

# Datasheet

## General features

- Linear magnetic sensor, with direct reading of the absolute position.
- Resolutions up to 1  $\mu\text{m}$ .
- Measuring length up to 30.000 mm.
- CANopen protocol.
- Contactless reading through positioning sensor based on magneto resistance, with AMR effect (Magnetic Anisotropy).
- Warning indication through LED.
- Extremely easy and fast mounting of the sensor and application of the magnetic scale, with wide alignment tolerances.
- Possibility to fix the magnetic sensor with M4 screws or with through M3 screws.
- Small size, to allow installation in narrow spaces.
- Axial or radial robust sealed cable output.
- Cable suitable for continuous movements.
- To be used with magnetic scale MBA2.



**CANopen**

## Technical characteristics

Pole pitch	2+2 mm
Repeatability	$\pm 1$ increment
Serial interface	CAN bus
Protocol - Profile	CANopen: encoder                      DS406 V. 3.1 communication            DS301 V. 4.02 LSS service                 DS305 V.2.0
Resolution absolute position	100 - 50 - 10 - 5 - 1 $\mu\text{m}$
Accuracy	$\pm 15 \mu\text{m}$
Measuring length ML	up to 30.000 mm
LED warning indication	LED lights up:            ready for operation LED lights up not:      check distance
Max. traversing speed	300 m/min <sup>1)</sup>
Vibration resistance (EN 60068-2-6)	200 m/s <sup>2</sup> [55 ... 2.000 Hz]
Protection class (EN 60529)	IP67
Operating temperature	0 °C ... +50 °C
Storage temperature	-20 °C ... +70 °C
Relative humidity	100%
Current consumption with 24 VDC	60 mA <sub>MAX</sub>
Electrical connections	see related table
Electrical protections	inversion of power supply polarity and short circuits on output ports
Weight	80 g

<sup>1)</sup> With a resolution of 1  $\mu\text{m}$ , the maximum traversing speed becomes 90 m/min.

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## Mechanical characteristics

- Magnetic sensor with untreated die-cast zinc housing (standard).
- Possibility to fix the magnetic sensor with M4 screws or with through M3 screws.
- Wide alignment tolerances.
- Robust sealed cable output.

## Electrical characteristics

- Reading through positioning sensor based on magneto resistance, with AMR effect (Magnetic Anisotropy).
- Electrical protection against inversion of power supply polarity and short circuits on output ports.

## Cable

Standard for CAN bus connection, 2 x 2 x 0.34.

Standard length 0.3 m.

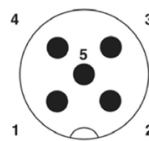
The cable is suitable for continuous movements.



**The cable's bending radius should not be lower than 80 mm.**

## Electrical connections

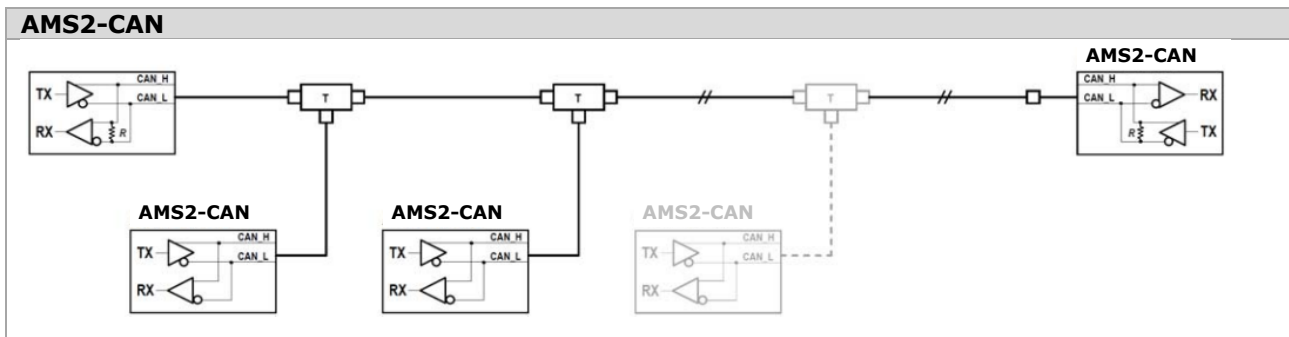
PIN	Signal	Colour
1	SCH	shield
2	+V	brown
3	0V	white
4	CAN_H	green
5	CAN_L	yellow



Connector type **CO5**:  
M12 plug, 5-pin,  
view plug side.

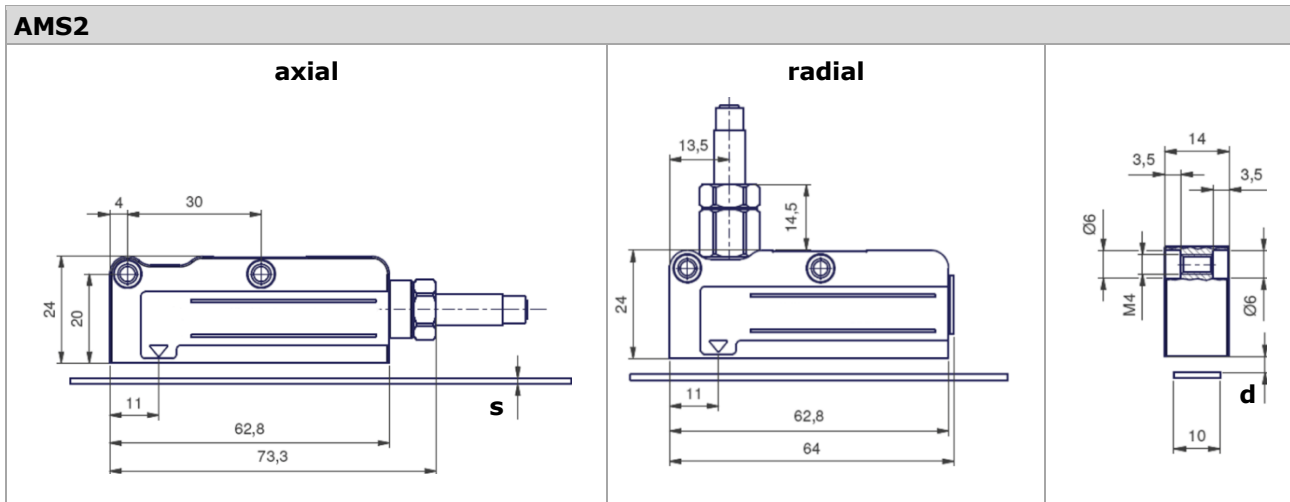
Pin assignment: M12 plug, 5-pin (according to DIN 47100)

## Connection diagram



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## Dimensions



All dimensions in mm

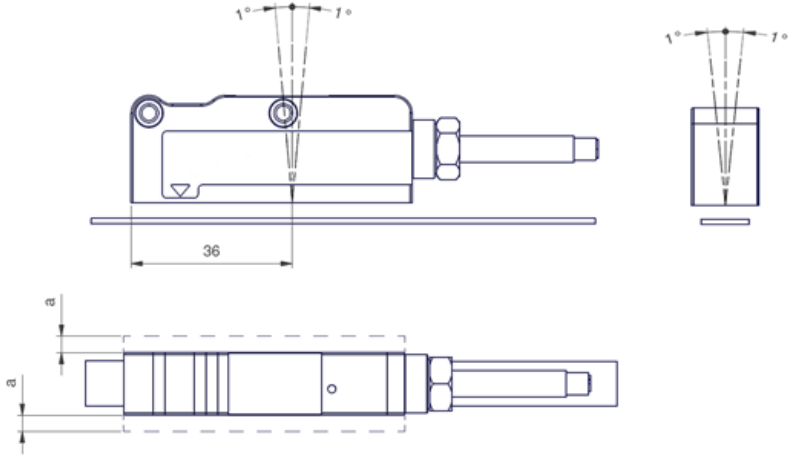
<b>s (mm)</b> = thickness magnetic scale		
<b>MBA2<sup>1)</sup></b>	thickness without double-sided adhesive tape	1.3
	thickness with double-sided adhesive tape	1.5
<b>MBA2 + DB01<sup>2)</sup></b>	thickness with double-sided adhesive tape and cover tape DB01	1.7

<b>d (mm)</b> = distance to be maintained between sensor and surface		
<b>MBA2<sup>1)</sup></b>	distance to be maintained between sensor and surface of the magnetic scale (without cover tape)	0.3 ... 1.0
<b>MBA2+ DB01<sup>2)</sup></b>	distance to be maintained between sensor and surface of the cover tape	max. 0.7

- 1) Absolute magnetic scale MBA2, composed by a magnetized plastoferrite tape, with pole pitch 2+2 mm. The plastoferrite is supported by a stainless steel tape, already provided with an adhesive tape.
- 2) Non-magnetic stainless steel cover tape DB01 on which a double-sided adhesive tape is pre-mounted for a quick sticking and an easy fixing on the magnetic scale.

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## Alignment tolerances

AMS2 + MBA2	a (mm) = alignment tolerance
	<p><b>a = 0.5<sub>MAX</sub></b></p>

### NOTICE

- Avoid the direct contact with magnetized objects or tools that could damage the surface.
- **Do not touch** the contacts of the cable's connector to avoid electrostatic discharges (ESD) on the device.

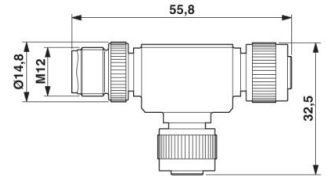
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## Accessories



Please order the T-parts, terminating impedance and extension cable separately, according to follow descriptions.

### T-part, terminating impedance and extension cable

	<p>T-Part CANopen / DeviceNet</p> <p>Art.-No.: 16134</p>	
	<p>Terminating impedance CANopen / DeviceNet</p> <p>Art.-No.: 16138</p>	
	<p>Bus-system cable CANopen / DeviceNet M12 plug/socket, 5-pin</p> <p>Art.-No.: 16139 (0.3 m) 16140 (0.5 m) 16142 (1.0 m) 16143 (2.0 m) 16147 (5.0 m) 16148 (10.0 m) 16152 (15.0m)</p>	
	<p>Bus-system cable CANopen M12 socket, 5-pin with open cable end</p> <p>Art.-No.: 16153 (2.0 m) 16154 (5.0 m) 16156 (10.0 m) 16158 (15.0 m)</p>	

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## Ordering example Magnetic sensor

<b>Type</b>	<b>AMS2-CAN</b>	-	<b>1</b>	-	<b>A</b>	-	<b>C</b>	-	<b>M0.3/C</b>	-	<b>SC</b>
<b>Pole pitch</b> [mm]	<b>2</b>	=	2+2								
<b>Resolution</b> [µm]	100; 50; 10; 5; <b>1</b>										
<b>Cable output</b>	<b>A</b>	=	axial								
	<b>R</b>	=	radial								
<b>Output signals</b>	<b>C</b>	=	CANopen								
<b>Cable length/type</b>	<b>M0.3</b>	=	0.3 m (standard)								
	<b>C</b>	=	CAN bus								
<b>Connector/wiring</b>	<b>SC</b>	=	without connector, open cable end								
	<b>CO5</b>	=	connector M12 plug, 5-pin								



Please order the magnetic scale, the corresponding cover tape, T-parts, terminating impedance and extension cable separately. For ordering information, please refer to the corresponding data sheet.

You can configure the enclosure according to your requirements from the technical information and enter it into the ordering code.

Variants that cannot be configured from the ordering code are available on request as a special version.

Without prior notice, the products may be subject to modifications that the Manufacturer reserves to introduce as deemed necessary for their improvement.