

# 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.

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## 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 <sub>pp</sub>	<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		
Test conditions: 20 ... 2 000 Hz continuous in 2 min., 8x within 16 min.	g <sub>p</sub>	10
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

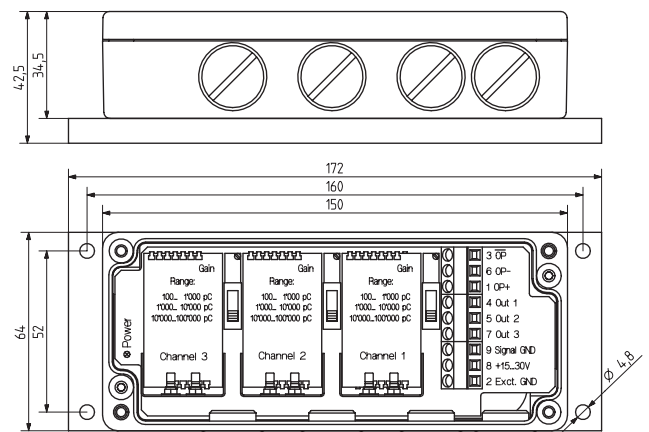


Fig. 1: Dimensions of industrial charge amplifier Type 5038A...

**Block Diagram Industrial Charge Amplifier Type 5038A...**

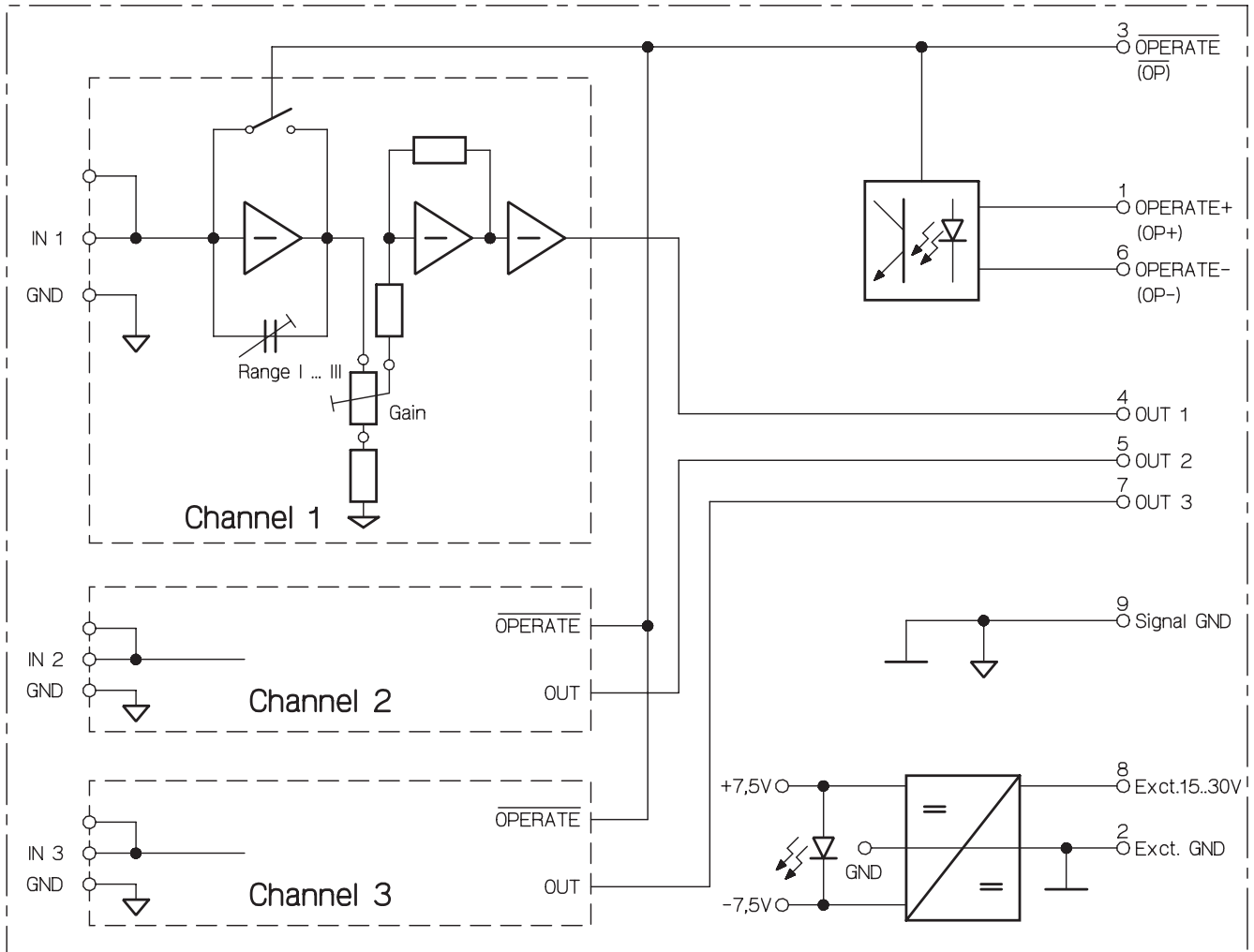


Fig. 2: Block diagram industrial charge amplifier Type 5038A...

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**Cable Concept Industrial Charge Amplifier Type 5038A...**

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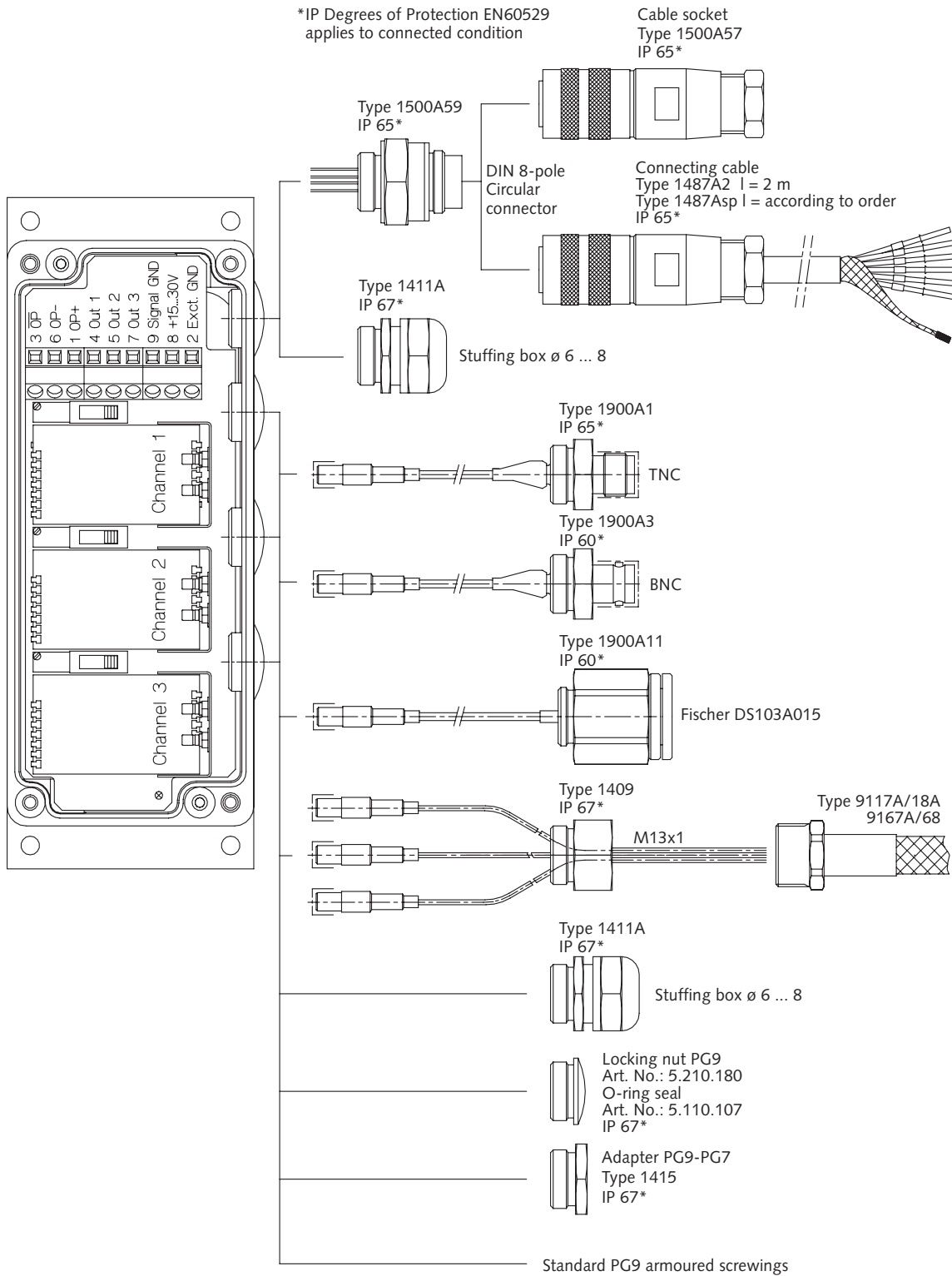


Fig. 3: Cable concept industrial charge amplifier Type 5038A...

### Accessories Included

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

### Optional Accessories

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

### Ordering Key

Type 5038A

1-channel industrial charge amplifier	<b>1</b>
2-channel industrial charge amplifier	<b>2</b>
3-channel industrial charge amplifier	<b>3</b>

