Measuring Amplifier

for Strain Gage Sensors and Resistive Travel Sensors

Industrial measuring amplifier for signal amplification of sensors with strain gage bridge (torque or load) and resistive travel sensors.

- 24 VDC power supply
- Analog output 0 ... ±5 V or 0 ... ±10 V
- Compact design
- Robust metal housing

Description

The measuring amplifier Type 4701A... can be connected to the sensor and to power supply/analog output either through cable bushings directly at the soldering terminals inside the housing (version A) or via plug connectors (version B for strain gage sensors or version C for resistive travel sensors).

Gain adjustment is performed by fixed resistors (coarse tuning) and additionally by a potentiometer (fine adjustment). With another potentiometer, the zero adjustment can be done externally through a case hole with screw cap (version A only). For simple installation, the robust metal housing of the amplifier is equipped with two holes for M4 screws.

Application

The measuring amplifier Type 4701A... is designed for industrial applications and is provided for switch board installation. This universal amplifier is suitable for the use with the following sensors:

- Torque: Type 4501A... Type 4507A... Type 4509A...
- Load: Type 4570A... Type 4573A... Type 4574A...
- Type 4575A... Type 4576A... Type 4577A...
- Travel (resistive): Type 2112A...

If desired, the amplifier can be delivered together with connected sensor as a calibrated measuring chain. Customized adjustments of sensitivity or output signal differing from standard are also available on request.
## Technical Data

<table>
<thead>
<tr>
<th>Input</th>
<th>Strain gage (0,5 ... 3,0 mV/V, full or half bridge, bridge input resistance max. 500 Ω):</th>
<th>Version A: approx. 1,5 mV/V</th>
<th>Version B: approx. 1,0 mV/V</th>
<th>Version C: input 0 ... 5 V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(input resistance 1 ... 5 kΩ):</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Output</td>
<td>Analog signal or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 ... ±5 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 ... ±10 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>Calibration together with sensor or adjustment of customized sensitivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>24 VDC non-stabilized (±10 %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy % of full range</td>
<td>≤±0,1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation temperature range</td>
<td>0 ... 50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal temperature range</td>
<td>10 ... 40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gain adjustment range %</td>
<td>ca. ±10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zero signal adjustment %</td>
<td>ca. ±10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>acc. to EN 60529</td>
<td>Version A with cable bushings: IP54</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Version B and C with plug connectors: IP40</td>
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</tbody>
</table>

**Electrical Connection (Schematic)**

- **Electrical Connection Version A**
  - Protection class: IP54
  - Standard adjustment of amplifier: sensitivity 1,5 mV/V, output 5 V or 10 V. Customized adjustments on request.

- **Electrical Connection Version B**
  - Protection class: IP40
  - Standard adjustment of amplifier: sensitivity 1,0 mV/V, output 5 V or 10 V. Customized adjustments on request.

**Pin Assignment for Amplifier Output (6-pin Built-in Plug, firm Binder, Series 581)**

- Pin 1: Sensor power supply (0 V)
- Pin 2: Sensor power supply (24 V)
- Pin 3: Shield
- Pin 4: Output voltage (±5 V)
- Pin 5: Output voltage (0 V)
- Pin 6: Not connected

**Pin Assignment for Amplifier Input (Connection Strain Gage Sensor, 6-pin Built-in Socket, firm Binder, Series 581)**

- Pin 1: Sensor power supply (0 V)
- Pin 2: Sensor power supply (+5 V)
- Pin 3: Shield
- Pin 4: Measuring signal (+)
- Pin 5: Measuring signal (–)
- Pin 6: Not connected
Included Accessories
- None

Optionale Accessories
- Connection cable, 5 m, 6-pin/6-pin KSM071860-5
- Connection cable, 5 m, 6-pin/free end KSM103820-5
- Connection cable, 5 m, 5-pin/5-pin KSM106410-5

Output signal

<table>
<thead>
<tr>
<th>Type/Art. No.</th>
<th>0 ... ±5 VDC</th>
<th>0 ... ±10 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSM071860-5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>KSM103820-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KSM106410-5</td>
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</tr>
</tbody>
</table>

Ordering Example:
Measuring amplifier Type 4701A..., output signal 0 ... ±10 VDC, with plug connectors for strain gage sensor (protection class IP40).

Pin Assignment for Amplifier Output (6-pin Built-in Plug, firm Binder, Series 581)
- Pin 1: Sensor power supply (0 V)
- Pin 2: Sensor power supply (24 V)
- Pin 3: Shield
- Pin 4: Output voltage (±5 V)
- Pin 5: Output voltage (0 V)
- Pin 6: Not connected

Standard adjustment of amplifier: input 0 ... 5 V, output 5 V or 10 V. Customized adjustments on request.

Pin Assignment for Amplifier Input (Connection resistive Travel Sensor, 5-pin Built-in Socket, firm Binder, Series 581)
- Pin 1: Input measuring signal
- Pin 2: Sensor power supply (0 V)
- Pin 3: Sensor power supply (+5 VDC)
- Pin 4: Shield
- Pin 5: Not connected