GLOBALTEST

Sensor & Measurement Instrumentation

Shock

Force

Pressure

Vibration

Acoustic emission

Catalogue

2019

Made in Russia

GLOBALTEST

MEASURING INSTRUMENTATION

Shock, Force, Pressure, Vibration, Acoustic Emission

GlobalTest, LLC is a specialized research & production enterprise with a closed cycle of development and manufacture of measuring sensors. The company was established in 1991.

Key business lines:

- scientific & technical research in the field of motion and mechanical load measurements;
- development and manufacture of sensor equipment to measure vibration, shock, pressure, force, and acoustic emission;
- metrological support of development, production and operation of measuring sensor instrumentation.

The Quality Management System of GlobalTest, LLC is certified by BUREAU VERITAS according to the requirements of ISO 9001:2008 with accreditation from UKAS (Great Britain).

Metrological department of the company is accredited to provide services for an initial and regular verification of measuring instruments (Accreditation Certificate No. RA.RU.312398).

The Quality Management System of GlobalTest, LLC is certified by the Independent Noncommercial Organization “Institute for Tests and Certification of Weapons and Military Equipment” (ANO “InIS VVT”) according to the requirements of GOST RV 0015-002-2012 and GOST ISO 9001-2011.

GlobalTest, LLC is licensed for:

- manufacture of equipment for nuclear facilities;
- design engineering of equipment for nuclear facilities;
- development, production, testing, installation, maintenance, repair, utilization and commercialization of weapons and military equipment;
- implementation of space activities;
- carrying out activities using information classified as state secret.

Contents

Scope of application ... 4
Dealers and representatives ... 8
Operating principle ... 10
Connection schemes ... 12

VIBRATION TRANSDUCERS ... 14

Influence of external factors ... 15
Effect of ground loops ... 16
Operation guidelines ... 17
Vibration transducer mounting ... 18

With charge output

Standard
AP10 ... 20

Shock
AP1011, AP1012 ... 21
AP1017 ... 22

Miniature
AP1019, AP1030 ... 23
AP1031, AP1032 ... 24

Miniature three-axis
AP1020 ... 25
AP1021, AP1022 ... 26
AP1023 ... 27
AP1026 ... 28

General purpose
AP1024, AP1024-01 ... 29
AP1034, AP1034-01 ... 30
AP1037, AP1037-01, AP1037-02, AP1037-03 ... 31
AP1040, AP1040-01 ... 32
AP1057, AP1057-01, AP1057-02 ... 33
AP1077 (AP1077M) ... 34
AP1090 ... 35
AP1095, AP1096, AP1097 ... 36

two-axis
AP1076-XX ... 37

General purpose, three-axis
AP1038, AP1038P ... 38
AP1080, AP1081 ... 39
AP1084, AP1084-01 ... 40

Industrial
AP62B, AP62B-02 ... 41
AP63B, AP63B-01 ... 42
AP63B-02, AP63B-03 ... 43
AP1066B, AP1066B-01 ... 44

Industrial, three-axis
AP1064 ... 45
AP1065 ... 46

Underwater
AP1078, AP1079 ... 47

High-sensitivity
AP1006, AP1006-01, AP1006-02 ... 48
AP1047 ... 49
AP1048, AP1049, AP1050 ... 50

With voltage output

Shock
AP2017-1 ... 51
AP2018-XX ... 52

Miniature
AP2019 ... 53
AP2030-XX, AP2031-XX ... 54
AP2029-XX ... 55
AP2034-XX ... 56
AP2034-XX-01 ... 57
AP2034-XX-02 ... 58

Miniature, three-axis
AP2022-XX ... 59

General purpose
AP2028-XX ... 61
AP2028B, AP2028I ... 62
AP2037-1, AP2037-2, AP2037-XX ... 63
AP2037-XX-01 ... 64
AP2037-XX-02 ... 65
AP2098-XX, AP2098-XX-01, AP2098-XX-02 ... 66
AP2098-XX-5 ... 67
AP2098-100-3.3 ... 68

General purpose, two-axis
AP20382 ... 69

General purpose, three-axis
AP2038-XX ... 70
AP2038P-XX ... 71
AP2039-XX ... 72
AP2043-XX ... 73
AP2045-XX ... 74
AP2046-1000 ... 75
AP2081-XX ... 76
AP2082M-XX ... 77
AP2083 ... 78

Industrial
AP2035-XX, AP2035-XX-01 ... 79
AP2035-XX-02 ... 80
AP2036-XX, AP2036-XX-01 ... 81
AP2036-XX-02 ... 82
AP2036-XX-03 ... 83
AP2085-XX ... 84
AP2085-XX-01 ... 85
AP2086-XX, AP2086-XX-01, AP2086-XX-02 ... 86

Industrial, three-axis
AP2071, AP2071-01 ... 87

Underwater
AP2078-10, AP2078-100 ... 88

High-sensitivity
AP2006-XX, AP2006-XX-01 ... 89
AP2050-100, AP2050-500, AP2050-1000 ... 90
AP2099-100, AP2099-500, AP2099-1000, AP2099-100-03, AP2099-500-03, AP2099-1000-03 ... 91
AP2099-100-01, AP2099-500-01, AP2099-1000-01, AP2099-100-02, AP2099-500-02, AP2099-1000-02 ... 92

Dual-mode operation
AP3098 ... 93

With current output
AP2035T-XX, AP2035T-XX-01 ... 94

With digital output
AP35D, AP35D-01 ... 95
AP35D Explorer software ... 96

VIBRATION VELOCITY TRANSDUCERS ... 97

With voltage output
AV01, AV01-01 ... 98
AV04 ... 99

With current output

With HART-protocol
AV02, AV02-01 ... 100
AV02-02, AV02-03 ... 101

With extended temperature range
AV02-04, AV02-05 ... 102
AV02-06, AV02-07 ... 103

VIBRATION DISPLACEMENT TRANSDUCERS ... 104

D100, D100-01, D100-02, D100-03 ... 105
D200 ... 106

VIBRATION SWITCHES 107

SV01 108
SV01B 109
SV01-01 110
SV01-01B 111
SV01-02 112
SV01-02B 113
SV02 114
Programming panel SVProg 115

Matching device

AG19 116

DYNAMIC PRESSURE SENSORS 117

With charge output

PS01, PS01-01, PS01-02, PS01-03, PS01-04, PS01-05 118
PS02, PS02-01 119
PS03, PS03-01 120
PS09, PS09-01 121
PS09B, PS09-01B 122

With voltage output

PS2001-XX, PS2001-XX-01 123

With voltage output

PS2010 124
PS2011-03, PS2011-03-01 125

ACOUSTIC EMISSION SENSORS 126

With charge output

GT200 127
GT200B 128
GT205, GT205B 129
GT300, GT301 130

With voltage output

GT200U 131
GT200UB 132
GT250, GT350 133

Acoustic

GT400 134

FORCE SENSORS 135

With charge output

AC20, AC21, AC22, AC23 136
AC26 137

With voltage output

AC2020 138
AC2026 139

IMPULSE HAMMERS 140

AU01, AU02 141

Miniature

AU03 142

PADS WITH THREE-AXIS VIBRATION TRANSDUCERS 143

AP5010, AP5011, AP5012, AP5211, AP5212 143

EDDY CURRENT SENSORS 144

Eddy current sensors 145

Eddy current probe sets

AP2200D-V, AP2200D-C, AP2200T-C 147

Primary transducers

AE052, AE053, AE082, AE083, AE192, AE193 148

Displacement adapters

D220-C 149
D220-V 150

Rotation adapter

T220 151

Rotation probe

AP2600 152

CALIBRATORS 153

AT01m, AT02 154
AT04 155

AMPLIFIERS 156

Charge amplifiers

AP5000-XXX-XX 157
AP5002 158
AQ02 159

Differential charge amplifiers

AP5001 160
AQ05-A.1, AQ05-A.2 161
AQ05-Б.1, AQ05-Б.2 162
AQ05-B.0, AQ05-B.1 163
AQ05-Г.1, AQ05-Г.2 164
AQ05-Д.1.1, AQ05-Д.2.1 165
AQ05-E.XXX 166
AQ08, AQ08-01 167

Charge and voltage amplifiers

AP5030-4 168
AP5210-16 169
AP5220-8 170
AP5230-16 171
AP5240-16 173
AP5230-1 175

Voltage and charge measuring amplifiers

AP5110 176
AP5200, AP5200-3, AP5200-4 178
AP5200-8 180

Amplifiers of acoustic emission sensor signals

Charge amplifiers

GT500A, GT500A-01 182
GT500B, GT500B-01 183

Voltage amplifiers

GT200A, GT200A-01 184
GT200AM, GT200AM-01 185
GT300A, GT300A-01 186
GT400A 187

ELECTRIC AUXILIARY UNITS 188

Matching devices

For vibration transducers with voltage output to IEPE standard

AG01, AG01-3 188
AG01-4 189
AG01-8 190
AG01-01, AG01-3-01 191
AG01B 192
AG02, AG02-3 193
AG02-01, AG02-3-01 194
AS01 195
AS07 196

For vibration transducers with voltage output

AG04 197
AG04B 198
AG01-5V 199
AG04-01 200
AG04-3-01 201

For vibration transducers with charge output

AG07B 202

For low-frequency vibration transducers

AG05, AG05-01 203
AG05-02, AG05-02-2 204

For integration of signal transducers
AG14, AG14-3 ... 205
AG22 ... 206
To convert USB to RS485
AG15 ... 207
For vibration transducers with HART-protocol
AG18 ... 208
AG18-01 ... 209
Commuting
AG03 ... 210
AG20 ... 211
For acoustic emission sensors
AG09 ... 212
For acoustic emission sensors
AG09B Ex ... 213
AG21 ... 214

Electrical equivalents
E0.95, E3.30, E1000 ... 215

Power units
AS02 – AS05 ... 216
AS06, AS08 ... 217
AS10 ... 218

MEASURING INSTRUMENTS ... 219

Autonomous detectors for monitoring shock and vibration
Standard interface of ADMV-Explorer software ... 220
ADMV-01 ... 221
ADMV-02 ... 222
ADMV-05 ... 223
ADMV-06 ... 224
ADMV-07 ... 225
ADMV-08 ... 226

Acting vibration recording unit
BRHV ... 227

Measuring voltage transducer
AP6300 ... 228

Instrument sets
For dynamic process measurements
AP6013 ... 230
For measuring indicated pressure of piston compressors
AP6011 ... 232
For acceleration measurements
AP6012 ... 234

Vibrometer
AP5500 ... 235

Simulation workbench
AP7000 ... 236

Vibration controllers
AP5300 ... 238
AP5300-1 ... 239

Analyzer
ПР 200Ex Ex ... 240

Ballistic facilities
AP8001 ... 241
AP8008 ... 242

OPTIONAL ACCESSORIES ... 243

Cable products
Configurable items
Definition of cable products ... 243
Table 1. Cable codes ... 244
Table 2. Connector codes ... 245
Traditional items
AK01, AK02, AK03, AK04, AK05, AK06, AK08, AK10, AK11, AK12, AK13, AK14, AK15 ... 247
AK15-01, AK15-02, AK15-03, AK16, AK17, AK18, AK19, AK20, AK21 ... 248
AK22, AK23, AK24, AK25, AK26, AK27, AK28, AK29 ... 249
AK30, AK31, AK32, AK33, AK34, AK34-01, AK34-02, AK35 ... 250

Cable adapters
AR01, AR03, AR03-01, AR0305, AR04, AR06, AR08, AR10, AR11, AR17 ... 251

Seal rings
AA01, AA02, AA03 ... 252

Spacer
AA04 ... 252

Cable connectors
AR05 ... 253
AR07 ... 254
AR09 ... 255
AR16 ... 256

Studs
AH0103, AH0105, AH0106, AH0108, AH0110, AH0503, AH1003, AH0605, AH0610, AH0805, AH0806, AH0810 ... 257
Insulating studs
AH1006, AH1010 ... 257

Thread adapters
AD01, AD02, AD03, AD04, AD05, AD06, AD07, AD08 ... 258

Magnet mounting bases
AM01, AM01-01, AM03, AM03-01, AM03-02, AM04, AM11, AM11-01, AM11-02 ... 259
AM13, AM13-01, AM19, AM14, AM14-01, AM14-02 ... 260
Insulating magnet bases
AM08, AM08-01, AM05, AM05-01, AM05-02, AM05-03, ... 261
AM12 ... 261
For acoustic emission sensors
AM06, AM06-01, AM06-02, AM06-03, AM07 ... 262

Probe
AN01 ... 263

Wax mastic
AW01 ... 263

Mounting blocks
АУ01, АУ02, АУ06, АУ19 ... 264

Hand vibration adapter sets
AP5022, AP5025, AP5026 ... 265

The sign «» means that the product is registered in the State Register of Measuring Instruments of the Russian Federation.

The sign «Ex» means that the product is explosion-proof.

December 2018

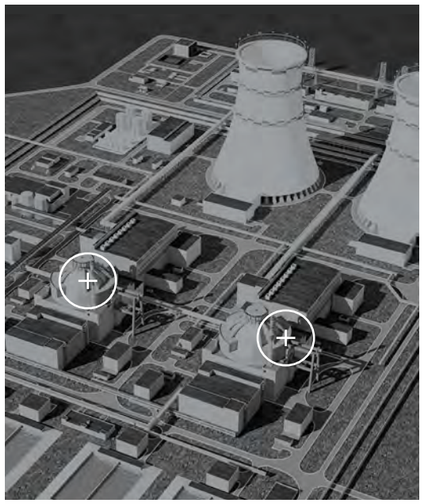
Scope of application

At present, LLC GlobalTest offers more than 500 types of measuring equipment.

This includes piezo-electric transducers, dynamic pressure sensors, force sensors, impulse hammers, acoustic emission transducers, eddy current probes, calibrators, electronic matching devices, vibroswitches, vibration controllers, self-contained vibration monitoring sensors, etc. that are designed for measuring and analysis of mechanical vibration and shock, vibroacoustic investigations and tests, permanent monitoring and technical diagnostics of industrial equipment, workplace assessment and industrial hygiene.

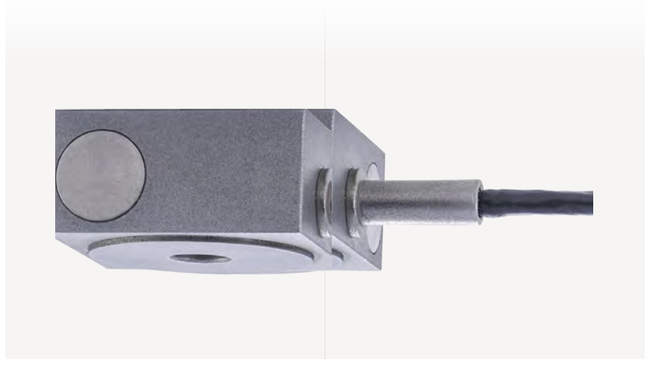
Vibration transducer with charge output AP1024

Monitoring of vibrational responses of solar array photoconverters, instrument boards, antenna reflectors, waveguides and other light structural elements.



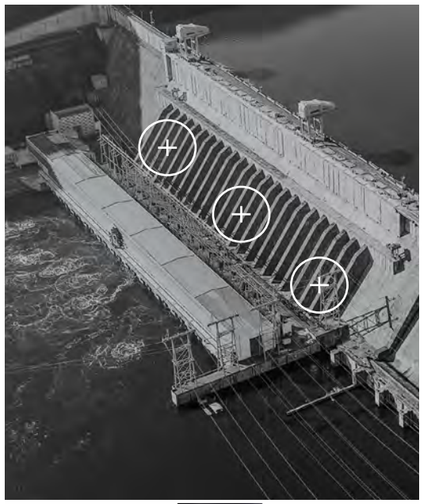
Acoustic sensor GT400

Diagnostics and monitoring of leaks in power equipment at potentially hazardous industrial facilities (e.g. pipelines of the primary circuit of nuclear reactors at nuclear power plants).



Vibration transducer with built-in electronics AP20382

Monitoring of vibration and shock accelerations on aircraft units and fuselage.



Dynamic pressure sensor PS2001

Monitoring of pressure pulsations of compressors, engines, turbines and other machines and mechanisms.

Acoustic emission transducer GT200

Detection and registration of incipient defects in the reactor vessel, reservoir and pipeline.

Scope of application

The instruments made by GlobalTest, LLC can be highly recommended due to their successful application in instrument making and machine building, power engineering, aerospace and defense industries, transport, oil refineries and chemical plants, metallurgical and cellulose and paper mills, as well as in public health authorities and metrology centers, etc.

The scope of GlobalTest instrumentation use covers over two thousand enterprises in total.

The key partners and customers of GlobalTest, LLC are:

- “INTERUNIS-IT” Ltd. Co.;
- “Octava+ Company”, LLC;
- “Visom”, Ltd.;
- Industry Center for New Technologies Implementation JSC “Russian Railways”;
- “ALGORITM-AKUSTIKA”, CJSC;
- “Scientific Technical Center Diaprom”, JSC;
- “Electronic Technologies and Metrological Systems” (ZETLAB company), CJSC;
- “ZET” (Safeguarding of Electronic Technologies), CJSC;
- “Center ACP”, LLC;
- “Tsyfrovye Pribory” (Digital Devices), LLC;
- “NTM-Zashita”, LLC (Moscow);
- Association VAST, Ltd.;
- “TST”, CJSC;
- “AUTEX SPb”;
- “EMS”, LLC (St.-Petersburg);
- “Promservis”, CJSC (Dimitrovgrad);
- “Diateh NN”, LLC;
- “Encotes”, LLC;
- GZD JSC “RZD” (Russian Railways, Nizhny Novgorod);
- “DATOS Ltd.” (Kiev, Ukraine).

Research Institutes, Design Bureaus, Experimental Centers:

- Moscow State University;
- All-Russian Scientific Research Institute of Railway Transport;
- Central Research Institute for Precision Machine Building;
- Scientific Research Institute for Computer Systems;
- Scientific Research Center for Vacuum Surface Investigations;
- Moscow Power Engineering Institute;
- Moscow State Technological University “STANKIN”;
- State Unitary Enterprise “Engineering Center for Strength and Materials Science of Elements of Nuclear Technology”;
- Mechanical Engineering Research Institute of the Russian Academy of Sciences;
- Institute of Geosphere Dynamics of the Russian Academy of Sciences;
- Schmidt Institute of Physics of the Earth of the Russian Academy of Sciences;
- All-Russian Research Institute of Railway Hygiene;
- Specialized Research Institute of Instrumentation “SNIIP”;
- “VNIIEM Corporation” JC;
- A.A. Bochvar High-Technology Research Institute for Inorganic Materials;
- Central Institute of Aviation Motors (CIAM);
- Berg Central Research Radio Engineering Institute (Moscow);
- Experimental and Design Organization “Gidropress” (Podolsk);
- Leipunsky Institute of Physics and Power Engineering (Obninsk),
- Research and Design Institute “Morteplotekhnika” (Lomonosov);
- All-Russian Research Institute of Experimental Physics (VNIIEF, Sarov);
- Zababakhin Research Institute of Technical Physics (VNIITF, Snezhinsk);
- Kyiv Medical Institute;
- Central Design Bureau for Automatics Engineering;
- Omsk Research Institute of Instrumentation;
- DYNAMICS Scientific-and-Production Center (Omsk),
- Scientific Technological Center “Avtomatika” (Krasnoyarsk);
- Research and Production Company “Vibrotech” (Kazan);
- Bereznyak State Engineering Design Bureau “Raduga” JSC (Dubna);
- Scientific Production Center “Polyus”;
- Institute of Strength Physics and Materials Science, Siberian Brach of the Russian Academy of Sciences (Tomsk);
- Institute of Problems of Mechanical Engineering of the Russian Academy of Sciences;
- State Center “Test-St. Petersburg”;
- Central Research Institute “Gidropribor”;
- KBP Instrument Design Bureau;
- Krylov State Research Center (St. Petersburg);
- Scientific and Production Enterprise “Molniya” (Ufa);
- Research Institute of Physical Measurements (Penza);
- Izhevsk Institute of Physics and Technology of the Russian Academy of Sciences;
- All-Russian Research and Design Institute of Atomic and Power Engineering “VNIIAM”, JSC (Volgodonsk);
- Nizhny Tagil Institute for Materials Research;
- Ural Design Bureau of Transport Engineering;
- Institute of Automation and Electrometry, Siberian Branch of the Russian Academy of Sciences;
- Institute of Mining, Siberian Branch of the Russian Academy of Sciences;
- Institute of Solid State Chemistry and Mechanochemistry, Siberian Branch of the Russian Academy of Sciences;
- Design and Technology Institute of Scientific Instrumentation;
- Chaplygin Siberian Aeronautical Research Institute (Novosibirsk).

- Instrument and Mechanical Engineering:
- Scientific Research Institute of Introscopy MNPO «SPEKTR»;
- OJSC «Informpribor»;
- OJSC «Morinformsystem-Agat»,
- CJSC «Geoacoustics»;
- OJHSC «Elektrozavod»;
- JSC «Electroprivod»;
- Vibration Diagnostics and Balancing Machines «DIAMECH 2000», Ltd;
- TurboControl, LLC;
- JSC All-Russian Production Corporation «ZAES»;
- Machine-building company CJSC «Uralmash drilling equipment»;
- Federal State Unitary Enterprise, Production Association «START» (Zarechny);
- Precision Instruments OJSC «Tochpribor» (Ivanovo);
- Plant «Kaliningradgazavtomatika», Ltd.;
- Kaluga Plant “Avtopribor”;
- JSC “Ural Design Bureau “Detail” (Kamensk-Uralskiy);
- Optical engineering, optoelectronics, “Zverev Krasnogorskiy Plant”, JSC;
- JSC Scientific-Production Company “Promavtomatika” (Krasnodar);
- JSC “Pribor” (Kursk);
- Nizhny Novgorod Machine-Building Plant, JSC;
- JSC “Mayak” (Penza);
- PJSC “Motovolikha Plants” (Perm);
- JSC “Ramensk Instrument-Making Plant”;
- JSC Military and Industrial Corporation “NPO Mashinostroyenia” (Reutov);
- Scientific-Production Company “LenPromAvtomatika”;
- JSC “Radio-avtomatika”;
- JSC “Baltic Shipyard”;
- JSC “Zvezdf”;
- PJSC “Power Machines” (St. Petersburg);
- Tomsk Vakhrushev Electromechanical Plant;
- Electronics and Automation Plant “ZEIM Automation” (Cheboksary).

Aerospace and defense industry:

- Ural Civil Aviation Plant;
- Khrunichev State Research and Production Space Center;
- Makeyev State Rocket Center;
- Perm Engine Company, OJSC;
- Lavochkin Research and Production Association;
- Glushko Research and Production Association “Energomash”;
- Motor Sich Joint Stock Company;
- JSC Aviadvigatel;
- Central Research Institute of Machine Building “TsNIIMash”;
- Space Rocket Center PROGRESS;
- Rybinsk Engines, OJSC;
- KAMOV Company (Design Bureau);
- Mil Moscow Helicopter Plant (Mil Helicopters);
- Arsenyev Aviation Company PROGRESS;
- Scientific & Production Enterprise “Molniya”;
- JSC “PO “Sevmash”;
- Helicopter Factory “Kazan Helicopters”;
- ISS-Reshetnev Company “Information Satellite Systems”;
- Tactical Missiles Corporation, JSC.

Oil and gas processing and chemical enterprises:

- JSC Orgenergoneft;
- JSC “Angarsk Petrochemical Company”;
- Yuzhno-Balyksliy Gas Processing Plant; “Permnefteorgsintez”;
- PJSC Nizhnekamskneftekhim;
- Severodvinskiy ORGKHIM;
- Mogilev Synthetic Fiber Plant (Mogilev);
- JSC Kaustik (Volgograd);
- Moscow Refinery,
- Novokuibyshevsk Refinery;
- “Ammofos” (Cherepovets);
- JSC Belaruskali;
- JSC Novoroscement;
- Urengoygazprom;
- JSC SIBUR-Neftekhim (Petrochemical Company;
- JSC Acron (Veliky Novgorod);
- JSC Shchekino Khimvolokno (Synthetic Fiber Company);
- JSC Uralkali;
- Yamburg Gas Production Plant;
- Mineral Fertilizers, JSC (Perm);
- CJSC Sterlitamak Petrochemical Plant;
- Polypropylene Plant (Omsk).

Power engineering:

- Smolensk NPP;
- Novovoronezh NPP;
- Rivne NPP;
- Zaporozhye NPP;
- Kalinin NPP;
- Balakovo NPP;
- Beloyarsk NPP;
- Ignalina NPP;
- Sayano-Shushenskaya Hydroelectric Power Station;
- KUVVAT Energy Corporation;
- Uzenergonaladka;
- JSC Arkhenergoremont;
- Mosteploset;
- Zaporozhye Hydroelectric Power Plant;
- Dnepropetrovsk Hydroelectric Power Plant;
- Zagorsk Hydroelectric Power Plant;
- Central Heating & Power Plant of Moscow;
- Volgograd;
- St. Petersburg;
- Petrozavodsk;
- Minsk;
- Kiev;
- Tver;
- Yaroslavl;
- Yakutsk.

Metallurgy:

- West-Siberian Metal Plant;
- Bratsk Aluminium Smelter;
- Novokuznetsk Iron and Steel Plant;
- Norilsk Nickel;
- Novolipetsk Steel Plant;
- Magnitogorsk Iron and Steel Works;
- Navoi Mining and Smelting Industrial Complex (Uzbekistan);
- Altai-Koks (Altai coke-chemical plant);
- Sinarskiy Pipe Plant;
- Vyksa Steel Works; Volzhsky Pipe Plant;
- St.-Petersburg Metal Plant;
- OJSC Belarus Steel Works (Zhlobin);
- JSC Moldova Steel Works (Rybnitsa);
- Cherepovets Steel Mill (PJSC Severstal);
- OJSC Nizhniy Tagil Iron and Steel Works;
- New Kramatorsk Machine Building Factory;
- JSC Belaya Kalitva Metallurgical Production Assosiation;
- JSC Oskolsky Electrometallurgical Works.

Transport:

- Moscow metro;
- Sheremetyevo Airport;
- Koltsovo Airport (Ekaterinburg);
- Gorky Railway;
- October Railway;
- Moscow Railway;
- South-Ural Railway;
- Northern main oil pipelines (Transneft North JSC, Ukhta);
- Volgotransgaz;
- Lentransgaz;
- Tyumentransgaz;
- Kievtransgaz;
- Beltransgaz;
- IVTC Tyumentransservice;
- Northern Shipping Company.

Automobile plants:

- Volzhsky Automobile Plant (VAZ);
- Minsk Automobile Plant (MAZ);
- Belarus Automobile Plant (BELAZ);
- FIAT;
- Gorky Automobile Plant (GAZ);
- Ulyanovsk Automobile Plant (UAZ);
- Zavolzhye Engine Plant (ZMZ).

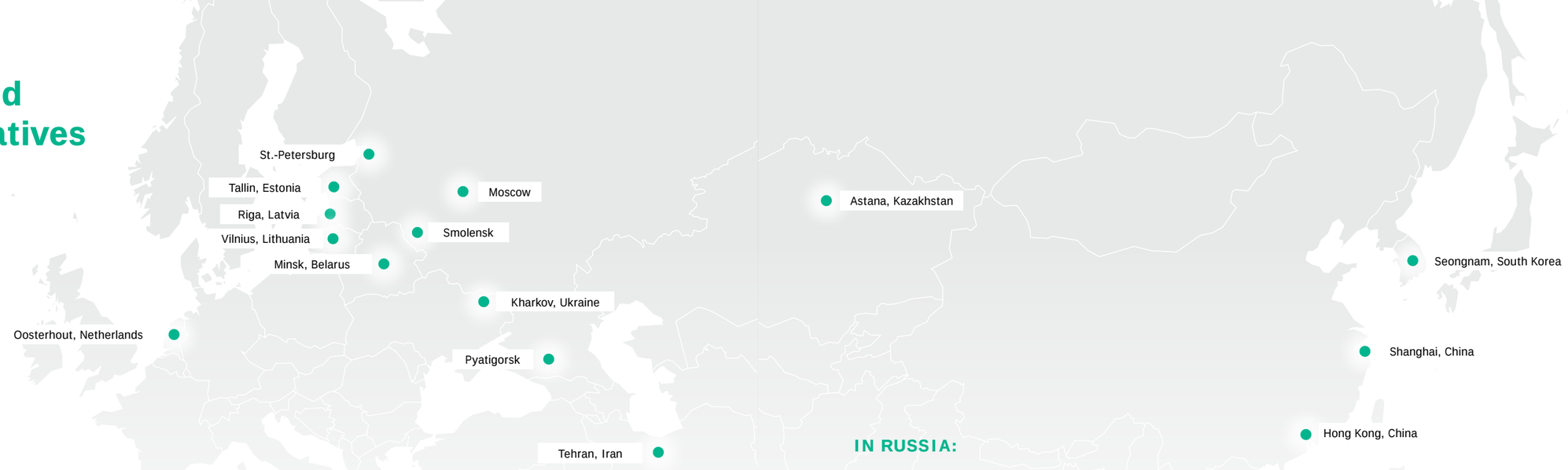
Pulp and paper mills:

- Kotlas Paper Mill;
- Krasnokamsk Pulp and Paper Mill “KAMA”;
- Segezha Pulp and Paper Mill;
- Solombalsky Pulp and Paper Mill;
- St.Petersburg Cartonboard and Printing Mill;
- Bratsk Pulp and Containerboard Mill;
- Naberezhnye Chelny Carton and Paper Mill;
- Mondi Syktyvkar Forest Industry Complex.

Standardization, metrology and public health:

- Standardization and Metrology Center, Orekhovo-Zuyevo;
- State Inspectorate for Small Vessels;
- Center for Certification of Road Construction Machines;
- Federal Center for State Sanitary and Epidemiological Supervision, Moscow;
- State Sanitary and Epidemiological Supervision Centers in the cities: Kirov, Vladivostok, Cheboksary, Voskresensk, Klin, Noginsk, Neryungri, Ekaterinburg, Tula, Kursk, Tomsk, Moscow (9 centers);
- Hygiene and Epidemiology Centers in the cities: Minsk (three centers), Vitebsk, Brest;
- Lithuanian University of Health Sciences;
- Ukranian State Committee for Occupational Health and Safety (8 mobile laboratories).

Dealers and representatives



INTERNATIONAL:

AP Technology International B.V.
(Oosterhout, Netherlands)

CEO: Alwin Hendriks

www.aptechnology.nl

info@aptechnology.nl

+31 (0) 162-46-27-93
+31 (0) 162-46-17-81

DMS (INTERNATIONAL) CO., Ltd..

Managing Director: Andrew Liao

Address:

Room No.2302 of ShenYin Development Mansion, No327 of Wuding Road, ShagHai;

Bulding 27, Hopewell Centre, No. 183 Queen's Road East, HongKong

www.dms-test.com, sale@dms-test.com

+(86) (10) 021-6231-42-60, 021-6321-43-50

JSC "Promavtomatica"
(Kharkov, Ukraine)

General manager:
Sirenko Sergey Yurievich

Address: Ukraine, 61002, Kharkov, per. Teatralniy, 11/13

www.promgroup.com.ua,

office@promgroup.com.ua

+7 (10) (38) (057) 706-01-50, 706-01-85

Private Unitary Enterprise "POLYTEST" (Minsk, Belarus)

Director:
Kirilenko Alexander Timofeevich

Address: Belarus, 220004, Minsk, Pobeditelei Ave., 23, bld. 2, office 600A, 601

www.octava.info, octava@tut.by

+ (375) (17) 203-80-65, 222-71-19

"Novatest Kazakhstan"
(Astana, Kazakhstan)

Director:
Danilichev Mikhail Aleksandrovich

Address: Republic of Kazakhstan, 010000, Astana, T. Shevchenko Str., 8/1, room 10,

www.novatest.kz, info@novatest.kz
+7 (7172) 51-17-80;
+7 (702) 206-95-19.

Beijing Gemconco M&E Equipment Co., Ltd.

General Manager – Tennyson Lee

Адрес: Office Room No.7, TaiPingJie Jia 2 Hao, XuanWu Dist., Beijing China, Post Code 100050,

www.gemconco.com,

bjgemconco@vip.163.com

+ (86) (10) 6351-68-38, 8355-79-77

D un D Centrs

Research Manager:
Aleksey Mironov

Address: The building of the Aviation Research Center, Riga International Airport, Ziemelu Str. 24, LV-1035, Latvia

aleksei@ddcentrs.lv

Phone: (+371) 67 468 850

Advanced Measurement Technology (AMT)

Address: 715, Jangmi-ro 42, Bundang-gu, Sungnam-si 463-828, Korea

gobsl121@outlook.com

CRT ABP Vibro, Ltd.

Address: First Floor, 18, 16th St., Khaled Eslamboli Ave (Vozara), TEHRAN – IRAN

+(9821) 88481873-4

IN RUSSIA:

R&D Center "Balancing Machine Plant", LLC

Director General:

Radchik Igor Iosifovich,

Address: 115230, Moscow, Varshavskoye shosse, 46

www.balansmash.ru,

bm@balansmash.ru,

+7 (495) 120-03-18

Radiant-Elcom, CJSC

Director General:
Kuznetsov Andrey Leonidovich,

Address: 117246, Moscow, Profsoyuznaya Str., 65, bld. 1, floor 11

www.radiant.su,

l_ponomarenko@be-techno.ru,

Phone.: +7(495) 725-04-04

Electronic Technologies and Metrological Systems (ZETLAB Company), CJSC

Director: Feizkhanov Usman Ferdinandovich,

Address: 124498, Moscow, Zelenograd, driveway 4922, 4, bld. 5

www.zetlab.com,

sale@zetlab.com,

+7(495)739-39-19

Be-Techno, LLC

Director:

Ponomarenko Larisa Anatolievna,

Address: 357538, Stavropol region, Pyatigorsk, Lyudkevich Str., 9, office 3-A

www.be-techno.ru,

l_ponomarenko@be-techno.ru,

+7(879 3) 398531

Octava+, LLC

Director: Kosinova Victoria Evgenyevna,

Address: 127273 Moscow, Berezovaya Alleya, 5A, bld..1-3, office 104

www.octava.ru,

info@octava.ru,

+7(495)799-90-92

Autex SPb

Address: 192019, Russia, St.-Petersburg, Shkapin Str., 32.

(located in the building of Special Design Bureau "Indicator"), office 304.

500 m from "Baltiyskaya" metro station

(812) 252-01-40

Visom, Ltd.

Address: 214013, Smolensk,

Energetichesky proezd, 1 bld. B

contact@visom.ru

+7 (4812) 61-80-76

Operating principle

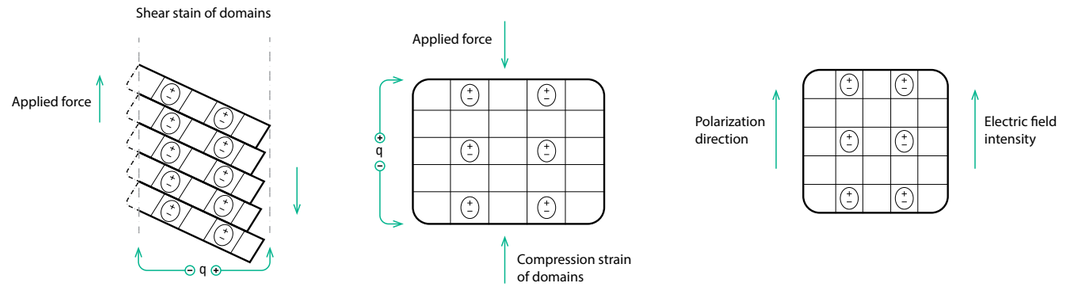
The principle of operation of the majority of GlobalTest sensors (vibration, pressure, shock, acoustic emission sensors) is based on the use of a direct piezoelectric effect (a phenomenon of formation of an electric charge caused by mechanical deformation of some dielectric materials).

The Greek word «piezo» means: squeeze, compress. The piezoelectric effect changes the sign of the generated charge to the opposite one as the sign of deformation changes.

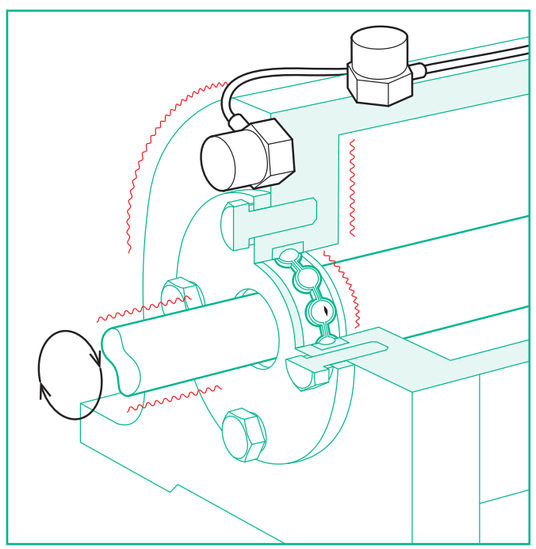
Piezoelectric materials include crystalline substances whose crystals do not have a center of symmetry (e.g. quartz, lithium niobate, etc.) as well as artificially created and electrically polarized piezoelectric ceramics, which are mechanical mixtures of metal oxides (e.g. lead zirconate titanate (LZT), sodium bismuth titanate (THaB), etc.).

Piezoceramics is polarized by placing it for a certain time in a strong electric field of direct current. During polarization the dipoles (domains) of the ceramic molecular structure are oriented in the direction coinciding with that of the electric field vector. After the electric field is turned off, most domains remain oriented in a direction close to the polarization field vector.

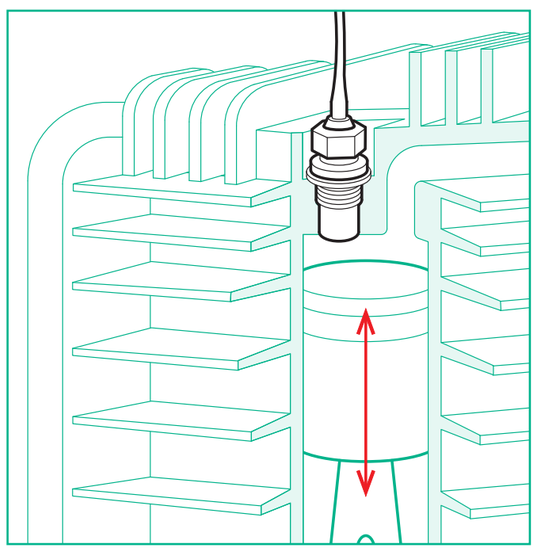
In piezoelements of the piezoelectric sensor subjected to mechanical impacts (acceleration, pressure, force, acoustic emission) the mechanical stresses appear that are proportional to these impacts and cause formation of an electric charge. This charge is removed with the help of electrodes. The law of linear proportionality between mechanical impact and electric charge and its conservation in a wide dynamic and frequency ranges is the basis for stability of the performance characteristics of piezoelectric generating sensors.



Simplified model of piezoelectric effect of artificially polarized ceramics. Electric charge q is collected from specified surfaces.

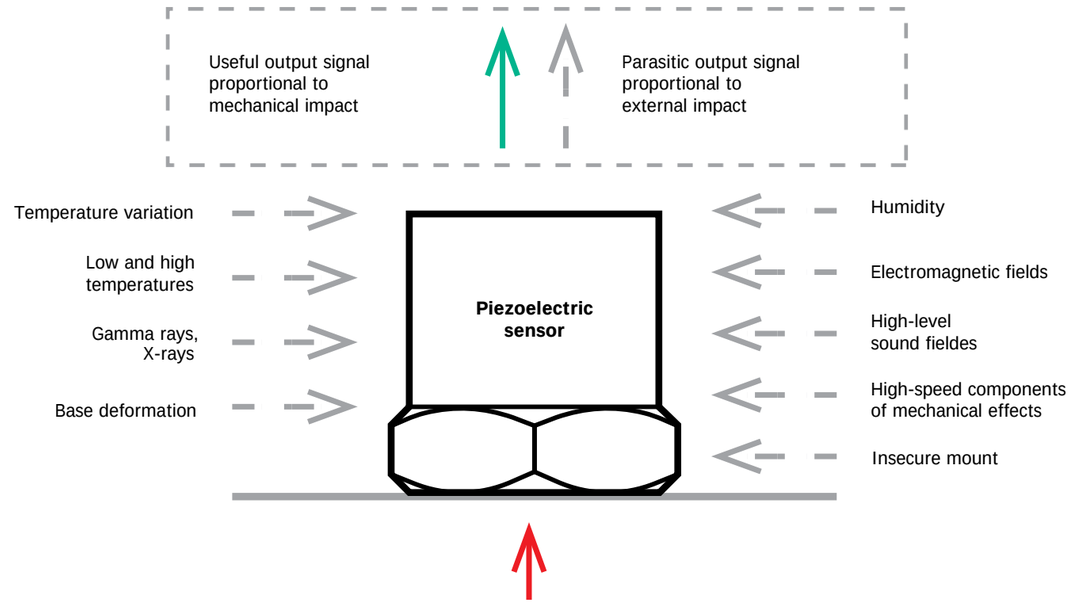


Vibration



Dynamic pressure

Types of impact on piezoelectric sensor



In choosing piezoelectric sensors attention should be paid to the conditions of their use.

Piezoelectric sensors are characterized by more than forty parameters that serve to evaluate performance, accuracy and applicability of the sensors for specific measurement purposes.

Technical parameters are divided into metrological and operational characteristics.

The most important metrological characteristics are:

- conversion factors;
- frequency of the setting resonance, which defines the upper limit of the operating frequency range;
- relative coefficient of transverse conversion;
- operating frequency range with the specified unevenness (ripple) of the amplitude-frequency response;
- operating acceleration range with the specified amplitude nonlinearity;
- operating temperature range.

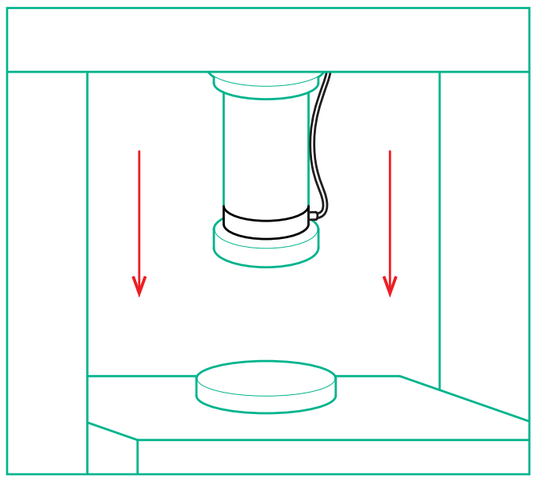
Depending on the measurement problem specification, important can be the values of the coefficients of influence of external effects (influencing factors).

The main operational characteristics may include:

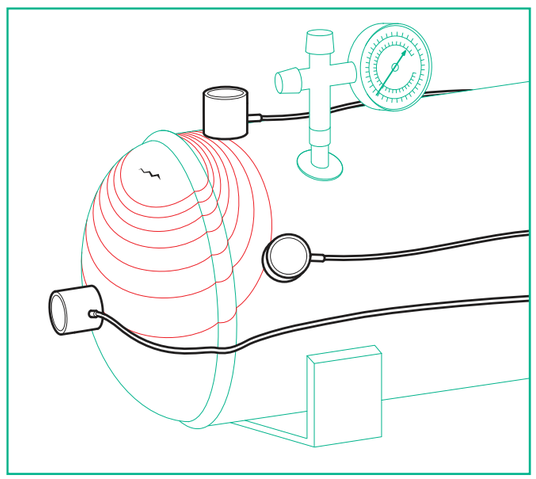
- weight and overall dimensions;
- method of mounting on the monitoring item;
- protection from environmental influences and sources of interference.

The received signal, proportional to the monitored mechanical impacts, may not always exceed the parasitic signal that is proportional to the influencing factors.

Most of the sensors produced by GlobalTest LLC have a mechanical scheme of shearing strain of piezoelectric elements, which makes them less sensitive to the majority of influencing factors.



Force



Acoustic emission

Connection schemes

To connect a piezoelectric transducer (vibration, pressure, force or acoustic emission sensor) to the recording equipment, the specially designed matching devices are used, which serve to match the output signal of the sensor (in amplitude, frequency, phase or digital code) to the input characteristics of the recording equipment.

According to the type of output signal, the piezoelectric transducers are divided into two groups:

- with built-in electronics;
- with charge output.

Each group has its advantages and disadvantages. For instance, to ensure high resistance of the sensor to the temperature (over 150 °C) or large values of amplitudes of the measured accelerations (more than 50 000 m/s^2), one should choose from a number of sensors with charge output. In this case, the use of connecting cables of long length (sensor - matching device) and, accordingly, large capacitance, affects the overall voltage sensitivity of the channel. The signal-to-noise ratio decreases accordingly, causing a slight decrease in the amplitude-frequency response (about 5%) in the high-frequency region (over 20 kHz). It is recommended that the maximum length of such cable line should not be more than 30-40 meters. It will also be necessary to use an anti-vibration (low-noise) cable (except for acoustic emission sensors with a frequency range of more than 50 kHz). However, when measuring low-level accelerations (‘g’ units), the effects associated with triboelectric phenomena in the cable may still appear. Under shock loads, this effect is proportional to the length of the oscillating (loose) part of the cable and duration of shock loading (more than 10-20 ms). Therefore, when measuring low-level accelerations, it is advisable to:

- shorten the length of cable sections subject to vibrations or shock disturbances;
- shorten the length of the cable part located between the last point of cable mounting on the movable object and the first fixed point;
- fix the cable on the test object without tension or sagging, using clamps, staples, mastics, etc., at a pitch of 200-300 mm and the first fixing point 30-50 mm apart from the sensor (2-5 mm for AP1019);
- if possible, determine the level of the signal caused by triboelectricity in the ‘vibration transducer - recording equipment’ cable lines prior to the tests, then using the «background» communication lines during the tests.

In other cases, it is advisable to use transducers with built-in electronics as they have better noise-immune characteristics and can use longer cable lines (piezoelectric transducer - matching device) up to 500 meters (up to 50 m – for current supply 2 mA).

The key element of the matching devices of measuring circuits of piezoelectric sensors with charge output are preamplifiers. Their main function is:

- matching the high output impedance of the sensor (more than 10 GΩ) to a lower impedance of the recorder (less than 10 MΩ).

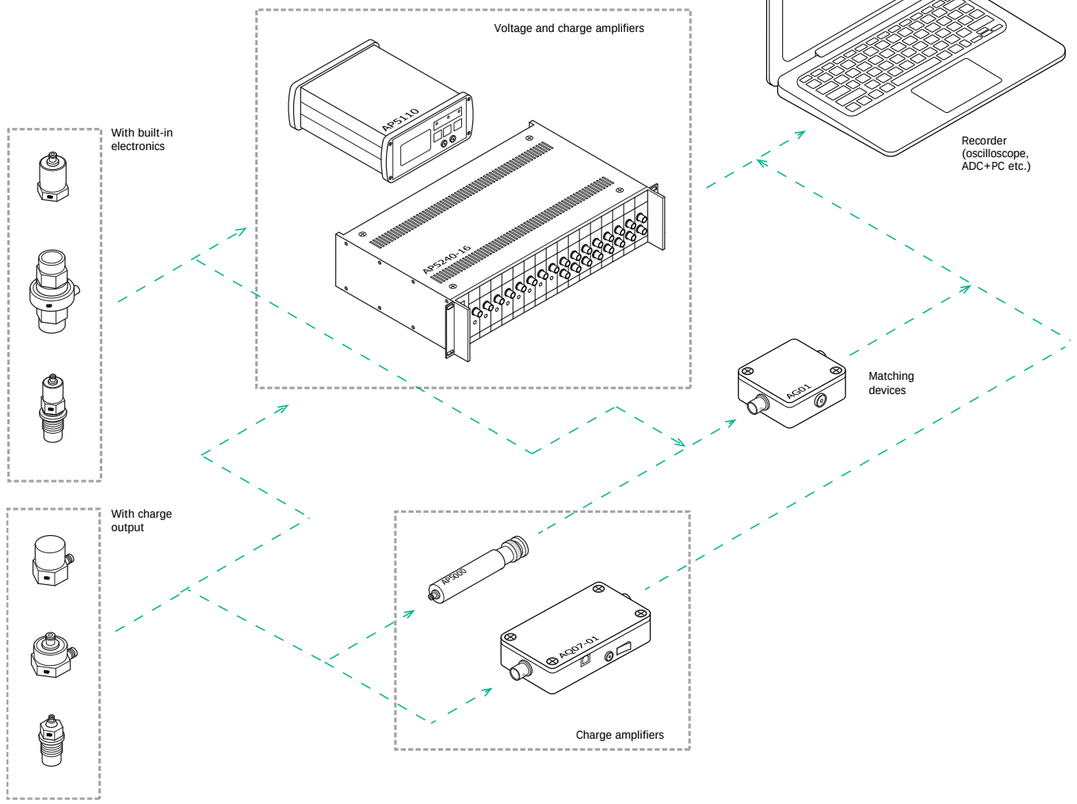
Preamplifiers housed in the sensor with built-in electronics perform the same functions as those in the sensors with charge output, while eliminating the following:

- capacity of the connecting cable, i.e. capacitive load at the preamp input, which influences the amplification factor, respectively, the conversion factor of the ‘sensor - preamplifier’ measuring path;
- parasitic stresses arising from the triboelectric effect in the cable, leading to an error.

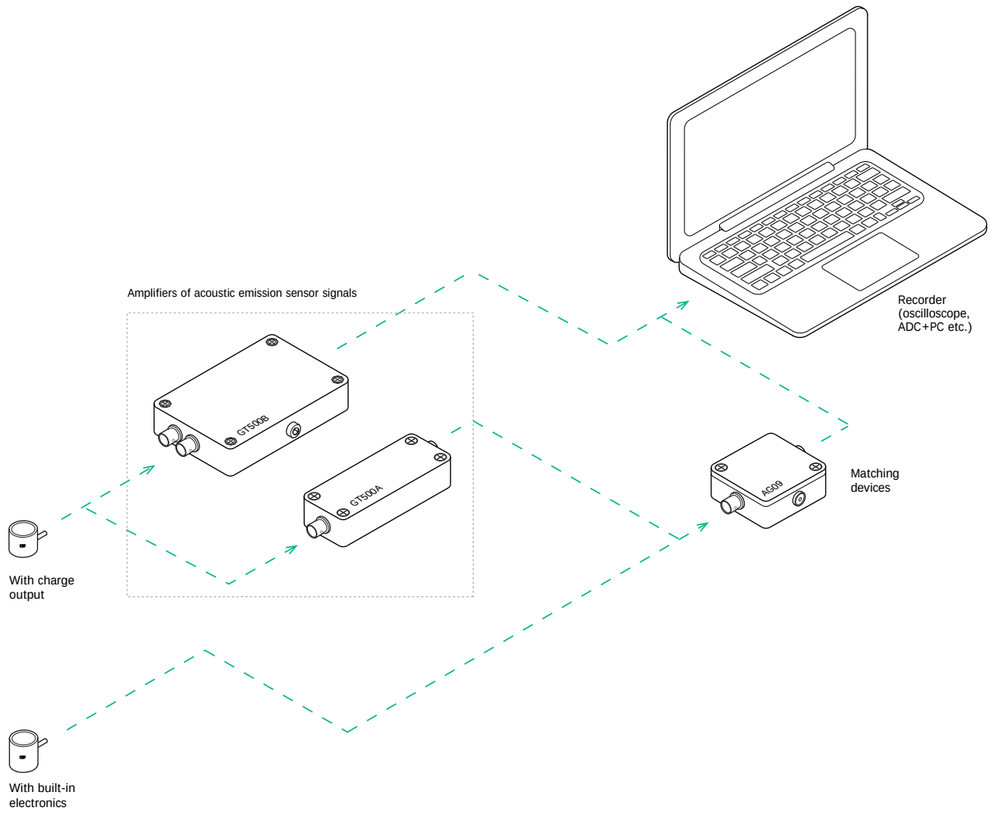
The electronics integrated in the sensors enables the analog low-impedance voltage output (IEPE, ± 5 V at a supply voltage of 15 ... 30 V and current of 2 ... 20 mA), as well as the standard current output (0 ... 5 mA and 4. .. 20 mA), digital output, integration or double integration (conversion of acceleration signal to RMS of velocity or displacement), and additional options: sensitivity rationing (deviation from nominal not more than 2%), TEDS interrogation technique (automatic detection of sensor type, its technical characteristics, in accordance with IEEE P1451.4), HART interface, etc.

Thus, matching devices for the sensors both with charge output and built-in electronics should be chosen on the basis of the following criteria:

- standard or customized version of the sensor;
- presence of electrical insulation of the piezoelectric element and built-in amplifier from the housing (for sensors with built-in electronics);
- need to amplify the signal from the sensor output;
- need for variation of amplification factor;
- number of channels of the matching device;
- need to integrate the signal from the sensor and, therefore, receive the signals proportional to velocity or displacement of mechanical oscillations;
- need for filtering the processed signals to eliminate unnecessary components of these signals (low-pass and high-pass filters);
- availability of an indicator to display the measured signal on the matching device;
- need to connect the amplifier to a personal computer and opportunity of remote control;
- value of the input resistance of the recording device;
- requirements for certification (State Register, explosion protection, etc.).



Connection scheme for vibration, pressure and force sensors



Connection scheme for acoustic emission sensors

Vibration transducers

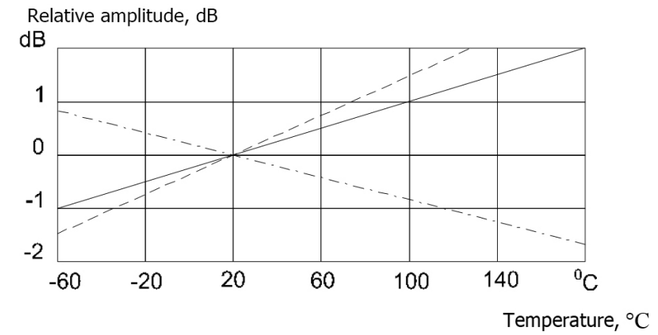
Measurement and analysis of mechanical vibration and shock, vibroacoustic research and testing, continuous monitoring and technical diagnostics of industrial equipment, certification of workplaces and industrial health.

Influence of external factors

Influence of ambient temperature

Vibration transducers of AP series are efficient in a wide range of temperatures. When the temperature deviates from normal, both the axial sensitivity and electrical capacitance of vibration transducers change. These changes are reversible and can be restored when the normal temperature is established. The temperature dependences of sensitivity and capacitance, typical for the AP vibration transducer, are shown in the figure.

The above temperature dependences can be used, if necessary, to correct acceleration measurement results at a known operating temperature of vibration transducers.



Axial sensitivity and electric capacity vs. temperature

Effect of alternating magnetic field

Magnetic susceptibility of the materials of the basic structural elements plays the main role in formation of sensitivity of the vibration transducers to the alternating magnetic field. Due to this fact, the basic structural elements of the AP vibration transducers are made of non-ferromagnetic materials whose magnetic susceptibility is close to zero. The sensitivity of the AP vibration transducers to the alternating magnetic field does not exceed 15^{-4} g/A·m^{-1} and its appreciable effect is possible only when measuring low-level accelerations.

Acoustic sensitivity

High-pressure acoustic fields have an insignificant effect on the output signal of the AP vibration transducers. At sound pressure levels of about 140 dB and frequency of 250 Hz, the acoustic sensitivity of the AP vibration transducers is found to be tenths of “g”.

Influence of test object deformation

When mounting the AP vibration transducers on a surface that is highly deformed during shock or vibration, a parasitic signal may appear due to the transfer of deformation through the base of the housing to the sensitive element. The AP vibration transducers are distinguished by their low strain sensitivity which, in general, does not exceed $5{\cdot}10^{-3}$ g·m/μm at a deformation of 250 μm/m.

Cross sensitivity

Cross sensitivity of the AP vibration transducers does not exceed 5% of the axial sensitivity. The passport of each transducer gives only the maximum value of cross sensitivity. To minimize the effect of cross sensitivity on the measurement results, the expected direction of acceleration should be aligned as accurately as possible with the working axis of the vibration transducer sensitivity.

Cable effect

The AP vibration transducers use the anti-vibration low-noise cable. However, when measuring low-level accelerations (“g” units), the effects associated with triboelectric phenomena in the cable may appear. Under shock loads, this effect is proportional to the length of the oscillating (unattached) part of the cable and duration of shock loading. At shock load durations of up to 10-20 ms, this effect on the measurement result is insignificant. At the same time, for low-frequency oscillations, the effect of triboelectricity on the measurement result can be decisive. Therefore, when measuring low-level accelerators by the AP vibration transducers, it is necessary to:

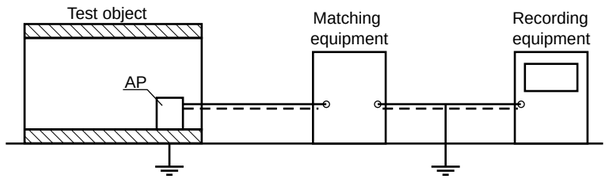
- shorten the length of cable sections subject to vibrations or shock disturbances;
- shorten the length of the cable part located between the last point of cable mounting on the movable object and the first fixed point;
- fix the cable on the test object without tension or sagging, using clamps, staples, mastics, etc., at a pitch of 200-300 mm and the first fixing point 30-50 mm apart from the vibration transducer (2-5 mm for AP1019, AP2019);
- if possible, determine the level of the signal caused by triboelectricity in the ‘vibration transducer - recording equipment’ cable lines prior to the tests, then using the «background» communication lines (or background vibration transducers) during the tests.

Effect of ground loops

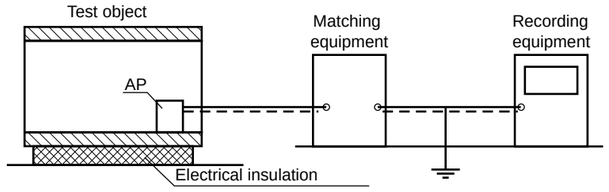
Significant difficulties in measuring accelerations by vibration transducers can be caused by electrical circuits that are formed due to incorrect grounding of the test object and matching equipment.

In this case, additional voltage is added to the vibration transducer output signal, which can significantly distort the measurement result at low levels of measured accelerations. In order to prevent formation of ground loops, it is required that the test object should be grounded, with vibration transducers and equipment installed at one point of the test object. In doing so, the grounding at the recording equipment is preferable.

However, if the experiment requires formation of ground loops, then the vibration transducers AP1020, AP1024, AP1030, AP1032, AP2035, AP2036, AP1077, AP2085, AP2086 which constructively provide electrical insulation of the housing from the test object, or AP1034, AP1037, AP1040, AP1057, AP1078 on an insulating stud (AH1006, AH1010) or on an insulating magnet (AM05, AM08), should be used.



Incorrect grounding of the object and equipment



Correct grounding of the object and equipment

Zero-line offset

Displacement of the zero line in vibration transducers can be manifested as an offset of the dc component that returns to the zero line exponentially.

The zero-line offset may be due to a number of reasons, such as cable effect, unreasonable grounding of the test object and recording equipment, or design features of vibration transducers.

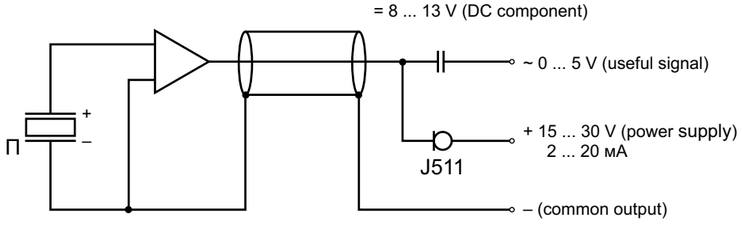
The AP vibration transducers with a sensitive element working in shear are least susceptible to displacement of the zero line and in this respect surpass the vibration transducers of other construction designs.

Power supply requirements for vibration transducers with built-in electronics

In vibration transducers with an integrated preamplifier of the IEPE type the power supply and signal transmission are carried out via a two-wire communication line. The power supply unit should provide power to the IEPE-type preamplifier with a direct current of 2 ... 20 mA at a supply voltage of 15 ... 30 V and connection of the vibration transducer to the recording equipment through a coupling capacitor with capacitance ≥ 10 μF × 35 V for separating the useful signal from the DC component with a voltage 8 ... 13 V. A current stabilizing diode, e.g. J511, must be included as a current source in the power supply device. The magnitude of the supply current depends on the length of the connecting cable (capacitive load) and operating conditions of the vibration transducer. At an ambient temperature t > 100 ° C, when the thermal scattering factor that influences the gain is important, the supply current must not exceed 6 mA.

If the recording equipment has no power supply device that meets the above requirements, the vibration transducers should be connected to the recording equipment through the power supply unit AS01 or adapter boxes AG01 (AG01-3), AG02 (AG02-3). The adapter boxes AG02 (AG02-3) are used to reduce the influence of transient processes, when switching channels to the measurement result in the low-frequency region.

To use other power supply schemes for vibration transducers with built-in electronics, consultation with the manufacturer is required.



Operation guidelines

Connecting cable requirements

Mounting a connecting cable is one of the most important aspects of installing a vibration transducer at a monitoring facility. Particular attention must be given to three main points: cable length, proper direction of mounting and grounding.

Cable length (capacitive load)

The presence of a connecting cable (capacitive load) at the output of the vibration transducer preamplifier limits the amplitude of the output signal of voltage in the high frequency region when long connecting cables are used.

For a vibration transducer to operate in a given amplitude range, the power supply unit must provide a direct supply current, the magnitude of which is determined by the following dependence:

$$I_п \geq 2\pi \cdot U \cdot f \cdot C_o \cdot l,$$

where **U** — peak-to-peak voltage of the output signal, V;
f — maximum frequency value in the operating frequency range, Hz;
$\mathbf{C_o}$ — capacity of lineal (running) meter of connecting cable, F/m;
l — connecting cable length, m.

For example, at voltage peak-to-peak signal U = 10 V, frequency range up to 10 kHz, cable running meter capacitance C_o = 100 pF/m and length l = 100 m, the supply current $I_п$ must be at least 6 mA.

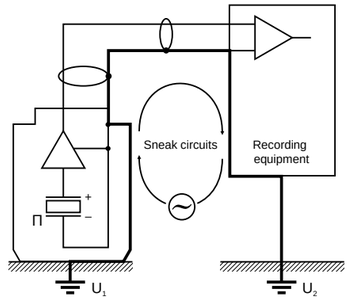
Cable mounting direction and electromagnetic interference

Portable radio stations, power lines and even electrostatic spark discharges may cause an interference signal. The properly chosen direction of cable mounting will minimize the interference signal. The connecting cables must not pass along the AC power lines. The cables must cross the AC power buses at right angles. In addition, the cables should be routed in the opposite direction from radio transmitting devices, engines, generators and transformers.

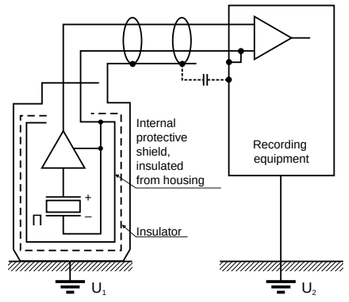
Cable grounding and ground-return sneak circuits

To avoid interference caused by stray currents flowing through the grounding buses of monitoring items and recording equipment, special attention must be given to cable grounding, with regard to the pattern of connecting a vibration transducer to the recording equipment.

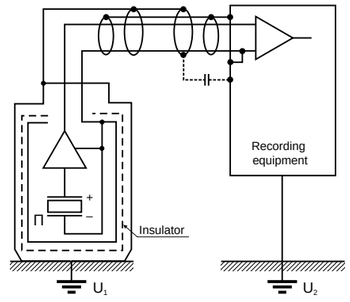
A ground-return sneak circuit may occur when the common bus «vibration transducer-recording equipment» is grounded in two points with different electrical potentials.
In case of possible sneak circuits, it is recommended that vibration transducers with external electrical insulation of the housing should be used, or insulating studs (AH1005, AH1006, AH1010) and insulating magnets (AM05, AM08). In vibration transducers with a sensitive element and built-in amplifier that are electrically isolated from the housing, no sneak circuits occur (AP2028B, AP2028I, AP2035 and AP2036 (without metal hose), AP2085-01).



Sneak circuit due to improper grounding



Multi-wire connection with a single protection shield



Multi-wire connection with two protection shields

The connection scheme of vibration transducers AP2028I, AP2028B, AP2035 and AP2036 (without metal hose), AP2085-01, AP2086 uses a 2-wire shielded connecting cable. The shield serves to protect the vibration transducer from electrostatic and electromagnetic interference. The shield should be grounded only in one place, usually on the sensor housing. The high-frequency noise can also be reduced by use of a capacitor with a capacitance of ≈ 0.01 μF × 200 V installed between the shield and recording equipment.

Under conditions of high-level electromagnetic interference (e.g., from radio transmitters, electrostatic discharge, sparking), it is advisable to use AP2035, AP2036, AP2085 vibration transducers with metal hose as the second external protective shield. The external protective shield is electrically connected to the housing of the vibration transducer.

The internal shield that is electrically insulated from the outer one is connected to the body of the recording equipment.

It is recommended that a capacitor with capacitance 0.01 μF × 200 V should be installed between the recording equipment and external shield by analogy with the connection diagram of a vibration transducer with a single protective shield.

Vibration transducer mounting

Thread mounting of vibration transducers

Vibration transducers should have secure mounting that does not limit the effective frequency and amplitude ranges.
In testing with no retightening the threaded mounting of vibration transducers may be secured with glue.

The stud used for fixing shouldnot be screwed into the vibration transducers until it stops, since the stud resting on the bottom of the threaded hole may cause a change its sensitivity.

Non-perpendicularity of threaded holes relative to the mounting surface is not more than 0.1 mm. The roughness of the mounting surface of the test object should be not worse than Ra 3.2, with nonflatness being not more than 0.05 mm.

When mounting three-axis vibration transducers AP1021, AP1022 on the test object, only special surfaces (ledges on the body) with a height of 2 mm and flat-to-flat dimension 8 and 7 mm, respectively, should be used, instead of the side faces of the sensor.

The table shows the ratio of tightening torque and minimum depth of the hole depending on the diameter of the thread:

Hole	Thread mounting	Minimum depth
M2-7H	0,4 ... 0,7 Nm	not less than 3 mm
M2,5-7H	0,5 ... 0,8 Nm	not less than 3,5mm
M3-7H	0,6 ... 0,9 Nm	not less than 4 mm
M4-7H	1,3 ... 1,5 Nm	not less than 5 mm
M5-7H	2 ... 2,2 Nm	not less than 6 mm
M6-7H	2,7 ... 3 Nm	not less than 7 mm

Adhesive mounting of vibration transducers

With adhesive mounting, the roughness of the mounting surface of the test object must not be worse than Rz20, nonflatness not more than 0.05 mm.

Epoxy or other adhesives are used for adhesive mounting of vibration transducers. In this case, it would be appropriate to check adhesive joints on the specimens. For laboratory tests, the cyanoacrylate adhesives, adhesive tape or wax mastic may be used.
Vibration transducer AP1020 may be mounted on one of three mounting surfaces of the test object.

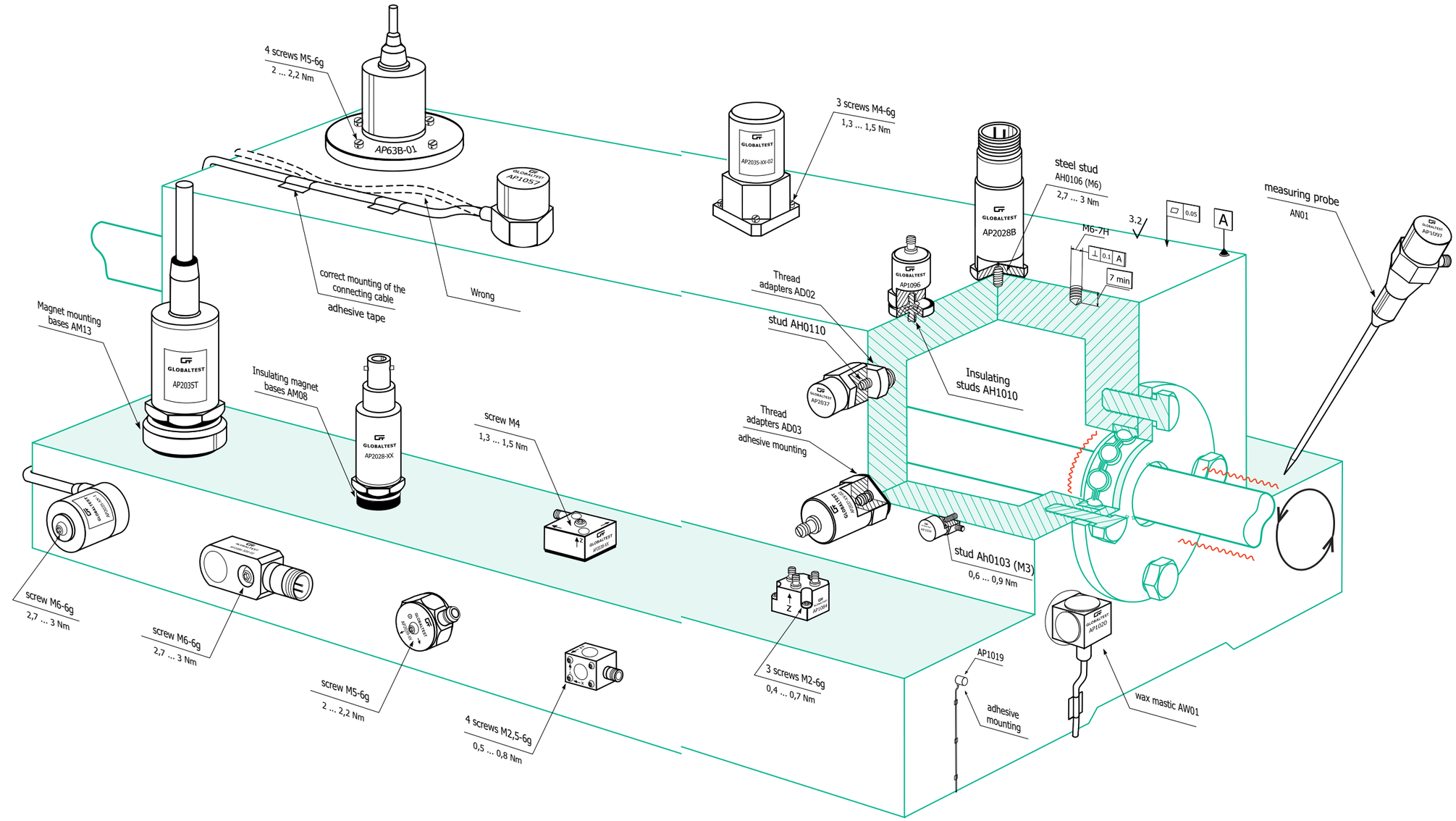
Adhesive mounting of vibration transducers with excessive adhesive area

In case of adhesive mounting, the excessive adhesive is allowed on the body of the vibration transducer.

It should be noted that with the adhesive mounting the surface for mounting the vibration transducer and test object must be thoroughly degreased.

Vibration transducer dismounting

For the vibration transducers attached by glue to be used repeatedly, they are not allowed to be dismounted from the test object by strike or detachment using the side faces of the body. It would be appropriate to dismount the vibration transducers by chipping the adhesive joint on the mounting surface with a sharp object (e.g. scalpel).



AP10

Purpose:

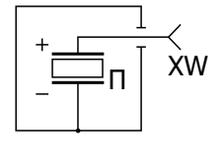
- Laboratory standard for verification of vibration transducers, using a comparison method;
- Conversion of mechanical oscillations of the test object to an electrical signal proportional to the vibration and shock acceleration of the mechanical system;
- Use as primary transducers in technical diagnostic and monitoring systems in a variety of industries to measure vibration and shock accelerations, as well as in laboratory and scientific research.

Features:

- Long-term stability.
- Wide temperature range.

Parameter	AP10
Nominal value of conversion factor at basic frequency 200 Hz	0.102 pC/ms^{-2}
Maximum value of measured vibroacceleration amplitude	> 10 000 m/s^2
Deviation of the actual value of conversion factor from the nominal value, within:	± 3 %
Limits of permissible basic relative error in measuring vibration acceleration:	
- in the frequency range 4 ... 1 250 Hz	± 3 %
- in the frequency range 0.5 ... 5 000 Hz	± 5 %
- in the frequency range 0.5 ... 10 000 Hz	± 7 %
Relative coefficient of transverse conversion	< 5 %
Adjustment resonance frequency in axial direction	> 30 kHz
Adjustment resonance frequency in transverse direction	> 11 kHz
Frequency response ripple relative to the value at basic frequency 200 Hz:	
- in the frequency range 4 ... 1 250 Hz	± 1 %
- in the frequency range 0.5 ... 5 000 Hz	± 3 %
- in the frequency range 0.5 ... 10 000 Hz	± 6 %
Amplitude nonlinearity within 0.05 ... 10 000 ms^{-2}	± 2 %
Operating temperature range	– 60 ... + 200 °C
Coefficient of ambient temperature influence in the operating temperature range	± 0.03 %/ °C
Electrical insulation resistance between the sensor housing and signal output, not less than:	
- in normal conditions	5 000 MΩ
- within operating temperatures	100 MΩ
- at relative humidity 98 % and temperature 25 °C	20 MΩ
Electric capacity under normal conditions	36 ± 2 pF
Polarity of the output signal relative to the body, with acceleration directed from the base to the upper end	positive
Connector type	AR03 (10-32 UNF)
Housing material	stainless steel
Weight (without cable)	45 g
Supplied accessories	cable AK03B6D1 (classic name AK10), stud AH0110

Electrical circuit of AP10



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ07, AQ07-01;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10;
- **cable adapters** AR01, AR04;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM04, AM08, AM11;
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002);
- **insulating stud** AH1010.

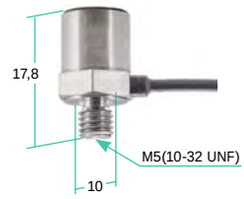
AP1011, AP1012

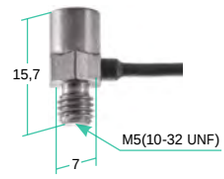
Purpose:

- Measuring high-intensity vibration and shock accelerations of the objects in diagnostic systems and laboratory tests.

Features:

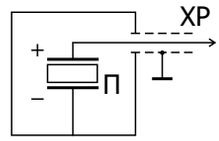
- Wide amplitude and frequency range.
- Stable characteristics and reliable operation.
- Non-detachable antivibration cable.
- Low sensitivity to temperature variation.





Parameter	AP1011	AP1012
Conversion factor (± 20%)	0.0035 pC/m·s^{-2}	0.0035 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured vibroacceleration amplitude	500 000 m/s^2	900 000 m/s^2
Maximum shock limit (peak value)	± 100 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 150 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 200 °C	
Operating frequency range (ripple ± 1 dB)	20 ... 23 000 Hz	200 ... 30 000 Hz
Adjustment resonance frequency in axial direction	> 70 kHz	> 145 kHz
Strain sensitivity	< 0.3 gm/ μm	
Electric capacity	300 ... 400 pF	
Insulation resistance under normal conditions	> 10 000 MΩ	
Connector type	AR05 (10-32 UNF)	
Temperatrue influence coefficient	< 0.03%/ °C	
Housing material	stainless steel	
Built-in cable length	2 m To be determined by customer	
Weight (without cable)	8 g	2.8 g

Electrical circuit of AP1011, AP1012



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **cable adapters** AR01, AR04, AR06;
- **magnet mounting bases** AM01, AM08, AM11;
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

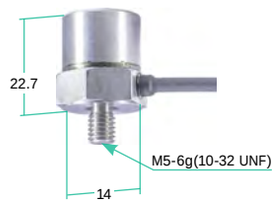
AP1017

Purpose:

- Measurement of high-intensity vibration and shock accelerations of objects in diagnostic systems and laboratory tests.

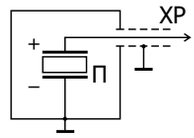
Features:

- Wide amplitude and frequency range.
- Stable characteristics and reliable operation.
- Non-detachable anti-vibration cable.
- Low sensitivity to temperature variation.



Parameter	AP1017
Conversion factor (± 20%)	0.01 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	100 000 m/s^2
Maximum shock limit (peak value)	± 30 000 g 1g = 9.807 m·s–2 or 10 m·s–2 = 1.02 g
Operating temperature range	– 60 ... + 200 °C
Operating frequency range (ripple ± 1 dB)	5... 15 000 Hz
Adjustment resonance frequency in axial direction	> 45 kHz
Electric capacity	300 ... 500 pF
Insulation resistance under normal conditions	> 1 000 MΩ
Connector type	AR05 (10-32 UNF)
Temperatrue influence coefficient	< 0.03%/ °C
Housing material	stainless steel
Built-in cable length	2 m To be determined by customer
Weight (without cable)	20 g

Electrical circuit of AP1017



Optional accessories:

- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **measuring amplifiers** AP5110, AP5200;
- **magnet mounting bases** AM01, AM08, AM11;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **cable adapters** AR01, AR04, AR10, AR11;
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

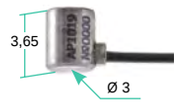
AP1019, AP1030

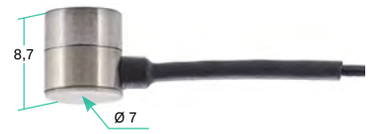
Purpose:

- Measuring vibration and shock acceleration of miniature objects in portable diagnostic systems and laboratory tests.

Features:

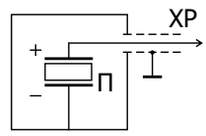
- Shear structure of piezoelement operation.
- Non-detachable antivibration cable.
- Miniature design and acceptable sensitivity.



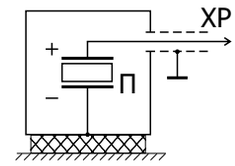


Parameter	AP1019	AP1030
Conversion factor (± 20%)	0.025 pC/m·s^{-2}	0.11 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %	< 3 %
Maximum value of measured acceleration amplitude	120 000 m/s^2	60 000 m/s^2
Maximum shock limit (peak value)	± 40 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 20 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C	– 60 ... + 150 °C
Operating frequency range (ripple ± 1 dB)	20 ... 30 000 Hz	5 ... 18 000 Hz
Adjustment resonance frequency in axial direction	> 90 kHz	> 55 kHz
Strain sensitivity	< 0.005 gm/ µm	
Electric capacity	400 ... 500 pF	500 ... 700 pF
Insulation resistance under normal conditions	>10000 MΩ	
Connector type	AR05 (10-32 UNF)	
Housing material	titanium alloy To be determined by customer	
Built-in cable length	1 m To be determined by customer	2 m To be determined by customer
Electric insulation of the body	–	available
Weight (without cable)	0.14 g	1.7 g

Electrical circuit of AP1019



Electrical circuit of AP1030



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02,AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **matching device** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04, AR06;
- **wax mastic** AW01;
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

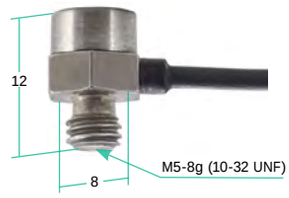
AP1031, AP1032

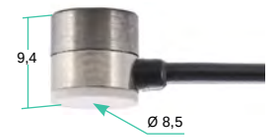
Purpose:

- Measuring vibration and shock acceleration of miniature objects in portable diagnostic systems and laboratory tests.

Features:

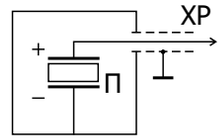
- Shear structure of piezoelement operation.
- Non-detachable antivibration cable.
- Miniature design and acceptable sensitivity.



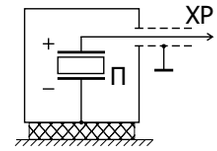


Parameter	AP1031	AP1031-01	AP1031-02	AP1032
Conversion factor (± 20%)	0.11 pC/m·s^{-2}	0.11 pC/m·s^{-2}	0.03 pC/m·s^{-2}	0.2 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 3 %			
Maximum value of measured acceleration amplitude	120 000 m/s^2		300 000 m/s^2	60 000 m/s^2
Maximum shock limit (peak value)	± 40 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			± 20 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C			– 60 ...+ 150 °C
Operating frequency range (ripple ± 1 dB)	5 ... 20 000 Hz			5 ... 16 000 Hz
Adjustment resonance frequency in axial direction	> 60 kHz			> 50 kHz
Strain sensitivity	< 0.0001 gm/ μm			< 0.005 gm/ μm
Electric capacity	600 ... 900 pF			
Insulation resistance under normal conditions	> 10 000 MΩ			
Connector type	AR05	PC4TB	AR05	
Housing material	stainless steel (titanium alloy) To be determined by customer			
Built-in cable length	2 m To be determined by customer			
Electric insulation of the body	–			available
Weight (without cable)	1.7 g			2.6 g

Electrical circuit of AP1031



Electrical circuit of AP1032



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04, AR06;
- **wax mastic** AW01 (for AP1032);
- **magnet mounting bases** AM01, AM03, AM08, AM11 (supplied with charge amplifier AP5000, AP5002);
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

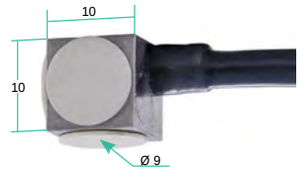
AP1020

Purpose:

- Simultaneous measurement of components of thriaxial-oriented vibration and shock acceleration in portable diagnostic systems and laboratory tests.

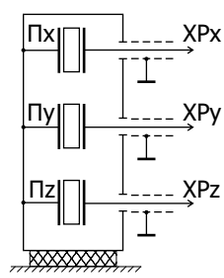
Features:

- Three-shear-sensor design.
- Non-detachable thriple-core antivibration cable.
- Miniature design and acceptable sensitivity.



Parameter	AP1020
Conversion factor (± 20%)	0.2 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured acceleration amplitude	30 000 m/s^2
Maximum shock limit (peak value)	± 10 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C
Operating frequency range (ripple ± 1 dB)	5 ... 16 000 Hz
Adjustment resonance frequency in axial direction	> 50 kHz
Strain sensitivity	< 0.000 5 gm/ μm
Electric capacity	600 ... 900 pF
Insulation resistance under normal conditions	> 10 000 MΩ
Connector type	AR05 (10-32 UNF)
Housing material	titanium alloy (stainless steel) To be determined by customer
Built-in cable length	2 m To be determined by customer
Electric insulation of the body	available
Weight (without cable)	8 g

Electrical circuit of AP1020



Optional accessories:

- **calibrators** AT01m , AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05 AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP 5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01-3, AG02-3, AG03 (supplied with charge amplifier AP5000, AP5002);
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10, AK11;
- **cable adapters** AR01, AR04, AR06;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM08, AM11 (supplied with thread adapter AD03);
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

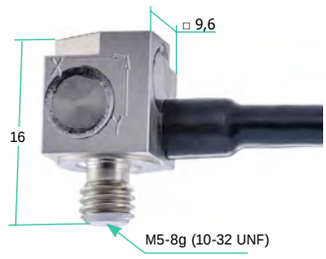
AP1021, AP1022

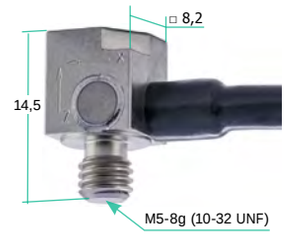
Purpose:

- Simultaneous measurement of components of thriaxial-oriented vibration and shock acceleration in portable diagnostic systems and laboratory tests.

Features:

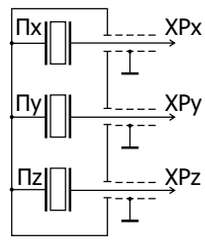
- Three-shear-sensor design.
- Non-detachable thriple-core antivibration cable.
- Miniature design and acceptable sensitivity.





Parameter	AP1021	AP1022
Conversion factor (± 20%)	0.2 pC/m·s^{-2}	0.1 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured acceleration amplitude	60 000 m/s^2	150 000 m/s^2
Maximum shock limit (peak value)	± 20 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 50 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	5... 18 000 Hz	5 ... 22 000 Hz
Adjustment resonance frequency in axial direction	> 55 kHz	> 70 kHz
Strain sensitivity	< 0.0005 gm/ µm	< 0.0005 gm/ µm
Electric capacity	600 ... 900 pF	500 ... 700 pF
Insulation resistance under normal conditions	>10 000 MΩ	
Connector type	AR05 (10-32 UNF)	
Housing material	titatium alloy (stainless steel) To be determined by customer	
Built-in cable length	2 m To be determined by customer	
Electric insulation of the body	–	
Weight (without cable)	8 g	6 g

Electrical circuit of AP1021, AP1022



Optional accessories:

- **calibrators** AT01m , AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05 AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP 5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01-3, AG02-3, AG03 (supplied with charge amplifier AP5000, AP5002);
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10, AK11;
- **cable adapters** AR01, AR04, AR06;
- **magnet mounting bases** AM01, AM03, AM08, AM11;
- **power units AS01, AS07** (supplied with charge amplifier AP5000, AP5002).

AP1023

Purpose:

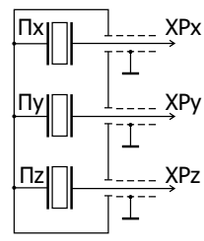
- Simultaneous measurement of components of thriaxial-oriented vibration and shock acceleration in portable diagnostic systems and laboratory tests.

Features:

- Three-shear-sensor design.
- Non-detachable thriple-core antivibration cable.
- Miniature design and acceptable sensitivity.

Parameter	AP1023
Conversion factor (± 20%)	0.025 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured acceleration amplitude	120 000 m/s^2
Maximum shock limit (peak value)	± 50 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ...+ 150 °C
Operating frequency range (ripple ± 1 dB)	20 ... 25 000 Hz
Adjustment resonance frequency in axial direction	> 75 kHz
Strain sensitivity	< 0.000 5 gm/ μm
Electric capacity	400 ... 700 pF
Insulation resistance under normal conditions	>1 000 MΩ
Connector type	AR05 (10-32 UNF) To be determined by customer
Toghtening torque	0.8 ... 1.0 Nm
Housing material	titanium alloy
Built-in cable length	2 m To be determined by customer
Weight (without cable)	3.1 g

Electrical circuit of AP1023



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01-3, AG02-3, AG03 (supplied with charge amplifier AP5000, AP5002);
- **cables** AK01, AK02, AK03, AK04, AK05, AK07, AK08, AK09, AK10;
- **cable adapters** AR01, AR04, AR06;
- **magnet mounting bases** AM01, AM03, AM08, AM11;
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002);

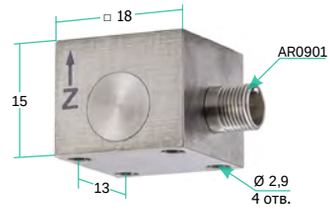
AP1026

Purpose:

- Simultaneous measurement of components of thriaxial-oriented vibration and shock acceleration in portable diagnostic systems and laboratory tests.

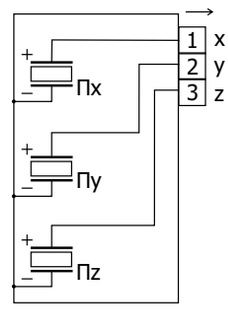
Features:

- Three-sensor design.
- Robust design and waterproof casing.
- Stable characteristics.
- Wide temperature range.



Parameter	AP1026
Conversion factor (± 20%)	0.1 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured acceleration amplitude	25 000 m/s^2
Maximum shock limit (peak value)	± 10 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 250 °C
Operating frequency range (ripple ± 1 dB)	5 ... 20 000 Hz
Self-resonant frequency in the fastened state	> 60 kHz
Strain sensitivity	< 0.01 gm/ μm
Electric capacity	600 ... 800 pF
Insulation resistance under normal conditions	> 10 000 MΩ
Connector type	AR0901
Housing material	titanium alloy
Weight (without cable)	17 g
Supplied accessories	cable AK41C6B8 (classic name AK03) screw M 2.5 × 19 – 4 pcs.

Electrical circuit of AP1026



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01-3, AG02-3, AG03 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04;
- **cable** AK29;
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

AP1024, AP1024-01

Purpose:

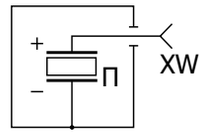
- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

Features:

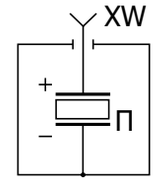
- Shear structure of piezoelement operation.
- High axial sensitivity and self-resonant frequency.
- Robust design and electrically insulated waterproof casing.
- Stable characteristics and reliable operation.
- Can be used for modal analysis.

Parameter	AP1024	AP1024-01
Conversion factor (± 20%)	0.3 pC/m·s^{-2}	
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured acceleration amplitude	18 000 m/s^2	
Maximum shock limit (peak value)	± 6 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	1 ... 10 000 Hz	
Self-resonant frequency in the fastened state	> 30 kHz	
Strain sensitivity	< 0.000 5 gm/ μm	
Electric capacity	600 ... 900 pF	
Insulation resistance under normal conditions	> 10 000 MΩ	
Electric insulation of the body	available	
Body insulation resistance	> 10 MΩ	
Connector type	AR03 (10-32 UNF)	
Housing material	anodized aluminium alloy	
Weight (without cable)	4.5 g	
Supplied accessories	cable AK03B6B6 (classic name AK04) To be determined by customer	

Electrical circuit of AP1024



Electrical circuit of AP1024-01



Optional accessories:

- **calibrators** AT01m, AT02;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10;
- **cable adapters** AR01, AR04, AR06;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM08, AM11 (supplied with a thread adapter AD03);
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

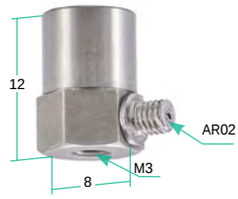
AP1034, AP1034-01

Purpose:

- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

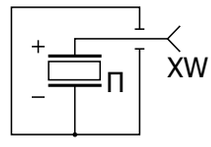
Features:

- Shear structure of piezoelement operation.
- High axial sensitivity and self-resonant frequency.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Can be used for modal analysis.

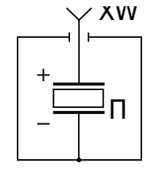


Parameter	AP1034	AP1034-01
Conversion factor (± 20%)	0.3 pC/m·s^{-2}	
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured acceleration amplitude	45 000 m/s^2	
Maximum shock limit (peak value)	± 15 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	1 ... 20 000 Hz	
Self-resonant frequency in the fastened state	> 60 kHz	
Strain sensitivity	< 0.005 gm/ µm	
Electric capacity	600 ... 900 pF	
Insulation resistance under normal conditions	> 1 000 MΩ	
Connector type	horizontal lead AR02 (M3)	vertical lead AR02 (M3)
Housing material	titanium alloy	
Weight (without cable)	2.9 g	
Supplied accessories	stud AH0103, cable AK02B1B6 (classic name AK06)	

Electrical circuit of AP1034



Electrical circuit of AP1034-01



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **matching device** AG14;
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10;
- **cable adapters** AR01, AR04, AR06;
- **probe** AN01;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM05, AM08, AM11;
- **stud** AH0503, AH1003;
- **power units AS01, AS07** (supplied with charge amplifier AP5000, AP5002).

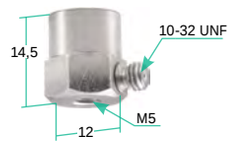
AP1037, AP1037-01, AP1037-02, AP1037-03

Purpose:

- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

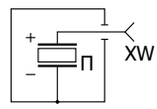
Features:

- Shear structure of piezoelement operation.
- High axial sensitivity and self-resonant frequency.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Can be used for modal analysis.

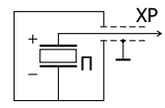


Parameter	AP1037	AP1037-01	AP1037-02	AP1037-03
Conversion factor (± 20%)	1 pC/m·s^{-2}			
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured acceleration amplitude	60 000 m/s^2			
Maximum shock limit (peak value)	± 15 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			
Operating temperature range	– 60 ... + 150 °C			
Operating frequency range (ripple ± 1 dB)	0,5 ... 15 000 Hz			
Self-resonant frequency in the fastened state	> 45 kHz			
Strain sensitivity	< 0.005 gm/ μm			
Electric capacity	700 ... 900 pF			
Insulation resistance under normal conditions	> 10 000 MΩ			
Connector type	AR03 (10-32 UNF)	CP-50-276ФВ		AR03 (10-32 UNF)
Housing material	stainless steel (titanium) To be determined by customer			
Built-in cable length	–	2 mm	1.2 mm	–
Weight (without cable)	12 g			
Supplied accessories	cable AK03B6B6 (classic name AK04) stud AH0110	– stud AH0110	– stud AH0110	cable AK03B6B6 (classic name AK04) stud AH0110

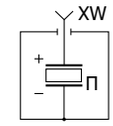
Electrical circuit of AP1037



Electrical circuit of AP1037-01, AP1037-02



Electrical circuit of AP1037-03



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **matching device** AG14;
- **cable adapters** AR01, AR04, AR06;
- **probe** AN01;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM05, AM08, AM11;
- **stud** AH0805;
- **insulating stud** AH1010.

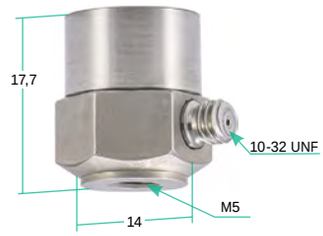
AP1040, AP1040-01

Purpose:

- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

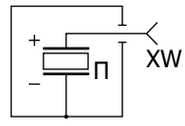
Features:

- Shear structure of piezoelement operation.
- High axial sensitivity and self-resonant frequency.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Can be used for modal analysis.

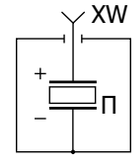


Parameter	AP1040	AP1040-01
Conversion factor (± 20%)	2.0 pC/m·s^{-2}	
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured acceleration amplitude	30 000 m/s^2	
Maximum shock limit (peak value)	± 10 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz	
Self-resonant frequency in the fastened state	> 30 kHz	
Strain sensitivity	< 0.025 gm/ μm	
Electric capacity	600 ... 800 pF	
Insulation resistance under normal conditions	> 10 000 MΩ	
Connector type	AR03 (10-32 UNF)	
Housing material	stainless steel (titanium alloy) To be determined by customer	
Weight (without cable)	14 g	
Supplied accessories	cable AK03B6B6 (classic name AK04), stud AH0110	

Electrical circuit of AP1040



Electrical circuit of AP1040-01



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **matching device** AG14;
- **cable adapters** AR01, AR04, AR06;
- **probe** AN01;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM05, AM08, AM11;
- **stud** AH0805;
- **insulating stud** AH1010.

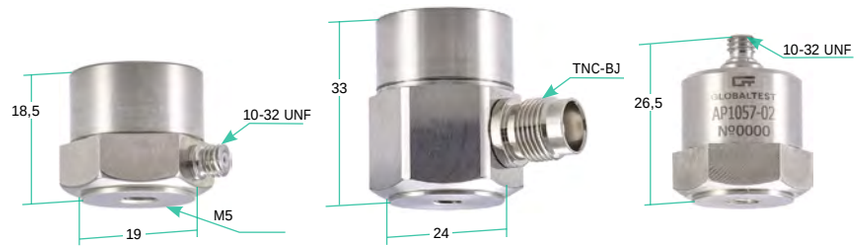
AP1057, AP1057-01, AP1057-02

Purpose:

- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

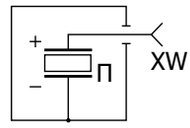
Features:

- Shear structure of piezoelement operation.
- High axial sensitivity and self-resonant frequency.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Can be used for modal analysis.

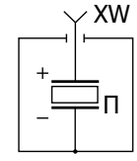


Parameter	AP1057	AP1057-01	AP1057-02
Conversion factor (± 20%)	8 pC/m·s^{-2}		
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured acceleration amplitude	± 1 500 m/s^2		
Maximum shock limit (peak value)	± 4 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 60 ... + 150 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 8 000 Hz		
Self-resonant frequency in the fastened state	> 20 kHz		
Strain sensitivity	< 0.005 gm/ μm		
Electric capacity	1 000 – 1 500 pF		
Insulation resistance under normal conditions	> 10 000 MΩ		
Connector type	AR03 (10-32 UNF)	TNC-BJ	AR03 (10-32 UNF)
Housing material	stainless steel (titanium alloy) To be determined by customer		
Weight (without cable)	40 g	65 g	40 g
Supplied accessories	cable AK03B6B6 (classic name AK04) stud AH0110	cable AK03G1P1 (classic name AK36) stud AH0110	cable AK03B6B6 (classic name AK04) stud AH0110

Electrical circuit of AP1057, AP1057-01



Electrical circuit of AP1057-02



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **cable adapters** AR01, AR04, AR06;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805;
- **insulating stud** AH1010;
- **wax mastic** AW01.

AP1077 (AP1077M)

Purpose:

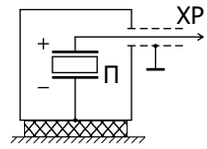
- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

Features:

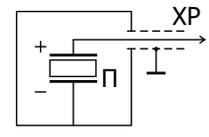
- Shear structure of piezoelement operation.
- Non-detachable antivibration cable.
- High axial sensitivity and self-resonant frequency.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Can be used for modal analysis.

Parameter	AP1077 (AP1077M)	AP1077-01 (AP1077M-01)	AP1077-02 (AP1077M-02)
Conversion factor (± 20 %)	2 pC/m·s^{-2}		
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured acceleration amplitude	30 000 m/s^2		
Maximum shock limit (peak value)	± 10 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 60 ...+ 150 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 8 000 Hz (0.5 ... 10 000) Hz		
Self-resonant frequency in the fastened state	> 24 kHz		
Strain sensitivity	< 0.005 gm/ μm		
Electric capacity	2 000 pF		
Insulation resistance under normal conditions	> 10 000 MΩ		
Connector type	built-in cable/ AR05 (10-32 UNF)	built-in cable/ CP50-276ФВ	built-in cable/ socket PC4TB
Housing material	stainless steel (titanium alloy) To be determined by customer		
Built-in cable length	2 m To be determined by customer		
Weight (without cable)	12 g		

Electrical circuit of AP1077



Electrical circuit of AP1077M



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **matching device** AG14;
- **probe** AN01;
- **cable adapters** AR01, AR04, AR06;
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM05, AM08.

AP1090

Purpose:

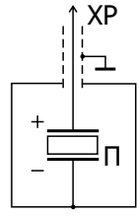
- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

Features:

- Shear structure of piezoelement operation.
- Non-detachable antivibration cable.
- High axial sensitivity and self-resonant frequency.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Can be used for modal analysis.

Paremeter	AP1090
Conversion factor (± 20%)	8 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured acceleration amplitude	15 000 m/s^2
Maximum shock limit (peak value)	± 4 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C
Operating frequency range (ripple ± 1 dB)	0.5 ... 6 500 Hz
Self-resonant frequency in the fastened state	> 20 kHz
Strain sensitivity	< 0.005 gm/ μm
Electric capacity	1 000 – 1 500 pF
Insulation resistance under normal conditions	> 10 000 MΩ
Connector type	AR05 (10-32 UNF)
Housing material	stainless steel (titanium alloy) To be determined by customer
Built-in cable length	2 m To be determined by customer
Weight (without cable)	42 g
Supplied accessories	stud AH01010

Electrical circuit
of AP1090



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04, AR06;
- **probe** AN01;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805;
- **insulating stud** AH1010;
- **power units** AS01, AS07 (supplied with charge amplifier AP5000, AP5002).

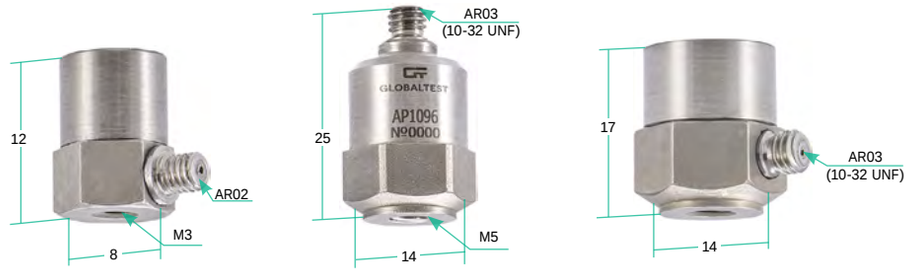
AP1095, AP1096, AP1097

Purpose:

- Measuring vibration and shock acceleration in portable diagnostic systems and laboratory tests.

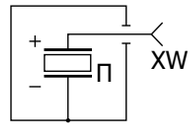
Features:

- Shear structure of piezoelement operation.
- High axial sensitivity and self-resonant frequency.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Wide temperature range.
- Can be used for modal analysis.

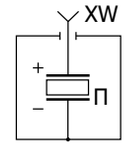


Parameter	AP1095	AP1096	AP1097
Conversion factor (± 20%)	0.3 pC/m·s^{-2}	1 pC/m·s^{-2}	
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured acceleration amplitude	45 000 m/s^2	30 000 m/s^2	
Maximum shock limit (peak value)	± 15 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 10 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 70 ... + 250 °C		
Operating frequency range (ripple ± 1 dB)	5 ... 15 000 Hz	1 ... 10 000 Hz	
Self-resonant frequency in the fastened state	> 45 kHz	> 30 kHz	
Strain sensitivity	< 0.001 gm/ μm		
Electric capacity	600 ... 900 pF	800 ... 1 200 pF	
Insulation resistance under normal conditions	> 1 000 МОм		
Connector type	AR02 (M3)	AR03 (10-32 UNF)	
Housing material	stainless steel (titanium alloy) To be determined by customer		
Weight (without cable)	2.6 g	19 g	
Supplied accessories	cable AK02B1B6 (classic name AK06), stud AH0103	cable AK03B6B6 (classic name AK04), stud AH0110	cable AK03B6B6 (classic name AK04), stud AH0110

Electrical circuit of AP1095, AP1097



Electrical circuit of AP1096



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **matching device** AG14;
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10 (for AP1096, AP1097);
- **cable adapters** AR01, AR04, AR06;
- **probe** AN01;
- **wax mastic** AW01;
- **magnet mounting bases** AM01, AM03, AM08, AM11;
- **stud** AH0805;
- **insulating stud** AH1010 (for AP1096, AP1097);
- **stud** AH0503, AH1003 (for AP1095).

AP1076-XX

Purpose:

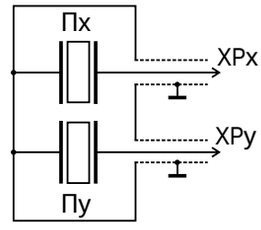
- Measuring the transverse components of vibration of tubular elements.

Features:

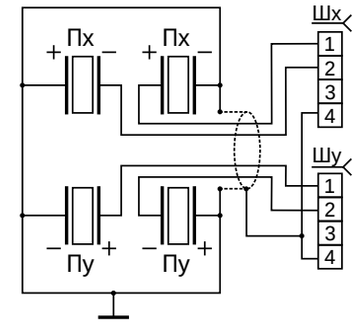
- Measuring two orthogonally related components of acceleration.
- Non-detachable termination of antivibration cable.
- Miniature design and acceptable sensitivity.

Parameter	AP1076	AP1076-01	AP1076-02	AP1076-03
Conversion factor (± 20 %)	0,2 pC/m·s^{-2}	0,8 pC/m·s^{-2}	1,0 pC/m·s^{-2}	0,2 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	10 000 m/s^2	100 m/s^2	5 000 m/s^2
Maximum shock limit (peak value)	1 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	5 000 g	100 g	1 000 g
Operating temperature range	– 10 ... + 100 °C			
Operating frequency range (ripple ± 1 dB)	1 ... 1 000 Hz	1 ... 2 500 Hz	1 ... 1 000 Hz	1 ... 1 000 Hz
Electric capacity of sensing element	300 pF	250 pF	500 pF	300 pF
Insulation resistance under normal conditions	> 1 000 MΩ			
Sensing element	shift	shift	bend	shift
Type of output signal	single-ended	differential	single-ended	single-ended
Type of connector	2×AR05 (10-32 UNF)	2×2РМД18КПН4Г5В	2×AR05 (10-32 UNF)	2×AR05 (10-32 UNF)
Housing material	stainless steel			
Built-in cable length	2 m To be determined by customer			
Maximum pressure (equivalent length)	5·10^5 Pa (50 m)	–	9·10^4 Pa (9 m)	–
Weight (without cable)	14 g	25 g	10 g	10 g

Electrical circuit of AP1076, AP1076-02, AP1076-03



Electrical circuit of AP1076-01



Optional accessories:

- **differential charge amplifier** AQ06 (for AP1076-01);
- **charge amplifier** AP5000, AQ02, AQ07-X (for AP1076, AP1076-02);
- **charge and voltage amplifiers** AP5030, AP5230 (for AP1076, AP1076-02);
- **insulating stud** AH1010;
- **measuring amplifiers** AP5110, AP5200 (for AP1076, AP1076-01).

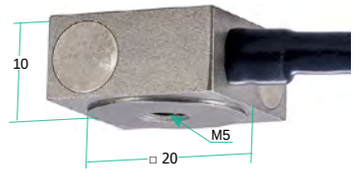
AP1038, AP1038P

Purpose:

- Simultaneous measurement of components of thriaxial-oriented vibration and shock acceleration in portable diagnostic systems and laboratory tests.

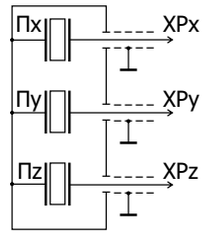
Features:

- Three-shear-sensor design.
- Non-detachable triple-core antivibration cable (AP1038), built-in connector (AP1038P).
- Miniature design and acceptable sensitivity.

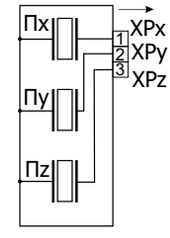


Parameter	AP1038	AP1038P
Conversion factor (± 20%)	1 pC/m·s^{-2}	
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured acceleration amplitude	25 000 m/s^2	
Maximum shock limit (peak value)	± 10 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz	
Self-resonant frequency in the fastened state	> 30 kHz	
Strain sensitivity	< 0.02 gm/ μm	
Electric capacity	900 ... 1 200 pF	
Insulation resistance under normal conditions	> 10 000 MΩ	
Connector type	built-in cable / 3 × AR05 (10-32 UNF)	horizontal lead / AR0901 (3-pin., M6)
Housing material	titanium alloy	
Built-in cable length	2 m To be determined by customer	–
Weight (without cable)	20 g	
Supplied accessories	screw M4×20	screw M4 × 20, cable AK41C6B8 (classic name AK03)

Electrical circuit of AP1038



Electrical circuit of AP1038P



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **measuring amplifiers** AP5110, AP5200;
- **matching device** AG14-3;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5250;
- **matching devices** AG01-03, AG02-3, AG03 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04, AR06;
- **cable** AK29;
- **wax mastic** AW01;
- **stud** AH0805;
- **insulating stud** AH1010.

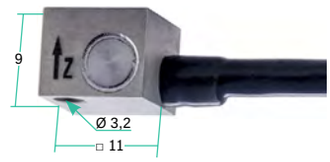
AP1080, AP1081

Purpose:

- Simultaneous measurement of components of thriaxial-oriented vibration and shock acceleration in portable diagnostic systems and laboratory tests.

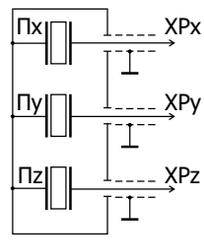
Features:

- Three-shear-sensor design.
- Non-detachable triple-core antivibration cable.
- Miniature design and acceptable sensitivity.



Parameter	AP1080	AP1081
Conversion factor	0.2 pC/m·s^{-2}	1 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured acceleration amplitude	15 000 m/s^2	10 000 m/s^2
Maximum shock limit (peak value)	± 5 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 20 000 Hz	0.5 ... 10 000 Hz
Self-resonant frequency in the fastened state	> 55 kHz	> 30 kHz
Strain sensitivity	< 0.005 gm/ μm	< 0.02 gm/ μm
Electric capacity	900 ... 1 200 pF	
Insulation resistance under normal conditions	> 10 000 MΩ	
Connector type	AR05 (10-32 UNF)	
Housing material	titanium alloy (stainless steel) To be determined by customer	
Built-in cable length	2 m To be determined by customer	
Weight (without cable)	6 (9) g	21 (32) g
Supplied accessories	screw M3 × 16	2 screws M3 × 16

Electrical circuit of AP1080, AP1081



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5230, AP5240A1, AP5240A1B1;
- **matching devices** AG01, AG02, AG03 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04, AR06;
- **matching device** AG14, AG14-3 (for AP1081);
- **wax mastic** AW01.

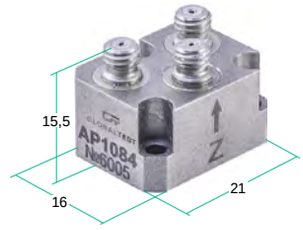
AP1084, AP1084-01

Purpose:

- Simultaneous measurement of components of thriaxial-oriented vibration and shock acceleration in portable diagnostic systems and laboratory tests.

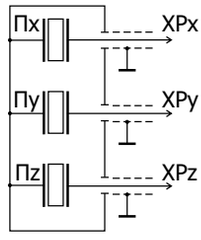
Features:

- Three-shear-sensor design.
- Miniature design and acceptable sensitivity.
- Electric insulation (for AP1084-01).



Parameter	AP1084	AP1084-01
Conversion factor	0,3 pC/m·s^{-2}	
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured acceleration amplitude	30 000 m/s^2	
Maximum shock limit (peak value)	± 5 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	X 0.5 ... 7 000 Hz Y 0.5 ... 7 000 Hz Z 0.5 ... 10 000 Hz	
Self-resonant frequency in the fastened state	X > 20 kHz Y > 20 kHz Z > 30 kHz	
Strain sensitivity	< 0.005 gm/ μm	< 0.02 gm/ μm
Electric capacity	600 ... 900 pF	
Insulation resistance under normal conditions	> 10 000 MΩ	
Connector type	3 x AR03 (10-32 UNF)	
Housing material	titanium alloy	anodized aluminium alloy
Built-in cable length	2 m To be determined by customer	
Weight (without cable)	15 g	12 g
Supplied accessories	cable AK03B6B6 (classic name AK04) – 3 pcs.; screw M2 × 8 – 3 pcs.	

Electrical circuit of AP1084, AP1084-01



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5230, AP5240A1, AP5240A1B1;
- **matching devices** AG01, AG02, AG03 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04, AR06;
- **matching device** AG14, AG14-3 (for AP1084);
- **wax mastic** AW01.

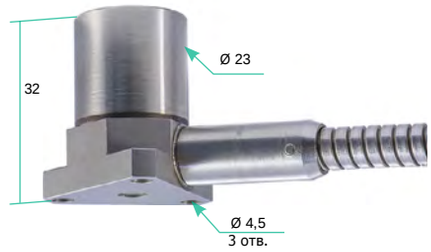
AP62B, AP62B-02

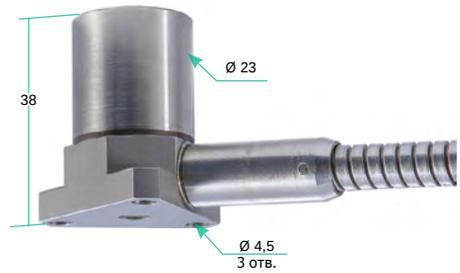
Purpose:

- Measuring vibration and shock acceleration in stationary diagnostic systems.

Features:

- Non-detachable cable termination.
- Differential and symmetric connection options.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Wide temperature range.



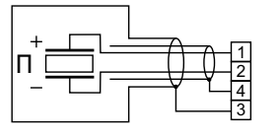


Parameter	AP62B	AP62B-02
Axial sensitivity (± 20 %)	10 pC/ m·s^{-2}	50 pC/ m·s^{-2}
Cross sensitivity	< 5 %	
Amplitude range	± 10 000 m·s^{-2} 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 5 000 m·s^{-2} 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Maximum shock limit (peak value)	± 5 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 2 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 250 °C	
Operating frequency range (ripple ± 1 dB)	2 ... 7 000 Hz	2 ... 5 000 Hz
Self-resonant frequency in the fastened state	> 21 kHz	> 15 kHz
Strain sensitivity	< 0.15 gm/ µm	
Electric capacity	4 000... 4 800 pF For standard cable length	
Insulation resistance under normal conditions	> 1 000 MΩ	
Housing material	stainless steel	
Built-in cable length	2 m To be determined by customer	
Connector type	2РМД18КПН4Г5В1 To be determined by customer	
Weight (without cable)	95 g	140 g
Supplied accessories	3 screws M4-6g × 12	

Description:

AP62B	0X	A(B,C,D)	-X
Type of sensor	Sensor version	Version of anti-vibration part of the cable: A – cable АВКТД(Л) without connector; B – cable АВКТД(Л) with connector 2РМД(Т)18КПН4Г5А1; C – cable АВКТД(Л) in metal hose Р3-Н-6 without connector; D – cable АВКТД(Л) in metal hose Р3-Н-6 with connector 2РМД(Т)18КПН4Г5А1	. Length of built-in cable from 1.0 to 20.0 m with an increment of 0.5 m.

Electrical circuit of AP62B, AP62B-02



Optional accessories:

- **charge amplifiers** AP5001, AQ05.X.XXX, AQ08, AQ08-01;
- **charge and voltage amplifier** AP5240A2;
- **measuring amplifiers** AP5110, AP5200.

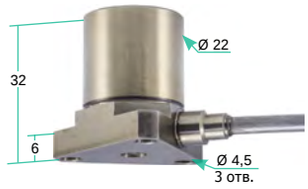
AP63B, AP63B-01

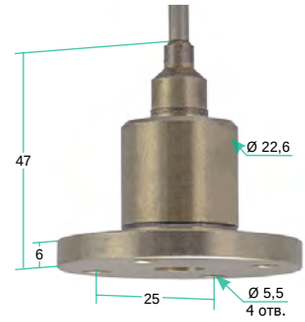
Purpose:

- Measuring vibration and shock acceleration in stationary diagnostic systems.

Features:

- Non-detachable cable termination.
- Differential and symmetric connection options.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Wide temperature range.



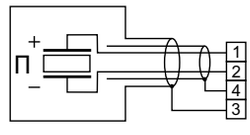


Parameter	AP63B	AP63B-01
Axial sensitivity (± 20 %)	1 pC/ m·s^{-2}	
Cross sensitivity	< 5 %	
Amplitude range	± 10 000 m·s^{-2} 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Maximum shock limit (peak value)	± 5 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 400 °C	
Operating frequency range (ripple ± 1 dB)	2 ... 7 000 Hz	
Self-resonant frequency in the fastened state	> 18 kHz	
Strain sensitivity	< 0.01 gm/ μm	
Electric capacity	1 300 ... 1 700 pF For standard cable length	
Insulation resistance under normal conditions	> 100 MΩ	
Housing material	stainless steel	
Built-in cable length	2 m To be determined by customer	
Connector type	2РМД18КПН4Г5В1 To be determined by customer	
Weight (without cable)	98 g	120 g
Supplied accessories	3 screws M4-6g × 12	4 screws M5-6g × 12

Description:

AP63B	0X	A(B,C,D)	X.X	XX.X
Type of sensor	Sensor version	Version of anti-vibration part of the cable: A – cable АВКТД(Л) without connector; B – cable АВКТД(Л) with connector 2РМД(Т)18КПН4Г5А1; C – cable АВКТД(Л) in metal hose Р3-Н-6 without connector; D – cable АВКТД(Л) in metal hose Р3-Н-6 with connector 2РМД(Т)18КПН4Г5А1	Length of heat-proof part (КНМС2С) 0.2 to 5.0 m with an increment of 0.1 m.	Length of anti-vibration part of the cable АВКТД(Л) 0.5 to 15.0 m with an increment of 0.5 m.

Electrical circuit of AP63B, AP63B-01



Optional accessories:

- **charge amplifiers** AP5001, AQ05.X.XXX, AQ08, AQ08-01;
- **charge and voltage amplifier** AP5240A2;
- **measuring amplifiers** AP5110, AP5200.

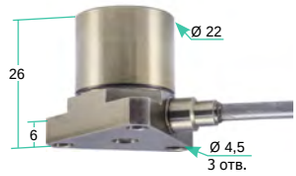
AP63B-02, AP63B-03

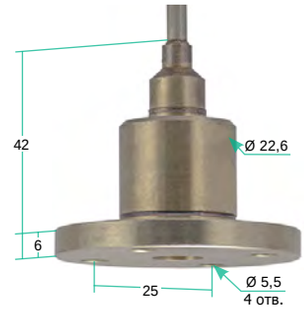
Purpose:

- Measuring vibration and shock acceleration in stationary diagnostic systems.

Features:

- Non-detachable cable termination.
- Differential and symmetric connection options.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Wide temperature range.



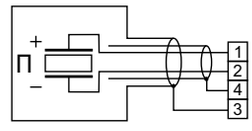


Parameter	AP63B-02	AP63B-03
Axial sensitivity (± 20 %)	0,2 pC/ m·s^{-2}	
Cross sensitivity	< 5 %	
Amplitude range	± 50 000 m·s^{-2} 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Maximum shock limit (peak value)	± 5 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 400 °C	
Operating frequency range (ripple ± 1 dB)	2 ... 12 000 Hz	
Self-resonant frequency in the fastened state	> 36 kHz	
Strain sensitivity	< 0.01 gm/ µm	
Electric capacity	1 300 ... 1 700 pF For standard cable length	
Insulation resistance under normal conditions	> 100 MΩ	
Housing material	stainless steel	
Built-in cable length	2 m To be determined by customer	
Connector type	2РМД18КПН4Г5В1 To be determined by customer	
Weight (without cable)	98 g	120 g
Supplied accessories	3 screws M4-6g × 12	4 screws M5-6g × 12

Description:

AP63B	0X	A(B,C,D)	X.X	XX.X
Type of sensor	Sensor version	Version of anti-vibration part of the cable: A – cable АВКТД(Л) without connector; B – cable АВКТД(Л) with connector 2РМД(Т)18КПН4Г5А1; C – cable АВКТД(Л) in metal hose Р3-Н-6 without connector; D – cable АВКТД(Л) in metal hose Р3-Н-6 with connector 2РМД(Т)18КПН4Г5А1	Length of heat-proof part (КНМС2С) 0.2 to 5.0 m with an increment of 0.1 m.	Length of anti-vibration part of the cable АВКТД(Л) 0.5 to 15.0 m with an increment of 0.5 m.

Electrical circuit of AP63B, AP63B-01



Optional accessories:

- **charge amplifiers** AP5001, AQ05.X.XXX, AQ08, AQ08-01;
- **charge and voltage amplifier** AP5240A2;
- **measuring amplifiers** AP5110, AP5200.

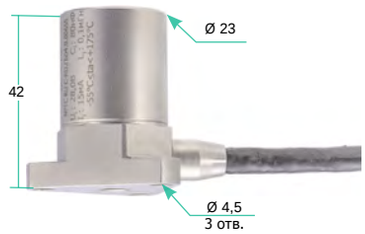
AP1066B, AP1066B-01

Purpose:

- Measuring vibration and shock acceleration in stationary diagnostic systems.

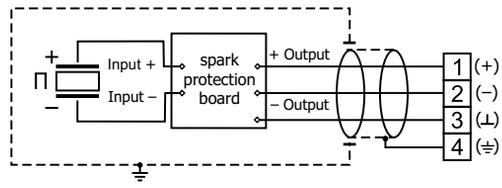
Features:

- Symmetric connection.
- Wide temperature range.
- Non-detachable termination of antivibration cable.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Explosion-proof version 1ExibIICT3.
- Intrinsically safe circuit:
  Ui : 28 V;
  Ii :15 mA;
  Li : 0,1 mH;
  Ci : 80 nF;
  – 55 °C ≤ ta ≤ + 175 °C



Parameter	AP1066B	AP1066B-01
Axial sensitivity (± 20 %)	10 pC/ m·s^{-2}	
Cross sensitivity	< 5 %	
Amplitude range	± 350 m·s^{-2} 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Maximum shock limit (peak value)	± 1 000 g 1 g = 9,807 м·с$^{-2}$ или 10 м·с$^{-2}$ = 1,02 g	
Operating temperature range	– 55 ... + 175 °C	
Operating frequency range (ripple ± 1 dB)	2 ... 5 000 Hz	
Self-resonant frequency in the fastened state	> 15 kHz	
Strain sensitivity	< 0.15 gm/ μm	
Connector type	4 mechanical clamp terminals (E0208)	
Housing material	stainless steel	
Built-in cable length	2 м To be determined by customer	
Weight (without cable)	100 g	
Supplied accessories	3 screws M4-6g × 12	

Electrical circuit of AP1066B, AP1066B-01



Optional accessories:

- **matching devices** AG07B.

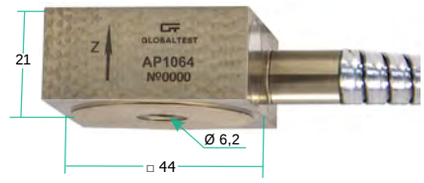
AP1064

Purpose:

- Measuring vibration and shock acceleration in stationary diagnostic systems.
- Simultaneous triaxial-oriented measurement.

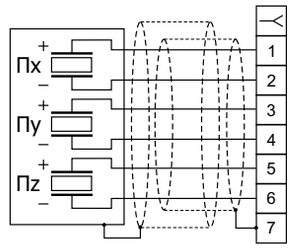
Features:

- Non-detachable termination of antivibration cable.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Wide temperature range.



Parameter	AP1064
Conversion factor	10 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	2 000 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 250 °C
Operating frequency range (ripple ± 1 dB)	2 ... 4 000 Hz
Self-resonant frequency in the fastened state	> 15 kHz
Strain sensitivity	< 0.01 gm/ μm
Electric capacity	4 800 ... 5 500 pF For standard cable length
Insulation resistance under normal conditions	>1 000 MΩ
Housing material	stainless steel
Built-in cable length	2 m To be determined by customer
Connector type	built-in cable / 2РМТ18КПН7Г1В1
Weight (without cable)	250 g
Supplied accessories	1 screw M6×38

Electrical circuit of AP1064



Optional accessories:

- **charge amplifiers** AQ05-X.XXX, AQ08, AP5001 supplied with cable AK52;
- **measuring amplifiers** AP5110.

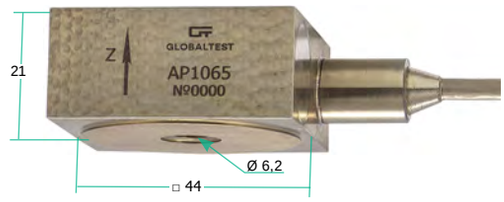
AP1065

Purpose:

- Measuring vibration and shock acceleration in stationary diagnostic systems.
- Simultaneous triaxial-oriented measurement.

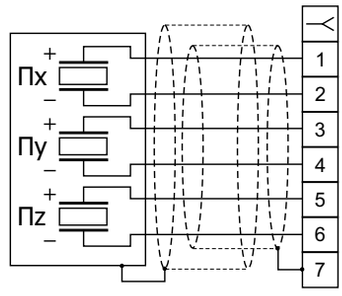
Features:

- Non-detachable termination of high-temperature and antivibration cable.
- Symmetric connection.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Wide temperature range.



Parameter	AP1065
Conversion factor	11 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	2 000 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 400 °C
Operating frequency range (ripple ± 1 dB)	2 ... 4 000 Hz
Self-resonant frequency in the fastened state	> 15 kHz
Strain sensitivity	< 0.01 gm/ μm
Electric capacity of operation loop	> 600 pF
Inner resistance of insulation under normal conditions	>10 MΩ
Housing material	stainless steel
Built-in cable length	2 m (1 m of КНМСС type / 1 m of АВКТМ6 type) To be determined by customer
Connector type	2РМТ18КПН7Г1В1
Weight (without cable)	250 g
Supplied accessories	1 screw М6×30

Electrical circuit of AP1065



Optional accessories:

- **charge amplifier** AQ05-X.XXX, AQ08, AP5001 supplied with cable АК52;
- **measuring amplifiers** AP5110.

AP1078, AP1079

Purpose:

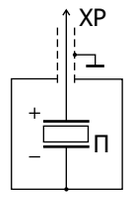
- Measuring acceleration of the objects at high himidity or under water at a depth of up to 50 metres.

Features:

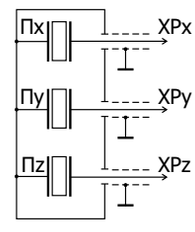
- Shear structure of piezoelement operation.
- Non-detachable termination of antivibration cable.
- Miniature design and acceptable sensitivity.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.

Parameter	AP1078	AP1079
Conversion factor	1 pC/m·d^{-2}	0.2 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 3 %	< 5 %
Maximum value of measured vibroacceleration amplitude	30 000 m/s^2	15 000 m/s^2
Maximum shock limit (peak value)	± 10 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 5 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 15 000 Hz	5 ... 15 000 Hz
Self-resonant frequency in the fastened state	> 45 kHz	> 50 kHz
Strain sensitivity	< 0.005 gm/ μm	< 0.000 5 gm/ μm
Electric capacity	1 000 pF	
Insulation resistance under normal conditions	> 10 000 MΩ	
Maximum pressure (equivalent depth 50 m)	5·10^5 Pa	
Connector type	AR05 (10-32 UNF)	3xAR05 (10-32 UNF)
Housing material	stainless steel (titanium alloy) To be determined by customer	
Built-in cable length	2 m To be determined by customer	
Weight (without cable)	13 g (10)	9 g (6)
Supplied accessories	stud AH0110	screw M3 × 20, ring plate Ø 3 mm

Electrical circuit of AP1078



Electrical circuit of AP1079



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5230, AP5240A1, AP5240A1B1;
- **cable adapters** AR01, AR04, AR06;
- **charge and voltage amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG01-03, AG02-3, AG03 (supplied with charge amplifier AP5000, AP5002);
- **insulating studs** AH1010, AH1005 (для AP1078);
- **magnet mounting bases** AM01, AM03, AM08, AM11.

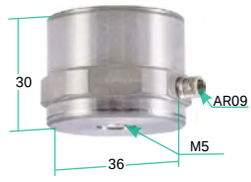
AP1006, AP1006-01, AP1006-02

Purpose:

- Measuring seismic and mechanical vibrations (from 0.01 Hz) of large engineering constructions (bridges, buildings, dams, etc.) in portable diagnostic systems and stationary monitoring facilities.

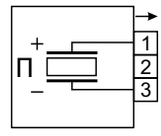
Features:

- Shear structure of piezoelement operation.
- Electric insulation between sensing element and casing.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.

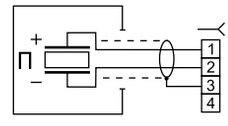


Parameter	AP1006	AP1006-01	AP1006-02
Conversion factor	100 pC/m·s^{-2}		
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	100 m/s^2		
Maximum shock limit (peak value)	± 100 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 80 ... + 120 °C		– 80 ... + 150 °C
Operating frequency range (ripple ± 1 dB)	0.01 ... 2 000 Hz		
Self-resonant frequency in the fastened state	> 7 kHz		
Strain sensitivity	< 0.000 5 gm/ μm		
Electric capacity	3 000 (± 500) pF	4 000 (± 500) pF	
Insulation resistance under normal conditions	100 GΩ		
Temperature variation sensitivity	0.2 %/°C		
Sensitivity to variable temperature			
HF filter cutoff frequency 0.2 Hz	0.002 g / °C		
HF filter cutoff frequency 3 Hz	0.0005 g / °C		
Housing material	stainless steel		
Weight (without cable)	165 g		
Built-in cable length	–	2 m	
Connector type	AR0901	2РМД18КПН4Г5В1	
Cable protection	–		metal hose
Supplied accessories	cable AK41C6T1	–	
	stud AH0110	stud AH0110	

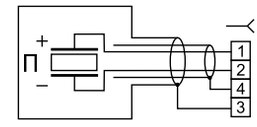
Electrical circuit of AP1006



Electrical circuit of AP1006-01



Electrical circuit of AP1006-02



Optional accessories:

- **charge amplifiers** AQ05-Д.Х.XXX;
- **matching device** AG05;
- **calibrators** AT01m, AT02;
- **charge and voltage amplifier** AP5240A3;
- **magnet mounting bases** AM03, AM14;
- **wax mastic** AW01;
- **insulating magnet** AM05.

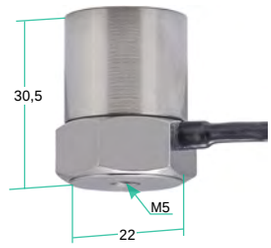
AP1047

Purpose:

- Measuring seismic and mechanical vibrations (from 0.1 Hz) of large engineering constructions (bridges, buildings, dams, etc.) in portable diagnostic systems and stationary monitoring facilities.

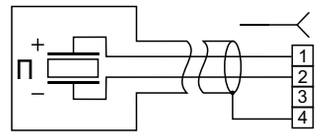
Features:

- Small size and weight along with high axial sensitivity.
- Non-detachable termination of antivibration cable.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Explosion-proof version 1ExibIICT4 (optional).



Parameter	AP1047
Conversion factor	50 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	2 000 m/s^2
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C
Operating frequency range (ripple ± 1 dB)	0.1 ... 5 000 Hz
Self-resonant frequency in the fastened state	> 15 kHz
Strain sensitivity	< 0.001 gm/ μm
Electric capacity	7 ± 0.5 nF
Insulation resistance under normal conditions	> 1 000 MΩ
Temperature variation sensitivity	0.2 %/ °C
Connector type	2РМТ14КПН4Г1В1В To be determined by customer
Housing material	stainless steel
Built-in cable length	2 m To be determined by customer
Weight (without cable)	70 g
Supplied accessories	stud AH0110

Electrical circuit of AP1047



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ08, AP5001;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cable adapters** AR01, AR04, AR06;
- **probe** AN01;
- **magnet mounting bases** AM03, AM04, AM05;
- **stud** AH0805;
- **insulating stud** AH1010.

AP1048, AP1049, AP1050

Purpose:

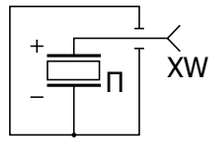
- Measuring seismic and mechanical vibrations (from 0.1 Hz) of large engineering constructions (bridges, buildings, dams, etc.) in portable diagnostic systems and stationary monitoring facilities.

Features:

- Small size and weight along with high axial sensitivity.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.

Parameter	AP1048	AP1049	AP1050
Conversion factor	20 pC/m·s^{-2}	40 pC/m·s^{-2}	60 pC/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	10 000 m/s^2	4 000 m/s^2	2 000 m/s^2
Maximum shock limit (peak value)	± 2 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 800 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	± 400 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 60 ... + 150 °C		
Operating frequency range (ripple ± 1 dB)	0.1 ... 2 000 Hz	0.1 ... 1 500 Hz	0.1 ... 1 000 Hz
Self-resonant frequency in the fastened state	> 6 kHz	> 5 kHz	> 4 kHz
Strain sensitivity	< 0.001 gm/ μm		
Electric capacity	7 ± 0.5 nF		
Insulation resistance under normal conditions	> 1 000 MΩ		
Temperature variation sensitivity	0.2 %/ °C		
Connector type	AR03 (10-32 UNF)		
Housing material	stainless steel (titanium) To be determined by customer		
Weight	31 g (20)	35 g (21)	36 g (21)
Supplied accessories	cable AK03B6D1 (classic name AK10), stud AH0110		

Electrical circuit of AP1048, AP1049, AP1050



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5230, AP5240A1, AP5240A1B1;
- **probe** AN01;
- **charge and voltage amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cables** AK01, AK02, AK03, AK04, AK05, AK07, AK08, AK09, AK10, AK11;
- **cable adapters** AR01, AR04, AR06;
- **magnet mounting bases** AM01, AM03, AM04, AM08;
- **insulating studs** AH1005, AH1010.

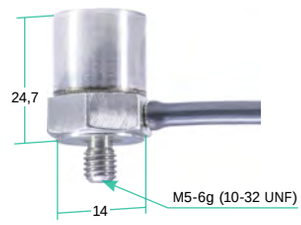
AP2017-1

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

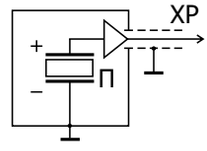
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Low level of intrinsic noise.



Parameter	AP2017
Conversion factor	0.1 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	50 000 m/s²
Maximum shock limit (peak value)	± 20 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 40 ... + 125 °C
Operating frequency range (ripple ± 1 dB)	5 ... 15 000 Hz
Adjustment resonance frequency in axial direction	45 kHz
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.05 m/s²
Output resistance	< 500 Ω
Power supply: - voltage - current	 + (18 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V
Temperatrue influence coefficient	± 0.3 %/°C
Housing material	stainless steel
Built-in cable length	2 m To be determined by customer
Connector type	cable termination, BNC
Weight (without cable)	22 g

Electrical circuit of AP2017



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **matching devices** AG01, AG02;
- **cable adapters** AR06, AR08, AR14;
- **calibrators** AT01m, AT02, AT04;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **power units** AS01, AS07.

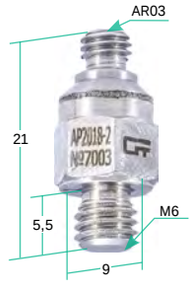
AP2018-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

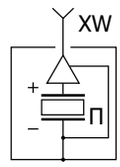
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Electrical lead – twisted pair.



Parameter	AP2018-0,5	AP2018-1	AP2018-2
Conversion factor	0.05 mV/(m·s^{-2})	0.1 mV/(m·s^{-2})	0.2 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	100 000 m/s^2	50 000 m/s^2	25 000 m/s^2
Maximum shock limit (peak value)	± 5 · 10^4 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	10 ... 20 000 Hz		
Adjustment resonance frequency in axial direction	60 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.015 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel (titanium alloy) To be determined by customer		
Built-in cable length	–		
Type of connector	AR03 (10–32 UNF)		
Weight (without cable)	5.5 g		
Supplied accessories	cable AK12B6D1 (classic name AK15)		

Electrical circuit AP2018-XX



Optional accessories:

- **calibrators** AT01m, AT02;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power unit** AS01, AS07;
- **cables** AK15-XX, AK01, AK02, AK04, AK08, AK10;
- **magnet mounting bases** AM03-02, AM05-02;

AP2019

Purpose:

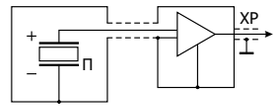
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2019
Conversion factor	0.05 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	100 000 m/s^2
Maximum shock limit (peak value)	20 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 55 ... + 125 °C
Operating frequency range (ripple ± 1 dB)	10 ... 30 000 Hz
Adjustment resonance frequency in axial direction	> 90 kHz
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.1 m/s^2
Output resistance	< 500 Ω
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V
Temperature influence coefficient	± 0.2 %/°C
Housing material	titanium alloy To be determined by customer
Built-in cable length	1 m To be determined by customer
Connector type	cable termination/BNC
Weight (without cable)	0.14 g
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).

Electrical circuit of AP2019



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK15, AK16;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **probe** AN01;
- **magnet mounting bases** AM01, AM08, AM11;
- **mounting block** AY19.

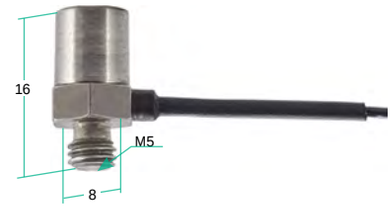
AP2030-XX, AP2031-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

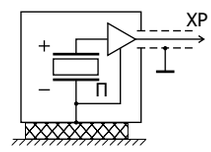
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

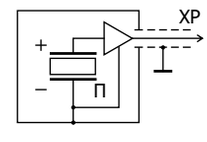


Parameter	AP2030-3	AP2030-10	AP2031-1	AP2031-3	AP2031-10
Conversion factor	0.3 mV/(m·s^{-2})	1 mV/(m·s^{-2})	0.1 mV/(m·s^{-2})	0.3 mV/(m·s^{-2})	1 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 3 %				
Maximum value of measured vibroacceleration amplitude	15 000 m/s^2	5 000 m/s^2	50 000 m/s^2	15 000 m/s^2	5 000 m/s^2
Maximum shock limit (peak value)	± 3 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		± 15 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C				
Operating frequency range (ripple ± 1 dB)	2 ... 18 000 Hz			2 ... 20 000 Hz	
Adjustment resonance frequency in axial direction	55 kHz			60 kHz	
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.02 m/s^2				
Output resistance	< 500 Ω				
Power: - voltage	+ (15 ... 30) V	+ (18 ... 30) V	+ (15 ... 30) V	+ (15 ... 30) V	+ (18 ... 30) B
- current	2 ... 20 mA				
Constant output voltage level	8 ... 13 V				
Temperature influence coefficient	± 0.2 %/°C				
Housing material	stainless steel (titanium alloy) To be determined by customer				
Built-in cable length	2 m To be determined by customer				
Connector type	cable termination/BNC				
Electric insulation of the body	available		–		
Weight (without cable)	2 g				
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).				

Electrical circuit of AP2030



Electrical circuit of AP2031



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK15, AK16;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **probe** AN01;
- **magnet mounting bases** AM01, AM08, AM11.

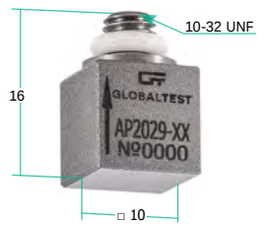
AP2029-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

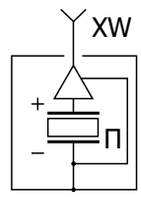
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Can be used for modal analysis.



Parameter	AP2029-10	AP2029-100
Conversion factor	1 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured vibroacceleration amplitude	5 000 m·s^{-2}	500 m·s^{2}
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 55 ... + 125 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 20 000 Hz	
Adjustment resonance frequency in axial direction	60 kHz	
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.02 m/s^{2}	< 0.005 m/s^{2}
Output resistance	< 500 Ω	
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA	
Constant output voltage level	10 ... 13 V	
Temperature influence coefficient	± 0.2 %/°C	
Housing material	titanium alloy	
Weight (without cable)	5 g	
Connector type	AR03 (10-32 UNF)	
Supplied accessories	cable AK12B6D1 (classic name AK15)	

Electrical circuit of AP2029



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK15, AK16, AK26;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **thread adapters** AD03, AD05;
- **magnet mounting bases** AM01, AM03, AM08, AM11.

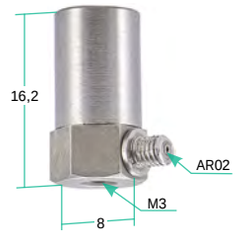
AP2034-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

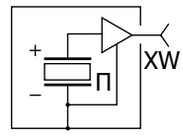
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2034-3	AP2034-10	AP2034-30
Conversion factor	0.3 mV/(m·s^{-2})	1 mV/(m·s^{-2})	3 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	16 000 m/s^2	5 000 m/s^2	1 600 m/s^2
Maximum shock limit (peak value)	± 3 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 20 000 Hz		
Adjustment resonance frequency in axial direction	60 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.015 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	 + (18 ... 30) V	
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel (titanium alloy) To be determined by customer		
Built-in cable length	–		
Connector type	horizontal lead AR02 (M3)		
Weight (without cable)	4 g		
Supplied accessories	cable AK02B1B6 (classic name AK06), stud AH0103		

Electrical circuit of AP2034



Optional accessories:

- **calibrators** AT01m, AT02;
- **adapter boxes** AG01, AG02;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **matching devices** AG01, AG02;
- **wax mastic** AW01;
- **stud** AH0503, AH1003;
- **cable** AK54.

AP2034-XX-01

Purpose:

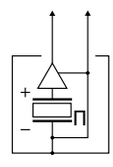
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Electrical lead: twisted pair.

Parameter	AP2034-3-01	AP2034-10-01	AP2034-30-01
Conversion factor	0.3 mV/(m·s^{-2})	1 mV/(m·s^{-2})	3 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	16 000 m/s^2	5 000 m/s^2	1 600 m/s^2
Maximum shock limit (peak value)	± 3 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 20 000 Hz		
Adjustment resonance frequency in axial direction	60 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.015 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	 + (18 ... 30) V	
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel (titanium alloy) To be determined by customer		
Built-in cable length	0.15 m		
Connector type	current terminals		
Weight (without cable)	4 g		
Supplied accessories	stud AH0103		

Electrical circuit of AP2034-01



Optional accessories:

- **calibrators** AT01m, AT02;
- **adapter boxes** AG01, AG02;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **matching devices** AG01, AG02;
- **wax mastic** AW01;
- **stud** AH0503, AH1003.

AP2034-XX-02

Purpose:

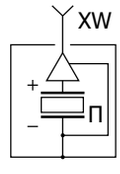
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Electrical lead: twisted pair.

Parameter	AP2034-3-02	AP2034-10-02	AP2034-30-02
Conversion factor	0.3 mV/(m·s^{-2})	1 mV/(m·s^{-2})	3 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	16 000 m/s^2	5 000 m/s^2	1 600 m/s^2
Maximum shock limit (peak value)	± 3 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 20 000 Hz		
Adjustment resonance frequency in axial direction	60 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.015 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	 + (18 ... 30) V	
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel (titanium alloy) To be determined by customer		
Built-in cable length	–		
Connector type	vertical lead AR02 (M3)		
Weight (without cable)	4 g		
Supplied accessories	stud AH0103, cable AK02B1B6 (classic name AK06)		

Electrical circuit of AP2034-XX-01



Optional accessories:

- **calibrators** AT01m, AT02;
- **adapter boxes** AG01, AG02;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **matching devices** AG01, AG02;
- **wax mastic** AW01;
- **stud** AH0503, AH1003;
- **cable** AK54.

AP2022-XX

Purpose:

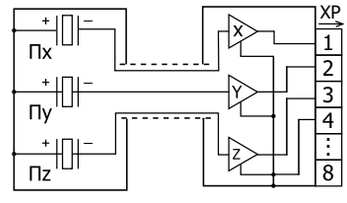
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

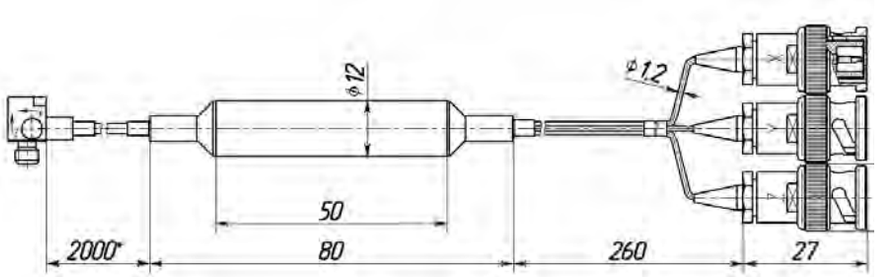
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2022-2 AP2022-2-01 AP2022-2-02 AP2022-2-03 AP2022-2-04	AP2022-10 AP2022-10-01 AP2022-10-02 AP2022-10-03 AP2022-10-04
Conversion factor	0.2 mV/(m·s^{-2})	1 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured vibroacceleration amplitude	25 000 m/s^2	5 000 m/s^2
Maximum shock limit (peak value)	± 5 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 55 ... + 125 °C	
Operating frequency range (ripple ± 1 dB)	10 ... 20 000 Hz	
Adjustment resonance frequency in axial direction	60 kHz	
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.01 m/s^2	
Output resistance	< 500 Ω	
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA	
Constant output voltage level	10 ... 13 V	
Temperature influence coefficient	± 0.2 %/°C	
Run mode setting time	4 s	
Housing material	titanium alloy	
Built-in cable length	2 m	
Connector type	LEMO FGG.1B.308; -01 – 3* BNC; -02 – 2РМ14Б4Ш1В1; -03 – 2РМ14КПН4Г1АВ; -04 – AR0901 To be determined by customer	
Weight (without cable)	4 g	

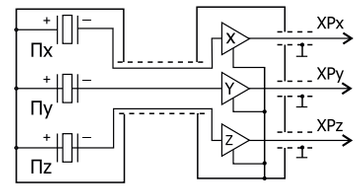
Electrical circuit AP2022



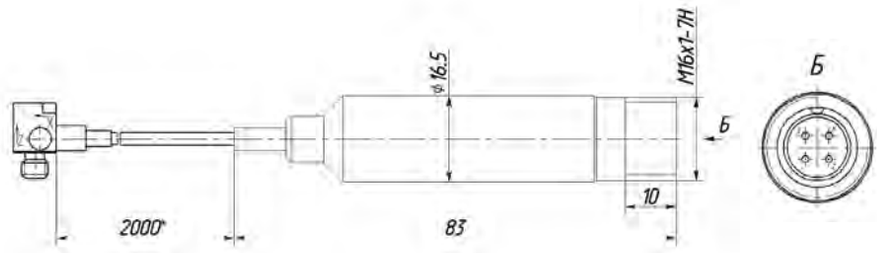
Parameter	AP2022-XX-01



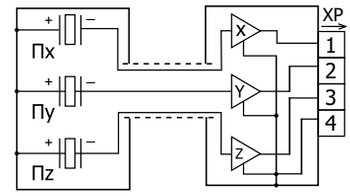
Electrical circuit of AP2022-XX-01



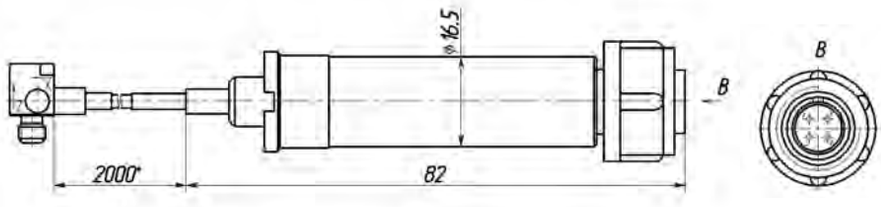
Parameter	AP2022-XX-02



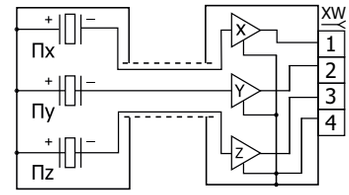
Electrical circuit of AP2022-XX-02



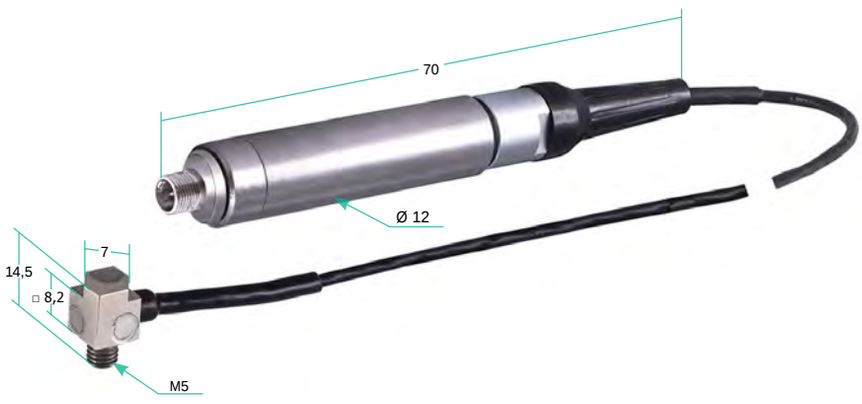
Parameter	AP2022-XX-03



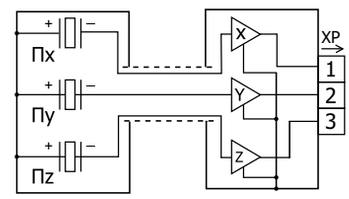
Electrical circuit of AP2022-XX-03



Parameter	AP2022-XX-04



Electrical circuit of AP2022-XX-04



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM08, AM11.

AP2028-XX

Purpose:

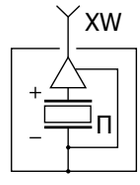
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2028-10 (AP2028-10-01)	AP2028-30 (AP2028-30-01)	AP2028-50 (AP2028-50-01)	AP2028-100 (AP2028-100-01)
Conversion factor	1 mV/(m·s^{-2})	3 mV/(m·s^{-2})	5 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	1 600 m/s^2	1 000 m/s^2	500 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			
Operating temperature range	– 55 ... + 125 °C			
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz			
Adjustment resonance frequency in axial direction	30 kHz			
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s^2	< 0.002 m/s^2		
Output resistance	< 500 Ω			
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA		+ (18 ... 30) V	
Constant output voltage level	8 ... 13 V			
Housing material	stainless steel			
Connector type	BNC (AR03 (10-32 UNF)) To be determined by design variant			
Weight (without cable)	45 g			
Supplied accessories	cable AK12D1D1 (classic name AK19) cable AK12B6D1 (classic name AK15) -(01) stud AH0106			
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).			

Electrical circuit of AP2028



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK15, AK17, AK26, AK19;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM03-02, AM13-01;
- **studs** AH0806, AH1006.

AP2028B, AP2028I

Purpose:

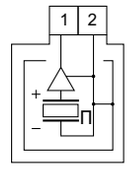
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

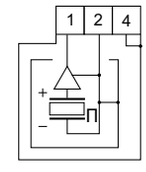
- Electrically insulated piezoelement and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Explosion-proof version 1ExibIICT4 (option for AP2028B).

Parameter	AP2028B	AP2028I
Conversion factor	3 mV/(m·s^{-2})	
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured vibroacceleration amplitude	1 600 m/s^2	
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 55 ... + 125 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 8 000 Hz	
Adjustment resonance frequency in axial direction	25 kHz	
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.002 m/s^2	
Output resistance	< 500 Ω	
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	
Constant output voltage level	8 ... 13 V	
Temperature influence coefficient	± 0.2 %/°C	
Housing material	stainless steel	
Connector type	AR0701 (5/8-24 UNF)	PC4-TB
Weight (without cable)	45 g	
Supplied accessories	cable AK12C1D1 (classic name AK16) stud AH0106	cable AK12G1D1
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).	

Electrical circuit of AP2028B



Electrical circuit of AP2028I



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01-01, AG02-01 (for AP28B);
- **calibrators** AT01m, AT02, AT04;
- **cables** AK17, AK35;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM03-02, AM13-01;
- **studs** AH0806, AH1006;
- **cable connector** AR07 (for AP2028B).

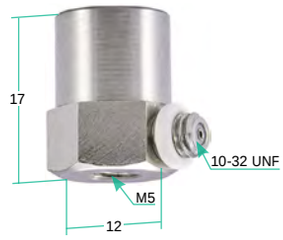
AP2037-1, AP2037-2, AP2037-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

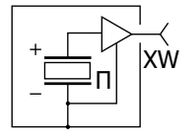
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2037-1	AP2037-2	AP2037-10	AP2037-50	AP2037-100	AP2037-500
Conversion factor	0.1 mV/(m·s^{-2})	0.2 mV/(m·s^{-2})	1 mV/(m·s^{-2})	5 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %					
Maximum value of measured vibroacceleration amplitude	50 000 m/s^2	25 000 m/s^2	5 000 m/s^2	1 000 m/s^2	500 m/s^2	100 m/s^2
Maximum shock limit (peak value)	± 10 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g					
Operating temperature range	– 55 ... + 125 °C					
Operating frequency range (ripple ± 1 dB)	0.5 ... 15 000 Hz					
Adjustment resonance frequency in axial direction	45 kHz					
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.05 m/s^2	< 0.025 m/s^2	< 0.005 m/s^2	< 0.006 m/s^2	< 0.0035 m/s^2	< 0.002 m/s^2
Output resistance	< 500 Ω					
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	+ (18 ... 30) V	+ (15 ... 30) V	+ (18 ... 30) V		
Constant output voltage level	8 ... 13 V					
Temperature influence coefficient	± 0.2 %/°C					
Housing material	stainless steel (titanium alloy) To be determined by customer					
Connector type	side lead AR03 (10-32 UNF)					
Weight (without cable)	13 g					
Supplied accessories	cable AK12B6D1 (classic name AK15), stud AH0110					
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).					

Electrical circuit of AP2037-XX



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cable** AK26;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **insulating stud** AH1010.

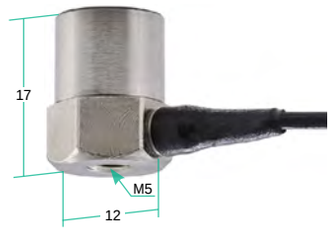
AP2037-XX-01

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

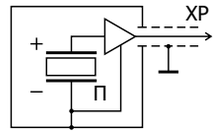
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2037-1-01	AP2037-2-01	AP2037-10-01	AP2037-50-01	AP2037-100-01	AP2037-500-01
Conversion factgor	0.1 mV/(m·s^{-2})	0.2 mV/(m·s^{-2})	1 mV/(m·s^{-2})	5 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %					
Maximum value of measured vibroacceleration amplitude	50 000 m/s^2	25 000 m/s^2	5 000 m/s^2	1 000 m/s^2	500 m/s^2	100 m/s^2
Maximum shock limit (peak value)	± 10 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g					
Operating temperature range	– 55 ... + 125 °C					
Operating frequency range (ripple ± 1 dB)	0.5 ... 15 000 Hz					
Adjustment resonance frequency in axial direction	45 kHz					
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.05 m/s^2	< 0.025 m/s^2	< 0.005 m/s^2	< 0.006 m/s^2	< 0.0035 m/s^2	< 0.002 m/s^2
Output resistance	< 500 Ω					
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	 + (18 ... 30) V	 + (15 ... 30) V	 + (18 ... 30) V		
Constant output voltage level	8 ... 13 V					
Temperature influence coefficient	± 0.2 %/°C					
Housing material	stainless steel (titanium alloy) To be determined by customer					
Connector type	cable termination, BNC					
Weight (without cable)	13 g					
Supplied accessories	stud AH0110					
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %)					

Electrical circuit of AP2037-XX-01



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cable** AK26;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **insulating stud** AH1010.

AP2037-XX-02

Purpose:

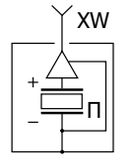
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2037-1-02	AP2037-2-02	AP2037-10-02	AP2037-50-02	AP2037-100-02	AP2037-500-02
Conversion factor	0.1 mV/(m·s⁻²)	0.2 mV/(m·s⁻²)	1 mV/(m·s⁻²)	5 mV/(m·s⁻²)	10 mV/(m·s⁻²)	50 mV/(m·s⁻²)
Relative coefficient of transverse conversion	< 5 %					
Maximum value of measured vibroacceleration amplitude	50 000 m/s²	25 000 m/s²	5 000 m/s²	1 000 m/s²	500 m/s²	100 m/s²
Maximum shock limit (peak value)	± 10 000 g 1 g = 9.807 m·s⁻² or 10 m·s⁻² = 1.02 g					
Operating temperature range	– 55 ... + 125 °C					
Operating frequency range (ripple ± 1 dB)	0.5 ... 15 000 Hz					
Adjustment resonance frequency in axial direction	45 kHz					
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.05 m/s²	< 0.025 m/s²	< 0.005 m/s²	< 0.006 m/s²	< 0.0035 m/s²	< 0.002 m/s²
Output resistance	< 500 Ω					
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA			 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V					
Temperature influence coefficient	± 0.2 %/°C					
Housing material	stainless steel (titanium alloy) To be determined by customer					
Connector type	vertical lead AR03 (10-32 UNF)					
Weight (without cable)	13 g					
Supplied accessories	cable AK12B6D1 (classic name AK15), stud AH0110					
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).					

Electrical circuit of AP2037-XX-02



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02, AG04;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK19, AK26;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **insulating stud** AH1010.

AP2098-XX, AP2098-XX-01, AP2098-XX-02

Purpose:

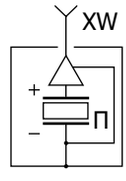
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

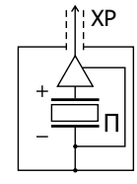
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2098-30	AP2098-100	AP2098-500
Conversion factor	3 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	1 600 m/s^2	500 m/s^2	100 m/s^2
Maximum shock limit (peak value)	± 2 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz		
Adjustment resonance frequency in axial direction	36 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.003 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel		
Connector type	BNC-BP AR03 (10-32 UNF) - (01) cable termination - (02)		
Weight (without cable)	40 r; 25r - (01); 32r - (02)		
Supplied accessories	cable AK12D1D1 (classic name AK19), stud AH0110 cable AK12B6D1 (classic name AK15), stud AH0110 - (01) stud AH0110 - (02)		
Options	–	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).	

Electrical circuit of AP2098-XX, AP2098-XX-01



Electrical circuit of AP2098-XX-02



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **cable** AK26;
- **cable adapters** AR01, AR04;
- **calibrators** AT01m, AT02, AT04;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805;
- **insulating stud** AH1010.

AP2098-XX-5

Purpose:

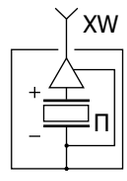
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

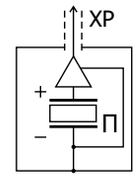
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2098-100-5	AP2098-100-5-01/	AP2098-100-5-02
Conversion factor	10 mV/(m·s^{-2})		10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	100 m/s^2		
Maximum shock limit (peak value)	± 2 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 40 ... + 85 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz		
Adjustment resonance frequency in axial direction	> 36 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.003 m/s^2		
Output resistance	< 200 Ω		
Power: - voltage - current	 + (5 ± 5 %) V 2 mA		
Constant output voltage level	2.5 ... 3.5 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel		
Connector type	BNC	AR03(10-32 UNF)	cable termination
Weight (without cable)	40 g	25 g	32 g
Supplied accessories	cable AK12D1D1 (classic name AK19) stud AH0110	cable AK12B6D1 (classic name AK15) stud AH0110	– stud AH0110

Electrical circuit of AP2098-XX-5, AP2098-XX-5-01



Electrical circuit of AP2098-XX-5-02



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240B1T, AP5240A1B1, AP5250;
- **matching devices** AG01, AG02;
- **cable** AK26;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **calibrators** AT01m, AT02, AT04;
- **stud** AH0805;
- **insulating stud** AH1010.

AP2098-100-3.3

Purpose:

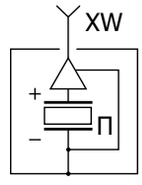
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

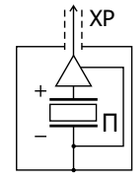
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2098-100-3.3	AP2098-100-3.3-01	AP2098-100-3.3-02
Conversion factor	10 mV/(m·s^{-2})		
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	70 m/s^2		
Maximum shock limit (peak value)	± 2 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 40 ...+ 85 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz		
Adjustment resonance frequency in axial direction	> 36 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.003 m/s^2		
Output resistance	< 200 Ω		
Power: - voltage - current	 + (3.3 ± 5%) V < 1 mA		
Constant output voltage level	2 ... 2.5 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel		
Connector type	BNC	AR03 (10-32 UNF)	cable termination
Weight (without cable)	40 g	25 g	32 g
Supplied accessories	cable AK12D1D1 (classic name AK19) stud AH0110	cable AK12B6D1 (classic name AK15) stud AH0110	– stud AH0110

Electrical circuit of AP2098-100-3.3, AP2098-100-3.3-01



Electrical circuit of AP2098-100-3.3-02



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **matching devices** AG01, AG02;
- **cable** AK26;
- **cable adapters** AR01, AR04;
- **calibrators** AT01m, AT02, AT04;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805;
- **insulating stud** AH1010.

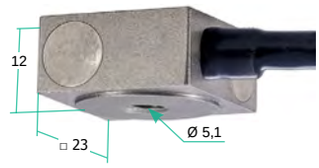
AP20382

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.
- Simultaneous measurements in orthogonally related directions.

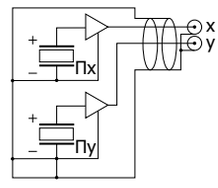
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP20382
Conversion factor	1 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	± 5 000 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 55 ... + 125 °C
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz
Self-resonant frequency in the fastened state	> 35 kHz
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s^2
Output resistance	< 500 Ω
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V
Temperature influence coefficient	± 0.2 %/°C
Run mode setting time	4 s
Housing material	stainless steel
Built-in cable length	2 m
Connector type	cable termination /2 × BNC (2 × 10-32 UNF) To be determined by customer
Weight (without cable)	36 g
Supplied accessories	screw M5-8g × 20
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4.

Electrical circuit of AP20382



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge amplifiers** AP5210, AP5230, AP5020;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM01, AM03;
- **cables** AK22, AK23.

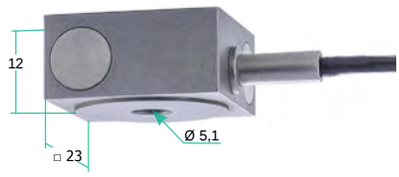
AP2038-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

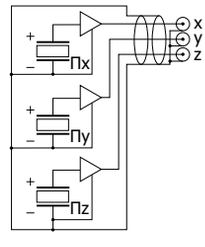
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2038-10	AP2038-100	AP2038-500	AP2038-1000
Conversion factor	1 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})	100 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	500 m/s^2	100 m/s^2	50 m/s^2
Maximum shock limit (peak value)	± 1 000 g			± 200 g
	1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			
Operating temperature range	– 55 ... + 125 °C			
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz			
Adjustment resonance frequency in axial direction	> 35 kHz			
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s^2	< 0.003 m/s^2	< 0.002 m/s^2	
Output resistance	< 500 Ω			
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA			
Constant output voltage level	8 ... 13 V			
Temperature influence coefficient	± 0.2 %/°C			
Run mode setting time	4 s			
Housing material	stainless steel			
Built-in cable length	2 m			
Connector type	cable termination /3 × BNC (3 × 10-32 UNF) To be determined by customer			
Weight (without cable)	36 g			
Supplied accessories	screw M5-8g × 20			
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4.			

Electrical circuit of AP2038



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK22, AK23, AK25, AK27;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM01, AM03, AM11.

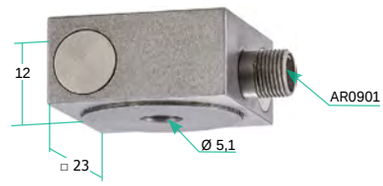
AP2038P-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

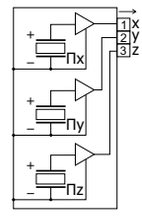
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Plug-in connection to cable.



Parameter	AP2038P-10	AP2038P-100	AP2038P-500	AP2038P-1000
Conversion factor	1 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})	100 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	500 m/s^2	100 m/s^2	50 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			
Operating temperature range	– 55 ... + 125 °C			
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz			
Adjustment resonance frequency in axial direction	> 35 kHz			
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s^2	< 0.003 m/s^2	< 0.002 m/s^2	
Output resistance	< 500 Ω			
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA			
Constant output voltage level	8 ... 13 V			
Temperature influence coefficient	± 0.2 %/°C			
Run mode setting time	4 s			
Housing material	stainless steel			
Connector type	AR0901 (M6 × 0,5)			
Weight (without cable)	36 g			
Supplied accessories	screw M5-8g × 20, cable AK51C6D3 (classic name AK21)			
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4.			

Electrical circuit of AP2038P



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK22, AK23, AK25, AK27;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM01, AM03, AM11.

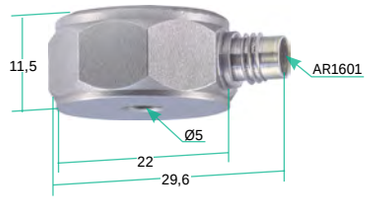
AP2039-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

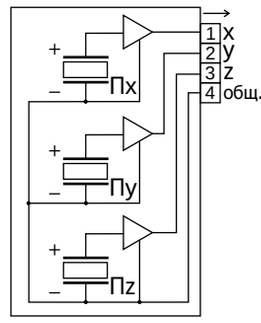
Features:

- Built-in preamplifier.
- Electrical insulation of elements sensitivity from the housing.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.



Parameter	AP2039-10	AP2039-50	AP2039-100
Conversion factor	1 mV/(m·s^{-2})	5 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	1 000 m/s^2	500 m/s^2
Maximum shock limit (peak value)	± 3 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 5 000 Hz		
Adjustment resonance frequency in axial direction	> 15 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.01 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Run mode setting time	4 s		
Housing material	titanium alloy		
Connector type	AR1601 (4-pin, 1/4–28UNF)		
Weight (without cable)	14,5 g		
Supplied accessories	cable AK41E1D3, screw M5 × 16		

Электрическая схема AP2039



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK58;
- **magnet mounting bases** AM01, AM03, AM05, AM08.

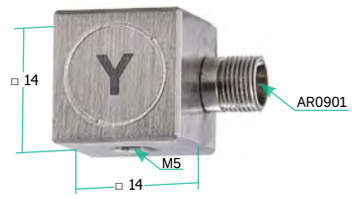
AP2043-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

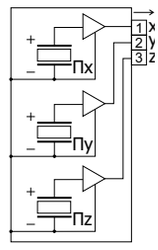
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2043-10	AP2043-30	AP2043-50	AP2043-100
Conversion factor	1 mV/(m·s^{-2})	3 mV/(m·s^{-2})	5 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	1 500 m/s^2	1 000 m/s^2	500 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			
Operating temperature range	– 55 ... + 125 °C			
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz			
Adjustment resonance frequency in axial direction	> 36 kHz			
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.02 m/s^2			
Output resistance	< 500 Ω			
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA			
Constant output voltage level	8 ... 13 V			
Temperature influence coefficient	± 0.2 %/°C			
Run mode setting time	4 s			
Housing material	titanium alloy			
Connector type	AR0901 (M6 × 0.5)			
Weight (without cable)	13 g			
Supplied accessories	cable AK51C6D3 (classic name AK21), stud AH0110			

Electrical circuit of AP2043



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK22, AK23, AK25, AK27;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805;
- **insulating stud** AH1010.

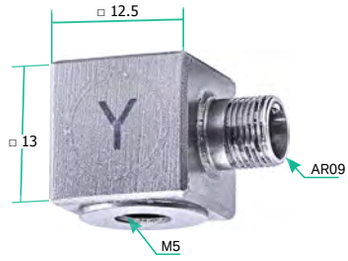
AP2045-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory.

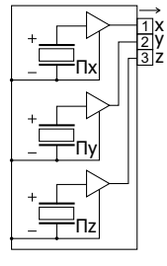
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2045-1	AP2045-10	AP2045-100
Conversion factor	0,1 mV/(m·s^{-2})	1 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	50 000 m/s^2	5 000 m/s^2	500 m/s^2
Maximum shock limit (peak value)	± 5 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	10 ... 15 000 Hz	0,5 ... 15 000 Hz	
Adjustment resonance frequency in axial direction	> 60 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.007 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Run mode setting time	4 s		
Housing material	titanium alloy		
Connector type	AR0901 (M6 × 0.5)		
Weight (without cable)	7,4 g		
Supplied accessories	cable AK51C6D3 (classic name AK21), stud AH0110		

Electrical circuit of AP2045-XX



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK22, AK23, AK25, AK27;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805;
- **insulating stud** AH1010-01.

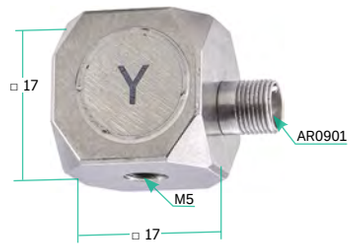
AP2046-1000

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests.

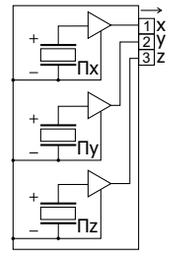
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2046-1000
Conversion factor	100 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	50 m/s^2
Maximum shock limit (peak value)	± 100 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 55 ... + 125 °C
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz
Adjustment resonance frequency in axial direction	> 36 kHz
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.0014 m/s^2
Output resistance	< 500 Ω
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V
Temperature influence coefficient	± 0.2 %/°C
Run mode setting time	4 s
Housing material	titanium alloy
Connector type	AR0901 (M6 × 0.5)
Weight (without cable)	20 g
Supplied accessories	cable AK51C6D3 (classic name AK21), stud AH0110

Electrical circuit of AP2046-1000



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK22, AK23, AK25, AK27;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805;
- **insulating stud** AH1010.

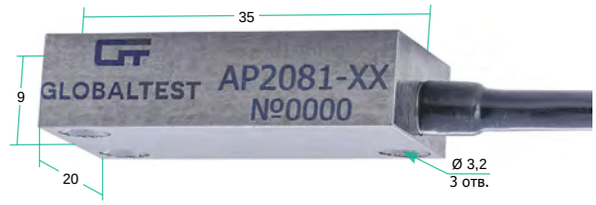
AP2081-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

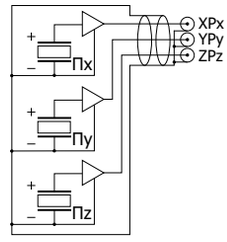
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2081-10	AP2081-100
Conversion factor	1 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	500 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 55 ... + 125 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz	
Adjustment resonance frequency in axial direction	> 30 kHz	
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s^2	< 0.003 m/s^2
Output resistance	< 500 Ω	
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	 + (18 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V	
Temperature influence coefficient	± 0.2 %/°C	
Housing material	titanium alloy	
Built-in cable length	2 m To be determined by customer	
Connector type	cable termination/BNC, AR05 (10-32 UNF) To be determined by customer	
Weight (without cable)	34 g	
Supplied accessories	3 screws M3 × 16	
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4..	

Electrical circuit of AP2081



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG03, AG03-3;
- **calibrators** AT01m, AT02, AT04;
- **cable adapters** AR01, AR04.

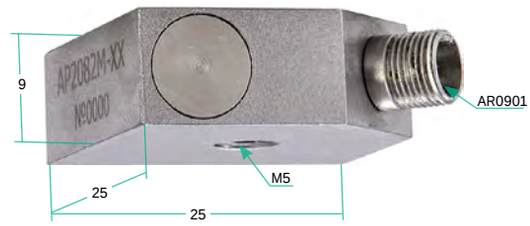
AP2082M-XX

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

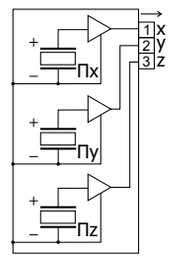
Features:

- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.



Parameter	AP2082M-100	AP2082M-500	AP2082M-1000
Conversion factor	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})	100 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	500 m/s^2	100 m/s^2	50 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz		
Adjustment resonance frequency in axial direction	> 30 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.003 m/s^2	< 0.002 m/s^2	
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Run mode setting time	4 s		
Housing material	stainless steel		
Connector type	AR0901 (M6 × 0.5)		
Weight (without cable)	26 g		
Supplied accessories	cable AK51C6D3 (classic name AK21), stud AH0110		

Electrical circuit of AP2082M



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK22, AK23, AK25, AK27;
- **cable adapters** AR01, AR04;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **insulating stud** AH1010-01.

AP2083

Purpose:

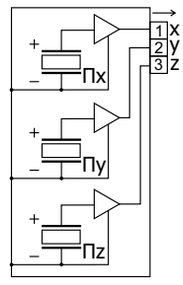
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- Plug-in connection to cable.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Built-in preamplifier.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2083
Conversion factor	1 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 55 ... + 125 °C
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz
Adjustment resonance frequency in axial direction	> 30 kHz
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s^2
Output resistance	< 500 Ω
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V
Temperature influence coefficient	± 0.2 %/°C
Run mode setting time	4 s
Housing material	titanium alloy
Connector type	AR0901 (M6 × 0.5)
Weight (without cable)	34 g
Supplied accessories	three screws M3-8g, cable AK51C6D3 (classic name AK21)

Electrical circuit of AP2083



Optional accessories:

- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **power units** AS01, AS07;
- **matching devices** AG01, AG01-3, AG02, AG02-3, AG03;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK22, AK23, AK25, AK27;
- **cable adapters** AR01, AR04.

AP2035-XX, AP2035-XX-01

Purpose:

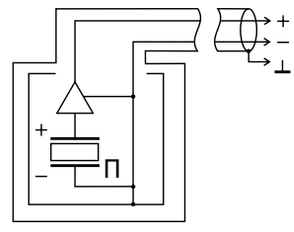
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

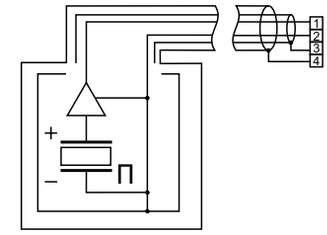
- Built-in preamplifier.
- Electrically insulated piezoelement and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2035-10 (AP2035-10-01)	AP2035-30 (AP2035-30-01)	AP2035-50 (AP2035-50-01)	AP2035-100 (AP2035-100-01)
Conversion factor	1 mV/(m·s⁻²)	3 mV/(m·s⁻²)	5 mV/(m·s⁻²)	10 mV/(m·s⁻²)
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured vibroacceleration amplitude	4 800 m/s²	1 600 m/s²	1 000 m/s²	500 m/s²
Maximum shock limit (peak value)	± 1 000 g 1 g = 9.807 m·s⁻² or 10 m·s⁻² = 1.02 g			
Operating temperature range	– 55 ... + 125 °C			
Operating frequency range (ripple ± 1 dB)	0.5 ... 8 000 Hz			
Adjustment resonance frequency in axial direction	> 25 kHz			
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s²	< 0.002 m/s²	< 0.002 m/s²	< 0.002 m/s²
Output resistance	< 500 Ω			
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	 + (18 ... 30) V 2 ... 20 mA	 + (18 ... 30) V 2 ... 20 mA	 + (18 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V			
Temperature influence coefficient	± 0.2 %/°C			
Housing material	stainless steel			
Built-in cable length	2 m To be determined by customer			
Connector type	cable termination/2РМД18КПН4Г5В1 To be determined by customer			
Weight (without cable)	39 g			
Supplied accessories	screw M6-6g × 38			
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).			

Electrical circuit of AP2035-XX without metal hose



Electrical circuit of AP2035-XX-01 with metal hose



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **matching devices** AG01-01, AG02-01 with power units AS03, AG01B;
- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;
- **cable adapters** AR01, AR04;
- **magnet mounting base** AM03.

AP2035-XX-02

Purpose:

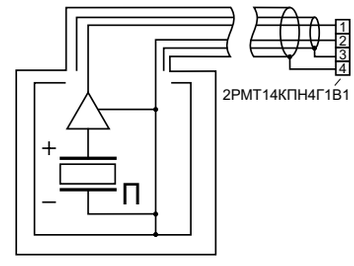
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields and electrostatic discharge.

Features:

- Built-in preamplifier.
- Electrically insulated sensing element and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Robust design and waterproof casing.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Low coefficient of operating temperature variation influence on axial sensitivity.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2035-30-02	AP2035-50-02	AP2035-100-02
Conversion factor	3 mV/(m·s^{-2})	5 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	1 600 m/s^2	1 000 m/s^2	500 m/s^2
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Coefficient of ambient temperature variation influence (from + 20 °C to + 125 °C) on axial sensitivity	– 0.04 ... 0.04 %/°C		
Coefficient of ambient temperature variation influence (from + 20 °C to - 40 °C) on axial sensitivity	– 0.08 ... 0 %/°C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 5 000 Hz		
Adjustment resonance frequency in axial direction	> 15 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	< 0.004 g	< 0.002 g
Output resistance	< 500 Ω		
Power: - voltage - current	+ (18 ... 30) V 2...20 mA		
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Housing material	stainless steel		
Built-in cable length	2 m (To be determined by customer)		
Connector type	cable termination/2РМТ14КПН4Г1В1		
Cable protection	metal hose		
Weight (without cable)	95 g		
Supplied accessories	3 screws M4 × 14		
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).		

Схема электрическая
AP2035-XX-02



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **matching devices** AG01-01, AG02-01 with power units AS03, AG01B.
- **charge and voltage amplifiers** AP5110, AP5200, AP5210, AP5230, AP5230-1, AP5240B1, AP5240B1T, AP5240A1B1;

AP2036-XX , AP2036-XX-01

Purpose:

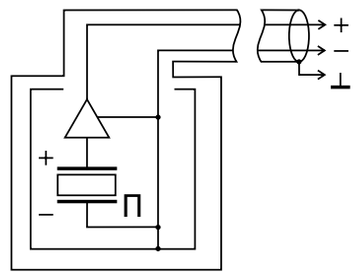
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

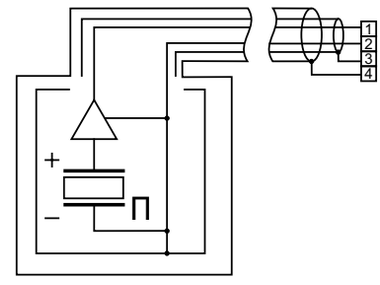
- Shear structure of piezoelement operation.
- Built-in preamplifier.
- Electrically insulated sensing element and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Robust design and waterproof casing.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2036-10 (AP2036-10-01)	AP2036-30 (AP2036-30-01)	AP2036-100 (AP2036-100-01)
Conversion factor	1 mV/(m·s^{-2})	3 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	2 500 m/s^2	750 m/s^2	250 m/s^2
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Coefficient of ambient temperature variation influence (from – 50 °C to + 125 °C) on axial sensitivity	± 0.2 %/°C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 8 000 Hz		
Adjustment resonance frequency in axial direction	> 25 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.003 m/s^2	< 0.001	< 0.003
Output resistance	< 500 Ω		
Power: - voltage - current	 + (9 ... 15) V < 4 mA		
Constant output voltage level, at Un = 15 V	8 ... 11 V		
Housing material	stainless steel		
Built-in cable length	2 m To be determined by customer		
Connector type	cable termination/2РМД18КПН4Г5В1 To be determined by customer		
Weight (without cable)	39 g		
Supplied accessories	screw M6-8g × 38		

Electrical circuit of AP2036-XX without metal hose



Electrical circuit of AP2036-XX-01 with metal hose



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **magnet mounting base** AM03;
- **charge and voltage amplifier** AP5240A1B1;
- **matching device** AG04-01 with power unit AS04.

AP2036-XX-02

Purpose:

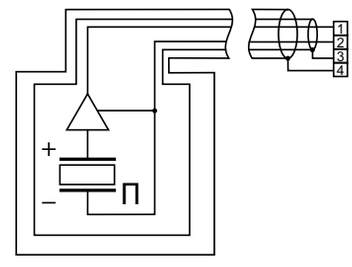
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields and electrostatic discharge.

Features:

- Shear structure of piezoelement operation.
- Built-in preamplifier.
- Electrically insulated sensing element and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Robust design and waterproof casing.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2036-10-02	AP2036-30-02	AP2036-100-02
Conversion factor	1 mV/(m·s⁻²)	3 mV/(m·s⁻²)	10 mV/(m·s⁻²)
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	2 500 m/s²	750 m/s²	250 m/s²
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s⁻² or 10 m·s⁻² = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Coefficient of ambient temperature variation influence (from + 20 °C to + 125 °C) on axial sensitivity	± 0.04 %/°C		
Coefficient of ambient temperature variation influence (from + 20 °C to – 40 °C) on axial sensitivity	± 0.08 %/°C		
Operating frequency range (ripple ± 1 dB)	1 ... 5 000 Hz		
Adjustment resonance frequency in axial direction	> 15 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.03 m/s²	< 0.001 m/s²	< 0.003 m/s²
Output resistance	< 500 Ω		
Power: - voltage - current	 + (9 ... 15) V < 4 mA		
Constant output voltage level, at Un = 15 V	8 ... 11 V		
Insulation strength between contacts 3, 4	1 kV		
Housing material	stainless steel		
Built-in cable length	2 m To be determined by customer		
Connector type	cable termination/2РМТ14КПН4Г1В1		
Supplied accessories	3 screws M4 × 14		
Cable protection	metal hose		

Electrical circuit of AP2036-XX-02



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge and voltage amplifier** AP5240A1B1;
- **matching device** AG04-01 with power unit AS04.

AP2036-XX-03

Purpose:

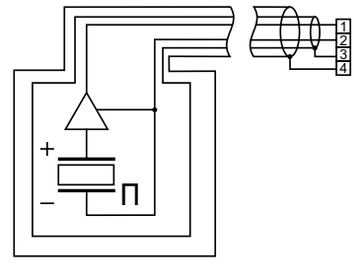
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields and electrostatic discharge.

Features:

- Shear structure of piezoelement operation.
- Built-in preamplifier.
- Electrically insulated sensing element and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Robust design and waterproof casing.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2036-10-03	AP2036-30-03	AP2036-100-03
Conversion factor	1 mV/(m·s^{-2})	3 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	2 500 m/s^2	750 m/s^2	250 m/s^2
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 150 °C		
Coefficient of ambient temperature variation influence (from + 20 °C to + 125 °C) on axial sensitivity	± 0.04 %/°C		
Coefficient of ambient temperature variation influence (from + 20 °C to – 40 °C) on axial sensitivity	± 0.08 %/°C		
Coefficient of ambient temperature variation influence (from + 20 °C to – 40°C) on axial sensitivity	± 0.2 %/°C		
Frequency range (ripple ± 1 dB)	1 ... 5 000 Hz		
Adjustment resonance frequency in axial direction	> 15 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.03 m/s^2	< 0.01 m/s^2	< 0.003 m/s^2
Output resistance	< 500 Ω		
Power: - voltage - current	 + (9 ... 15) V < 4 mA		
Constant output voltage level	5 ... 12 V		
Insulation strength between contacts 3, 4	1 kV		
Housing material	stainless steel		
Built-in cable length	2 m To be determined by customer		
Connector type	cable termination/2РМТ14КПН4Г1В1		
Supplied accessories	3 screws M4 × 14		
Cable protection	metal hose		

Electrical circuit of AP2036-XX-03



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge and voltage amplifier** AP5240A1B1;
- **matching device** AG04-01 with power unit AS04.

AP2085-XX

Purpose:

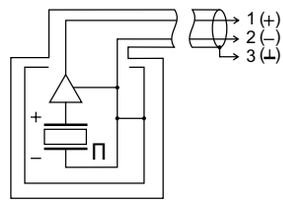
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- Built-in preamplifier.
- Electrically insulated piezoelement and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2085-30	AP2085-100	AP2085-500
Conversion factor	3 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	1 600 m/s^2	500 m/s^2	100 m/s^2
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ...+ 125 °C		
Coefficient of ambient temperature variation influence (from – 40 °C to + 125 °C) on axial sensitivity	0.1 %/°C		
Frequency range (ripple ± 1 dB)	0.5 ... 8 000 Hz		
Adjustment resonance frequency in axial direction	> 25 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.002 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Housing material	stainless steel		
Built-in cable length	2 m (To be determined by customer)		
Connector type	cable termination		
Weight (without cable)	60 g		
Supplied accessories	stud AH0106		
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).		

Electrical circuit of AP2085-XX



Optional accessories:

- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP52400B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01-01, AG02-01;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK16, AK17, AK32, AK34;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM03-02, AM13-01;
- **studs** AH0806, AH1006.

AP2085-XX-01

Purpose:

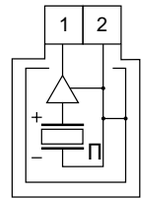
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- Built-in preamplifier.
- Electrically insulated piezoelement and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2085-30-01	AP2085-100-01	AP2085-500-01
Conversion factor	3 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	1 600 m/s^2	500 m/s^2	100 m/s^2
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Coefficient of ambient temperature variation influence (from – 40 °C to + 125 °C) on axial sensitivity	0.1 %/°C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 8 000 Hz		
Self-resonant frequency in the fastened state	> 25 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.002 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Housing material	stainless steel		
Connector type	AR0701 (5/8-24 UNF) To be determined by customer		
Weight (without cable)	60 g		
Supplied accessories	stud AH0106, cable AK31C1A2		
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).		

Electrical circuit of AP2085-XX-01



Optional accessories:

- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP52400B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01-01, AG02-01;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK16, AK17, AK32, AK34;
- **cable adapters** AR01, AR04;
- **magnet mounting bases** AM03-02, AM13-01;
- **studs** AH0806, AH1006.

AP2086-XX, AP2086-XX-01, AP2086-XX-02

Purpose:

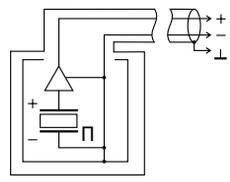
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

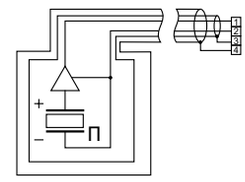
- Built-in preamplifier.
- Electrically insulated piezoelement and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.
- Explosion-proof version 1ExibIICT4 (optional).
- captive screw

Parameter	AP2086-30/ AP2086-30-01/ AP2086-30-02	AP2086-100/ AP2086-100-01/ AP2086-100-02	AP2086-500/ AP2086-500-01/ AP2086-500-02
Conversion factor	3 mV/(m·s^{-2})	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	1 600 m/s^2	500 m/s^2	100 m/s^2
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Coefficient of ambient temperature variation influence (from – 40 °C to + 125 °C) on axial sensitivity	0.2 %/°C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 6 000 Hz		
Self-resonant frequency in the fastened state	> 30 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	0.005 m/s^2	0.003 m/s^2	0.002 m/s^2
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level, at Un = 15 V	8 ... 11 V		
Housing material	stainless steel		
Built-in cable length	2 m To be determined by customer		
Connector type	cable termination cable termination, cable protection bellows, IP68 - (01) AR0701 (5/8-24 UNF) - (02) To be determined by customer		
Weight (without cable)	80 g		
Supplied accessories	cable AK31C1A3 - (02)		
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %).		

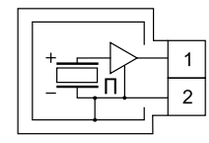
Electrical circuit of AP2086-XX



Electrical circuit of AP2086-XX-01



Electrical circuit of AP2086-XX-02



Optional accessories:

- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP52400B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01-01, AG02-01;
- **calibrators** AT01m, AT02, AT04;
- **cable adapters** AR01, AR04;
- **power units** AS03;
- **magnet mounting bases** AM03-02, AM13-01;
- **cables** AK16, AK17, AK32, AK34 (for AP2086-XX-02);
- **studs** AH0806, AH1006.

AP2071, AP2071-01

Purpose:

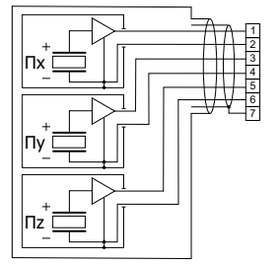
- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- Built-in preamplifier.
- Electrically insulated piezoelement and built-in preamplifier.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Low sensitivity to electromagnetic fields.
- Wide range of power supply voltage and current (for AP2071-01).
- Low level of intrinsic noise.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2071	AP2071-01
Conversion factor	20 mV/(m·s^{-2})	
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured vibroacceleration amplitude	250 m/s^2	
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 55 ... + 125 °C	
Operating frequency range (ripple ± 1 dB)	1 ... 5000 Hz	
Adjustment resonance frequency in axial direction	> 20 kHz	
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.001 m/s^2	
Output resistance	< 500 Ω	
Power: - voltage - current (on 1 channel)	 + (9 ... 15) V < 4 mA	 + 18 ... 30 2 ... 20
Constant output voltage level	8 ... 13 V	
Temperature influence coefficient	± 0.2 %/°C	
Housing material	stainless steel	
Built-in cable length	2 m To be determined by customer	
Cable protection	metal hose	
Connector type	cable termination, metal hose/2РМД18КПН7Г5В1 To be determined by customer	
Weight (without cable)	160 g	
Supplied accessories	4 screws M4 × 30	

Electrical circuit of AP2071



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **matching device** AG04-3-01 with **power unit** AS03, AS04 (for AP2071);
- **matching devices** AG-01-03, AG02-01-03, AG03 (for AP2071-01);
- **power units** AS01, AS07 (для AP2071-01), AS05;
- **measuring amplifiers** AP5110, AP5200 (for AP2071-01);
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP52400B1, AP52400B1T, AP 5240A1B1, AP5240, AP5250 (for AP2071-01).

AP2078-10, AP2078-100

Purpose:

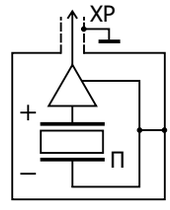
- Measuring acceleration of the objects at high himidity or under water at a depth of up to 50 metres.

Features:

- Shear structure of piezoelement operation.
- Small size and acceptable sensitivity.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.

Parameter	AP2078-10	AP2078-100
Conversion factor	1 mV/(m·s^{-2})	10 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %	
Maximum value of measured vibroacceleration amplitude	5 000 m/s^2	500
Maximum shock limit (peak value)	± 1 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 55 ... + 125 °C	
Operating frequency range (ripple ± 1 dB)	0.5 ... 15 000 Hz	
Self-resonant frequency in the fastened state	> 45 kHz	
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.005 m/s^2	< 0.0035 m/s^2
Output resistance	< 500 Ω	
Power: - voltage - current	 + (15 ... 30) V 2 ... 20 mA	 + (18 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 13 V	
Temperature influence coefficient	± 0.2 %/°C	
Maximum pressure (equivalent depth 50 m)	5 · 10^5 Pa	
Housing material	titanium alloy	
Connector type	cable termination/BNC, СР50-74ФВ To be determined by customer	
Built-in cable length	2 m To be determined by customer	
Weight (without cable)	15 g	
Supplied accessories	stud AH0110	
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %)	

Electrical circuit of AP2078



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02;
- **magnet mounting bases** AM01, AM03, AM05, AM08, AM11;
- **wax mastic** AW01;
- **studs** AH0605, AH0805;
- **insulating stud** AH1010.

AP2006-XX, AP2006-XX-01, AP1006-02

Purpose:

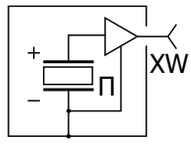
- Measuring seismic and mechanical vibrations (from 0.1 Hz) of large engineering constructions (bridges, buildings, dams, etc.) in portable diagnostic systems and stationary monitoring facilities.

Features:

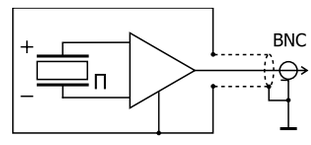
- Shear structure of piezoelement operation.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Wide range of power supply voltage and current.
- Low level of intrinsic noise.

Parameter	AP2006-500	AP2006-5000	AP2006-500-01	AP2006-5000-01	AP2006-500-02	AP2006-5000-02
Conversion factor	50 mV/(m·s⁻²)	500 mV/(m·s⁻²)	50 mV/(m·s⁻²)	500 mV/(m·s⁻²)	50 mV/(m·s⁻²)	500 mV/(m·s⁻²)
Relative coefficient of transverse conversion	< 5 %					
Maximum value of measured vibroacceleration amplitude	100 m/s²	10 m/s²	100 m/s²	10 m/s²	100 m/s²	10 m/s²
Maximum shock limit (peak value)	± 100 g 1 g = 9.807 m·s⁻² or 10 m·s⁻² = 1.02 g					
Operating temperature range	– 55 ... + 125 °C					
Temperature variation sensitivity cutoff frequency HFF 0.2 Hz 3 Hz	 0.002 g/°C 0.0005 g/°C					
Operating frequency range (ripple ± 1 dB)	0.1 ... 2 000 Hz					
Adjustment resonance frequency in axial direction	> 7 kHz					
Noise level, RMS (0.1 ... 2 000 Hz)	< 0,0001 m/s²					
Output resistance	< 500 Ω					
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA					
Constant output voltage level	8 ... 13 V					
Temperature influence coefficient	± 0.2 %/°C					
Run mode setting time	10 s					
Housing material	stainless steel					
Weight (without cable)	180 g					
Connector type	AR03 (10-32 UNF)		cable termination/ BNC		cable termination/ BNC	
Cable protection	–		metal hose		metal hose	
Supplied accessories	cable AK12B6D1 (classic name AK15) stud AH0110		– stud AH0110		– stud AH0110	

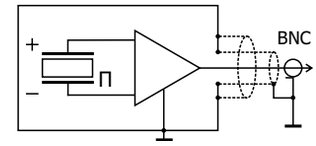
Electrical circuit of AP2006-XX



Electrical circuit of AP2006-XX-01



Electrical circuit of AP2006-XX-02



Optional accessories:

- **calibrators** AT01m, AT02;
- **cable** AK26;
- **insulating stud** AH1010;
- **matching device** AG05-01;
- **power unit** AS06;
- **magnet mounting bases** AM03;
- **insulating magnet** AM05;
- **wax mastic** AW01;

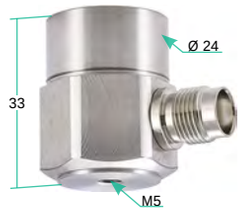
AP2050-100, AP2050-500, AP2050-1000

Purpose:

- Measuring seismic and mechanical vibrations of large engineering constructions (bridges, buildings, dams, etc.) in portable diagnostic systems and stationary monitoring facilities.

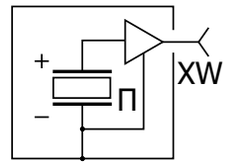
Features:

- Built-in preamplifier.



Parameter	AP2050-100	AP2050-500	AP2050-1000
Conversion factor	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})	100 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 4 %		
Maximum value of measured vibroacceleration amplitude	500 m/s^2	100 m/s^2	50 m/s^2
Maximum shock limit (peak value)	± 100 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 5 000 Hz		
Adjustment resonance frequency in axial direction	> 15 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.0002 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 13 V		
Temperature influence coefficient	± 0.2 %/°C		
Run mode setting time	5 s		
Housing material	stainless steel		
Connector type	TNC		
Weight (without cable)	65 g		
Supplied accessories	cable AK12D6D1 (classic name AK24), stud AH0110		
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %)		

Electrical circuit of AP2050-XX



Optional accessories:

- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP52400B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **calibrators** AT01m, AT02, AT04;
- **matching devices** AG01, AG02;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM08;
- **stud** AH0805;
- **insulating stud** AH1010.

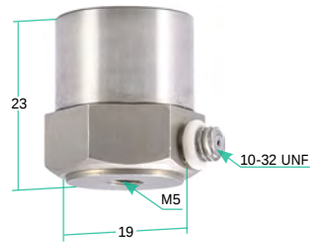
AP2099-100, AP2099-500, AP2099-1000, AP2099-100-03, AP2099-500-03, AP2099-1000-03

Purpose:

- Measuring seismic and mechanical vibrations of large engineering constructions (bridges, buildings, dams, etc.) in portable diagnostic systems and stationary monitoring facilities.

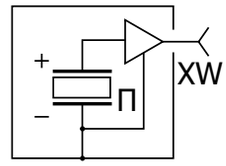
Features:

- Built-in preamplifier.

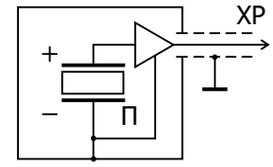


Parameter	AP2099-100 AP2099-100-03	AP2099-500 AP2099-500-03	AP2099-1000 AP2099-1000-03
Conversion factor	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})	100 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	500 m/s^2	100 m/s^2	50 m/s^2
Maximum shock limit (peak value)	± 2 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz		
Adjustment resonance frequency in axial direction	> 24 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.0005 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	10 ... 13 V		
Run mode setting time	4 s		
Housing material	stainless steel (titanium alloy) To be determined by customer		
Connector type	AR03 (10-32 UNF) cable termination - (03)		
Weight (without cable)	35 g		
Supplied accessories	cable AK12B6D1 (classic name AK15), stud AH0110 stud AH0110 - (03)		
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %)		

Electrical circuit of AP2099



Electrical circuit of AP2099-XXX-03



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP52400B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805, AH0605;
- **insulating stud** AH1010.

AP2099-100-01, AP2099-500-01, AP2099-1000-01, AP2099-100-02, AP2099-500-02, AP2099-1000-02

Purpose:

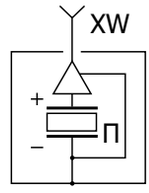
- Measuring seismic and mechanical vibrations of large engineering constructions (bridges, buildings, dams, etc.) in portable diagnostic systems and stationary monitoring facilities.

Features:

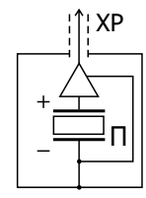
- Built-in preamplifier.

Parameter	AP2099-100-01 AP2099-100-02	AP2099-500-01 AP2099-500-02	AP2099-1000-01 AP2099-1000-02
Conversion factor	10 mV/(m·s^{-2})	50 mV/(m·s^{-2})	100 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %		
Maximum value of measured vibroacceleration amplitude	500 m/s^2	100 m/s^2	50 m/s^2
Maximum shock limit (peak value)	± 2 500 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 55 ... + 125 °C		
Operating frequency range (ripple ± 1 dB)	0.5 ... 10 000 Hz		
Adjustment resonance frequency in axial direction	> 24 kHz		
Noise level, RMS (1 Hz ÷ 10 kHz)	< 0.0005 m/s^2		
Output resistance	< 500 Ω		
Power: - voltage - current	 + (18 ... 30) V 2 ... 20 mA		
Constant output voltage level	10 ... 13 V		
Run mode setting time	4 s		
Housing material	stainless steel (titanium alloy) To be determined by customer		
Connector type	AR03 (10-32 UNF) - (01) cable termination - (02)		
Weight (without cable)	45 g		
Supplied accessories	cable AK12B6D1 (classic name AK15), stud AH0110 - (01) stud AH0110 - (02)		
Options	T, N TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4. Normilized sensitivity (nominal deviation not more than 2 %)		

Electrical circuit of AP2099



Electrical circuit of AP2099-XXX-02



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP52400B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **probe** AN01;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **stud** AH0805, AH0605;
- **insulating stud** AH1010.

AP3098

Purpose:

- Measuring vibration and shock acceleration in diagnostic systems and laboratory tests.

Features:

- Automatic selection of two operating modes depending on the amplifier input:
  - with a built-in IEPE preamplifier;
  - with a PE charge output.
- Signal transmission in the IEPE mode at a distance of up to 500 m.
- High amplitude range in the PE mode.
- High shock resistance.
- Extended operating temperature range.
- Shear-type structure of piezoelement operation.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Can measure quasi-stationary accelerations for PE mode.

Parameter	AP3098
Conversion factor (± 10 %)	2 mV/(m·s^{-2})
Relative coefficient of transverse conversion	< 5 %
Maximum value of measured acceleration amplitude: - IEPE mode - PE mode	 2 500 m/s^2 50 000 m/s^2
Nonlinearity of amplitude response within the range from 0.01 m/s^2 to the maximum	± 4 %
Maximum shock limit (peak value)	10 000 g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 55 ... + 150 °C
Operating frequency range (ripple ± 1 dB)	0.5 ... 12 000 Hz
Self-resonant frequency in the fastened state	> 35 kHz
Noise level in IEPE mode, RMS (1 Hz ÷ 10 kHz)	< 0.01 m/s^2
Electric capacity for PE mode	800 ... 1 000 pF
Power supply for IEPE mode: - voltage - current	 + (18 ... 30) V 2 ... 20 mA
Constant output voltage level in IEPE mode	9 ... 13 V
Temperatrue influence coefficient	± 0.2 %/°C
Housing material	stainless steel
Type of connector	AR03 (10-32 UNF)
Weight	25 g
Supplied accessories	cable AK03B6B6 (classic name) AK04 stud AH0105

Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5210, AP5220, AP5230, AP5240, AP5250, AP5030;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **cables** AK05, AK08, AK10;
- **magnet mounting bases** AM01, AM03, AM05, AM08;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **studs** AH0805;

AP2035T-XX, AP2035T-XX-01

Purpose:

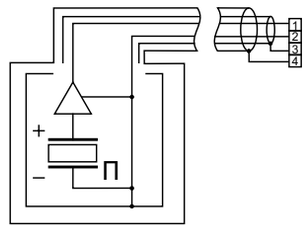
- Measuring vibration acceleration in diagnostic systems with standard current output (4–20 mA).

Features:

- Built-in electronic amplifier (normalizing transducer) converts a signal proportional to vibration acceleration to a standard current signal 4 ... 20 mA.
- Electric insulation of piezoelement and built-in electronic transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AP2035T-0,5	AP2035T-0,25	AP2035T-0,5-01	AP2035T-0,25-01
Conversion factor for current cignal 4 ... 20 mA	0.05 mA/m·s^{-2}	0.025 mA/m·s^{-2}	0.05 mA/m·s^{-2}	0.025 mA/m·s^{-2}
Relative coefficient of transverse conversion	< 5 %			
Maximum value of measured vibroacceleration amplitude	320 m/s^2	640 m/s^2	320 m/s^2	640 m/s^2
Maximum shock limit (peak value)	± 50 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			
Operating temperature range	– 40 ...+ 80 °C			
Operating frequency range (ripple ± 1 dB)	1 ... 8 000 Hz			
Adjustment resonance frequency in axial direction	> 25 kHz			
Amplitude nonlinearity	± 2.5 %			
Load resistance in current output circuit at power supply voltage 9 ... 30 V	100 ... 250 Ω			
Power supply voltage	+ (8 ... 25) V			
Temperature influence coefficient	± 0.2 %/°C			
Run mode setting time	< 4 s			
Housing material	stainless steel			
Built-in cable length	2 m To be determined by customer			
Cable protection	metal hose			
Weight (without cable)	140 g		95 g	
Supplied accessories	stud AH0106		screw M6-8g × 50	

Electrical circuit of AP2035T-XX, AP2035T-1-XX



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **power unit** AS03;
- **magnet mounting base** AM13-01;
- **stud** AH1006.

AP35D, AP35D-01

Purpose:

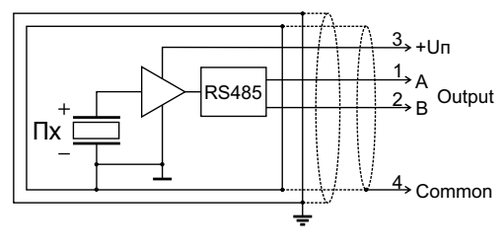
- Measuring vibration acceleration, vibration velocity (AP35D), vibration displacement (AP35D-01), oscillation frequency (AP35D-01) and temperature in diagnostic systems and laboratory tests under strong electromagnetic fields.

Features:

- Electrically insulated piezoelement and built-in preamplifier.
- Low sensitivity to electromagnetic fields.
- Transmission of measured values via a serial bi-directional RS-485 channel at a distance of up to 1000 m.
- Connecting up to 128 sensors on one line of RS485 interface.

Parameter	AP35D	AP35D-01
Vibration acceleration measuring range	0.05... 20 (RMS) g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g (To be determined by customer)	0.05... 20 (peak) g
Vibration velocity measuring range, RMS	0.5... 200 mm/s To be determined by customer	–
Vibration displacement amplitude measuring range	–	0.01...12 mm To be determined by customer
Frequency measuring range	–	10...100 Hz
Temperature measuring range	– 40 ...+ 85 °C	
Frequency range at -1 dB:		
for vibration acceleration	1 ... 10 000 Hz	10 ... 100 Hz
for vibration velocity	10 ... 1 000 Hz	–
for vibration displacement	–	10 ... 100 Hz
Maximum shock limit (peak value)	± 100 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Basic relative error of measuring vibration acceleration, velocity and displacement (at calibraiton frequency: 160 Hz for AP35D, 40 Hz for AP35D-01)	± 15(± 2) %	
Additional measurement error within temperatures from – 40 to + 85 °C	± 5 %	
Basic relative error of frequency measurements	± 2 %	
Basic relative error of temperature measurements	± 10 %	
Cross sensitivity	< 5 %	
Operating temperature range	– 40 ...+ 85 °C	
Self-resonant frequency in the fastened state	> 35 kHz	
Output	RS-485 interface, Modbus RTU protocol	
Power supply voltage	5... 12 V	
Current consumption	< 20 mA	
Run mode setting time	< 4 s	
Housing material	stainless steel	
Built-in cable length	2 m (To be determined by customer)	
Weight (without cable)	50 g	
Supplied accessories	screw M6-8g × 55	

Electrical circuit of AP35D



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **matching device** GT15.

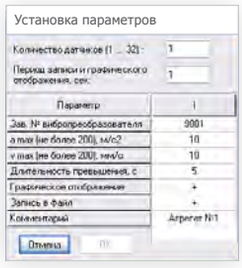
AP35D Explorer software

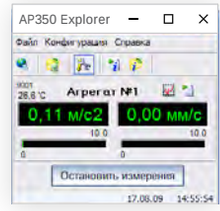
Purpose:

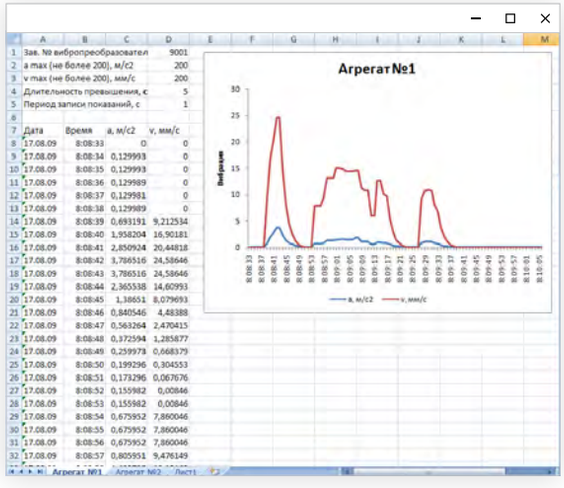
- Monitoring of vibration (vibroacceleration and vibrovelocity) and temperature parameters measured by vibration transducers AP35D.

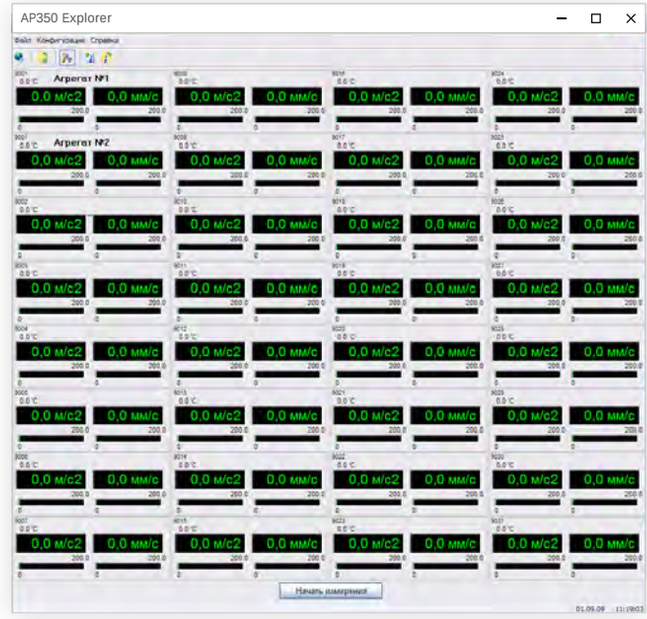
Features:

- User-friendly operator interface.
- Digital, scale and graphic display of measured vibration parameters.
- Color change of digital and scale indicators from green to red at varying vibration from normal to limiting value, respectively.
- Alarm indication.
- File recording of measurable vibration parameters (vibroacceleration and vibrovelocity).
- Conversion of recorded data to MS Excel format.
- Configuration setup, storage and loading.
- Indication recording from up to 32 vibration transducers.









Vibration velocity transducers

Measuring vibration velocity of industrial equipment elements
in stationary vibration diagnostic systems.

AV01, AV01-01

Purpose:

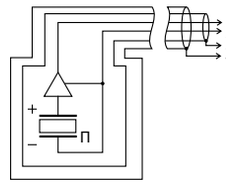
- Measuring vibration velocity in stationary vibrodiagnostic systems.

Features:

- The built-in electronic amplifier-transducer ensures conversion of the piezoelement signal to a low-resistance voltage signal proportional to vibration velocity.
- Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.

Parameter	AV01	AV01-01
Conversion factor at basic frequency 159. 6 Hz	4.0 ±0.4 mV/mm/s	
Vibration velocity measuring range	0.1 ... 1 000 мм/s	
Vibration velocity frequency range	2 ... 2 000 Hz	50 ... 5 000 Hz
Variation in frequency response relative to the basic frequency value 159. 15 Hz, within:	from 3 to – 12.5 %	
Relative coefficient of transverse conversion	< 5 %	
Maximum shock limit (peak value)	± 500 g 1 g = 9.807 $m \cdot s^{-2}$ or 10 $m \cdot s^{-2}$ = 1.02 g	
Self-resonant frequency in the fastened state	> 25 kHz	
Operating temperature range	– 40 ... + 125 °C	
Ambient temperature influence coefficients, within:	± 0.2 %/°C	
Root-mean-square value of noise voltage, not greater than	0.05 mm/s	
Maximum output voltage at nonlinear distortion factor not higher than 5%	± 5 V	
Power: - external source of voltage dc - current	 + (18 ... 30) V 3.6 ... 20 mA	
Constant output voltage level	9 ... 13 V	
Built-in cable length	2 m (To be determined by customer)	
Housing material	stainless steel	
Connector type	4 mechanical clamp terminals (A4) To be determined by customer	
Weight (without cable)	70 g	
Cable protection	metal hose	
Supplied accessories	stud AH0106	

Electrical circuit of AV01



Optional accessories:

- **calibrators** AT01m, AT02;
- **magnet mounting bases** AM04, AM13-01;
- **matching devices** AG01-01, AG02-01 with power unit AS03;
- **studs** AH0610, AH0806, AH1006;
- **power units** AS01, AS07.

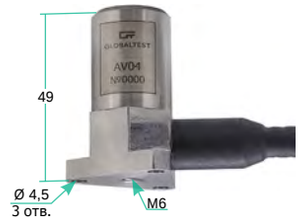
AV04

Purpose:

- Measuring vibration velocity in stationary vibrodiagnostic systems according to GOST ISO 10816 and GOST ISO 2954.

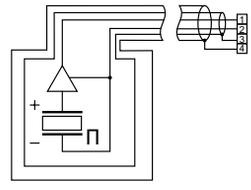
Features:

- The built-in electronic amplifier-transducer ensures conversion of the piezoelement signal to a low-resistance voltage signal proportional to vibration velocity.
- Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.



Parameter	AV04
Conversion factor at basic frequency 80 Hz	4.4 ± 0.44 mV/mm/s
Vibration velocity measuring range	0.1 ... 500 mm/s
Operating frequency range	2 ... 3 000 Hz
Variation in frequency response relative to the basic frequency value 80 Hz : - within frequencies 2 ... 3 000 Hz - within frequencies 5 ... 2 000 Hz	 ± 2.5 dB ± 1.0 dB
Relative coefficient of transverse conversion	< 5 %
Operating temperature range	– 50 ... + 125 °C
Ambient temperature influence coefficients, within:	± 0.1 %/°C
Intrinsic noise RMS reduced to the input value	< 0.05 mm/s
Maximum output voltage at nonlinear distortion factor not higher than 5%	± 5 V
Output resistance	< 500 Ω
Power: - external source of voltage dc - current	 + (18 ... 30) V < 8 mA
Constant output voltage level	10 ... 23 V
Built-in cable length	2 m To be determined by customer
Housing material	stainless steel
Weight (without cable)	95 g
Cable protection	metal hose
Environments protection rating	IP65
Connector type	4 mechanical clamp terminals (A4) To be determined by customer
Supplied accessories	3 screws M4 × 14

Electrical circuit of AV04



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **matching device** AG04-01;
- **power unit** AS03;
- **magnet mounting bases** AM01, AM03, AM04;
- **studs** AH0610, AH0806, AH1006.

AV02, AV02-01

Purpose:

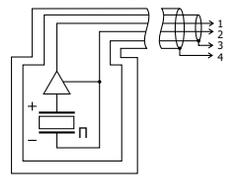
- Measuring vibration velocity in stationary diagnostic systems with standard current output (4–20 mA).

Features:

- Conversion of a piezoelement signal proportional to vibration velocity into a standard current signal 4 ... 20 mA.
- HART-protocol (Highway Addressable Remote Transducer Protocol) - digital industrial protocol for transfer of data superimposed on a current analog loop of 4 ... 20 mA.
- Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 1 000 m.
- Evaluation of machines vibration according to GOST ISO 10816-97, GOST ISO 10816-3-2002.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AV02-0,08	AV02-0,8	AV02-01-0,08	AV02-01-0,8
Conversion factor for vibration velocity to current signal 4 ... 20 mA	0.08 ± 0.008 mA·s/mm	0.8 ± 0.08 mA·s/mm	0.08 ± 0.008 mA·s/mm	0.8 ± 0.08 mA·s/mm
Vibration velocity measuring range	0.1 ... 200 mm/s	0.1 ... 20 mm/s	0.1 ... 200 mm/s	0.1 ... 20 mm/s
Vibration velocity frequency range	10 ... 1 000 Hz			
Variation in frequency response relative to the basic frequency value 159. 15 Hz, within:	from 3 to -12.5 %			
Relative coefficient of transverse conversion	< 5 %			
Self-resonant frequency in the fastened state	> 25 kHz			
Operating temperature range	– 40 ... + 85 °C			
Ambient temperature influence coefficients, within:	± 0.2 %/°C			
Power from external source of voltage dc	+ (9 ... 25) V			
Load resistance in the current output circuit: - at power supply voltage 9 V - at power supply voltage 25 V	 ≤ 100 Ω ≤ 800 Ω			
Run mode setting time	< 4 s			
Housing material	stainless steel			
Explosion-proofness				
Built-in cable length	2 m (To be determined by customer)			
Connector type	4 mechanical clamp terminals (A4)			
Weight (without cable)	95 g			
Cable protection	metal hose			
Supplied accessories	stud AH0106		screw M6-8g × 55	

Electrical circuit of AV02



Optional accessories:

- **calibrators** AT01m, AT02;
- **power unit** AS03;
- **magnet mounting base** AM13-01;
- **stud** AH1006.

AV02-02, AV02-03

Purpose:

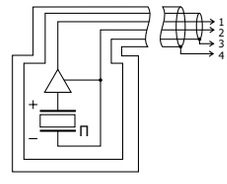
- Measuring vibration velocity in stationary diagnostic systems with standard current output (4–20 mA).

Features:

- Conversion of a piezoelement signal proportional to vibration velocity into a standard current signal 4 ... 20 mA.
- HART-protocol (Highway Addressable Remote Transducer Protocol) - digital industrial protocol for transfer of data superimposed on a current analog loop of 4 ... 20 mA.
- Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 500 m.
- Evaluation of machines vibration according to GOST ISO 10816-3-2002.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AV02-02-0,08	AV02-02-0,8	AV02-03-0,08	AV02-03-0,8
Conversion factor for vibration velocity to current signal 4 ... 20 mA	0.08 ± 0.004 mA·s/mm	0.8 ± 0.04 mA·s/mm	0.08 ± 0.004 mA·s/mm	0.8 ± 0.04 mA·s/mm
Vibration velocity measuring range, RMS	0.1 ... 200 mm/s	0.1 ... 20 mm/s	0.1 ... 200 mm/s	0.1 ... 20 mm/s
Operating frequency range	2 ...1 000 Hz			
Variation in frequency response relative to the basic frequency value 159. 15 Hz, within:	from 3 to -12.5 %			
Relative coefficient of transverse conversion	< 5 %			
Self-resonant frequency in the fastened state	> 25 kHz			
Maximum vibration acceleration (peak value)	100 m/s²			
Operating temperature range	– 40 ... + 85 °C			
Ambient temperature influence coefficients, within:	± 0.2 %/°C			
Power from external source of voltage dc	+ (9 ... 25) V			
Load resistance in the current output circuit: - at power supply voltage 9 V - at power supply voltage 25 V	 ≤ 100 Ω ≤ 850 Ω			
Run mode setting time	< 4 s			
Housing material	stainless steel			
Built-in cable length	2 m To be determined by customer			
Connector type	4 mechanical clamp terminals (A4)			
Weight (without cable)	95 g			
Cable protection	metal hose			
Supplied accessories	stud AH0106		screw M6-8g × 55	

Electrical circuit of AV02-02, AV02-03



Optional accessories:

- **calibrators** AT01m, AT02;
- **power unit** AS03;
- **magnet mounting base** AM13-01;
- **stud** AH1006.

AV02-04, AV02-05

Purpose:

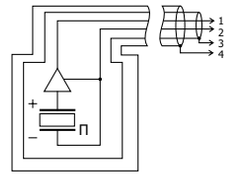
- Measuring vibration velocity in stationary diagnostic systems with standard current output (4–20 mA).

Features:

- Conversion of a piezoelement signal proportional to vibration velocity into a standard current signal 4 ... 20 mA.
- Extended operating temperature range;
- Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 500 m.
- Evaluation of machines vibration according to GOST ISO 10816-3-2002.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AV02-04-0,08	AV02-04-0,8	AV02-05-0,08	AV02-05-0,8
Conversion factor for vibration velocity to current signal 4 ... 20 mA	0.08 ± 0.004 mA·s/mm	0.8 ± 0.04 mA·s/mm	0.08 ± 0.004 mA·s/mm	0.8 ± 0.04 mA·s/mm
Vibration velocity measuring range, RMS	0.1 ... 200 mm/s	0.1 ... 20 mm/s	0.1 ... 200 mm/s	0.1 ... 20 mm/s
Operating frequency range	10 ...1 000 Hz			
Variation in frequency response relative to the basic frequency value 159. 15 Hz, within:	from 3 to -12.5 %			
Relative coefficient of transverse conversion	< 5 %			
Self-resonant frequency in the fastened state	> 25 kHz			
Maximum vibration acceleration (peak value)	100 m/s²			
Operating temperature range	– 60 ... + 150 °C			
Ambient temperature influence coefficients, within:	± 0.2 %/°C			
Power from external source of voltage dc	+ (9 ... 25) V			
Load resistance in the current output circuit: - at power supply voltage 9 V - at power supply voltage 25 V	 ≤ 100 Ω ≤ 850 Ω			
Run mode setting time	< 4 s			
Housing material	stainless steel			
Built-in cable length	2 m To be determined by customer			
Connector type	4 mechanical clamp terminals (A4)			
Weight (without cable)	95 g			
Cable protection	metal hose			
Supplied accessories	stud AH0106		screw M6-8g × 55	

Electrical circuit of AV02



Optional accessories:

- **calibrators** AT01m, AT02;
- **power unit** AS03;
- **magnet mounting base** AM13-01;
- **stud** AH1006.

AV02-06, AV02-07

Purpose:

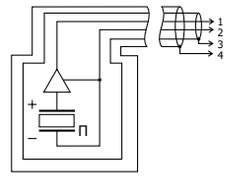
- Measuring vibration velocity in stationary diagnostic systems with standard current output (4–20 mA).

Features:

- Conversion of a piezoelement signal proportional to vibration velocity into a standard current signal 4 ... 20 mA.
- Extended operating temperature range;
- Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 500 m.
- Evaluation of machines vibration according to GOST ISO 10816-3-2002.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AV02-06-0,08	AV02-06-0,8	AV02-07-0,08	AV02-07-0,8
Conversion factor for vibration velocity to current signal 4 ... 20 mA	0.08 ± 0.004 mA·s/mm	0.8 ± 0.04 mA·s/mm	0.08 ± 0.004 mA·s/mm	0.8 ± 0.04 mA·s/mm
Vibration velocity measuring range, RMS	0.1 ... 200 mm/s	0.1 ... 20 mm/s	0.1 ... 200 mm/s	0.1 ... 20 mm/s
Operating frequency range	2 ...1 000 Hz			
Variation in frequency response relative to the basic frequency value 159. 15 Hz, within:	from 3 to -12.5 %			
Relative coefficient of transverse conversion	< 5 %			
Self-resonant frequency in the fastened state	> 25 kHz			
Maximum vibration acceleration (peak value)	100 m/s^2			
Operating temperature range	– 60 ... + 1250°C			
Ambient temperature influence coefficients, within:	± 0.2 %/°C			
Power from external source of voltage dc	+ (9 ... 25) V			
Load resistance in the current output circuit: - at power supply voltage 9 V - at power supply voltage 25 V	 ≤ 100 Ω ≤ 850 Ω			
Run mode setting time	< 4 s			
Housing material	stainless steel			
Built-in cable length	2 m To be determined by customer			
Connector type	4 mechanical clamp terminals (A4)			
Weight (without cable)	95 g			
Cable protection	metal hose			
Supplied accessories	stud AH0106		screw M6-8g × 55	

Electrical circuit of AV02



Optional accessories:

- **calibrators** AT01m, AT02;
- **power unit** AS03;
- **magnet mounting base** AM13-01;
- **stud** AH1006.

Vibration displacement transducers

Measuring vibration displacement of machine and mechanism parts in stationary diagnostic systems.

D100, D100-01, D100-02, D100-03

Purpose:

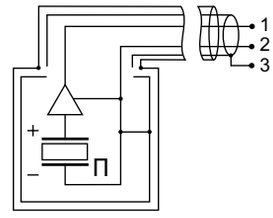
- Measuring vibration displacement in stationary diagnostic systems with standard current output (4–20 mA).

Features:

- Conversion of a piezoelement signal proportional to vibration displacement into a standard current signal 4 ... 20 mA.
- Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 500 m.
- Evaluation of machines vibration according to GOST ISO 10816-97, GOST ISO 10816-3-2002.

Parameter	D100	D100-02	D100-01	D100-03
Conversion factor for vibrodisplacement to current signal 4 ... 20 mA	0.08 ± 0.004 mA/µm			
Frequency range at –1 dB	10 ... 1 000 Hz	2 ... 1 000 Hz	10 ... 1 000 Hz	2 ... 1 000 Hz
Vibration displacement measuring range, RMS	0.2... 200 µm			
Maximum shock limit (peak value)	± 50 g 1 g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g			
Operating temperature range	– 40 ... + 85 °C			
Cross sensitivity	< 5 %			
Amplitude nonlinearity	± 3 %			
Self-resonant frequency in the fastened state	> 25 kHz			
Load resistance in the current output circuit: - at power supply voltage 9 V - at power supply voltage 25 V	 ≤ 100 Ω ≤ 800 Ω			
Power supply voltage	+ (9 ... 25) V			
Run mode setting time	< 4 s			
Housing material	stainless steel			
Built-in cable length	2 m To be determined by customer (can be increased up to 15 m)			
Cable protection	metal hose			
Weight (without cable)	95 g			
Supplied accessories	Stud AH0106		screw M6-8g × 55, nut Ø 6 mm	

Electrical circuit of D100, D100-02



Optional accessories:

- **calibrators** AT01m, AT02, AT04;
- **magnet mounting base** AM04;
- **insulating stud** AH1010.

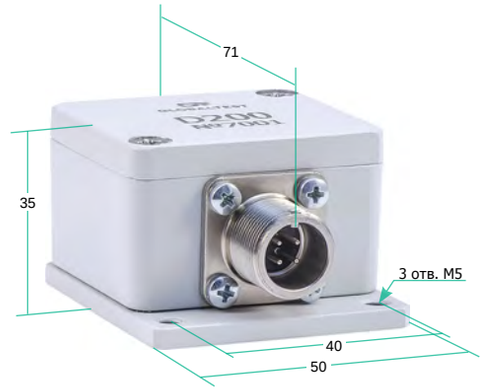
D200

Purpose:

- Measuring vibration displacement of machine and mechanism parts in stationary diagnostic systems.

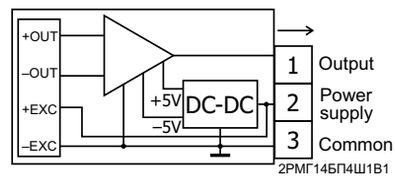
Features:

- Analog voltage output.
- Transmission of output signal at a distance of up to 100 m.
- Procedure for assessing technical condition of major equipment at service stations 70238424.27.140.001-2011 (for hydroelectric power plants).
- MEMS technology.

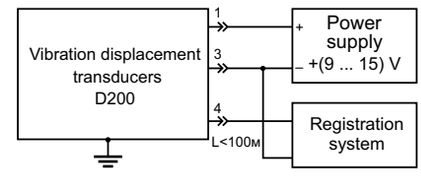


Parameter	D200
Vibration displacement measuring range	± 500 μm
Frequency range at –1 dB	0.8 ... 200 Hz
Conversion factor	10 ± 0.5 mV/μm
Operating temperature range	– 20 ... + 85 °C
Coefficient of temperature variation influence on conversion factor	± 0.15 %/°C
Cross sensitivity	< 5 %
Amplitude nonlinearity	1.5 %
Maximum shock limit	± 500 g 1 g = 9.807 m·s^{-2}
Noise level	± 50 mV
Power supply voltage	+ (9 ... 15) V
Current consumption	< 15 mA
Output resistance	< 500 Ω
Maximum output voltage	± 5 V
Housing material	aluminium
Weight	150 g
Overall dimensions	71 × 50 × 35 mm
Connector type	2РМГ14БП4Ш1В1
Supplied accessories	cable АК51Р6А4, stud АН0105, magnet mounting base АМ08

Electrical circuit of D200



Wiring diagram of D200

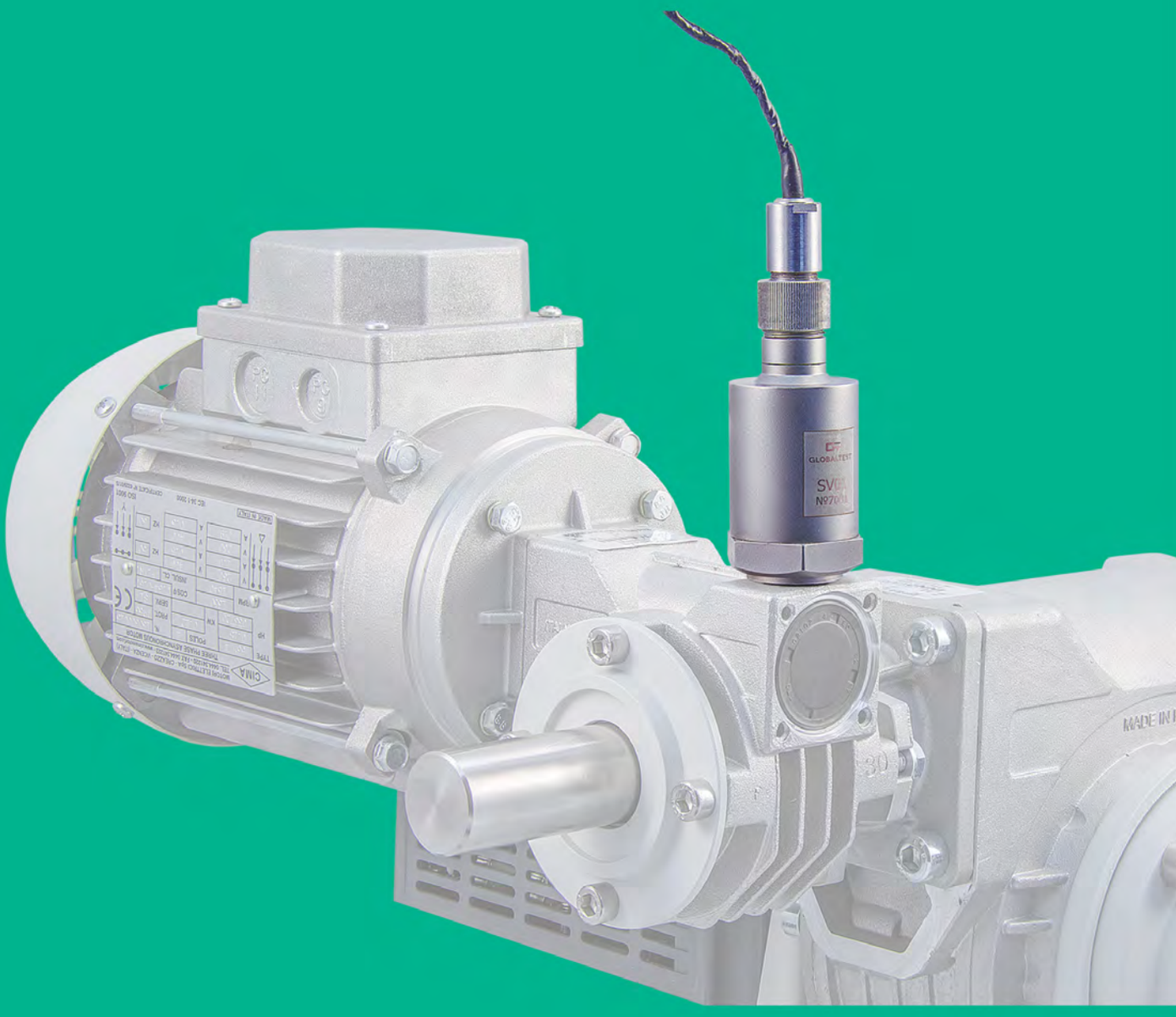


Optional accessories:

- **calibrators** АТ01, АТ02;
- **cable** АК33;
- **insulating stud** АН1010.

Vibration switches

Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.



SV01

Purpose:

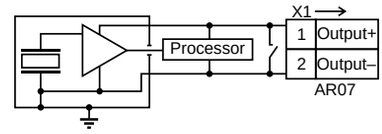
- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

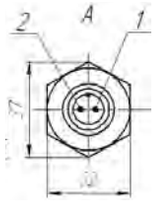
Features:

- Two-wire connection line.
- No additional power supply needed.
- Signal transmission at a distance of up to 100 m.
- Custom-programmed main parameters.
- Conformity to GOST ГОСТ ISO 10816.
- Explosion-proof version 1ExibIICT4 (optional).

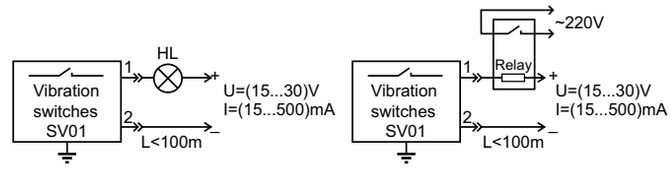
Parameter	SV01
Operating frequency range at – 1 dB	2 ... 1 000 Hz
Preset operating threshold value (RMS) / minimum operation thresholding step	1 ... 99.9/0.1; 100 ... 200/1 mm/s To be determined by customer or programmed via SVProg
Relative error of operation thresholding	± 3 %
Relative additional error in the temperature range – 40 ... + 85 °C	± 5 %
Run mode setting time after power-on	< 10 s
Actuation signal criteria	informative signal is continuously exceeding the threshold value during 0–9 s To be determined by customer or programmed via SVProg
Actuation mode	blocking / self-recovery To be determined by customer or programmed via SVProg
Self-recovery conditions	vibration decrease by 6% from operating threshold
Vibration control delay (after setting an operation or self-recovery mode)	0 or 20 s To be determined by customer or programmed via SVProg
Relay contact parameters: - switching current - switching voltage - voltage drop: - at 15 mA - at 500 mA - position	 15 ... 500 mA 15 ... 30 V < 4 V < 7 V closed / open To be determined by customer or programmed via SVProg
Current concumption in an open position	< 1.5 mA
Operating temperature range	– 40 ... + 85 °C
Connector type	AR07
Housing material	stainless steel
Weight (without cable)	120 g
Supplied accessories	cable AK31C1A3, stud AH0106

Electrical circuit of SV01





Examples of connection schemes for vibration switch SV01



Optional accessories:

- **calibrator** AT02;
- **programming panel** SVProg;
- **stud** AH1006.

SV01B

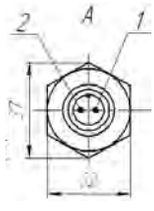
Purpose:

- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

Features:

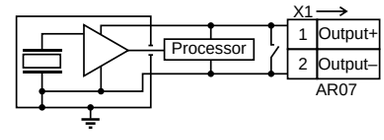
- Two-wire connection line.
- No additional power supply needed.
- Signal transmission at a distance of up to 100 m.
- Custom-programmed main parameters.
- Conformity to GOST ГОСТ ISO 10816.
- Explosion-proof version 1ExibIICT4.

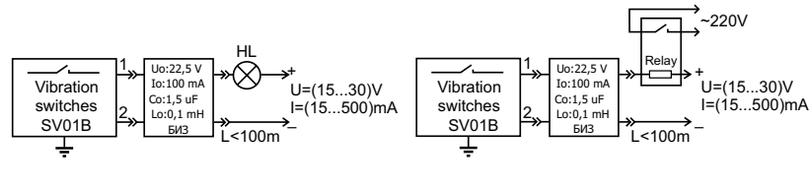
Parameter	SV01B
Operating frequency range at – 1 dB	2 ... 1 000 Hz
Preset operating threshold value (RMS) / minimum operation thresholding step	1 ... 99.9/0.1; 100 ... 200/1 mm/s To be determined by customer or programmed via SVProg
Relative error of operation thresholding	± 3 %
Relative additional error in the temperature range – 40 ... + 85 °C	± 5 %
Run mode setting time after power-on	< 10 s
Actuation signal criteria	informative signal is continuously exceeding the threshold value during 0–9 s To be determined by customer or programmed via SVProg
Actuation mode	blocking / self-recovery To be determined by customer or programmed via SVProg
Self-recovery conditions	vibration decrease by 6% from operating threshold
Vibration control delay (after setting an operation or self-recovery mode)	0 or 20 s To be determined by customer or programmed via SVProg
Relay contact parameters: - switching current - switching voltage - voltage drop: - at 15 mA - at 500 mA - position	 15 ... 500 mA 15 ... 30 V < 4 V < 7 V closed / open To be determined by customer or programmed via SVProg
Current concumption in an open position	< 1.5 mA
Operating temperature range	– 40 ... + 85 °C
Connector type	AR07
Housing material	stainless steel
Weight (without cable)	120 g
Supplied accessories	cable AK31C1A3, stud AH0106



Examples of connection schemes for vibration switch SV01B

Electrical circuit of SV01B





Optional accessories:

- **calibrator** AT02;
- **programming panel** SVProg;
- **stud** AH1006.

SV01-01

Purpose:

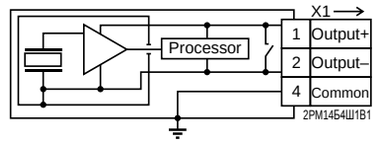
- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

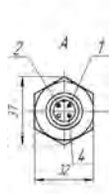
Features:

- Three-wire connection line.
- No additional power supply needed.
- Signal transmission at a distance of up to 100 m.
- Custom-programmed main parameters.
- Conformity to GOST ISO 10816.
- Explosion-proof version 1ExibIICT4 (optional).

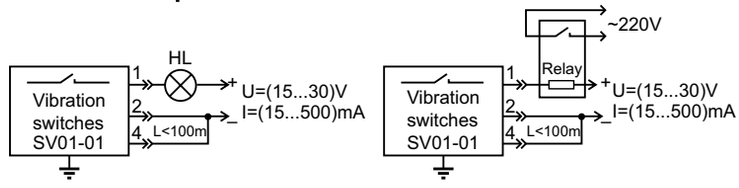
Parameter	SV01-01
Operating frequency range at – 1 dB	2 ... 1 000 Hz
Preset operating threshold value (RMS) / minimum operation thresholding step	1 ... 99.9/0.1; 100 ... 200/1 mm/s To be determined by customer or programmed via SVProg
Relative error of operation thresholding	± 3 %
Relative additional error in the temperature range – 40 ... + 85 °C	± 5 %
Run mode setting time after power-on	< 10 s
Actuation signal criteria	informative signal is continuously exceeding the threshold value during 0–9 s To be determined by customer or programmed via SVProg
Actuation mode	blocking / self-recovery To be determined by customer or programmed via SVProg
Self-recovery conditions	vibration decrease by 6% from operating threshold
Vibration control delay (after setting an operation or self-recovery mode)	0 or 20 s To be determined by customer or programmed via SVProg
Relay contact parameters: - switching current - switching voltage - voltage drop: - at 15 mA - at 500 mA - position	 15 ... 500 mA 15 ... 30 V < 4 V < 7 V closed / open To be determined by customer or programmed via SVProg
Current concumption in an open position	< 1.5 mA
Operating temperature range	– 40 ... + 85 °C
Connector type	2РМ14Б4Ш1В1
Housing material	stainless steel
Weight (without cable)	120 g
Supplied accessories	cable AK31P6A2, stud AH0106

Electrical circuit of SV01-01





Examples of connection schemes for vibration switch SV01-01



Optional accessories:

- **calibrator** AT02;
- **programming panel** SVProg;
- **stud** AH1006.

SV01-01B

Purpose:

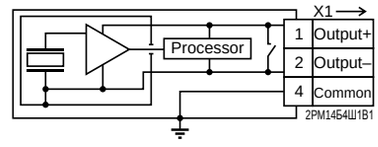
- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

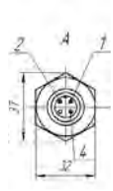
Features:

- Three-wire connection line.
- No additional power supply needed.
- Signal transmission at a distance of up to 100 m.
- Custom-programmed main parameters.
- Conformity to GOST ISO 10816.
- Explosion-proof version 1ExibIICT4.

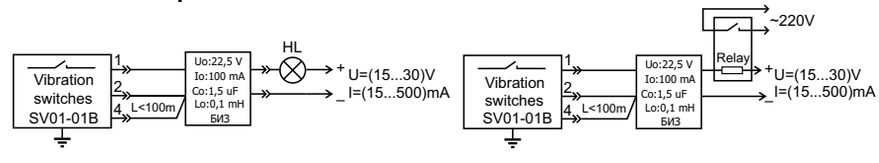
Parameter	SV01-01B
Operating frequency range at – 1 dB	2 ... 1 000 Hz
Preset operating threshold value (RMS) / minimum operation thresholding step	1 ... 99.9/0.1; 100 ... 200/1 mm/s To be determined by customer or programmed via SVProg
Relative error of operation thresholding	± 3 %
Relative additional error in the temperature range – 40 ... + 85 °C	± 5 %
Run mode setting time after power-on	< 10 s
Actuation signal criteria	informative signal is continuously exceeding the threshold value during 0–9 s To be determined by customer or programmed via SVProg
Actuation mode	blocking / self-recovery To be determined by customer or programmed via SVProg
Self-recovery conditions	vibration decrease by 6% from operating threshold
Vibration control delay (after setting an operation or self-recovery mode)	0 or 20 s To be determined by customer or programmed via SVProg
Relay contact parameters: - switching current - switching voltage - voltage drop: - at 15 mA - at 500 mA - position	 15 ... 500 mA 15 ... 30 V < 4 V < 7 V closed / open To be determined by customer or programmed via SVProg
Current concumption in an open position	< 1.5 mA
Operating temperature range	– 40 ... + 85 °C
Connector type	2РМ14Б4Ш1В1
Housing material	stainless steel
Weight (without cable)	120 g
Supplied accessories	cable АК31Р6А2, stud АН0106

Electrical circuit of SV01-01B





Examples of connection schemes for vibration switch SV01-01B



Optional accessories:

- **calibrator** AT02;
- **programming panel** SVProg;
- **stud** AH1006.

SV01-02

Purpose:

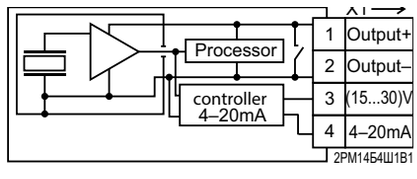
- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

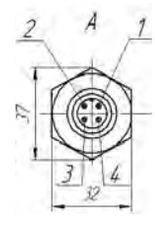
Features:

- Four-wire connection line.
- No additional power supply needed.
- Signal transmission at a distance of up to 100 m.
- Custom-programmed main parameters.
- Measurement and transmission of vibration velocity RMS value over a standard current interface of 4 ... 20 mA.
- Conformity to GOST ISO 10816.
- Explosion-proof version 1ExibIICT4 (optional).

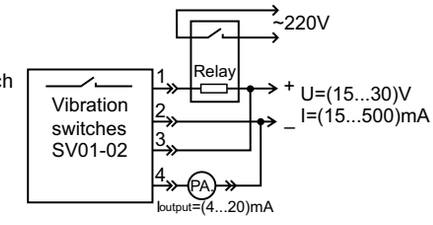
Parameter	SV01-02
Operating frequency range at – 1 dB	3 ... 1 000 Hz
Preset operating threshold value (RMS) / minimum operation thresholding step	1 ... 20/0.1; 1 ... 99.9/0.1; 100 ... 200/1 mm/s To be determined by customer or programmed via SVProg
Relative error of operation thresholding	± 3 %
Relative additional error in the temperature range from – 40 to + 85 °C	± 5 %
Run mode setting time after power-on	< 10 s
Actuation signal criteria	informative signal is continuously exceeding the threshold value during 0–9 s To be determined by customer or programmed via SVProg
Actuation mode	blocking / self-recovery To be determined by customer or programmed via SVProg
Self-recovery conditions	vibration decrease by 6% from operating threshold
Vibration control delay (after setting an operation or self-recovery mode)	0 or 20 s To be determined by customer or programmed via SVProg
Relay contact parameters: - switching current - switching voltage - voltage drop: - at 15 mA - at 500 mA - position	 15 ... 500 mA 15 ... 30 V < 4 V < 7 V closed / open To be determined by customer or programmed via SVProg
Current concumption in an open position	< 1.5 mA
Measuring range of vibration velocity RMS	0.2 ... 20; 0.4 ... 40; 0.6 ... 60; 0.8 ... 80; 1 ... 100; 1.2 ... 120; 1.4 ... 140; 1.6 ... 160; 1.8 ... 180; 2 ... 200 mm/s (To be determined when setting the operating threshold)
Conversion factor for vibration velocity to current signal 4–20 mA (± 3%)	0.8; 0.4; 0.27; 0.2; 0.16; 0.13; 0.11; 0.1; 0.09; 0.08 mA·s/mm (To be determined when setting the operating threshold)
Operating temperature range	– 40 ... + 85 °C
Connector type	2РМ14Б4Ш1В1
Housing material	stainless steel
Weight (without cable)	120 g
Supplied accessories	cable АК51Р6А3, stud АН0106

Electrical circuit of SV01-02





Examples of connection schemes for vibration switch SV01-02



Optional accessories:

- **programming panel** SVProg;
- **calibrator** AT02;
- **stud** AH1006.

globaltest.ru +7 (831-30) 6-77-77

SV01-02B

Purpose:

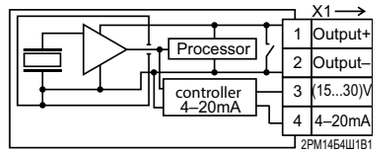
- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

Features:

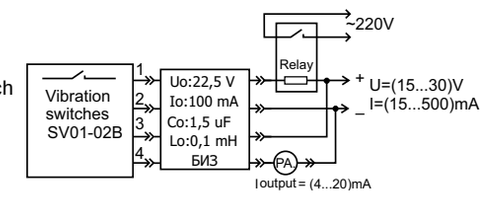
- Four-wire connection line.
- No additional power supply needed.
- Signal transmission at a distance of up to 100 m.
- Custom-programmed main parameters.
- Measurement and transmission of vibration velocity RMS value over a standard current interface of 4 ... 20 mA.
- Conformity to GOST ISO 10816.
- Explosion-proof version 1ExibIICT4.

Parameter	SV01-02B
Operating frequency range at – 1 dB	3 ... 1 000 Hz
Preset operating threshold value (RMS) / minimum operation thresholding step	1 ... 20/0.1; 1 ... 99.9/0.1; 100 ... 200/1 mm/s To be determined by customer or programmed via SVProg
Relative error of operation thresholding	± 3 %
Relative additional error in the temperature range from – 40 to + 85 °C	± 5 %
Run mode setting time after power-on	< 10 s
Actuation signal criteria	informative signal is continuously exceeding the threshold value during 0–9 s To be determined by customer or programmed via SVProg
Actuation mode	blocking / self-recovery To be determined by customer or programmed via SVProg
Self-recovery conditions	vibration decrease by 6% from operating threshold
Vibration control delay (after setting an operation or self-recovery mode)	0 or 20 s To be determined by customer or programmed via SVProg
Relay contact parameters: - switching current - switching voltage - voltage drop: - at 15 mA - at 500 mA - position	 15 ... 500 mA 15 ... 30 V < 4 V < 7 V closed / open To be determined by customer or programmed via SVProg
Current concumption in an open position	< 1.5 mA
Measuring range of vibration velocity RMS	0.2 ... 20; 0.4 ... 40; 0.6 ... 60; 0.8 ... 80; 1 ... 100; 1.2 ... 120; 1.4 ... 140; 1.6 ... 160; 1.8 ... 180; 2 ... 200 mm/s (To be determined when setting the operating threshold)
Conversion factor for vibration velocity to current signal 4–20 mA (± 3%)	0.8; 0.4; 0.27; 0.2; 0.16; 0.13; 0.11; 0.1; 0.09; 0.08 mA·s/mm (To be determined when setting the operating threshold)
Operating temperature range	– 40 ... + 85 °C
Connector type	2РМ14Б4Ш1В1
Housing material	stainless steel
Weight (without cable)	120 g
Supplied accessories	cable АК51Р6А3, stud АН0106

Electrical circuit of SV01-02B



Examples of connection schemes for vibration switch SV01-02B



Optional accessories:

- **programming panel** SVProg;
- **calibrator** AT02;
- **stud** AH1006.

SV02

Purpose:

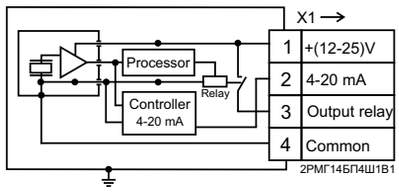
- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

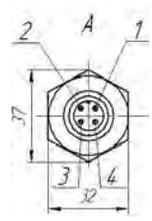
Features:

- Measurement and transmission of vibration velocity RMS value over a standard current interface of 4 ... 20 mA.
- HART-protocol (Highway Addressable Remote Transducer Protocol) - digital industrial protocol for transfer of data superimposed on a current analog loop of 4 ... 20 mA. Electric insulation of piezoelement and built-in amplifier-transducer from the body eliminates the influence of grounding loop currents on measurement results.
- Robust design, waterproof casing and non-detachable armored cable.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 100 m.
- Evaluation of machines vibration according to GOST ISO 10816-97, GOST ISO 10816-3-2002.

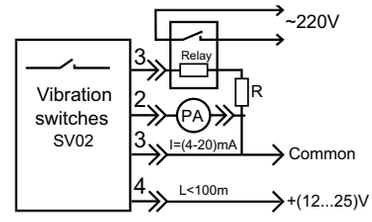
Parameter	SV01-02
Operating frequency range at – 1 dB	10 ... 1 000 Hz
Preset operating threshold value (RMS) / minimum operation thresholding step	1 ... 99.9/0.1; 100 ... 200/1 mm/s To be determined by customer or programmed via SVProg
Relative error of operation thresholding	± 3 %
Relative additional error in the temperature range from – 40 to + 85 °C	± 5 %
Run mode setting time after power-on	< 10 s
Actuation signal criteria	informative signal is continuously exceeding the threshold value during 0–9 s To be determined by customer or programmed via SVProg
Actuation mode	blocking / self-recovery To be determined by customer or programmed via SVProg
Self-recovery conditions	vibration decrease by 6% from operating threshold
Vibration control delay (after setting an operation or self-recovery mode)	0 or 20 s To be determined by customer or programmed via SVProg
Relay contact parameters: - switching current - switching voltage Power supply: - voltage - current	 0 ... 1 mA 12 ... 25 V 12 ... 25 V < 35 V
Measuring range of vibration velocity RMS	0.2 ... 20; 0.4 ... 40; 0.6 ... 60; 0.8 ... 80; 1 ... 100; 1.2 ... 120; 1.4 ... 140; 1.6 ... 160; 1.8 ... 180; 2 ... 200 mm/s (To be determined when setting the operating threshold)
Conversion factor for vibration velocity to current signal 4–20 mA (± 3%)	0.8; 0.4; 0.27; 0.2; 0.16; 0.13; 0.11; 0.1; 0.09; 0.08 mA·s/mm (To be determined when setting the operating threshold)
Operating temperature range	– 40 ... + 85 °C
Connector type	2РМГ14БП4Ш1В1
Housing material	stainless steel
Weight (without cable)	120 g
Supplied accessories	cable АК51Р6А4, stud АН0106

Electrical circuit of SV02





Examples of connection schemes for vibration switch SV02



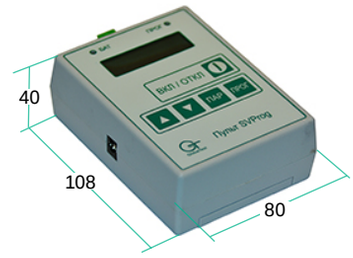
Optional accessories:

- **calibrator** AT02;
- **stud** AH1006.

Programming panel SVProg

Purpose:

- Setting and programming operating parameters of vibration switches of SV01, SV01-01, SV01-02.



Parameter	SVProg
SV contact operation thresholding range	1.0 ÷ 200 mm/s
Time for exceeding the threshold value before operation of SV contacts	0 ÷ 9 s
Position of SV contacts	normally open; normally closed
SV contact operation mode	blocking; self-recovery
Control delay time after SV start (setting a normal position of SV contacts)	0; 20 s
Automatic power off when not in use during:	60 s
Operating temperature range	0 ... +70 °C
Power supply: - external source of voltage dc - battery or 9 V accumulator	 + 12 ± 1 V 9 ± 3 V
Current consumption: - in parameter setting mode - in programming mode	 ≤ 20 mA ≤ 150 mA
Overall dimensions	80 × 108 × 40 mm
Weight	≤ 200 g

Delivery set

Description	Designation code	Quantity
SVProg panel	ABKJ.431134.019	1
Passport	ABKJ.431134.019 PS	1
Power unit	+12B-300mA	1 To be supplied on separate order
Cable	AK34 (SV01); AK34-01 (SV01-01); AK34-02 (SV01-02)	1 To be supplied on separate order

AG19

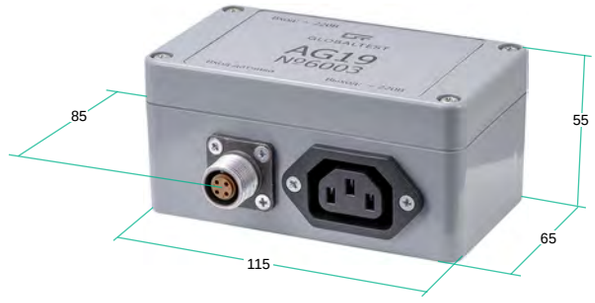
Purpose:

- The matching device AG19 is used together with vibration switches SV01 and SV01-01 in the vibration protection systems of various equipment. It is intended for powering on/off the operating equipment of the vibration protection systems of various units and facilities (power supply ~ 220 V), when receiving a signal of exceeding the preset vibration level from the vibration switch mounted on the equipment.

Features:

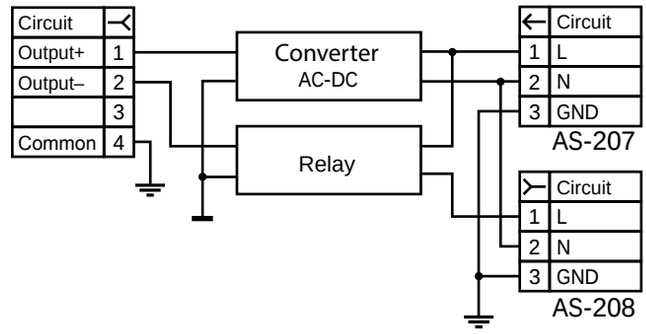
Built-in solid-state relay:

- switching current: < 10 A;
- switching voltage: ~220 V ±10%.

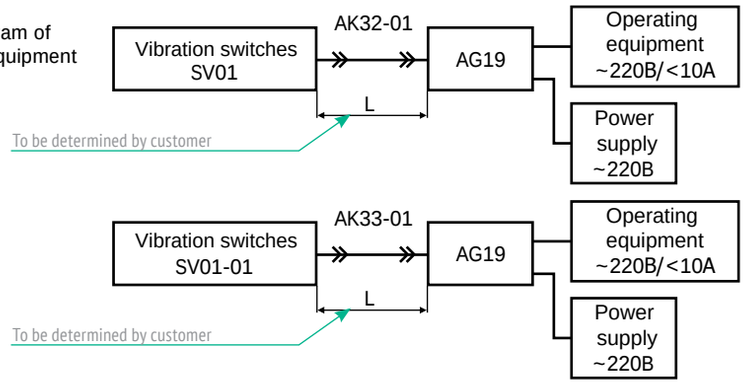


Parameter	AG19
Length of cable connecting the vibration switch and matching device	up to 100 m
Overall dimensions	115 × 85 × 55 mm
Weight	250 g

Electrical circuit of AG19



Wiring diagram of operating equipment



To be used with:

- vibration switches **SV01, SV01-01.**

Dynamic pressure sensors

Application of sensitive elements made of piezocrystals of quartz, langatate, and lithium niobate ensures a long-term stability in the operating temperature range. Dynamic pressure sensors are widely used in diagnostics of internal-combustion engines, development of rocket and space equipment, explosive experiments, study of gas dynamic processes in cannon barrels, research of cavitation mechanisms in liquids, measurement of pressure in shock and detonation waves, combustion waves in gas media, as well as pressure waves in liquids.
Dynamic pressure sensors are also used to study the pulsating state of gas turbine engines for determining stability boundaries of compressors as well as initiation of vibrating combustion in the combustion chamber.

PS01, PS01-01, PS01-02, PS01-03, PS01-04, PS01-05

Purpose:

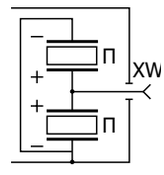
- Measuring dynamic pressure in different environments. Can be used both independently and in diagnostic systems of compressors, engines, turbines and other machinery.

Features:

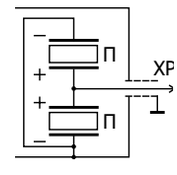
- Single-crystal sensing element.
- Wide dynamic range.
- Long-term stability.

Parameter	PS01 PS01-01	PS01-03 PS01-02	PS01-05 PS01-04
Upper limit of measured pressures	25 MPa		
Conversion factor	200 ± 40 pC/MPa	4 000 ± 600 pC/MPa	600 ± 100 pC/MPa
Resonance frequency	> 30 kHz		
Limits of acceptable basic error reduced to the upper-range value	± 3 %		
Self-resonant frequency	> 30 kHz		
Acceleration sensitivity	< 0.001 bar/g 1g = 9.807 $m \cdot s^{-2}$ or 10 $m \cdot s^{-2}$ = 1.02 g		
Operating temperature range	– 60 ... + 200 °C		
Limits of acceptable additional relative error in the operating temperature range for every 10 ° C	± 0.2 %	± 0.5 %	± 0.2 %
Electric capacity	7 ... 12 pF; 180 ... 220 pF	30 ... 40 pF; 200 ... 250 pF	15 ... 25 pF; 185 ... 235 pF
Insulation resistance under normal conditions	> 10 000 MΩ		
Sensing element material	quartz	lithium niobate	langatate
Housing material	stainless steel		
Membrane material	stainless steel		
Environments protection rating	IP65 IP68 Waterproof version (can be used at a depth of up to 50 m)		
Connector type	AR03 (10-32 UNF); non-detachable cable, BNC		
Weight (without cable and connector)	40 g		
Supplied accessories	cable AK12B6B6 (classic name AK04), o-ring AA02 (2 pcs.)		

Electrical circuit of PS01, PS01-03, PS01-05



Electrical circuit of PS01-01, PS01-02, PS01-04



Optional accessories:

- **charge amplifiers** AP500, AP5002 AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifiers AP5000, AP5002);
- **matching device** AG05;
- **power units** AS01, AS07;
- **cables** AK02, AK08, AK09, AK10, AK26, AK31;
- **cable adapters** AR01, AR04, AR06, AR08;
- **o-ring** AA02 (5 pcs.).

PS02, PS02-01

Purpose:

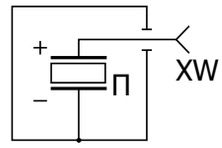
- Measuring dynamic pressure in different environments. Can be used both independently and in diagnostic systems of compressors, engines, turbines and other machinery.
- Recording high-speed impulse processes.

Features:

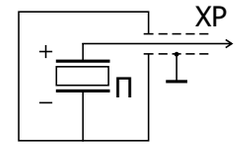
- Quartz sensing element.
- Wide dynamic range.
- Long-term stability.

Parameter	PS02	PS02-01
Upper limit of measured pressures	250 MPa	
Conversion factor	70 ± 20 pC/MPa	
Limits of acceptable basic error reduced to the upper-range value	± 3 %	
Self-resonant frequency	> 30 kHz	
Acceleration sensitivity	< 0.001 bar/g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 200 °C	
Limits of acceptable additional relative error in the operating temperature range for every 10 ° C	± 0.2 %	
Electric capacity	5 ... 10 pF	180 ... 220 pF
Insulation resistance under normal conditions	> 10 000 Ω	
Sensing element material	quartz	
Housing material	stainless steel	
Membrane material	stainless steel	
Environments protection rating	IP65	IP68 Waterproof version (can be used at a depth of up to 50 m)
Connector type	AR03 (10-32 UNF)	non-detachable cable 2 m, BNC To be determined by customer
Weight (without cable and connector)	15 g	
Supplied accessories	o-ring AA01 (2 pcs.) cable AK12B6B6 (classic name AK04)	o-ring AA01 (2 pcs.) –

Electrical circuit of PS02



Electrical circuit of PS02-01



Optional accessories:

- **charge amplifiers** AP500, AP5002 AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifiers AP5000, AP5002);
- **matching device** AG05;
- **power units** AS01, AS07;
- **cables** AK02, AK08, AK09, AK10, AK26, AK31;
- **cable adapters** AR01, AR04, AR06, AR08.

PS03, PS03-01

Purpose:

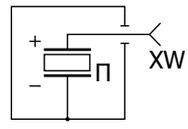
- Measuring dynamic pressure in different environments. Can be used both independently and in diagnostic systems of compressors, engines, turbines and other machinery.
- Recording high-speed impulse processes.

Features:

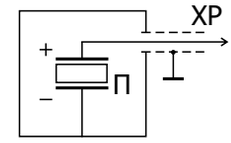
- Quartz sensing element.
- Wide dynamic range.
- Long-term stability.

Parameter	PS03	PS03-01
Upper limit of measured pressures	600 MPa	
Conversion factor	25 ± 5 pC/MPa	
Limits of acceptable basic error reduced to the upper-range value	± 3 %	
Self-resonant frequency	> 30 kHz	
Acceleration sensitivity	< 0.001 bar/g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g	
Operating temperature range	– 60 ... + 200 °C	
Limits of acceptable additional relative error in the operating temperature range for every 10 ° C	± 0.2 %	
Electric capacity	4 ... 7 pF	180 ... 220 pF
Insulation resistance under normal conditions	> 10 000 Ω	
Sensing element	quartz	
Housing material	stainless steel	
Membrane material	stainless steel	
Environments protection rating	IP65	IP68 Waterproof version (can be used at a depth of up to 50 m)
Connector type	AR03 (10-32 UNF)	non-detachable cable 2 m, BNC To be determined by customer
Weight (without cable and connector)	25 g	
Supplied accessories	o-ring AA03 (2 pcs.) cable AK12B6B6 (classic name AK04)	o-ring AA03 (2 pcs.) –

Electrical circuit of PS03



Electrical circuit of PS03-01



Optional accessories:

- **charge amplifiers** AP500, AP5002 AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02 (supplied with charge amplifiers AP5000, AP5002);
- **matching device** AG05;
- **power units** AS01, AS07;
- **cables** AK02, AK08, AK09, AK10, AK26, AK31;
- **cable adapters** AR01, AR04, AR06, AR08.

PS09, PS09-01

Purpose:

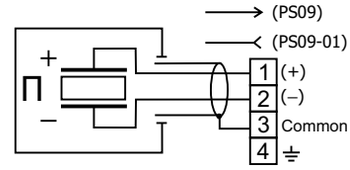
- Measuring dynamic pressure in different environments. Can be used both independently and in diagnostic systems of compressors, engines, turbines and other machinery.

Features:

- Electrically insulated sensing element from the body eliminates the influence of grounding loop currents on measurement results.
- Waterproof design (can be used at a depth of up to 50 m).

Parameter	PS09	PS09-01
Upper limit of measured pressures	25 MPa	
Conversion factor	200 ± 40 pC/MPa	
Limits of acceptable basic error reduced to the upper-range value	± 3 %	
Self-resonant frequency	> 30 kHz	
Operating temperature range	– 55 ... + 125 °C	
Limits of acceptable additional relative error in the operating temperature range for every 10 ° C	± 0,2 %	
Electric capacity	7 ... 12 pF	180 ... 220 pF
Insulation resistance under normal conditions	> 10 000 MΩ	
Sensing element material	quartz	
Housing material	stainless steel	
Membrane material	stainless steel	
Environments protection rating	IP65	IP68
Connector type	2РМГ14Б4Ш1В1В	non-detachable cable, Т1(2РМД18КПН4Г)
Weight (without cable and connector)	95 g	
Supplied accessories	o-ring АА02 (2 pcs.) cable АК41Р6Т1	o-ring АА02 (2 pcs.) –

Electrical circuit of PS09, PS09-01



Optional accessories:

- **charge amplifiers** AP5001, AQ05.X.XXX, AQ08, AQ08-01;
- **charge and voltage amplifiers** AP5240A2;
- **measuring amplifiers** AP5110, AP5200.

PS09B, PS09-01B

Purpose:

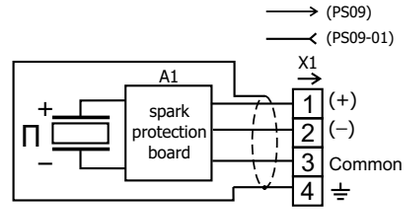
- Measuring dynamic pressure in different environments. Can be used both independently and in diagnostic systems of compressors, engines, turbines and other machinery.

Features:

- Electrically insulated sensing element from the body eliminates the influence of grounding loop currents on measurement results.
- Explosion-proof version 1ExibIICT4.

Parameter	PS09B	PS09-01B
Upper limit of measured pressures	25 MPa	
Conversion factor	200 ± 40 pC/MPa	
Limits of acceptable basic error reduced to the upper-range value	± 3 %	
Self-resonant frequency	> 30 kHz	
Operating temperature range	– 55 ... + 125 °C	
Limits of acceptable additional relative error in the operating temperature range for every 10 ° C	± 0,2 %	
Insulation resistance under normal conditions	> 500 MΩ (between 3 and 4 contact)	
Sensing element material	quartz	
Housing material	stainless steel	
Membrane material	stainless steel	
Environments protection rating	IP65	IP68
Connector type	2РМГ14Б4Ш1В1В	non-detachable cable, A4
Weight (without cable and connector)	95 g	
Supplied accessories	matching device AG07B, o-ring AA02 (2 pcs.) cable АК41Р6А4	matching device AG07B, o-ring AA02 (2 pcs.) –

Electrical circuit of PS09B, PS09B-01B



Optional accessories:

- **charge amplifiers** AP5000, AP5002 AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **matching devices** AG01, AG02 (supplied with charge amplifiers AP5000, AP5002);
- **matching devices** AG05;
- **power units** AS01, AS07.

PS2001-XX, PS2001-XX-01

Purpose:

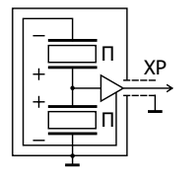
- Measuring dynamic pressure in different environments. Can be used both independently and in diagnostic systems of compressors, engines, turbines and other machinery.

Features:

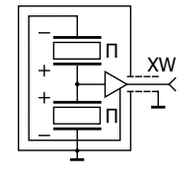
- Quartz sensing element.
- Long-term stability.
- Waterproof design (can be used at a depth of up to 50 m) for PS2001-X-01 versions with non-detachable cable.
- Built-in preamplifier.
- Low level of intrinsic noise.

Parameter	PS2001-5 PS2001-5-01	PS2001-50 PS2001-50-01	PS2001-250 PS2001-250-01
Pressure range	0.0002 ... 0.5 MPa	0.001 ... 5.0 MPa	0.001 ... 25 MPa
Conversion factor	10 000 (± 3 000) mV/MPa	1 000 (± 300) mV/MPa	200 (± 60) mV/MPa
Limits of acceptable basic error reduced to the upper-range value	± 3 %		
Self-resonant frequency	> 30 kHz		
Acceleration sensitivity	< 0.001 bar/g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g		
Operating temperature range	– 40 ... + 125 °C		
Limits of acceptable additional relative error in the operating temperature range for every 10 ° C	± 0.2		
Output resistance	< 500 Ω		
Power: - external source of voltage dc - current	 + (15 ... 30) V 2 ... 20 mA		
Constant output voltage level	8 ... 11 V		
Sensing element material	quartz		
Housing material	stainless steel		
Membrane material	stainless steel		
Environments protection rating	IP65 IP68 Waterproof version (can be used at a depth of up to 50 m)		
Connector type	AR03 (10-32 UNF); non-detachable cable, BNC		
Weight (without cable and connector)	40 g		
Supplied accessories	cable AK12B6B6 - for PS2001-X only, o-ring AA02 (2 pcs.)		
For PS2001-X-01: Built-in cable length / Connector type	2 m / BNC To be determined by customer		
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4		

Electrical circuit of PS2001-X



Electrical circuit of PS2001-X-01



Optional accessories:

- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02, AG05-01;
- **cables** AK26, AK31;
- **cable adapters** AR01, AR04, AR08;

PS2010

Purpose:

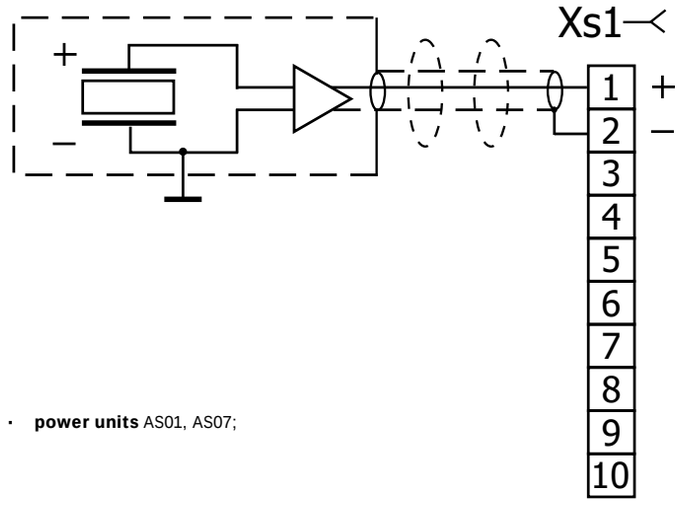
- Measuring dynamic pressure and acoustic wave parameters in different environments.

Features:

- Long-term stability.
- Waterproof design (can be used at a depth of up to 50 m) for PS2001-X-01 with a non-detachable cable.
- Built-in preamplifier.
- Low level of intrinsic noise.
- Protective screen for reducing pyroeffect when recording air shock waves.

Parameter	PS2010
Pressure range	0.05 ... 150 kPa
Conversion factor	20 000 ± 10 000 mV/MPa
Limits of acceptable basic error reduced to the upper range value	± 3 %
Operating frequency range	0.05 ... 2 500 kHz
Acceleration sensitivity	< 0.001 bar/g 1g = 9.807 m·s^{-2} or 10 m·s^{-2} = 1.02 g
Operating temperature range	– 40 ... + 125 °C
Output resistance	< 500 Ω
Power: - external source of voltage dc - current	 + (15 ... 30) V 2 ... 20 mA
Constant output voltage level	8 ... 11 V
Sensing element material	Lead zirconate titanate (ЦТС-19)
Housing material	stainless steel
Membrane material	stainless steel
Connector type	non-detachable cable, СНЦ-10/18 Р-13-В
Weight (without cable and connector)	150 g
Supplied accessories	o-ring АГТ-Л1.478.011 (2 pcs.)
For PS2001-X-01: built-in cable length / connector type	2 m / BNC To be determined by customer
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4

Electrical circuit of PS2010



Optional accessories:

- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02, AG05-01;
- **power units** AS01, AS07;

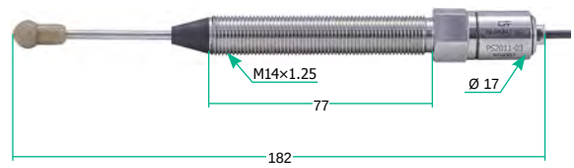
PS2011-03, PS2011-03-01

Purpose:

- Measuring dynamic pressure in different environments. Can be used both independently and in measuring systems to investigate shock wave parameters of explosion, shot, etc.

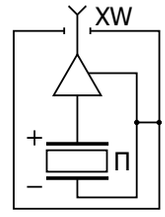
Features:

- Spherical sensing element.
- Long-term stability.
- Waterproof design (can be used at a depth of up to 50 m).
- Built-in preamplifier.
- Low level of intrinsic noise.



Parameter	PS2011-03	PS2011-03-01
Pressure range	1 ... 1 500 kPa	1 ... 10 000 kPa
Conversion factor	3 000 mV/MPa	500 mV/MPa
Frequency range (± 3 B), not lower than	0.5 ... 5 000 Hz	0.5 ... 3 000 Hz
Limits of acceptable basic error reduced to the upper-range value	± 2 %	
Operating temperature range	– 30 ... + 50 °C	
Output resistance	< 500 Ω	
Power: - external source of voltage dc - current	 + (15 ... 30) V 2 ... 20 mA	
Constant output voltage level	8 ... 11 V	
Sensing element material	Lead zirconate titanate (ЦТС-19)	
Housing material	stainless steel	
Environments protection rating	IP68 Waterproof version (can be used at a depth of up to 50 m)	
Built-in cable length / Connector type	2 m / BNC To be determined by customer	
Weight (without cable)	110 g	
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4	

Electrical circuit of PS2011-03, PS2011-03-01



Optional accessories:

- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **matching devices** AG01, AG02, AG05-01;
- **power units** AS01, AS07.

Acoustic emission sensors

Detection and location of the origin and development of defects in metal structures in a stress-strain state. For example, in arched constructions, pressure vessels, etc.

GT200

Purpose:

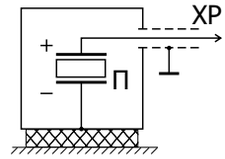
- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

Features:

- Waterproof design.

Parameter	GT200
Type	resonant
Operating frequency range	100 ... 200 kHz
Resonance frequency	180 kHz
Electroacoustic conversion factor at resonance frequency	> 60 dB relative to 1V/m/s
Electric capacity	350 ... 500 pF
Insulation resistance	> 1 000 MΩ
Operating temperature range	– 55 ... +120 °C
Housing material	stainless steel
Built-in cable length	0.5 m To be determined by customer
Weight (without cable)	15 g
Connector type	BNC-S58P (СР-50-74ФВ) To be determined by customer

Electrical circuit of GT200



Optional accessories:

- **voltage amplifier** GT200A, GT200AM;
- **matching device** AG09;
- **magnet mounting base** AM06-02 (with GT200);
- **magnet mounting base** AM06-01 (with GT205);
- **power units** AS03, AS04, AS05.

GT200B

Purpose:

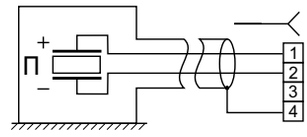
- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

Features:

- Waterproof design.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	GT200B
Type	resonant
Operating frequency range	100 ... 200 kHz
Resonance frequency	180 kHz
Electroacoustic conversion factor at resonance frequency	> 60 dB relative to 1V/m/s
Limits of relative error of electric conversion	± 20 %
Electric capacity	350 ... 500 pF
Insulation resistance	> 1 000 MΩ
Operating temperature range	– 55 ... +120 °C
Housing material	stainless steel
Built-in cable length	0.5 m To be determined by customer
Weight (without cable)	20 g
Connector type	2РМ14КПН4Г1В1 To be determined by customer

Electrical circuit of GT200B



Optional accessories:

- **voltage amplifier** GT200A-01, GT200AM-01;
- **matching device** AG09;
- **magnet mounting base** AM06-02;
- **power units** AS03, AS04, AS05.

GT205, GT205B

Purpose:

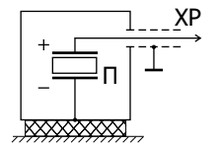
- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

Features:

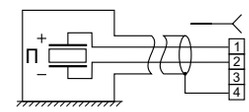
- Waterproof design.
- GT205B has an electrically insulated sensing element and non-detachable 2-core shielded cable.
- Explosion-proof version 1ExibIICT4 (option for GT205B).

Parameter	GT205	GT205B
Type	low-frequency	
Operating frequency range	40 ... 100 kHz	
Resonance frequency	55 kHz	
Electroacoustic conversion factor at resonance frequency	> 70 dB relative to 1V/m/s	
Limits of relative error of electric conversion	± 20 %	
Electric capacity	350 ... 500 pF	
Insulation resistance	> 1 000 MΩ	
Operating temperature range	– 55 ... +120 °C	
Housing material	stainless steel	
Built-in cable length	0.5 m To be determined by customer	
Weight (without cable)	45 g	45 g
Connector type	BNC-S58P (СР-50-74ФВ) To be determined by customer	2РМ14КПН4Г1В1

Electrical circuit of GT205



Electrical circuit of GT205B



Optional accessories:

- **voltage amplifier** GT200A, GT200AM, GT200A-01, GT200AM-01 (for GT205B);
- **matching device** AG09;
- **magnet mounting base** AM06-01;
- **power units** AS03, AS04, AS05.

GT300, GT301

Purpose:

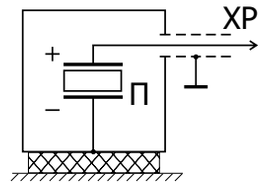
- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

Features:

- Waterproof design.

Parameter	GT300	GT301
Type	wide-band	
Operating frequency range	100 ... 800 kHz	50 ... 500 kHz
Resonance frequency	283 kHz	251 kHz
Electroacoustic conversion factor at resonance frequency	> 50 dB relative to 1V/m/s	
Limits of relative error of electric conversion	± 20 %	
Electric capacity	400 ... 500 pF	130 pF
Insulation resistance	> 1 000 MΩ	
Operating temperature range	– 55 ... +120 °C	
Housing material	stainless steel	
Built-in cable length	0.5 m To be determined by customer	
Weight (without cable)	15 g	14 g
Connector type	BNC - S58P (СР-50-74ФВ) To be determined by customer	

Electrical circuit of GT300, GT301



Optional accessories:

- **voltage amplifier** GT200A, GT200AM;
- **matching device** AG09;
- **power unit** AS03, AS04, AS05;
- **magnet mounting base** AM06-02 (with GT300, GT301), AM07 (with GT300).

GT200U

Purpose:

- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

Features:

- Waterproof design.

Parameter	GT200U
Type	resonant, with amplifier
Operating frequency range	130 ... 200 kHz
Resonance frequency	180 kHz
Electroacoustic conversion factor at resonance frequency	> 80 dB relative to 1V/m/s
Limits of relative error of electric conversion	± 20 %
Amplification factor of built-in amplifier	10
Power supply voltage	+ (12 ± 0.5) V
Current consumption	≤ 30 mA
Operating temperature range	– 40 ... + 100 °C
Housing material	stainless steel
Built-in cable length	0.5 m To be determined by customer
Weight (without cable)	50 g
Connector type	BNC - S58P (СР-50-74ФВ) To be determined by customer

Optional accessories:

- **matching device** AG09;
- **power unit** AS05;
- **magnet mounting base** AM07.

GT200UB

Purpose:

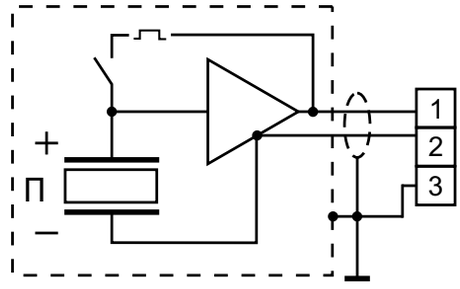
- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

Features:

- Waterproof design.
- Built-in amplifier.
- Electrically insulated sensing element.
- Performance efficiency can be checked without dismounting from the object.
- Explosion-proof version 1ExibIICT4.

Parameter	GT200UB
Type	resonant, with amplifier
Electroacoustic conversion factor	> 75 dB relative to 1V/m/s
Operating frequency	165 kHz
Pass band	130 ... 300 kHz
Amplification factor	10
Power supply voltage	9 V
Current consumption	20 mA
Operating temperature range	– 40 ... + 120 °C
Housing material	stainless steel
Built-in cable length	0.5 m To be determined by customer
Weight (without cable)	45 g
Connector type	2РМ14КПН4Г1В1

Electrical circuit of GT200UB



Optional accessories:

- **matching device** AG21;
- **power unit** AS05;
- **magnet mounting base** AM06.

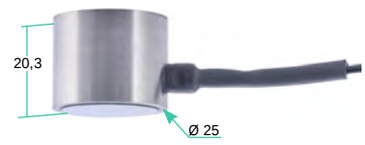
GT250, GT350

Purpose:

- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

Features:

- Waterproof design with non-detachable cable.
- Built-in amplifier.



Parameter	GT250	GT350
Type	low-frequency, with amplifier	broad pass band, with amplifier
Operating frequency range	40 ... 100 kHz	100 ... 800 kHz
Resonance frequency	55 kHz	283 kHz
Electroacoustic conversion factor at resonance frequency	> 90 dB relative to 1V/m/s	> 70 dB relative to 1M/m/s
Limits of relative error of electric conversion	± 20 %	
Amplification factor	10	
Operating temperature range	– 40 ... + 100 °C	
Power supply voltage Current consumption	+ (12 ± 0.5) V ≤ 30 mA	
Housing material	stainless steel	
Built-in cable length	0.5 m To be determined by customer	
Weight (without cable)	80 g	15 g
Connector type	BNC - S58P (СР-50-74ФВ) To be determined by customer	

Optional accessories:

- **matching device** AG09;
- **magnet mounting base** AM06 (with GT250), AM07 (with GT350);
- **power unit** AS05.

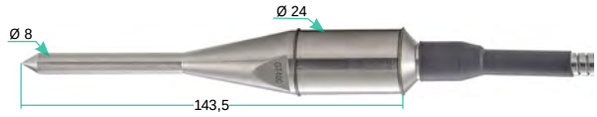
GT400

Purpose:

- Recording and converting the energy of vibrational displacement of elastic waves propagating from the place of origin and development of a defect in the metal structure into an electric signal.
- Technical diagnostics using passive ultrasound.

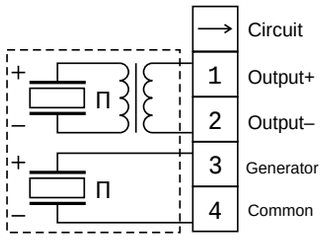
Features:

- Waterproof design.
- Transformer output.
- Off-line testing.



Parameter	GT400
Type	bandpass-type
Operating frequency range	50 ... 250 kHz
Resonance frequency	110 kHz
Electroacoustic conversion factor at resonance frequency	> 45 dB relative to 1V/m/s
Limits of relative error of electric conversion	± 25 %
Electric capacity	> 1 700 pF For the testing channel
Insulation resistance	> 20 MΩ For the testing channel
Operating temperature range	– 40 ... + 150 °C
Housing material	stainless steel
Built-in cable length	5 m To be determined by customer
Cable protection	metal hose
Environments protection rating	IP65
Weight (without cable)	250 g
Connector type	СН-60-4А/14-1 / 2РМД18КПН4Ш1В1 (or 4 clamp terminals)

Electrical circuit of GT400



Optional accessories:

- **amplifier** GT400A;
- **matching device** AG09;
- **power units** AS03, AS04, AS05.

Force sensors

Dynamic force measurements.

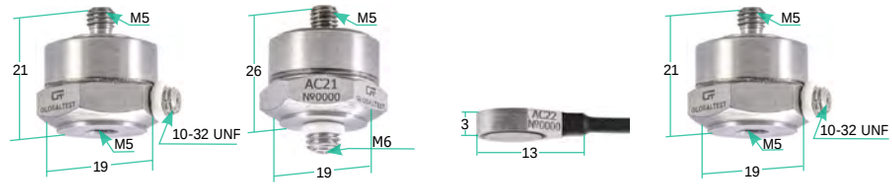
AC20, AC21, AC22, AC23

Purpose:

- Dynamic force measurements.
- Can be used both independently and in combination with vibration testing systems and vibration transducers in dynamic tests of various constructions and machinery.

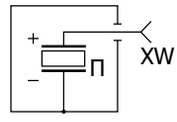
Features:

- Robust design and waterproof casing.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Wide temperature range.
- Low sensitivity to temperature variation.
- For mounting sensors AC20 and AC23, a threaded hole M5-7H of a depth not less than 6 mm, with a fastening torque 1.9 ... 2.1 N·m, should be made.

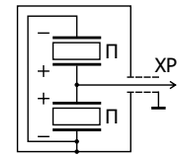


Parameter	AC20	AC21	AC22	AC23
Conversion factor (± 20 %) (nominal value)	2 pC/N		4 pC/N	
Cross sensitivity	< 5 %		< 3 %	< 5 %
Temperature variation sensitivity	< 0.05 %/°C		< 0.1 %/°C	< 0.05 %/°C
Operating temperature range	– 60 ...+ 200 °C		– 60 ...+ 150 °C	– 60 ...+ 200 °C
Strain sensitivity	< 0.05 N·m/ μm		< 0.1 N·m/ μm	< 0.03 N·m/ μm
Electric capacity	20 ... 35 pF		200 ... 350 pF	10 ... 14 pF
Insulation resistance	> 1 000 MΩ			
Force range	– 1 000 ...+ 5 000 N	+ 0.1 ...+ 5 000 N	+ 500 ...+ 5 000 N	– 1 000 ...+ 5 000 N
Resonance frequency	> 20 kHz		100 kHz	> 25 kHz
Effective inertial mass - above piezoelement - under piezoelement	 5 (3) g 20 (11) g		 0.3 (0.2) g 1.3 (0.8) g	 5 g 20 g
Housing material	stainless steel (titanium alloy) To be determined by customer			stainless steel
Built-in cable length	–		2 m To be determined by customer	–
Weight (without cable)	25 (14) m	25 (14) m	1.6 (1) g	25 g
Supplied accessories	cable AK03B6B6 (classic name AK04) stud AH0110	cable AK03B6B6 (classic name AK04) –	– –	cable AK03B6B6 (classic name AK04 stud AH0110

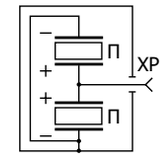
Electrical circuit of AC20, AC21



Electrical circuit of AC22



Electrical circuit of AC23



Optional accessories:

- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **matching device** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5240B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10;
- **impulse hammers** AV01, AV02 for AC21;
- **cable adapter** AR01, AR04, AR06;
- **stud** AH1006;
- **insulating stud** AH1010.

AC26

Purpose:

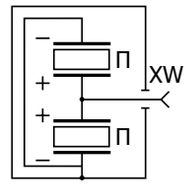
- Dynamic force measurements.
- Can be used both independently and in combination with vibration testing systems and vibration transducers in dynamic tests of various constructions and machinery.

Features:

- Robust design and waterproof casing.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Wide temperature range.
- Low sensitivity to temperature variation.

Parameter	AC26
Conversion factor (± 20 %) (nominal value)	3 pC/N
Cross sensitivity	< 5 %
Temperature variation sensitivity	< 0.05 %/°C
Operating temperature range	– 60 ... + 200 °C
Strain sensitivity	< 0.1 N·m/ μm
Electric capacity	20 ... 25 pF
Insulation resistance	> 1 000 MΩ
Force range	– 50 000 ... + 100 000 N With loading nuts
Resonance frequency	> 10 kHz
Housing material	stainless steel
Weight (without cable) with loading nuts	460 g
Weight without loading nuts	130 g
Supplied accessories	cable AK03B6B6 (classic name AK04), loading nuts, stud M 18

Electrical circuit of AC26



Optional accessories:

- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01, AQ08, AQ08-01;
- **matching device** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240A1, AP5240A1B1, AP5240B1, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **cables** AK01, AK02, AK04, AK05, AK07, AK08, AK09, AK10;
- **cable adapter** AR01, AR04, AR06.

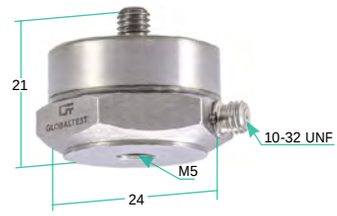
AC2020

Purpose:

- Dynamic force measurements.
- Can be used both independently and in combination with vibration testing systems and vibration transducers in dynamic tests of various constructions and machinery.

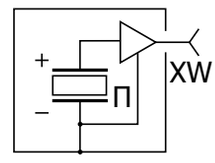
Features:

- Robust design and waterproof casing.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Low sensitivity to temperature variation.
- For mounting sensors AC2020, a threaded hole M5-7H of a depth not less than 6 mm, with a fastening torque 1.9 ... 2.1 N·m, should be made.



Parameter	AC2020
Conversion factor (±10%)	1 mV/N
Cross sensitivity	< 5 %
Temperature variation sensitivity	< 0.05 %/°C
Strain sensitivity	< 0.1 N·m/ µm
Force range	– 1 000 ... + 5 000 N
Resonance frequency	> 20 kHz
Time constant	18 ± 10 %
Constant output voltage level	10 ... 13 V
Power supply voltage	+ (18...30) V
Power supply current	2 ... 20 mA
Noise level	< 0.2 N
Operating temperature range	– 40 ... + 120 °C
Housing material	stainless steel
Weight	25 g
Supplied accessories	cable AK12B6D1 (classic name AK15), stud AH0110

Electrical circuit of AC2020



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240B1, AP5240A1B1, AP5250;
- **power units** AS01, AS07;
- **matching device** AG02;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK15, AK26, AK31;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01;
- **probe** AN01;
- **magnet mounting bases** AM01, AM08, AM11;
- **insulating stud** AH1010.

AC2026

Purpose:

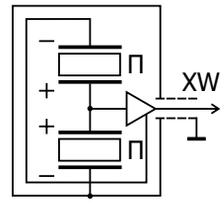
- Dynamic force measurements.
- Can be used both independently and in combination with vibration testing systems and vibration transducers in dynamic tests of various constructions and machinery.

Features:

- Robust design and waterproof casing.
- High axial sensitivity, self-resonant frequency and shock resistance.
- Stable characteristics and reliable operation.
- Low sensitivity to temperature variation.

Parameter	AC2026
Conversion factor (± 10 %)	70 mV/kN
Relative coefficient of transverse conversion	< 5 %
Temperature influence coefficient	< 0.05 %°C
Strain sensitivity	< 0.1 N·m/ μm
Force range	– 50 000 ... + 100 000 N With loading nuts
Resonance frequency	> 10 kHz
Time constant	> 470 ± 10 %
Weight without loading nuts	130 g
Power supply voltage	+ (18 ... 30) V
Power supply current	2 ... 20 mA
Constant output voltage level	10 ... 13 V
Noise level	< 0.2 N
Operating temperature range	– 40... + 120 °C
Connector type	AR03 (10-32 UNF)
Housing material	stainless steel
Weight	460 g
Supplied accessories	cable AK12B6D1 (classic name AK15), loading nuts, stud M 18

Electrical circuit of AC2026



Optional accessories:

- **measuring amplifiers** AP5110, AP5200;
- **charge and voltage amplifiers** AP5030, AP5210, AP5230, AP5240B1, AP5240A, AP5250;
- **power units** AS01, AS07;
- **matching devices** AG01, AG02;
- **calibrators** AT01m, AT02, AT04;
- **cables** AK15, AK26, AK31;
- **cable adapters** AR01, AR04;
- **wax mastic** AW01.

Impulse hammers

Dynamic tests of mechanical systems and structures to determine their frequency characteristics and measure mobility and mechanical impedance.

AU01, AU02

Purpose:

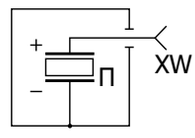
- Dynamic tests of mechanical systems and structures to determine their frequency characteristics, measure mobility and mechanical impedance.
- Can be used both for diagnostics and simulation of dynamic parameters.
- The force applied to an object is measured by AC21 force sensor.

Features:

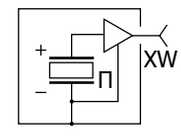
- Wide temperature range.
- Wide range of dynamic force and duration.
- No connecting cable with force sensor.

Parameter	AU01	AU02 Built-in preamplifier
Peak value of dynamic force: - with a steel head - with a plastic head - with a rubber head	 5 000 N 1 000 N 700 N	
Shock impulse duration: - with a steel head - with a steel head and additional mass - with a plastic head - with a plastic head and additional mass - with a rubber head - with a rubber head and additional mass	 0.1 ... 0.2 ms 0.15 ... 0.3 ms 0.4 ... 0.6 ms 0.5 ... 0.8 ms 1.2 ... 2.6 ms 1.7 ... 3.9 ms	
Weight of hammer in a set with sensor, no additional mass, no head	330 g	
Additional mass	105 g	
Weight of head - steel - plastic - rubber	 10 g 7 g 9 g	
Charge sensitivity	2 pC/N	–
Voltage sensitivity (nominal value)	–	1.5 mV/N
Operating temperature range	– 40 ... + 125 °C	
Power: - voltage - current	 –	 + (15 ... 30) V 2 ... 20 mA
Noise level	–	< 0.03 N
Constant output voltage level	–	8 ... 10 V
Output resistance	–	< 500 Ω
Connector type	AR03 (10-32 UNF)	AR03 (10-32 UNF), BNC To be determined by customer
Delivery set	hammer, force sensor AC21, additional mass, steel head, rubber head, plastic head, cable AK12B6B6 (classic name AK04)	hammer, force sensor AC21, additional mass, steel head, rubber head, plastic head, cable AK12B6D1 (classic name AK15)

Electrical circuit of AU01



Electrical circuit of AU02



Optional accessories:

- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01 (for AU01);
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **power units** AS01, AS07 for AU02;
- **matching device** AG01, AG02 (supplied with charge amplifier AP5000, AP5002 for AU01);
- **cables** AK01, AK02, AK05, AK07, AK08, AK09, AK10 (for AU01), AK31 (for AU02);
- **cable adapter** AR01, AR04, AR06.

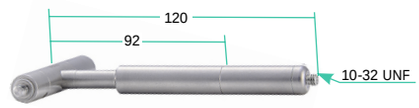
AU03

Purpose:

- Dynamic tests of mechanical systems and structures to determine their frequency characteristics, measure mobility and mechanical impedance.
- Can be used both for diagnostics and simulation of dynamic parameters.
- The force applied to an object is measured by AC25 force sensor.

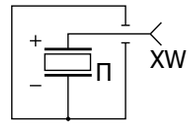
Features:

- Wide temperature range.
- Wide range of dynamic force and duration.
- No connecting cable with force sensor.

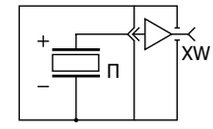


Parameter	AU03 without amplifier	with amplifier
Peak value of dynamic force: - with a steel head - with a plastic head - with a rubber head	300 N 200 N 100 N	500 H
Shock impulse duration: - with a steel head - with a steel head and additional mass - with a plastic head - with a plastic head and additional mass - with a rubber head - with a rubber head and additional mass	 0.1 ... 0.2 ms 0.15 ... 0.3 ms 0.2 ... 0.5 ms 0.3 ... 0.6 ms 1.1 ... 2.4 ms 1.3 ... 2.7 ms	
Weight of hammer in a set with sensor, no additional mass, no head	70 g	90 g
Additional mass	20 g	
Weight of head - steel - plastic - rubber	 2.5 g 2 g 2 g	
Charge sensitivity	300 pC/N	–
Voltage sensitivity (nominal value)	–	10 mV/N
Operating temperature range	– 40 ... + 125 °C	
Power: - voltage - current	–	 + (15 ... 30) V 2 ... 20 mA
Noise level	–	< 0.000 7 N
Constant output voltage level	–	8 ... 10 V
Output resistance	–	< 500 Ω
Connector type	AR03 (10-32 UNF)	
Delivery set	hammer, force sensor AC25, additional mass, steel head, rubber head, plastic head, cable AK12B6B6 (classic name AK04)	

Electrical circuit of AU03 without amplifier



Electrical circuit of AU03 with amplifier



Optional accessories:

- **charge amplifiers** AP5000, AP5002, AQ02, AQ05, AQ07, AQ07-01;
- **charge and voltage amplifiers** AP5030, AP5210, AP5220, AP5230, AP5240, AP5250;
- **measuring amplifiers** AP5110, AP5200;
- **power units** AS01, AS07;
- **matching device** AG01, AG02 (supplied with charge amplifier AP5000, AP5002);
- **cables** AK01, AK02, AK05, AK07, AK08, AK09, AK10, AK31;
- **cable adapter** AR01, AR04, AR06.

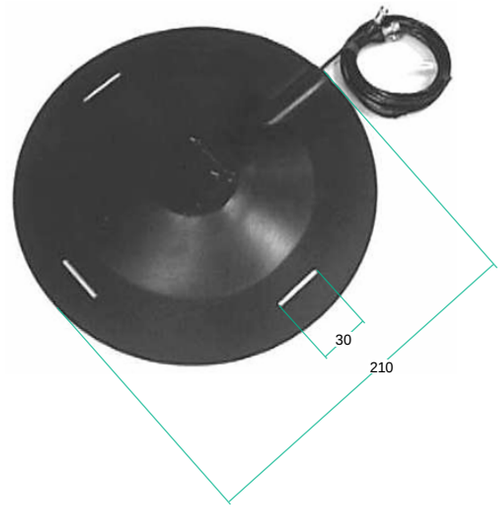
AP5010, AP5011, AP5012, AP5211, AP5212

Purpose:

- To be used for measuring mechanical vibrations affecting the human body in accordance with ISO 2631 and are designed according to the European Standard EN 1032.
- Comprise a three-axis vibration transducer mounted in a semi-rigid rubber disc. Vibration transducers can be installed under a seated person, on a vibrating floor or platform with an appropriate load from above or attached using the tape to the body in order to measure vibration in the direction from the head to the legs, from the back to the chest and from one side of the body to the other.

Features:

- Pads AP5010, AP5211 and AP5212 are supplied with vibration transducers with built-in preamplifiers AP2081-10, AP2081-100 and AP2082M, respectively.
- Pad AP5011 is supplied with a charge-output vibration transducer AP1081.
- Pad AP5012 is supplied with a charge-output vibration transducer AP1038P.



Parameter	AP5010, AP5011, AP5012, AP5211, AP5212
Frequency range	0.5–100 Hz
Overall dimensions:	
- height	3 mm at the edges, with increasing to 12 mm in the center
- diameter	210 mm
Base plate	stainless steel
Pad material	oil-gasoline-resistant rubber

Eddy current sensors

Non-contact measurement of vibration displacement and rotation speed of electrically conductive objects.

Eddy current sensors

Eddy current sensors (eddy current probes) are designed for non-contact measurement of vibration displacement and rotation speed of electrically conductive objects. They are used to diagnose the condition of industrial turbines, compressors, and electric motors. Most often, the axial displacement and radial vibration of the rotor shaft relative to the body are taken as objects for monitoring.

The eddy current sensor (eddy current probe) consists of a primary transducer, extension cable and matching device (Figure 1). The transducer is often referred to as the eddy current sensor system. The primary transducer is a metal probe with a dielectric tip (which contains a coil) at one end and a piece of coaxial cable on the other. The primary transducer is connected to the matching device, using a coaxial cable extension.

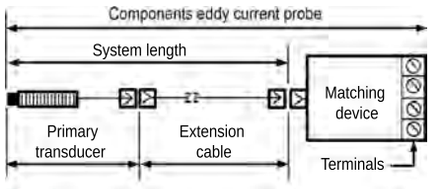


Fig. 1

The matching device generates a drive signal of the primary transducer and selects the informative parameter. The output signal is an electrical signal directly proportional to the distance from the end of the primary transducer to the monitored item.

Operating principle

An inductance coil is located at the end of the dielectric tip of the primary transducer (Figure 2).

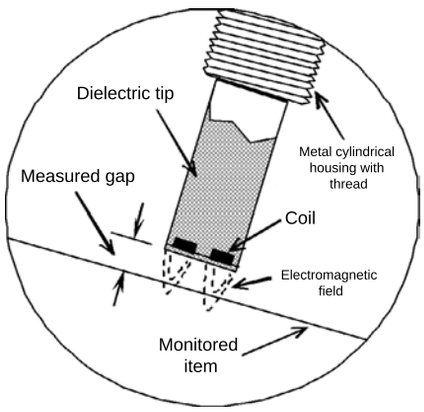


Fig. 2

The matching device ensures excitation of electromagnetic oscillations in the coil. As a result, an electromagnetic field is formed that interacts with the material of the monitored item.

If the material is electrically conductive, eddy currents are induced on its surface, which, in turn, change the parameters of the coil - its active and inductive resistance. The parameters change with varying the gap between the monitored item and the end of the sensor.

The matching device converts these changes into an electrical signal which is then linearized and scaled.

Design

The primary transducer (probe) has the largest number of versions as its design depends on the mounting location and measuring range.

The primary transducer can be connected to the matching device directly or via an extension cable. To protect against mechanical damage, the connecting cable is covered with a metal hose.

The matching device is a sealed metal box with a coaxial connector for connecting the cable, as well as power supply and grounding terminals, common and output signal terminals.

Frequency characteristics

Eddy current probes have a good frequency response (response to a change in the distance between the end of the probe and monitored item). The frequency range may reach 0-10000 Hz. In this case, the frequency response ripple does not exceed 0.5 dB.

Input and output

The gap width between the end face of the primary transducer and electrically conductive item is taken as the input parameter of the eddy current sensor. The size of the gap to be measured is several millimeters and depends on the diameter of the coil enclosed at the end of the dielectric tip. The output signal proportional to the measured gap can be represented as voltage or current

Field of application

The priority field of use of eddy current sensors is the monitoring of axial displacement and lateral runout of shafts of large turbines, compressors, electric motors in which sliding bearings are used. The use of velocity and acceleration sensors for this purpose, although permissible, is not justified as the result will have a large error due to decrease in the coefficient of proportionality between the vibration displacement of the rotor and support at low rotational speeds, as well as considerable (3-10 times) weakening of the rotor vibration by the massive body of the apparatus. The eddy current method, on the contrary, has exceptional accuracy, since not only does it have no lower frequency limit, but does not require mathematical processing of measurement results as the output signal directly matches the current displacement of the shaft or measuring shoulder relative to the housing.

In small turbines, generators and compressors, where rolling bearings are used and the weight of the body is relatively small, it is reasonable to apply velocity and acceleration sensors that are placed on the body of the mechanism to measure vibration of the shaft.

Radial vibration

To measure the magnitude of radial vibration, two sensors are usually used that are installed perpendicular to the shaft and deployed relative to each other at the angle of 90° (Figure 3).

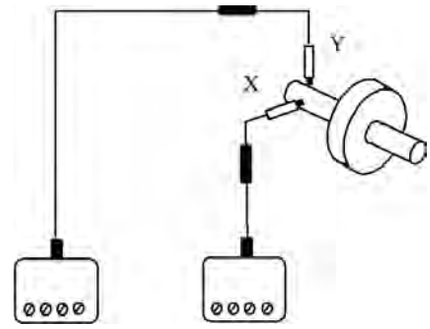


Fig. 3

The orthogonal X-Y placement of the primary transducers will improve the diagnostic capabilities, since it allows to obtain both total and separate information for each coordinate and, with the appropriate monitoring means, enables visual observation of the orbital motion of the shaft in the radial plane. In addition, the measurement of vibro-displacement vectors in several planes makes it possible to draw a line of dynamic deflection of the shaft.

Axial displacement

To measure the axial shift, the primary transducer is placed perpendicular to the planes of the shaft end and (or) the measuring shoulder (Fig. 4).

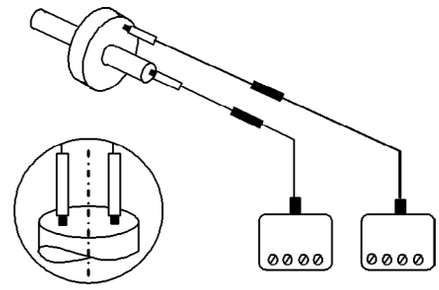


Fig. 4

In some cases, two primary transducers (main and auxiliary) are used for reliability purposes.

Rotation speed

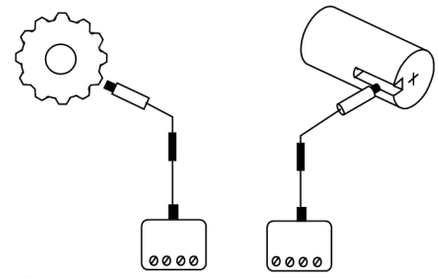


Fig. 5

Eddy current sensors are often used to measure the rotor speed (Figure 5). The primary transducer response is usually formed by a small depression on the shaft

resulted from milling. Such sensor can be used in conjunction with X-Y radial vibration primary transducers. In this case, the primary transducer serves as the phase label generator, relative to which the shaft motion orbit is determined. To form the primary transducer response, the design features of the rotor can be used, e.g. availability of a gear.

More...

Eddy current sensors are used:

- to measure eccentricity (off-set) of the shafts;
- to measure the thickness of dielectric (varnish-and-lacquer) coatings on a metal substrate;
- to measure the relative temperature expansion of mechanisms;
- to measure the wear rate of friction parts and mechanisms;
- as non-contact limit switches;
- to measure a metallized layer on a dielectric substrate.

System configuration

Several basic configurations of eddy current sensors are offered, with different primary transducer coil diameters, cable length, output signal parameters and measured value. The diameter of the probe coil determines the measuring range and the area of interaction of the electromagnetic field with the monitored object. It is assumed that the interaction area does not go beyond the imaginary circle on the surface of the object whose diameter is equal to the double diameter of the primary transducer coil. The latter circumstance must be taken into account when selecting the mounting location of the primary transducer, as well as for monitoring the transverse vibration of the shaft, since in this case the irradiated surface is cylindrical, which causes a systematic error that increases with increasing the coil diameter and decreasing the shaft diameter.

For each combination «coil diameter + system cable length», the corresponding matching device is calibrated and marked appropriately. Nonconformity of the system cable length or the primary transducer coil diameter leads to an increase in the error.

The table shows the main system characteristics that allow the user to determine the appropriate configuration of the sensor system to solve an existing application task.

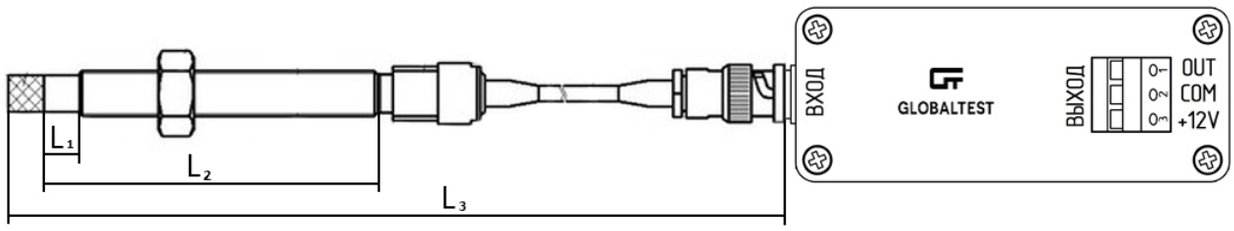
AP2200D-V, AP2200D-C, AP2200T-C

Purpose:

- Measurement of vibration, displacement and rotation speed of machine parts and mechanisms.

Features:

- High stability of characteristics.
- Interchangeability of primary transducers without affecting the metrological characteristics.



Model	Type of electronic unit	Output signal	Probe coil diameter	Measurement range	Sensitivity	System length	Measured parameter
AP2200D - V	D220-V	voltage 0–10 V	5 mm 8 mm 11 mm 19 mm	0.1 – 2.2 mm 0.2 – 3.3 mm 0,3–4,3 mm 1.0 – 8.0 mm	+ 4 mV/µm + 2.7 mV/µm + 4 mV/µm + 1.1 mV/µm	1 – 18 m	Vibration, displacement
AP2200D - C	D220-C	current 4–20 mA	5 mm 8 mm 11 mm 19 mm	0.1 – 2.2 mm 0.2 – 3.3 mm 0,3–4,3 mm 1.0 – 8.0 mm	8 µA/µm 5.3 µA/µm 2 µA/µm 2.3 µA/µm	1 – 18 m	Vibration, displacement
AP2200T - C	T220	current 4–20 mA	5 mm 8 mm 11 mm 19 mm	0 – 60 000 rpm	–	1 – 18 m	Rotation speed

Marking:

AP2200	X-	X.	XXX.	XX.	XX.	XX.	XXX.	XX..	XX.
		Output signal:	Model	l_1	l_2 thread length	l_3 system length	Number of matchmarks per shaft revolution	Lower limit of measuring range	Upper limit of measuring range
	D – displacement	C – current 4–20mA; V – voltage	AE052, AE053, AE082,AE083, AE112, AE113, AE192, AE193	Standard version: **00** = 0 mm; Step: **01** = 10 mm; Maximum: l_2 minus 20 mm.	Standard version: **07** = 70 mm; Step: **01** = 10 mm; Maximum: **25** = 250 mm Minimum: **02** = 20 mm;	Standard version: **05** = 5 m; Step: 1 m; Maximum: **18** = 18 m Minimum: **01** = 1 m	–	–	–
	T – rotation;	C – current 4–20mA;	AE052, AE053, AE082,AE083, AE112, AE113, AE192, AE193	Standard version: **00** = 0 mm; Step: **01** = 10 mm; Maximum: l_2 minus 20 mm.	Standard version: **07** = 70 mm; Step: **01** = 10 mm; Maximum: **25** = 250 mm Minimum: **02** = 20 mm;	Standard version: **05** = 5 m; Step: 1 m; Maximum: **18** = 18 m Minimum: **01** = 1 m;	From 001 to 255	$Ax10^B$ rpm (min)	$Ax10^B$ rpm (max)

Example:

- AAP2200D-V – 052.01.07.05 (eddy current sensor with a 5 mm coil without metal hose, l_1– 10 mm, l_2 – 70 mm, l_3– 5 m with matching device D220-V output voltage 0 ... 5 V).
- AP2200T-C.083.00.15.015.12.23 (eddy current sensor with a 19 mm coil, with metal hose l_1 – 0 mm, l_2 – 80 m, l_3 – 15 m, number of responses – 15, with matching device T220 with current output 4 ... 20 mA). Lower limit of measuring range 100 rpm, upper limit of measuring range 2 000 rpm

AE052, AE053, AE082, AE083, AE192, AE193

Purpose:

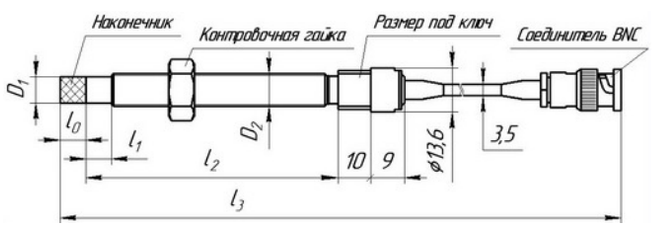
- Are part of eddy current sensors for non-contact measurement of vibration, displacement and rotation frequency of electrically conductive objects.

Features:

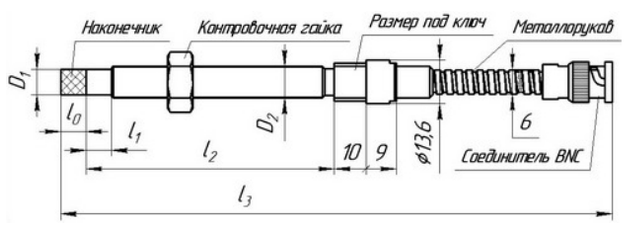
- Interchangeability for the same system length (transducer + built-in cable).
- Housing material: stainless steel;
- Tip material: high-strength moulding material;
- High-strength coaxial fluoroplast-insulated cable;
- Coaxial connector;
- Temperature range: from – 40 to + 125 °C;
- High thermal stability.

Model	D_1	Coil diameter	Metal hose	D_2	l_0	Flat-to-flat dimension	XX. l_1	XX l_2 (thread length)	– l_3 (System length)
AE052	8 mm	5 mm	W/O	M10 × 1	8 mm	9 mm	Standard version: 00 = 0 mm; Step: 01 = 10 mm; Maximum: l_2 minus 20 mm.	Standard version: 07 = 70 mm; Step: 01 = 10 mm; Maximum: 25 = 250 mm Minimum: 02 = 20 mm;	Standard version: **05** = 5 m; Step: 1 m; Maximum: **18** = 18 m Minimum: **01** = 1 m
AE053			W/						
AE082	9.6 mm	8 mm	W/O	M12 × 1					
AE083			W/						
AE112	13 mm	11 mm	W/O	M16 × 1	10 mm	14 mm			
AE113			W/						
AE192	21 mm	19 mm	W/O	M24 × 1.5	20 mm	20 mm			
AE193			W/						

Without metal hose



With metal hose



Marking:

AE	XXX.	XX.	XX	XX
	Model (see Table above): 052, 053, 082, 083, 192, 193	l_1 (see Table above)	l_2 (see Table above)	l_3 (see Table above)

Example:

- AE052.00.07.05 – primary transducer with a 5 mm coil, **l_1 =** 0 mm, **l_2 = 7**0 mm, **l_3= 5** m.
- AE083.01.04.06 – primary transducer with a 8 mm coil in a metal hose, **l_1 = 1**0 mm, **l_2 = 4**0 mm, **l_3= 6** m.

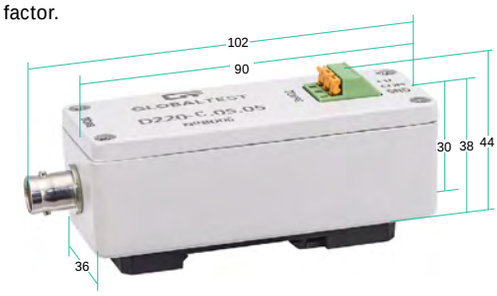
D220-C

Purpose:

- In combination with the eddy current sensor, it provides an instrument for measuring vibration and displacement of machine parts and mechanisms.

Особенности:

- Analog voltage output.
- High stability of temperature and time characteristics.
- Can transfer the output signal (4–20 mA) at a distance of up to 1 000 m.
- Eddy current sensor can be replaced without change in conversion factor.
- Mounted on a 35mm DIN- rack.

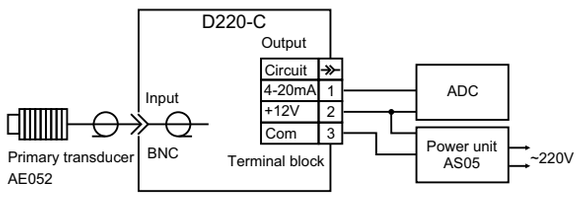


Parameter	D220-C
Measuring range:	
- for a 5 mm coil	0,2 – 2,2 mm
- for a 8 mm coil	0,3 – 3,3 mm
- for a 11 mm coil	0,3–4,3 mm
- for a 19 mm coil	1,0 – 8,0 mm
Conversion factor:	
- for a 5 mm coil	8 μA/μm
- for a 8 mm coil	5.3 μA/μm
- for a 11 mm coil	2 μA/μm
- for a 19 mm coil	2.3 μA/μm
Frequency range	0 ... 10 000 Hz
Measurement error	± 5 %
Additional measurement error of the matching device with primary transducer in the temperature range from – 40 to + 125 °C	< ± 10 %
Operating temperature range (for matching device)	– 40 ... + 85 °C
Operating temperature range (for primary transducer)	– 40 ... + 125 °C
Power supply voltage / current consumption	12 ± 0,5 V / < 35 mA
Output resistance	≤ 100 Ω
Root-mean-square value of intrinsic noise:	
- for a 5 mm coil	≤ 2 μm
- for a 8 mm coil	≤ 3 μm
- for a 11 mm coil	≤ 4 μm
- for a 19 mm coil	≤ 11 μm
Input / output connectors	BNC / terminal block
Type of primary transducer To be determined by customer	AE052, AE053, AE082, AE083, AE112, AE113, AE192, AE193
Overall dimensions	102 × 36 × 44 mm
Weight (without primary transducer)	150 g

Marking:

D220-C	-XX.	XX
	Coil diameter of eddy current sensor: 05, 08, 19 (5, 8, 19 mm, respectively)	System length: 1 m (01) – 18 m (18) Optional calibration of the matching device for a system length up to 18 m

Wiring diagram example for D220-C



Example:

- D220-C.05.05 – matching device for primary transducer with a 5 mm coil, system length 5 m.

Optional accessories:

- **Power unit** AS05.

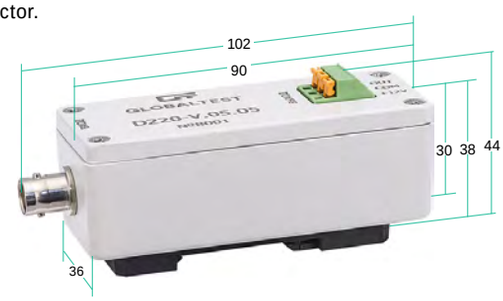
D220-V

Purpose:

- In combination with the eddy current sensor, it provides an instrument for measuring vibration and displacement of machine parts and mechanisms.

Особенности:

- Analog voltage output.
- High stability of temperature and time characteristics.
- Can transfer the output voltage signal (0–5 V) at a distance of up to 100 m.
- Eddy current sensor can be replaced without change in conversion factor.
- Mounted on a 35mm DIN- rack.

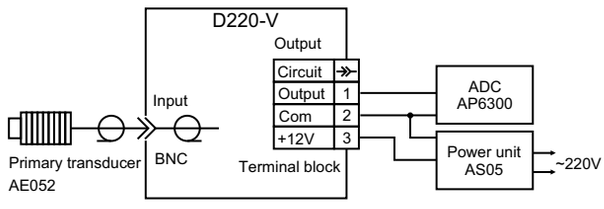


Parameter	D220-V
Measuring range	
- for a 5 mm coil	0,2 – 2,2 mm
- for a 8 mm coil	0,3 – 3,3 mm
- for a 11 mm coil	0,3–4,3 mm
- for a 19 mm coil	1,0 – 8,0 mm
Conversion factor:	
- for a 5 mm coil	4 mV/µm
- for a 8 mm coil	2.7 mV/µm
- for a 11 mm coil	4 mV/µm
- for a 19 mm coil	1.1 mV/µm
Frequency range	0 ... 10 000 Hz
Measurement error	± 5 %
Additional measurement error of the matching device with primary transducer in the temperature range from – 40 to + 125 °C	< ± 10 %
Operating temperature range (for matching device)	– 40 ... + 85 °C
Operating temperature range (for primary transducer)	– 40 ... + 125 °C
Power supply voltage / current consumption	12 ± 0,5 V / < 15 mA
Output resistance	≤ 100 Ω
Root-mean-square value of intrinsic noise:	
- for a 5 mm coil	≤ 2 µm
- for a 8 mm coil	≤ 3 µm
- for a 11 mm coil	≤ 4 µm
- for a 19 mm coil	≤ 11 µm
Input / output connectors	BNC / terminal block
Type of primary transducer To be determined by customer	AE052, AE053, AE082, AE083, AE112, AE113, AE192, AE193
Overall dimensions	102 × 36 × 44 mm
Weight (without primary transducer)	150 g

Marking:

D220-V	-XX.	XX
	Coil diameter of eddy current sensor: 05, 08, 19 (5, 8, 19 mm, respectively)	System length: 1 m (01) – 18 m (18) Optional calibration of the matching device for a system length up to 18 m

Wiring diagram example for D220-V



Example:

- D220-V.05.05 – matching device for primary transducer with a 5 mm coil, system length 5 m.

Optional accessories:

- **Power unit** AS05.

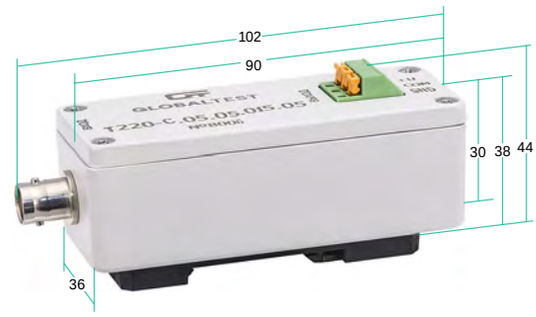
T220

Purpose:

- In combination with the eddy current sensor, it provides an instrument for measuring rotation rate (revolutions per unit time) of machine parts and mechanisms.

Features:

- Conversion of rotation speed to a standard current signal 4–20 mA.
- LED indicator «Ready» (normal clearance) for monitoring correctness of setting the primary transducer.Transmission of current (4–20 mA) signals at a distance of up to 1 000 m.
- Stable characteristics and reliable operation.
- Mounted on a 35mm DIN- rack.

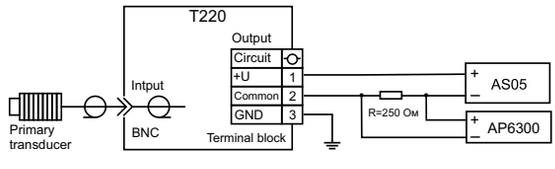


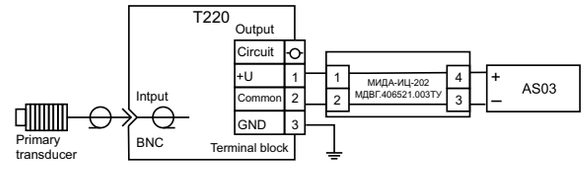
Parameter	T220
Measuring range	1 ... 60 000 rpm To be determined by customer At one response per rotation
Primary transducer setting range	1,5 ± 0,2 (AE052, AE053); 2,0 ± 0,2 (AE082, AE083) mm; 2,5 ± 0,2 (AE112, AE113) mm; 4,0 ± 0,2 (AE192, AE193) mm
Measurement error	± 2 %
Additional measurement error of the matching device with primary transducer in the temperature range from – 40 to + 85 °C	± 3 %
Number of responses per one revolution	1 ... 255 To be determined by customer At one response per rotation
Operating temperature range (for matching device)	– 40 ... + 85 °C
Operating temperature range (for primary transducer)	– 40 ... + 125 °C
Power supply voltage	12 ... 24 V
Input / output connectors	BNC / terminal block
Type of primary transducer	AE052, AE053), AE082, AE083, AE112, AE113, AE192, AE193 To be determined by customer
Overall dimensions	102 × 36 × 44 mm
Weight (without primary transducer)	150 g

Marking:

T220	.XX.	XX.	XXX.	XX.	XX
	Coil diameter of eddy current sensor: 05, 08, (5, 8, mm, respectively)	System length: 1 m (01) – 18 m (18)	Number of responses: 001–255; from 1 to 255 responses per one shaft rotation (response is formed by a protrusion, cavity or, e.g., gear teeth).	Lower limit of measuring range (min)	Upper limit of measuring range (max)

Wiring diagram examples for T220





Example:

- T220-08.05.001.50.33 – matching device with current output 4–20 mA, for eddy current sensor with a 8 mm coil, system length 5 m, number of responses – 1, lower measuring limit – 5 rpm ($50 = 5 \cdot 10^0$), upper measuring limit – 3 000 rpm ($33 = 3 \cdot 10^3$).

Optional accessories:

- **Spectrum analyzer** AP6300;
- **Power unit** AS05, AS03;
- МИДА-ИЦ-202 МДВГ.406521.003ТУ.

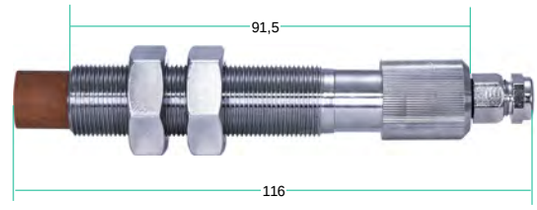
AP2600

Purpose:

- Measuring rotation frequency (rotations per unit time) of machine parts and mechanisms.

Features:

- Conversion of rotation frequency to a standard current signal 4 ... 20 mA.
- Programming the measurement range and number of responses per one revolution of the shaft.
- Monitoring correct mounting of the sensor according to the definition of normal clearance for current. (If the clearance is properly set, the initial current is 4 mA, in other cases 3.6 mA)
- Transmission of a current signal at a distance of up to 1000 m.

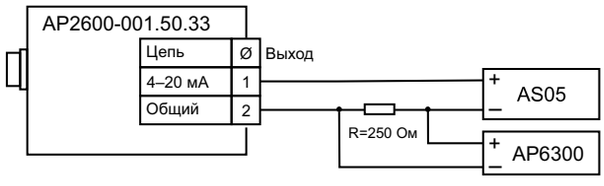


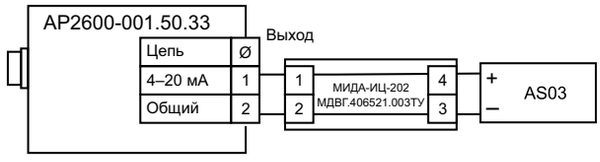
Parameter	AP2600
Measuring range	1 ... 60 000 rpm To be determined at customer's request At one response per rotation
Primary transducer setting range	2.5 ± 0.5 mm
Measurement error	± 1 %
Additional error in the temperature range from – 40 to + 85 °C	± 2 %
Number of responses per one rotation	1 ... 255 To be determined at customer's request At one response per rotation
Operating temperature range	– 20 ... + 85 °C
Power supply voltage	9 ... 25 V
Output connector	screw terminal block
Overall dimensions	116 × 25 mm
Weight (withoutprimary transducer)	150 g

Marking:

AP2600-	XXX.	XX.	XX
	Number of responses: 001 – 255; From 1 to 255 responses per one rotation of the shaft (response is formed by projection, cavity, or, for example, gear teeth).	Lower limit of measuring range (min)	Upper limit of measuring range (max)

Examples of wiring diagrams for AP2600





Example:

- AP2600-001.50.33 – number of responses – 1, lower limit of measurements – 5 rpm (50 = 5·10⁰), upper limit of measurements – 3 000 rpm (33 = 3·10³).

Optional accessories:

- **Spectrum analyzer** AP6300;
- **Power unit** AS03, AS05;
- МИДА-ИЦ-202 МДВГ.406521.003ТУ.

Calibrators

Calibration, verification and graduation of vibration measuring, control and recording equipment in the field and laboratory environment.

AT01m, AT02

Purpose:

- Calibration, verification and graduation of vibration measuring, control and recording equipment in units of acceleration, velocity and displacement in the field and laboratory environment.

Features:

- Self-contained power supply:
- AT01m – four replaceable batteries 1.2 V 150AAM,
- AT02 – battery 12 V, capacity 1 500 mA·h.

For AT02 only:

- Measurement and indication of acceleration produced by calibrator.
- Measurement and indication of axial sensitivity of vibration transducers.
- Operation mode management via the control panel and USB port:
- switching the «charge – ICP» input;
- variation of produced acceleration;
- logging.
- Can be powered by external power supply of + 15 V and current not lower than 1 A.
- Built-in charger.
- Complies with GOST ISO 8041-2006.

Parameter	AT01m	AT02
Vibration frequency (± 1 %)	159.2 Hz	
Acceleration (СК3 ± 2 %)	10 m/s²	2–20 m/s²
Velocity (RMS ± 2 %)	10 mm/s	2–20 mm/s
Displacement (RMS ± 2 %)	10 µm	2–20 µm
Transverse vibration amplitude	< 5 %	
Nonlinear distortions (with sensor weight 0.5 – 140 g)	< 3 %	
Operating mode setting time	< 5 s	
Maximum weight of calibrated sensor	160 g	
Operating temperature range	– 10 ...+ 50 °C	+ 5 ...+ 50 °C Extended operating temperature range – 10 ... + 50 °C
Maximum mounting torque of calibrated sensor	0.1 N·m In the absence of a dynamometer, the calibrated sensors can be mounted manually	
Weight	950 g	1 000 g
Supplied accessories	adapters AD01, AD0805; studs AH0108, AH0810, battery charger	adapters AD01, AD0805; studs AH0108, AH0810, power unit AS04-01, interface cable USB A-B

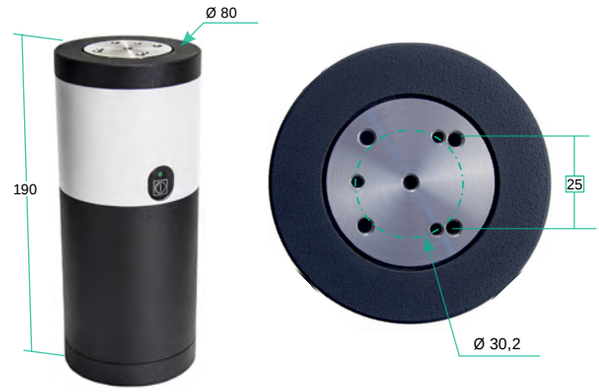
AT04

Purpose:

- Calibration, verification and graduation of vibration measuring, control and recording equipment in the field and laboratory environment.

Features:

- Self-contained power supply.
- Large vibrobench (shaker), diameter 50 mm, for holding vibration transducers of different design.
- Can be used in hard-to-reach areas without overall dismantling of vibration transducers.
- High quality and accuracy of reproduction of vibration parameters.



Parameter	AT04
Nominal value of vibration frequency, Hz	40 Hz
Acceptable limits of basic relative error of excited vibration frequency	± 1 %
Root-mean-square value (RMS): - displacement of excited vibrations, - velocity of excited vibrations, - acceleration of excited vibrations	 40 μm 10 mm·c^{-1} 2.53 m·s^{-2}
Permissible limits of basic relative error of maintaining RMS of vibration displacement, velocity and acceleration of excited vibrations	± 3 %
Coefficient of cross components of excited vibrations	< 7 %
Harmonic factor of excited vibrations	< 5 %
Maximum weight of calibrated vibration transducer	200 g
Operating temperature range	– 10 ... + 50 °C
Continuous run time	1 min
Operation time without battery recharging	not less than 1.5 h
Calibration period	1 year
Overall dimensions	190 × ø 80 mm
Weight of calibrator	1500 g
Built-in battery power supply	4 × 1.2V 2500 mA·h
Supplied accessories	demountable support battery charger stud AH0110

Amplifiers

Reception, amplification and conversion of signals from vibration, force, dynamic pressure and acoustic emission sensors.

AP5000-XXX-XX

Purpose:

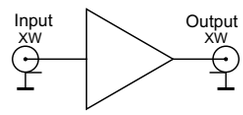
- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

Features:

- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.

Parameter	AP5000-001 AP5000-001-01 AP5000-001-02	AP5000-010 AP5000-010-01 AP5000-010-02	AP5000-100 AP5000-100-01 AP5000-100-02	AP5000-0,1 AP5000-0,1-01 AP5000-0,1-02
Conversion factor for charge To be determined by customer	1 mV/pC	10 mV/pC	100 mV/pC	0.1 mV/pC
Maximum input charge (peak), within frequencies:	± 5 000 pC (0.5 ... 50 000) Hz	± 500 pC (0.5 ... 50 000) Hz	± 50 pC (0.5 ... 50 000) Hz	± 50 000 (0.5 ... 50 000) Hz
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %			
Operating frequency range at -3 dB	0.5 ... 50 000 Hz			
RMS level of intrinsic noise within 1 ... 22 000 Hz	$5 \cdot 10^{-6}$ pC/pF	$2 \cdot 10^{-6}$ pC/pF		$30 \cdot 10^{-6}$ pC/pF
Output resistance	< 500 Ω			
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	± 5 V			
Acceptable additional relative error limits of conversion factor for charge within operating temperature range	± 2 %			
Power: - external source of voltage dc - current	 18 ... 30 V 2 ... 20 mA			
Constant output voltage level	8 ... 13 V			
Connector type: input / output	AR03 (10-32 UNF) / BNC-Bj AR03 (10-32 UNF) / BNC-S58P - (01) plug CP-50-267ФВ / socket CP-50-73-ФВ - (02)			
Weight	36 g			
Optional accessories	power units AS01, AS07 matching devices AG01, AG02			
Operating temperature range	– 40 ... + 85 °C			
Options	T TEDS poll technology (Transducer Electronic Data Sheet) – electronic work sheets that automatically define the type of sensor and its technical characteristics according to IEEE P1451.4			

Electrical circuit of AP5000-XXX-XX



To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1022-01, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1031-01, AP1031-02, AP1032, AP1034, AP1034-01, AP1037, AP1037-01, AP1037-02, AP1037-03, AP1038, AP1038P, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1057-02, AP1077, AP1077M, AP1077-01, AP1077M-01, AP1077-02, AP1077M-02, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS01-01, PS01-02, PS01-03, PS02, PS02-01;
- **impulse hammer** AU01, AU03.

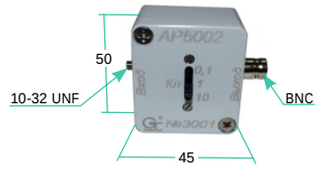
AP5002

Purpose:

- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

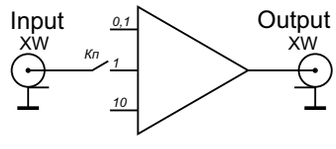
Features:

- Variable sensitivity.
- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.



Parameter	AP5002		
Conversion factor for charge	0.1 mV/pC	1 mV/pC	10 mV/pC
Maximum input charge (peak)	50 000 pC	5 000 pC	500 pC
Maximum input charge (peak), within frequencies:	± 50 000 pC (0.5 ... 3 000 Hz) ± 30 000 pC (0.5 ... 5 000 Hz) ± 20 000 pC (0.5 ... 10 000 Hz) ± 5 000 pC (0.5 ... 30 000 Hz) ± 3 000 pC (0.5 ... 50 000 Hz)	± 5 000 pC (0.5 ... 50 000 Hz)	± 500 pC (0.5 ... 50 000 Hz)
Acceptable limits of basic relative error of charge-to-voltage conversion factor at the frequency of 1 kHz	± 2 %		
Acceptable additional relative error limits of conversion within operating temperature range – 40 ... + 85 °C	± 1 %		
Output resistance	< 500 Ω		
Operating frequency range at -3 dB	0.5 ... 50 000 Hz		
Frequency-response ripple ± 1% within frequencies:	5 ... 10 000 Hz	7 ... 25 000 Hz	7 ... 20 000 Hz
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	± 5 V		
Load resistance	> 5 kΩ		
RMS level of intrinsic noise within 1 ... 50 000 Hz	$50 \cdot 10^{-6}$ pC/pF $20 \cdot 10^{-6}$ pC/pF $5 \cdot 10^{-6}$ pC/pF		
Power supply voltage	18 ... 30 V		
Power supply current	2 ... 20 mA		
Constant output voltage level	10 ... 13 V		
Type of input connector	AR03 (10-32 UNF), BNC-Bj To be determined by customer		
Type of output connector	BNC-Bj		
Weight	80 g		
Environments protection rate	IP52		
Optional accessories	power units AS01, AS07 matching devices AG01, AG02		

Electrical circuit of AP5002



To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1022-01, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1031-01, AP1031-02, AP1032, AP1034, AP1034-01, AP1037, AP1037-01, AP1037-02, AP1037-03, AP1038, AP1038P, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1057-02, AP1077, AP1077M, AP1077-01, AP1077M-01, AP1077-02, AP1077M-02, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS01-01, PS01-02, PS01-03, PS02, PS02-01;
- **impulse hammers** AU01, AU03.

AQ02

Purpose:

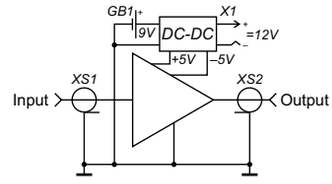
- Converting high-impedance charge signal from a piezoelectric transducer to a low-impedance voltage signal.

Features:

- Built-in battery with charging from an external power supply.
- Power check indicators (Battery status: full charge, charging, low charge).
- Low intrinsic noise.
- Can be used at long communication lines (up to 100 m), almost without reducing conversion factor or limiting the low frequency region.

Parameter	AQ02-001	AQ02-010	AQ02-100	AQ02-0,1
Conversion factor for charge, (error ± 2 %) To be determined by customer	1 mV/pC	10 mV/pC	100 mV/pC	0.1 mV/pC
Maximum input charge	5000 pC	500 pC	50 pC	50 000 pC
Acceptable basic relative error limits of conversion factor for charge	± 2			
Frequency range at: - 1 dB	1 ... 100 000 Hz			
Input resistance	> 10^9 Ω			
Output resistance	< 1000 Ω			
Maximum output voltage at nonlinear distortion factor < 5 %	± 5 V			
RMS value of noise	< $10 \cdot 10^{-6}$ pC/pF	< $1 \cdot 10^{-6}$ pC/pF	< $0.1 \cdot 10^{-6}$ pC/pF	< $100 \cdot 10^{-6}$ pC/pF
Coefficient of ambient temperature variation influence (from –40 to +85°C) on conversion factors for charge	≤ 0.025 %/°C			
Built-in filters with decline in frequency response not less than 40 dB/decade at -1dB: - HF filter - LF filter	 1 Hz 100 kHz			
Power - external source of voltage dc - 9 V battery	 + (12 ± 0.5) V 8.4 V			
Current consumption	< 30 mA			
Type of input connector	AR03 (10-32 UNF), BNC-Bj To be determined by customer			
Type of output connector	BNC-Bj			
Overall dimensions	131 × 68 × 30 mm			
Weight	300 g			
Optional accessories	power unit AS05			

Electrical circuit of AQ02



To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1022-01, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1031-01, AP1031-02, AP1032, AP1034, AP1034-01, AP1037, AP1037-01, AP1037-02, AP1037-03, AP1038, AP1038P, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1057-02, AP1077, AP1077M, AP1077-01, AP1077M-01, AP1077-02, AP1077M-02, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS01-01, PS01-02, PS01-03, PS02, PS02-01;
- **impulse hammers** AU01, AU03.

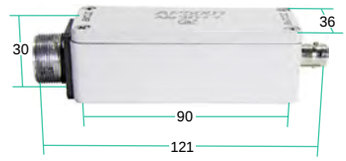
AP5001

Purpose:

- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

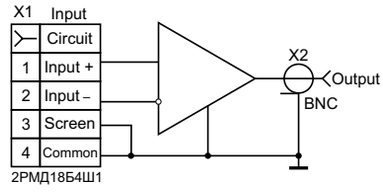
Features:

- Can be used at long communication lines (up to 100 m) between the amplifier and recording equipment.
- Low intrinsic noise.
- Can be connected to industrial vibration transducers.



Parameter	AP5001		
Conversion factor for charge	1 mV/pC	10 mV/pC To be determined by customer	0.1 mV/pC
Maximum input charge	5 000 pC	500 pC	50 000 pC
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %		
Operating frequency range at -3 dB	1 ... 20 000 Hz		
Load capacity for input	10 ... 10 000 pF		
Maximum output voltage at nonlinear distortion factor < 5 %	± 4 V		
Output resistance	< 500 Ω		
Load resistance	> 5 kΩ		
RMS level of intrinsic noise reduced to the input for sensor capacity 1 nF	$< 5 \cdot 10^{-3}$ pC		
Maximum output voltage at nonlinear distortion factor < 5 %	± 4 V		
Common-mode rejection ratio at 1 kHz	> 40 dB		
Acceptable additional relative error limits of conversion factor for charge in the operating temperature range –40 ... 85 °C	< 1 %		
Power: - external source of voltage dc - current	 + (18 ... 30) V 4.7 ... 20 mA		
Constant output voltage level	11 ... 13 V		
Type of input connector	2РМД18Б4Ш1В1 (2РМ14Б4Ш1В1) To be determined by customer		
Type of output connector	BNC		
Weight	100 g		
Optional accessories	power units AS01, AS07, matching devices AG01, AG02		

Electrical circuit of AP5001



To be used with:

- **vibration transducers** AP1046, AP1065, AP1047, AP62B, AP62B-02, AP63B, AP63B-01.

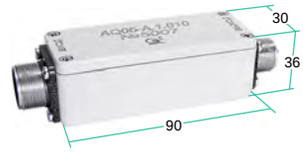
AQ05-A.1, AQ05-A.2

Purpose:

- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

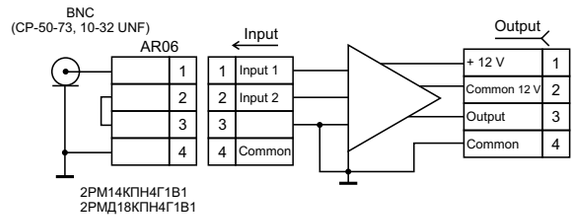
Features:

- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.



Parameter	AQ05-A.1.XXX		AQ05-A.2.XXX	
Number of channels	1		2	
Conversion factor for charge	1 mV/pC	10 mV/pC	100 mV/pC	0.1 mV/pC
	To be determined by customer			
Maximum input charge	10 000 pC	1 000 pC	100 pC	100 000 pC
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %			
Operating frequency range at -3 dB	1 ... 30 000 Hz (To be determined by customer)			
Frequency-response ripple ± 30% (± 5%) within frequencies:	1 ... 30 000 Hz (10 ... 3 000 Hz)			
RMS level of intrinsic noise reduced to the input for sensor capacity 1 nF	< $10 \cdot 10^{-3}$ pC			
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	10 V			
Output resistance, not more than	100 Ω			
Bias voltage at the output	± 5 mV			
Common-mode rejection ratio at 1 kHz, not less than:	40 dB			
Acceptable additional relative error limits of conversion factor for charge in the operating temperature range –40 ... 85 °C	± 1 %			
Power: - external source of voltage dc - current	 + (12 ± 0.5) V 20 mA			
Type of input connector	2РМД18Б4Ш1В1 (2РМ14Б4Ш1В1) (To be determined by customer)			
Type of output connector	2РМ14Б4Г1В1 (2РМД18Б4Г1В1) (To be determined by customer)			
Weight	100 g		250 g	
Optional accessories	power unit AS05-04, adapter AR06			

Electrical circuit of AQ05-A



Example:

- AQ05-A.2.100 – charge amplifier, two-channel, with conversion factor for charge: 100 mV/pC.

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1022-01, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1031-01, AP1031-02, AP1032, AP1034, AP1034-01, AP1037, AP1037-01, AP1037-02, AP1037-03, AP1038, AP1038P, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1057-02, AP1064, AP1065, AP1077, AP1077M, AP1077-01, AP1077M-01, AP1077-02, AP1077M-02, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS01-01, PS01-02, PS01-03, PS02, PS02-01;
- **impulse hammer** AU01, AU03.

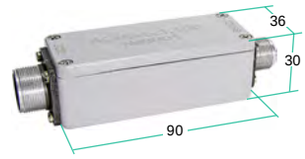
AQ05-Б.1, AQ05-Б.2

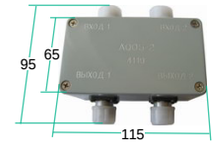
Purpose:

- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

Features:

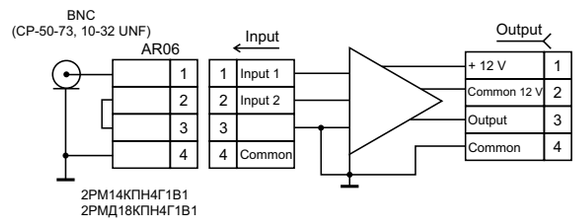
- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.





Parameter	AQ05-Б.1.XXX		AQ05-Б.2.XXX	
Number of channels	1		2	
Conversion factor for charge	1 mV/pC To be determined by customer	10 mV/pC	100 mV/pC	0.1 mV/pC
Input charge range	7 000 ... 10 000 pC	700 ... 1 000 pC	70 ... 100 pC	70 000 ... 100 000 pC
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %			
Operating frequency range at -3 dB	1 ... 30 000 Hz To be determined by customer			
Frequency-response ripple ± 30% (± 5%) within frequencies:	1 ... 30 000 (10 ... 3 000) Hz			
RMS level of intrinsic noise reduced to the input for sensor capacity 1 nF	< $10 \cdot 10^{-3}$ pC			
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	10 V			
Output resistance, not more than	100 Ω			
Bias voltage at the output	± 5 mV			
Common-mode rejection ratio at 1 kHz, not less than	40 dB			
Acceptable additional relative error limits of conversion factor for charge in the operating temperature range –40 ... 85 °C	± 1 %			
Power: - external source of voltage dc - current	 ± (9 ... 15) V 10 mA			
Type of input connector	2РМД18Б4Ш1В1 (2РМ14Б4Ш1В1) To be determined by customer			
Type of output connector	2РМ14Б4Ш1В1 (2РМД18Б4Ш1В1) To be determined by customer			
Weight	100 g		250 g	
Optional accessories	power unit AS04, adapter AR06			

Electrical circuit of AQ05-Б



Example:

- AQ05-Б.2.100 – charge amplifier, two-channel, with conversion factor for charge: 100 mV/pC.

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1033, AP1034, AP1037, AP1038, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1058, AP1064, AP1065, AP1077, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP62B, AP62B-02, AP63B, AP63B-02;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS01-01, PS01-02, PS01-03, PS02, PS02-01;
- **impulse hammers** AU01, AU03.

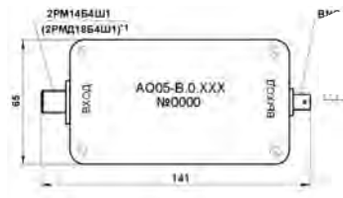
AQ05-B.0, AQ05-B.1

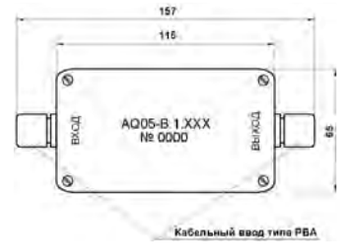
Purpose:

- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

Features:

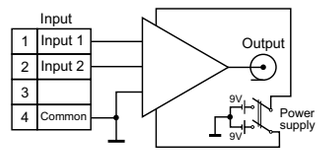
- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.
- AQ05-B – internal battery supply.
- AQ05-B.1 – external power supply.
- Explosion-proof version 1ExibIICT4 (optional).



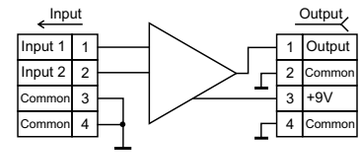


Parameter	AQ05-B.0.XXX		AQ05-B.1.XXX	
Number of channels	1			
Conversion factor for charge	1 mV/pC	10 mV/pC	100 mV/pC	0.1 mV/pC
Maximum input charge	4 500 pC	450 pC	45 pC	45 000 pC
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %			
Operating frequency range at -3 dB	1 ... 30 000 Hz (To be determined by customer)			
Frequency-response ripple ± 30% (± 5%) within frequencies:	1 ... 30 000 (10 ... 3 000) Hz			
RMS level of intrinsic noise reduced to the input for sensor capacity 1 nF	< $10 \cdot 10^{-3}$ pC			
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	2.4 V			
Output resistance, not more than	100 Ω			
Bias voltage at the output	+ (2.5 ± 5) mV			
Common-mode rejection ratio at 1 kHz, not less than	40 dB			
Acceptable additional relative error limits of conversion factor for charge in the operating temperature range –40 ... 85 °C	± 1 %			
Power: - external source of voltage dc - current	 7 ... 9 V from external source of dc 10 mA		 7 ... 9 V internal battery supply 10 mA	
Type of input connector	2РМД18Б4Ш1В1 (2РМ14Б4Ш1В1) To be determined by customer		PBA-type cable inlet	
Type of output connector	2РМ14Б4Ш1В1/(2РМД18Б4Ш1В1) To be determined by customer		PBA-type cable inlet	
Weight	450 g			
Optional accessories	cable adapter AR06			

Electrical circuit of AQ05-B.0



Electrical circuit of AQ05-B.1



Example:

- AQ05-B.1.100 – charge amplifier with external power supply and conversion factor for charge: 100 mV/pC.
- AQ05-B. 100 – charge amplifier with internal power supply and conversion factor for charge: 100 mV/pC.

To be used with:

- **vibration transducers** AP1047, AP62B, AP62B-01, AP63B, AP63B-02, AP1064, AP1065.

AQ05-Г.1, AQ05-Г.2

Purpose:

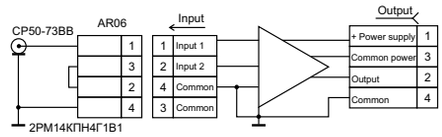
- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

Features:

- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.
- Power supply voltage 5 V.
- Explosion-proof version 1ExibIICT4 (optional).

Parameter	AQ05-Г.1.XXX		AQ05-Г.2.XXX	
Number of channels	1		2	
Conversion factor for charge	1 mV/pC To be determined by customer	10 mV/pC	100 mV/pC	0.1 mV/pC
Maximum input charge	4 500 pC	450 pC	45 pC	45 000 pC
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %			
Operating frequency range at -3 dB	1 ... 30 000 Hz (To be determined by customer)			
Frequency-response ripple ± 30% (± 5%) within frequencies:	1 ... 30 000 (10 ... 3 000) Hz			
RMS level of intrinsic noise reduced to the input for sensor capacity 1 nF	< $10 \cdot 10^{-3}$ pC			
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	4.5 V			
Output resistance, not more than	100 Ω			
Bias voltage at the output	± 5 mV			
Common-mode rejection ratio at 1 kHz, not less than	40 dB			
Acceptable additional relative error limits of conversion factor for charge in the operating temperature range –40 ... 85 °C	± 1 %			
Power: - external source of voltage dc - current	 ± (5 ... 0.5) V 35 mA			
Type of input connector	2РМД18Б4Ш1В1 (2РМ14Б4Ш1В1) (To be determined by customer)			
Type of output connector	2РМ14Б4Ш1В1 (2РМД18Б4Ш1В1) (To be determined by customer)			
Weight	100 g		250 g	
Optional accessories	power unit AS06, adapter AR06			

Electrical circuit of AQ05-Г.1.XXX



Example:

- AQ05-Г.1.100 – charge amplifier, two-channel, with conversion factor for charge: 100 mV/pC.

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1022-01, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1031-01, AP1031-02, AP1032, AP1034, AP1034-01, AP1037, AP1037-01, AP1037-02, AP1037-03, AP1038, AP1038P, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1057-02, AP1064, AP1065, AP1077, AP1077M, AP1077-01, AP1077M-01, AP1077-02, AP1077M-02, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS01-01, PS01-02, PS01-03, PS02, PS02-01;
- **impulse hammers** AU01, AU03.

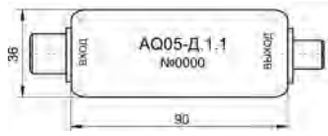
AQ05-Д.1.1, AQ05-Д.2.1

Purpose:

- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

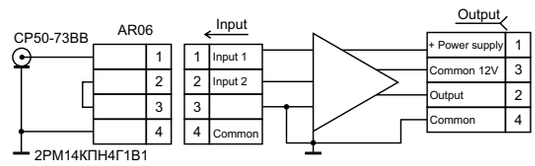
Features:

- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.



Parameter	AQ05-Д.1.1	AQ05-Д.2.1
Number of channels	1	2
Sensitivity (±2%)	1 mV/pC	
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %	
Maximum input charge	10 000 pC	
Operating frequency range at -3 dB	0.01 ... 30 000 Hz To be determined by customer	
Frequency-response ripple ± 30% (± 5%) within frequencies:	0.01 ... 30 000 (1 ... 3 000) Hz	
RMS level of intrinsic noise reduced to the input for sensor capacity 1 nF	< $10 \cdot 10^{-3}$ pC	
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	10 V	
Output resistance	< 1 000 Ω	
Bias voltage at the output	± 5 mV	
Common-mode rejection ratio at 1 kHz, not less than:	40 dB	
Acceptable additional relative error limits of conversion factor for charge in the operating temperature range –40 ... 85 °C	± 1 %	
Power: - external source of voltage dc - current	 + (12 ± 0.5) V 20 mA	
Type of input connector	2РМД18Б4Ш1В1 (2РМ14Б4Ш1В1) To be determined by customer	
Type of output connector	2РМ14Б4Ш1В1 (2РМД18Б4Ш1В1) To be determined by customer	
Weight	100 g	250 g
Optional accessories	power unit AS05-04, adapter AR06	

Electrical circuit of AQ05-Д



Example:

- AQ05-Д.1.1 – charge amplifier, one-channel, with conversion factor for charge: 1 mV/pC.

To be used with:

- **vibration transducers** AP1006, AP1006-01 AP1064, AP1065.

AQ05-E.XXX

Purpose:

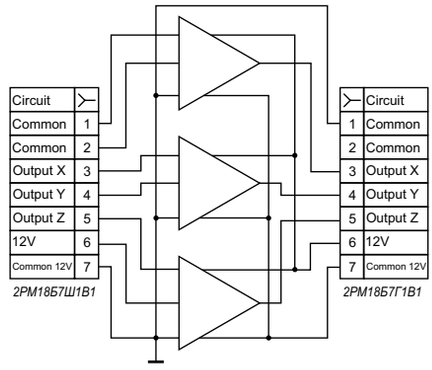
- Converting high-impedance charge signal from a piezoelectric transducer (vibration transducer, force sensor, dynamic pressure sensor, etc.) to a low-impedance voltage signal.

Features:

- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Low intrinsic noise.

Parameter	AQ05-E.XXX			
Number of channels	3			
Conversion factor for charge	1 mV/pC To be determined by customer	10 mV/pC	100 mV/pC	0.1 mV/pC
Maximum input charge	10 000 pC	1 000 pC	100 pC	100 000 pC
Acceptable basic relative error limits of conversion factor for charge at the frequency of 1 kHz	± 2 %			
Operating frequency range at -3 dB[*1]	1 ... 30 000 Hz To be determined by customer			
Frequency-response ripple ± 30% (± 5%) within frequencies:	1 ... 30 000 (10 ... 3 000) Hz			
RMS level of intrinsic noise reduced to the input for sensor capacity 1 nF	< $10 \cdot 10^{-3}$ pC			
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	10 V			
Output resistance, not more than	100 Ω			
Bias voltage at the output	± 5 mV			
Common-mode rejection ratio at 1 kHz, not less than	40 dB			
Acceptable additional relative error limits of conversion factor for charge in the operating temperature range –40 ... 85 °C	± 1 %			
Power: - external source of voltage dc - current	 + (12 ± 0.5) V 60 mA			
Type of input connector	2РМД18Б7Ш1В1			
Type of output connector	2РМ18Б7Г1В1			
Weight	200 g			
Optional accessories	power unit AS05-04-3			

Electrical circuit of AQ05-E.XXX



Example:

- AQ05-E.100 – charge amplifier, three-channel, with conversion factor for charge: 100 mV/pC.

To be used with:

- **vibration transducers** AP1064, AP1065.

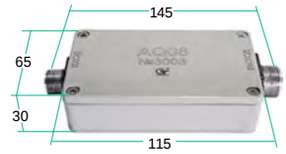
AQ08, AQ08-01

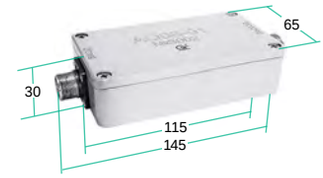
Purpose:

- Converting high-impedance charge signal from a piezoelectric transducer to a low-impedance voltage signal.

Features:

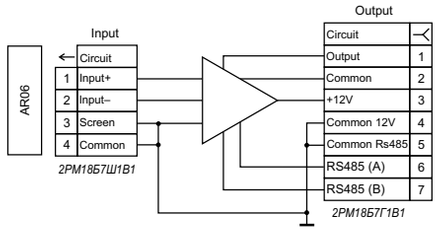
- Low intrinsic noise.
- Can be used at long communication lines (up to 100 m), almost without reducing sensitivity or limiting the low frequency region.
- Normalization mode.
- Measurement report.
- Operating mode control:
- AQ08 – via RS-485 port with an option of connecting up to 128 amplifiers.
- AQ08-01 – via USB port.



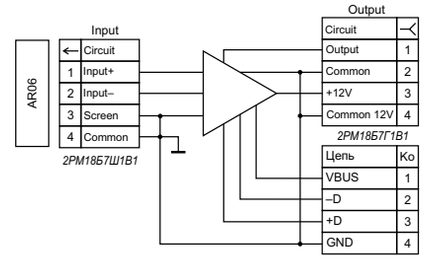


Parameter	AQ08	AQ08-01
Maximum input charge	10^5 pC	
Conversion factor по заряду	0.1; 0.2; 0.5; 1; 2; 5; 10; 20; 50; 100 Parameters are programmed via RS485 interface or USB (placed under the amplifier cover)	
Normalization factor	1 ... 9.99 with an increment of 0.01 pC/unit Parameters are programmed via RS485 interface or USB (placed under the amplifier cover)	
Basic measurement error	± 0.5 %	
Operating frequency range at –1 dB	0.3 ... 30 000 Hz To be determined by customer	
RMS level of intrinsic noise reduced to the input, not greater than:	5 μV	
Input resistance	> 10^9 Ω	
Output resistance	< 1000 Ω	
Bias voltage at the output	± 5 mV	
Max. amplitude of output voltage at load resistance 10 kΩ and nonlinear distortion factor < 5 %	± 13 V	± 4.8 V
Common-mode rejection ratio at 1 kHz	> 40 mV/pC	
Coefficient of temperature variation (from – 40 to + 85 °C) influence on conversion factor for charge	≤ 0.025 %/°C	
Built-in filters with decline in frequency response not less than 20 dB/decade at -1dB: - HF filter - LF filter	0.3; 1; 3; 10 Hz 0.3; 1; 10; 30 kHz Parameters are programmed via RS485 interface or USB (placed under the amplifier cover)	
Power: - external source of voltage dc - current	 + (12 ± 2) V 100	
Type of input connector	2РМД18Б4Ш1В1 (2РМ14Б4Ш1В1,TWIN BNC) To be determined by customer	
Type of output connector	2РМ18Б7Г1В1	2РМ14Б4Г1В1
Weight	300 g	
Supplied accessories	setup CD	interface cable USB A-B, setup CD
Optional accessories	matching device AG15 (RS485-USB converter), power unit AS05-02, cable adapter AR06	power unit AS05-02, cable adapter AR06

Electrical circuit of AQ08



Electrical circuit of AQ08-01



To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1022-01, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1031-01, AP1031-02, AP1032, AP1034, AP1034-01, AP1037, AP1037-01, AP1037-02, AP1037-03, AP1038, AP1038P, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1057-02, AP1077, AP1077M, AP1077-01, AP1077M-01, AP1077-02, AP1077M-02, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS01-01, PS01-02, PS01-03, PS02, PS02-01;
- **impulse hammers** AU01, AU03.

AP5030-4

Purpose:

- Vibration (vibroacceleration) measurements in the modes:
- charge amplifier;
- voltage amplifier.

Features:

- Vibroacceleration measurements.
- Normalization mode.
- Overload display mode.
- Low level of noise.
- Control and power from USB.

Parameter	AP5030-4
Number of measuring channels:	4
Maximum input charge (peak), not less than:	± 5 · 10^4 pC
Maximum input voltage (peak), not less than:	± 5 V
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 100 mV/pC
Conversion factor for voltage (corresponds to 1, 2, 5):	from 1 to 100
Normalization range (increment 0.01) of conversion factor:	from 1 to 9.99
Basic relative error limits of conversion factor setting, not more than:	± 0.8 %
Additional error limits of conversion factor setting within temperatures from 0 to +50°C:	± 0.5 %
Operating frequency range with attenuation on the boundaries: -30%:	from 0.2 to 120 000 Hz
Cutoff frequencies of built-in HF filters (increment 0.1; 1; 10; 100 Hz) with decline in frequency response not less than 40dB/decade and attenuation of -10%:	from 0.3 to 200 Hz HF filter has attenuation not more than 30% at the cutoff frequency 0.2 Hz.
Cutoff frequencies of built-in LF filters (increment 0.1; 1; 10; kHz) with decline in frequency response not less than 40dB/decade and attenuation of -10%:	from 0.1 to 100 kHz
Maximum output voltage (peak) at nonlinear distortion factor < 5 %	± 5 V
Input resistance, not less than:	10^{11} Ω
Output resistance, not more than:	100 Ω
Root-mean-square (RMS) value of noise reduced to the input in the mode of voltage conversion, not greater than:	20 μV
Root-mean-square (RMS) value of noise reduced to the input in the mode of charge conversion for sensor capacity 1 nF, not greater than:	20 · 10^{-3} pC
Power supply of sensors with built-in matching amplifier: - voltage - current	 + (24 ± 2) V from 3 to 15 mA To be determined by customer
Power supply of amplifier from external source of dc voltage:	+ (5 ± 0.5) V
Current consumption, not more than:	400 mA
Type of input connectors:	BNC, 10-32 UNF
Type of output connectors:	BNC
Power:	line supply from power unit AS05-03, USB from computer
Supplied accessories	setup CD with AP5030-4 Exlorer Software; cable USB A-B; power unit ~220V/+5V, ± 0.5A; capacity transducer E1000
Overall dimensions:	157 × 236 × 75 mm
Weight, not more than:	1 500 g

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3.3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

AP5210-16

Purpose:

- Conversion and amplification of high-impedance charge signal from piezoelectric transducers and sensors with built-in matching amplifier to a low-impedance voltage signal.

Features:

- Operating mode control via USB port.
- Overload display mode.
- Low level of noise.
- Casing 19” – metal, height – 1U, depth – 260 mm.

Parameter	AP5210-16
Number of measuring channels:	16
Input voltage range	± 10 V
Input charge range	± 10^4 pC
Frequency range at: - 1 dB	0.2 ... 100 000 Hz
Input resistance	> 10^{10} Ω
Output resistance	< 100 Ω
Maximum output voltage at nonlinear distortion factor < 5 %	± 10 V
RMS value of noise (reduced to the input)	≤ 20 μV
Power supply of sensors with built-in electronics: - voltage - current	 24 ± 4 V 5.6 ± 1.1 mA
Amplification factor for voltage, (error ± 1 %)	1; 2; 5; 10; 20; 50; 100
Conversion factor for charge, (error ± 1 %)	1; 2; 5; 10; 20; 50; 100 mV/pC
Coefficient of ambient temperature variation influence (from 0 to 40 °C) on amplification and conversion factors	≤ 0.025 % / °C
Built-in HF filter with decline in frequency response not less than 40 dB/decade at: - 1 dB:	0.2 Hz
Built-in LF filter with decline in frequency response not less than 80 dB/decade at: - 1 dB	10; 20; 50; 100 kHz
Power supply voltage	+ (12 ± 2) V
Current consumption	< 1 A
Type of input connectors	TNC
Type of output connectors	BNC
Power	line supply from power unit
Overall dimensions	483 × 325 × 45 mm
Weight	4 500 g

Delivery set:

Description	Identification code	Quantity
Charge and voltage amplifiers AP5210-16	АБКЖ.431134.045	1
Passport	АБКЖ.431134.045ПС	1
Operator’s manual	–	1
Setup CD with AP5230 Explorer Software	–	1
Power unit AS05-05 (~220В/=12В, 1,5А)	–	1
Cable USB A-B	–	1
Cable adapter AR10	–	16
Cable adapter AR15	–	16 To be determined by customer
Capacity transducer E1000	–	1 To be determined by customer

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3.3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

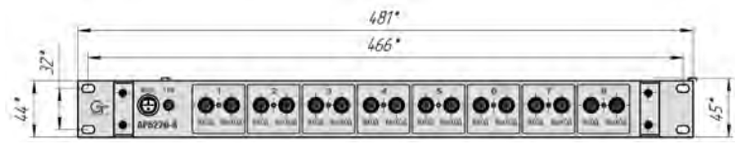
AP5220-8

Purpose:

- Converting input signal from piezoelectric transducers with charge output and those with built-in electronics to voltage.
- Measuring vibration velocity of an object and generating a warning signal of exceeding a preset vibration level in the form of closed or open relay contacts.

Features:

- 8-channel version.
- Normalization mode.
- Overload display mode.
- TEDS (Transducer Electronic Data Sheet) poll technology (automatic definition of the type of sensor and its technical characteristics).
- Can work as vibration controller:
- display of measured vibration velocity value (RMS);
- customized programming of relay operation parameters.
- Evaluation of machines vibration according to GOST ISO 10816-3-2002.
- Low level of noise.
- Operating mode control via USB port.
- Casing 19” – metal, height – 1U, depth – 260 mm.



Parameter	AP5220-8
Number of measuring channels:	8
Maximum input charge (peak), not less than:	± 10^5 pC
Maximum input voltage (peak), not less than:	± 10 V
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 100 mV/pC
Conversion factor for voltage (corresponds to 1, 2, 5):	from 1 to 100
Normalization range (increment 0.01) of conversion factor:	from 1 too 9.99
Operating frequency range with attenuation on the boundaries: - 10%:	from 0.3 to 100 000 Hz
Operating frequency range for vibrovelocity with attenuation on the boundaries: - 10% (to be set by built-in HF and LF filters):	from 2 to 2 000 Hz
Cutoff frequencies of built-in HF filters (increment 0.1; 1; 10; 100 Hz) with decline in frequency response not less than 80dB/decade and attenuation of -10%:	from 0.3 to 200 Hz
Cutoff frequencies of built-in LF filters (increment 0.1; 1; 10; kHz) with decline in frequency response not less than 80dB/decade and attenuation of -10%:	from 0.1 to 100 kHz
Relay operation parameters: - defined operating level (RMS)/ operating level increment, (error ± 2 %) ; - actuation signal conditions; - relay operation mode; - self-recovery; - vibration control delay (after setting the operation mode or self-recovery).	1...20/0.1; 20...100/0.5; 100...200/1 mm/s informative signal is continuously exceeding the threshold value during 0-9 s; with blocking or self-recovery; decrease in vibration by 10% from operating level 0... 20 s
Relay contact parameters:	
- switching current	1 A (AC), 2 A (DC)
- switching voltage	0 ... 60 V
- position	closed / open
Maximum output voltage (peak) at nonlinear distortion factor < 5 %:	± 10 V
Input resistance, not less than:	10^9 Ω
Output resistance, not more than:	100 Ω
Root-mean-square (RMS) value of noise reduced to the input, not greater than:	20 μV
Power supply of sensors with built-in matching amplifier: - voltage - current	 + (24 ± 0.5) V 5.6 ± 1.2 mA
Power supply of amplifier from external source of dc voltage:	+ (12 ± 2) V
Current consumption, not more than:	1.5 A
Type of input connectors:	BNC, 10-32 UNF
Type of output connectors:	BNC
Type of relay connectors:	terminal blocks
Power:	line supply from power unit
Supplied accessories	setup CD with AP5220-8 Explorer Software; cable USB A-B; power unit AS05-03 (~220V/=12V; 1.5A); capacity transducer E1000
Overall dimensions:	481 × 320 × 45 mm
Weight, not more than:	5 000 g

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3.3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

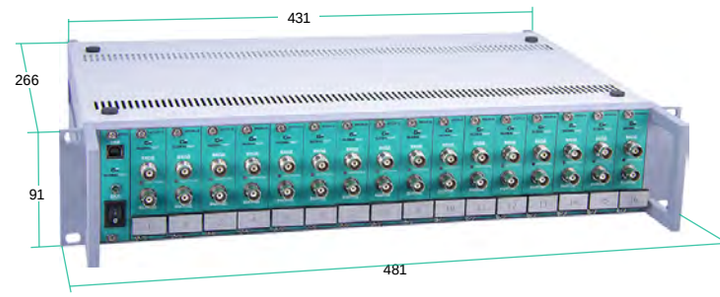
AP5230-16

Purpose:

- Converting input signal from piezoelectric measuring transducers with charge output and those with built-in electronics to voltage.

Features:

- Normalization mode.
- Overload display mode.
- Low level of noise.
- Operating mode control via USB port, Ethernet.
- Casing 19'' – metal, height – 2U, depth – 260mm.



Parameter	AP5230-16
Number of measuring channels:	16
Maximum input charge (peak), not less than:	± 10^5 pC
Maximum input voltage (peak), not less than:	± 10 V
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 100 mV/pC
Conversion factor for voltage (corresponds to 1, 2, 5):	from 1 to 100
Normalization range (increment 0.01) of conversion factor:	from 1 to 9.99
Basic relative error limits of conversion factor setting:	± 0.8 %
Operating frequency range with attenuation on the boundaries: - 10%:	from 0.1 Hz (at -30%) to 100 000 Hz (at - 10%)
Cutoff frequencies of built-in HF filters with decline in frequency response not less than 40dB/decade and attenuation of -10%:	0.1; 0.2; 1; 2; 10; 100 Hz HF filter has attenuation not more than 30% at the cutoff frequency 0.1 Hz.
Cutoff frequencies of built-in LF filters with decline in frequency response not less than 40dB/decade and attenuation of -10%:	1; 10; 30; 100 kHz
Maximum output voltage (peak) at nonlinear distortion factor < 5 %, not less than:	± 10 V
Input resistance, not less than:	10^9 Ω
Output resistance, not more than:	100 Ω
Root-mean-square (RMS) value of noise reduced to the input in the mode of voltage conversion, not greater than:	20 μV
Root-mean-square (RMS) value of noise reduced to the input in the mode of charge conversion for sensor capacity 1 nF, not greater than:	20 · 10^{-3} pC
Run mode setting time after power-on or switching inputs and conversion factors, not more than:	10 s
Power supply of sensors with built-in matching amplifier: - voltage - current	 + (24 ± 2) V 5.6 ± 1.2 mA
Power supply of amplifier from external source of dc voltage:	+ (12 ± 2) V
Current consumption не более:	2.6 A
Type of input connectors:	TNC
Type of output connectors:	BNC
Power:	line supply from power unit
Overall dimensions:	481 × 325 × 90 mm
Weight, not more than:	8 000 g

Delivery set:0

Description	Description	Quantity
Measuring amplifier AP5230-16	АБКЖ.431134.045	1
Passport	АБКЖ.431134.045ПС	1
Operator's manual	–	1
Setup CD with AP5230 Explorer Software	–	1
Power unit AS05-03 (~220В/=12В, 4,5А)	–	1
Cable USB A-B	–	1
Cable adapter AR10	–	16
Cable adapter AR15	–	16 To be supplied on separate order
Capacity transducer E1000	–	1 To be supplied on separate order

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3.3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

AP5240-16

Purpose:

- Converting input signal from piezoelectric measuring transducers with charge output and those with built-in electronics to voltage.

Features:

- 16-channel module design.
- Normalization mode.
- Overload display mode.
- Low level of noise.
- Operating mode control via USB port.
- Casing 19'' – metal, height – 2U, depth – 290 mm.

AP5240A1 – charge amplifier with unbalanced input (frequency range 0.3 ... 100000 Hz);

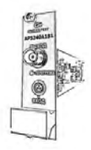
AP5240A2 – charge amplifier with balanced input (frequency range 0.3 ... 100000 Hz);

AP5240A3 – charge amplifier with balanced input (frequency range 0.01 ... 10000 Hz);

AP5240CV – current Converter 4-20mA and voltage 0-10V to voltage signal

AP5240B2 – voltage amplifier (frequency range 0.1 ... 100000 Hz).

AP5240A1B1 – amplifier of charge with unbalanced input and voltage (frequency range 0.3 ... 100000 Hz;



AP5240B1 (T) – voltage amplifier **T** – TEDS poll technology (automatic definition of the type of sensor and its technical characteristics) (frequency range 0.3 ... 100000 Hz);

Parameter	AP5240A1	AP5240A2	AP5240A3	AP5240B1 AP5240B1T	AP5240B2	AP5240A1B1	AP5240CV
Number of measuring channels:	16						
Maximum input charge (peak), not less than:	± 10^5 pC		± 10^4 pC	–		± 10^5 pC	–
Maximum input voltage (peak), not less than:	± 10 V						0 ... 10 B
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 1 000 mV/pC			–		from 0.1 to 1 000 mV/pC	–
Conversion factor for voltage (corresponds to 1, 2, 5):	–			from 1 to 1 000			–
Normalization range (increment 0.01) of conversion factor:	from 1 to 9.99						–
Basic relative error limits of conversion factor setting at 1 kHz: - within 0.1 to 200 - within 500 to 1 000	 ± 0.8 % ± 1.6 %						–

Parameter	AP5240A1	AP5240A2	AP5240A3	AP5240B1 AP5240B1T	AP5240B2	AP5240A1B1	AP5240CV
Operating frequency range with attenuation on the boundaries: - 10%:	from 0.3 to 100 000 Hz		from 0.01 to 10 000 Hz The frequencies 0.01; 0,1 Hz have attenuation not more than 30% on the boundaries	from 0.3 to 100 000 Hz	from 0.1 to 100 000 Hz	from 0.3 to 100 000 Hz	–
Cutoff frequencies of built-in HF filters (increment 0.1; 1; 10; 10 Hz) with decline in frequency response not less than 40dB/decade and attenuation of -10%:	from 0.3 to 100 Hz						–
Cutoff frequencies of built-in LF filters (increment 0.1; 1; 10; 10 kHz) with decline in frequency response not less than 40dB/decade and attenuation of -10%:	from 100 to 100 000 Hz						–
Maximum output voltage (peak) at nonlinear distortion factor < 5 %, not less than:	± 10 V						0 ... 10 V
Input resistance, not less than:	10^9 Ω						–
Output resistance, not more than:	100 Ω						
Root-mean-square (RMS) value of noise reduced to the input in the mode of voltage conversion, not greater than:	–			20 μV (within 1 to 22 000 Hz)			–
Root-mean-square (RMS) value of noise reduced to the input in the mode of charge conversion for sensor capacity 1 nF, not greater than:	20·10^{-3} pC (within frequencies 1 to 22 000 Hz)			–		10^{-2} pC (within frequencies from 1 to 22 000 Hz)	–
Power supply of sensors with built-in matching amplifier: - voltage - current	–			24 V ± 4 (5, 10, 15) mA ± 20% To be determined at customer's request			–
Voltage of converters with current output and voltage output	–						12 V, 24 V
Input current	–						
Power supply of amplifier from external source of dc voltage:	+ (12 ± 2) V						
Current consumption, not more than:	4 A						
Type of input connectors:	BNC, 10-32 UNF	TWIN BNC		BNC			LEMO
Type of output connectors:	BNC						
Power:	line supply						
Overall dimensions:	485 × 87 × 340 mm						
Weight, not more than:	6 200 g						

Delivery set:

Description	Identification code	Quantity
Measuring amplifier AP5240-16	ABKJ.431134.046	1
Passport	ABKJ.431134.046PS	1
Operator's manual	ABKJ.00020-01 34	1
Setup CD with AP5240-16 Explorer Software	–	1
Cable USB A-B	–	1
Power unit AS05-03 (~220V/=12V, >= 4,5A)	–	1
Capacity transducer E1000	–	1 To be supplied on separate order

To be used with:

Module AP5240A1

- **vibration transducers** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1064, AP1065, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097;
- **force sensors** AC20, AC21, AC22, AC23, AC26;
- **pressure sensors** PS01, PS02;
- **impulse hammers** AU01, AU03.

Module AP5240A2

- **vibration transducers** AP62, AP62B-02, AP63B, AP63B-01, AP64.

Module AP5240A3

- **vibration transducers** AP1006, AP1006-01.

Module AP5240B1, AP5240B1T

- **vibration transducers** AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3,3, AP2099;
- **force sensors** AC2020, AC2026;
- **pressure sensors** PS2001;
- **impulse hammers** AU02, AU03.

Module AP5240B2

- **vibration transducers** AP2006, AP2006-01.

Module AP5240A1B1

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, , AP1064, AP1065, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3,3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

Module AP5240CV

- **vibration transducers:** AV02, D100, D200;
- **eddy current sensor:** AP2200D-V, AP220D-C, AP2200T-C.

AP5230-1

Purpose:

- Vibration (vibroacceleration) measurements in the modes:
- charge amplifier;
- voltage amplifier.

Features:

- Vibroacceleration measurements.
- Normalization mode.
- Overload display mode.
- Low level of noise.
- Control via USB.

Parameter	AP5230-1
Number of measuring channels:	1
Maximum input charge (peak), not less than:	± 10^5 pC
Maximum input voltage (peak), not less than:	± 10 V
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 100 mV/pC
Conversion factor for voltage (corresponds to 1, 2, 5):	from 1 to 100
Normalization range (increment 0.01) of conversion factor:	from 1 to 9.99
Basic relative error limits of conversion factor setting:	± 0.8 %
Operating frequency range with attenuation on the boundaries: - 10%:	from 0.2 Hz (at -30%) to 100 000 Hz (at -10%)
Cutoff frequencies of built-in HF filters with decline in frequency response not less than 40dB/decade and attenuation of -10%:	0.2 Hz; 1 Hz; 2 Hz; 10 Hz; 100 Hz HF filter has attenuation not more than 30% at the cutoff frequency 0.1 Hz.
Cutoff frequencies of built-in LF filters with decline in frequency response not less than 40dB/decade and attenuation of -10%:	1 kHz; 10 kHz; 30 kHz; 100 kHz
Maximum output voltage (peak) at nonlinear distortion factor < 5 %, not less than:	± 10 V
Input resistance, not less than:	10^{10} Ω
Output resistance, not more than:	100 Ω
Root-mean-square (RMS) value of noise reduced to the input in the mode of voltage conversion, not greater than:	20 μV
Root-mean-square (RMS) value of noise reduced to the input in the mode of charge conversion for sensor capacity 1 nF, not greater than:	20 · 10^{-3} pC
Power supply of sensors with built-in matching amplifier: - voltage - current To be determined by customer	 + (24 ± 2) V from 3 to 15 mA
Power supply of amplifier from external source of dc voltage:	+ (12 ± 2) V
Current consumption, not more than:	150 mA
Type of input connectors:	BNC, 10-32 UNF
Type of output connectors:	BNC
Power:	line supply from power unit (AS05)
Supplied accessories	setup CD with AP5230-01 Explorer Software; cable USB A-B; power unit ~220V/+12V (AS05), >=0.1A; capacity transducer E1000
Overall dimensions:	138 × 70 × 30 mm
Weight, not more than:	500 g

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3.3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

AP5110

Purpose:

- Conversion and measurement of RMS of signals from piezoelectric transducers in the modes:
- charge amplifier (connecting transducers with charge-output);
- voltage amplifier (connecting transducers with built-in electronics).

Features:

- Modular structure.
- Metal casing.
- Balanced and unbalanced input of charge amplifier.
- Input signal integration.
- Normalization mode.
- Overload display mode.
- Low level of noise.
- Built-in voltmeter that measures RMS of an output signal.
- Interface for connecting to computer USB.
- Measurement report.
- To complete a standard channel.

Parameter	AP5110
Number of measuring channels:	1
Maximum input charge (peak), not less than:	$\pm 10^5$ pC
Maximum input voltage (peak), not less than:	± 10 V
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 1 000 mV/pC
Conversion factor for voltage (corresponds to 1, 2, 5):	from 1 to 1 000
Normalization range (increment 0.01) of conversion factor:	from 1 to 9.99 V
Basic relative error limits of conversion factor setting at 200 Hz: - within 0.1 to 200 - within 500 to 1 000 (for Acceleration mode)	 ± 0.8 % ± 1.6 %
Additional error limits of conversion factor setting in the temperature range from 0 to + 50 °C:	± 0.5 %
Operating frequency range with attenuation on the boundaries: - 10%: - for Acceleration mode - for Velocity mode	 0.2 (at -30%) ... 100 000 Hz (at -10%) 2...2 000 Hz
Frequency response ripple: - for Acceleration mode: within frequencies from 3 to 30 000 Hz - for Velocity mode: within frequencies from 10 to 1 000 Hz	 ± 0.5 % ± 2.0 %
Cutoff frequencies of built-in HF filters (increment 0.1; 1; 10; 100 Hz) with decline in frequency response: - for Acceleration mode: not less than 40 dB/decade and attenuation -10% - for Velocity mode: not less than 40 dB/decade and attenuation -10%	 from 0.2 to 200 Hz HF filter has attenuation not more than 30% at the cutoff frequency 0.2 Hz. from 2 to 200 Hz
Cutoff frequencies of built-in LF filters (increment 0.1; 1; 10 kHz) with decline in frequency response: - for Acceleration mode: not less than 40 dB/decade and attenuation -10% - for Velocity mode: not less than 40 dB/decade and attenuation -10%	 from 0.1 to 100 kHz 1; 2 kHz
Maximum output voltage (peak) at nonlinear distortion factor < 5 %, not less than:	± 10 V
Basic relative error limits for RMS value of the output signal voltage in the range from 100 mV to the maximum and within frequencies from 20 to 100 000 Hz:	± 1 %
Input resistance, not less than:	10^9 Ω
Output resistance, not more than:	100 Ω
Root-mean-square (RMS) value of noise reduced to the input in the mode of voltage conversion within frequencies from 3 Hz to 30 kHz, not greater than:	20 μV
Root-mean-square (RMS) value of noise reduced to the input in the mode of charge conversion for sensor capacity 1 nF within frequencies from 3 Hz to 30 kHz, not greater than:	$20 \cdot 10^{-3}$ pC

Parameter	AP5110
Power supply of sensors with built-in matching amplifier: - voltage - current To be determined by customer	 + (22 ± 2) V from 3 to 15 mA
Power supply of amplifier from external source of dc voltage:	+ (12 ± 2) V
Current consumption, not more than:	700 mA
Type of input connectors:	BNC, TWIN BNC, 10-32 UNF
Type of output connectors:	BNC
Power:	self-contained line supply from adapter

Delivery set:

Parameter	Identification code	Quantity
Voltage and charge amplifier AP5110	ABKJ.431134.030	1
Passport	ABKJ.431134.030PS	1
Operator's manual	ABKJ.00018-01 34	1
Shielding cap	–	4
Power unit AS05-01 (~220V/=12V; 1A)	–	1
Setup CD with AP5110 Explorer Software	–	1
Cable USB A-B	–	1
Service manual	ABKJ.431134.030RE	1 To be supplied on separate order
Cable plug TWIN BNC	–	1 To be supplied on separate order
Capacity transducer E1000	–	1 To be supplied on separate order

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1064, AP1065, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3.3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

AP5200, AP5200-3, AP5200-4

Purpose:

- Conversion and measurement of RMS of signals from piezoelectric transducers in the modes:
- charge amplifier (connecting transducers with charge-output);
- voltage amplifier (connecting transducers with built-in electronics).

Features:

- Normalization mode.
- Overload display mode.
- Input signal integration.
- Low level of noise.
- Built-in voltmeter that measures RMS of an output signal.
- Modular structure.
- Metal casing.
- Operation control via USB.
- Galvanic-isolated input/output («Floating ground» mode).

Parameter	AP5200	AP5200-3	AP5200-4
Number of measuring channels:	1	3	4
Maximum input charge (peak), not less than:	± 10^5 pC		
Maximum input voltage (peak), not less than:	± 10 V		
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 1 000 mV/pC		
Conversion factor for voltage (corresponds to 1, 2, 5):	from 1 to 1 000		
Normalization range (increment 0.01) of conversion factor:	from 1 to 9.99		
Basic relative error limits of conversion factor setting: - within 0.1 to 200 - within 500 to 1 000	 ± 0.8 % ± 1.6 %		
Additional error limits of conversion factor setting in the temperature range from 0 to +50 °C:	± 0.5 %		
Operating frequency range with attenuation on the boundaries: - 10%: - for Acceleration mode - for Velocity mode	 from 0.3 to 100 000 Hz from 1 to 2 000 Hz		
Cutoff frequencies of built-in HF filters (increment 0.1; 1; 10; 100 Hz) with decline in frequency response not less than 80dB/decade and attenuation of -10%:	from 0.3 to 200 Hz		
Cutoff frequencies of built-in LF filters (increment 0.1; 1; 10 kHz) with decline in frequency response not less than 80dB/decade and attenuation of -10%:	from 0.1 to 100 kHz		
Maximum output voltage (peak) at nonlinear distortion factor < 5 %, not less than:	± 10 V		
Basic relative error limits for RMS value of the output signal voltage in the range from 100 mV to the maximum and within frequencies from 20 to 50 000 Hz:	± 1 %		
Input resistance, not less than:	10^{10} Ω		

Parameter	AP5200	AP5200-3	AP5200-4
Output resistance, not more than:	100 Ω		
Root-mean-square (RMS) value of noise reduced to the input in the mode of voltage conversion, not greater than:	30 μV		
Root-mean-square (RMS) value of noise reduced to the input in the mode of charge conversion for sensor capacity 1 nF, not greater than:	$30 \cdot 10^{-3}$ pC		
Run mode setting time after power-on or switching inputs and conversion factors, not more than:	10 s	5 s	
Power supply of sensors with built-in matching amplifier: - voltage - current	 +(24 ± 2) V 5.7 ± 0.7 mA		
Power supply of amplifier from external source of dc voltage:	+ (12 ± 2) V		
Current consumption, not more than:	300 mA	700 mA	900 mA
Type of input connectors:	TNC		
Type of output connectors:	BNC		
Power (line supply from adapter):	AS05-01 (~220V/=12V; 1A)		
Overall dimensions:	157 × 232 × 75 mm		
Weight, not more than:	2 000 g		

Delivery set

Description	Identification code			Quantity
	AP5200	AP5200-3	AP5200-4	
Measuring amplifier	ABKJ.431134.007	ABKJ.431134.010	ABKJ.431134.023	1
Passport	ABKJ.431134.007PS	ABKJ.431134.010PS	ABKJ.431134.023PS	1
Power unit AS05-01 (~220V/=12V; 1A)	–			1
Capacity transducer E1000	–			1 To be supplied on separate order
Operator's manual	ABKJ.00027-01 34			1
Setup CD with AP5200 Explorer software	–			1
Cable USB A-B	–			1
Cable adapter AR10	–			1 / 3 / 4
Cable adapter AR15	–			1 To be supplied on separate order
Harness RS-485	–			1 To be supplied on separate order
Power unit AS05-01	–			1

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3,3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

AP5200-8

Purpose:

- Vibration (vibroacceleration) measurements in the modes:
- charge amplifier;
- voltage amplifier.

Features:

- Vibration acceleration measurements.
- Normalization mode.
- Overload display mode.
- Low level of noise.
- Built-in voltmeter that measures:
- RMS of vibration accelerationan in the mode of charge and voltage amplifier.
- Touch-sensitive keyboard.
- Casing 19" – metal, height – 3U, depth – 260mm.

Parameter	AP5200-8
Number of measuring channels:	8
Maximum input charge (peak), not less than:	± 10^5 pC
Maximum input voltage (peak), not less than:	± 10 V
Conversion factor for charge (corresponds to 1, 2, 5):	from 0.1 to 1 000 mV/pC
Conversion factor for voltage (corresponds to 1, 2, 5):	from 1 to 1 000
Normalization range (increment 0.01) of conversion factor:	from 1 to 9.99
Basic relative error limits of conversion factor setting: - within 0.1 to 200 - within 500 to 1 000	 ± 0.8 % ± 1.6 %
Additional error limits of conversion factor setting in the temperature range from 0 to + 50°C:	± 0.5 %
Operating frequency range with attenuation on the boundaries: - 10%:	from 0.3 to 100 000 Hz
Cutoff frequencies of built-in HF filters (increment 0.1; 1; 10; 100 Hz) with decline in frequency response not less than 80dB/decade and attenuation of -10%:	from 0.3 to 200 Hz
Cutoff frequencies of built-in LF filters (increment 0.1; 1; 10 kHz) with decline in frequency response not less than 80dB/decade and attenuation of -10%:	from 0.1 to 100 kHz
Maximum output voltage (peak) at nonlinear distortion factor < 5 %, not less than:	± 10 V
Basic relative error limits for RMS value of the output signal voltage in the range from 100 mV to the maximum and within frequencies from 20 to 100 000 Hz:	± 1 %
Input resistance, not less than:	10^9 Ω
Output resistance, not more than:	100 Ω
Root-mean-square (RMS) value of noise reduced to the input in the mode of voltage conversion, not greater than:	20 μV
Root-mean-square (RMS) value of noise reduced to the input in the mode of charge conversion for sensor capacity 1 nF, not greater than:	$2 \cdot 10^{-2}$ pC
Run mode setting time after power-on or switching inputs and conversion factors, not more than:	5 s
Power supply of sensors with built-in matching amplifier: - voltage - current	 + (24 ± 2) V 4.7 ± 0.3 mA
Power supply of amplifier from external source of dc voltage:	+ (12 ± 2) V
Current consumption per channel, not more than:	300 mA

Parameter	AP5200-8
Type of input connectors: - unbalanced charge-sensitive - with built-in preamplifier	 10-32 UNF BNC
Type of output connectors:	BNC
Power:	line supply from adapter
Overall dimensions:	483 × 342 × 142 mm
Weight, not more than:	6 000 g

Delivery set

Description	Identification code	Quantity
Measuring amplifier AP5200-8	ABKJ.431134.010	1
Passport	ABKJ.431134.010PS	1
Shielding cap	–	16
Power unit AS05-03 (~220V/=12V; 3A)	–	1
Capacity transducer E1000	–	1 To be supplied on separate order

To be used with:

- **vibration transducers:** AP10, AP1006, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1026, AP1030, AP1031, AP1032, AP1034, AP1037, AP1038, AP1038P, AP1040, AP1047, AP1048, AP1049, AP1050, AP1057, AP1077, AP1077M, AP1078, AP1079, AP1080, AP1081, AP1090, AP1095, AP1096, AP1097, AP2006, AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2037, AP2038, AP2038P, AP20382, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2098, AP2098-100-3,3, AP2099;
- **force sensors:** AC20, AC21, AC22, AC23, AC26, AC2020, AC2026;
- **pressure sensors:** PS01, PS02, PS03, PS2001;
- **impulse hammers:** AU01, AU02, AU03.

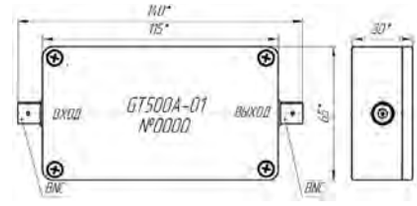
GT500A, GT500A-01

Purpose:

- Reception and amplification of acoustic emission sensor signals up to normalized values.

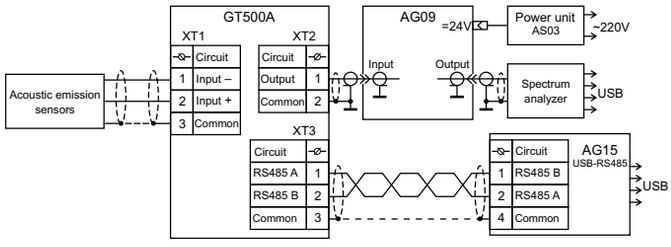
Features:

- Can be used at long communication lines (up to 10 m) from sensor to amplifier.
- Can operate on coaxial 50 Ω line up to 100 m long.
- Switching amplification factor via RS-485 interface or by closing Kus contacts located under the amplifier cover (cyclic search of amp factors).
- Low intrinsic noise.
- Waterproof casing.

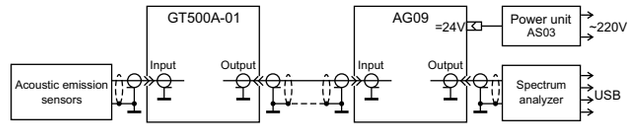


Parameter	GT500A	GT500A-01
Amplification factor	20 ... 50 dB with an increment of 10 dB To be switched via RS-485 interface or by closing Kus contacts located under the amplifier cover	
Basic error limits of amplification factor setting	± 2 %	
Additional relative error limits of amplification factor setting within operating temperatures – 40 ... +85 °C	± 1 %	
Operating frequency range with attenuation on the boundaries: - 30%	20 ... 350 kHz	
Cutoff frequencies of built-in LF filters with decline in frequency response not less than 20dB/octave	350 kHz	
Cutoff frequencies of built-in HF filters with decline in frequency response not less than 20dB/octave	20 kHz	
Maximum output voltage at nonlinear distortion factor < 5 %	± 2 V	
Input resistance	100 kΩ	
Load resistance	50 Ω	
Root-mean-square value of noise (reduced to the input)	< 15 μV	
Power: - external source of voltage dc - current	 24 ± 2 V < 35 mA	
Type of input and output connectors	screw terminal blocks	BNC - Bj
Weight	250 g	
Optional accessories	matching device AG09, power unit AS03	

Wiring diagram of GT500A



Wiring diagram of GT500A-01



Application:

- **GT500A shall be used with acoustic emission sensors** GT200B, GT205B;
- **GT500A-01 shall be used with acoustic emission sensors** GT200, GT205, GT300, GT301.

GT500B, GT500B-01

Purpose:

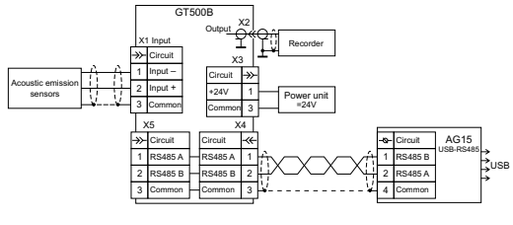
- Reception and amplification of acoustic emission sensor signals up to normalized values.

Features:

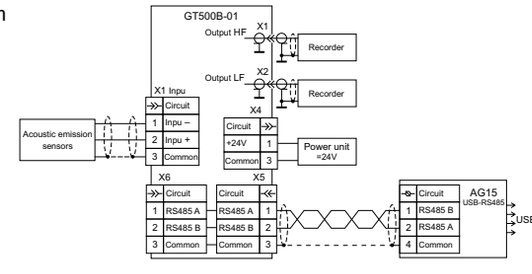
- Can be used at long communication lines (up to 10 m) from sensor to amplifier.
- Can operate on coaxial 50 Ω line up to 100 m long.
- Switching amplification factor via RS-485 interface or by closing Kus contacts located under the amplifier cover (cyclic search of amp factors).
- Connection of sensors with balanced output.
- GT500B-01 has additional low-frequency output to measure vibration acceleration of monitored objects.
- Mounted on a 35mm DIN- rack.
- Waterproof casing.

Parameter	GT500B	GT500B-01
Amplification factor of HF channel	20... 50 dB with an increment of 10 dB To be switched via RS-485 interface or by closing Kus contacts located under the amplifier cover	
Amplification factor of LF channel	–	10
Basic error limits of setting amplification factor of HF channel	± 5 %	
Basic error limits of setting amplification factor of LF channel	± 2 %	
Additional error limits of amplification factor within operating temperatures – 20 ... + 70 °C	± 1 %	
Frequency range of HF channel with attenuation on boundaries -3 dB	80 ... 300 kHz To be determined by customer	
Frequency range of LF channel with attenuation on boundaries -3 dB	–	1 ... 20 000 kHz To be determined by customer
For HF channel the cutoff frequency of built-in HF filter with decline in frequency response not less than 20dB/octave	80 kHz	
For HF channel the cutoff frequency of built-in LF filter with decline in frequency response not less than 20dB/octave	300 kHz	
For LF channel the cutoff frequency of built-in LF filter with decline in frequency response not less than 20dB/octave	–	20 kHz
Maximum output voltage at nonlinear distortion factor < 5 %	± 3 V	
Input resistance	> 10^5 Ω	> 10^9 Ω
Load resistance	50 Ω	
Root-mean-square value of noise, reduced to the input	< 10 μV	
Operating temperature range	– 20 ... + 70 °C	
Power: - external source of voltage dc - current	 + (24 ± 2) V < 35 mA	 + (24 ± 2) V < 45 mA
Type of input connectors	DBEU 102-A052-130; BNC-Bj(CP-50-73ПВ) To be determined by customer	
Type of output connectors	BNC -Bj(CP-50-73ПВ) To be determined by customer	
Type of power supply connector	SACC-DSI-M8MS-3CON-M8/0.5 (Phoenix Contact)	
Type of RS-485 connectors	SACC-DSI-M8FS-3CON-M10/0.5 (Phoenix Contact)	
Weight	350 g	

Wiring diagram of GT500B



Wiring diagram of GT500B-01



To be used with:

- **acoustic emission sensors** GT200B, GT205B.

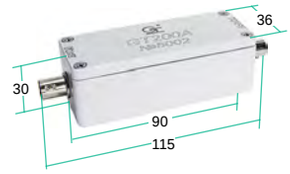
GT200A, GT200A-01

Purpose:

- Reception and amplification of acoustic emission sensor signals up to normalized values.

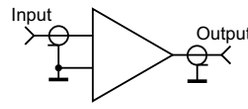
Features:

- Can operate on coaxial 50 Ω line up to 100 m long.
- Low intrinsic noise.
- Waterproof casing.

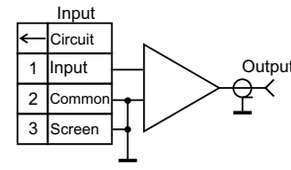


Parameter	GT200A	GT200A-01
Amplification factor	1 ... 200 To be determined by customer	
Basic relative error limits of amplification factor	± 2 %	
Additional relative error limits of amplification factor within operating temperatures – 40 ... + 85 °C	± 1 %	
Input resistance	100 kΩ	
Load resistance	50 Ω	
Operating frequency range with attenuation on boundaries -30%, at line length: - 10 m, - 50 m, - 100 m	 10 ... 800 kHz 10 ... 650 kHz 10 ... 400 kHz	
Maximum output voltage at nonlinear distortion factor < 5 %	± (1 ... 2) V	
Root-mean-square value of noise (reduced to the input)	< 7 μV	
Operating temperature range	– 40 ... + 85 °C	
Power: - voltage - current	 12 ... 24 V 30 mA	
Type of input connectors	BNC (СР50-73ФВ1) To be determined by customer	2РМ14Б4Ш1В1
Type of output connectors	BNC (СР50-73ФВ1) To be determined by customer	
Weight	140 g	

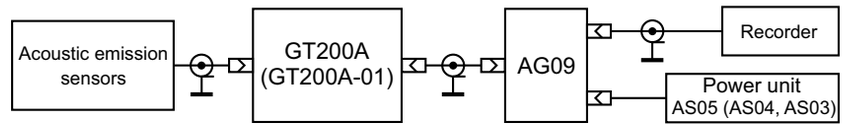
Electrical circuit of GT200A



Electrical circuit of GT200A-01



Wiring diagram of GT200A, GT200A-01



Application:

- **GT200A** shall be used with acoustic emission sensors GT200, GT205, GT300, GT301;
- **GT200A-01** shall be used with acoustic emission sensors GT200B, GT205B.

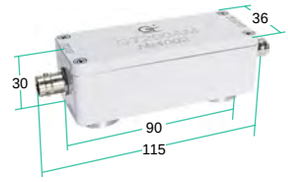
GT200AM, GT200AM-01

Purpose:

- Reception and amplification of acoustic emission sensor signals up to normalized values..

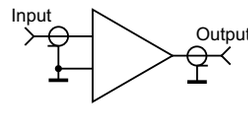
Features:

- Can operate on coaxial 50 Ω line up to 100 m long.
- Low intrinsic noise.
- Case-mounted magnets with tearing force not less than 100 N allow easy mounting/dismounting of the amplifier on the monitored object or metal frame of recording equipment.
- Waterproof casing.

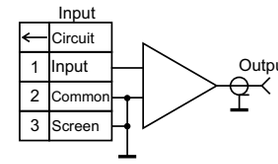


Parameter	GT200AM	GT200AM-01
Amplification factor	1 ... 200 To be determined by customer	
Basic relative error limits of amplification factor	± 2 %	
Additional relative error limits of amplification factor within operating temperatures – 40 ... + 85 °C	± 1 %	
Input resistance	100 kΩ	
Load resistance	50 Ω	
Operating frequency range with attenuation on boundaries -30%, at line length: - 10 m, - 50 m, - 100 m	 10 ... 800 kHz 10 ... 650 kHz 10 ... 400 kHz	
Maximum output voltage at nonlinear distortion factor < 5 %	± (1 ... 2) V	
Root-mean-square value of noise (reduced to the input)	< 7 μV	
Operating temperature range	– 40 ... + 85 °C	
Power: - voltage - current	 12 ... 24 V 30 mA	
Type of input connectors	BNC (СР50-73ФВ1) To be determined by customer	2РМ14Б4Ш1В1
Type of output connectors	BNC (СР50-73ФВ1) To be determined by customer	
Weight	165 g	

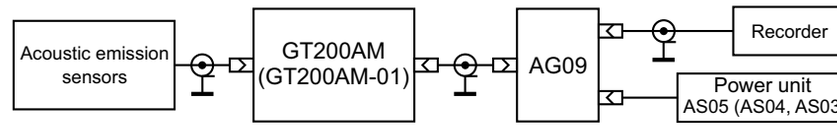
Electrical circuit of GT200AM



Electrical circuit of GT200AM-01



Wiring diagram of GT200A, GT200A-01



Application:

- **GT200AM** shall be used with acoustic emission sensor GT200, GT205, GT300, GT301.
- **GT200AM-01** shall be used with acoustic emission sensor GT200B, GT205B.

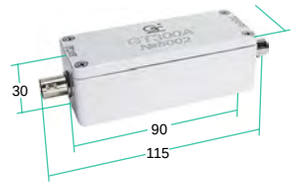
GT300A, GT300A-01

Purpose:

- Reception and amplification of acoustic emission sensor signals up to normalized values..

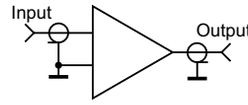
Features:

- Can operate on coaxial 50 Ω line up to 100 m long.
- Low intrinsic noise.
- Waterproof casing.

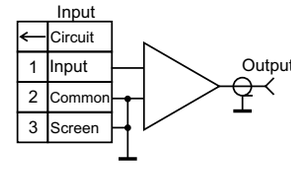


Parameter	GT300A	GT300A-01
Amplification factor	1 ... 100 To be determined by customer	
Basic relative error limits of amplification factor	± 2 %	
Additional relative error limits of amplification factor within operating temperatures – 40 ... + 85 °C	± 1 %	
Input resistance	100 kΩ	
Load resistance	50 Ω	
Operating frequency range with attenuation on boundaries -30%, at line length: - 10 m, - 50 m, - 100 m	 10 ... 2 000 kHz 10 ... 1 500 kHz 10 ... 1 000 kHz	
Maximum output voltage at nonlinear distortion factor < 5 %	± 1 V	
Root-mean-square value of noise (reduced to the input)	< 10 μV	
Operating temperature range	– 40 ... + 85 °C	
Power: - voltage - current	 12 ± 0.5 V 30 mA	
Type of input connectors	BNC (СР50-73ФВ1) To be determined by customer	2РМ14Б4Ш1В1
Type of output connectors	BNC (СР50-73ФВ1) To be determined by customer	
Weight	140 g	

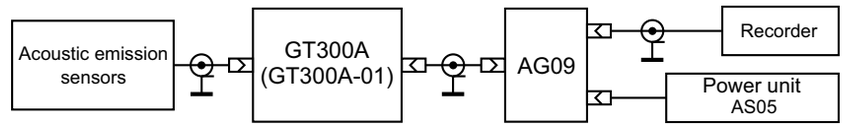
Electrical circuit of GT300A



Electrical circuit of GT300A-01



Wiring diagram of GT200A, GT200A-01



Application:

- **GT300A** shall be used with acoustic emission sensors GT200, GT205, GT300, GT301;
- **GT300A-01** shall be used with acoustic emission sensor GT200B, GT205B.

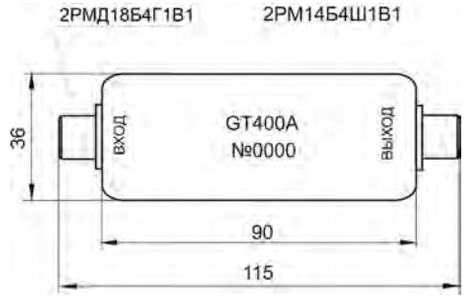
GT400A

Purpose:

- Reception and amplification of signals from acoustic emission sensors GT400 up to normalized values.

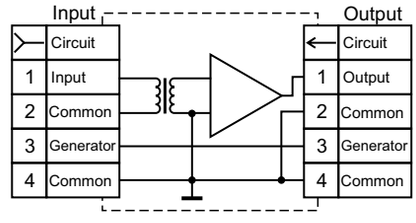
Features:

- Can operate on coaxial 50 Ω line up to 100 m long.
- Low intrinsic noise.

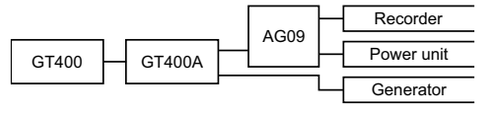


Parameter	GT400A
Amplification factor (± 2%)	100 To be determined by customer из диапазона от 1 до 200
Basic relative error limits of amplification factor	± 2 %
Additional relative error limits of amplification factor within operating temperatures – 40 ... + 85 °C	± 1 %
Input resistance	100 kΩ
Load resistance	50 Ω
Operating frequency range with attenuation on boundaries -30%, at line length up to 100 m	50 ... 250 kHz
Maximum output voltage at nonlinear distortion factor < 5 %	± (2 ... 4) V
Root-mean-square value of noise (reduced to the input)	< 7 μV
Operating temperature range	– 40 ...+ 85 °C
Power: - voltage - current	 12 ... 24 V 30 mA
Weight	140 g

Electrical circuit of GT400A



Wiring diagram of GT400A



To be used with:

- **acoustic sensor** GT400.

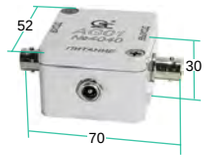
AG01, AG01-3

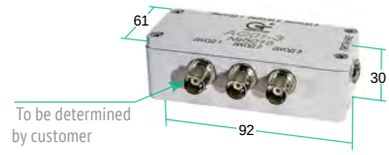
Purpose:

- Connecting vibration transducers, force sensors, dynamic pressure sensors and impulse hammers to a power supply source and recording equipment in stationary conditions.

Features:

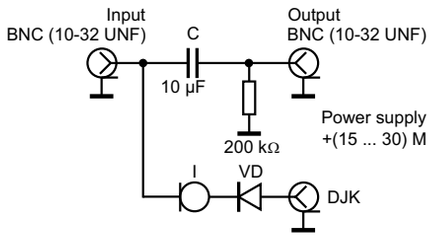
- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with/without a built-in preamplifier, which are connected by means of the charge amplifier AP5000.
- Ensures connection to the recording equipment with the input resistance not less than 1 MOhm.



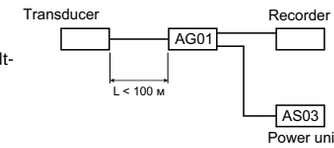


Parameter	AG01
Power supply voltage of the sensor	24 ± 2 V
Power supply current	4.7 ± 10% mA
External power supply voltage	15 ... 30 V
Current consumption	< 100 mA
Operating temperature range	– 40 ... + 85 °C
Input connector	BNC
Output connector	BNC
Type of plug for power supply connection	DJK-02A
Housing material	aluminium

Electrical circuit of one channel

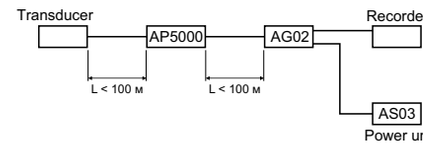


Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

Wiring diagram for connecting transducer without built-in amplifier via the charge amplifier AP5000



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1032, AP1034, AP1034-01, AP1037, AP1038, AP1038P, AP1039, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1077, AP1078, AP1079, AP1080, AP1081, AP1095, AP1096, AP1097 (with charge amplifier AP5000, AP5002);
- **vibration transducers with built-in preamplifier** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2078, AP2071-01, AP2081, AP2083, AP2098, AP2099;
- **force sensors** AC20, AC21, AC22, AC23, AC26 (with charge amplifier AP5000, AP5002), A2020, AC2026;
- **pressure sensors** PS01, PS02, PS03 (with charge amplifier AP5000, AP5002), PS2001;
- **impulse hammers** AU01 (with charge amplifier AP5000, AP5002);
- **impulse hammers** AU02, AU03.

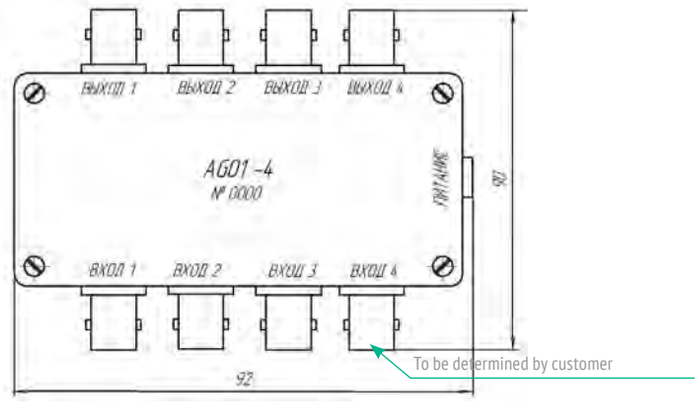
AG01-4

Purpose:

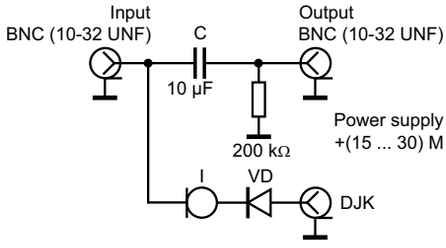
- Connecting vibration transducers, force sensors, dynamic pressure sensors and impulse hammers to a power supply source and recording equipment in stationary conditions.

Features:

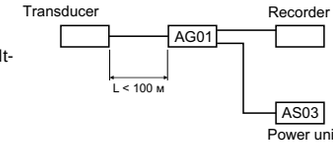
- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier or primary transducers without a built-in preamplifier, which are connected by means of the charge amplifier AP5000.
- Ensures connection to the recording equipment with the input resistance not less than 1 MOhm.



Electrical circuit of one channel

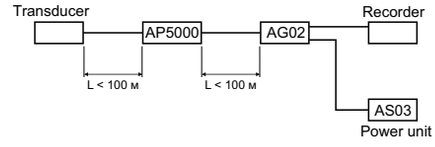


Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

Wiring diagram for connecting transducer without built-in amplifier via the charge amplifier AP5000



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1032, AP1034, AP1034-01, AP1037, AP1038, AP1038P, AP1039, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1064, AP1065, AP1077, AP1078, AP1079, AP1080, AP1081, AP1095, AP1096, AP1097 (with charge amplifier AP5000, AP5002);
- **vibration transducers with built-in preamplifier** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2078, AP2081, AP2083, AP2098, AP2099;
- **impulse hammers** AU01 (with charge amplifier AP5000, AP5002);
- **force sensors** AC20, AC21, AC22, AC23, AC26 (with charge amplifier AP5000, AP5002), A2020, AC2026;
- **pressure sensors** PS01, PS02, PS03 (with charge amplifier AP5000, AP5002), PS2001;
- **impulse hammers** AU02, AU03.

AG01-8

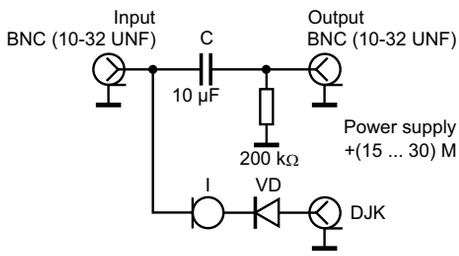
Purpose:

- Connecting vibration transducers, force sensors, dynamic pressure sensors and impulse hammers to a power supply source and recording equipment in stationary conditions.

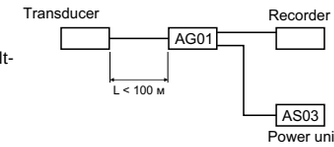
Features:

- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier or primary transducers without built-in preamplifier, which are connected by means of the charge amplifier AP5000.
- Ensures connection to the recording equipment with the input resistance not lower than 1 MOhm.

Electrical circuit of one channel

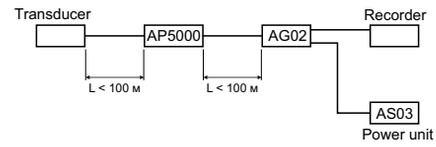


Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

Wiring diagram for connecting transducer without built-in amplifier via the charge amplifier AP5000



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1032, AP1034, AP1034-01, AP1037, AP1038, AP1038P, AP1039, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1064, AP1065, AP1077, AP1078, AP1079, AP1080, AP1081, AP1095, AP1096, AP1097 (with charge amplifier AP5000, AP5002);
- **vibration transducers with built-in preamplifier** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2078, AP2081, AP2083, AP2098, AP2099;
- **impulse hammers** AU01 (with charge amplifier AP5000, AP5002);
- **force sensors** AC20, AC21, AC22, AC23, AC26 (with charge amplifier AP5000, AP5002), A2020, AC2026;
- **pressure sensors** PS01, PS02, PS03 (with charge amplifier AP5000, AP5002), PS2001;
- **impulse hammers** AU02, AU03.

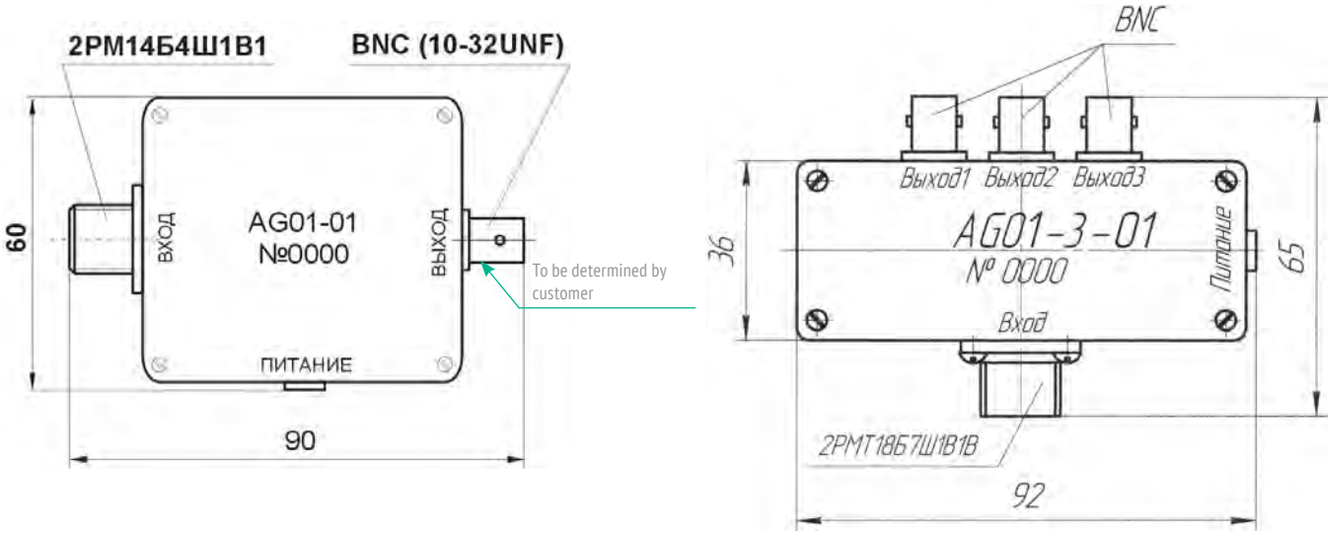
AG01-01, AG01-3-01

Purpose:

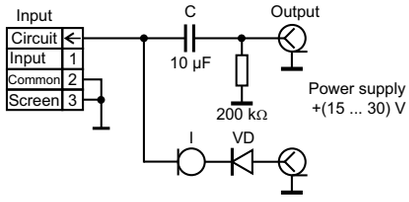
- Connecting industrial vibration transducers to a power supply source and recording equipment in stationary conditions.

Features:

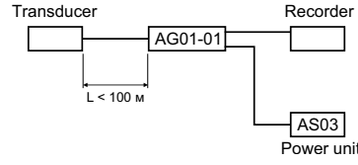
- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier.
- Ensures connection to the recording equipment with the input resistance not lower than 1 MOhm.



Electrical circuit of one channel



Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP2028I, AP2028B, AP2035, AP2071-01, AP2085, AP2091.

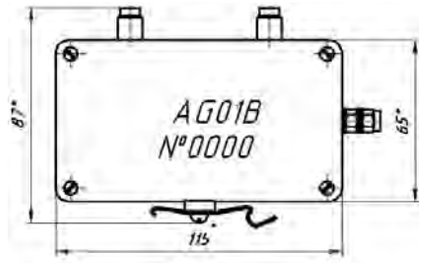
AG01B

Purpose:

- Connecting vibration transducers with built-in electronics, placed in explosion hazard zone, to a power supply source and recording equipment in stationary conditions.

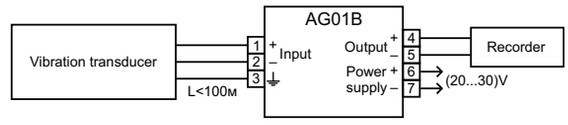
Features:

- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier.
- Output sparkproof parameters:
- Uo: 24 V,
- Io: 100 mA,
- Co: 0.06 mF,
- Lo: 1 mH.
- Mounted on a 35 mm DIN- rack.
- Explosion-proof version [Exib]IIC.



Parameter	AG01B
Power supply voltage of the sensor	15 ... 18 V
Power supply current of the sensor	4.7 ± 10 % mA
Input voltage range	30 V
Input resistance	> 10^9 Ω
Output voltage range	24 V
Output resistance	< 1000 Ω
Frequency range at –1 dB	0.5 ... 30 000 Hz
Root-mean-square value of noise (reduced to the input)	≤ 5 μV
External power supply voltage	20 ... 30 V
Current consumption	< 20 mA
Operating temperature range	– 40 ... + 85 °C
Input / output connector	screw terminal blocks
Overall dimensions	115 × 87 × 30 mm
Weight	150 g

Wiring diagram of AG01B



Can be increased up to 400 m, with lowering the upper boundary of the frequency range to 7 kHz

To be used with:

- **vibration transducers with built-in preamplifier** AP2028B, AP2085, AP2071-01.

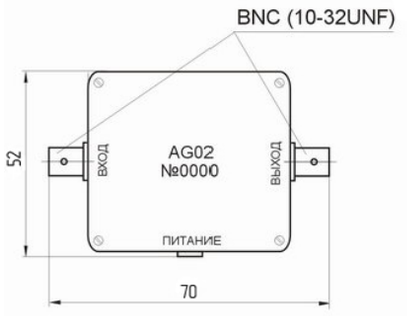
AG02, AG02-3

Purpose:

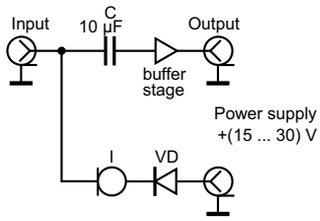
- Connecting vibration transducers, force sensors and impulse hammers to a power supply source and recording equipment in multi-channel systems.

Features:

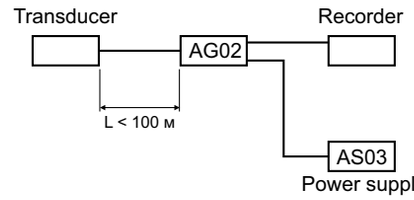
- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with/without a built-in preamplifier, which are connected by means of the charge amplifier AP5000.
- Eliminates the transition effect in the «coupling capacitor - input resistance» circuit of the recording equipment, when varying the value of the latter from the high- to low-resistance one (e.g., when switching the channel by a multiplexer in the data acquisition mode).
- Ensures connection to the recording equipment with the input resistance higher than 2 kOhm



Electrical circuit of one channel

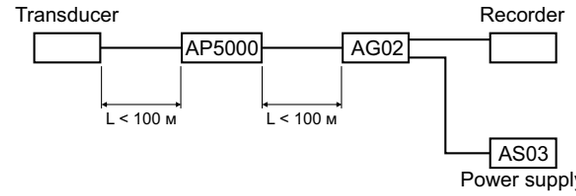


Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range.

Wiring diagram for connecting transducer without built-in amplifier via the charge amplifier AP5000



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range.

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1032, AP1034, AP1034-01, AP1037, AP1038, AP1038P, AP1039, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1064, AP1065, AP1077, AP1078, AP1079, AP1080, AP1081, AP1095, AP1096, AP1097 (with charge amplifier AP5000, AP5002);
- **vibration transducers with built-in preamplifier** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2078, AP2071-01, AP2081, AP2083, AP2098, AP2099;
- **impulse hammers** AU01 (with charge amplifier AP5000, AP5002);
- **force sensors** AC20, AC21, AC22, AC23, AC26 (with charge amplifier AP5000, AP5002), A2020, AC2026;
- **pressure sensors** PS01, PS02, PS03 (with charge amplifier AP5000, AP5002), PS2001;
- **impulse hammers** AU02, AU03.

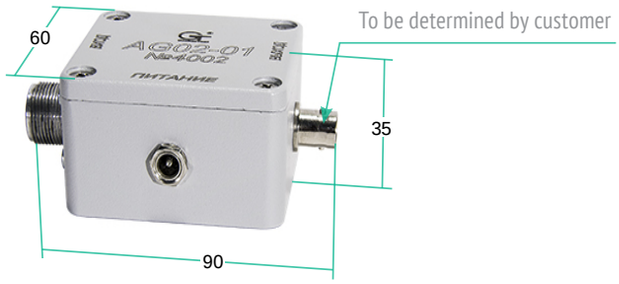
AG02-01, AG02-3-01

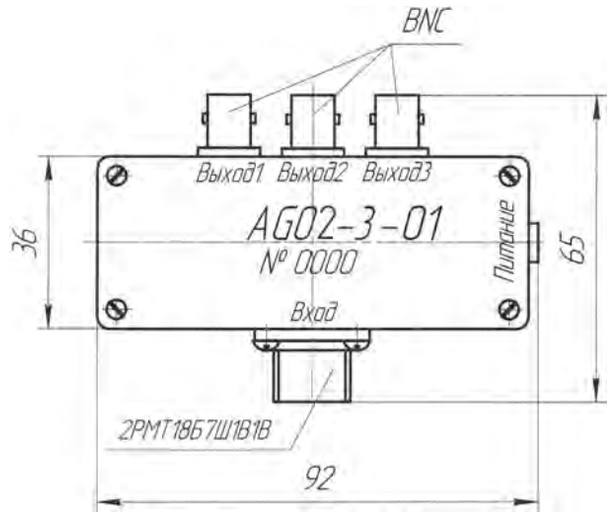
Purpose:

- Connecting industrial vibration transducers to a power supply source and recording equipment in multi-channel systems.

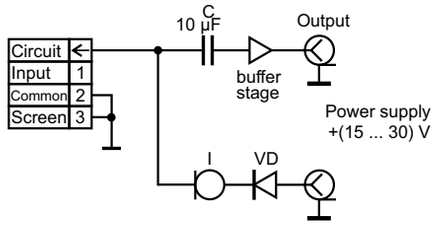
Features:

- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier.
- Eliminates the transition effect in the «coupling capacitor - input resistance» circuit of the recording equipment, when varying the value of the latter from the high- to low-resistance one (e.g., when switching the channel by a multiplexer in the data acquisition mode)

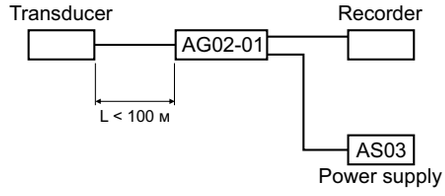




Electrical circuit of one channel



Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP2028I, AP2028B, AP2035, AP2071-01, AP2085, AP2091.

AS01

Purpose:

- Works with piezoelectric transducers that have a built-in preamplifier.

Features:

- Powered by a rechargeable Ni-Cad batteries or AC adapter AS02.
- Has battery charge indicators:
- green LED indicates the normal battery charge status,
- red LED – low battery,
- yellow LED – battery charging.

Parameter	AS01
Power supply voltage of the sensor	22 ... 30 V
Power supply current of the sensor	4.7 ± 10 % mA
Frequency range (nonlinearity ± 1 dB)	0.5 ... 100 000 Hz
Noise level, RMS (1 Hz ÷ 10 kHz)	< 2 μV
Battery (capacity >150 mA·h)	3 × 9 V
External power supply voltage	28 – 30 V
Charge current	< 10 mA
Continuous work time	40 h
External power supply connector diameter	3.5 mm
Overall dimensions	145 × 77 × 42 mm
Weight (without cable)	600 g
Input / output connector	BNC/BNC (10-32 UNF/10-32 UNF) To be determined by customer

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1032, AP1034, AP1034-01, AP1037, AP1038, AP1038P, AP1039, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1064, AP1065, AP1077, AP1078, AP1079, AP1080, AP1081, AP1095, AP1096, AP1097 (with charge amplifier AP5000, AP5002);
- **vibration transducers with built-in preamplifier** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2078, AP2081, AP2083, AP2098, AP2099;
- **force sensors** AC20, AC21, AC22, AC23, AC26 (with charge amplifier AP5000, AP5002), A2020, AC2026;
- **pressure sensors** PS01, PS02, PS03 (with charge amplifier AP5000, AP5002), PS2001;
- **impulse hammers** AU01 (with charge amplifier AP5000, AP5002);
- **impulse hammers** AU02, AU03.

Optional accessories:

- **power unit** AS02.

AS07

Purpose:

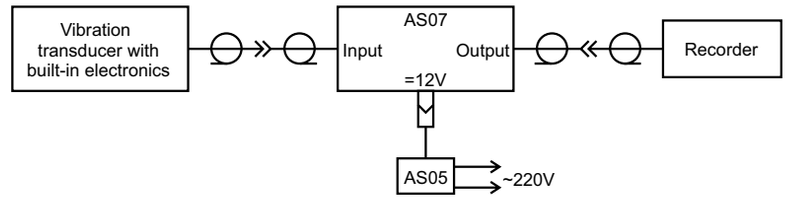
- Works with piezoelectric transducers that have a built-in preamplifier.

Features:

- Built-in LCD that shows:
- bias voltage at the output of the connected vibration transducer;
- preset scaling factor of the input signal;
- charge level of built-in batteries.
- Powered by built-in batteries or mains adapter AS05.
- Has battery charge indicators:
- red LED – low battery;
- yellow LED – battery charging.

Parameter	AS07
Power supply voltage of the sensor	22 ... 24 V
Power supply current of the sensor	5.6 ± 1.2 mA
Input voltage range	± 4.5 V
Input resistance	> 10^9 Ω
Output voltage range	± 4.5 V
Output resistance	< 100 Ω
Frequency range at –1 dB	0.5 ... 30000 Hz
Root-mean-square value of noise (reduced to the input)	≤ 5 μV
Scaling factor (error ± 1%)	1; 10; 100
Additional error of scaling factor in the temperature range from 0 to +50 °C	± 2 %
Operating temperature range	0 ... + 50 °C
Battery (capacity > 150 mA·h)	2 × 9 V
External power supply voltage	12 ± 1 V
Current consumption	< 50 mA
Input / output connector	BNC / BNC
Overall dimensions	115 × 65 × 67 mm
Weight	300 g

Wiring diagram of AS07



To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1032, AP1034, AP1034-01, AP1037, AP1038, AP1038P, AP1039, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1064, AP1065, AP1077, AP1078, AP1079, AP1080, AP1081, AP1095, AP1096, AP1097 (with charge ampliffier AP5000, AP5002);
- **vibration transducers with built-in preamplifier** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2078, AP2081, AP2083, AP2098, AP2099;
- **force sensors** AC20, AC21, AC22, AC23, AC26 (with charge ampliffier AP5000, AP5002), A2020, AC2026;
- **pressure sensors** PS01, PS02, PS03 (with charge ampliffier AP5000, AP5002), PS2001;
- **impulse hammers** AU01 (with charge ampliffier AP5000, AP5002);
- **impulse hammers** AU02, AU03;
- **pressure sensor** PS2001;
- **charge amplifier** AP5000, AP5002.

Optional accessories:

- **power unit** AS05.

AG04

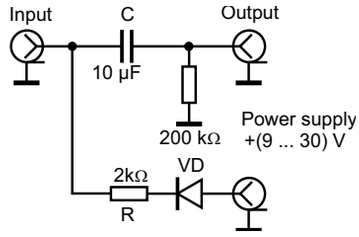
Purpose:

- Connecting vibration transducers with built-in electronics to a power supply source and recording equipment in stationary conditions.

Features:

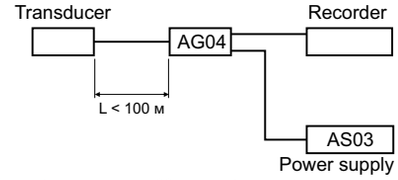
- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier.

Electrical circuit of one channel



For AP2098-100-3.3: +3.3 V, for AP98-100-5: +5 V

Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP2098-100-3.3, AP2098-100-5.

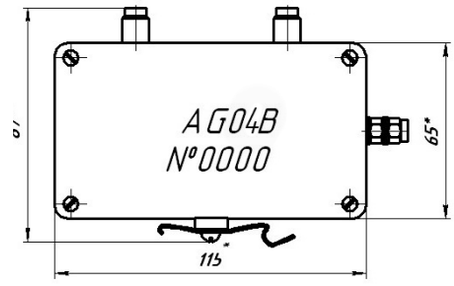
AG04B

Purpose:

- Connecting vibration transducers with voltage output, placed in explosion hazardous area, to a power supply source and recording equipment in stationary conditions.

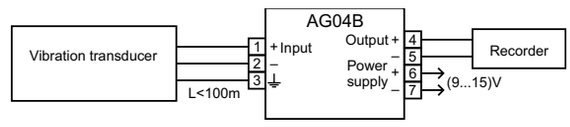
Features:

- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier.
- Output sparkproof parameters:
- Uo: 24 V,
- Io: 100 mA,
- Co: 0.06 mF,
- Lo: 1 mH.
- Mounted on a 35 mm DIN- rack.
- Explosion-proof version [Exib]IIC.



Parameter	AG04B
Power supply voltage of the sensor	9 V
Power supply current of the sensor	4.0 A
Maximum input voltage range	30 V
Input resistance	> 10^9 Ω
Maximum output voltage range	24 V
Output resistance	< 1000 Ω
Frequency range at –1 dB	0.5 ... 30 000 Hz
Root-mean-square value of noise (reduced to the input)	≤ 5 μV
External power supply voltage	9 ... 15 V
Current consumption	< 12 mA
Operating temperature range	– 40 ... + 85 °C
Input / output connector	screw terminal blocks
Overall dimensions	115 × 87 × 30 mm
Weight	150 g

Wiring diagram of AG04B



Can be increased up to 400 m, with lowering the upper boundary of the frequency range to 7 kHz

To be used with:

- **vibration transducers with built-in preamplifier** P2071.

AG01-5V

Purpose:

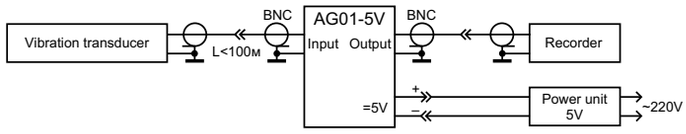
- Connecting vibration transducers, force sensors, dynamic pressure sensors and impulse hammers to a power supply source and recording equipment in stationary conditions.

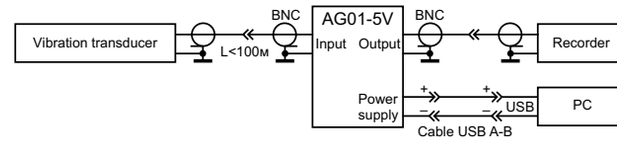
Features:

- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with/without a built-in preamplifier, which are connected by means of the charge amplifier AP5000.
- Ensures connection to the recording equipment with the input resistance not lower than 1 MOhm.
- Powered from an external stabilized source 5V or a PC via USB port

Parameter	AG01-5V
Power supply voltage of the sensor	24 ± 2 V
Power supply current of the sensor	4.7 ± 10% mA
External power supply voltage	5 ± 10% V
Current consumption	< 100 mA
Operating temperature range	– 40 ... + 85 °C
Input connector	BNC
Output connector	BNC
Type of plug for power supply connection	USBB-1J, DJK-02A
Housing material	aluminium
Overall dimensions	89 × 59 × 35 mm
Weight	150 g

Wiring diagrams of AG01-5V





Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP10, AP1011, AP1012, AP1019, AP1020, AP1021, AP1022, AP1023, AP1024, AP1024-01, AP1026, AP1030, AP1031, AP1032, AP1034, AP1034-01, AP1037, AP1038, AP1038P, AP1039, AP1040, AP1040-01, AP1047, AP1048, AP1049, AP1050, AP1057, AP1057-01, AP1077, AP1078, AP1079, AP1080, AP1081, AP1095, AP1096, AP1097 (with charge amplifier AP5000, AP5002);
- **vibration transducers with built-in preamplifier** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2078, AP2081, AP2083, AP2098, AP2099;
- **force sensors** AC20, AC21, AC22, AC23, AC26 (with charge amplifier AP5000, AP5002), A2020, AC2026;
- **pressure sensors** PS01, PS02, PS03 (with charge amplifier AP5000, AP5002), PS2001;
- **impulse hammers** AU01 (with charge amplifier AP5000, AP5002);
- **impulse hammers** AU02, AU03.

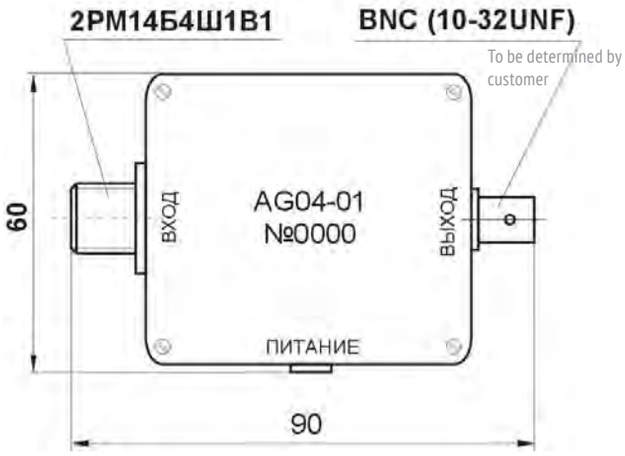
AG04-01

Purpose:

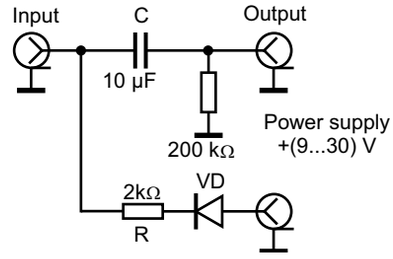
- Connecting industrial vibration transducers to a power supply source and recording equipment in stationary conditions.

Features:

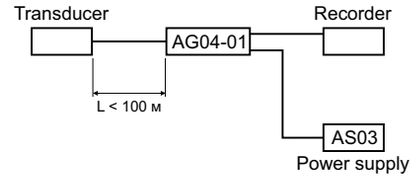
- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier.



Electrical circuit of one channel



Wiring diagram for connecting transducers with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **vibration transducers** AP2036, AP2036-02, AP2036-03, AV04.

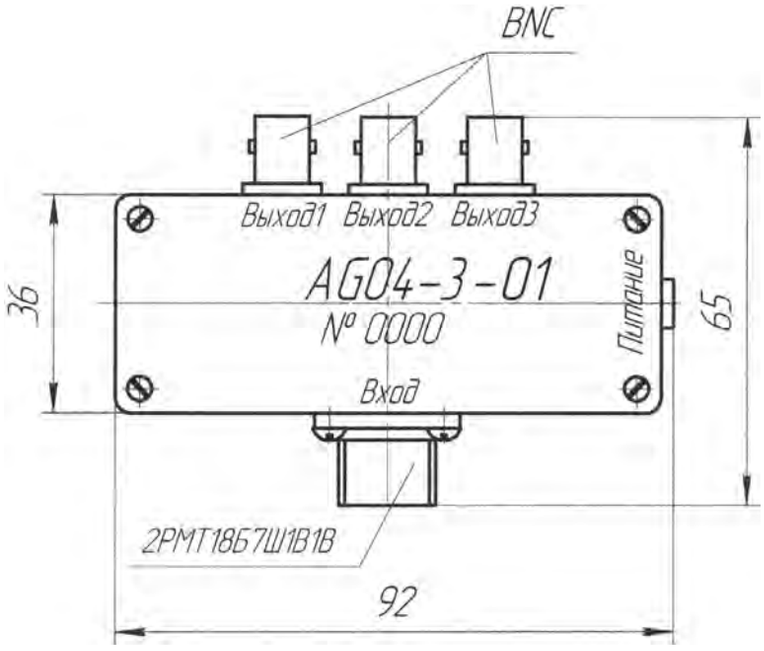
AG04-3-01

Purpose:

- Connecting industrial vibration transducers to a power supply source and recording equipment in stationary conditions.

Features:

- Provides separation of the constant component of the power supply source and variable component of the measured signal of vibration transducers with a built-in preamplifier.



To be used with:

- **vibration transducers** AP2071.

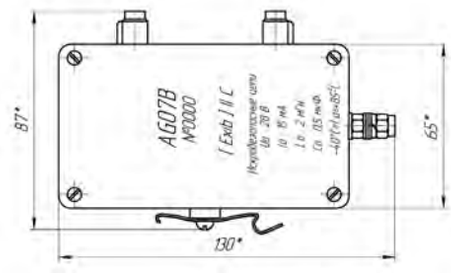
AG07B

Purpose:

- Connection of charge piezoelectric vibration transducers located in an explosion hazardous area to a power source and recording equipment under stationary conditions.

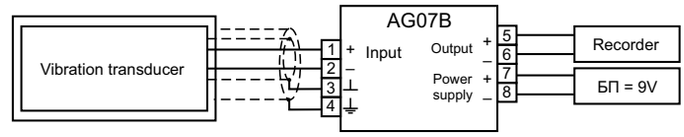
Features:

- Can be used at long connection lines (up to 100 m), basically without reducing sensitivity or limiting the area of low frequencies.
- Output intrinsic safety parameters:
- Uo: 28 V,
- Io: 15 mA,
- Co: 0.08 μF,
- Lo: 0.3 mH.
- Mounted on a 35mm DIN-rack.
- Explosion-proof version [Exib]IIC.



Parameter	AG07B
Conversion factor (± 2 %)	1 mV/pC
Input charge range	4 500 pC
Additional error resulting from temperature change	< 1 %
Input resistance	> 10^9 Ω
Maximum input voltage range	15 V
Maximum output voltage range	28 V
Output resistance	< 100 Ω
Frequency range at: –1 dB	0.5 ... 30 000 Hz
Root-mean-square value of noise (reduced to the input)	≤ 5 μV
External power supply source voltage	12 ... 24 V
Current consumption	< 20 mA
Operating temperature range	– 40 ... + 85 °C
Input / output connector	screw terminal blocks
Overall dimensions	115 × 87 × 30 mm
Weight	150 g

Wiring diagram for connecting AG07B



To be used with:

- **vibration transducers with built-in preamplifier** AP1066B.
- **pressure sensors** PS09B.

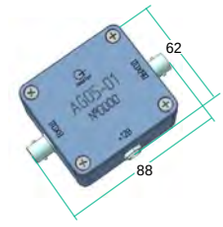
AG05, AG05-01

Purpose:

- Converting a high impedance charge signal of piezoelectric transducer to a low impedance voltage signal (AG05).
- Generating a variable voltage signal of piezoelectric transducers with a built-in preamplifier (AG05-01).

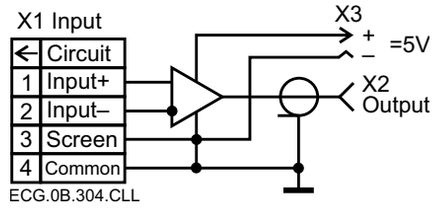
Features:

- Low intrinsic noise.
- Large time constant.
- Built-in HF and LF filters with decline in frequency response not less than 40 dB/decade.
- Balanced input for charge-output vibration transducers.



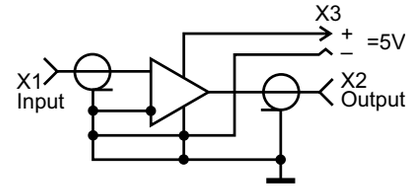
Parameter	AG05	AG05-01
Input charge range	10 000 pC	–
Input voltage range	–	± 5 V
Operating frequency range at: - 1 dB	0.01 ... 2 000 Hz	0.1 ... 2 000 Hz
Conversion factor for charge (error ± 1%)	1 mV/pC	
Voltage amplification factor (error ± 1%)	–	1
Coefficient of ambient temperature variation influence (from – 40 to + 85 °C) on amplification and conversion factor	≤ 0.025 %/°C	
Output resistance	< 1 000 Ω	
Maximum output voltage at nonlinear distortion factor < 5 %	± 10 V	± 5 V
Power supply of sensors with built-in preamplifier: - voltage - current	– 	 + 24 V 4.7 mA
RMS value of noise	< 5 μV	< 2 μV
Power supply voltage	+ (5 ± 0.5) V	
Current consumption	< 50 mA	< 100 mA
Type of input connector	ECG.0B.304.CLL (Lemo)	BNC
Type of output connector	BNC	
Type of plug for power supply connection	DS-026N (2.1 × 5.5 × 9.5)	
Weight	185 g	
Optional accessories	Power unit AS06	

Electrical circuit of AG05

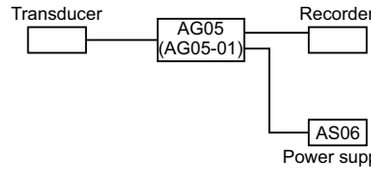


ECG.0B.304.CLL

Electrical circuit of AG05-01



Wiring diagram for connecting to recording equipment



To be used with:

- **AG05** shall be used with vibration transducers AP1006;
- **AG05-01** shall be used with vibration transducers AP2006.

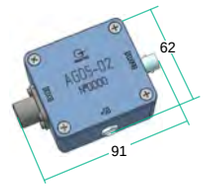
AG05-02, AG05-02-2

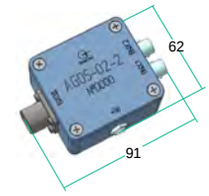
Purpose:

- Generating a variable voltage signal of piezoelectric transducers with a built-in preamplifier.

Features:

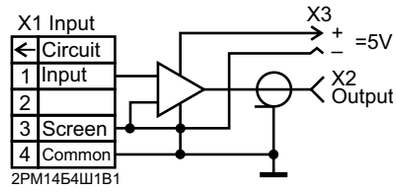
- Low intrinsic noise.
- Large time constant.
- Built-in HF and LF filters with decline in frequency response not less than 40 dB/decade.



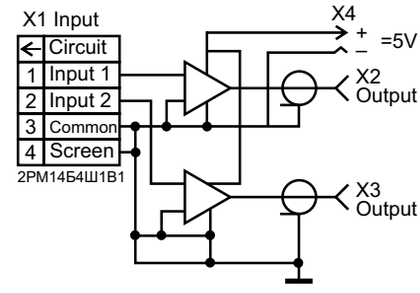


Parameter	AG05-02	AG05-02-2
Input voltage range	± 5 V	
Operating frequency range at: - 1 dB	0.1 ... 2 000 Hz	
Voltage amplification factor (error ± 1 %)	1	
Coefficient of ambient temperature variation influence (from – 40 to + 85 °C) on amplification and conversion factors	≤ 0.025 %/°C	
Output resistance	< 1 000 Ω	
Maximum output voltage at nonlinear distortion factor < 5 %	± 5 V	
Power supply of sensors with built-in preamplifier: - voltage - current	 + 24 V 4.7 mA	
RMS value of noise	< 2 μV	
Power supply voltage	+ (5 ± 0.5) V	
Current consumption	< 100 mA	< 200 mA
Type of input connector	2РМ14Б4Ш1В1	
Type of output connector	BNC	
Type of plug for power supply connection	DS-026N (2.1 × 5.5 × 9.5)	
Weight	185 g	
Optional accessories	mains adapter +5 V	

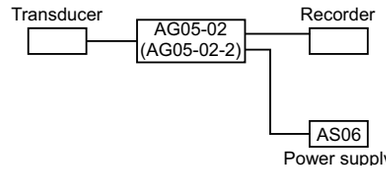
Electrical circuit of AG05-02



Electrical circuit of AG05-02-2



Wiring diagram for connection to recording equipment



To be used with:

- **AG05-02** shall be used with vibration transducers AP2006-02;
- **AG05-02-2** shall be used with vibration transducers AP2006-03.

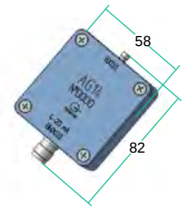
AG14, AG14-3

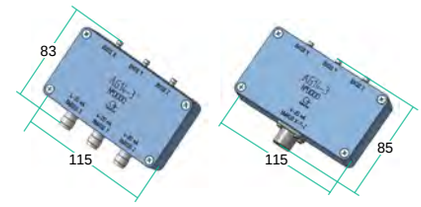
Purpose:

- Connecting vibration transducers for measuring vibrovelocity in stationary diagnostic systems with standard current input (4–20 mA).

Features:

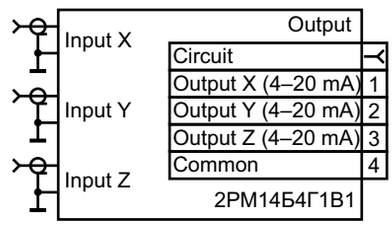
- Conversion of a piezoelement signal proportional to vibration velocity into a standard current signal 4 ... 20 mA.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 500 m.



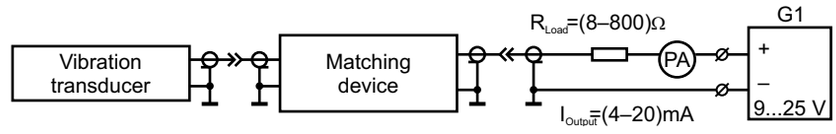


Parameter	AG14	AG14-3
Conversion factor for vibration velocity to current signal 4–20 mA	0.5 ± 0.025 mA·s/mm To be determined by customer	
Frequency range at – 1 dB	5 ... 1 000 Hz To be determined by customer	
Measured vibration velocity range, RMS	0.1 ... 32 mm/s To be determined by customer	
Maximum input charge	1 000 pC	
Operating temperature range	– 40 ... + 85 °C	
Power supply voltage	+ (9 ... 25) V	
Load resistance in current output circuit : - at power supply voltage 9 V - at power supply voltage 25 V	 ≤ 100 Ω ≤ 800 Ω	
Run mode setting time	< 8 s	
Input connector	10-32 UNF	
Output connector	TNC-7422	TNC-7422 or 2РМ14Б4Г1В1
Housing material	aluminium	
Overall dimensions	82 × 58 × 35 mm	115 × 83 × 30 mm
Weight	150 g	250 g

Electrical circuit of AG14-3



Wiring diagram for connecting 1 channel with output connector TNC-7422



Note:

- **Supplied with vibration transducers** AP1037, AP1038, AP1040, AP1077, AP1081, AP1096, AP1097.

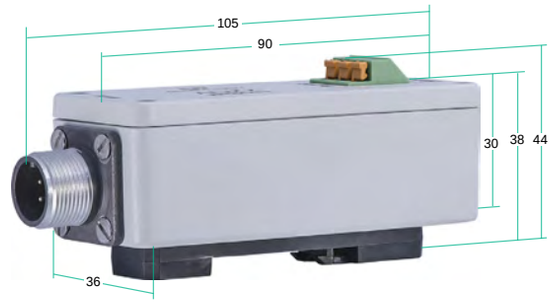
AG22

Purpose:

- Connecting vibration transducers with built-in electronics for measuring vibrovelocity in stationary diagnostic systems with standard current input (4–20 mA).

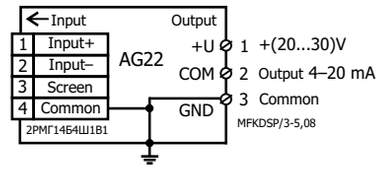
Features:

- Converting a signal proportional to vibration velocity, from a piezoelectric vibration transducer with built-in electronics, to a standard current signal 4-20 mA.
- Robust design and waterproof casing.
- Stable characteristics and reliable operation.
- Transmission of current signal at a distance of up to 100 m.
- Evaluation of machine vibration according to GOST ISO 10816-97, GOST ISO 10816-3-2002.
- Can be mounted on a 35 mm DIN-rail.

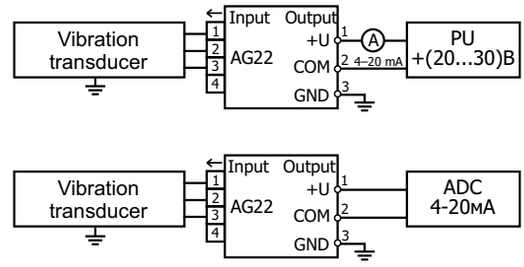


Parameter	AG22
Conversion factor for vibration velocity to current signal 4–20 mA	0,8м ± 0,04 mA·s/mm To be determined by customer
Frequency range at – 1 dB	10 ... 1 000 Hz
Measured vibration velocity range, RMS	0,1 ... 20 mm/s To be determined by customer
Conversion factor of connected vibration transduser	10 mV/ms²
Operating temperature range	– 40 ... + 85 °C
Power supply voltage	+ (20 ... 30) V
Output current	4 ... 20 mA
Run mode setting time	< 8 s
Input connector	2РМ14Б4Ш1В1
Output connector	terminal block
Housing material	aluminium
Overall dimensions	105 x 36 x 44 mm
Weight	150 g

Electrical circuit of AG22



Wiring diagram for connecting AG22



To be used with:

- **vibration transducers** AP2035-100, AP2085-100, AP2086-100.

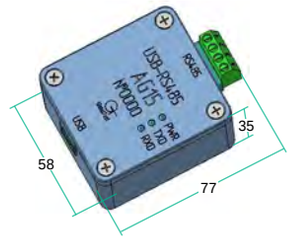
AG15

Purpose:

- Connecting electronic devices and vibration transducers having RS485 interface to the USB port of a PC.

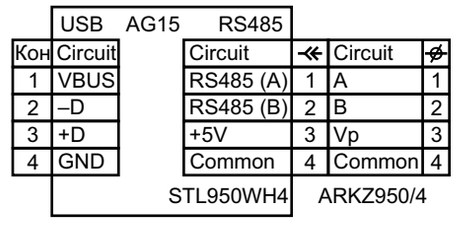
Features:

- Interface implementation in accordance with MODBUS EIA/TIA-485 specification.
- Galvanic isolation of RS485 interface.
- Works in a 2-wire topology.
- USB protocol Rev 2.0 (full speed).
- Powered from USB. No external powering required.
- Simultaneous operation of several transducers.
- Support of Windows XP/VISTA/7 32 bit.
- Built-in converter for powering connected devices.
- Robust design.
- Stable characteristics and reliable operation.
- Can receive and transmit signals at a distance of up to 1000 m.
- Connecting up to 128 devices having the RS485 interface.



Parameter	AG15
USB protocol	version 2.0 (full speed)
RS485 specification	EIA/TIA-485
RS485 transmission rate	300 ... 921600 bps
Electric strength of galvanic isolation	1 000 V
Operating temperature range	– 40 ... + 85 °C
Power supply	+ 5 (USB) V
Current consumption with loading	< 500 mA
Built-in power supply converter:	
- voltage	+ 5 ± 0.5 V
- current	< 400 mA
USB connector	USBB-1J
RS485 connector	terminal block ARKZ950/4
Housing material	aluminium
Overall dimensions	77 × 58 × 35 mm
Weight	150 g

Electrical circuit of AG15



To be used with:

- **vibration transducers** AP2035D, AP2035D-01;
- **vibration controller** AP5300-1, **vibromonitor-controller** AP5400.
- **amplifier** AQ07, AQ08, GT500A;

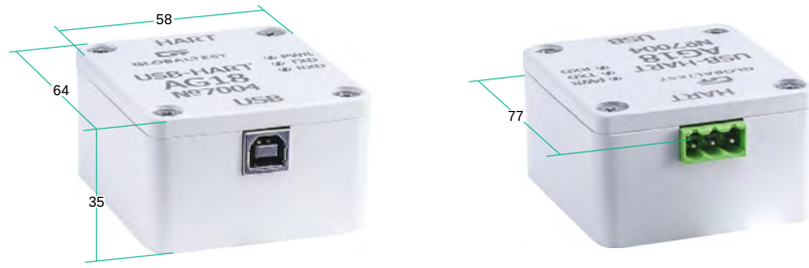
AG18

Purpose:

- Connecting electronic devices with a HART interface to the USB port of a computer, using the 2-wire connection on the current loop 4-20 mA.

Features:

- Galvanic isolation of HART interface.
- USB protocol Rev 2.0 (full speed).
- Powered from USB. No external power supply needed.
- Simultaneous operation of several converters.
- Support of Windows XP/VISTA/7/8 32/64 bit.
- Built-in transducer for powering connected devices.
- Robust design.
- Stable characteristics and reliable operation.
- Can receive and transmit signals at a distance of up to 3000 meters.
- Connecting up to 15 HART-devices in the mode of fixed current 4 mA.

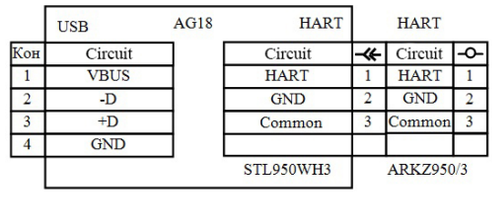


Parameter	AG18
USB protocol	Version 2.0 (full speed)
HART transfer rate	1 200 bps
Electrical strength of galvanic isolation	1 000 V
Operating temperatures	– 40 ... + 85 °C
Power supply	+ 5 (USB) V
Current consumption with load	< 500 mA
Built-in power supply converter: - voltage - current	 + 24 ± 1 V < 80 mA
USB connector	USBB-1J
Housing material	Aluminium
Overall dimensions	77 × 58 × 35 mm
Weight	150 g

Delivery set

Item	Identification code	Quantity
USB-HART converter for AG18	АГТ-Л1487	1
Passport	АГТ-Л1487ПС	1
Gt-HART Explorer Operator's Manual	АГТ-Л100002-01 34	1
Gt-HART Explorer Software	АГТ-Л100002	1
Cable	USB-A-B	1

Electrical circuit of AG18



To be used with:

- **vibration velocity transducers** AV02 AV02-01, AV02-02, AV02-03

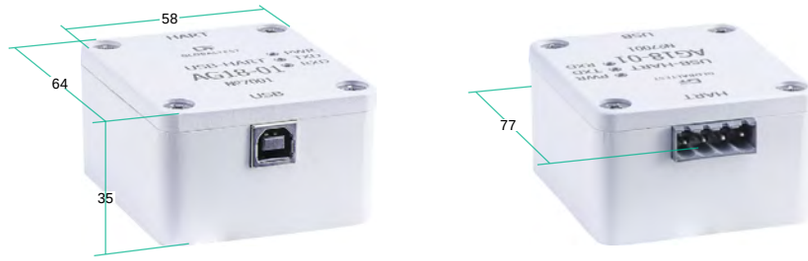
AG18-01

Purpose:

- Connecting electronic devices with a HART interface to the USB port of a computer, using the 3-wire connection:
  - on the current loop 4-20 mA with a separate power line;
  - programming operational parameters of SV02.

Features:

- Galvanic isolation of HART interface.
- USB protocol Rev 2.0 (full speed).
- Powered from USB. No external power supply needed.
- Simultaneous operation of several converters.
- Support of Windows XP/VISTA/7/8 32/64 bit.
- Built-in transducer for powering connected devices.
- Robust design.
- Stable characteristics and reliable operation.
- Can receive and transmit signals at a distance of up to 3000 meters.
- Connecting up to 15 HART-devices in the mode of fixed current 4 mA.

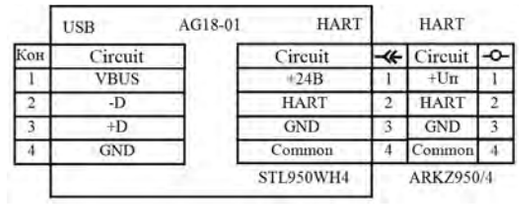


Parameter	AG18-01
USB protocol	Version 2.0 (full speed)
Bit rate of RS485	1 200 bps
Electrical strength of galvanic isolation	1 000 V
Operating temperature range	– 40 ... + 85 °C
Power supply	+ 5 (USB) V
Current consumption with load	< 500 mA
Built-in power supply converter: - voltage - current	 + 24 ± 1 V < 80 mA
USB connector	USBB-1J
RS485 connector	terminal block ARKZ950/3
Housing material	aluminium
Overall dimensions	77 × 58 × 35 mm
Weight	150 g

Delivery set

Item	Identification code	Quantity
USB-HART converter AG18	АГТ-Л487-01	1
Passport	АГТ-Л487-01ПС	1
Gt-HART Explorer Operator's Manual	АГТ-Л00002-01 34	1
Gt-HART Explorer software	АГТ-Л00002-01	1
Cable	USB-A-B	1

Electrical circuit of AG18-01



To be used with:

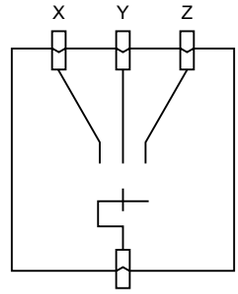
- **Vibration switches** SV02

AG03

Purpose:

- Series switching of measuring channels of three-component vibration transducers AP1020, AP1021, AP1022, AP3108, AP1080, AP1081.

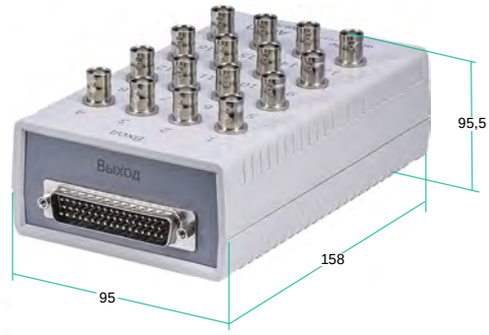
Electrical circuit of AG03



AG20

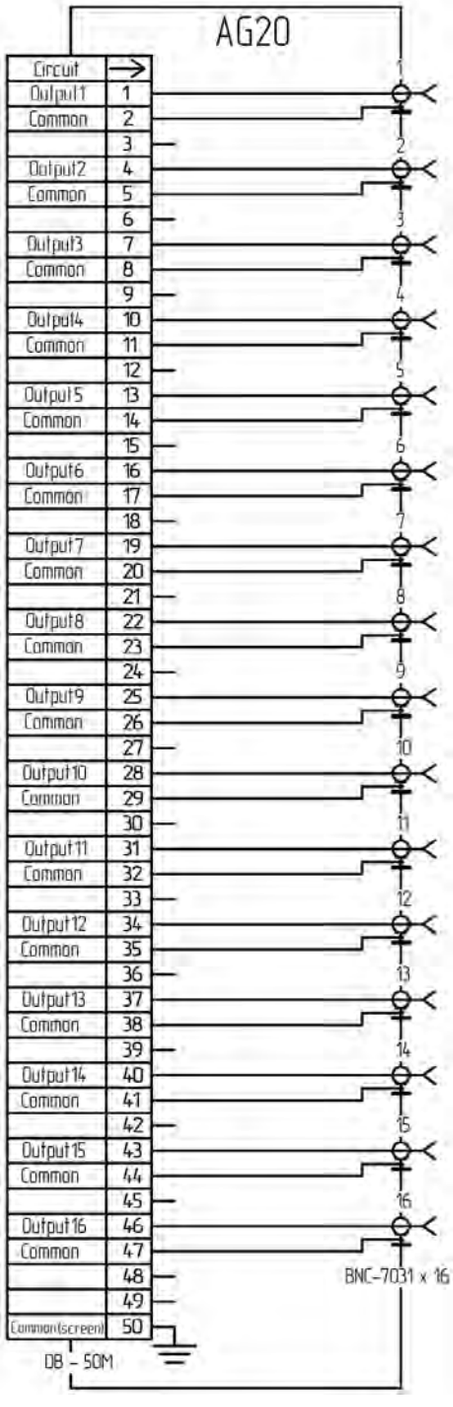
Purpose:

The central point of assembling the cables laid from separate IEPE-type sensors with built-in electronics of multichannel measuring system. The signals coming from the sensors are grouped to be transmitted to the data display/recording devices via a single multicore cable that is connected to the data logging equipment by means of BNC connectors.

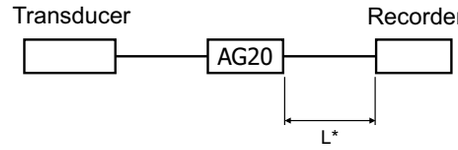


Cable length is to be determined when making an order

Electrical circuit of AG20



Wiring diagram for connecting sensors with built-in electronics IEPE standard (up to 16 PCs.)



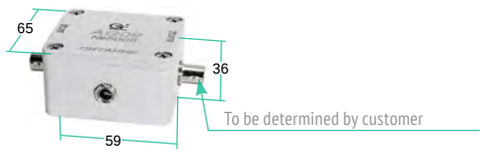
AG09

Purpose:

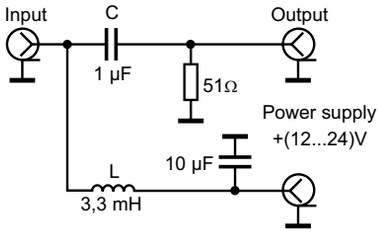
- Connecting acoustic emission sensors to a power supply source and recording equipment in stationary conditions.

Features:

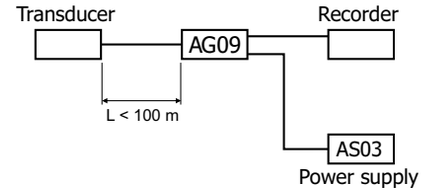
- Provides separation of the constant component of the power supply source and variable component of the measured signal of acoustic emission sensors with/without a built-in preamplifier, which are connected by means of the amplifier GT200A.



Electrical circuit of AG09

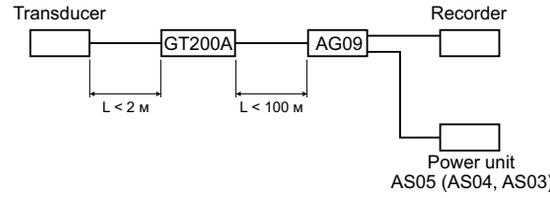


Wiring diagram for connecting acoustic emission sensors with built-in preamplifier



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

Wiring diagram for connecting acoustic emission sensors without built-in preamplifier via the amplifier GT200A



Can be increased up to 500 m, but with lowering the upper boundary of the frequency range

To be used with:

- **acoustic emission sensors** GT200, GT205, GT300, GT301 (with charge amplifier GT200A);
- **acoustic emission sensors with built-in preamplifier** GT200U, GT250, GT350.

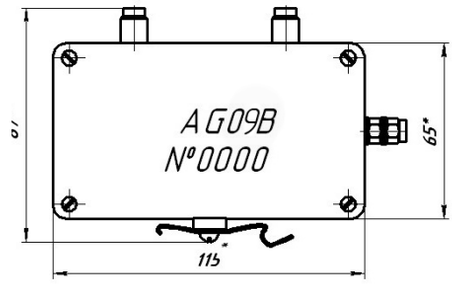
AG09B

Purpose:

- Connecting acoustic emission sensors, located in the explosion hazardous area, to a power supply source and recording equipment in stationary conditions.

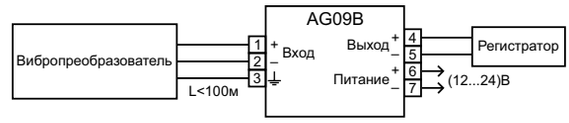
Features:

- Ensures separation of the constant component of the power supply source and variable component of the measured signal of transducers with a built-in preamplifier.
- Output sparkproof parameters:
- Uo: 12.6 V,
- Io: 300 mA,
- Co: 1.0 mF,
- Lo: 0.3 mH.
- Mounted on a 35mm DIN- rack.
- Explosion-proof version [Exib]IIC.



Parameter	AG09B
Maximum input voltage	30 V
Input resistance	> 10^9 Ω
Maximum output voltage	12.6 V
Output resistance	< 1 000 Ω
Frequency range at: –1 dB	10 ... 1 000 Hz
RMS value of noise (reduced to the input)	≤ 5 μV
External power source voltage	12 ... 24 V
Current consumption	< 20 mA
Operating temperature range	– 40 ... + 85 °C
Input / output connector	screw terminal blocks
Overall dimensions	115 × 87 × 30 mm
Weight	150 g

Wiring diagram for AG09B



Can be increased up to 400 m, with lowering the upper boundary of the frequency range to 7 kHz

To be used with:

- **acoustic emission sensors with charge output** GT200B, GT205B.

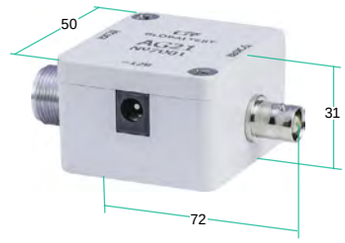
AG21

Purpose:

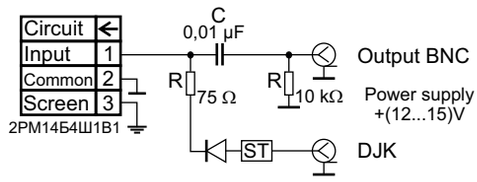
- Connecting acoustic emission sensors to a power supply source and recording equipment in stationary conditions.

Features:

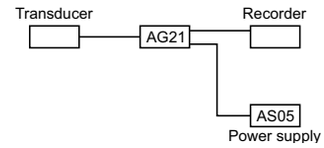
- Provides separation of the constant component of the power supply source and variable component of the measured signal of acoustic emission sensor with a built-in preamplifier.
- Ensures connection to the recording equipment with the input resistance higher than 100 kOhm.



Electrical circuit of AG21



Wiring diagram for connecting acoustic emission sensor with a built-in preamplifier



To be used with:

- **acoustic emission** sensor GT200UB.

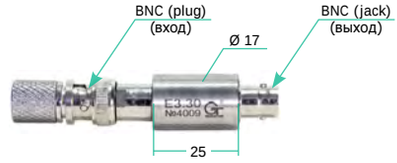
E0.95, E3.30, E1000

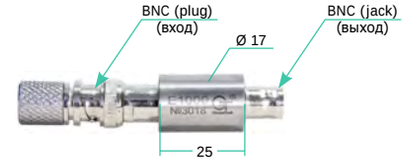
Purpose:

- Calibration of data collectors (analyzers, vibration meters, noise level meters) with input channels for direct connection of sensors with a built-in preamplifier (only E0.95 and E3.30).
- Functional test of charge amplifiers (only E1000).

Features:

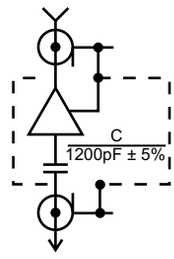
- Wide range of power supply voltage and current (only E0.95 and E3.30).
- Low level of intrinsic noise (only E0.95 and E3.30).



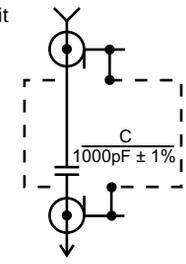


Parameter	E0.95	E3.30	E1000
Amplifier gain factor	0.94 ... 0.97	3.3 ± 5 %	–
Input resistance of the amplifier	> $5 \cdot 10^8$ Ω	> $5 \cdot 10^8$ Ω	–
Insulation resistance under normal conditions	–	–	> 10 000 MΩ
Amplifier input capacitance	< 30 pF	< 110 pF	1 000 pF
Maximum input voltage	± 5 V	± 1.5 V	–
Frequency range	0.5 ... 50 000 Hz	0.5 ... 50 000 Hz	–
Noise level, RMS (1 Hz ÷ 10 kHz)	< 10 μV	< 20 μV	–
Output resistance	< 500 Ω	< 500 Ω	–
Maximum output voltage (at nonlinear distortion factor < 5 %)	± 5 V	± 5 V	–
Power:			
- voltage	15 ... 30 V	18 ... 30 V	–
- current	2 ... 20 mA	2 ... 20 mA	
Constant output voltage level	8 ... 13 V	10 ... 13 V	–
Weight	20 g		
Supplied accessories	plug BNC jack		

Electrical circuit of E0.95 and E3.30



Electrical circuit of E1000



Note:

- **With a fixed plug that ensures short-circuit-to-frame of the input connector, E 0.95 is an electric equivalent of the following vibration transducers:** AP2028-10, AP2028-30, AP2035-10, AP2035-30, AP2091, AP2019, AP2030, AP2031, AP2034-10, AP2037, AP2038, AP2081, AP2083.
- **With a fixed plug that ensures short-circuit-to-frame of the input connector, E 3.30 is an electric equivalent of the following vibration transducers:** AP2035-100, AP2085, AP2098-100, AP2098-500, AP2099-500, AP2099-1000, AP2037-100, AP2050.
- **With a removed plug, E 0.95 and E 3.30 can be used as voltage amplifiers of piezoelectric transducers** (vibration transducers, force sensors, etc.).
- **With a removed plug, E 1000 is an electric equivalent of the following vibration transducers** AP1030, AP1031, AP1032, AP1033, AP1037, AP1038, AP1039, AP1040, AP1077 (AP1077M), AP1078, AP1079, AP1080, AP1081, AP1090.

AS02 – AS05

Purpose:

- Converting supply-line a.c. voltage (220 ± 40 V, 47 ... 63 Hz) to the d.c. voltage.

Parameter	AS02	AS03	AS04	AS04-01	AS05
Operation mode	unregulated d.c. power supply	regulated d.c. power supply		unregulated d.c. power supply	regulated d.c. power supply
Output voltage	30 ± 2 V	24 ± 0.5 V	15 ± 1 V	15 ± 1.5 V	12 ± 0.5 V
Maximum output current	100 mA			1 000	100
Ripple factor	0.5 %	0.2 %		–	0.2 %
Supply voltage	220 ± 20 V				
Supply-line voltage frequency	47 ... 63 Hz				
Overall dimensions	48 × 62 × 73 mm		65 × 85 × 96 mm	100 × 67 × 55 mm	65 × 85 × 96 mm
Type of output connectors	DJK-10A			DJK-10A	DJK-10A
Weight	200 g			300 g	390 g

Parameter	AS05-01	AS05-02	AS05-03	AS05-04	AS05-05
Operation mode	unregulated d.c. power supply		regulated d.c. power supply		
Output voltage	12 ± 1.2 V				
Maximum output current	1 000 mA	500 mA	4 500 mA	100 mA	1500 mA
Ripple factor	–		0.7 %	0.2 %	
Supply voltage	220 ± 20 V				
Supply-line voltage frequency	47 ... 63 Hz				
Overall dimensions	100 × 67 × 55 mm		105 × 55 × 35 mm	65 × 85 × 96 mm	165 × 78 × 45 mm
Type of output connectors	DJK-10A			2РМД14КПН4ШВ (2РМД18КПН4ШВ1)/ BNC	DJK-10A
Weight	300 g			200 g	100 g

Application:

- **AS02** shall be used with power unit AS01;
- **AS03** shall be used with the following vibration transducers having a built-in preamplifier AP2028, AP2035, AP2085, AP2091, AP2098, AP2030, AP2031, AP2037, AP2038, AP2081 (via the matching device AG01, AG02);
- **to be used with charge amplifier** AP5000, AP5001 (via the matching device AG01, AG02);
- **to be used with velocity sensors** AV01, AV02, AV04;
- **to be used with voltage amplifier** GT200A (via the matching device AG09);
- **AS04** shall be used with vibration transducers having a built-in voltage amplifier AP2036, AP2071;
- **to be used with voltage amplifier** GT200A (via the matching device AG09);
- **to be used with the amplifier** AQ05-Б.Х.ХХХ;
- AS04-01 shall be used with calibrator AT02;
- AS05 shall be used with charge amplifiers AQ02, AQ07, AQ07-01, AP5230-01;
- **to be used with power unit** AS07;
- **to be used with voltage amplifier** GT200A (via the matching device AG09);
- **AS05-01** shall be used with amplifiers AP5110;
- **AS05-02** shall be used with amplifier AP5200;
- **AS05-03** shall be used with amplifiers AP5200-8, AP5220-8 (16);
- **AS05-04** shall be used with amplifier AQ05-A.X.XXX;
- **to be used with drivers** D210, D210A;
- **to be used with transmitters** T240, T240A-C;
- **AS05-05** shall be used with amplifiers AP5200-3, AP5200-4, AP5210-16.

AS06, AS08

Purpose:

- Converting supply-line a.c. voltage (220 ± 40 V, 47 ... 63 Hz) to the d.c. voltage.

Parameter	AS06	AS06-01	AS06-02
Operation mode	regulated d.c. power supply		pulsed regulated d.c. power supply
Output voltage	5 ± 0.5 V		5± 1.2 V
Maximum output current	500 mA		1 000 mA
Ripple factor	0.2 %		0.5 %
Supply voltage	220 ± 20 V		
Supply-line voltage frequency	47 ... 63 Hz		
Overall dimensions	65 × 85 × 33 mm		65 × 30× 60
Type of output connectors	DJK-10A	2РМ14КПН 4ШВ (2РМД 18КПН4ШВ1)/ BNC	LEMO FGG.00.304CLAD35Z
Weight	100 g	200 g	

Application:

- **AS06** shall be used with matching devices AG05, AG05-01, AG05-02, AG05-02-2, AP5030-4;
- **AS06-01** shall be used with amplifier AQ05-Г.Х.ХХХ;
- **AS06-02** shall be used with calibrator AT01m;

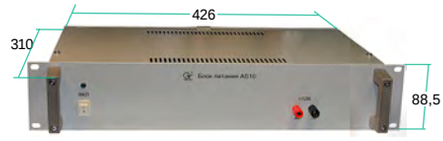
AS10

Purpose:

- Converting supply-line voltage ~220 V to a regulated d.c. voltage 12 V.

Features:

- Maximum load current up to 10 A.
- Overload and output short circuit protection.
- Output voltage ripple does not exceed 10 mV at the load of 10 A.
- Low electromagnetic radiation.
- Casing 19” – metal, height – 2 U, depth – 260mm.
- Can be connected to a set of up to eight electronic devices with common load current not exceeding 10 A.



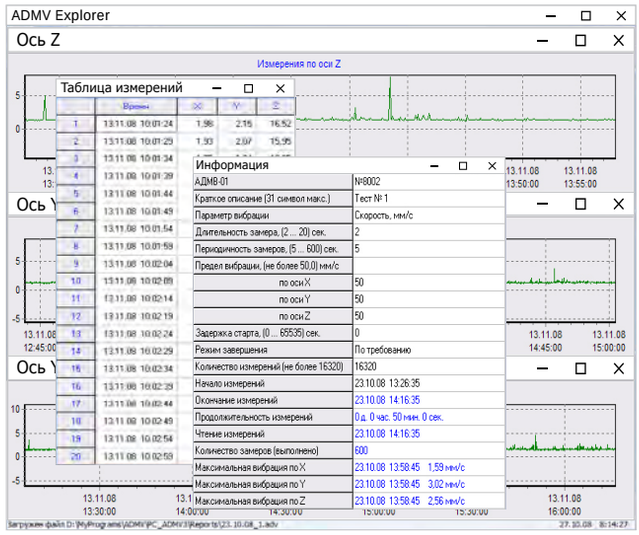
Parameter	AS10
Output voltage	+12 V
Maximum load current	10 A
Output voltage regulation	± 5 %
Ripple factor	< 0.1 %
Supply voltage	220 ± 20 V
Supply-line voltage frequency	47 ... 63 Hz
Type of output connectors	screw terminal blocks
Overall dimensions	481 × 310 × 89 mm
Weight	10 kg

To be used with:

- **amplifiers** AP5210-16, AP5230-16, AP5240-16, AP5250-16.

Measuring instruments

Standard interface of ADMV-Explorer software



Graphic imaging

- **Contains the graphs of measurements read from ADMV or file.**

Table of measurements

- **Contains numerical values of measurements along the X, Y and Z axes with indicating the sequence number of the measurement and its time mark.**

Measurement Table

	Время	X	Y	Z
1	13.11.08 10:01:24	1,98	2,15	16,52
2	13.11.08 10:01:29	1,93	2,07	15,95
3	13.11.08 10:01:34	1,75	1,94	16,65
4	13.11.08 10:01:39	1,93	2,07	16,62
5	13.11.08 10:01:44	1,84	1,96	16,49
6	13.11.08 10:01:49	1,89	2,1	16,38
7	13.11.08 10:01:54	1,84	2	16,38
8	13.11.08 10:01:59	1,93	2,07	16,14
9	13.11.08 10:02:04	1,8	1,96	16,49
10	13.11.08 10:02:09	1,86	2,02	16,59
11	13.11.08 10:02:14	1,9	2,02	16,24
12	13.11.08 10:02:19	1,95	2,07	16,33
13	13.11.08 10:02:24	1,75	1,94	16,21
14	13.11.08 10:02:29	1,71	1,86	16,46
15	13.11.08 10:02:34	1,77	1,93	16,52
16	13.11.08 10:02:39	1,89	2,05	16,4
17	13.11.08 10:02:44	1,9	2,05	16,65
18	13.11.08 10:02:49	1,9	2,05	16,05
19	13.11.08 10:02:54	1,74	1,88	16,71
20	13.11.08 10:02:59	1,8	1,93	16,24

Information window

- **Displays the serial number and operating parameters of the ADMV connected to a PC. Once the measurement file is read, the information window shows a serial number and parameters of the ADMV from which the measurement data were read and filed.**

Information

АДМВ-01	№8002
Краткое описание (31 символ макс.)	Тест № 1
Параметр вибрации	Скорость, мм/с
Длительность замера, (2 ... 20) сек.	2
Периодичность замеров, (5 ... 600) сек.	5
Предел вибрации, (не более 50,0) мм/с	
по оси X	50
по оси Y	50
по оси Z	50
Задержка старта, (0 ... 65535) сек.	0
Режим завершения	По требованию
Количество измерений (не более 16320)	16320
Начало измерений	23.10.08 13:26:35
Окончание измерений	23.10.08 14:16:35
Продолжительность измерений	0 д. 0 час. 50 мин. 0 сек.
Чтение измерений	23.10.08 14:16:35
Количество замеров (выполнено)	600
Максимальная вибрация по X	23.10.08 13:58:45 1,59 мм/с
Максимальная вибрация по Y	23.10.08 13:58:45 3,02 мм/с
Максимальная вибрация по Z	23.10.08 13:58:45 2,56 мм/с

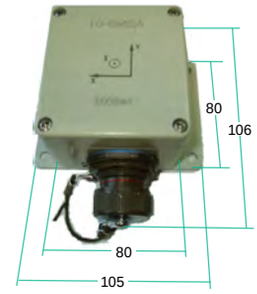
ADMV-01

Purpose:

- Off-line measurement and accumulation of vibration parameters for a long period of time (up to 3 months).

Features:

- Measuring peak values of vibroacceleration or vibrovelocity in the low frequency range in three directions.
- Data accumulation in internal memory (up to 16000 measurements in each direction).
- Comparing measured values with preset thresholds and alarming the limit excess.
- Signaling power-supply voltage drop to the lower limit level.



Parameter	ADMV-01
Simultaneous measurement of vibration along the axes:	X, Y, Z
Operating frequency range with attenuation on boundaries not more than 1 dB,	3–200 Hz
Amplitude range of measured vibroacceleration	0.05–50 m/s^2
Amplitude range of measured vibrovelocity	0.05–50 mm/s
Built-in HF filter with decline in frequency response not less than 20 dB/decade and attenuation not greater than 1 dB	3 Hz
Built-in LF filter with decline in frequency response not less than 30 dB/decade and attenuation not greater than 1 dB	200 Hz
Accepted limits of basic relative error of vibroacceleration and vibrovelocity measurements in the ranges (0.5–50) m/s^2 and (0.5–50) mm/s, respectively	0.5 dB
Total nonlinearity of amplitude-frequency response in the measurement frequency band not more than	1 dB
Duration of single measurement	2–20 τ , s
Measurement time interval	5–600 τ, s
Maximum amount of measured values on each axis, stored in the internal memory	16 320
Continuous operation time	3 months
Operating temperature range	– 20 ... + 60 °C
Ambient humidity	50 ÷ 100 %
Overall dimensions	80 × 105 × 62 mm
Weight	700 g
Powering from 2 lithium batteries SL-360P	3.6 V 2 300 mAh

Delivery set

Description	Identification code	Quantity
Autonomous detector for monitoring vibration ADMV-01	ABKJ.431134.015	1
Passport	ABKJ.431134.015PS	1
ADMV Explorer Operator's Manual	ABKJ.00005-01 34	1
Cable	USB A-A	1
Setup CD with ADMV Explorer Software	–	1

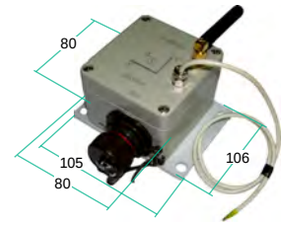
ADMV-02

Purpose:

- Off-line measurement and accumulation of vibration parameters for a long period of time (up to 3 months).
- Transmission of notifying and alarm SMS-messages via GSM-channel. Communication of accumulated data at the given email address via the GPRS channel.

Features:

- Measuring peak values of vibroacceleration or vibrovelocity in the low frequency range in three directions.
- Data accumulation in internal memory (up to 16000 measurements in each direction).
- Comparing measured values with preset thresholds, and excess alarm.
- Signaling power-supply voltage drop to the lower limit level.



Parameter	ADMV-02
Simultaneous measurement of vibration along the axes:	X, Y, Z
Operating frequency range with attenuation on boundaries not more than 1 dB	3–200 Hz
Amplitude range of measured vibroacceleration	0.05–50 m/s^2
Amplitude range of measured vibrovelocity	0.05–50 mm/s
Built-in HF filter with decline in frequency response not less than 20 dB/decade and attenuation not greater than 1 dB	3 Hz
Built-in LF filter with decline in frequency response not less than 30 dB/decade and attenuation not greater than 1 dB	200 Hz
Accepted limits of basic relative error of vibroacceleration and vibrovelocity measurements in the ranges (0.5–50) m/s^2 and (0.5–50) mm/s, respectively	0.5 dB
Total nonlinearity of amplitude-frequency response in the measurement frequency band not more than	1 dB
Duration of single measurement	2–20 τ , s
Measurement time interval	5–600 τ , s
Maximum amount of measured values on each axis, stored in the internal memory	16 320
Continuous operation time	3 months
Operating temperature range	– 20 ... + 60 °C
Ambient humidity	50 ÷ 100 %
Overall dimensions	80 × 105 × 62 mm
Weight	700 g
Power supply: - from 2 lithium batteries SL-360P (when transmitting data to ADMV-02 via a USB cable) - external power supply (when transmitting data to ADMV-02 via a GSM/GPRS channel)	3.6 V, 2300 mAh 9 ... 15 V, 500 mA

Delivery set

Description	Identification code	Quantity
Autonomous detector for monitoring vibration ADMV-02	ABKJ.431134.015-02	1
Passport	ABKJ.431134.015-02PS	1
ADMV Explorer Operator's Manual	ABKJ.00005-01 34	1
Cable	USB A-A	1
Setup CD with ADMV Explorer Software	–	1

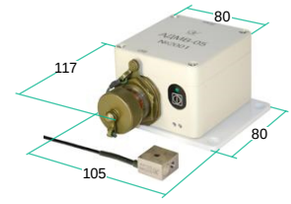
ADMV-05

Purpose:

- Off-line measurement and recording of time realization of vibration parameters for a period of up to 2 weeks.

Features:

- Measuring vibration acceleration in the low frequency range in three directions.
- Recording the parameter time realization in internal memory (more than 2 300 000 points in each direction).
- Signaling power-supply voltage drop to the lower limit level.
- Information management and reading via USB port.



Parameter	ADMV-05
Simultaneous measurement of vibration along the axes:	X, Y, Z
Operating frequency range with attenuation on boundaries not more than 1 dB	0.5–2 000 Hz
Amplitude range of measured vibroacceleration	0.02–150 m/s^2
Internal memory space	128 Mbyte
Built-in HF filter with decline in frequency response not less than 40 dB/decade and attenuation not greater than 1 dB	0.5 Hz
Built-in LF filter with decline in frequency response not less than 80 dB/decade and attenuation not greater than 1 dB	2 000 Hz
Accepted limits of basic relative error of vibroacceleration measurements	5 %
Nonlinearity of amplitude-frequency response in the measurement frequency band not more than	1 dB
Maximum duration of measurement	4614 τ , s
Maximum amount of measured values on each axis, stored in the internal memory	23068672
Continuous operation time	14 days
Operating temperature range	– 20 ... + 60 °C
Ambient humidity	50 ÷ 100 %
Overall dimensions	80 × 105 × 62 mm
Weight	700 g
Powering from 2 lithium batteries SL-360P	3.6V 2 300 mAh

Delivery set

Description	Identification code	Quantity
Autonomous detector for monitoring vibration ADMV-05	ABKJ.431134.015-05	1
Passport	ABKJ.431134.015-05PS	1
ADMV Explorer Operator's Manual	ABKJ.00005-05 34	1
Cable	USB A-A	1
Setup CD with ADMV Explorer Software	–	1
Vibration transducer AP38	ABKJ.433642.005	1

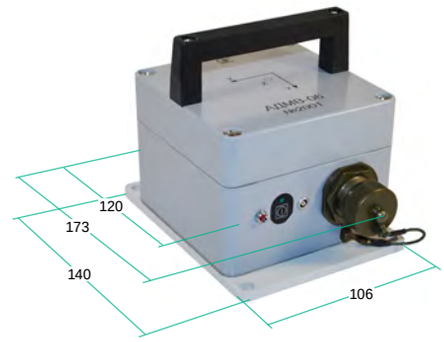
ADMV-06

Purpose:

- Off-line measurement and recording of vibration acceleration parameters at shock and vibration.

Features:

- Measuring vibration acceleration in the low frequency range in three directions.
- High dynamic range of up to 90 dB.
- Indication of power-supply voltage drop to the lower limit level.



Parameter	ADMV-06
Simultaneous measurement of vibration along the axes:	X, Y, Z
Operating frequency range	0.1–200 Hz
Amplitude range of measured vibroacceleration	0.005–15 m/s^2
Basic relative error limits, not greater than	± 5 %
Built-in HF filter with decline in frequency response not less than 40 dB/decade and attenuation not greater than 1 dB	0.1 Hz
Built-in LF filter with decline in frequency response not less than 40 dB/decade and attenuation not greater than 1 dB	200 Hz
Nonlinearity of amplitude-frequency response in the measurement frequency band not more than	1 dB
Maximum time of continuous data recording (500 measurements/s)	70 h
Internal memory space	512 Mbyte
Continuous operation time, without recharging	20 days
Operating temperature range	– 40 ... + 60 °C
Ambient humidity	50 ... 100 %
Unit dimensions	122 × 120 × 92.5 mm
Overall dimensions	173 × 122 × 138 mm
Weight, not greater than	2 600 g
Powering from Li-ion storage battery	7.2 V; 5 400 mA·h

Delivery set

Description	Identification code	Quantity
Autonomous detector for monitoring vibration ADMV-06	ABKJ.431134.033	1
Passport	ABKJ.431134.033PS	1
ADMV Explorer Operator's Manual	ABKJ.00005-06 34	1
Cable	USB A-A	1
Setup CD with ADMV Explorer Software	–	1

ADMV-07

Purpose:

- Off-line measurement and accumulation of vibration parameters. Data transmission via the GSM/GPRS channel at the given email address.
- Transmission of notifying and alarm SMS-messages via the GSM-channel. Communication of accumulated data at the given email address via the GPRS channel.

Features:

- Measuring peak and root-mean-square values of vibroacceleration or vibrovelocity in the low frequency range in three directions.
- Data accumulation in internal memory.
- Actuating the instrument and start recording vibration levels at a scheduled time.
- Stop recording at vibration below the level of rest within a predetermined time (when the facility is in the idle state).
- Monitoring vibration levels and continuous recording of signal in case the actuation events exceed a certain number of times within a specified period.
- Comparing the measured values with the specified limits and alarming the limit excess. When vibration exceeds the predetermined acceptable level during recording, an alarm SMS-text with indicating the sensor serial number, time and level of vibration will be sent at the specified mobile phone numbers, and an email containing the data acquired from the start of recording up to the current time will be sent to a specified email address, with no interruption in recording.
- Signaling power-supply voltage drop to the lower limit level.

Parameter	ADMV-07
Simultaneous measurement of vibration along the axes:	X, Y, Z
Operating frequency range with attenuation on boundaries not more than 1 dB	0.5–200 Hz
Amplitude range of measured vibroacceleration	0.007–7 m/s^2
Measuring range of vibroacceleration root-mean-square (RMS) value	0.005–5 m/s^2
Amplitude range of measured vibrovelocity	0.07–70 mm/s
Measuring range of vibrovelocity RMS value	0.05–50 mm/s
Operating frequency range for vibrovelocity with attenuation on the boundaries not more than 1 dB	1–150 Hz
Operating frequency range for vibrovelocity with attenuation on the boundaries not more than 3 dB and 1 dB, respectively	2–150 Hz
Built-in HF filter with decline in frequency response not less than 40 dB/decade and attenuation not greater than 1 dB	1 Hz
Built-in LF filter with decline in frequency response not less than 40 dB/decade and attenuation not greater than 3 dB	2 Hz
Built-in LF filter with decline in frequency response not less than 80 dB/decade and attenuation not greater than 1 dB	150 Hz
Accepted limits of basic relative error of vibroacceleration and vibrovelocity measurements in the ranges (0.5–50) m/s^2 and (0.5–50) mm/s, respectively	0.5 dB
Total nonlinearity of amplitude-frequency response in the measurement frequency band not more than	1 dB
Duration of single measurement	2–20 τ , s
Measurement time interval	5–600 τ , s
Maximum amount of measured values on each axis, stored in the internal memory	92274688
Time of continuous operation from a built-in battery without data transfer via E-mail	48 h
Time of continuous operation from a built-in battery with data transfer via E-mail at the rate of one time every 10 min Operation from a built-in battery is an auxiliary function that is activated at emergency switch-off of the external power	> 12 h
Operating temperature range at operation from a built-in battery at operation from external power supply	 0 ... + 40 °C – 20 ... + 60 °C
Ambient humidity	50 ÷ 100 %
Overall dimensions	125 × 110 × 82 mm
Weight	700 g
Power supply: - from external source of voltage dc: - from built-in battery:	 12 V/1 A 7.2 V/2 800 mA × h

Delivery set

Description	Identification code	Quantity
Autonomous detector for monitoring vibration ADMV-07	ABKJ.431134.015-07	1
Passport	ABKJ.431134.015-07PS	1
ADMV Explorer Operator's Manual	ABKJ.00005-07 34	1
Cable	USB A-A	1
Setup CD with ADMV Explorer Software	–	1

ADMV-08

Purpose:

- Off-line measurement of acceleration at shock and vibration and recording measurement results with reference to real time scale.

Features:

- Vibration acceleration measurement in three directions.
- Recording measurements (events) on exceeding a predetermined acceleration threshold with a history and specified duration of time.
- Overwriting (after memory filling) events of minimal accelerations with new ones of greater acceleration.
- High dynamic range of up to 80 dB.
- Indication of measuring mode.
- Indication of power-supply voltage drop to the lower limit level.
- Options: ambient temperature and humidity measurements.

Parameter	ADMV-08
Simultaneous measurement of vibration along the axes:	X, Y, Z
Operating frequency range with attenuation on boundaries: – 10%	0.4 – 200 Hz
Amplitude range of measured vibroacceleration	0.01 ... 100; 0.02 ... 200; 0.05 ... 500 m/s^2
Basic relative error, not greater than	5 %
Built-in HF filter with decline in frequency response not less than 40 dB/decade and attenuation not greater than 1 dB	0.4 Hz
Built-in LF filter with decline in frequency response not less than 80 dB/decade and attenuation not greater than 1 dB	10, 20, 50, 100, 200 Hz
Nonlinearity of amplitude-frequency response in the measurement frequency band not more than	1 dB
Maximum time of continuous data recording, not less than	720 h
Internal memory space	512 Mbyte
Operating temperature range	– 40 ... +60 °C
Additional relative measurement error within operating temperatures	± 10 %
Ambient humidity	50 ... 100 %
Unit dimensions	105 × 87 × 62 mm
Weight, not greater than	700 g
Power supply from lithium battery	3.6 V; 19 000 mA·h

Delivery set

Description	Identification code	Quantity
Autonomous detector for monitoring shock and vibration ADMV-08	ABKJ.431134.049	1
Passport	ABKJ.431134.049PS	1
ADMV Explorer Operator's Manual	ABKJ.00005-08 34	1
Cable	USB A-LEMO	1
Setup CD with ADMV Explorer Software	–	1

BRHV

Purpose:

- Measurement of voltage amplitude when recording shock and vibration over 12 channels simultaneously.

Features:

- Conversion of signals from three-axis vibration transducers of the IEPE type under shock and vibration effects to a low-impedance voltage signal.
- Digitization and recording in the non-volatile memory of the recorder.
- Ensures the start / end of signal recording from sensors, and deletion of signal information.
- Has built-in Butterworth low pass and high pass filters.
- Recording duration is more than 30 minutes.
- Powered by external DC voltage.
- Indication of supply voltage drop to the lower limit level.
- Waterproof aluminum-alloy casing.
- Data exchange with PC via USB4 and Rs485 interfaces.

Parameter	AVRU
A.C. voltage range	± 2 500 mV
Operating frequency range with attenuation on the boundaries -10 %	10 ... 20 000 Hz
Attenuation of the built-in high-pass filter (HPF) with a cutoff frequency of 10 Hz	> 40 dB/decade
Attenuation of the built-in low-pass filter (LPF) with a cutoff frequency of 20 000 Hz	> 80 dB/decade
Limits of acceptable basic absolute error of the a.c. voltage amplitude measurement	± $(0.01 \cdot U_{input} + 5)$ mV
Limits of acceptable additional measurement error caused by the ambient temperature variation	± 2 %
Operating temperature range	– 40 ... + 60 °C
Ambient humidity	up to 95 %
Overall dimensions	172 × 122 × 138 mm
Weight	2 600 g
Power supply from external DC source	(27 ± 3) V/1 A

Delivery set

Description	Designation code	Quantity
Acting vibration recording unit (BRHV)	ABKJ.431134.057	1
BRHV Passport	ABKJ.431134.057PS	1
BRHV Explorer. Operator's Manual	ABKJ.00005-06 34	1
Cable	USB A-A	1
Setup CD	–	1
Vibration transducer AP2022-XX	ABKJ.431134.057RE	To be determined by customer
BRHV Service Manual	ABKJ.00005-06	One per batch
BRHV Verification Procedure	A3009.0241.MP-18	One per batch

AP6300

Purpose:

- ADC provides registration, recording and digital postprocessing of signals from sensors having an analog output.

Features:

- Can connect sensors according to the IEPE standard (2mA, 24V).
- High accuracy of vibration and acoustic measurements.
- Synchronization option (may synchronize up to 8 devices).
- Built-in antialiasing filters.
- Digital LF and HF filters of any order.
- Graphic equalizer.
- Automatic calibration for higher accuracy.
- Variable sampling rate.
- Easy-to-use GTLab software that implements virtual instruments, such as oscilloscope, spectrum analyzer, frequency meter, DC voltmeter, AC
- voltmeter.
- Signal recording and reproduction.
- Support of OS Windows 8, Windows 7, Windows XP.

Parameter	Value
Sampling rate	1 ... 128 kHz
Type of input connectors	BNC
Interface	USB 2.0 HighSpeed
Operating temperature	0 ... + 55 ºC
Storage temperature	– 20 ... + 70 ºC
Humidity	5 ... 95 %
Power supply	from USB (5V / 400mA)
Overall dimensions	170 × 45 × 115 mm

Analog input	Value
Number of analog inputs	4
Frequency range	0.1 ... 50 000 Hz
DC and AC voltage ranges	± 10 000 mV
Bandwidth for the level of -10%:	
- DC/AC mode	0 ... 50 000 Hz
- AC mode	0.4 ... 50 000Hz
Number of ADC bits	24 bits
Voltage range of input signal	± 10 V
Input impedance	200 kΩ

Virtual instruments and functionalities of GTLab software:

- Spectrum analyzer
- Oscilloscope
- Frequency meter
- AC voltmeter
- DC voltmeter
- Inter-spectral analysis
- Modal analysis
- Amplitude and phase-frequency response measurements

AP6013

Purpose:

- Measuring dynamic processes (vibration, pressure, acoustic emission, etc.) in laboratory, industrial and field environments.

Features:

- Can be configured with ADC modules, voltage and charge amplifiers.
- Each module is an independent device of the measuring channel in the instrument set.
- Each module can be calibrated individually.
- The choice of sensors is determined by the set task.
- All catalog matching devices can be incorporated in the portable instrument set.
- Spectral processing of signals in real time and processing of recorded time realizations.
- Compliance of filters to GOST 17168-82 for accuracy class 1 and IEC 1260 for accuracy class 0.
- Easy-to-use GTLab software that implements virtual instruments, such as oscilloscope, spectrum analyzer, frequency meter, DC voltmeter, AC voltmeter.
- Complies with IP67 (when closed).

The photo shows configuration of a 8-channel version of the instrument set.

Including:

Description	Quantity
Laptop	1
AP6300 measuring voltage transducer	2
AP5030 charge and voltage amplifier	1

Inputs 1 – 4 have two connection modes:

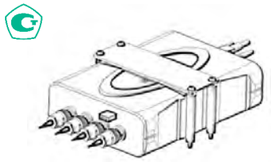
- For charge-output sensors.
- For sensors with an IEPE voltage output.

Inputs 5 – 8 have two connection modes:

- For sensors with an IEPE voltage output.
- Free analog input mode (AC/DC, ± 10 V).

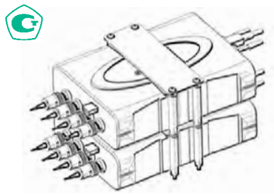
Configuration example:

ADC module AP6300



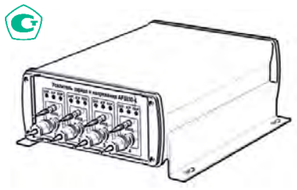
Detection, recording and digital postprocessing of signals from 4 sensors

ADC module 2 pcs. AP6300



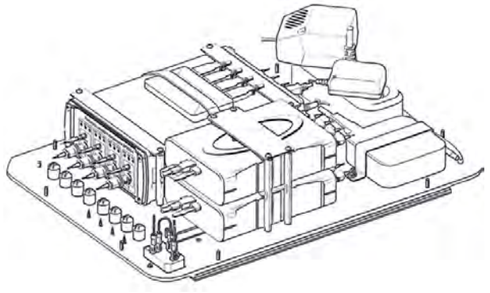
Detection, recording and digital post-processing of signals from 8 sensors

Charge and voltage amplifier module AP5030



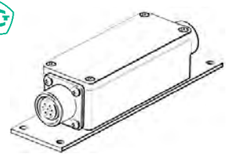
Programming of switching between the charge and voltage amplifier modes, IEPE standard

Example of location of the modules on the carrying plate of the case



Dimensions of the carrying plate and case may vary according to the chosen configuration

Differential charge amplifier module, model AQ05



Connection of sensors according to the differential circuit

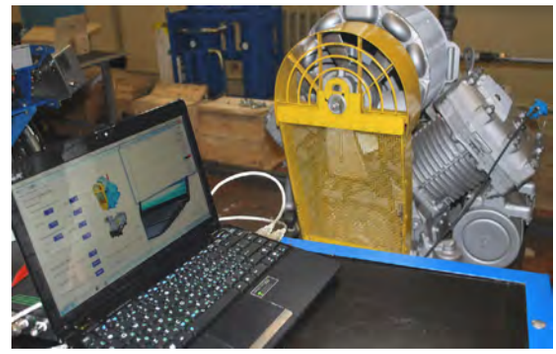
Examples of implemented configurations:

- For FSUE «NIISU» (laboratory for the study of strength characteristics of metals). Set includes: ADC 4-channel – 1 pc.; acoustic emission sensors – 5 pcs.; pulsed acoustic field shaper in solids – 1 pc.
- For Perm Instrument-Making Company. Set includes: ADC 4-channel – 1 pc.; transducers AP1006 – 4 pcs.; differential charge amplifiers AQ05-Д.1.1 – 4 pcs.
- For Glushko NPO Energomash. Set includes: ADC 4-channel – 1 pc.; vibration transducers AP2029 – 2 pcs.; dynamic pressure sensors PS2001 – 2 pcs.; impulse hammer AU02 – 1 pc.

AP6011

Purpose:

- Recording indicated pressures in working cavities of compressors, construction and processing of indicator diagrams.
- Optimization of compressor design and operating mode.



Instrument set:

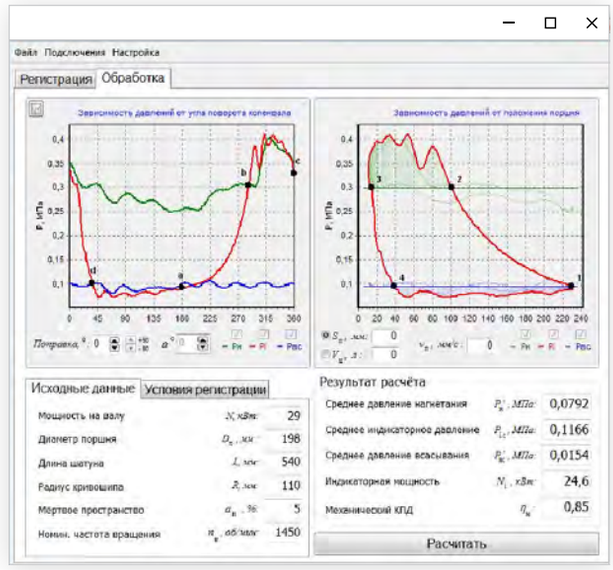
- Three channels for measuring pressure in the increasing / decreasing spaces and pump cylinder (P = 0 ... 16 bar).
- Three channels for measuring temperature in compressor cavities.
- Atmospheric pressure measuring channel.
- Ambient humidity measuring channel.
- Ambient temperature measuring channel.
- Crank shaft rpm sensor.
- Laptop with installed software.

Features:

- Calculation of mechanical efficiency, average indicated pressure, average discharge pressure, average intake pressure, indicated power.
- User-friendly program interface that allows the user to easily construct graphs, log and archive obtained data.

Data logging window

contains the area of instantaneous values from the sensors installed on the compressor and environmental sensors, the logging time (averaging) entry field and «Start» button to start data collection.



Processing window

contains graphs of pressures vs. crankshaft angle and piston stroke, source data input field and calculation results.

Application:

- **JSC «Transpnevmatika»** (designer and manufacturer of compressor units for railway vehicles, e.g. ВУ3, 5/10-1450; ВВ08/8-720; ВВ0,05/7-1000; КП5,4/1 Nizhny Novgorod region, Pervomaysk.

Parameter	AP6011
Dynamic memory space	up to 32 Mb
Flash-memory space	up to 4 Mb
Data rate over HighSpeed USB 2.0	480 Mbps
Weight	0.4 kg
Overall dimensions	115 × 180 × 35 mm

Analog input

Parameter	Value
Number of analog inputs	2
Frequency range of simultaneously analyzed signals	0...1, 0...10, 0...100, 0...1 000, 0...10 000, 0...20 000 Hz
Conversion frequency for each channel	up to 500 kHz
Number of ADC bits	20
Antialiasing filtering of signals	up to 20 kHz
Maximum input voltage at unity gain	± 8.4 V
Programmable amplification factors	20, 40, 60 dB
Dynamic range within frequencies: - up to 100 Hz, - up to 1 kHz, - up to 10 kHz, - up to 100 kHz	 126 dB 116 dB 106 dB 96 dB
Interchannel phase offset	1/10 1 degree/kHz
Level of intrinsic noise in the entire bandwidth at maximum gain, reduced to the input	5 μV

Analog output

Parameter	Value
Number of analog outputs	1
Frequency range of generated sine wave signal	0.03 ... 200 000 Hz
Limits of acceptable relative error of frequency setting for the ranges: - 0...200 000 Hz - 0.03...10 Hz	 ± 0.1 % ± 10 %
DC output voltage	± 4 V
Limits of acceptable error of setting the DC output voltage	± (2 + 0.2 %) mV
AC output voltage	0.002 ... 7 V
Limits of acceptable error of setting the AC output voltage in the frequency range from 0.03 Hz to 30 kHz	± (2 + 0.2 %) mV

Instrument set:

- vibration transducers with built-in preamplifier (e.g., AP2098), vibration velocity sensors, etc.;
- vibration transducers with charge output (e.g., AP1040);
- preamplifiers (e.g., AP5000);
- 2-channel module ADC-DAC A17;
- laptop.

The final architecture of the instrument set is determined by the type of equipment, tasks and Customer's capabilities

AP6012

Purpose:

- Periodic and regular monitoring of vibration acceleration, velocity, and displacement.
- Acceleration limit exceedance warning.
- Vibration signal storage for defining trends of the object state changes.
- Data transmission over local and global networks for specialists of diagnostic services (laboratories, centers).

Features:

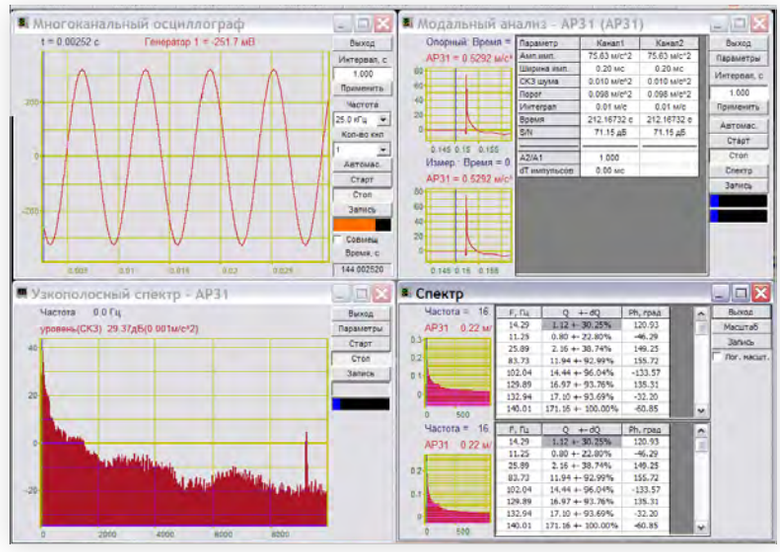
- Types of measured signals: periodic and pulsed signals.
- External synchronization and start-up capability.
- Measured parameters: RMS, peak value, spectral density, spectral power.
- Unique configuration due to the use of proprietary vibration measuring equipment.

Parameter	Units	AP6012
Maximum input voltage	V	15
Operating frequency range	Hz	1 ... 25 000
Recording time	h	up to 30

Instrument set AP6012 functioning and processing data output

Operation of the AP6012 instrument set and output of the processing results is performed using software that enables:

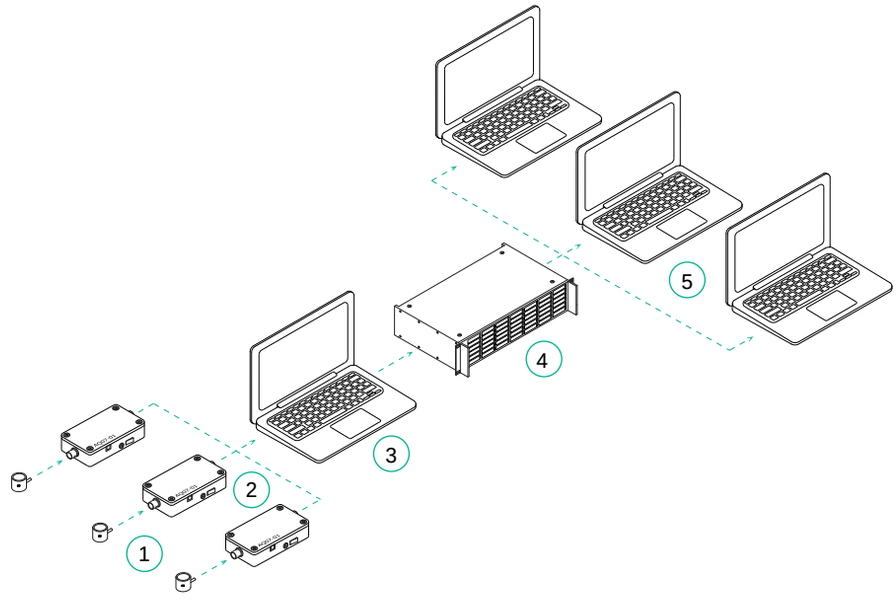
- simultaneous analysis and recording of digitized signals;
- Fourier analysis and fractional-octave analysis in real time;
- time processes (oscilloscope mode);
- averaged autospectra;
- pulse process spectra;
- integration, differentiation and filtering (HF and LF filters);
- simultaneous viewing of signal and its spectrum;
- linear and logarithmic scale;
- simultaneous processing of one signal by different algorithms;
- generating reports and analysis results in Microsoft Office applications;
- procesing previously recorded signals, quick access and storage of processing results;
- calibration and graduation.



Configuration*1:

1. vibration transducers (e.g. AP62B), vibration velocity and displacement sensors, rpm sensor, etc.;
2. preamplifier with filters and Zener (spark-protecting) barrier (e.g. AQ07);
3. personal computer (industrial version is possible) with a data acquisition card for 16 channels, possible extension to 64 channels;
4. company's network server;
5. PCs of different departments of the company.

The final architecture of the instrument set is determined by the type of equipment, tasks and Customer's capabilities.



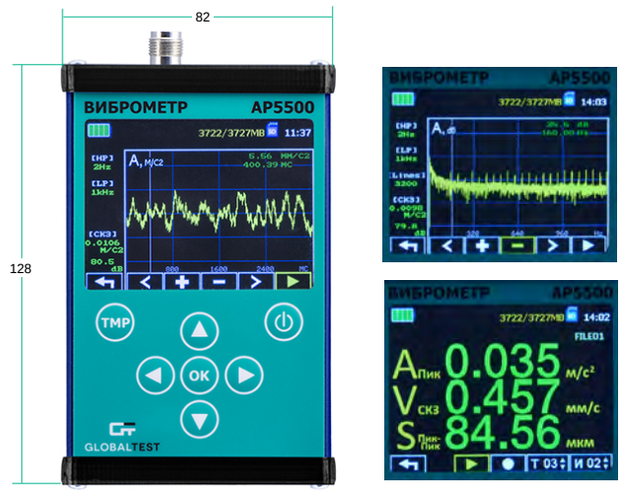
AP5500

Purpose:

- Vibration measurement in real time mode.

Features:

- Built-in pyrometer;
- compact, ergonomic casing;
- can be connected to vibration transducers with charge output and built-in amplifier of IEPE type;
- simultaneous display of velocity, acceleration and displacement;
- display of signal spectrum and waveform;
- signal recording to a file;
- entry of measured values in the table.



Parameter	AP5500
Frequency range	1 Hz ... 25 kHz
Measurement modes	vibro-acceleration, vibro-velocity, vibro-displacement, spectrum, oscilloscope
Detector type	RMS, peak value, peak-to-peak value
Bandwidth according to GOST 10816	2 ... 1000, 2 ... 2000, 10 ... 1000, 10 ... 2000 Hz
Built-in charge amplifier	available
Built-in voltage amplifier (IEPE)	available
Graphic display unit	320 × 240 color LED
Keyboard	membrane-style keyboard with tactile buttons
Communication port	USB
Data storage	SD card
Operating temperature range	–20 ... +50 °C
Weight	250 g
Dimensions	130 × 80 × 25 mm
Battery life	not less than 8 hours
Battery type	built-in LI-Pol, 3500 mAh
Type of input connector	TNC

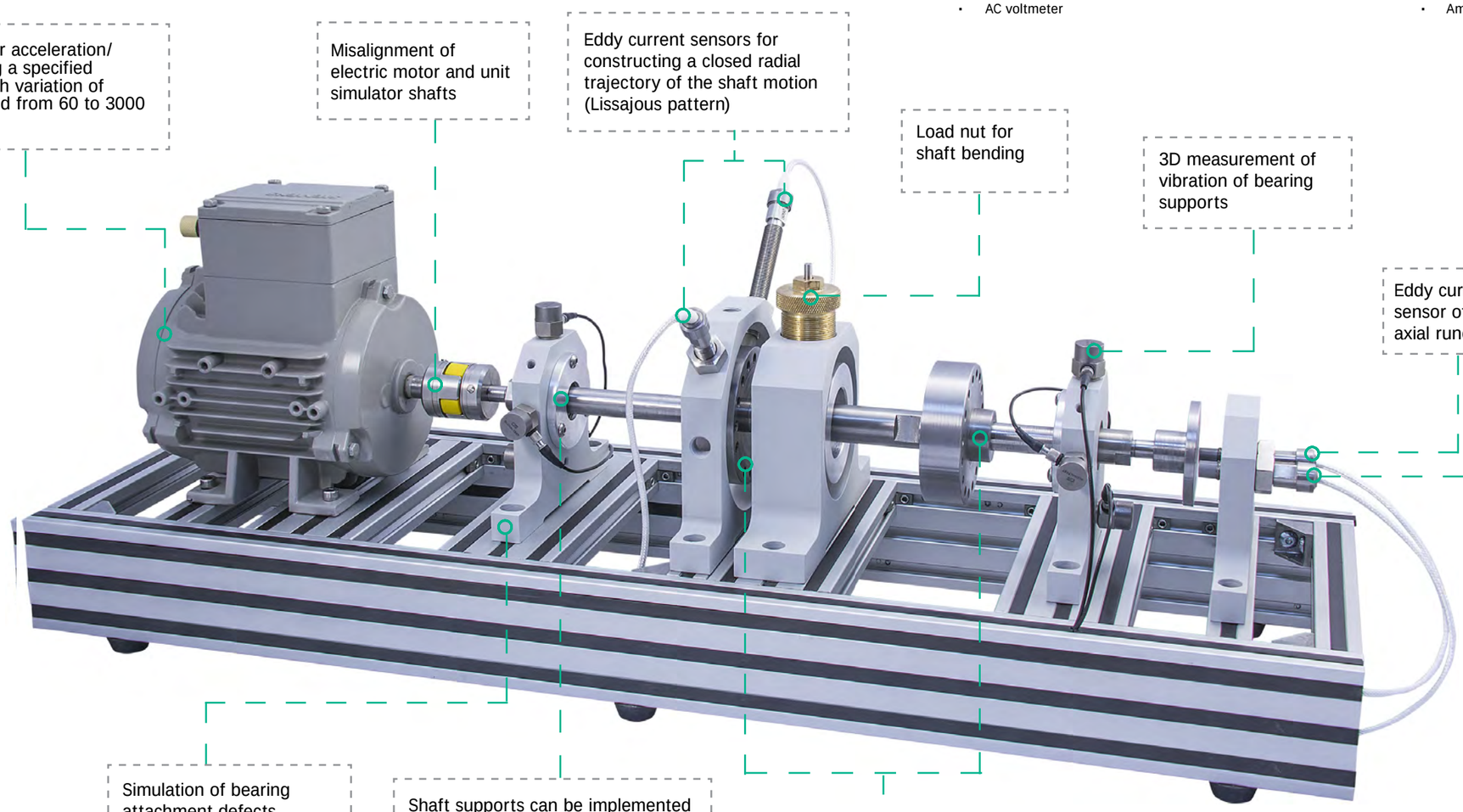
AP7000

Purpose:

- Final adjustment and demonstration of methods for balancing and vibration monitoring of rotary industrial equipment.

Features:

Measurable parameters: vibro-acceleration (6 -12 channels), vibro-displacement (3 channels); phase (1 channel).
Simulation of various operating modes of industrial equipment.



Delivery set*

Name	Quantity
Simulation workbench	1
Frequency transducer	1
Laptop	1
Vibration sensors of AP2037 type	6
Set of eddy-current sensors of AP2200D-V type	3
Set of eddy-current rpm converters of AP2200T-V type	1
ADC, 4-channel AP6300	3
Workbench overall dimensions	620 × 200 × 220 mm

*The measuring channel can be supplied as a portable instrument set AP6013

Virtual instruments and functionalities of GTLab software:

- Spectrum analyzer
- Oscilloscope
- Frequency meter
- AC voltmeter
- DC voltmeter
- Inter-spectral analysis
- Modal analysis
- Amplitude and phase-frequency response measurements

AP5300

Purpose:

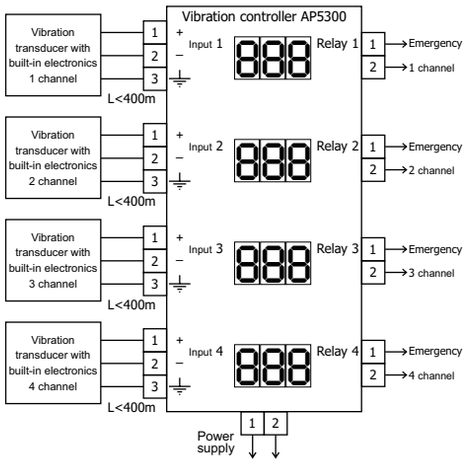
- Monitoring vibration velocity of four objects and generating a signal in the form of a closed «dry» contact when exceeding the allowable vibration level.

Features:

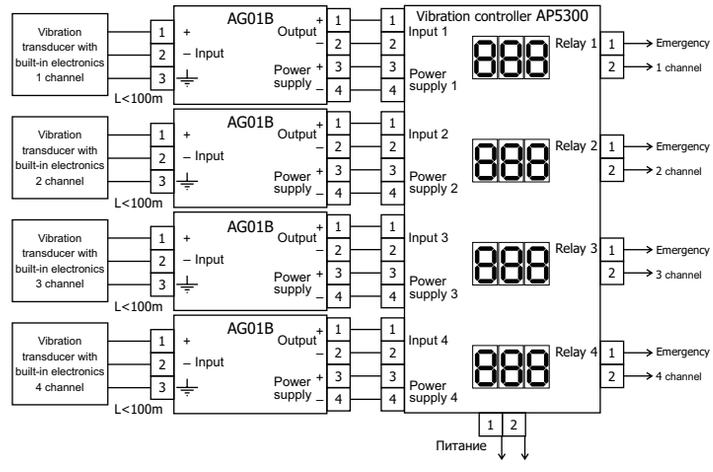
- Parameters displayed by built-in indicators:
- vibration velocity measured value,
- specified operation threshold value,
- error codes at cable breakdown or vibration transducer failure.
- Works with vibrationn transducers with built-in electronics.
- Works with vibration transducers with built-in electronics that are placed in explosion hazard zone, using an AG01B adapter box.

Parameter	AP5300
Number of channels	4
Operating frequency range at: – 1dB	10 ... 2 000 Hz
Vibration velocity measuring range	0.2 ... 20 mm/s
Relative error of vibrovelocity measurement	± 2 %
Additional relative error in the temperature range – 40 ... + 70 °C	± 3 %
Power supply voltage of the sensor	22 ... 30 V
Power supply current of the sensor	4.7 ± 10 % mA
Built-in comparator parameters - specified operation threshold value - operation threshold setting step	 1 ... 20 mm/s 1 mm/s
Conditions of generating a dry closed contact signal of EMERGENCY relay	informative signal is continuously exceeding the threshold value during 5 s
Dry contact parameters - switching current - switching voltage	 < 1 A < 30 V
Power supply voltage	12 ± 1 V
Current consumption	< 1 A
Operating temperature range	– 40 ... + 70 °C
Input connector	screw terminal blocks
Overall dimensions	166 × 160 × 80 mm
Weight	500 g

Wiring diagram of AP5300



Electrical wiring diagram of AP5300 when vibration transducers are placed in explosion hazard zone



To be used with:

- **vibration transducers with built-in electronics** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2085, AP2091, AP2098, AP2099.

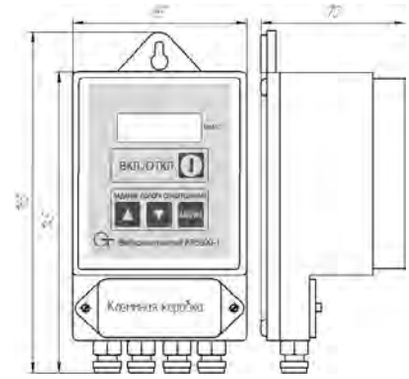
AP5300-1

Purpose:

- Monitoring vibration velocity of an object and generating a signal in the form of a closed or open «dry» contact of the EMERGENCY relay when exceeding the allowable vibration level.

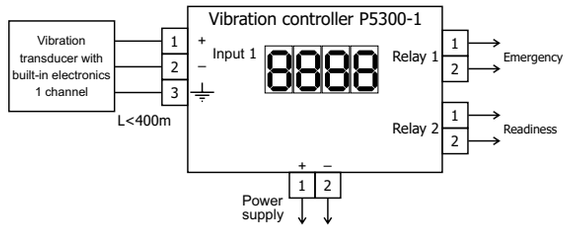
Features:

- Parameters displayed by built-in indicators:
- vibration velocity measured value,
- specified operation threshold value,
- error codes at cable breakdown or vibration transducer failure;
- vibration transducer conversion factor;
- preset time of exceeding the threshold value by an informative signal;
- EMERGENCY relay contacts condition.
- Generates a signal as a closed «dry» contact of the READINESS relay when the vibration transducer and vibration controller work correctly.
- Works with vibrationn transducers with built-in electronics.
- Inputs conversion factor of the used vibration transducer.
- Sets the EMERGENCY relay contact condition, closed or open.
- AP5300-1I version with USB and RS-485 interfaces can operate vibration controller from a PC.



Parameter	AP5300-1
Vibration velocity measuring range	0.1 ... 20 mm/s
Operating frequency range at: – 1dB	10 ... 1 000 Hz
Relative measurement error	± 2 %
Additional relative error in the temperature range – 20 ... + 70 °C	± 2 %
Power supply voltage of the sensor	24 ± 1 V
Power supply current of the sensor	4.7 ± 10 % mA
Built-in comparator parameters	
- specified operation threshold value	0.2 ... 20 mm/s
- operation threshold setting step	0.1 mm/s
Conditions of generating a dry closed contact signal of EMERGENCY relay	informative signal is continuously exceeding the threshold value during 0–9 s
Increment of setting the time of exceeding the vibrovelocity threshold value by an informative signal	1 s
Dry contact parameters	
- switching current	< 1 A
- switching voltage	< 30 V
Power supply voltage	12 ± 1 V
Current consumption	< 100 mA
Operating temperature range	– 20 ... + 70 °C
Connectors	screw terminal blocks
Overall dimensions	145 × 85 × 70 mm
Weight	200 g

Wiring diagram of AP5300-1



To be used with:

- **vibration transducers with built-in electronics** AP2019, AP2022, AP2028, AP2028B, AP2028I, AP2029, AP2030, AP2031, AP2034, AP2035, AP2037, AP2038, AP2038P, AP2043, AP2050, AP2071-01, AP2078, AP2081, AP2082M, AP2083, AP2085, AP2091, AP2098, AP2099.

ПР 200Ex

Purpose:

- Measurement, control and spectral analysis of vibration parameters of industrial facilities (power units of metallurgical enterprises and oil pumping stations, power facilities of power plants, compressors, ventilators, pumps, boilers, etc.).
- Measurement of general and local production vibration parameters.

Features:

- One, two or three-channel version.
- Built-in block of filters and amplifiers, microprocessor, and volatile memory.
- Simultaneous (synchronous) time and spectral analysis of signals from 1 to 3 vibration transducers with determination of peak values and RMS of vibration acceleration, velocity and displacement.
- Sets the sensitivity of vibration transducers and operation routing of the analyzer.
- Enables 2-plane balancing, impact analysis and balancing of blades.
- Display of signals and functions on an LCD color monitor 800x480 pixels in size.
- Linear and logarithmic axis scaling and oscilloscope mode.
- Charging the batteries from an external power supply.
- Can be connected to vibration transducers with charge output.

Parameter	ПР 200Ex
Measurable acceleration range	0.1 ... 5 000 m/s² for vibration transducers AP1040 (2.0 pC/m/s²) 1.6 ... 100 000 m/s² for vibration transducers AP1031 (0.1 pC/m/s²) 0,2 ... 10 000 m/s² for vibration transducers AP1038 (1 pC/m/s²)
Frequency range	from 0.5 to 20 000 Hz
Spectral analysis subranges	0.05; 0.1; 0.2; 0.5; 1.0; 2.0; 5.0; 10; 20 kHz
Number of spectrum counts	up to 3 200 lines
Measurement error of peak values and RMS of vibration acceleration, velocity and displacement	5 % at the middle of the subrange
Time of continuousoperation from batteries	not less than 5 h
Guarantee period	2 years
Overall dimensions	350 x 300 x 160 mm
Weight	3 100 g

Delivery set

Item	Identification code	Quantity
Analyzer ПР 200Ex	АБКЖ.411168.001	1
Device and PC interface cable	–	1
Power unit	–	1
Analyzer ПР 200Ex. Passport	АБКЖ.411168.001ПС	1
ПР 200Ex Explorer. Operator's manual	АБКЖ.00022-01 34	1
Setup CD	АБКЖ.00022-01	1 Flash drive is acceptable
Vibration transducer AP1040	АБКЖ.433641.002	1-3 To be supplied on a separate order
Vibration transducer AP1031	АБКЖ.433641.017	1-3 To be supplied on a separate order
Vibration transducer AP1038	АБКЖ.433641.005	1 To be supplied on a separate order

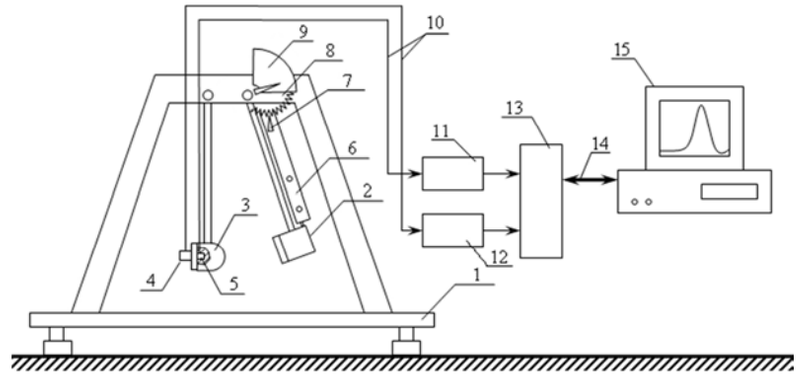
AP8001

Purpose:

- Reproduction of shock acceleration in the range from 1000 to 80 000 m/s².
- Calibration and verification of measuring transducers at shock loading: determination of axial conversion factor, amplitude nonlinearity, relative ratio of transverse conversion.
- To be used as a reference measuring equipment of category 1 according to GOST 8.137-84.

Features:

- The operating principle is based on the ballistic pendulum method. The created amplitude of shock acceleration impulse is monitored using a reference measuring transducer (MT) of acceleration.
- Structurally, the facility consists of a frame on which a hammer and anvil with a built-in reference acceleration transducer are mounted using special hangers. The shock acceleration amplitude depends on the hammer lift height. To vary shock duration, the hammer can accommodate special gaskets made of, e.g. aluminium, rubber or textolite.



1 – facility frame;
2 – hammer;
3 – anvil;
4 – transducer to be calibrated;
5 – reference measuring transducer AP1012;
6 – hammer holder with a trigger;
7 – fixing device;
8 – ratchet sector;
9 – arrow pointer of hammer tilt angle;
10 – anti-vibration (low-noise) cable AK02;
11, 12 – measuring amplifier, e.g. AP5110;
13 – spectrum analyzer, e.g. A19;
14 – communication line;
15 – personal computer.

Parameter	AP8001
Shock acceleration amplitude range	1 000 ... 80 000 m/s²
Duration of the leading edge of shock acceleration at pulse amplitude of 0.1–0.9	50 ... 300 µs
Duration of shock acceleration reproduced by the facility at pulse amplitude of 0.5	80 ... 500 µs
Basic relative error limits of reproduction of shock acceleration amplitude	± 6 %
Shock acceleration amplitude instability	± 10 %
Weight of calibrated measuring transducers, not more than	0.2 kg
Operating conditions: - ambient temperature - relative humidity	 + 18...+ 28 °C up to 75 %
Overall dimensions (L × W × H)	850 × 550 × 1250 mm
Weight, not more than	100 kg

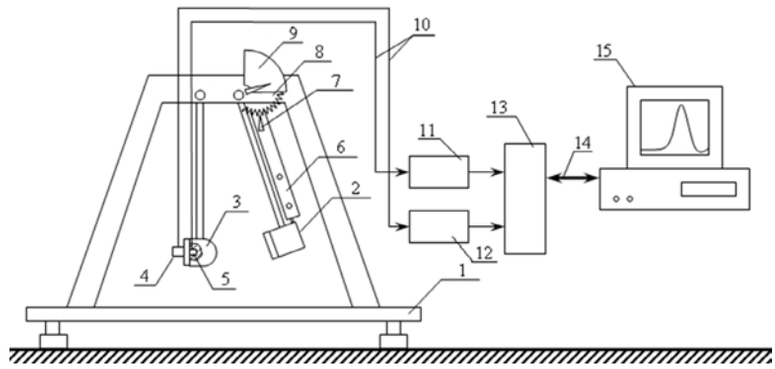
AP8008

Purpose:

- Reproduction of shock acceleration in the range from 10 to 500 m/s².
- Calibration and verification of measuring transducers at shock loading: determination of axial conversion factor, amplitude nonlinearity, relative ratio of transverse conversion.
- To be used as a reference measuring equipment.

Features:

- The operating principle is based on the ballistic pendulum method. The created amplitude of shock acceleration impulse is monitored using a reference measuring transducer (MT) of acceleration.
- Structurally, the facility consists of a frame on which a hammer and anvil with a built-in reference acceleration transducer are mounted using special hangers. The shock acceleration amplitude depends on the hammer lift height. To vary shock duration, the hammer can accommodate special gaskets made of, e.g. aluminium, rubber or textolite.



1 – facility frame;
2 – hammer;
3 – anvil;
4 – transducer to be calibrated;
5 – reference measuring transducer AP1040;
6 – hammer holder with a trigger;
7 – fixing device;
8 – ratchet sector;
9 – arrow pointer of hammer tilt angle;
10 – anti-vibration (low-noise) cable AK02;
11, 12 – measuring amplifier, e.g., AP5110;
13 – spectrum analyzer, for example A19;
14 – communication line;
15 – personal computer.

Parameter	AP8008
Shock acceleration amplitude range	10 ... 500 m/s²
Duration of shock acceleration reproduced by the facility at pulse amplitude of 0.5	0.5 ... 50 ms
Basic relative error limits of reproduction of shock acceleration amplitude	± 6 %
Shock acceleration amplitude instability	± 10 %
Weight of calibrated measuring transducers, not more than	2 kg
Operating conditions: - ambient temperature - relative humidity	 + 18...+ 28 °C up to 75 %
Overall dimensions (L × W × H)	850 × 550 × 1250 mm
Weight, not more than	100 kg

Definition of cable products

Each cable has its own code, according to Table 1.

Each connector has its own code, according to Table 2.

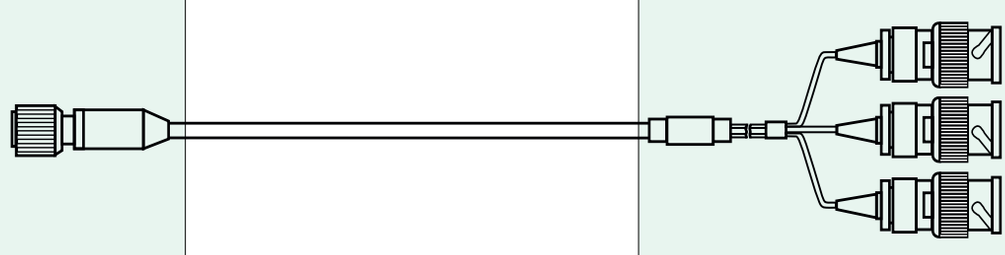
The name of cable producs begins with the abbreviation «AK» followed by the codes of cables and connectors. For example, «AK03B1B6» means: a single-core antivibration cable with a diameter of 2 mm (code «03» in Table 1) with an AR02 (M3) connector on one side (code «B1» of Table 2) and AR05 (10-32 UNF) on the other (code «B6» of Table 2).

For the version of cable items with a metal hose, the symbol «M» is added before the cable code. For example, the code «AKM12D1B6» means: a single-core connecting cable with a diameter of 2 mm (code «12» of Table 1) with a metal hose (symbol «M») with a BNC connector on one side (code «D1» of Table 2) and AR05 (10- 32 UNF) - on the other (code «B6» of Table 2).

It should be noted that, for example, «B1» and «B6» are different connectors. The numbers from «2» to «5» coincide with the number of B1 connectors on one end of the cable, and from «7» to «9» specify the number of B6 connectors on the other end. In this case, 6 (1 + 5) means one connector, 7 (2 + 5) - two connectors, 8 (3 + 5) - three connectors, 9 (4 + 5) - four connectors. An exception is «A» connectors (see column «Code» in Table 2), in which the number uniquely coincides with the number of cable leads.

For a variety of non-standard, unique or other specific connectors, the second-order encoding is applied (adding an additional character to the connector code of Table 2). For example: «CH4», «DC2», etc. For second-order codes, the number uniquely corresponds to the number of cable leads.

Example:

AK 41 C6 D3		
		
AR09 (M6*0.5)	Triple-core antivibration cable d 2,5 mm	3*BNC
Code	Code	Code
C6	41	D3

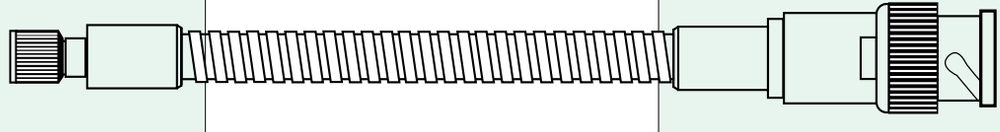
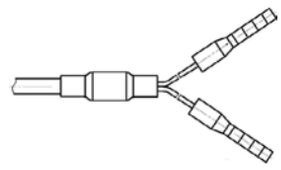
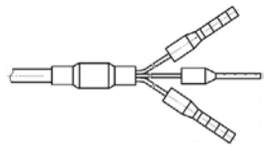
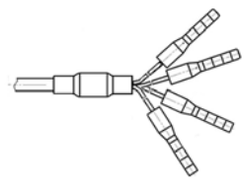
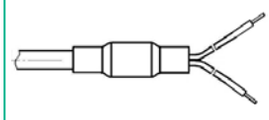
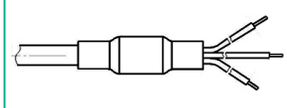
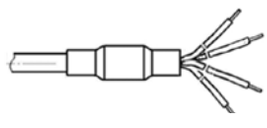
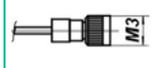
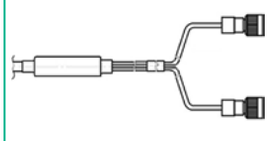
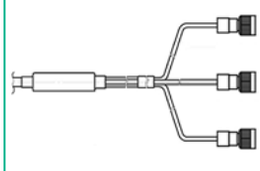
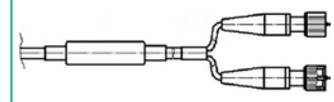
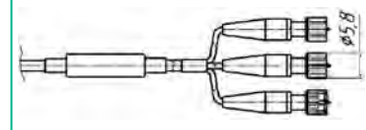
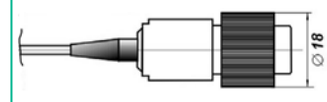
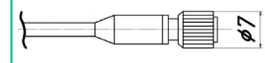
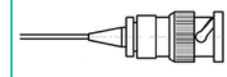
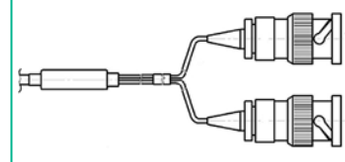
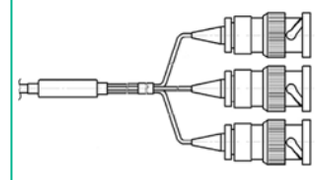
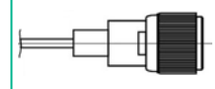
AK M03 B6 D1		
		
AR05 (10-32UNF)	Single-core antivibration cable d 2 mm (with a metal hose)	BNC
Code	Code	Code
B6	M03	D1

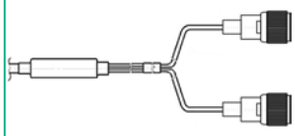
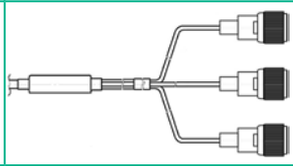
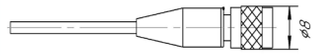
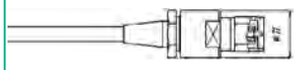
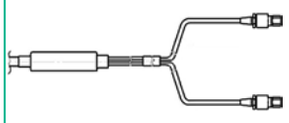
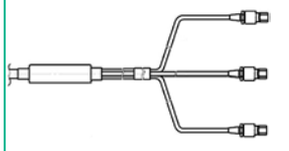
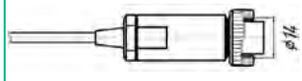
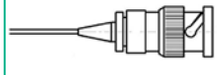
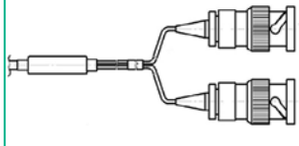
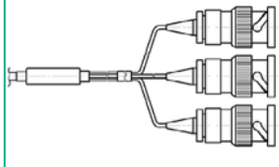
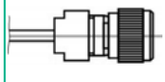
Table 1. Cable codes

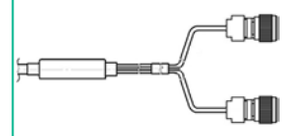
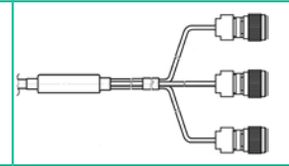
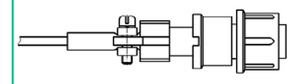
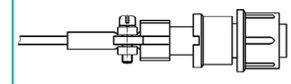
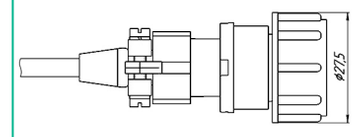
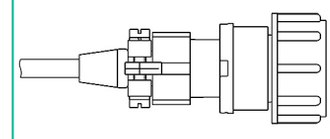
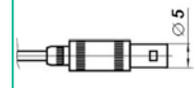
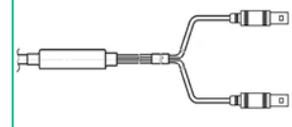
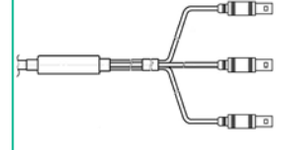
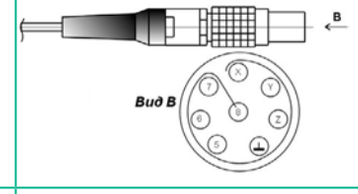
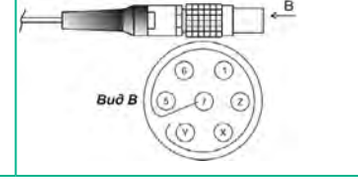
Cable		Code	Characteristics	View
One-core	anti-vibration	01	d 0.7 mm	
		02	d 1.1 (±0.1) mm	
		03	d 2 mm	
		04	d 2.5 mm, underwater version	
		05	d 3.5 mm, underwater version	
	connecting	11	d 1.1 (±0.1) mm	
		12	d 2 mm	
		13	d 2.5 mm, underwater version	
Two-core	anti-vibration	21	d 3.5 mm	
	connecting	31	d 3.7 (±0.5)mm	
		32	d 4.2 (±0.5)mm, 2 shields	
Triple-core	anti-vibration	41	d 2.5 mm	
		42	d 3.5 mm, underwater version	
	connecting	51	d 2.5 mm	
		52	d 3.8 mm, underwater version	
Four-core	connecting	71	d 3.5 mm	
		72		
Six-core	anti-vibration	82	d 3.5 mm	

Table 2. Connector codes

Code	Connector	View
A2	2*Mechanical clamp terminal	
A3	3*Mechanical clamp terminal	
A4	4*Mechanical clamp terminal	
AA2	Soldering leads	
AA3	3*Soldering leads	
AA4	4*Soldering leads	
B1	AR02 (M3)	
B2	2*AR02 (M3)	
B3	3*AR02 (M3)	

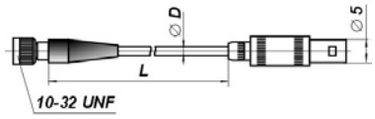
Code	Connector	View
B6	AR05 (10-32UNF)	
B7	2*AR05 (10-32UNF)	
B8	3*AR05 (10-32UNF)	
C1	AR07 (5/8-24UNF)	
C6	AR09 (M6*0.5)	
D1	BNC	
D2	2*BNC	
D3	3*BNC	
D6	TNC	

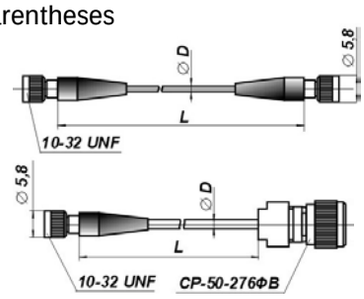
Code	Connector	View
D7	2*TNC	
D8	3*TNC	
E7	AR16 (4-pin 1/4-28UNF)	
F1	SMA	
F2	2*SMA	
F3	3*SMA	
G1	PC4TB	
H1	CP50-74ФВ	
H2	2*CP50-74ФВ	
H3	3*CP50-74ФВ	
H6	CP50-276ФВ	

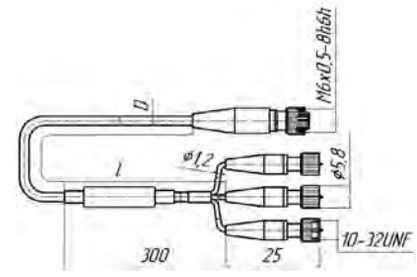
Code	Connector	View
H7	2*CP50-276ФВ	
H8	3*CP50-276ФВ	
P1	2РМ14КПН4Ш	
P6	2РМ14КПН4Г	
T1	2РМД18КПН4Г	
T6	2РМД18КПН4Ш	
Y1	LEMO FFA.00.250	
Y2	2*LEMO FFA.00.250	
Y3	3*LEMO FFA.00.250	
Z1	LEMO FGG.1B.308	
Z6	LEMO FGG.0B.307	

AK01, AK02, AK03, AK04, AK05, AK06, AK08, AK10, AK11, AK12, AK13, AK14, AK15

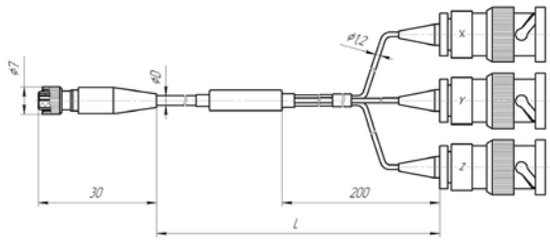
The configurable name is shown in parentheses

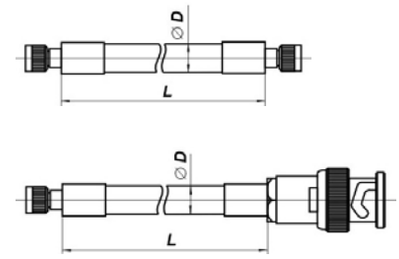




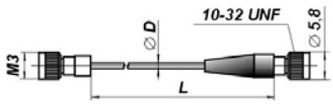


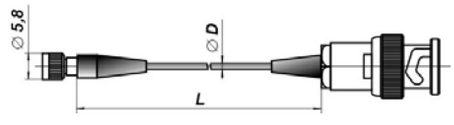
AK01 (AK03B6ZB1)	AK02 (AK02B6H6), AK04 (AK03B6B6), AK07 (AK05B6B6)	AK03 (AK41C6B8)
antivibration (low-noise) cable	antivibration (low-noise) cable	antivibration (low-noise) triple-core cable
10-32 UNF – LEMO FGG.1B.303	10-32 UNF – 10-32 UNF (CP-50-276ФВ) To be determined by customer	AR09 – 3 × 10-32 UNF To be determined by customer
AK01: L = 2 m To be determined by customer, D = 2 mm	AK02: L = 2 m To be determined by customer, D = 1.2 mm AK04: L = 2 m To be determined by customer, D = 2 mm AK07: L = 2 m To be determined by customer, D = 3.5 mm	AK03: L = 2 m To be determined by customer, D = 2.4 mm

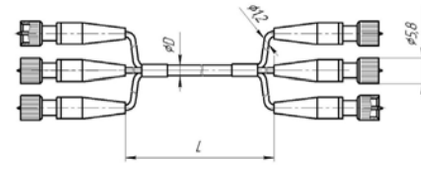




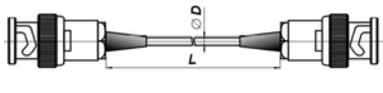
AK03-01 (AK41C6D3)	AK05 (AKM02B6B6)
antivibration (low-noise) triple-core cable	antivibration (low-noise) cable, with a metal hose
AR09 (BNC) To be determined by customer	10-32 UNF – 10-32 UNF (BNC, CP50-74ФВ) To be determined by customer,
AK03: L = 2 m To be determined by customer, D = 2.4 mm	AK05: L = 2 m To be determined by customer, D = 6.3 mm

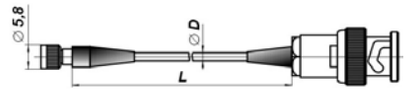






AK06 (AK02B1B6)	AK08 (AK02B6D1), AK09 (AK05B6D1), AK10 (AK03B6D1)	AK11 (AK41B8B8)
antivibration (low-noise) miniature cable	antivibration (low-noise) cable	antivibration (low-noise) triple-core cable
M3 – 10-32 UNF	10-32 UNF – BNC (CP50-74ФВ) To be determined by customer	10-32 UNF – 10-32 UNF (BNC, CP50-74ФВ) To be determined by customer
AK06: L = 2 m To be determined by customer, D = 1.2 mm	AK08: L = 2 m To be determined by customer, D = 1.2 mm AK09: L = 2 m To be determined by customer, D = 3.5 mm AK10: L = 2 m To be determined by customer, D = 2 mm	AK11: L = 2 m To be determined by customer, D = 2.4 mm

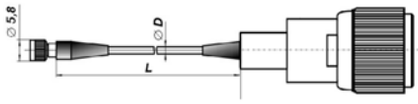


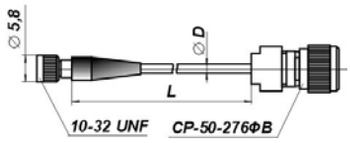


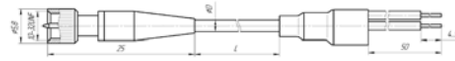
AK12 (AK02D1D1), AK13 (AK03D1D1), AK14 (AK05D1D1)	AK15
antivibration (low-noise) cable	connecting cable
BNC – BNC (CP50-74ФВ) To be determined by customer	10-32 UNF – BNC (CP50-74ФВ) To be determined by customer
AK12: L = 2 m To be determined by customer, D = 1.2 mm AK13: L = 2 m To be determined by customer, D = 2 mm AK14: L = 2 m To be determined by customer, D = 3.5 mm	AK15: L = 2 m To be determined by customer, D < 5 mm

AK15-01, AK15-02, AK15-03, AK16, AK17, AK18, AK19, AK20, AK21

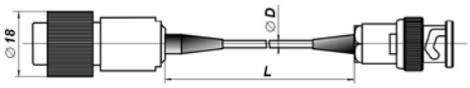
The configurable name is shown in parentheses

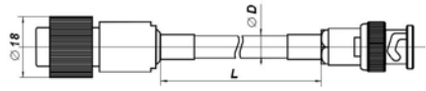




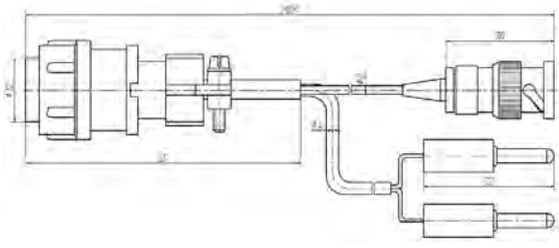


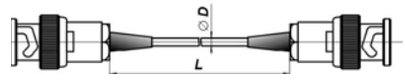
AK15-01 (AK12B6D6)	AK15-02 (AK12B6H6)	AK15-03 (AK12B6AA1)
connecting cable	connecting cable	connecting cable
10-32 UNF – TNC	10-32 UNF – CP-50-276ФВ	10-32 UNF – blank terminal
AK15: L = 2 m To be determined by customer, D < 5 mm	AK15: L = 2 m To be determined by customer, D < 5 mm	AK15: L = 2 m To be determined by customer, D < 5 mm



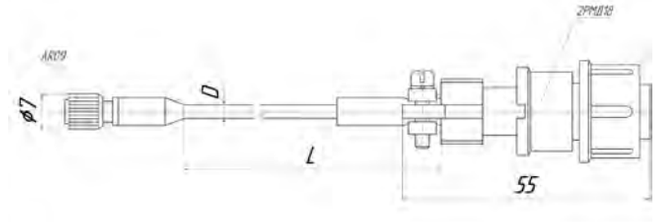


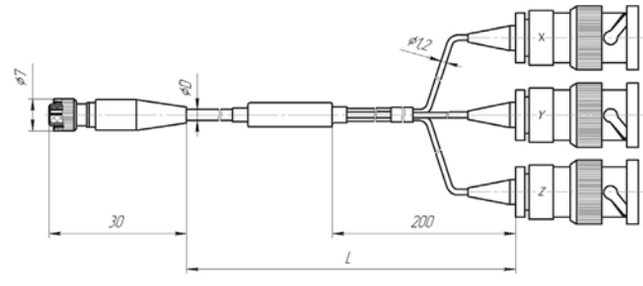
AK16 (AK12C1D1)	AK17 (AKM14C1D1)
connecting cable	connecting cable, with a metal hose
2-pin connector (5/8–24UNF) AR07 – BNC (CP50-74ФВ) To be determined by customer	2-pin connector (5/8–24UNF) AR07 – BNC (CP50-74ФВ) To be determined by customer
AK16: L = 2 m To be determined by customer, D < 2.5 mm	AK17: L = 2 m To be determined by customer, D = 6.3 mm





AK18	AK19 (AK12D1D1)
connecting, triple-core cable	connecting cable
2РМТ14КП4Ш1В1 – BNC (BNC,2 banana plug)	BNC – BNC (CP50-74ФВ) To be determined by customer
AK18: L = 2 m To be determined by customer, l = 0,2 m, D = 2 mm	AK19: L = 2 m To be determined by customer, D < 5 mm

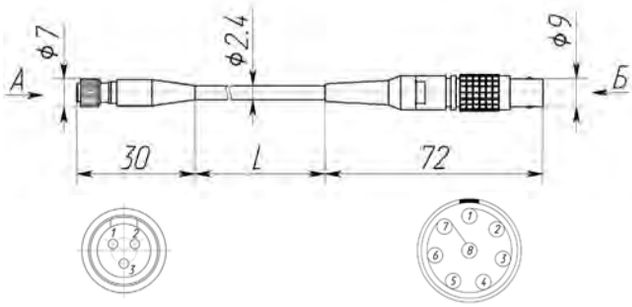


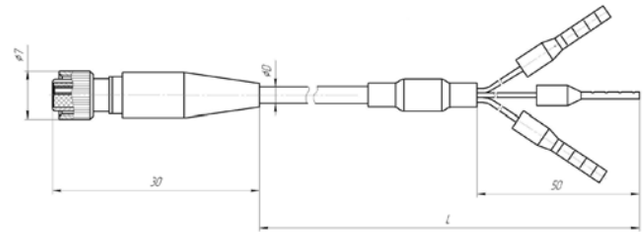


AK20 (AK05C6W6)	AK21 (AK51C6D3)
antivibration (low-noise) cable	connecting, triple-core cable
AR09 – 2PMD18 (2PM14)	3-pin connector (M6 × 0.5) AR09 – BNC (10-32 UNF) To be determined by customer
AK20: L = 2 m To be determined by customer, l = 0.2 m, D <5 mm	AK21: L = 2 m To be determined by customer, l = 0.2 m, D = 2.4 mm

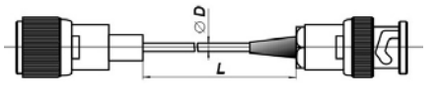
AK22, AK23, AK24, AK25, AK26, AK27, AK28, AK29

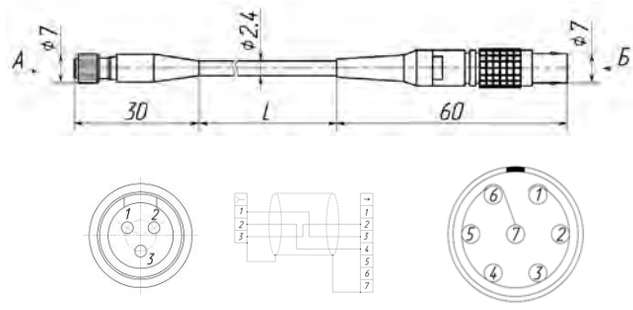
The configurable name is shown in parentheses



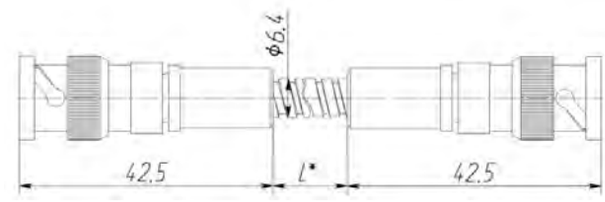


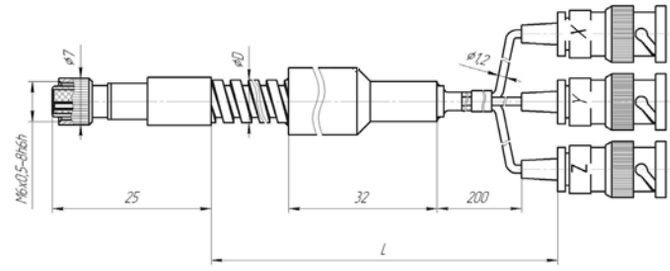
AK22 (AK13C6Z1)	AK23 (AK51C6A3)
connecting cable	connecting, triple-core cable
3-pin connector (M6 × 0.5) AR09 – LEMO FGG.1B.308	3-pin connector (M6 × 0.5) AR09 – blank terminals
AK22: L = 2 m To be determined by customer, D = 2.4 mm	AK23: L = 2 m To be determined by customer, l = 0.02 m, D = 2.4 mm



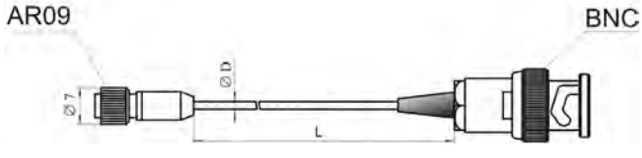


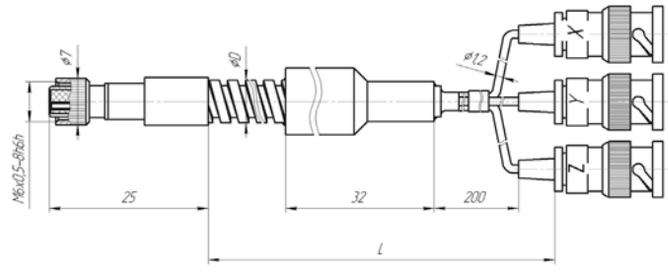
AK24 (AK12D6D1)	AK25 (AK41C6Z6)
connecting cable	connecting cable
TNC – BNC	3-pin connector (M6 × 0.5) AR09 – LEMO FGG.0B.307
AK24: L = 2 m*1, D < 2.5 mm	AK25: L = 2 m To be determined by customer, D = 2.4 mm





AK26 (AKM11D1D1)	AK27 (AKM51C6D3)
connecting cable, with a metal hose BNC – BNC	connecting, triple-core cable, with a metal hose 3-pin connector (M6 × 0.5) AR09 – BNC (10-32 UNF) To be determined by customer
AK26: L = 2 m To be determined by customer, D = 6 mm	AK27: L = 2 m To be determined by customer, D = 6 mm

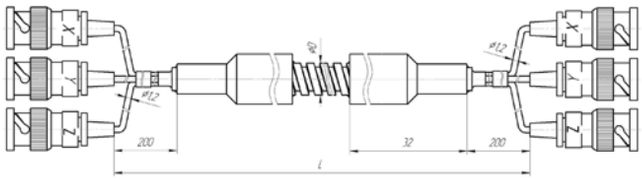


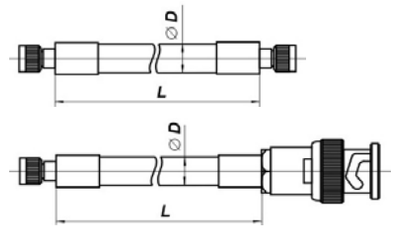


AK28	AK29 (AKM41C6D3)
connecting cable	antivibration (low-noise) triple-core cable, with a metal hose
(M6 × 0,5) AR09 – BNC	3-pin connector (M6 × 0.5) AR09 – BNC (10-32 UNF) To be determined by customer
AK28: L = 2 m To be determined by customer, D = 4.5 mm	AK29: L = 2 m To be determined by customer, D = 6 mm

AK30, AK31, AK32, AK33, AK34, AK34-01, AK34-02, AK35

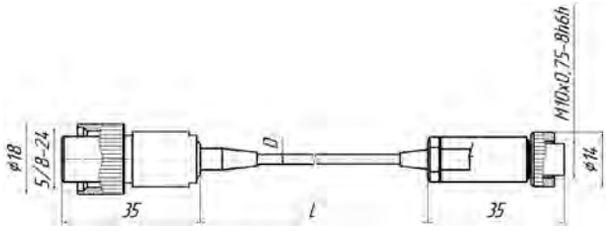
The configurable name is shown in parentheses

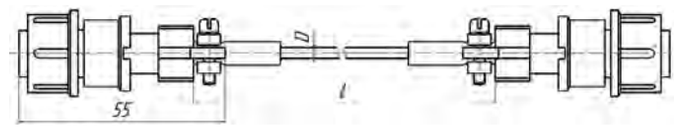




AK30 (AKM51D3D3)
connecting, triple-core cable, with a metal hose
BNC – BNC
AK30: L = 2 m To be determined by customer, l = 0.2 m, D = 6 mm

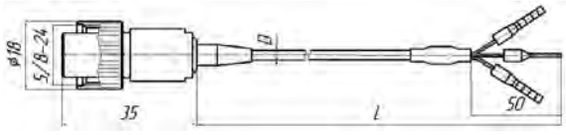
AK31 (AKM11B6B6)
connecting cable, with a metal hose
10-32 UNF – 10-32 UNF (BNC, CP50-74ФВ) To be determined by customer,
AK31: L = 2 m To be determined by customer, D = 6.3 mm

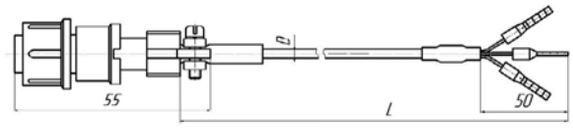




AK32 (AK12C1G1)
connecting cable
AR07 – PC4
AK32: L = 2 m To be determined by customer, D < 2.5 mm

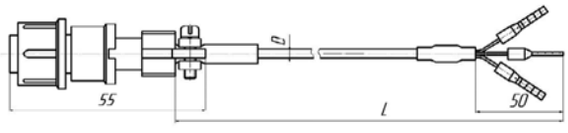
AK33 (AK13P1P1)
connecting cable
2PM14 (2РМД18) – 2PM14 (2РМД18)
AK33: L = 2 m To be determined by customer, D = 2.5 mm To be determined by customer

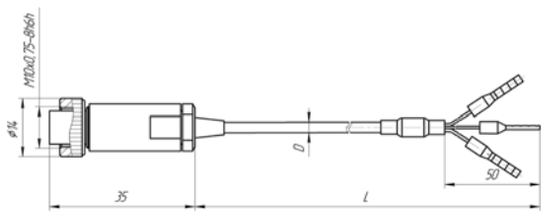




AK34 (AK13C1A1)
connecting cable
AR07 – blank terminals
AK34: L = 2 m To be determined by customer, D = 2.5 mm

AK34-01 (AK13P1A1)
connecting cable
2PM14 – blank terminals
AK34-01: L = 2 m To be determined by customer, D = 2.5 mm





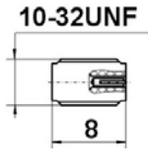
AK34-02 (AK13T1A1)
connecting cable
2РМД18 – blank terminals
AK34-02: L = 2 m To be determined by customer, D = 2.5 mm

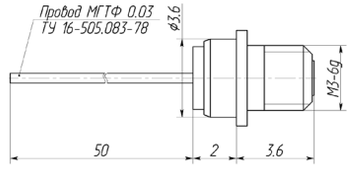
AK35 (AK13G1A1)
connecting cable
PC4 – blank terminals
AK35: L = 2 m To be determined by customer, D = 2.5 mm

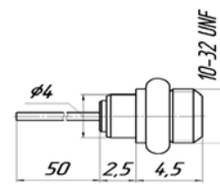
AR01, AR03, AR03-01, AR0305, AR04, AR06, AR08, AR10, AR11, AR17

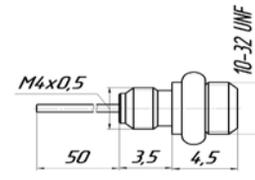
Purpose:

- **AR01** — connecting cables AK01, AK02, AK03, AK04, AK05, AK07, AK08, AK09, AK10, AK11, AK16 that have 10-32 UNF connector;
- **AR03, AR03-01, AR0305** — sockets for equipment and vibration transducers for connecting the cables having connectors 10-32 UNF;
- **AR04** — connecting vibration transducers, force sensors and impulse hammers having connecting cables with 10-32 UNF connectors to the equipment having a BNC connector;
- **AR06** — converting the differential input of the charge amplifier AQ05 to the line input;
- **AR08** — connecting the cables having a BNC connector;
- **AR10** — connecting vibration transducers, force sensors and impulse hammers having connecting cables with 10-32 UNF connectors to the equipment having a TNC connector;
- **AR11** — connecting vibration transducers, force sensors and impulse hammers having connecting cables with 10-32 UNF connectors to the equipment having a LEMO FGG.1B.303.CLAD62 connector.
- **AR14** — connecting the cables having a BNC connector;
- **AR15** — connecting vibration transducers, having connecting cables with BNC connectors to the equipment having a TNC connector.

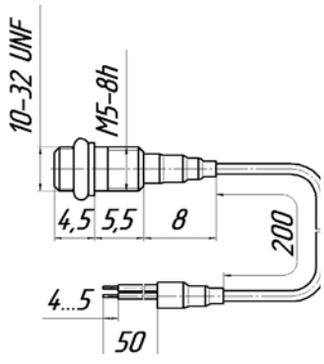


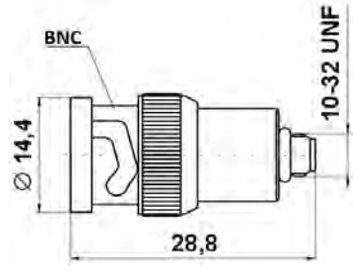




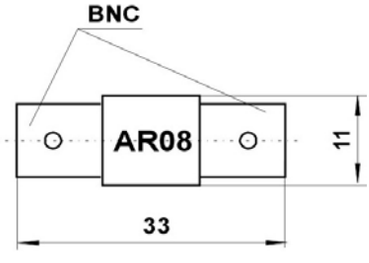


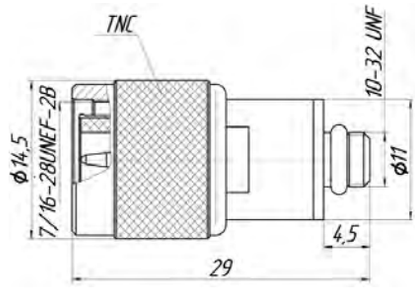
AR01	AR0201	AR03	AR03-01

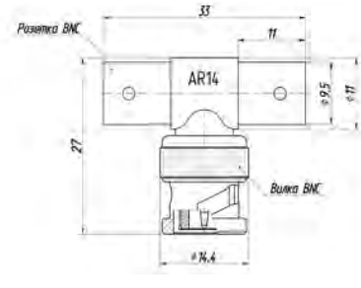




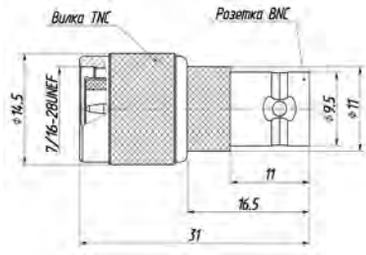
AR0305	AR04	AR06



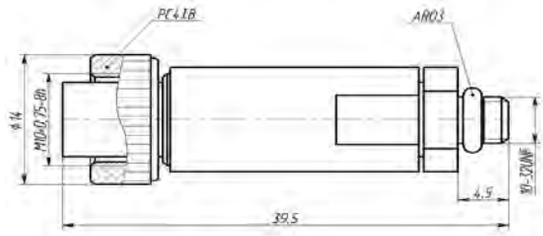




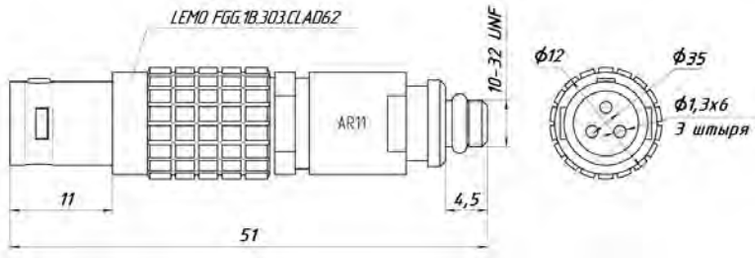
AR08	AR10	AR14



AR15



AR17



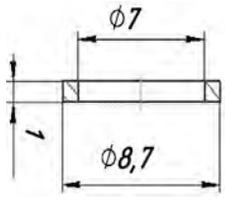
AR11

AA01, AA02, AA03

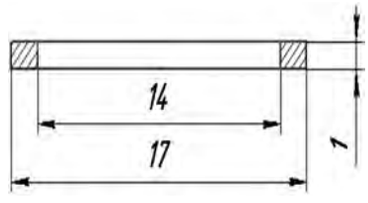
Purpose:

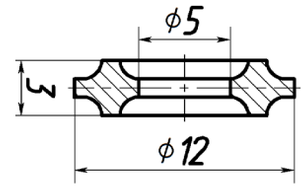
- Seal rings are used for mounting dynamic pressure sensors on a test object.

For dynamic pressure sensor PS02-XX



For dynamic pressure sensor PS01-XX, PS2001-X, PS2001-X-01, PS09, PS09B, PS09-01, PS09B-01

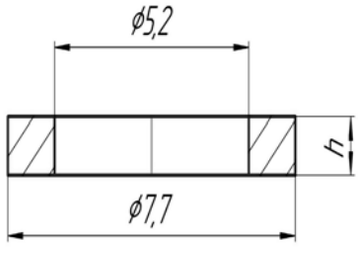




AA04

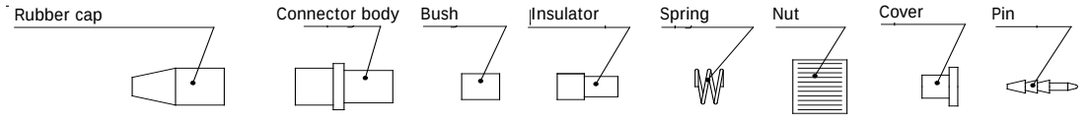
Purpose:

- For orienting the sensor cable outlet with an M5 threaded shank.
- h = 0.1; 0.2; 0.3; 04 set of 8 units, 2 pcs of each type.



AR05

Cable connector AR05

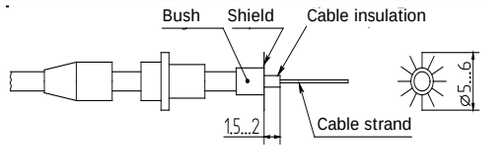


Supplied as AR0501S sets — 20 pcs. for cable ∅ 1.2 mm, with a mounting device AO 01; AR0501 — 25 pcs. for cable ∅ 1.2 mm; AR0502S — 20 pcs. for cable ∅ 2 mm, with a mounting device AO01; AR0502 — 25 pcs. for cable ∅ 2 mm.

1

Put the rubber cap and connector body on the cable.
Use tool 1 from the AO 01 set to screw the bush on the cable (the cable end must touch the slot side).
Note: The connector set may include two bushes, one for the cable with a fluoroplastic coating 1.2 mm in diameter (ABKT-6), the other for the cable with a fluoroplastic coating 2 mm in diameter (ABKT-4).

2

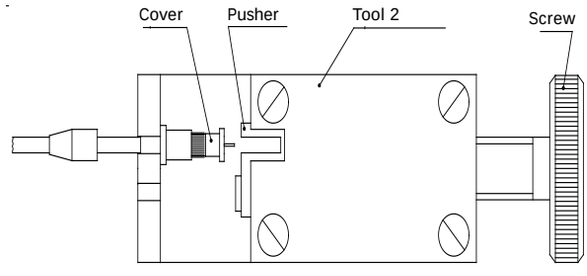


Set the shield wires in radial position.
When using the low-noise cable, remove the anti-vibration substance from the cable insulation.

3

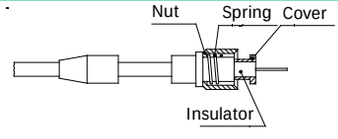
Put the insulator on the cable, arrange the shield wires along the insulator.

4



Put the cover on the insulator and set the cable in the slot of tool 2 of the AO 01 set. By turning the screw, press the part of the insulator in the body (do not press the cover!). Pull out the cable, remove the cover.

5



Put on the nut, spring and cover.

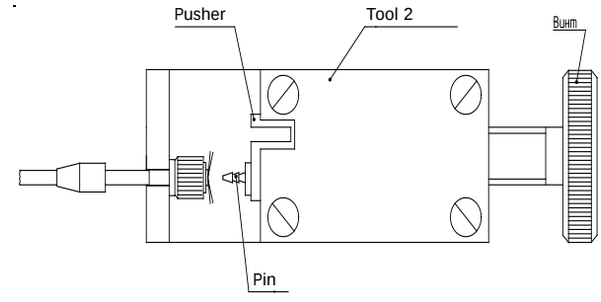
6

Place the cable in the slot of tool 2 of the AO 01 set.
Turn the screw to move the pusher of the tool until it stops (the lid will be pressed into the connector body).

7

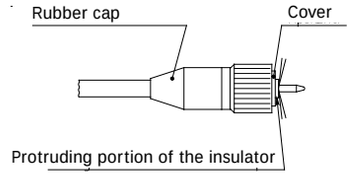
Pull the connector out of the tool.
Arrange the cable strand wires approximately evenly around the circumference.

8



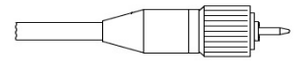
Place the cable in tool 2. Put the pin in the pusher hole. Bring the end of the pin to the insulator, set it into the insulator hole using tweezers and, by turning the screw, press the pin until tight (when pressing the pin, the strand wires will be partially drawn into the insulator).

9



Cut the protruding portion of the insulator and strand wire flush with the cover.
Put on the rubber cap.
Assembly completed.

View of assembled connector



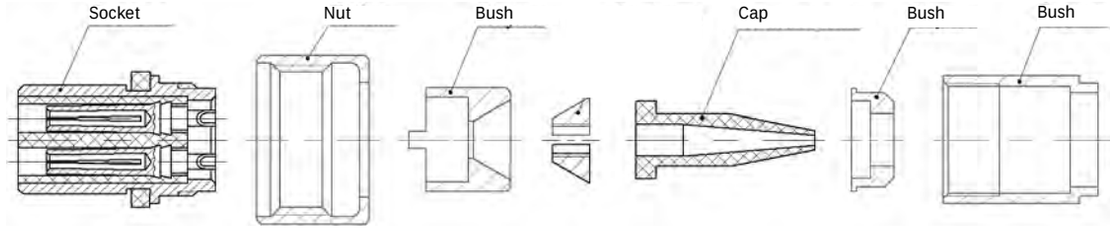
Pusher

Screw

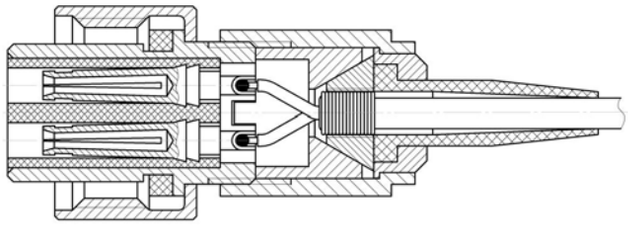
Tool 2

AR07

2-pin cable connector (5/8–24UNF) AR07

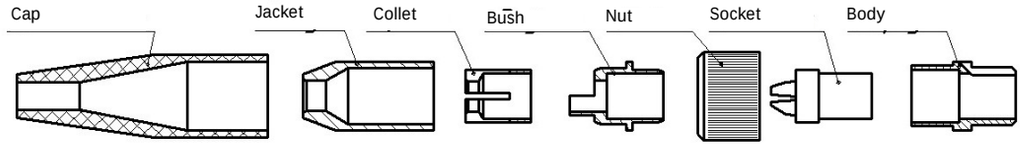


Example of mounting the cable connector AR07

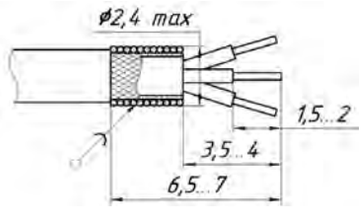


AR09

Cable connector AR09

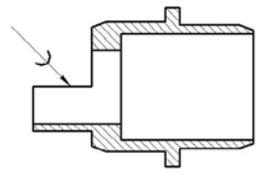


1



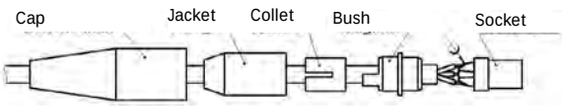
Terminate the cable end as shown in the figure.

2



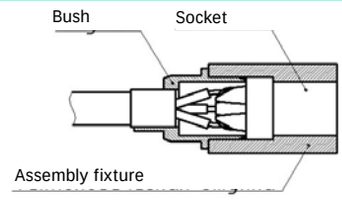
Tin the bush shank.

3



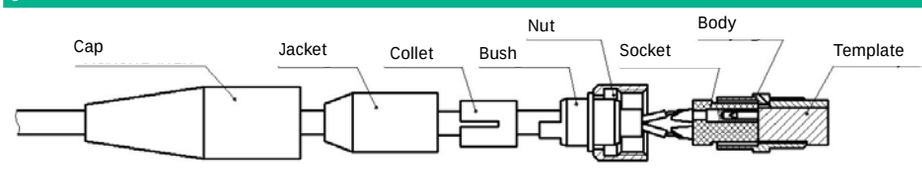
Put the cap, jacket, collet, bush on the cable and solder the cable cores to the socket termination points.

4



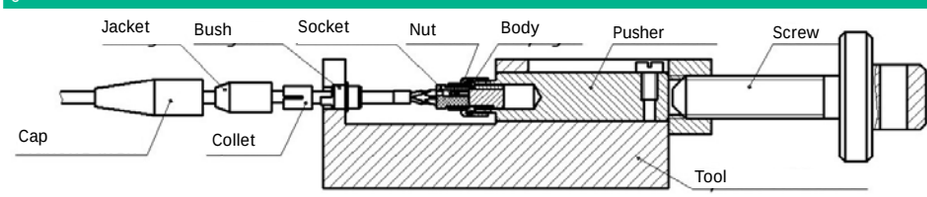
Put an assembly fixture on the socket and shift the bush in the position shown in the figure. Make sure there is no electric circuit between the cable cores and the bush.

5



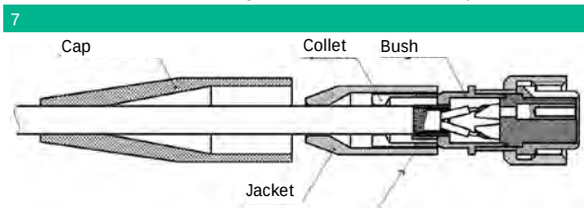
Put a nut on the cable, insert a template in the body and joint the socket with the template.

6



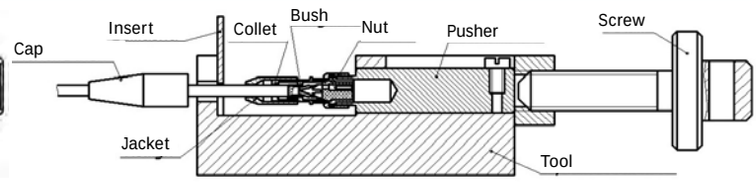
Place the cable in the mounting tool. Screw the nut on the pusher. Press the bush in the body by turning the screw.

7



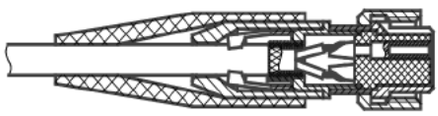
Remove the cable from the mounting tool casing, disconnect the template. Solder the cable shield to the bush. Shift the jacket to the position shown in the figure.

8



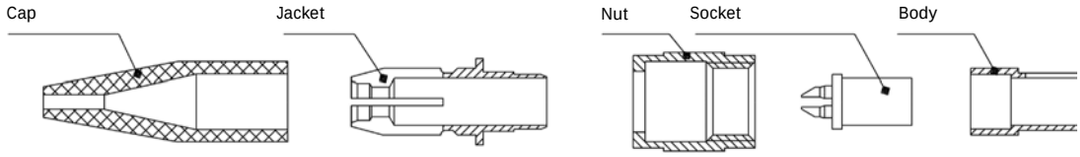
Place the cable in the mounting tool. Screw the nut on the pusher. Place an insert as illustrated. Press the jacket on the bush by turning the screw. Remove the cable from the mounting tool. Put on the tip. Assembly completed.

View of assembled connector

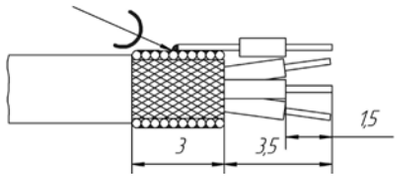


AR16

Cable connector AR16

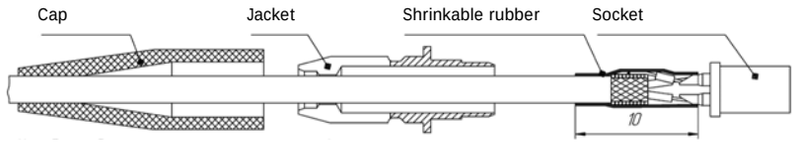


1



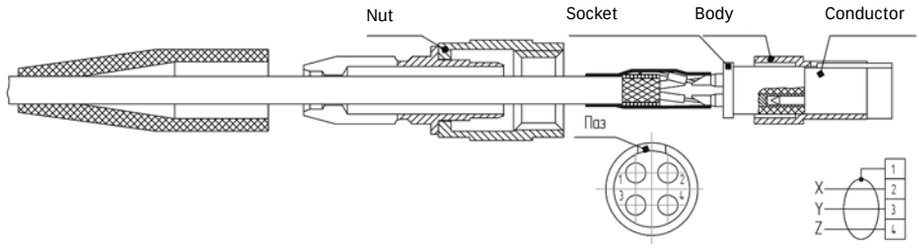
Terminate the cable end as shown in the figure.

2



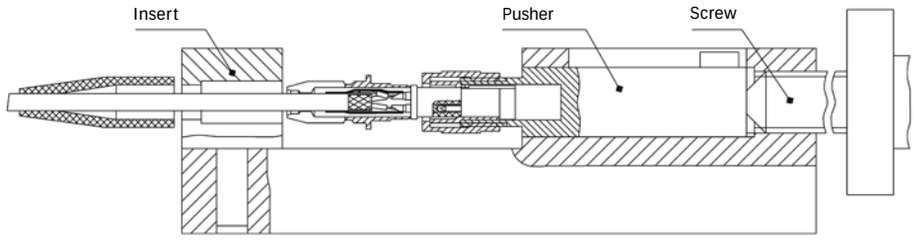
Put the cap, jacket, heat shrinkable rubber. Solder the cable cores to the socket termination points, install heat shrinkable rubber.

3



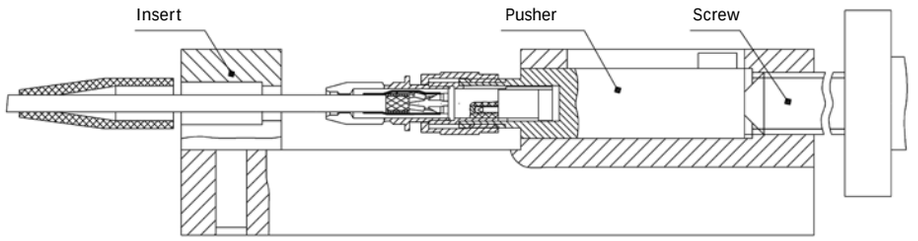
Put a nut on the cable, insert a template in the body and joint the socket with the template.

4



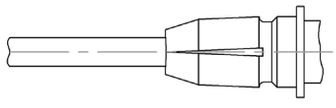
Place the cable in the mounting tool. Screw the nut on the pusher. Press the bush in the body by turning the screw.

5



Take the pusher. Place an insert as illustrated. Press the jacket on the bush by turning the screw. Remove the cable from the mounting tool. Put on the tip. Assembly completed.

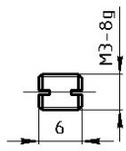
View of assembled connector



AH0103, AH0105, AH0106, AH0108, AH0110, AH0503, AH1003, AH0605, AH0610, AH0805, AH0806, AH0810

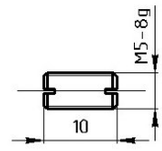
Purpose and material:

- Material: stainless steel (studs).
- Studs and insulating studs are used for fastening sensors that have a thread hole.



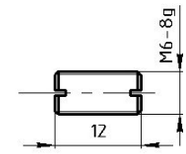
AH0103

Recommended torque – 0.5–0.7 N·m



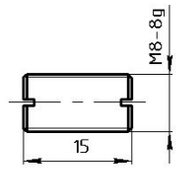
AH0105

Recommended torque – 1.9–2.1 N·m



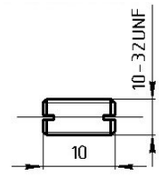
AH0106

Recommended torque – 2.5–2.7 N·m



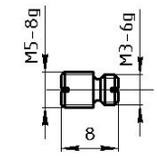
AH0108

Recommended torque – 3.8–4 N·m



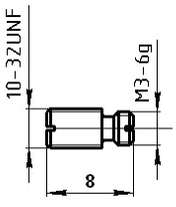
AH0110

Recommended torque – 1.9–2.1 N·m



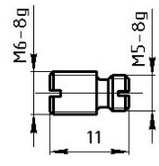
AH0503

Recommended torque – 1.9–2.1 N·m



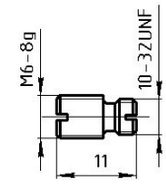
AH1003

Recommended torque – 1.9–2.1 N·m



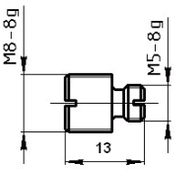
AH0605

Recommended torque – 1.9–2.1 N·m



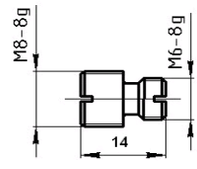
AH0610

Recommended torque – 1.9–2.1 N·m



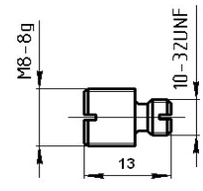
AH0805

Recommended torque – 1.9–2.1 N·m



AH0806

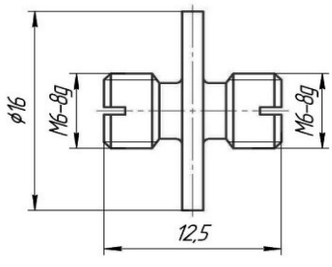
Recommended torque – 2.5–2.7 N·m



AH0810

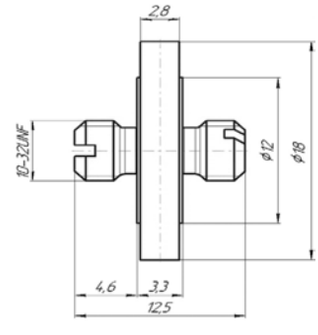
Recommended torque – 1.9–2.1 N·m

AH1006, AH1010



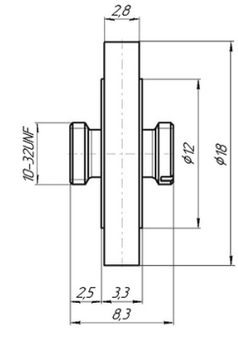
AH1006

Recommended torque – 2.5–2.7 N·m



AH1010

Recommended torque – 1.9–2.1 N·m

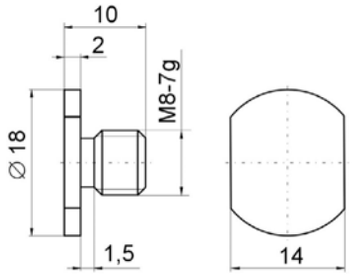


AH1010-01

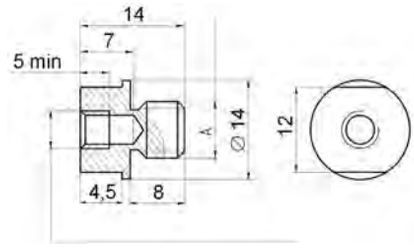
AD01, AD02, AD03, AD04, AD05, AD06, AD07, AD08

Purpose:

- **Thread adapters are used for mounting sensors (e.g., on a calibrator).**

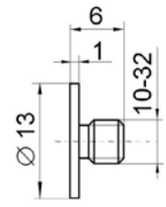


AD01

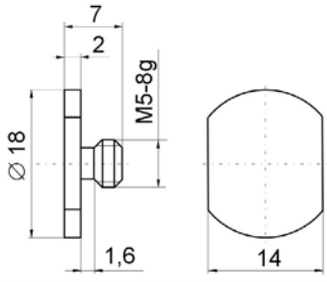


AD02

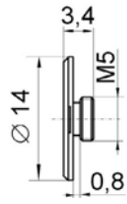
AD0203 – M3 × M8
AD0206 – M5 × M6
AD0208 – M5 × M8
AD0210 – M5 × M10



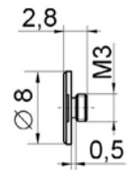
AD03



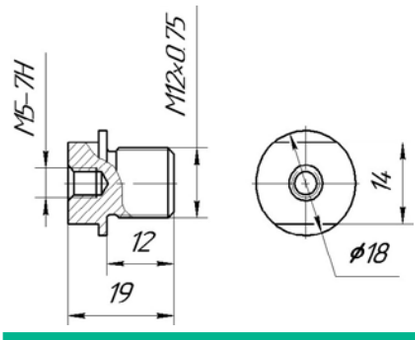
AD04



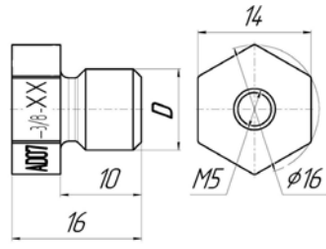
AD05



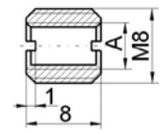
AD06



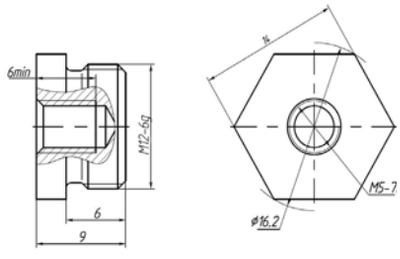
AD07



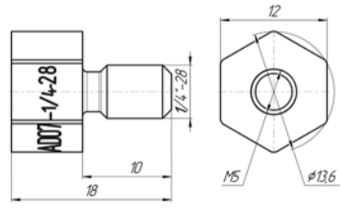
AD07-XX



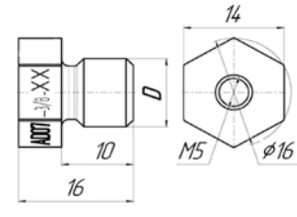
AD0803 – M8-M3
AD0805 – M8-M5
AD0810 – M8-10-32 UNF



AD07-01



AD07-1/4-28



AD07-3/8-16
AD07-3/8-24

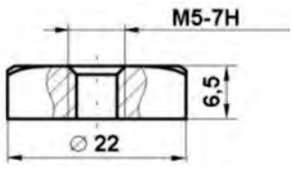
AM01, AM01-01, AM03, AM03-01, AM03-02, AM04, AM11, AM11-01, AM11-02

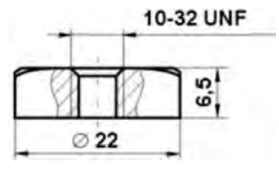
Purpose:

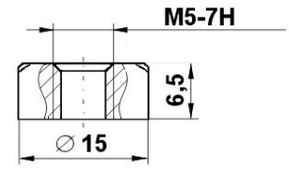
- Magnet mounting bases are used for mounting vibration transducers having a thread shank or thread hole onto a flat or curved surface.

Features:

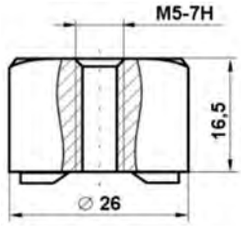
- Ensuring electrical insulation of the sensor body from the object.

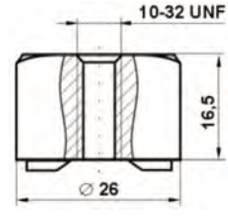


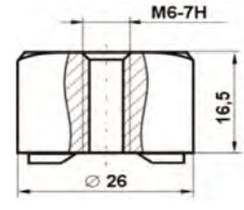




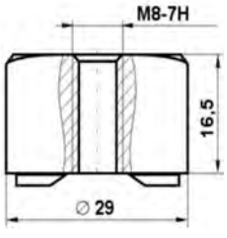
AM01	AM01-01	AM11
Tearing force – 50 N	Tearing force – 50 N	Tearing force – 50 N

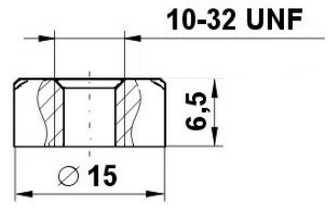


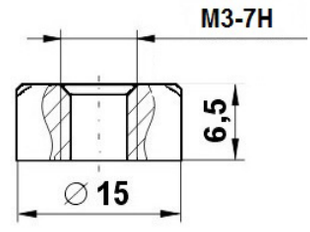




AM03	AM03-01	AM03-02
Tearing force – 60 N	Tearing force – 60 N	Tearing force – 60 N







AM04	AM11-01	AM11-02
Tearing force – 100 N	Tearing force – 50 N	Tearing force – 50 N

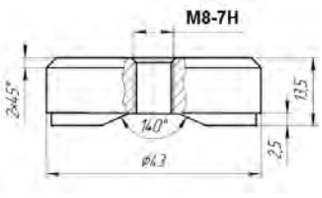
AM13, AM13-01, AM19, AM14, AM14-01, AM14-02

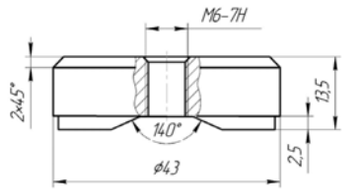
Purpose:

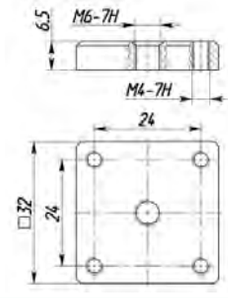
- Magnet mounting bases are used for mounting vibration transducers having a thread shank or thread hole onto a flat or curved surface.

Features:

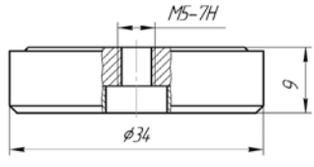
- Ensuring electrical insulation of the sensor body from the object.

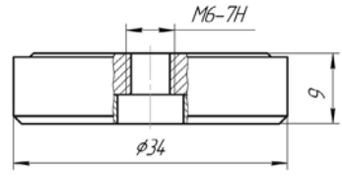


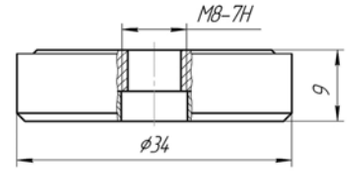




AM13	AM13-01	AM19
Tearing force – 150 N	Tearing force – 150 N	Tearing force – 100 N







AM14	AM14-01	AM14-02
Tearing force – 50 N	Tearing force – 50 N	Tearing force – 50 N
Operating temperature – 250 °C	Operating temperature – 250 °C	Operating temperature – 250 °C

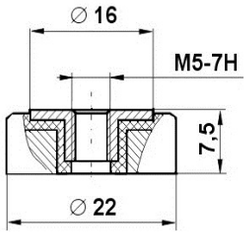
AM08, AM08-01, AM05, AM05-01, AM05-02, AM05-03, AM12

Purpose:

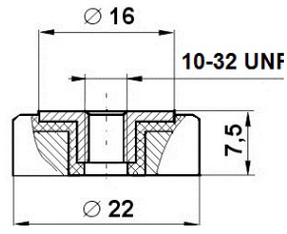
- Magnet mounting bases are used for mounting vibration transducers having a thread shank or thread hole onto a flat or curved surface.

Features:

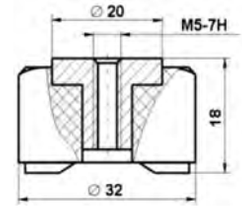
- Ensuring electrical insulation of the sensor body from the object.



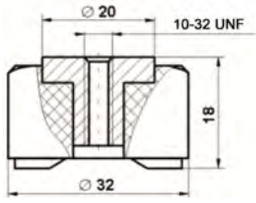
AM08
Insulating magnet bases
Tearing force – 100 N



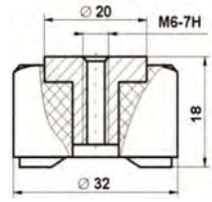
AM08-01
Insulating magnet bases
Tearing force – 100 N



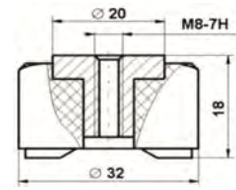
AM05
Insulating magnet bases
Tearing force – 100 N



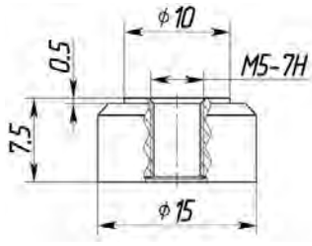
AM05-01
Insulating magnet bases
Tearing force – 100 N



AM05-02
Insulating magnet bases
Tearing force – 100 N



AM05-03
Insulating magnet bases
Tearing force – 100 N



AM012
Insulating magnet bases
Tearing force – 50 N

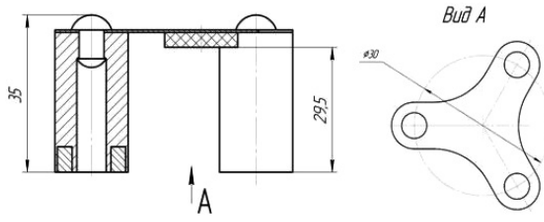
AM06, AM06-01, AM06-02, AM06-03, AM07

Purpose:

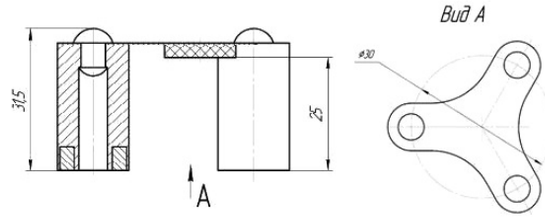
- Mounting magnets are used for mounting acoustic emission sensors.

Features:

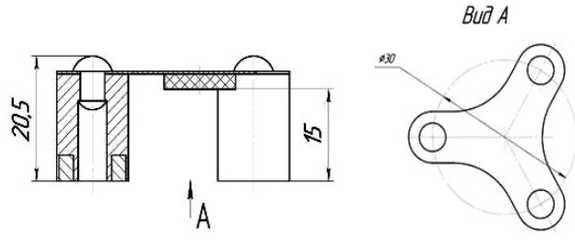
- Ensuring electrical insulation of the sensor body from the object.



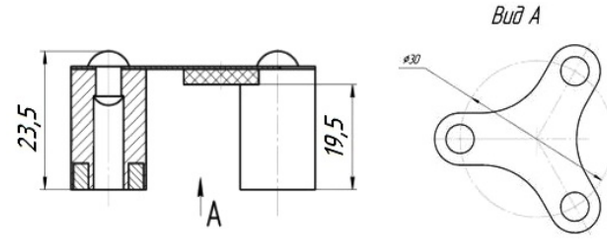
AM06
for mounting GT205B, GT200UB, GT250
Tearing force – 60 N



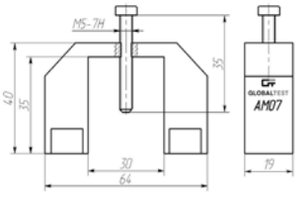
AM06-01
for mounting GT205
Tearing force – 60 N



AM06-02
for mounting GT200, GT200B, GT300, GT301
Tearing force – 60 N



AM06-03
for mounting GT350
Tearing force – 60 N



AM07
general-purpose
Tearing force – 50 N

AN01

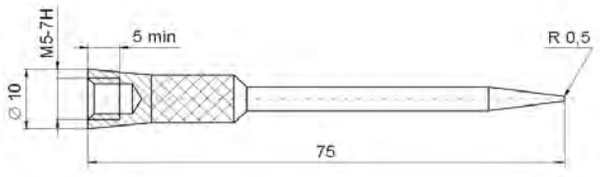
Purpose:

- **For** operational monitoring of vibration in hard-to-reach measuring points.

Features:

- stainless steel.
- Upper frequency limit not more than 1 kHz.

External view of AN01



AW01

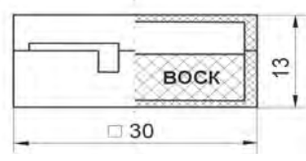
Purpose:

- For mounting vibration transducers in laboratory conditions.

Features:

- Tear strength 20 N / cm².
- Composition bee wax.
- Weight 5g

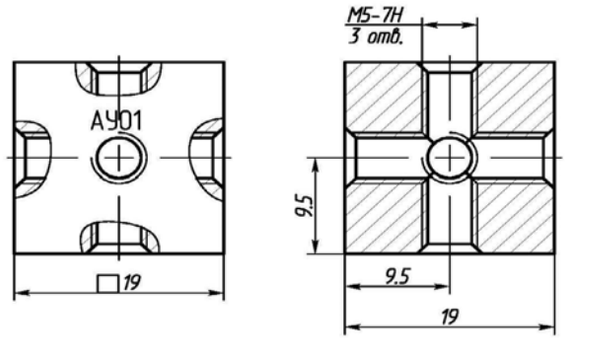
External view of AW01



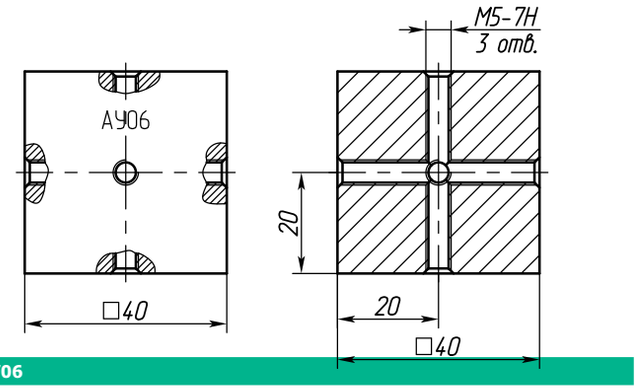
АУ01, АУ02, АУ06, АУ19

Purpose:

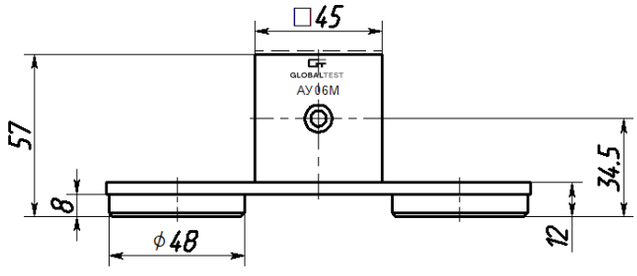
- АУ01 — for mounting vibration transducers AP2028, AP1031, AP1034, AP1037, AP1040, AP1057, AP2031, AP2034, AP2037, AP2098;
- АУ02 — for mutually perpendicular adhesive fastening of three transducers AP1019, AP2019;
- АУ06 — for mounting vibration transducers AP1006, AP2006-XX;
- АУ06М — magnetic block for installation of one-axis vibration transducers with M5 thread according to the Cartesian coordinate system axes.
- АУ19 — for mutually perpendicular adhesive/thread fastening of three transducers AP19.

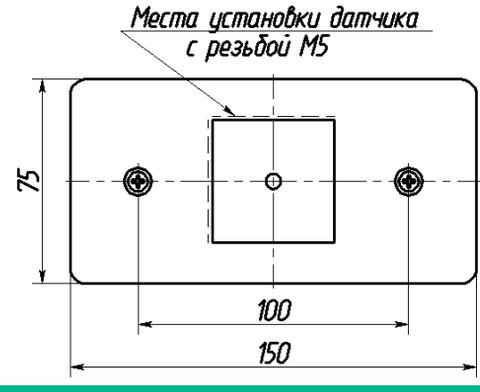


АУ01



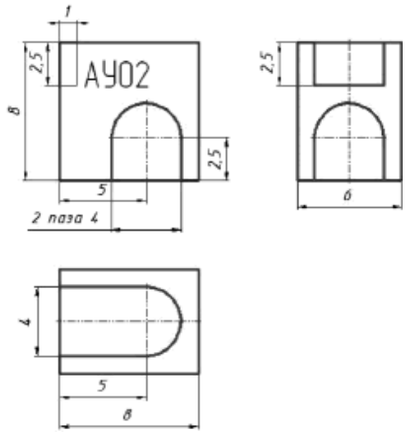
АУ06



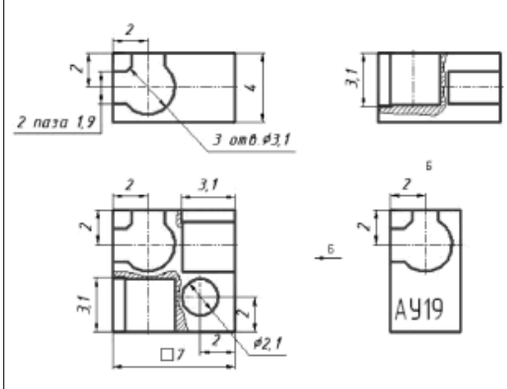


АУ06М

Tearing force – 300 N



АУ02



АУ19

AP5022, AP5025, AP5026

Purpose:

- Measuring mechanical vibrations generated by the equipment and affecting the human hand and arm, according to ISO 2631, ISO 5349. A set consists of three adapters AP5021, AP5221, AP524, AP5027 nut for internal fixing of vibration transducers and mounting wrench. The adapters are used to enable mounting of vibration transducers directly onto the instrument handle.

Features:

- AP5021/1 set includes vibration transducer AP1031.
- AP5221/1 set includes vibration transducer AP2031.
- AP5021/3 set includes vibration transducer AP1022.
- AP5244/3 set includes vibration transducer AP2043.

Hand adapters	AP5022	AP5025	AP5026
Parameter			
Upper frequency limit	> 3.000 Hz	> 1.500 Hz	> 2.000 Hz
Measurement directions for single-axis accelerometer	X, Y, Z	X, Y, Z	Y, Z
Overall dimensions	19 × 19 × 19 mm	Base 50 × 12 mm	87 × 23 mm
Housing material	Anodized aluminium		
Weight	16 g	19 g	30 g

Vibration transducers	AP1031	AP2031	AP1022	AP2043-50
Parameter				
Axial sensitivity 1g = 9.807 m·s–2 or 10 m·s–2 = 1.02 g	1 pC/g 0.1 pC/ms²	– –	1 pC/g 0.1 pC/ms²	– –
Axial sensitivity 1g = 9.807 m·s–2 or 10 m·s–2 = 1.02 g	–	3 mV/g 0.3 mV/ms²	–	50 mV/g 5.10 mV/ms²
Frequency range (irregularity ± 1 dB)	0.5 ... 20.000 Hz	0.5 ... 20.000 Hz	0.5 ... 20.000 Hz	0.5 ... 12.000 Hz
Maximum shock limit (peak value)	40.000 g	3000 g	50.000 g	200 g
Built-in cable length	2 m To be determined by customer			
Connector type	10-32 UNF	BNC	3 × 10-32 UNF	AR09
Weight	1.3 g	1.6 g	4 g	13 g
Supplied accessories	–	–	–	cable AK21, stud AH0110

Delivery set

Set	Adapters			Mounting nut	Wrench	AP1031	AP2031	AP1022	AP2043-50
	AP5022	AP5025	AP5026	AP5027					
5021/1	1	1	1	1	1	1			
5221/1	1	1	1	1	1		1		
5021/3	1	1	1	1	1			1	
5244/3	1	1	1	1	1				1

Product catalogue

GLOBALTEST

607185, Russia, Nizhny Novgorod region,
Sarov, Pavlika Morozova Str., 6
GlobalTest, LLC
Tel. (83130) 67777, 67778
E-mail: mail@globaltest.ru
Development and manufacture

www.globaltest.ru

115114, Moscow, 2-nd Paveletsky
proezd, 5, bld. 1, office 413.
GlobalTest, LLC
Tel. 8 (916) 958-20-37
E-mail: moscow@globaltest.ru
Office

GLOBALTEST