

Industrial Charge Amplifier

Type 5038A...

Robust Construction (IP67)

Industrial charge amplifier for converting electric charge generated by piezoelectric sensors into a proportional voltage. Especially suited for use in machine monitoring systems, e.g., for force shunt measurements requiring an adjustment on the machine.

- Robust aluminium diecast housing
- Four threads (armoured PG9) for freely selectable connectors
- Tight (IP67)
- Simple adjustment at the user's
- Conforming to **CE**
- 2 parallel-connected coaxial input sockets, e.g. for summing the signals

Description

Versions with optional 1, 2 or 3 measuring channels. In each channel 3 measuring ranges can be selected with a slide switch (range) and a potentiometer (fine adjustment).

The adjusting potentiometers are designed as plug-in units. This allows to exchange the amplifier without the need for recalibration.

The instrument is conforming to EC with EC Directive 89/336/EC and complies with EMC standards for industrial equipment (EN 50081-2 regarding interference emission and EN 50082-2 regarding interference immunity); compliance is required with the relevant installation information.

The industrial charge amplifier Type 5038A... has a hybrid capacitive feedback amplifier with extremely high insulating resistance in each in-put channel. The inputs (Operate) can be controlled through TTL or electrically insulated circuits (opto-couplers). An unregulated voltage source of 15 ... 30 V suffices for powering the Type 5038A... .



Application

The industrial charge amplifier Type 5038A... is especially intended for use in industrial applications together with all types of piezoelectric sensors. The output signals can be transferred to industrial control units and processed. The Type 5038A... is delivered without adjustment; adjustment is made at the user's. The concept of cable feed-through is universal. The instrument is delivered with blind plugs. The desired version for cable feed-through and connecting cable can optionally be assembled with the accessories or available parts with PG9-threads. The cable feed-throughs are installed at the OEM customer's or distributor's.

Technical Data

Charge Amplifier

| | | |
|--|------------------|--------------------|
| Measuring ranges (Adjustable with slide switches and exchangeable potentiometers) | | |
| Range I | pC | 100 ... 1 000 |
| Range II | pC | 1 000 ... 10 000 |
| Range III | pC | 10 000 ... 100 000 |
| Setting tolerance | % | <0,1 |
| Drift (r.F. <50 %, with opened cover) | | |
| 25 °C typical | pC/s | <0,03 |
| 25 °C maximum | pC/s | <0,05 |
| 60 °C | pC/s | <0,3 |
| Reset/Operate transition | pC | <±1 |
| Output voltage | V | 0 ... ±5 |
| Output current | mA | 0 ... ±2 |
| Output impedance | Ω | 100 |
| Output interference signal | mV _{pp} | <3 |
| Zero point error (Reset) | mV | <±15 |
| Frequency limit | | |
| -5 % | kHz | 0 ... >4 |
| -3 dB | kHz | 0 ... >10 |

Control Inputs for Reset/Operate (All Channels)

| | | |
|---------|--|-----------------------------|
| Operate | | Connection to GND or <0,8 V |
| Reset | | Input open or >2,4 V |

| | | |
|---------------------------|----|-----|
| Input impedance on +7,5 V | | |
| 1 channel | kΩ | 215 |
| 2 channels | kΩ | 107 |
| 3 channels | kΩ | 70 |

| | | |
|--|-----|-------------|
| Operate +/- Operate - | | |
| Control connection Operate/Reset electrically isolated by optocouplers | | |
| Control voltage | VDC | 5 ... 45 |
| Current consumption | mA | 0,4 ... 4,4 |
| Operate-Reset time (Residual charge <0,5 % FS) | | |
| Range <5 000 pC | ms | <6 |
| Range <100 000 pC | ms | <40 |

Power Supply

| | | |
|------------------------------------|-----|-----------|
| Supply voltage | VDC | 15 ... 30 |
| Current consumption (without load) | | |
| 1 channel | mA | <18 |
| 2 channels | mA | <25 |
| 3 channels | mA | <32 |

General Data

| | | |
|--|----------------|-------------|
| Temperature range | | |
| for specifications | °C | 0 ... 60 |
| for function | °C | -10 ... 60 |
| Housing material | Aluminium | |
| Degree of protection | | |
| with connection for protection hose and armouring Type 1409 | EN60529 | IP67 |
| with conduit gland Type 1411A | EN60529 | IP67 |
| with TNC gland Type 1900A1 | EN60529 | IP65* |
| with DIN round pin plug Type 1500A59 | EN60529 | IP65* |
| with BNC gland Type 1900A3 | EN60529 | IP60* |
| with Fischer connector Type 1900A11 | EN60529 | IP60* |
| Vibration resistance | g _p | 10 |
| Test conditions: 20 ... 2 000 Hz continuous in 2 min., 8x within 16 min. | | |
| Shock resistance during 1 ms | g | 200 |
| Connections optional (see accessories) | | |
| Weight | g | ca. 550 |
| Dimensions | | |
| LxWxH | mm | 150x64x34,5 |
| with insulation plate | mm | 172x64x42,5 |

* counts only with connected cable

Dimensions

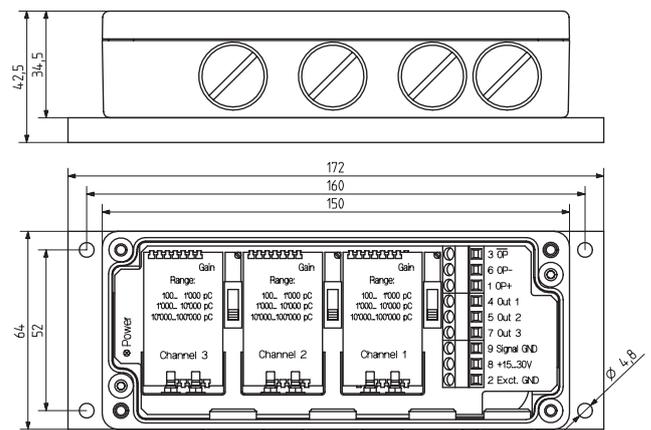


Fig. 1: Dimensions of industrial charge amplifier Type 5038A...

Block Diagram Industrial Charge Amplifier Type 5038A...

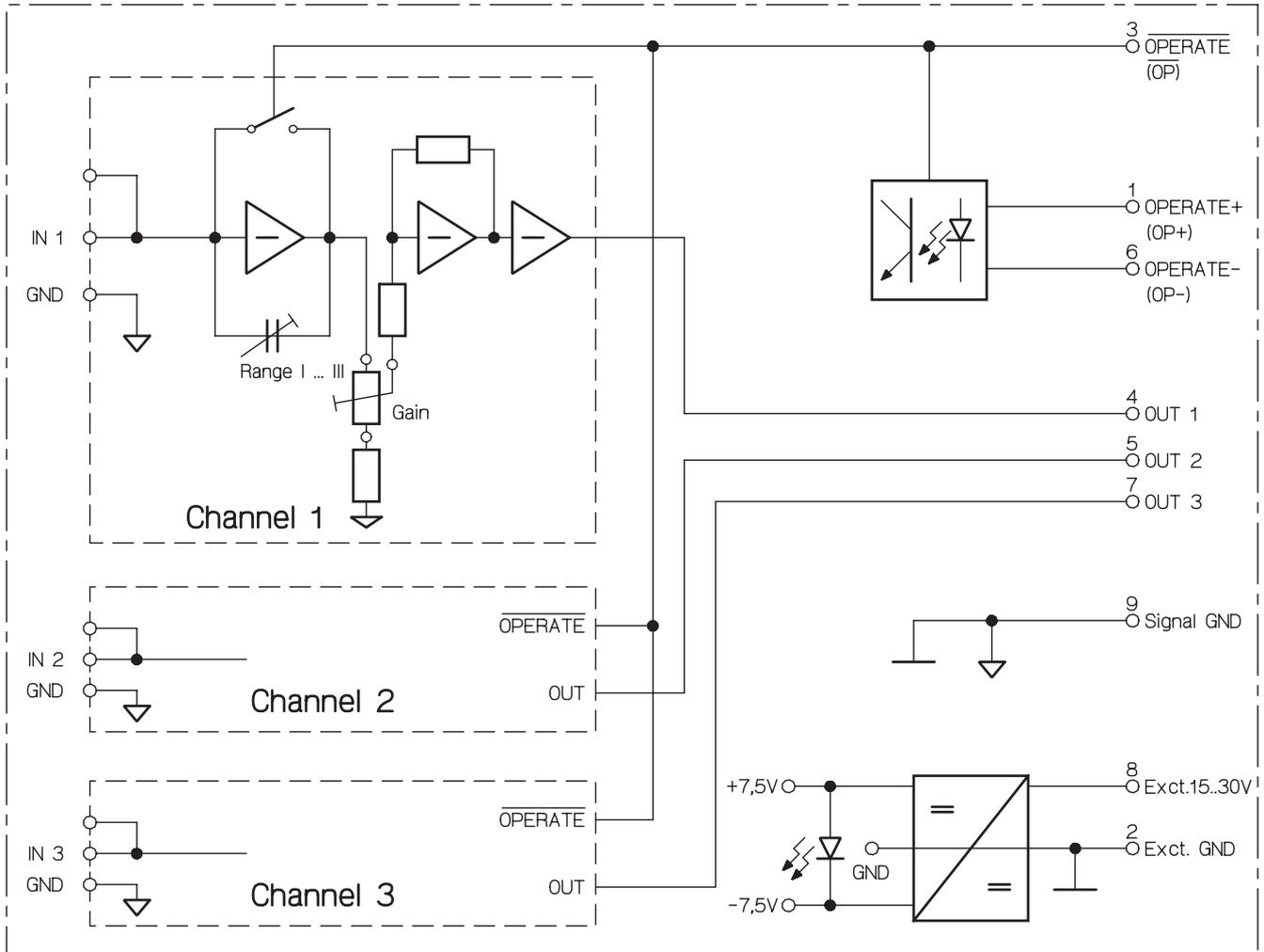


Fig. 2: Block diagram industrial charge amplifier Type 5038A...

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Cable Concept Industrial Charge Amplifier Type 5038A...

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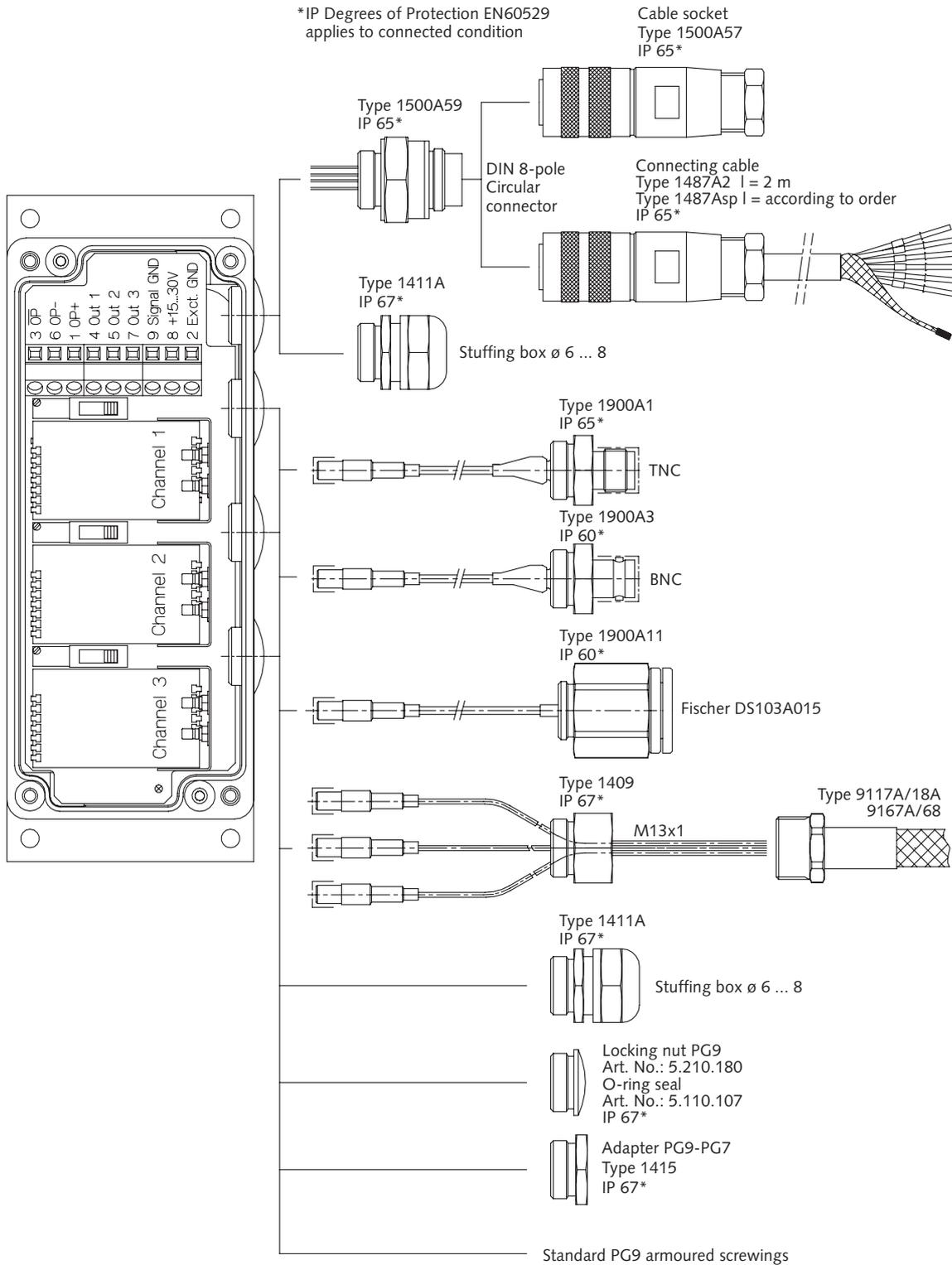


Fig. 3: Cable concept industrial charge amplifier Type 5038A...

Accessories Included

- Charge amplifier with isolation plate PG9 connecting thread with blind plug

Optional Accessories

- | | |
|--|-----------------------|
| • Feed-through coupling Minicoax – BNC neg., IP60 | Type 1900A3 |
| • Feed-through coupling Minicoax – TNC neg., IP65 | 1900A1 |
| • Coupling M13x1 – PG9, IP67 | 1409 |
| • Chassis plug 8-pin, DIN45326, IP65 | 1500A59 |
| • Cable socket 8-pin, DIN45326, IP65 | 1500A57 |
| • Conduit gland ø6 ... 8 mm, IP67 | 1411A |

Ordering Key

Type 5038A

| | |
|---------------------------------------|----------|
| 1-channel industrial charge amplifier | 1 |
| 2-channel industrial charge amplifier | 2 |
| 3-channel industrial charge amplifier | 3 |



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