



- Bearingless encoder
- Non contact magnetic sensing
- Sensor/ring clearance up to 1.5 mm
- IP67 washdown protection (IP69K on request)



SMRI5 • MRI

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F)
Protection:	IP67

MECHANICAL SPECIFICATIONS

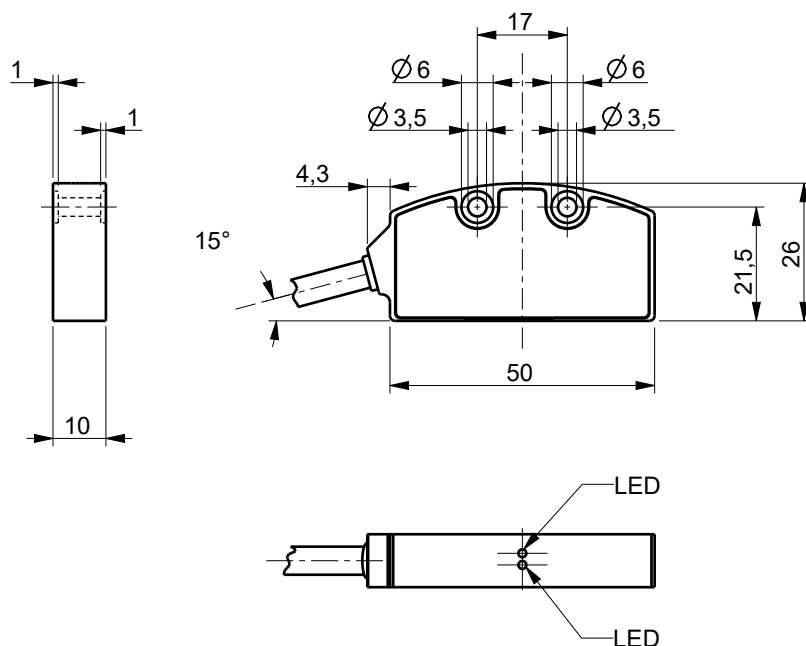
Dimensions:	see drawing
Hollow shaft diameter:	see drawing (from Ø 6 to 250 mm)
Shaft rotational speed:	MRI/31, MRI/48: 25000 rpm max. (mechanical) MRI/57: 22000 rpm max. (mechanical) MRI/114, MRI/141: 15000 rpm max. (mechanical) MRI/284: 9000 rpm max. (mechanical)
Gap sensor-ring:	0,1 ÷ 1,5 mm (typical)
Electrical connections:	M12 8 pin inline plug or Lika Hi-flex cable 1,0 m (3.3 ft)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	see specifications
Accuracy:	± 0,05° (± 0,1° typical)
Output circuits:	Line Driver, Push-Pull
Power supply:	+5Vdc ±5%, +10Vdc ÷ +30Vdc
Consumption:	70 mA max.
Output signals:	AB /AB, ABO /ABO
Output current (per channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, EN 61000-4-2 EN 61000-4-4

MATERIALS

Housing:	anticorodal, UNI EN AW-6082
Hub:	anticorodal, UNI EN AW-6082 or stainless steel
Ring:	ferrite or plastoferrite



SMRI5

Order code

SMRI5	-	XX	-	X	-	XXX	-	XX	-	X	-	X	X	/Sxxx
		(a)		(b)		(c)		(d)		(e)		(f)	(g)	(h)

(a) OUTPUT CIRCUITS / POWER SUPPLY

Y2 = Push Pull (AB), +10Vdc +30Vdc
 YC2 = Push Pull (AB, /AB), +10Vdc± +30Vdc
 L1 = Line Driver (AB, /AB), +5Vdc ±5%
 L2 = Line Driver (AB, /AB), +10Vdc± +30Vdc

(b) RESOLUTION

see Resolution vs rpm combinations
 (other resolutions on request)

(c) INDEX

N = without
 R = with reference signal

(d) OUTPUT & CABLE LENGTH

L010 = cable output 1 m
 Lxx0 = cable out. x m (max. length 10m)
 M005 = 0,5 m cable + M12 8 pin inline plug
 M020 = 2 m cable + M12 8 pin inline plug

(e) RING TYPE (*)

A = MRI/31
 B = MRI/48
 C = MRI/57
 G = MRI/99
 K = MRI/114
 L = MRI/119
 M = MRI/141
 P = MRI/200
 Q = MRI/284
 R = MRI/301

(*) Magnetic rings have to be ordered separately.

(f) MIN. EDGE DISTANCE

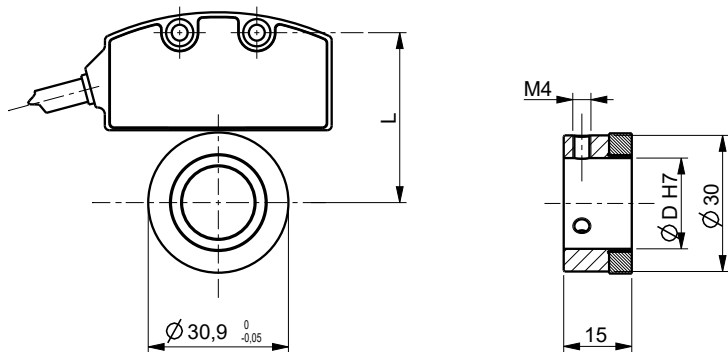
J = 0,5 µs (2 MHz)

(g) CUSTOM VERSION

(*) SMRI5 sensors are specifically optimized for each ring type. Wrong ring type may not allow proper function.

Magnetic rings have to be ordered separately.

Document release	Date	Description
1.2	19.12.2024	Drawing update (MRI114, MRI141, MRI284)
1.1	2.07.2024	Order code MRI31
1.0	September 2023	New order code

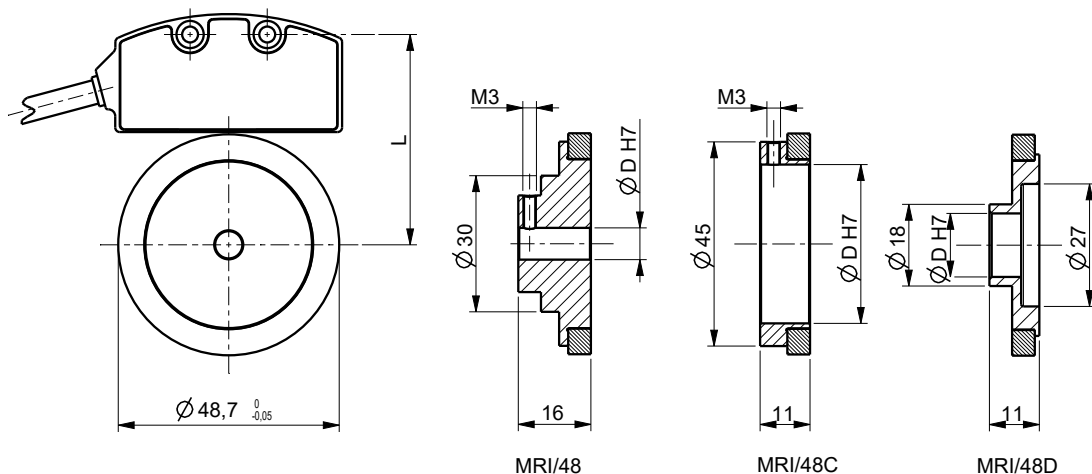


Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
100	500	21000 rpm
200	1000	21000 rpm
400	2000	11000 rpm
1K	5000	4000 rpm

Order code magnetic ring	D H7
MRI/31C-014-A-F-20/5N-R	Ø 14 mm
MRI/31C-016-A-F-20/5N-R	Ø 16 mm
MRI/31C-019-A-F-20/5N-R	Ø 19 mm
MRI/31C-020-A-F-20/5N-R	Ø 20 mm

All rings are without reference track



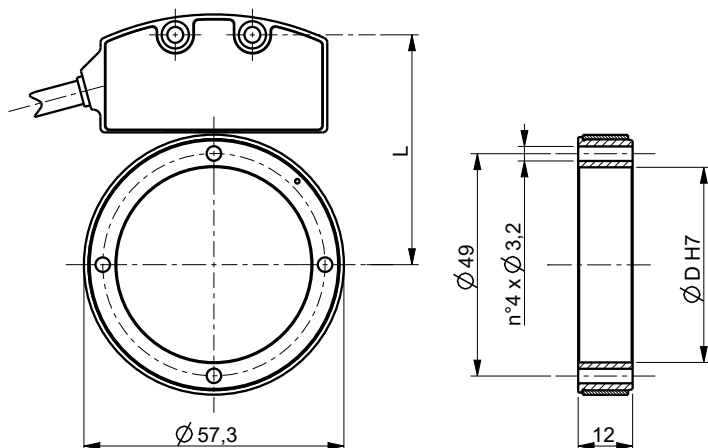
Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
32	256	82000 rpm (a)
64	512	41000 rpm (a)
128	1024	20000 rpm
256	2048	10000 rpm
512	4096	5000 rpm

Order code magnetic ring	D H7
MRI/048-006-A-F-32/5N-R	Ø 6 mm
MRI/48C-035-A-F-32/5N-R	Ø 35 mm
MRI/48D-014-A-F-32/5N-R	Ø 14 mm

All rings are without reference track

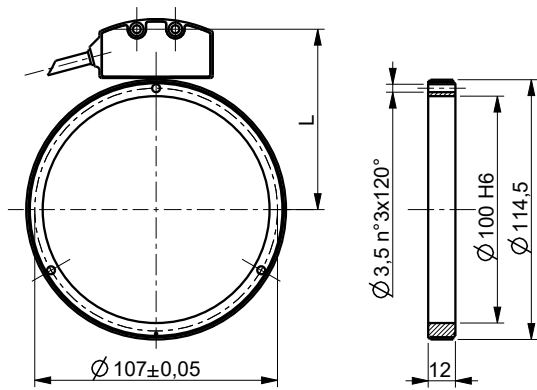
(a) limited by mechanical speed



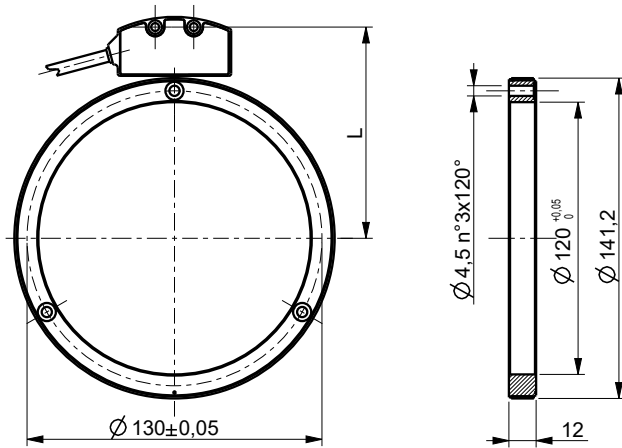
Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
80	760	7000 rpm
100	950	11000 rpm
128	1216	17000 rpm
800	7600	3000 rpm

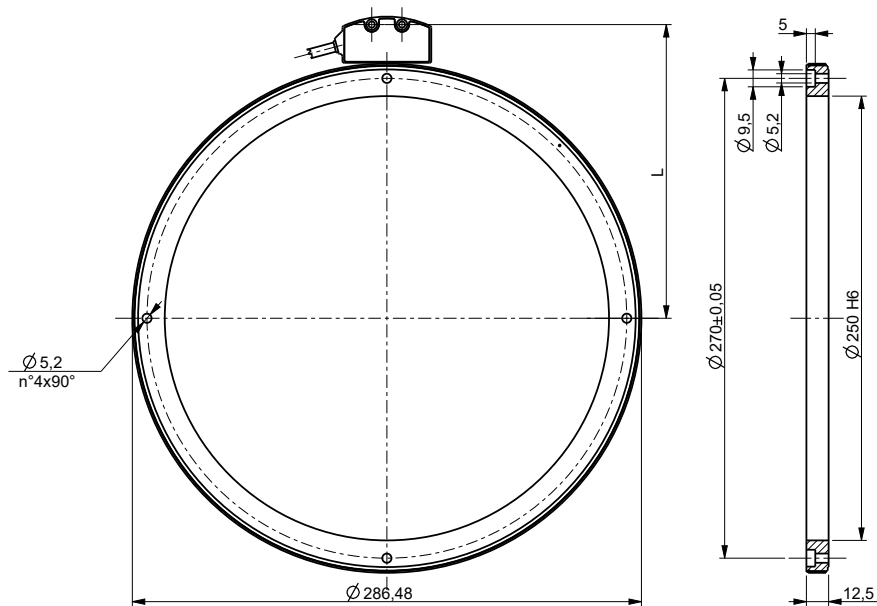
Order code magnetic ring	D H7
MRI/057-043-S-E-38/5N-R (without reference)	Ø 43 mm
MRI/57Z-043-S-E-38/5Z-R (with reference)	Ø 43 mm



MRI/114



MRI/141
MRI/141Z



MRI/284

Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
100	1800	6000 rpm
200	3600	6000 rpm
400	7200	3000 rpm
500	9000	2500 rpm
1K	18000	1200 rpm

Order code magnetic ring	D H6
MRI/114-100-S-E-72/5N-R (without reference)	$\varnothing 100$ mm
MRI/114-100-S-E-72/5Z-R (with reference)	$\varnothing 100$ mm

Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
40	900	3000 rpm
80	1800	3000 rpm
160	3600	3000 rpm
200	4500	5000 rpm
320	7200	3000 rpm
400	9000	2500 rpm

Order code magnetic ring	D
MRI/141-120-S-E-90/5N-R (without reference)	$\varnothing 120$ mm
MRI/141-120-S-E-90/5Z-R (with reference)	$\varnothing 120$ mm

Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
8	360	58000 rpm (a)
32	1440	14000 rpm (a)
40	1800	1500 rpm
80	3600	1500 rpm
100	4500	2500 rpm
200	9000	2500 rpm

(a) limited by mechanical speed

Order code magnetic ring	D H6
MRI/284-250-S-E-180/5N-R (without reference)	$\varnothing 250$ mm
MRI/284-250-S-E-180/5Z-R (with reference)	$\varnothing 250$ mm