

Datasheet

With IO-Link-Interface

Basic features

- The AHP2-IOL sensor is multifunctional and a particularly powerful, absolute position measuring system
- Particularly suitable for applications in mechanical engineering and automation technology where high accuracy of position and end position is required in real-time
- For monitoring linear and rotary movements
- Non-contact and therefore wear-free measurement
- Measuring range 8190 mm, repeatability $\leq 1 \mu\text{m}$
- Automatic recognition of the sensor and its settings, even after loss of operating voltage and restarting the system
- High reliability due to continuous plausibility check
- Status LED and diagnostic functions for reliable operation and accelerated maintenance
- Space-saving, compact design



Output/Interface

Data format	32 bit signed
Differential signals	no
Error signal	yes
IO-Link version	1.1
Preset	configurable via IO-Link system parameters
Process data, device - master	4 bytes
Process data, master - device	0 bytes
Interfaces	IO-Link-Smart Sensor Profile IO-Link-Smart Sensor Profile Ed. 2 Analog sin/cos interface (1Vpp)
Interface coding	Binary
Cycle time min.	1 ms
Count direction	rising

Display/Operation

Error value	0x7FFFFFFF
Function indicator	LED green LED red

Electrical data

Output value	Position in μm
Operating voltage U_b	18...30 VDC
Switch-on delay max.	100 ms
Hysteresis H max.	1 μm
Power consumption	$\leq 1.4 \text{ W}$ (no load)
PD cycle min., 1.1 master	2 ms
Voltage-proof up to (GND to housing)	500 VDC
Current consumption max. at 24 VDC	70 mA
Overvoltage protection	no

Electrical connection

Connection	Connector, M12x1 plug, 4-pin
Connection version	axial
Polarity reversal protected	yes

Functional safety

MTTF (40 °C)	153 a
--------------	-------



The MTTF value given does not represent any binding quality and/or service life commitments. They are merely empirical values without binding character. These values do not extend the limitation period for claims based on defects or influence it in any other way. For further information on MTTF, see MTTF certificate.

Detection range/measuring range

Resolution	1 μm
Interpolation factor	2000
Read distance	0.01...1.3 mm
Non-linearity of sensor head, max.	$\pm 5 \mu\text{m}$
Measuring range	8190 mm
Optimal read distance	0.4 mm
Traverse speed max.	10 m/s
Repeat accuracy	$\leq 1 \mu\text{m}$

Material

Housing material	Die-cast zinc, nickel plated, Chrome-plated
Housing material, surface protection	nickel plated Chrome-plated

Mechanical data

Dimension	16 x 18.6 x 54 mm
Mounting	Through-hole 4.3 mm
Diameter min.	400 mm
Weight	50 g (without cable)
Pitch max.	$\pm 0.5^\circ$
Pole width	2 mm
Roll max.	$\pm 0.5^\circ$
Lateral offset (Y)	$\pm 1.5 \text{ mm}$
Tangential offset (X) max.	$\pm 1 \text{ mm}$
Procedure direction	Lengthwise to magnetic scale
Yaw max.	$\pm 1.0^\circ$

Datasheet

Environmental conditions

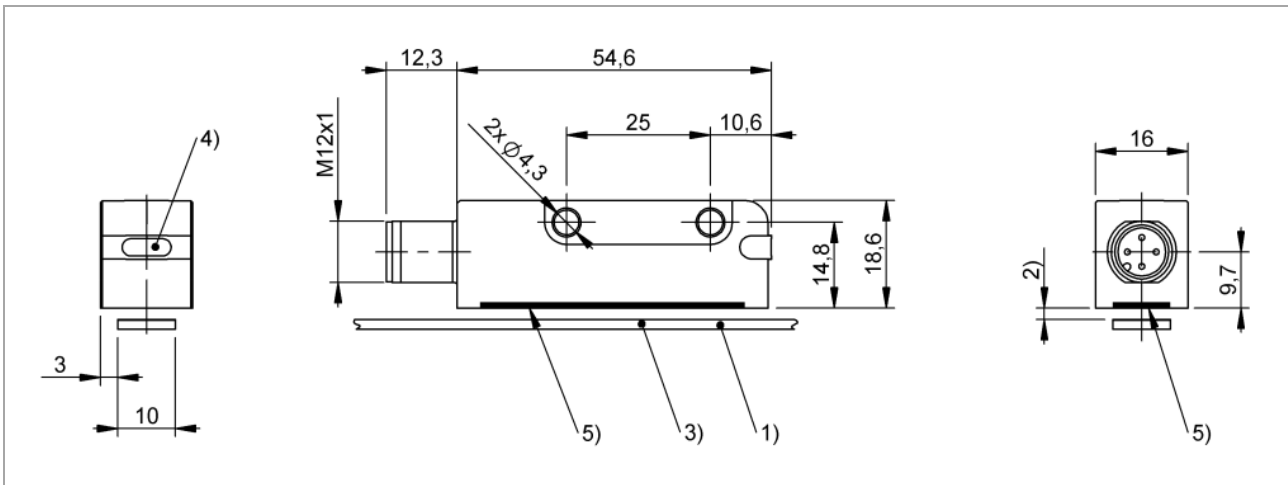
Radiation	(EN 55016-2-3)	Industrial areas
Continuous shock	(EN 60068-2-27)	150 g, 2 ms
Shock	(EN60068-2-27)	100 g, 6 ms
Vibration	(EN 60068-2-6)	20 g, 10...2000 Hz
Noise	(EN600068-2-64)	20 g, 5...2000 Hz
ESD	(EN61000-4-2)	Severity Level 4
RFI	(EN 61000-4-3)	Severity Level 3
Burst	(EN61000-4-4)	Severity Level 3
Surge	(EN 61000-4-5)	Severity Level 2
High-frequency fields	(EN 61000-4-6)	Severity Level 3
Magnetic fields	(EN 61000-4-8)	Severity Level 5
External magnetic fields max., in operation		<1 mT (no effect)
Altitude max.		2000 m (above sea level)
Storage temperature		-25...85 °C
Relative humidity		≤ 90%, non-condensing
IP rating (connector)		IP67
Temperature coefficient, overall system		10.5 ppm/K
Ambient temperature		-20...70 °C

Approval/Conformity

Approval/Conformity	CE, cURus, EAC, WEEE
---------------------	----------------------

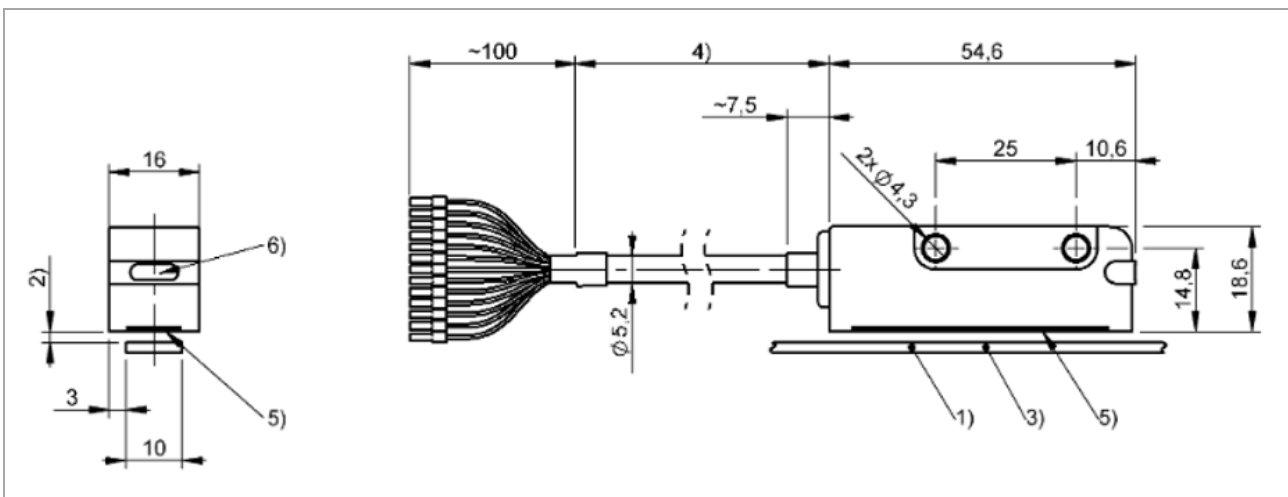
Datasheet

Dimensions



- 1) not included in scope of delivery, 2) distance to magnetic scale, 3) magnetic scale, 4) LED function indicator, 5) active measurement surface

Dimensions Cable version



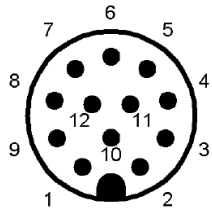
- 1) not included in scope of delivery, 2) distance to magnetic scale, 3) magnetic scale, 4) cable length, 5) active measurement surface, 6) LED function indicator

Datasheet

Electrical connection

Depending on the connection version the electrical connection is made by a fixed cable or a plug connection.

AHP2-IOL - S284/KA_ _ Connector S284/cable connection KA_ _



Pin assignment of S284 plug (M12, 12-pin), view from above on sensor head); connection is performed via a 12-pin cable

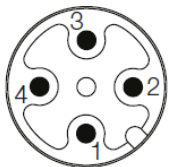
Pin assignment

Connector S284/cable connection KA_ _ *with* analog sin/cos interface (1Vpp)

PIN	Wire colour	Signal	Description
1	WH	+B (+cos)	Cosine analog signal
2	BN	-B (-cos)	Cosine analog signal, inverted
3	GN	Not used ¹⁾	--
4	YE	Not used ¹⁾	--
5	GY	C/Q/OUT2	Data signal IO-Link/Switching Output 2
6	PK	OUT1	Switching Output 1
7	BU	L-	Sensor head ground (0 V)
8	RD	L+	Supply voltage 18...30 VDC
9	BK	-A (-sin)	Sinusoidal analog signal
10	VT	+A (+sin)	Sine analog signal, inverted
11	GY PK	Not used ¹⁾	--
12	RD BU	Not used ¹⁾	--
SCH	TR	Shield	(Connector housing to) shield

¹⁾ Unassigned leads must not be connected.

AHP2-IOL - SA Connector S4



Pin assignment

Connector S4 *no* analog sin/cos interface (1Vpp)

PIN	Wire colour	Signal	Description
1	BN	L+	Supply voltage 18...30 VDC
2	WH	OUT2	Switching Output 2
3	BU	L-	Sensor head ground (0 V)
4	BL	C/Q/OUT1	Communication line/Switching Output 1

Datasheet

Ordering example

Type **AHP2-IOL** - **U1ZZ** - **ZU1L** - **S4**

Interface

U = IO-Link, absolute

Data format

- 1** = Smart sensor profile, COM3
- M** = Smart-Sensor-Profil Ed. 2
- E** = Smart-Sensor-Profil Ed. 2 Enhanced

Additional signal

- Z** = no additional signal
- A** = 1 Vpp

Resolution

U1 = 1 μ m

Operating voltage

L = 18...30 VDC (IO-Link)


Electrical connection

- S4** = M12 connector 4-pin via IO-Link
- S284** = M12 connector 12-pin via IO-Link and analog additional signal
- KA__** = PUR-cable, 12-pin via IO-Link and analog additional signal

Accessories


Magnetic tape M02-AS:

1 m length: #24942

-  Measuring length = Magnetic tape length less 65 mm, up to 8,19 m max.
Magnetic tape can be supplied assembled in any length as specified.

Masking tape DB01:

1 m length: #16501

-  Masking tape can be supplied assembled in any length to customer's specification.

Connector/cable:

- 5 m cable with M12 connector (socket) 12-pin: #31605
- 10 m cable with M12 connector (socket) 12-pin: #31610

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