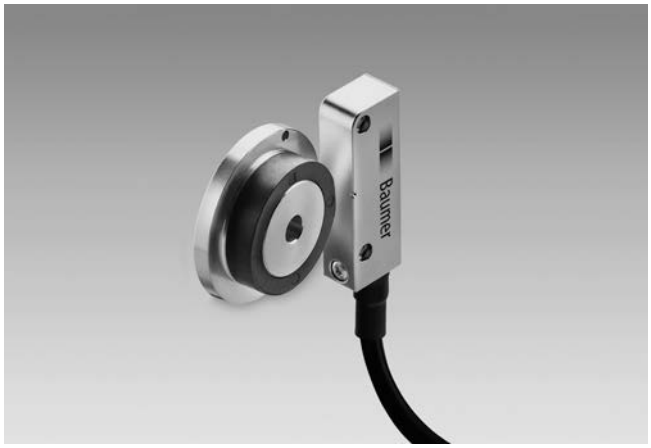
Encoders without bearings - incremental

Sensor head with magnetic wheel

Max. 4096 pulses per revolution

MIR10



MIR10

Features

- **Sensor head with magnetic wheel**
- **Robust magnetic sensing method**
- **Max. 4096 pulses per revolution**
- **Output signals A 90° B with zero pulse**
- **Output circuits: HTL/push-pull and TTL/RS422**
- **Non-contact, wear-free sensing system**
- **High resistant to dirt, vibrations**

Technical data - electrical ratings

Sensing method	Magnetic
Pulses per revolution	320...4096
Interpolation	10-fold, 20-fold, 32-fold, 64-fold
Output stages	HTL/push-pull TTL/RS422
Output signals	A+, B+, R+, A-, B-, R-
Reference signal	Zero pulse, width 90° (zero pulse only with magnet rotor incl. reference magnet)
Output frequency	≤350 kHz
Short-circuit proof	Yes
System accuracy	Typ. ±0.7° (+20 °C)
Initializing time	≤50 ms after power on (see general informations)
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Approvals	CE, UL

Technical data - electrical ratings (HTL)

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption typ.	20 mA (w/o load)

Technical data - electrical ratings (TTL)

Voltage supply	5 VDC ±5 %
Consumption typ.	30 mA (w/o load)
Recommended cable termination	On control side each channel pair 120 Ohm

Technical data - mechanical design

Dimensions (sensor head)	10 x 15 x 45.5 mm
Shaft type	ø6...43.5 mm (through hollow shaft)
Protection DIN EN 60529	IP 66, IP 67
Operating temperature	-40...+85 °C
Operating speed	≤10000 rpm (50 and 64 poles) ≤20000 rpm (up to 36 poles)
Working distance	0.1...0.6 mm (axial/radial)
Resistance	DIN EN 60068-2-6 Vibration 30 g, 10-2000 Hz DIN EN 60068-2-27 Shock 500 g, 6 ms
Material	Housing: zinc diecast, plated
Relative humidity	EN 60068-2-78:2010 EN 60068-2-30:2005 93 % condensation permitted
Connection	Cable 2 m Cable 0.3 m with connector M12
Weight approx.	130 g

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MIR10

Part number

Sensor head

MIR10-S0. [ ][ ][.][ ][**A.A**]

Interpolation
- 010 10 pulses per pole
- 020 20 pulses per pole
- 032 32 pulses per pole
- 064 64 pulses per pole

Voltage supply / output stages
- E 4.75...5.25 VDC / TTL/RS422, 6 channel (with an adequate magnetic rotor with reference magnet)
- N 10...30 VDC / HTL/push-pull, 6 channel (with an adequate magnetic rotor with reference magnet)

Connection
- L Cable 2 m
- C Cable 0.3 m with connector M12, 8-pin, pin terminals, ccw

Magnetic wheel

MIR10-P. [ ][.][ ][ ][**S**]

Bore diameter*
- 006 ø6 mm
- 5Z8 ø5/8" (15.875 mm)
- 025 ø25 mm
- 1Z0 ø1" (25.4 mm)

Reference
- N Without reference magnet
- A With reference magnet

Number of poles
- 032.0.031 32 poles (Bore diameter max. 17.5 mm)
- 036.0.031 36 poles (Bore diameter max. 17.5 mm)
- 050.0.056 50 poles (Bore diameter max. 43.5 mm)
- 064.0.056 64 poles (Bore diameter max. 43.5 mm)

* Other bore diameter om request.

Selection of sensor head / magnetic wheel

The pulses are a result of the interpolation factor of the sensor head and the number of poles on the magnetic wheel. The table below shows as an example which sensor head and which magnetic wheel have to be combined in order to achieve a certain number of pulses. Other pulses are available on request.

Sensor head MIR10-S	**Magnetic wheel MIR10-P**				
Interpolation factor	**32 poles**	**36 poles**	**50 poles**	**64 poles**	
10	320	**360**	**500**	640	
20	640	**720**	**1000**	1280	
32	**1024**	1152	1600	**2048**	
64	**2048**	2304	3200	**4096**	

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Max. 4096 pulses per revolution

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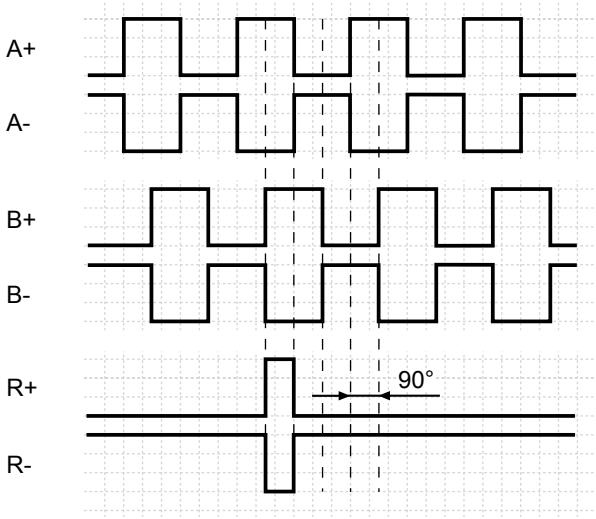
Accessories

Connectors and cables

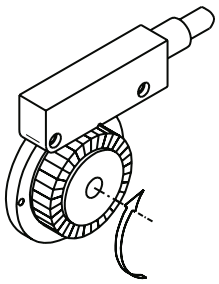
10146775	Female connector M12, 8-pin, straight

Output signals

With clockwise rotation shown below.



Rotational or linear direction



Trigger level

Outputs	**HTL/push-pull**
Output level High	>+Vs -2 V
Output level Low	<0.5 V
Load	≤20 mA

Outputs	**TTL/RS422**
Output level High	>2.4 V
Output level Low	<0.5 V
Load	≤20 mA

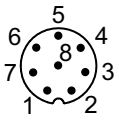
General informations

The initializing time of the sensor is 50 ms. Output signals may not be processed during this time.

Terminal assignment

Cable or cable 0.3 m with connector M12

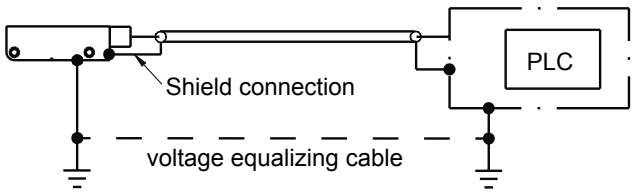
Connector	Core colour	Signals
Pin 1	white	0 V
Pin 2	brown	+Vs
Pin 3	green	A+
Pin 4	yellow	A-
Pin 5	grey	B+
Pin 6	pink	B-
Pin 7	blue	R+ (zero pulse)
Pin 8	red	R- (zero pulse inv.)



Cable screen: connected to sensor housing or connector M12 and sensor housing.

Cable data: PUR 4 x 2 x 0.14 mm², shielded
Bending radius: >50 mm (fix) / >100 mm (cable chain)
Outer diameter: 6.3 mm

Recommended grounding concept



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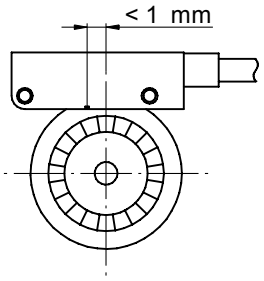
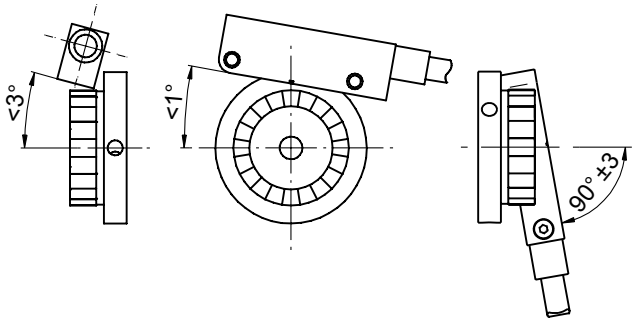
MIR10

Axial misalignment

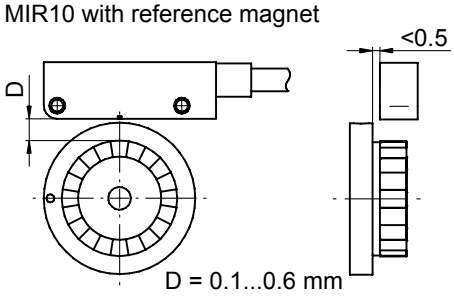


Angular misalignment

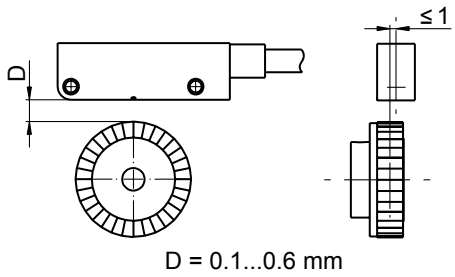


Working distance

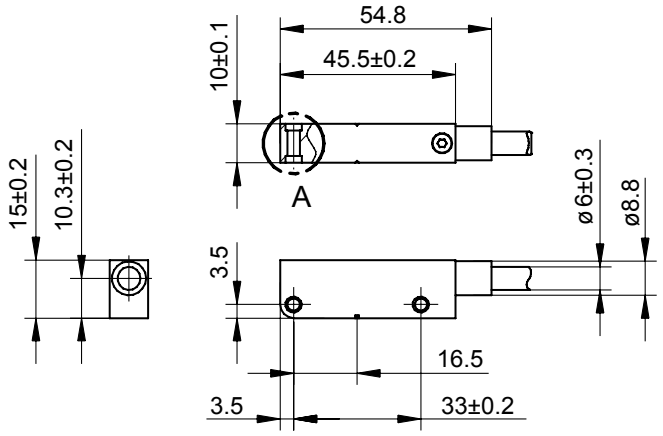
MIR10 with reference magnet



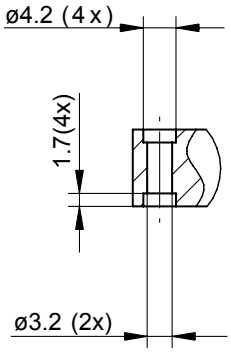
MIR10 without reference magnet



Dimensions



Detail A



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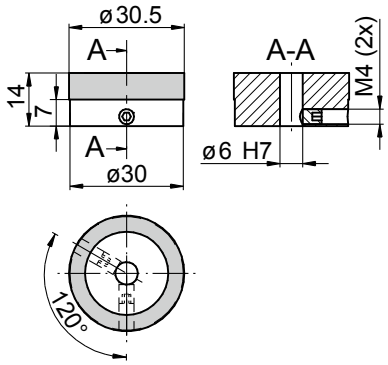
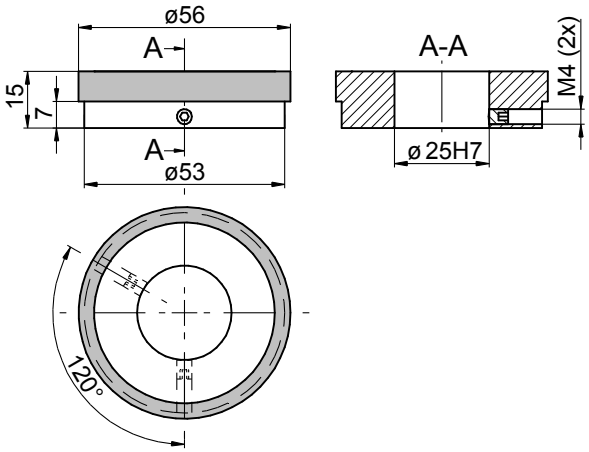
MIR10

Magnetic wheel without reference magnet

MIR10-P with 32, 36 poles

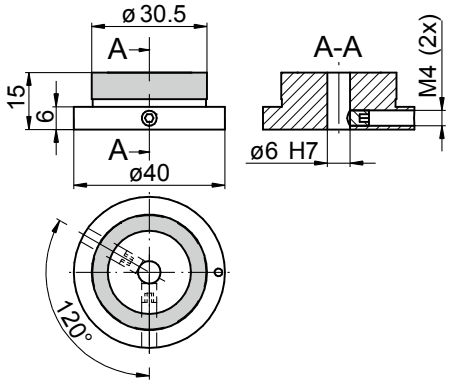


MIR10-P with 50, 64 poles

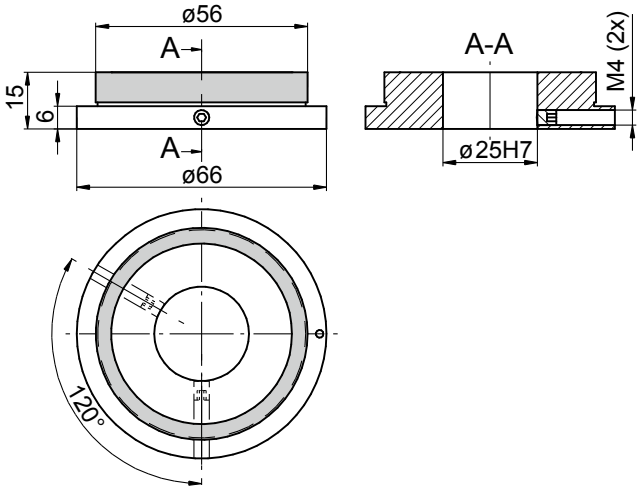


Magnetic wheel with reference magnet

MIR10-P with 32, 36 poles



MIR10-P with 50, 64 poles



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