

# MiniAmp

Type 5030A...

## Miniature Charge Amplifier

The MiniAmp Type 5030A... is a single channel, industrial charge amplifier, which converts the charge signal from piezo-electric sensors into a proportional voltage signal.

- Compact size
- 2 measuring ranges 10:1
- External control (PLC) of "Measure" and "Range" (measuring range)
- Signal output  $\pm 10$  V

### Description

With its rugged metal case and encapsulated electronic circuitry, the MiniAmp Type 5030A... is suitable for industrial application (Degree of Protection IP65).

An unstabilized DC voltage of 18 ... 30 V is sufficient for the power supply. The digital inputs "Measure" and "Range" (not electrically isolated) can be actuated via TTL logic ("high level" up to 30 V possible).

### Applications

With its compact construction and sealed case, the MiniAmp is ideal for monitoring machinery and processes in the manufacturing industry. It can be used with all types of piezoelectric sensors and can be installed in the smallest space. As a result of its low mass, it can also be mounted on moving parts close to the sensor, thereby avoiding cyclic movements of the sensor cable.

The output signal can be processed and monitored by any electronic evaluation system. Digital inputs for industrial control systems (PLC) and a simple power supply allow a broad range of applications on production machinery and in many other fields.

Customized measuring ranges ( $\pm 100$  ...  $\pm 150\,000$  pC) and range ratios (1:2 ... 1:10) can be provided for OEM applications.



### Technical Data

#### Signal Input (Sensor)

Measuring range I		
Type 5030A1	pC	$\pm 1\,000$
Type 5030A2	pC	$\pm 10\,000$
Type 5030A3	pC	$\pm 100\,000$
Measuring range II		
Type 5030A1	pC	$\pm 100$
Type 5030A2	pC	$\pm 1\,000$
Type 5030A3	pC	$\pm 10\,000$
Error	%	$< \pm 1$
Connection	KIAG 10-32 neg.	

#### Signal Output

Output voltage, FS	V	$\pm 10$
Output current	mA	$< 0 \dots \pm 1$
Output impedance	$\Omega$	$\approx 10$
Zero point error	mV	$< \pm 15$
Linearity	%FS	$< \pm 0,05$
Noise (0,1 Hz ... 1 MHz)		
Measuring range I	mV <sub>pp</sub>	$< 10$
Measuring range II	mV <sub>pp</sub>	$< 25$
Reset/Operate shift	pC	$< \pm 2$
Frequency range (-3 dB)	kHz	$\approx 0 \dots 10$
Drift, at 20 °C	pC/s	$< \pm 0,05$

5030A\_000-523e-10.07

**Digital Inputs**

Measure		
Inactive (Reset)	V	2,4 ... 30 (or open)
Active (Operate)	V	0 ... 0,8 (or GND)
Reset/Operate time	ms	<2
Operate/Reset time (residual charge <0,5 % FS)		
Type 5030A1	ms	<2
Type 5030A2	ms	<15
Type 5030A3	ms	<110
Range (Measuring range)		
Measuring range I	V	2,4 ... 30 (or open)
Measuring range II	V	0 ... 0,8 (or GND)
Delay	ms	<2

**General**

Power supply	VDC	18 ... 30
Current consumption	mA	<20
Operating temperature range	°C	0 ... 70
Signal output/dig. inputs/supply		M12x1, 8-pole (shielded cable recommended)
Dimensions (LxWxH)	mm	38x25x28
Weight	kg	0,03
Case material		Aluminum
Degree of protection	EN60529	IP65 (with cable connected)

The unit complies with EMC regulations EN61000-6-3 (interference emission) and EN61000-6-2 (interference immunity).

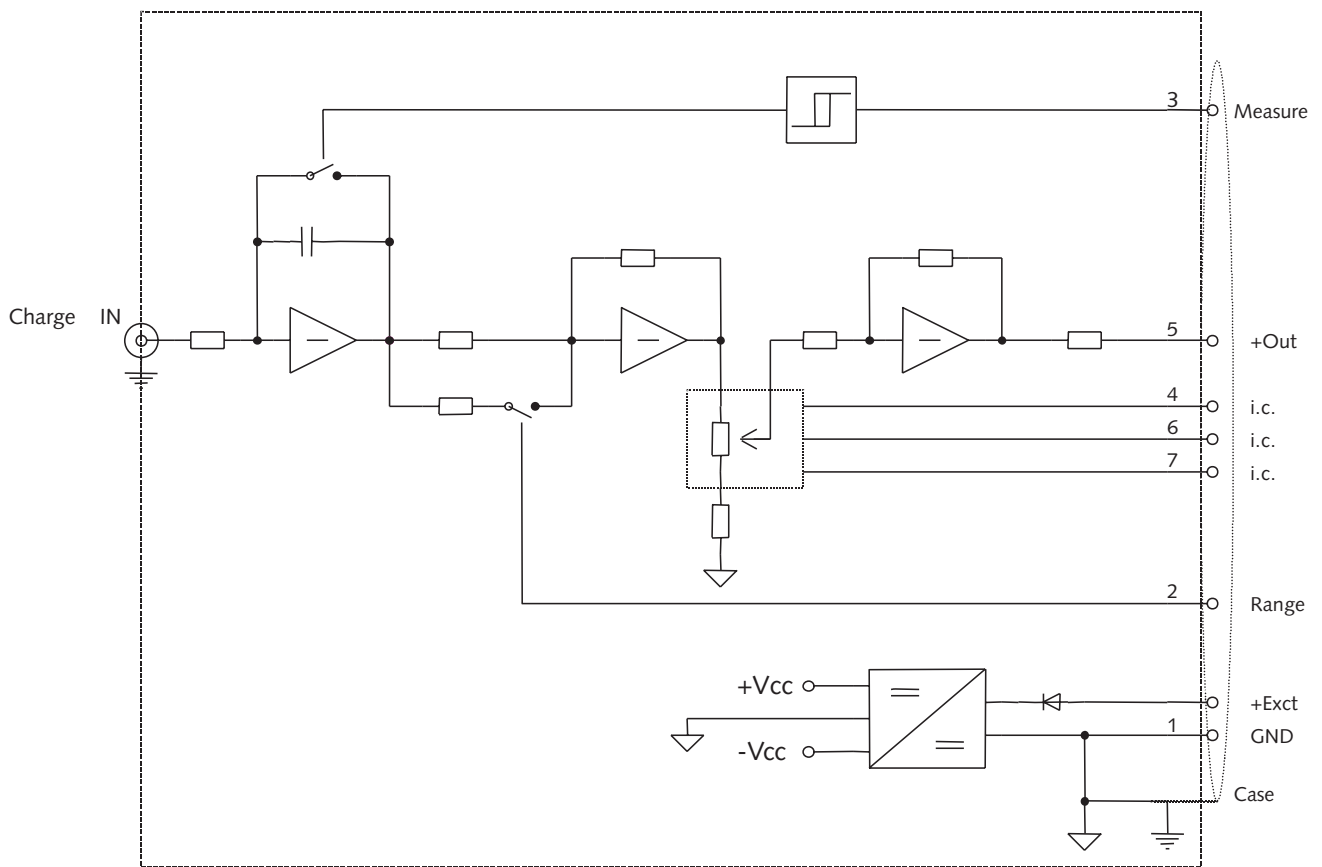


Fig. 1: Block schematic diagram Type 5030A...

5030A\_000-523e-10.07

## Wiring

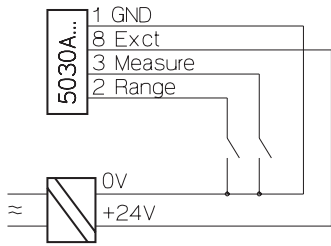


Fig. 2: Switch contacts

## Pin Allocation



Colors of individual wires with 8-pole connecting cable Type 1787A... and 1789A...

1 GND	white
2 Range	brown
3 Measure	green
4 do not connect	yellow
5 Signal Out	gray
6 do not connect	pink
7 do not connect	blue
8 Exct (18 ... 30 VDC)	red

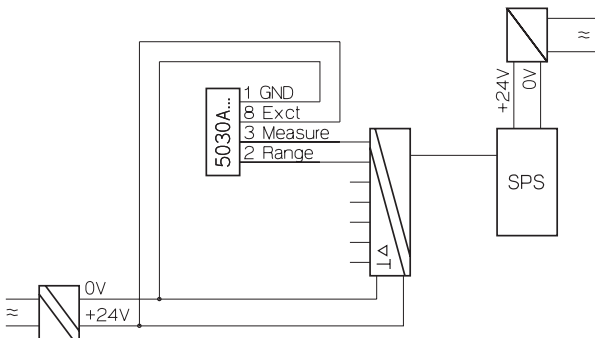
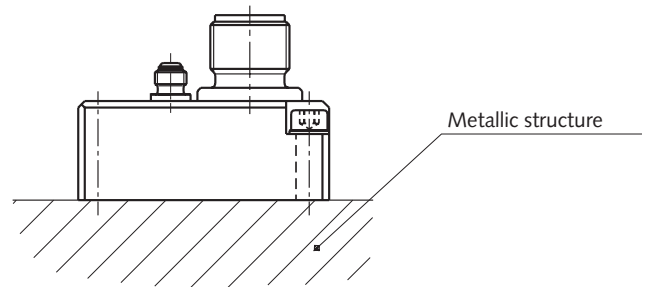


Fig. 3: PLC with electrical isolation

## Mounting



Version 1: Installation of the charge amplifier on a metallic base (grounded)

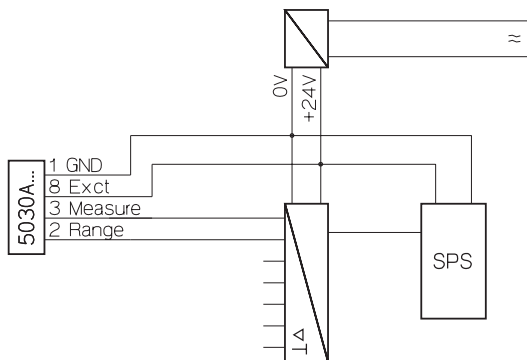
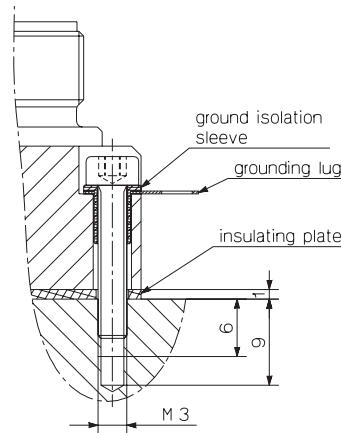


Fig. 4: PLC without electrical isolation



Version 2: Ground-isolated installation with ground isolation set. The metallized side of the insulating plate must contact the Type 5030A... housing. We recommend to ground the charge amplifier case if the sensor power supply (Fig. 2 and 3) is mounted electrically isolated.

**Dimensions**

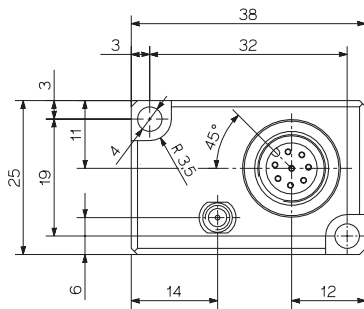


Fig. 5: Dimensions MiniAmp Type 5030A...

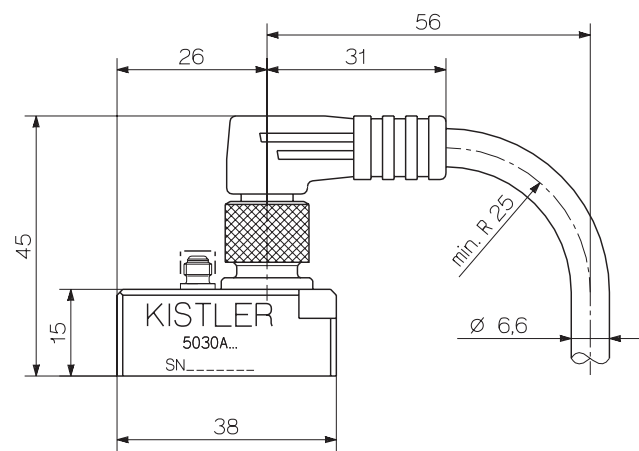
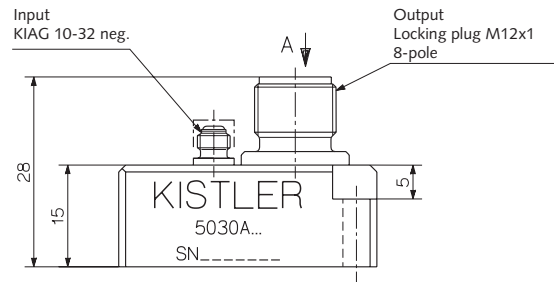


Fig. 6: Amplifier with connecting cable Type 1789A...

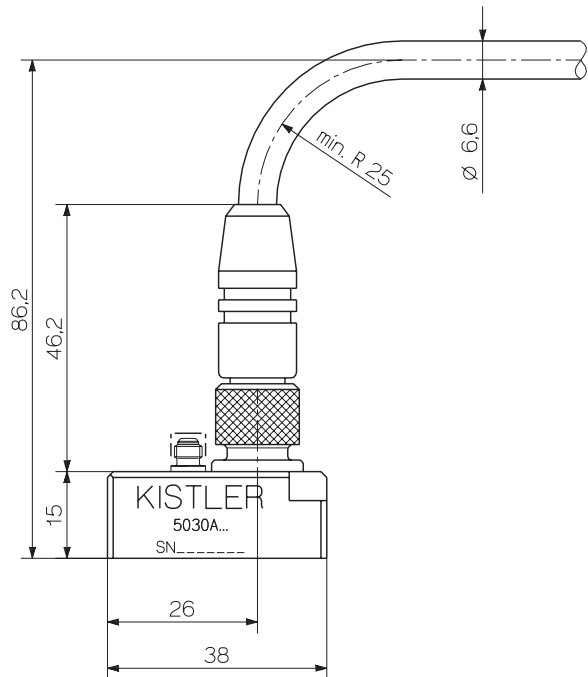


Fig. 7: Amplifier with connecting cable Type 1787A...

**Accessories Included**

- Ground isolation set, consisting of
  - Insulating plate
  - 2 Insulation centering sleeves
  - Soldering plug
- 2 hexagon socket head screws, M3x16

**Art. No.**  
7.050.070  
  
6.120.176

**Optional Accessories**

**Type**  
Connecting cables for controlling the MiniAmp Type 5030A...  
8-pole cable for connection to monitor Type 5825A1

- Connecting cable  
M12-8 pole plug, straight, l = 2 m 1700A66
- Connecting cable  
M12-8 pole plug, right-angled, l = 2 m 1700A68

8-pole cables for connection to PLC

- Connecting cable, M12-8 pole plug, straight, open cable end, l = 5 m 1787A5
- Connecting cable, M12-8 pole plug, straight, open cable end, l = 20 m 1787A20
- Connecting cable, M12-8 pole plug, right-angled, open cable end, l = 5 m 1789A5

Connecting cables for sensors

- For sensors with connection KIAG 10-32 neg.
- 2 mm PFA, KIAG 10-32 pos./KIAG 10-32 pos. 1635C...
  - 2,6 mm metal sheathed, KIAG 10-32 pos./KIAG 10-32 pos. 1957A...
  - 2,6 mm metal sheathed, KIAG 10-32 pos. int./KIAG 10-32 pos. int. 1927A...
  - 2 mm Viton®, oil-tight, KIAG 10-32 pos. int./KIAG 10-32 pos. int. 1983AC

For sensors with connection M4 neg.

- 2 mm PFA, M4 pos./KIAG 10-32 pos. 1655C...
- 2 mm PFA, M4 pos. int./KIAG 10-32 pos. 1921
- 2,6 mm metal sheathed, M4 pos. int./KIAG 10-32 pos. 1919
- 2 mm Viton®, oil-tight, M4 pos. int./KIAG 10-32 pos. int. 1983AB...

For cables, see also data sheet cables for force, torque and strain sensors 1631C\_000-346.

Unit for controlling the MiniAmp Type 5030A...

- Remote Control Monitor (RCM) 5825A1
  - Mobile display unit for the supply and operation of the charge amplifier (without measuring range adjustment)
  - Control of the MiniAmp Supply, Measure (Operate/Reset), Measuring range switching (Range I/II)
  - Display of the measured value
  - RS-232C transfer of the measured value
  - External trigger connection
  - Analog output for the measuring signal
  - Power unit for external power supply

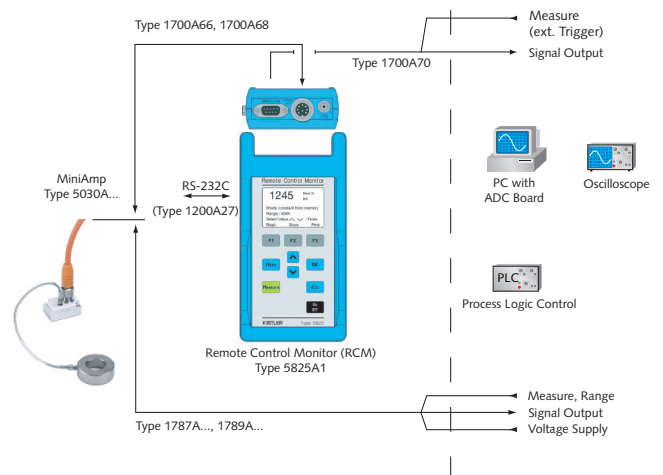


Fig. 8: Optional accessories MiniAmp Type 5030A...

**Ordering Key**

		Type 5030A □
Measuring range I ±1 000 pC	1	↑
Measuring range I ±10 000 pC	2	
Measuring range I ±100 000 pC	3	

5030A\_000-523e-10.07

Viton® is a registered trademark of DuPont Performance Elastomers

This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

©2007, Kistler Instrumente AG, Eulachstrasse 22, 8408 Winterthur, Switzerland  
Tel. +41 52 224 11 11, Fax +41 52 224 14 14, info@kistler.com, www.kistler.com