

Data Sheet for Amplifier



Amplifier for load cells with strain gauge full bridge

Series IMA2-DMS



Amplifier module for force sensors including strain gauge full bridges with 5V or 10V bridge supply.

- For all strain gauge sensors
- Temp. coefficient $<0.02\%$ F.S./°C
- Misc. output signals
- Galvanically isolated

Electrical Data

Supply voltage	24 VDC (18..36 VDC), optional 12 VDC (9..18 VDC)
Power consumption (no load)	max. 150 mA @ 24 VDC, max. 300 mA @ 12 VDC
Supply voltage sensor	10 VDC, optional 5 VDC
Sensitivity	1.0 mV/V / 1.2 mV/V / 1.5 mV/V / 2.0 mV/V / 3.0 mV/V $\pm 10\%$
Setting range offset	$< \pm 10\%$
Setting range amplification	$< \pm 10\%$
Output signal	0..5 V / 0..10 V / ± 5 V / ± 10 V / 0..20 mA / 4..20 mA
Noise, residual ripple	$< 20 \text{ mV}_{\text{eff}}$ (DC..20 MHz)
Linearity deviation	$< \pm 0.01\%$
Temperature coefficient sensitivity	$< \pm 0.02\%$ /°C
Temperature coefficient zero point	$< \pm 0.01\%$ /°C
Limit frequency / Output (3db)	1 kHz
Insulation resistance 1.)	1 GOhm @ 500 VDC
Insulation voltage 1.)	500 VAC, 1 min
Overvoltage max.	40 V

Mechanical Data, Environmental Conditions, Miscellaneous

Housing	UEGM (Phoenix Contact)
Mounting	DIN Rail
Operating temperature range	-25 °C up to +85 °C
Storage temperature range	-30 °C up to +85 °C
Mass	ca. 100 g

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

Please note: Max. permissible supply voltage <75 VDC respectively <50 VAC in addition the max. power rating must be observed

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Order code					
Description	Selection: standard=black/bold , possible <i>options=grey/italic</i>				
Series:	IMA2-DMS				
Supply voltage: 24 V (18..36 VDC) <i>Option 12 V (9..18 VDC)</i>		24 V <i>15 V</i>			
Output signal: <i>0..5 V</i> 0..10 V <i>±5 V</i> ±10 V <i>0..20 mA</i> 4..20 mA			<i>0-5V</i> 0-10V <i>±5V</i> ±10V <i>0-20mA</i> 4-20mA		
Excitation voltage 10 V <i>Option 5 V</i>				- <i>5 V</i>	
Sensitivity: <i>1.0 mV/V</i> <i>1.2 mV/V</i> <i>1.5 mV/V</i> 2.0 mV/V <i>3.0 mV/V</i>					<i>1</i> <i>1,2</i> <i>1,5</i> 2 <i>3</i>

For higher quantities or on-going demand, additional options are available on request

E.g. other supply voltages and a higher max. Output current are realizable

Adjustment notes

When ordered, the module is calibrated to a sensor sensitivity of 2mV/V as standard. On request the amplifier can be calibrated to a specific load cell. In this case the exact sensor sensitivity ($\pm 0.05\%$) and transducer series must be specified. The offset is set to $< 0.01V$ by default when the sensor input is short-circuited. As the load cell offset depends on its mounting position, it is advisable to calibrate the load cell after it has been mounted. This is done by adjusting the offset trimmer after installation of the load cell so that the output signal has the desired offset value (normally 0V).

Two variants are available for a subsequent adjustment:

1. Adjustment with load cell connected:

First, the offset is adjusted with the transducer unloaded. Then the transducer is loaded with a known force. The trim potentiometer is then used to adjust the gain so that the output signal is the desired value.

2. Adjustment without load cell:

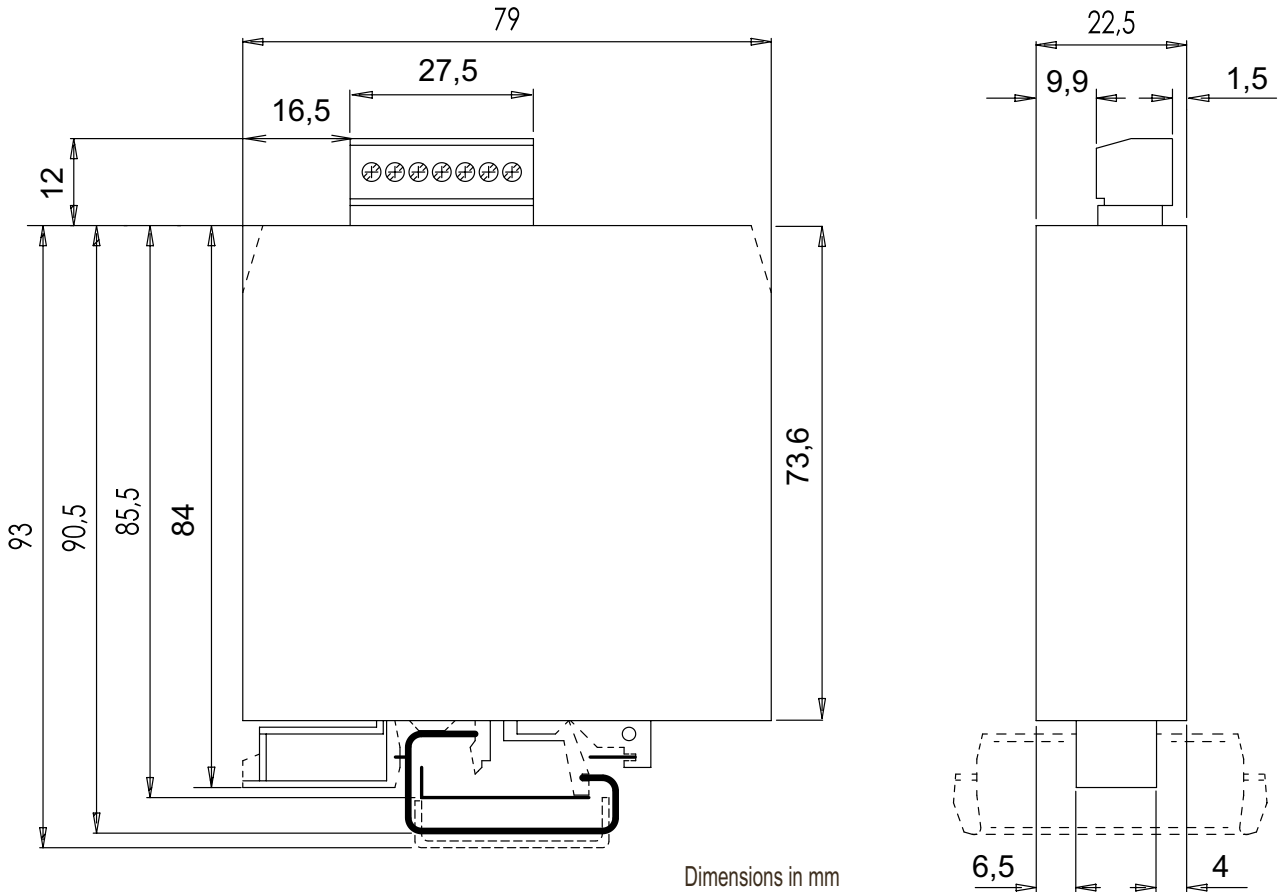
To calibrate in this way, the sensitivity of the transducer must be known. It is also necessary to have a calibration source that provides a stable, low-noise voltage in the mV range. For calibration it is necessary to connect the sensor input (terminal 6 (-)) with low impedance (e.g. 300 Ω) to the sensor supply lines (terminal 5 (-)). The calibration source is connected to terminal 6 (-) and 8 (+). The offset is calibrated at 0 mV. Then the load of the transducer is simulated with the voltage source (e.g. a transducer with a sensitivity of 2 mV/V and a sensor supply voltage of 10 V will deliver a voltage of 20 mV at its nominal load) and the gain is set to the standardised output signal (e.g. 5 V). The built-in transducer is then connected and the offset adjusted again.

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Drawing



Connection

