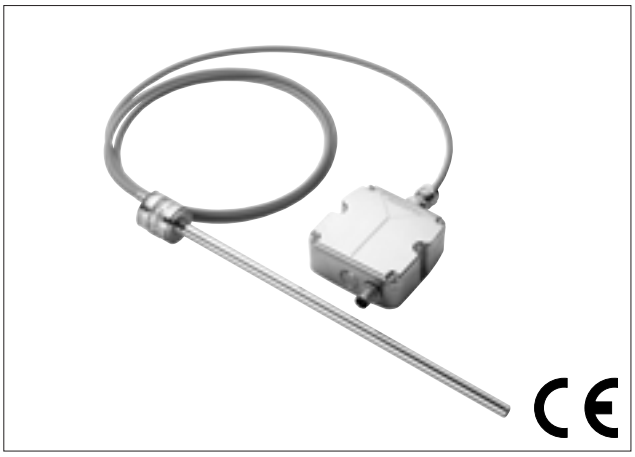
GEFRAN

RK-A

CONTACTLESS MAGNETOSTRICTIVE LINEAR POSITION TRANSDUCER WITH REMOTE ELECTRONICS (ANALOG OUTPUT)



Main characteristics

- *Absolute transducer with remote electronics structure*
- *Sensor available in three different mechanical versions*
- *Strokes from 50 to 4000mm*
- *Analog output in voltage or current for measuring shift and speed*
- *Cursor position: single or double (minimal distance 75mm).*
- *Operating temperature: -30...+90°C*
- *Resistance to vibration (DIN IEC68T2/6 20g)*
- *IP67 protection*
- *EMI CE compatibility (EN 50081-2 50082-1)*
- *Power supply range 10...30 Vdc*
- *Optional adjustment of zero and full-scale over 100% of stroke by means of "magnetic pen"*
- *Connection to remote electronics with connector or terminal board (PUR 5 mm diameter wire)*
- *Max. distance between remote electronics and sensor: 50 m*

Contactless linear position transducer with magnetostrictive technology with analog output.
The separate, remote electronics (up to a maximum of 50 metres) reduces sensor size to a minimum and facilitates installation in the cylinder.
The sensing element is available in three versions for adaptation to different mechanical installation requirements.
The overall dimensions of the sensor are among the smallest available on the market.
Excellent linearity, repeatability, resistance to mechanical vibrations and shocks complete the product's specifications overview

TECHNICAL DATA

Model	from 50 to 4000 mm
Measurement taken	Displacement / Speed
Position read sampling time (typical)	1 ms
Speed range	0.1 ... 10 m/s
Accuracy speed	< 2% (in all F.S.)
Speed calculation time	Sampling time + 500µsec
Shock test DIN IEC68T2-27	100g, 11ms single shock
Vibrations DIN IEC68T2-6	20g, 10...2000Hz
Displacement speed	≤10 m/s
Max. acceleration	≤ 100 m/s² displacement
Resolution	16 bit
Working pressure	
RK-1 and RK-3	350 bar (peak max 500 bar)
RK-2	700 bar (peak max 1000 bar)

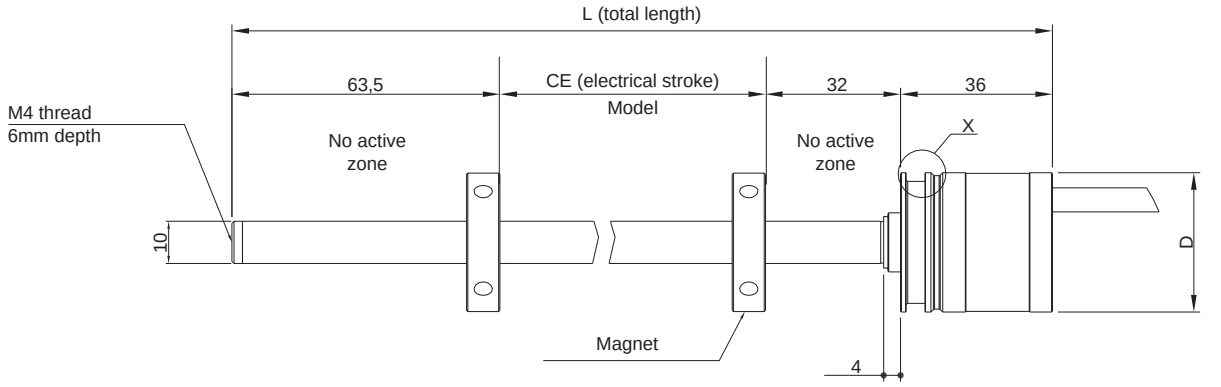
ELECTRICAL DATA

Output signal	0...10V (**N,P,Y**) 0...5V (**K**)	4...20mA (**E,F,H**) 0...20mA (**B,C,D**)
Nominal power supply	10...30Vdc	10...30Vdc
Max. power ripple	1Vpp	1Vpp
Input	Depends on power supply voltage: max 70mA with power supply of 30Vdc * max 85mA with power supply of 24Vdc * max 110mA with power supply of 18Vdc ** max 200mA with power supply of 10Vdc ** * peak 0,2A at power-up ** peak 0,4A at power-up	
Output load	2KΩ	< 500Ω
Max. output ripple	< 5 mV pp	< 5 mV pp
Max. output value	10.6 V	25 mA
Electrical isolation	500 V	500 V
Protection against polarity inversion	Yes	Yes
Protection against overvoltage	Yes	Yes
Self-resetting internal fuse	Yes	Yes

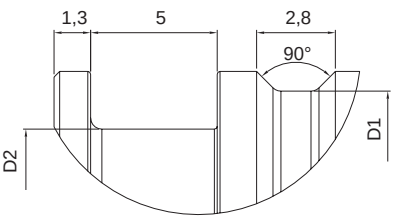
ENVIRONMENTAL DATA

Protection	IP 67
Operating temperature	-30°…+90°C
Storage temperature	-40°…+100°C
Coeffcient temperature	0.005% F.S. / °C

MECHANICAL DIMENSIONS (RK-1 and RK-2)

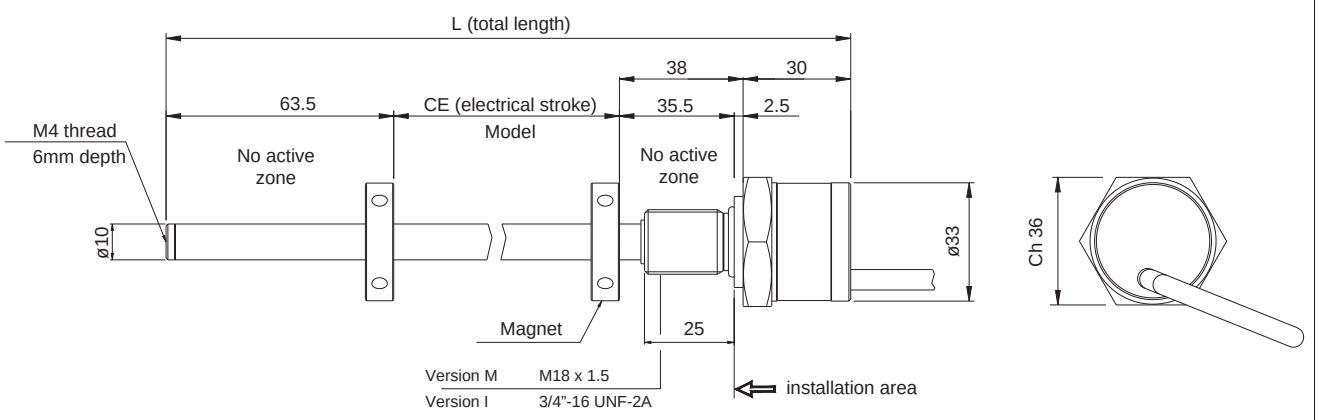


Detail X

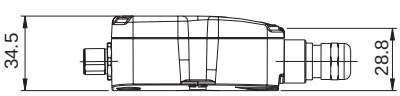


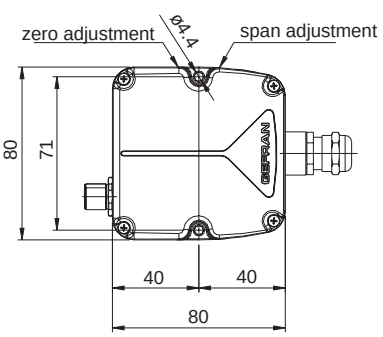
Model	Pressure	D	D1	D2
RK-1	350 bar	0 ø 30 h8-0.033	ø 28,6	ø 25,9 ±0,05
RK-2	700 bar	0 ø 33 h8-0.039	ø 31,6	ø 28,9 ±0,05

MECHANICAL DIMENSIONS (RK-3)



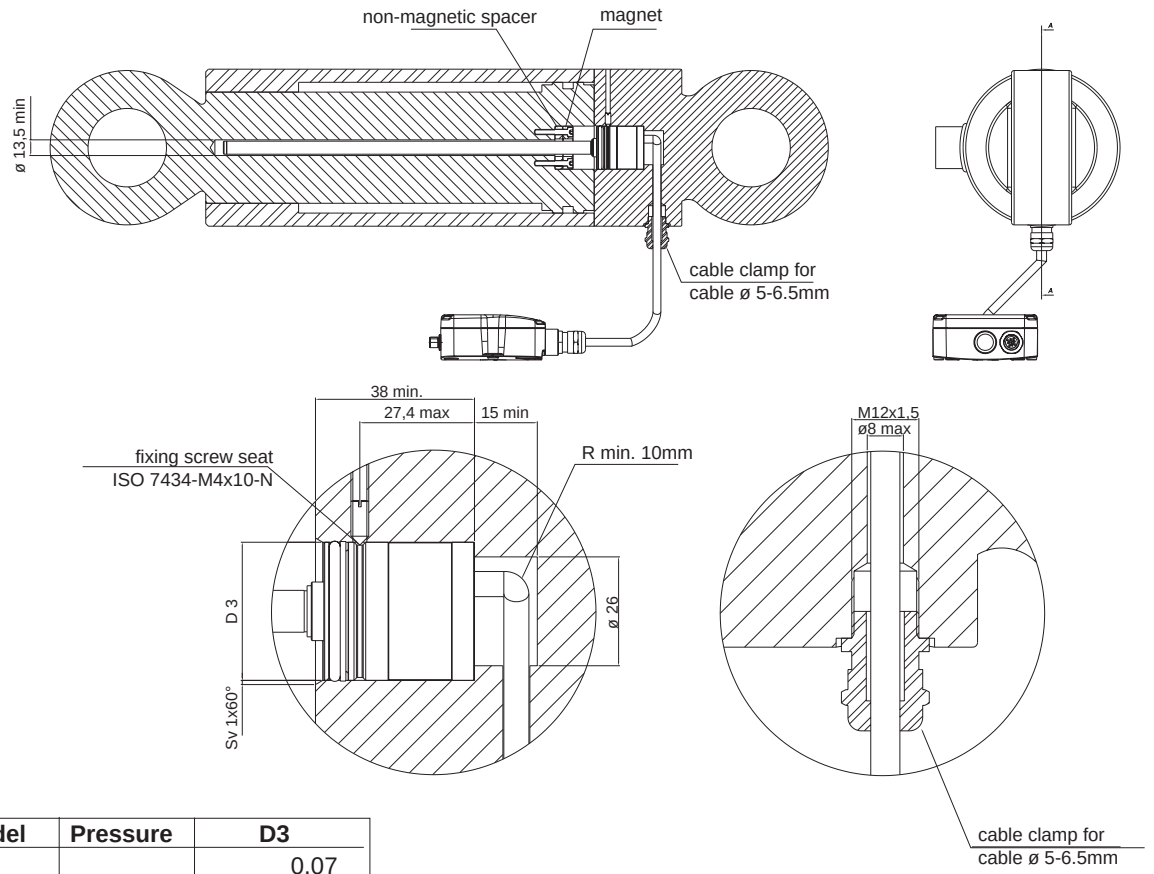
MECHANICAL DIMENSIONS (EKA)





MOUNTING INSIDE A CYLINDER (RK-1 and RK-2)

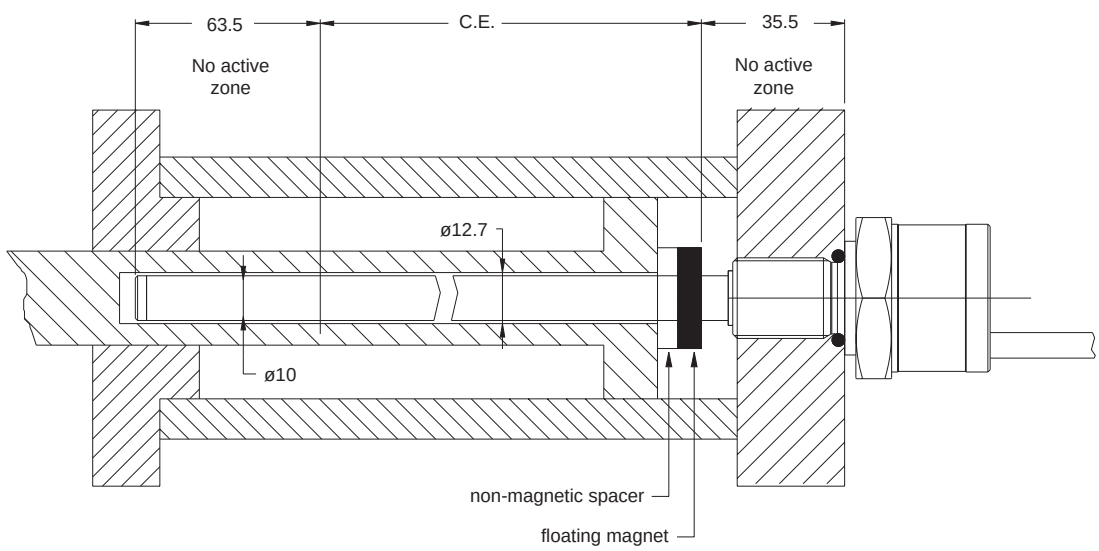
RK-1 / RK-2: versions with internal flange, installation completely inside cylinder



Model	Pressure	D3
RK-1	350 bar	0.07 ø 30 h8-0.04
RK-2	700 bar	0.09 ø 33 h8-0.05

MOUNTING INSIDE A CYLINDER (RK-3)

RK-3: version with threaded external flange, installation partially inside cylinder

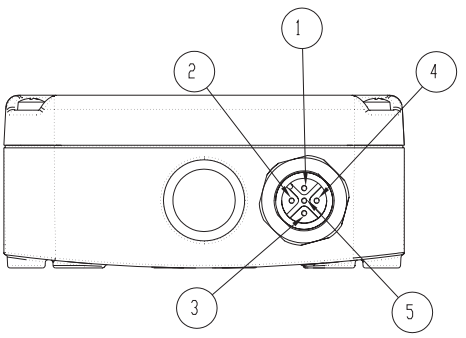


ELECTRICAL / MECHANICAL DATA

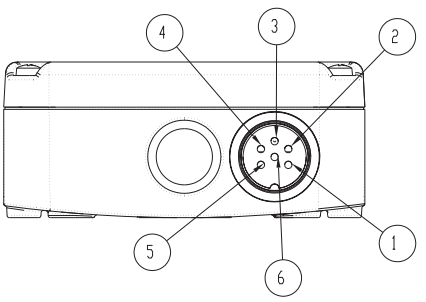
Model		50	100	130	150	200	225	300	400	450	500	600	700	750	800	900	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
Electrical stroke (C.E.)	mm	**Model**																											
Independent linearity	± %F.S.	typical 0,02 (Max. 0,04)																											
Max. dimensions (L)	mm	**Model +** 131,5 (excluding cable)																											
Repeatability	mm	0,001 of the FS																											
Hysteresis	mm	< 0.01																											
Sampling time	mm	**1** (**1.5** for stroke from 1100 to 2000) (**2** for stroke from ≥2000)																											

ELECTRICAL CONNECTIONS

RK-_-_ _ _ _-S-EKA- _ -M-_ - _



RK-_-_ _ _ _-S-EKA- _ -B-_ - _



Function	EKA-_-M-_-_ M12 5-pin	EKA-_-B-_-_ M16 6-pin DIN 45322	Optional cable for M12
Output 1 (displacement) 0...10V 0...5V 4...20mA 0...20mA	1	1	Brown
GND shift 1 (0V)	2	2	White
Output 2 (reverse displacement, or second cursor or speed, depending on the model 0...10V 0...5V 4...20mA 0...20mA	3	3	Blue
GND shift 1/2 (0V)	2	4	White
Power supply +	5	5	Grey
Power supply -	4	6	Black

CALIBRATION WITH MAGNETIC PEN (option RK- _ - _ _ _ _ -S-EKA-D- _ - _ - _)

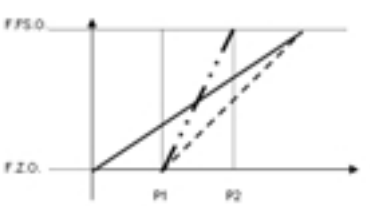
The magnetic pen is needed to calibrate the useful stroke of the transducer in a manner other than as configured in the factory (default).

• CALIBRATION OF ZERO POINT
when the magnet is at the required zero point, position the magnetic pen in the ZERO zone for a time between 0.5 and 10 seconds.

• CALIBRATION OF FULL-SCALE POINT
when the magnet is at the required full-scale point, position the magnetic pen in the FS zone for a time between 0.5 and 10 seconds.

• SAVING THE NEW CALIBRATION
position the magnetic pen in the ZERO or FS zone for a time between 10 and 60 seconds. The programmed configuration will be saved and active at the next power-up.

• RESTORING FACTORY DEFAULT CALIBRATION
position the magnetic pen in the ZERO or FS zone for more than 60 seconds. This will restore the original factory calibration in the internal EEPROM.



——— Factory

– – – Zero button with Magnet in P1

—·— FS button with magnet in P2

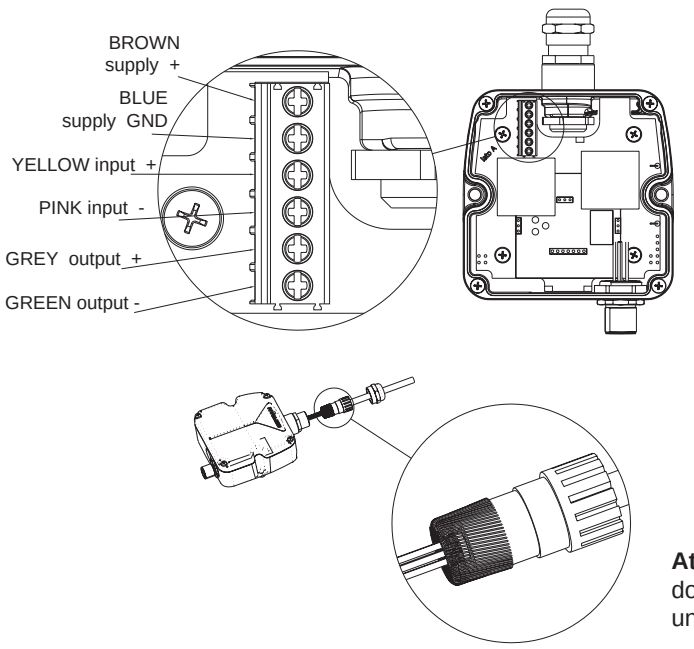
F.Z.O: 0V, 4mA, 0mA, -10V, -5V

F.F.S.O: 10V, 20mA, 0mA, +10V, +5V

INTERCONNECTION BETWEEN PRIMARY SENSOR AND REMOTE ELECTRONICS

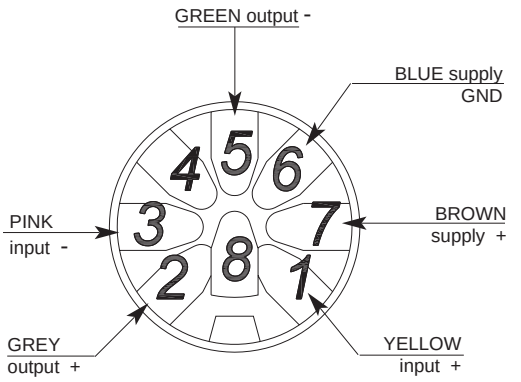
RK- _ - _ _ _ _ - S-EKA - _ - _ - R - _

(interconnection with wire clamp and screw terminals)



RK- _ - _ _ _ _ - S-EKA - _ - _ - M - _

(interconnection with M12 8-pin connector)



Attention:
do all wiring BEFORE powering the electronics (i.e., with unit off).

ORDER CODE

Position transducer

R	K						S	-	E	K	A					0	0	0	0	X								0	X	X

Head type

Internal flange, max 350 bar	**1**
Internal flange, max 700 bar	**2**
Threaded external flange	**3**

Model

Analog output	**A**
Analog output with zero and span setting	**D**

Output connector type

M12 5-pin connector output	**M**
DIN45322 6 pin connector output	**B**

Type of connection to the primary sensor

Internal screw terminal	**R**
M12 - 8 pin connector	**M**

Output

0...10Vdc	1 Cursor, double output position (standard)	**N**
0...10Vdc	1 Cursor, position and speed	**P**
0...10Vdc	2 Cursors	**Y**
4...20mA	1 Cursor, double output position	**E**
4...20mA	1 Cursor, osition and speed	**F**
4...20mA	2 Cursors	**H**

Available on request

0...20mA	1 Cursor, double output position	**B**
0...20mA	1 Cursor, osition and speed	**C**
0...20mA	2 Cursors	**D**
0...+5Vdc	1 Cursor, double output position	**K**

Output of speed

Only for analogic output option C, F, P

Max. measurable speed: 0.1 ÷ 10.0 m/s

00.0	Function not required

Power supply

S	10...30V (standard)

Connection cable to remote element

00 = 1 mt **02** = 2 mt **03** = 3 mt
04 = 4 mt **05** = 5 mt **10** = 10 mt
15 = 15 mt

Threading

None (RK-1 and RK-2)	**X**
M18 x 1,5 (RK-3 standard)	**M**
3/4"-16UNF (RK-3 option)	**I**

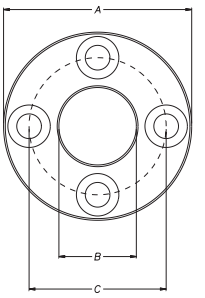
Mechanical and/or electrical characteristics differing from those in the standard version may be arranged on request.

FLOATING CURSOR (to order separately)

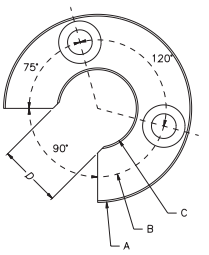
P C U R ☐ ☐ ☐

Cursors	
Cursor Diameter 32.8	**022**
Cursor Diameter 32.8 with 90° slit	**023**
Cursor Diameter 25.4	**024**

PCUR022

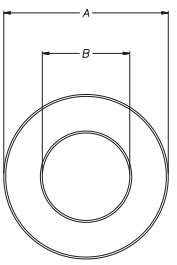


PCUR023



Dimensions	A	B	C	Thickness
PCUR022	32.8	13.5	23.9	7.9
PCUR023				
PCUR024	25.4	13.5	-	

PCUR024



The **PCUR022** is supplied with:

N° 8 Brass nuts M4
N° 8 Brass washers D4
N° 4 Brass screws M4x25

The **PCUR023** is supplied with:

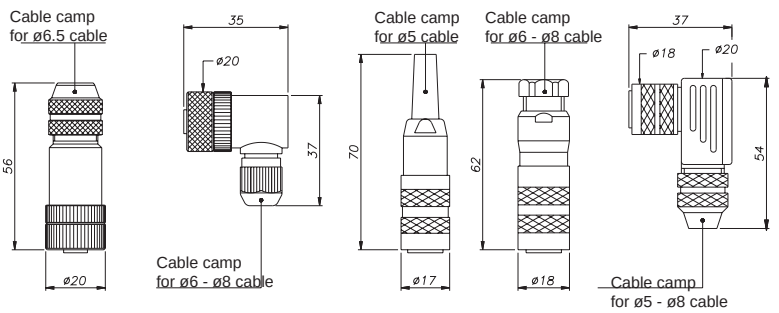
N° 4 Brass nuts M4
N° 4 Brass washers D4
N° 2 Brass screws M4x25

OPTIONAL FEMALE CONNECTORS (to order separately)

For M outputs, M12 thread connector
(for RK-_-_ _ _ _-S-EKA-_-M-_-_)
Code: **CON031** 5-pin
CON041 5-pin

For B outputs, M12 thread connector
(for RK-_-_ _ _ _-S-EKA-_-B-_-_)
Code : **CON021** 6-pin
CON022 6-pin
CON023 6-pin

Connector extraction length: 10mm



CON031
IP67 - IEC 48B

CON041
IP67

CON021
IP40 - EMC

CON022
IP67 - EMC

CON023
IP67 - EMC

OPTIONAL CABLES OUTPUT (to order separately)

Cable code (for RK-_-_ _ _ _-S-EKA-_-M-_-_-_)			
Length "L"		CODE	
		Straight cable	Cable to 90°
2	mt	**CAV011**	**CAV021**
5	mt	**CAV012**	**CAV022**
10	mt	**CAV013**	**CAV023**
15	mt	**CAV015**	**CAV024**

ACCESSORIES (to order separately)

RK sensor (see Order Code details)	RK-_-_ _ _ _-S 0000X000X _ _X0XX
RK-A electronics (see Order Code details)	EKA-_-_-_-_ 0000X_ _ _ S00X0XX
M12, 8-pin axial male connector for interconnection	CON460
Magnetic pen to calibrate remote electronic (model RK-A-D)	PKIT312
Non-magnetic spacer for mounting PCUR022 cursor	available soon
Cable clamp	PRE064

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