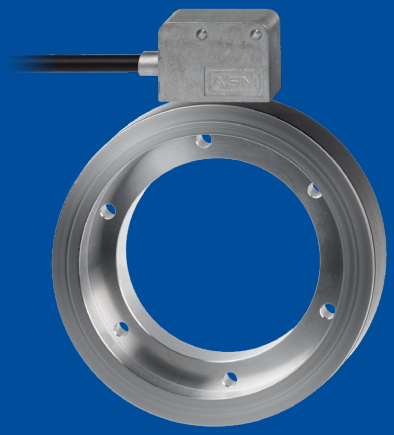
posimag® rot
Magnetic Incremental Encoders

PMIS4, PMIR5

Incremental encoder for rotative applications consisting of sensor head PMIS4 and magnetic ring PMIR5



- **Protection class IP67**
- **Measurement range from 0 to 360°**
- **Shielded metal housing**
- **Contactless and wear-free**
- **Up to 327,680 pulses / 360°**

Product version

Incremental encoder output



PMIS4 - Sensor head
Magnetic Incremental Encoder

Specifications

			Order options
Magnetic period of the sensor	5 mm	1	**50**
Scaling factor	See table of scaling factors	2	**see table p. 7**
Maximum pulse frequency f_P	50 kHz 20 kHz 10 kHz (other frequencies on request, standard 50 kHz, max. 480 kHz)	3	**50KHZ** **20KHZ** **10KHZ**
Output	Incremental encoder output A/B with differential push-pull output, HTL, TTL/RS-422 or TTL/24 V compatible	4	**HTL** **TTL** **TTL24V**
Signal Z / status signal	A/B without signal Z A/B with signal Z A/B with signal Z and status signal, only for non-differential (single-ended) outputs	5	**Z0** **Z1** **Z3**
Excitation voltage	10 ... 30 VDC oder 5 VDC ±5%		
Excitation current	300 mA max.		
Guided spacing between sensor and ring x_Z	0.1 ... 2 mm		
Side tracking tolerance of the sensor	±1 mm		
Linearity (sensor with magnetic ring)	0.1°		
Repeatability	±1 digit		
Output signals	A, $\overline{A}$, B, $\overline{B}$ / signal Z, $\overline{Z}$ / status signal $\overline{ERR}$		
Housing material	Zinc die casting		
Cable length	Standard 2 m Max. length of the integrated sensor cable: output TTL: 3 m; HTL/TTL24V: 20 m	6	**2M**
Connection	Cable 8 wire, dia. 5 mm, open cable end 15 pin D-Sub connector at the cable end as option	7	**S** **P15**
Weight	30 g ±5 g (without cable and connector)		
Protection class (EN 60529)	IP67		
Shock	DIN EN 60068-2-27:1993, 50 g 6 ms, 100 shocks		
Vibration	DIN EN 60068-2-6:1995, 20 g, 10-2000 Hz, 10 cycles		
Operating temperature	-40 ...+85°C		
EMC	DIN EN 61326-1:2013		

Order code

PMIS4	–	1	–	2	–	3	–	4	–	5	–	6	–	7

Order example Sensor head:	PMIS4	–	50	–	100	–	50KHZ	–	HTL	–	Z0	–	2M	–	S

Output signals

NOTICE

The subsequent counting device must be able to process the specified maximum pulse frequency.

Saturation voltage	UH, UL = 0,2 V UH, UL = 0,4 V C_{last} < 10 nF	I_{out} = ±10 mA I_{out} = ±30 mA	(UH = UB - U_{out})
Short circuit current	ISL, ISH < 800 mA ISL, ISH < 90 mA	(UH, UL = 0 V) (UH, UL = 1,5 V)	
Rise time	tr, tf < 200 ns	with cable length 1 m, 10 % … 90 %	

Pulse frequency depending on the cable length

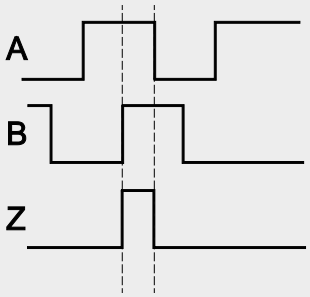
Load / cable length	**Load / pulse frequency f_p**		
	HTL single ended UB = 24 V	**TTL/RS422 differential** UB = 5 V *	**TTL/24 V** UB = 24 V
Max. output current	50 mA	50 mA	10 mA
R_{last} min.	500 Ω	100 Ω	500 Ω
C_{last} max.	10 nF	10 nF	1 nF
200 m	15 kHz	—	—
100 m	25 kHz	100 kHz	—
50 m	50 kHz	200 kHz	50 kHz
10 m	100 kHz	300 kHz	100 kHz

* = consider the voltage drop within the cable; the excitation voltage 5 V ± 5% of the sensor must be guaranteed.

Note: For longer distances (see specification above) you must use min. 0.5 mm^2 wire for „Excitation +“ and „Excitation GND“ (see signal wiring), all signal wires must be min. 0.14 mm^2!

Output signals

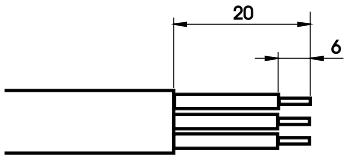
Option Z1
(Signal Z)



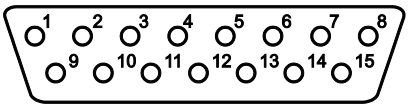
Signal wiring/ connection

	Signal name			Cable with open end, cable color	Connector D-Sub, 15 pin
Option	**Z0**	**Z1**	**Z3***		
	Excitation +			white	1
	Excitation GND (0V)			brown	2
	B	B	B	green	6
	A	A	A	yellow	4
	$\overline{B}$	$\overline{B}$	$\overline{ERR}$	grey	7
	$\overline{A}$	$\overline{A}$	–	pink	5
	–	Z	Z	blue	8
	–	$\overline{Z}$	–	red	9
	Shield			black	12

Z = Reference pulse
$\overline{ERR}$ = Status signal, periodical approx. 16 Hz, for side tracking and velocity errors
* = Status signal ERR available only with HTL (single ended) output



Cable output dimensions, open end



Connector D-Sub (Pin)
View to connector pins



PMIR5 - Magnetic rings

Magnetic Incremental Encoder

Specifications PMIR5

Material	Plastic bonded magnetic scale
Base material	Aluminium, stainless steel
Signal periods per revolution	64 / 96 / 160 poles per revolution
Magnetic period	5 mm
Temperature range	-40 ...+120°C
Linearity with sensor PMIS4	Approx. ± 0.1°

Standard magnetic rings

Type	Poles	Ø	Width	Signal periods/revolution	Inner diameter Ø
PMIR5-50-64-O-83 **PMIR5-50-64-M-83**	64	102.3	14	Divisions see table p. 7	Ø83 H7
PMIR5-50-96-O-133 **PMIR5-50-96-M-133**	96	153.2	14	Divisions see table p. 7	Ø133 H7
PMIR5-50-160-O-233 **PMIR5-50-160-M-233**	160	255.1	14	Divisions see table p. 7	Ø233 H7

Scaling factor

Scaling factor sensor PMIS4-50- ...	PMIR5-50-64-O-83 PMIR5-50-64-M-83		PMIR5-50-96-O-133 PMIR5-50-96-M-133		PMIR5-50-160-O-233 PMIR5-50-160-M-233	
	Signal periods	r.p.m. 1/min* (at 480 kHz)	Signal periods	r.p.m. 1/min* (at 480 kHz)	Signal periods	r.p.m. 1/min* (at 480 kHz)
1	64	3000	96	3000	160	3000
2	128	3000	192	3000	320	3000
4	256	3000	384	3000	640	3000
8	512	3000	768	3000	1280	3000
10	640	3000	960	3000	1600	1800
16	1024	3000	1536	3000	2560	3000
20	1280	3000	1920	3000	3200	1800
25	1600	3000	2400	3000	4000	2880
32	2048	3000	3072	3000	5120	3000
40	2560	3000	3840	3000	6400	1800
50	3200	3000	4800	3000	8000	2880
64	4096	3000	6144	3000	10 240	2250
80	5120	3000	7680	3000	12 800	1800
100	6400	3000	9600	2400	16 000	1440
125	8000	2880	12 000	1920	20 000	1152
128	8192	2813	12 288	1875	20 480	1125
200	12 800	1800	19 200	1200	32 000	720
250	16 000	1440	24 000	960	40 000	576
256	16 384	1406	24 576	938	40 960	563
400	25 600	900	38 400	600	64 000	360
500	32 000	720	48 000	480	80 000	288
512	32 768	703	49 152	469	81 920	281
1024	65 536	352	98 304	234	163 840	141
2048	131 072	176	196 608	117	327 680	70

* Maximum revolution per minute mechanically 3,000 r.p.m.

Magnetic ring PMIR5 without Z signal mark

			Order options
Magnetic period	5 mm	1	**50**
Number of poles and mounting diameter	64-O-83 96-O-133 160-O-233	2	**64-O-83** **96-O-133** **160-O-233**
Option	Masking tape (recommended for harsh environments to protect the magnetic layer)	3	**AB**

Order code

PMIR5 – 1 – 2 – 3

Order example magnetic ring PMIR5

PMIR5 – 50 – 64-O-83 – AB

Magnetic ring PMIR5 with Z signal mark

			Order options
Magnetic period	5 mm	1	**50**
Number of poles and mounting diameter	64-M-83 96-M-133 160-M-233	2	**64-M-83** **96-M-133** **60-M-233**
Option	Masking tape (recommended for harsh environments to protect the magnetic layer)	3	**AB**

Order code

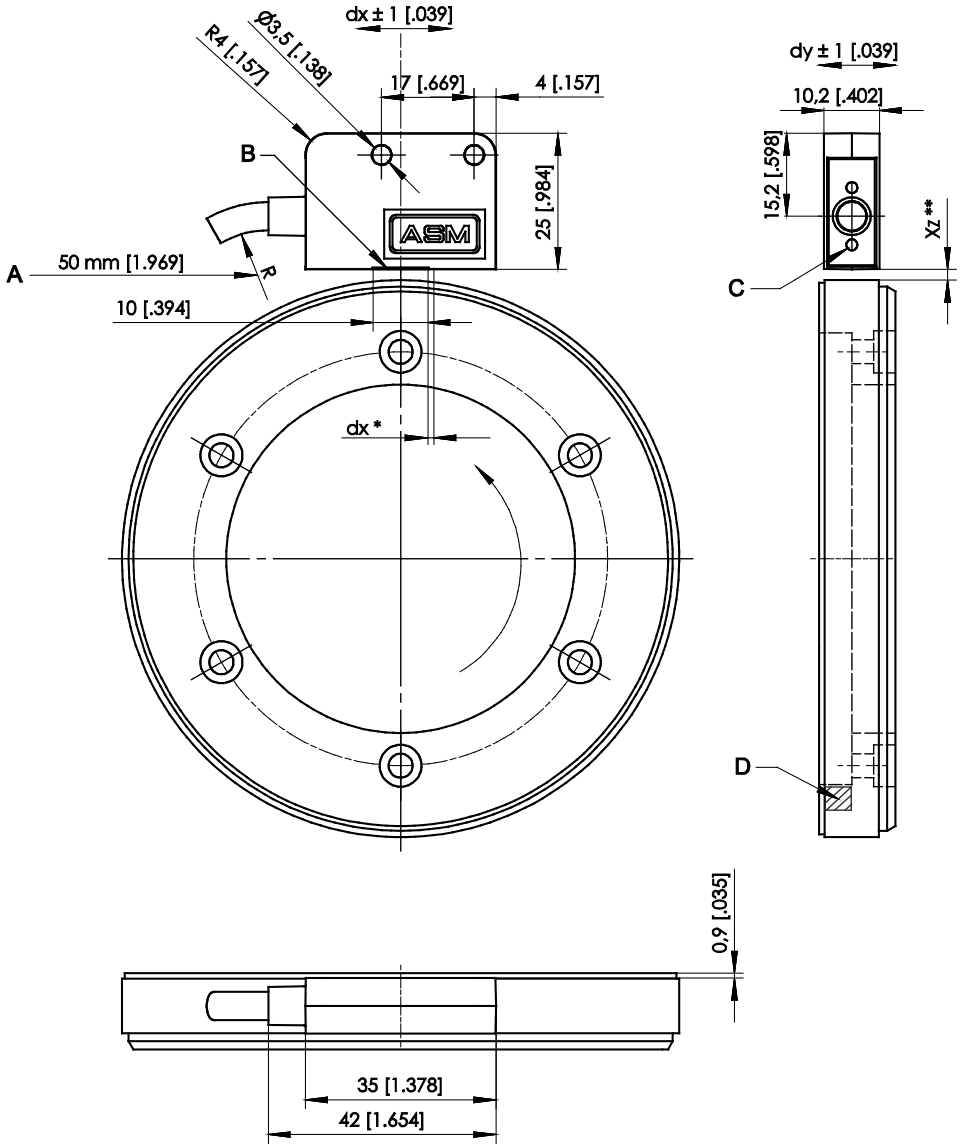
PMIR5 – 1 – 2 – 3

Order example magnetic ring PMIR5

PMIR5 – 50 – 64-M-83 – AB

Dimensions

PMIS4 and PMIR5



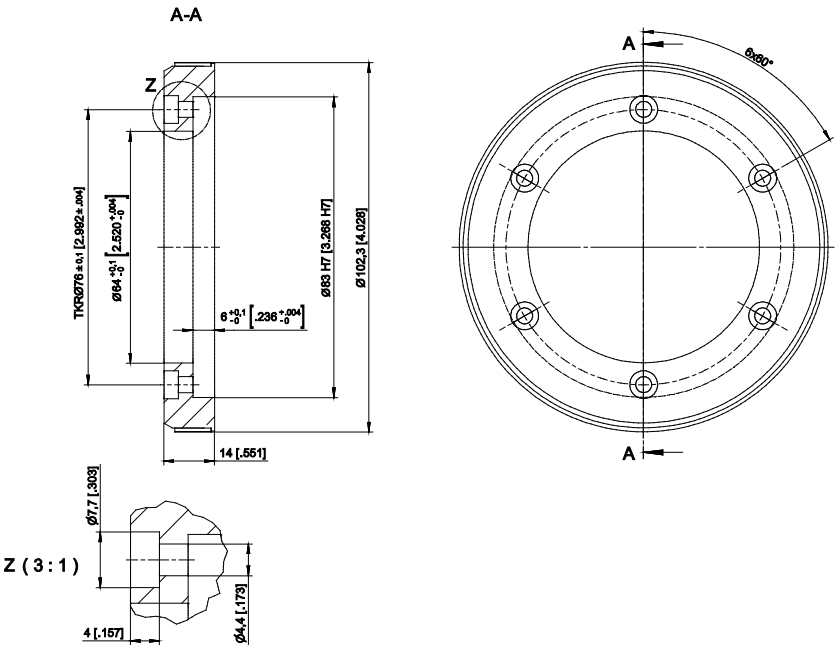
A – Minimum bending radius
B – Active measurement area
C – Status signal (LED)
D – Index mark

* = position tolerance of the active measurement area: dx = ±1 mm
** = see “Specifications”

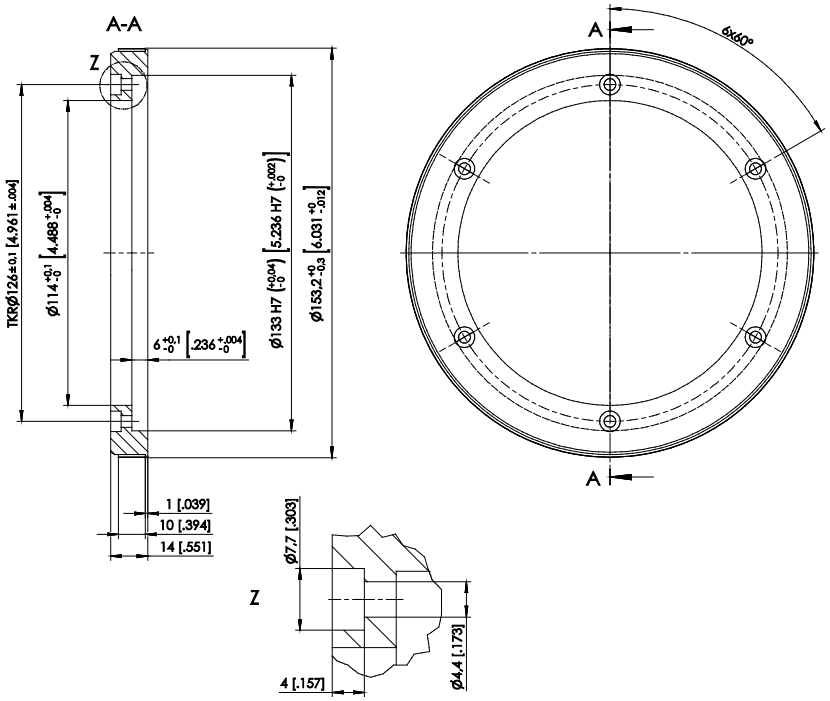
Dimensions in mm [inch]
Dimensions informative only.
For guaranteed dimensions please consult factory.

Magnetic rings

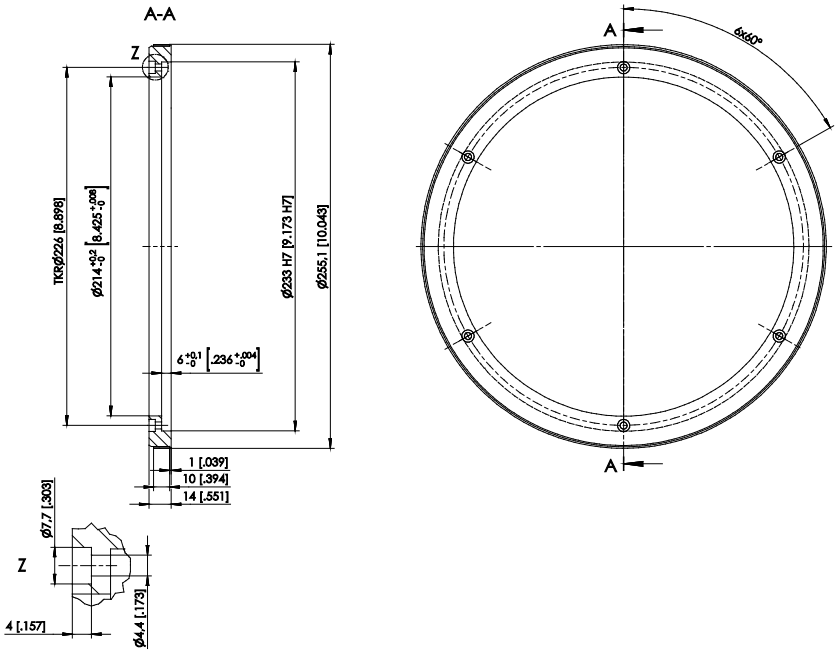
PMIR5-50-64-O-83
PMIR5-50-64-M-83



PMIR5-50-96-O-133
PMIR5-50-96-M-133



PMIR5-50-160-O-233
PMIR5-50-160-M-233



Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.