

Data Sheet for Amplifier



Amplifier for potentiometers (linear and rotary)

Series IMA2-R



The IMA2-R module is used to convert output signals from potentiometric sensors to standardised output signals.

- For all potentiometers
- Temp. coefficient $< 0.02\%$ F.S./ $^{\circ}\text{C}$
- Misc. output signals
- Galvanically isolated

Electrical Data	
Supply voltage	24 VDC (18..36 VDC), optional 12 VDC (9..18 VDC)
Power consumption (with load)	max. 150 mA @ 24 VDC, max. 300 mA @ 12 VDC
Power consumption (no load)	max. 80 mA @ 24 VDC, max. 100 mA @ 12 VDC
Supply voltage sensor	5 VDC (50 mA), optional 10 VDC
Input	0..5 VDC
Setting range offset	$> \pm 15\%$
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	$< 15 \text{ mV}_{\text{eff}}$ (DC..20 MHz)
Linearity deviation	$< \pm 0.02\%$
Temperature coefficient sensitivity	$< \pm 0.001\%$ / $^{\circ}\text{C}$
Temperature coefficient zero point	$< \pm 0.004\%$ / $^{\circ}\text{C}$
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 $^{\circ}\text{C}$ up to +85 $^{\circ}\text{C}$
Storage temperature range	-30 $^{\circ}\text{C}$ up to +85 $^{\circ}\text{C}$
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-R			
Supply voltage: 24 V (18..36 VDC) <i>Option 12 V (9..18 VDC)</i>		24 V <i>15 V</i>		
Output signal: 0..5 V 0..10 V ±5 V ±10 V 0..20 mA 4..20 mA			0-5V 0-10V ±5V ±10V 0-20mA 4-20mA	
Excitation voltage: 5 V <i>Option 10 V</i>				- <i>10 V</i>

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

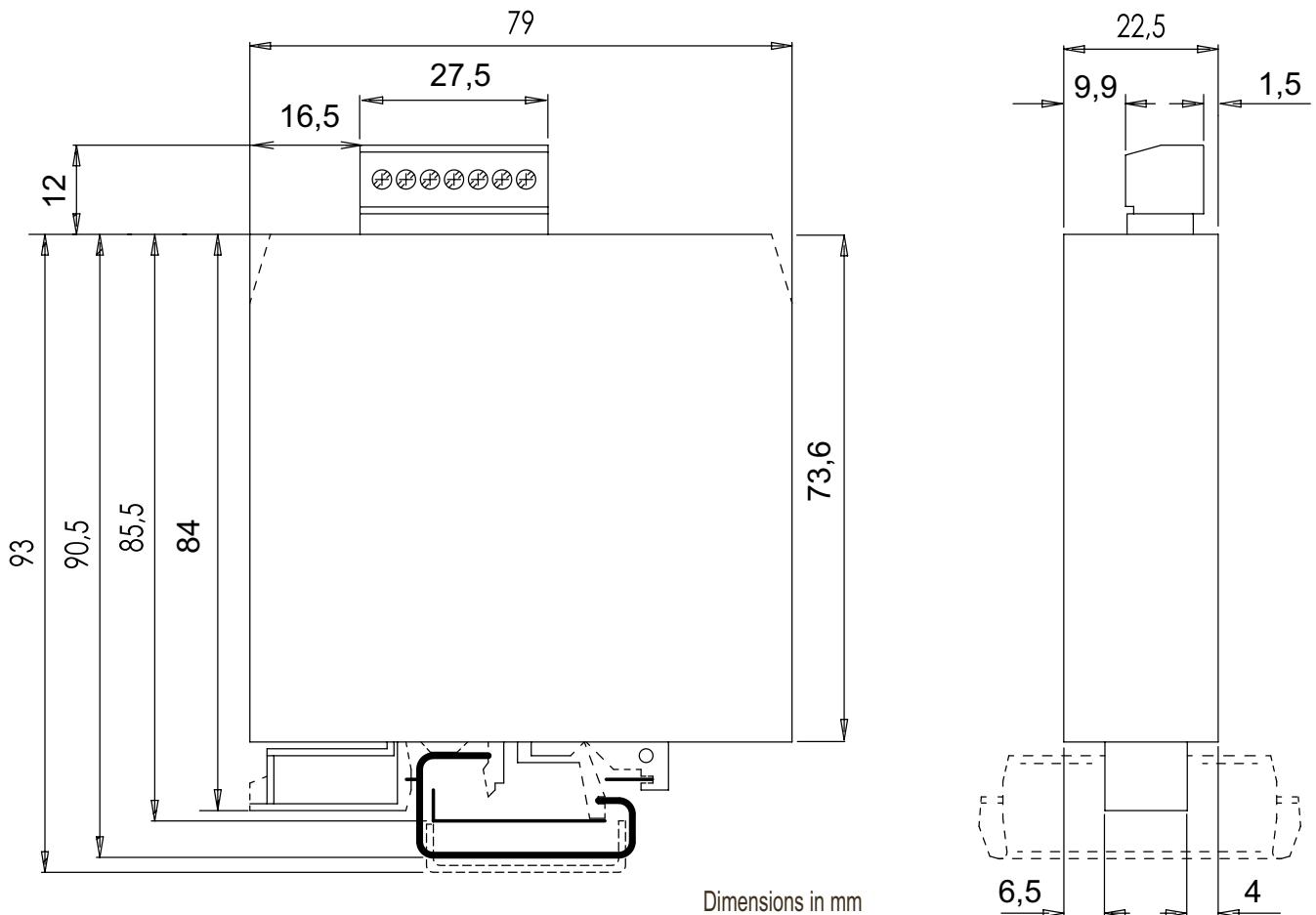
Data Sheet for Amplifier



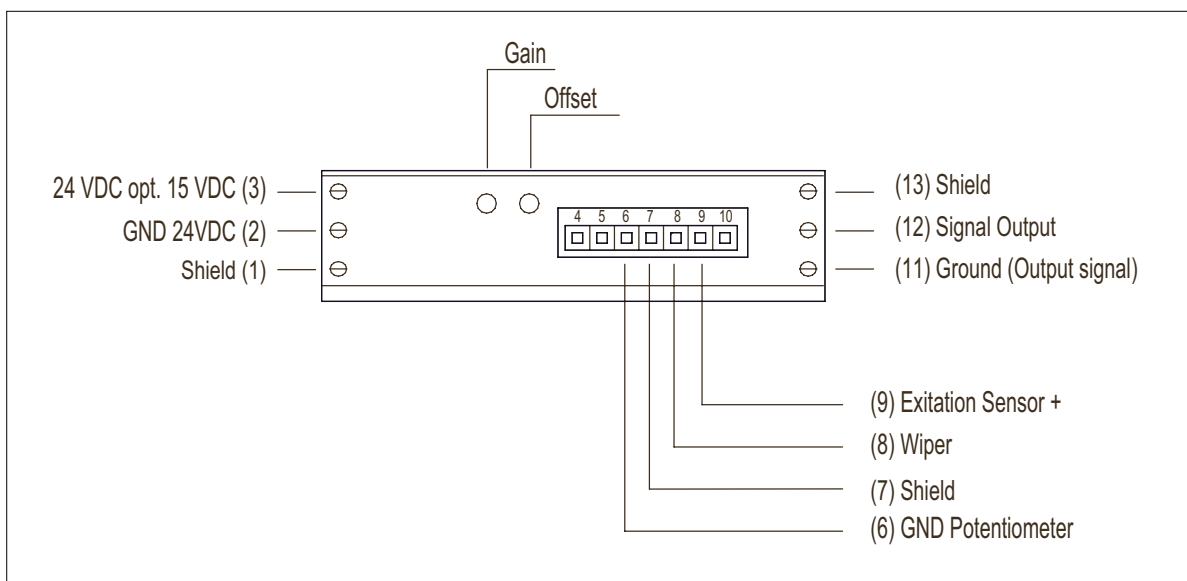
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Drawing



Connection



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Installation of IMA2R

1. General

The module is intended for DIN rail mounting in a control cabinet. Installation must be carried out by qualified electrical personnel in an ESD protected environment.

2. Shielding

To achieve the highest possible immunity to external interference, the connection to the sensor and the connection to the signal processing must be as short as possible ($< 10\text{ m}$) and shielded. If possible, the shield should be connected to earth at both sides (see wiring diagram). The shield connection (internally connected to earth) of the interface module is provided for this purpose. In rare cases where hum interference occurs due to unfavourable earth potentials, it is recommended to connect the shield to earth via a capacitor (approx. $10\text{ nF}/200\text{ V}$).

3. Connection to the power supply

The connection to the power supply must be made using sufficiently sized cables (recommended AWG24 / 0.22 mm^2). The cable length must not exceed 10 m . The earth connection must be as short as possible and of sufficient size.

4. Connection of the potentiometer

It should be noted that low impedance potentiometers ($< 1\text{ kW}$) carry a significant current. This can lead to measurement errors in combination with long cable lengths and small cable cross-sections. It is therefore recommended that the cable cross-section is sufficiently large (recommended: AWG24 / 0.22 mm^2), especially for low-impedance potentiometers.

5. Connection to the signal processing

Please observe the regulations of your signal processing here.

6. Adjustment

The amplifier is supplied calibrated. If necessary, the offset and gain can be changed to a limited extent. Two externally accessible trimming potentiometers are provided for this purpose.

Offset: The offset is set at a potentiometer position where the output voltage (of the IMA) should be 0 V or 0 mA . If this is not possible for technical reasons, it is recommended to adjust the gain before adjusting the offset.

Gain: The final value (sensitivity) is set with the trimming potentiometer.

Circuit

