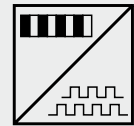


POSIROT®
PMIS4, PMIR5
Magnetic incremental encoder



Magnetic wheels for rotative applications with POSIROT® position sensor PMIS4

- All metal housing
- Protection class IP67
- Highest EMC protection
- Large guiding distance of ±1 mm
- Suitable for harsh environments
- Up to 327,680 pulses/360°



Order Code PMIR5
(magnetic ring)

PMIR5 - [] - [] - [] - [] - []

Model name

Magnetic period
50 = 5 mm

Number of poles
64 / 96 / 160 (other pole numbers on request)

Z signal mark
O = without / M = with

Inner diameter (mounting)
83/133/233 (depending on the number of poles, see page 62/63)

Option
AB = Masking tape

Order Code PMIS4
(sensor head)

PMIS4 - [] - [] - [] KHZ - [] - [] - [] M - []

Model name

Magnetic period
50 = 5 mm

Scaling factor
See table page 61

Maximum pulse frequency (in kHz, standard 50 kHz)
50 / 20 / 10 (other frequencies on request, max. 480 kHz)

Output
HTL = HTL output with excitation 24 V DC, output 24 V
TTL = TTL output with excitation 5 V DC, output TTL/RS422
TTL24V = TTL output with excitation 24 V DC, output TTL/10 mA

Signal Z / status signal
Z0 = A/B w/o signal Z
Z1 = A/B with signal Z
Z3 = A/B with signal Z and status signal, only for non-differential (single-ended) outputs

Cable length (in m, standard 2 m)

Connection
S = Open cable end
P15 = D-Sub connector at the cable end, 15 poles

Order example position magnet ring: PMIR5 - 50 - 64 - M - 83 - AB

Order example sensor: PMIS4 - 50 - 100 - 50KHZ - HTL - Z0 - 2M - S

POSIROT® PMIS4 Magnetic incremental encoder



Specifications	Output	Incremental encoder output A/B with differential push-pull output, TTL/24 V-, TTL/RS-422- or HTL-compatible	
	Excitation voltage	10 ... 30 V DC or 5 V DC ± 5 %	
	Excitation current	50 mA to 300 mA, depending on pulse frequency, cable length and load	
	Magnetic period of the sensor	2 mm	5 mm
	Guided spacing between sensor and wheel x_z	0.1 ... 0.8 mm	0.1 ... 2 mm
	Side tracking tolerance of the sensor	±1 mm	±1 mm
	Linearity (sensor with magnetic wheel PMIR4)	±0.1°	±0.1°
	Repeatability	±1 digit	±1 digit
	Maximum pulse frequency f_p	50, 20, 10 kHz (standard 50 kHz, max. 480 kHz)	
	Output signals	A, \bar{A} , B, \bar{B} signal Z, \bar{Z} (optional) status signal ERR (optional)	
	Material of housing	Zinc die casting	
	Connection	Cable 8 wire, dia. 5 mm, open cable end. 15 pin D-Sub conn. at the cable end as option. Max. length of the integrated sensor cable: output TTL: 3 m; HTL/TTL24V: 20 m	
	Weight (w/o cable and connector)	30 ± 5 g	
	Protection class (EN 60529)	IP67	
	Environmental		
	Shock	EN60068-2-27:1993, 50 g 6 ms, 100 shocks	
	Vibration	EN60068-2-6:1995, 20 g, 10-2000 Hz, 10 cycles	
EMC	EN61326-1:2006		
Temperature	-40 ... +85 °C (-40 ... +185 °F)		



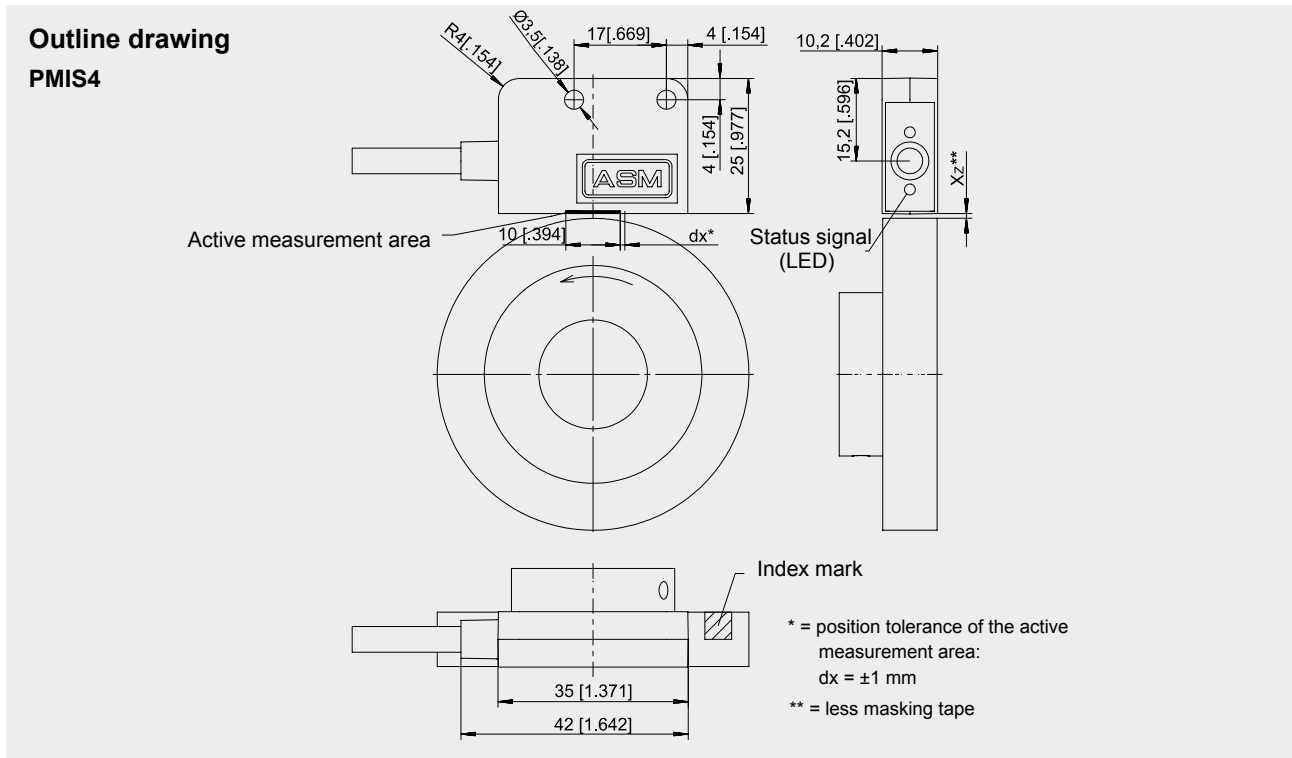
The subsequent counting device must be able to process the specified maximum pulse frequency of the sensor.

Output signals	Saturation voltage	UH, UL = 0.2 V UH, UL = 0.4 V $C_{last} < 10$ nF	$I_{out} = \pm 10$ mA $I_{out} = \pm 30$ 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	$t_r, t_f < 200$ ns	with cable length 1 m, 10 % ... 90 %	

Pulse frequency in dependence 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	

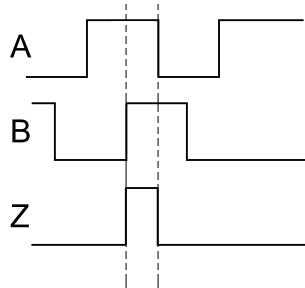
* = consider the voltage loss of the cable; the excitation voltage 5 V ± 5% of the sensor must be guaranteed.

Note: For longer distances (see specification above) you must use min. 0.5 mm² wire for „Excitation+“ and „Excitation GND“ (see signal wiring next page), all signal wires must be min. 0.14 mm²!



Output signals

Option Z1 (signal Z)



Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions please consult factory.

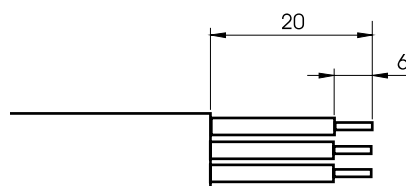
Signal wiring	Signal name			Cable with open end, cable color	Connector D-Sub, pin no. 15 poles
	Option	Z0	Z1		
				white	1
				brown	2
		B	B	green	6
		A	A	yellow	4
		\bar{B}	\bar{B}	grey	7
		\bar{A}	\bar{A}	pink	5
		-	Z	blue	8
		-	\bar{Z}	red	9
				black	12

Z = reference pulse

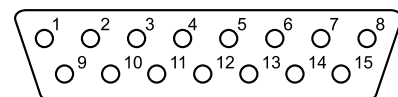
ERR = status signal, periodical approx. 16 Hz, for side tracking and velocity errors

* = status signal ERR available only with HTL (single ended) output

Connection



Cable output dimensions



Connector D-Sub (Pin)
 View to connector pins

POSIROT® PMIR5 Incremental magnetic wheels



Specifications	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 (-40 ... -248 °F)
	Linearity with sensor PMIS4	Approx. ± 0.1°

Standard magnet rings

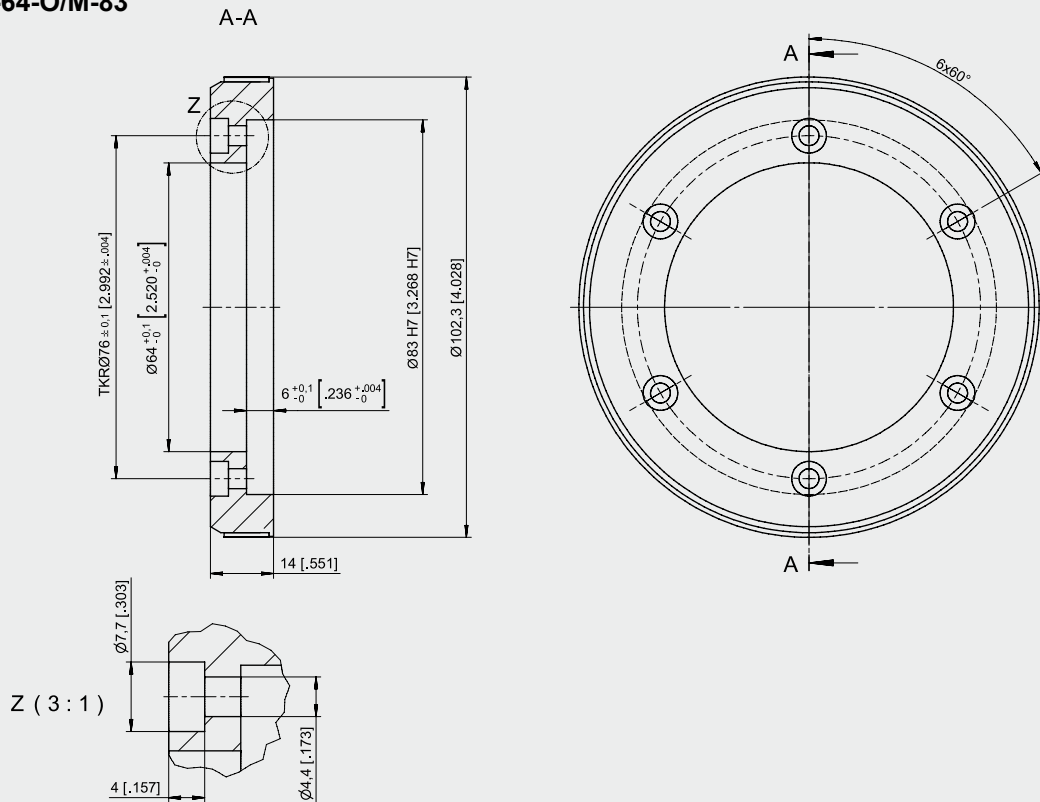
Type	Poles	∅	Width	Signal periods/revolution	Inner diameter ∅
PMIR5-50-64-O/M-83	64	102.3	14	Divisions see table below	∅83 H7
PMIR5-50-96-O/M-133	96	153.2	14	Divisions see table below	∅133 H7
PMIR5-50-160-O/M-233	160	255.1	14	Divisions see table below	∅233 H7

Position magnet rings with other number of poles, diameters or magnetic periods on request.

Scaling factor sensor PMIS4-50- ...	PMIR5-50-64-O/M-83		PMIR5-50-96-O/M-133		PMIR5-50-160-O/M-233	
	Signal periods	R.p.m. * (at 480 kHz)	Signal periods	R.p.m. * (at 480 kHz)	Signal periods	R.p.m. * (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

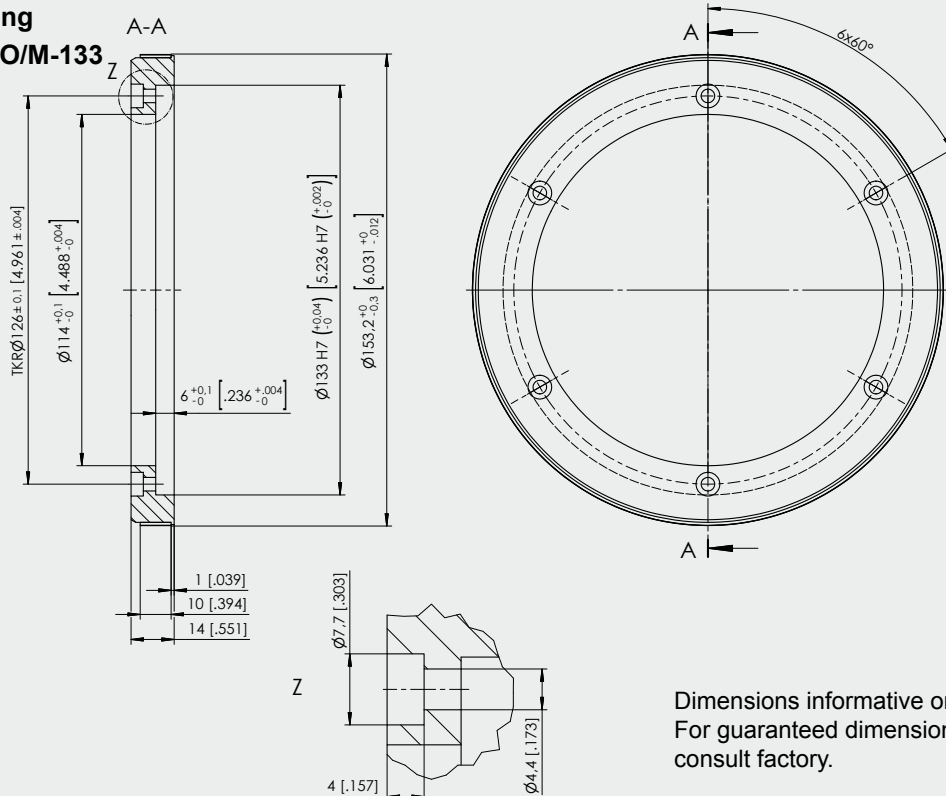
* Maximum r.p.m. mechanically 3.000 U/min

Outline drawing
PMIR5-50-64-O/M-83



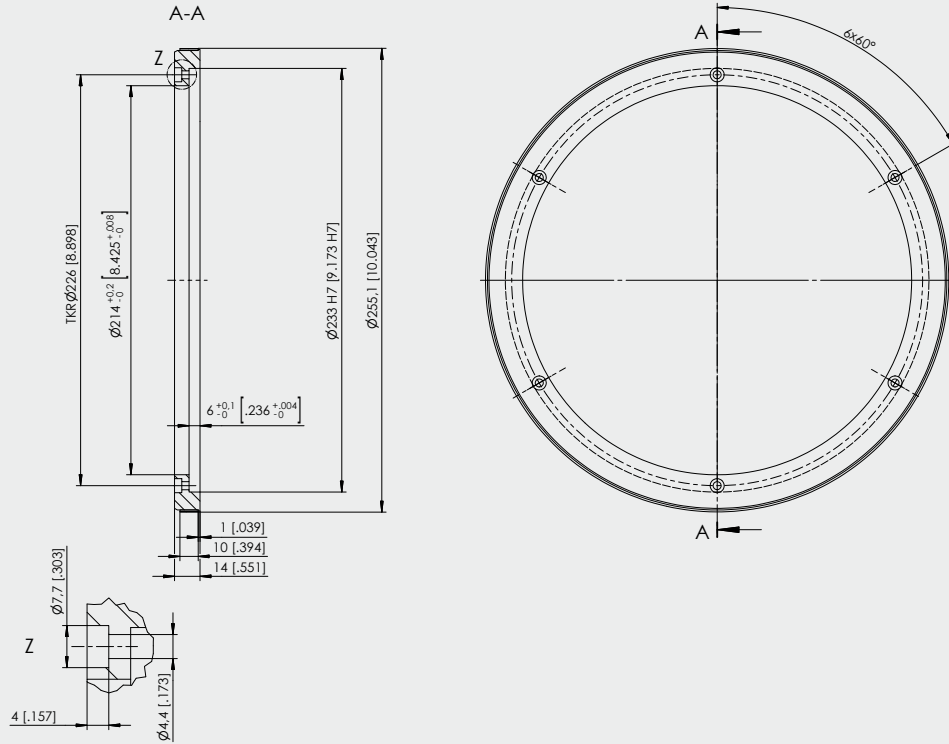
Dimensions in mm [inch]

Outline drawing
PMIR5-50-96-O/M-133



Dimensions informative only.
 For guaranteed dimensions please
 consult factory.

Outline drawing
PMIR5-50-160-O/M-233



Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions please consult factory.