

Data Sheet for Amplifier

Amplifier for load cells with strain gauge full bridge

Series IMA2-DMS

Amplification 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 ±10%
Setting range offset	< ±10%
Setting range amplification	< ±10%
Output signal	0..5 V / 0..10 V / ±5 V / ±10 V / 0..20 mA / 4..20 mA
Noise, residual ripple	< 20 mV _{eff} (DC..20 MHz)
Linearity deviation	< ±0,01%
Temperature coefficient sensitivity	< ±0,02% /° C
Temperature coefficient zero point	< ±0,01% /° C
Limit frequency / Output (3db)	1 kHz
Insulation resistance 1.)	1 GOhm @ 500 VDC
Insulation voltage1.)	500 VAC, 1 min
Overvoltage max.	40 V

Mechanical Data, Environmental Conditions, Miscellaneous	
Housing	UEGM (PhoenixConact)
Mounting	DIN Rail
Operating temperature range	-25..+85°C
Storage temperature range	-30..+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 options= <i>grey/cursive</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

Adjustment notes

When ordered, the module is calibrated to a sensor sensitivity of 2mV/V as standard. On request, the measuring amplifier can be calibrated for a specified force transducer. In this case, the exact sensor sensitivity ($\pm 0.05\%$) and series of force transducer must be specified. The offset is adjusted to < 0.01 V as standard with a short-circuited sensor input. Since the offset of the force transducer depends on its installation position, it is advisable to calibrate it only after it has been installed. For this purpose, the trimming potentiometer for the offset is adjusted after installation of the force transducer so that the output signal has the desired offset value (usually 0V).

Two variants are available for a subsequent adjustment:

1. Adjustment with connected force transducer:

First the offset is adjusted with the transducer unloaded. Next, the transducer is loaded with a known force. The gain is now adjusted by means of the trim potentiometer so that the output signal has the desired value.

2. Adjustment without force transducer:

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

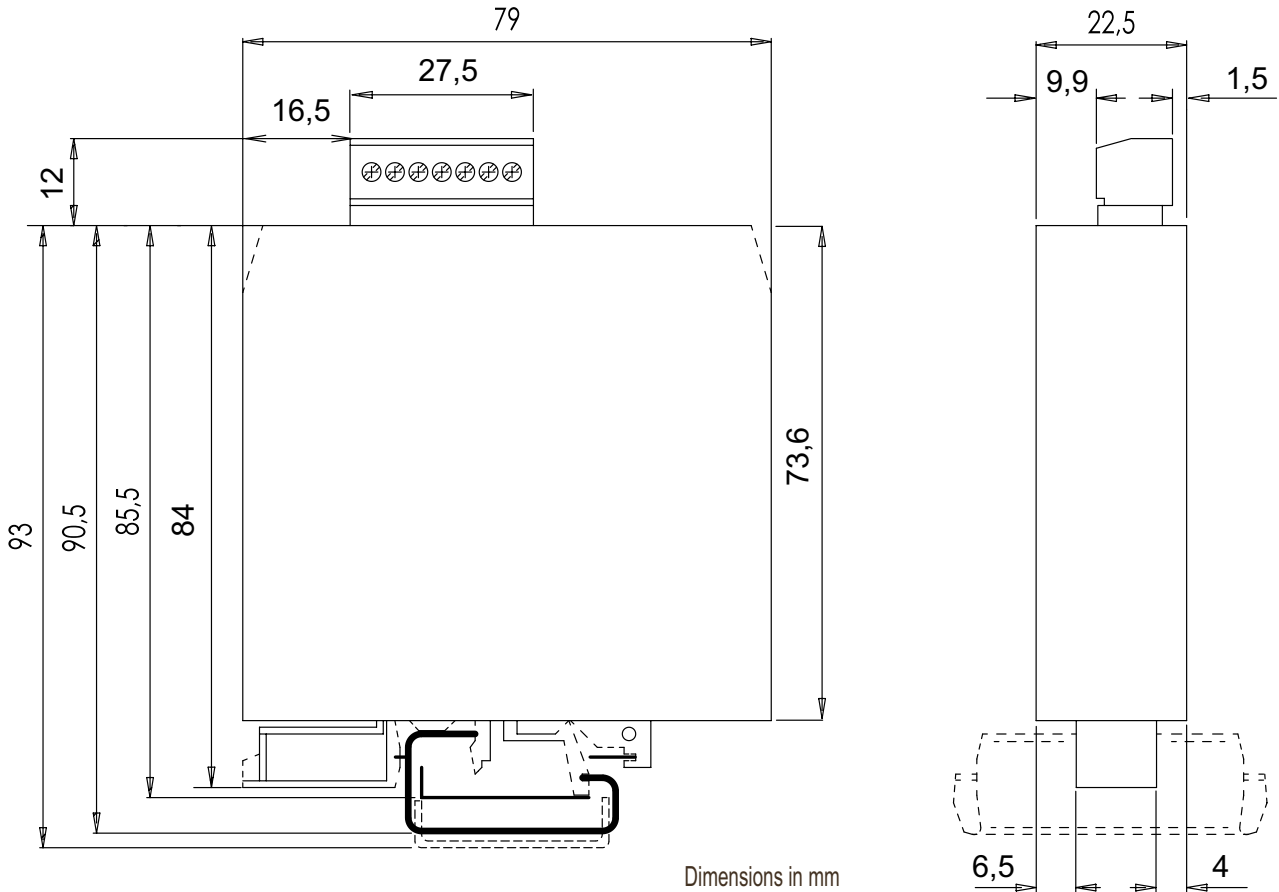
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Drawing



Connection

