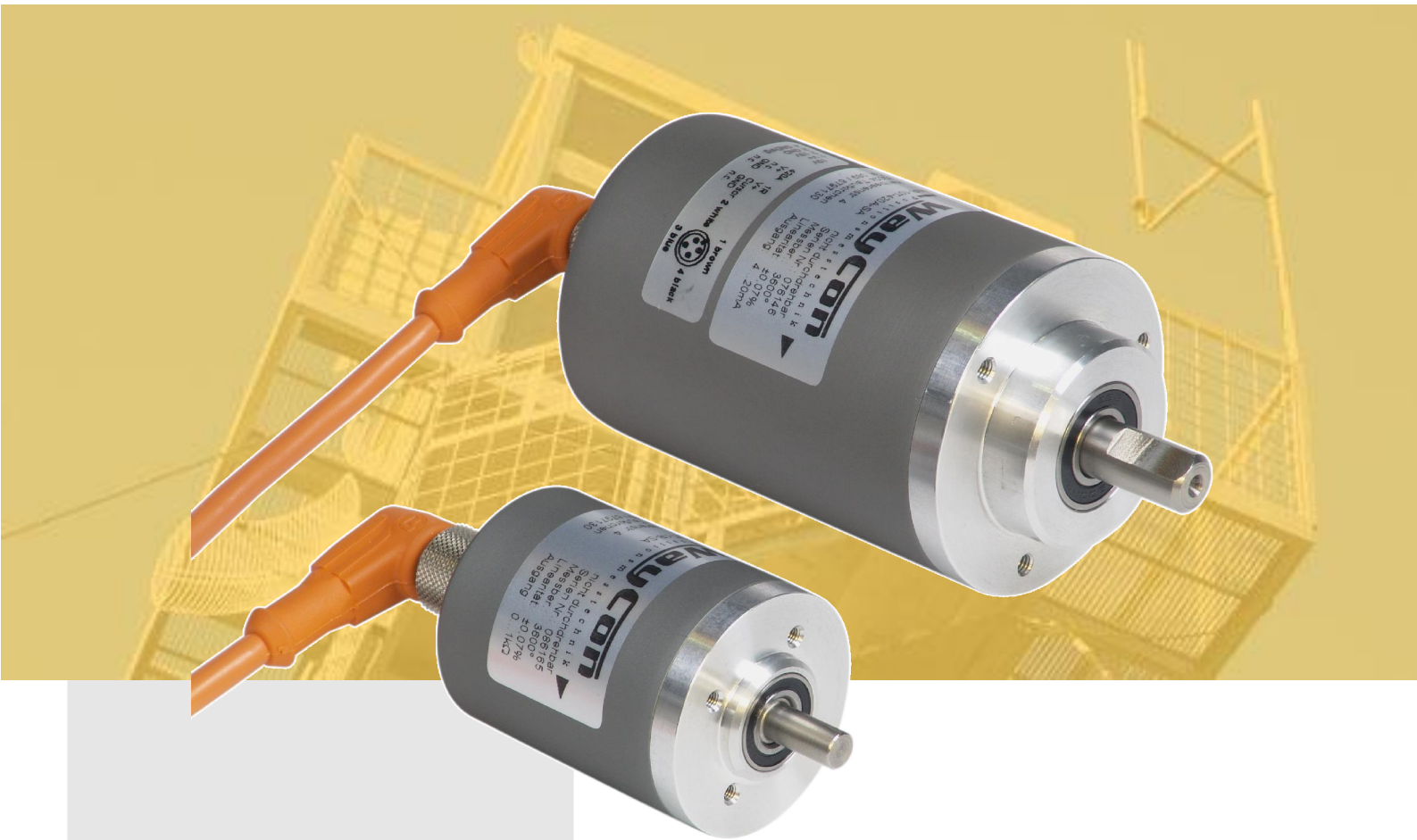
Rotary Transducer

Analogue – Industry Type



Series WP, WP-M

Key-Features:

- Housing diameter WP-M: 40 mm, WP: 60 mm
- High precision potentiometer
- Rotation angle 90° / 180° / 320°
- Multiturn 3 / 5 / 10 / ... / up to 120 turns
- Protection class: IP60 to IP67
- Output: potentiometer, 0...10 VDC, 4...20 mA
- Linearity up to 0.05 %
- Rotation speed: up to 200 rpm
- Life expectancy: > 5 million turns
- Housing: anodised aluminium, stainless steel

Content:

05.02.14

WayCon Positionsmesstechnik

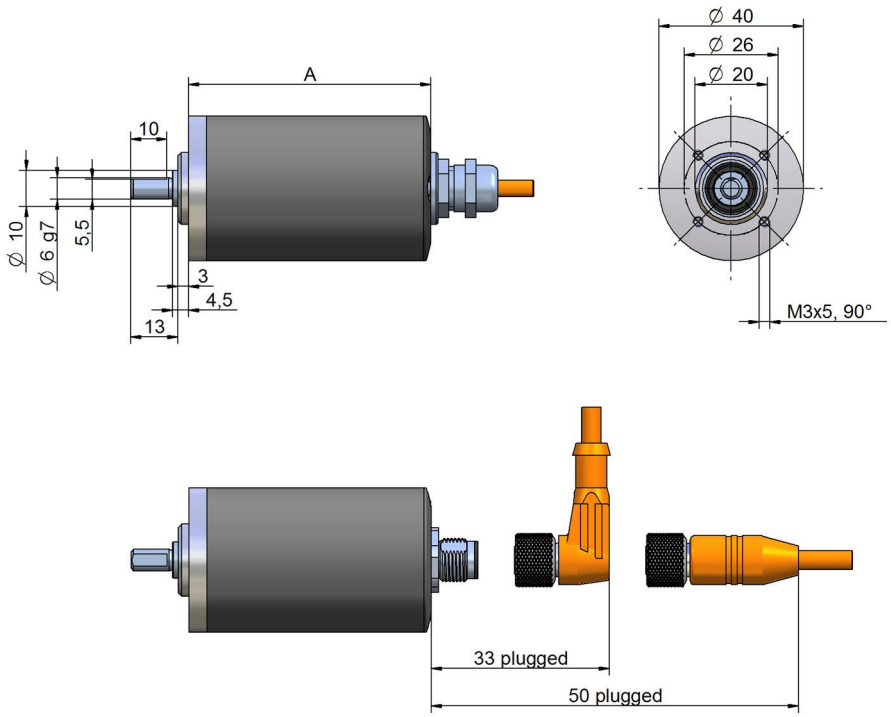
TECHNICAL DATA – SERIES WP-M

WP-M	measurement range [°]	linearity [%]	continuous rotation
90	90	0.30 (0.20)	yes
180	180	0.30 (0.20)	yes
1 Turn	320	0.30 (0.20)	yes
3 Turn	1000	0.15 (0.10)	-
5 Turn	1800	0.15 (0.10)	-
10 Turn	3600	0.10 (0.05)	-

Linearity values in brackets are optional.

signal direction	signal increasing counter clock wise (view on shaft)
housing	aluminium, titanium grey anodised; stainless steel
working temperature	dependant on the output signal, see page 4
storage temperature	-30…+85 °C
connection	M12-connector or cable outlet with TPE-cable (2 m)
rotation speed max.	200 rpm
torque	0.8 Ncm
shaft material	stainless steel
shaft bearing	2 sealed bearings, type 2RS
shaft load	40 N radial, 25 N axial
protection class (housing)	IP65 or IP67
protection class (shaft input)	IP60 or IP65
life time	> 2 million shaft turns
weight	approx. 130 g

TECHNICAL DRAWING – SERIES WP-M



output	A
potentiometer	53.5
10V / 420A	67

TECHNICAL DATA – SERIES WP

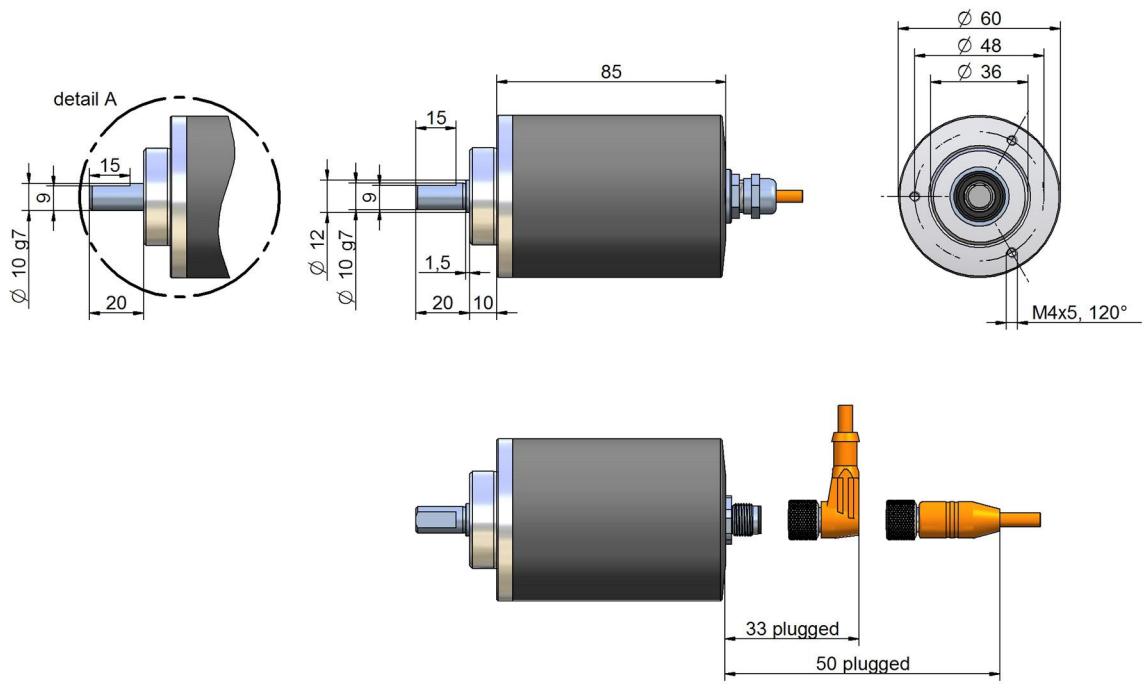
WP	measurement range [°]	linearity [%]	continuous rotation
90	90	0.30 (0.20)	yes
180	180	0.30 (0.20)	yes
1 Turn	320	0.30 (0.10)	yes
3 Turn	1000	0.15 (0.10)	-
5 Turn	1800	0.15 (0.10)	-
10 Turn	3600	0.10 (0.05)	-
15 Turn	5400	0.10 (0.05)	-
20 Turn	7200	0.10 (0.05)	-
25 Turn	9000	0.10 (0.05)	-
30 Turn	10800	0.10 (0.05)	-

WP	measurement range [°]	linearity [%]	continuous rotation
40 Turn	14400	0.10 (0.05)	-
45 Turn	16200	0.10 (0.05)	-
50 Turn	18000	0.10 (0.05)	-
60 Turn	21600	0.10 (0.05)	-
70 Turn	25200	0.10 (0.05)	-
75 Turn	27000	0.10 (0.05)	-
80 Turn	28800	0.10 (0.05)	-
90 Turn	32400	0.10 (0.05)	-
100 Turn	36000	0.10 (0.05)	-
120 Turn	43200	0.10 (0.05)	-

Additional measurement ranges are available on request. Linearity values in brackets are optional.

signal direction	signal increasing counter clock wise (view on shaft)
housing	aluminium, titanium grey anodised; stainless steel
working temperature	dependant on the output signal, see page 4
storage temperature	-30…+85 °C
connection	M12-connector or cable outlet with TPE-cable (2 m)
rotation speed max.	200 rpm
torque	0.8 Ncm
shaft material	stainless steel
shaft bearing	2 sealed bearings, type 2RS
shaft load	50 N radial, 30 N axial
protection class (housing)	IP65 or IP67
protection class (shaft input)	IP60, IP65 or IP67
life time	> 2 million shaft turns
weight	approx. 260 g

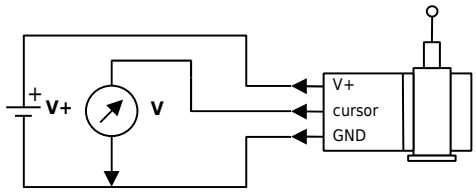
TECHNICAL DRAWING – SERIES WP



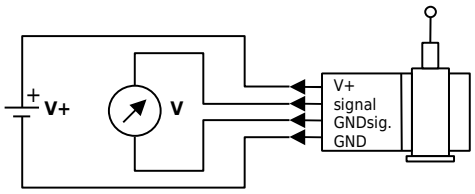
Note: „detail A“ is valid for all rotary transducers with a measurement range of 15 turns or more!

ANALOGUE OUTPUT

Potentiometer (voltage divider)	
output	1 kOhm
supply voltage	max. 30 V
recommended cursor current	< 1 µA
noise	depending on supply
working temperature	-20…+85 °C
temperature coefficient	± 0.0025 %/K

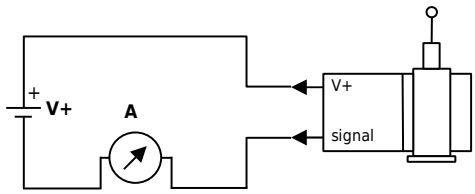


0…10 V voltage output	
output	0…10 V, galvanically isolated, 4 conductors
supply voltage	12…30 VDC
max. current consumption	22.5 mA (unloaded)
output current	max. 10 mA, min. load 1 kOhm
dynamics	< 3 ms from 0…100 % and 100…0 %
noise	3 mV_{pp} typically, max. 37 mV_{pp}
inverse-polarity protection	yes, infinite
short-circuit proof	yes, permanent
working temperature	-20…+60 °C
temperature coefficient	0.0037 %/K



note: GND sig. and GND may be connected in 3-wire system.

4…20 mA current output	
output	4…20 mA, 2 conductors
voltage supply	12…30 VDC
output current	max. 50 mA in case of error*
dynamics	< 1 ms from 0…100 % and 100…0 %
noise	0.03 mA_{pp} = 6 mV_{pp} at 200 Ohm
inverse-polarity protection	yes, infinite
working temperature	-20…+60 °C
temperature coefficient	0.0079 %/K



* e. g. exceeding specified measurement range at sensors with continuous rotation

CONNECTION

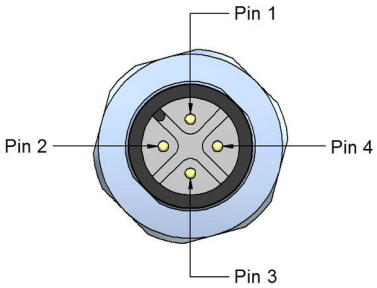
cable output:

axial 2.0 meter standard, other cable lengths available (see accessories)
type: TPE, flexible
diameter: approx. 4.5 mm
stranded wire: 0.25 mm²
temperature range: fixed installation -30…+80 °C, flexible installation -20…+80 °C

pin	wire colour	10 V	420 mA	1 kOhm
1	brown	V +	V +	V +
2	white	signal	n. c.	cursor
3	blue	GND	signal	GND
4	black	GND signal	n. c.	n. c.

4-pin M12 connector output (socket):

profile/ view on solder side of mating connector



ACCESSORIES

Cable with connector M12, straight and angular

cable with straight connector:		cable with angular connector:	
K4P2M-S-M12	2 m	K4P2M-SW-M12	2 m
K4P5M-S-M12	5 m	K4P5M-SW-M12	5 m
K4P10M-S-M12	10 m	K4P10M-SW-M12	10 m

Connector M12, straight and angular, shielded (for self assembly)

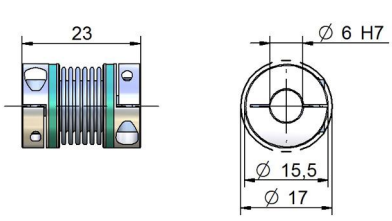
straight connector:	D4-G-M12-S		
angular connector:	D4-W-M12-S		
protection class:	IP67	cable diameter:	ø 4...8 mm
temperature:	-25...+90 °C	wire cross-section:	0.14...0.34 mm²
mode of connection:	spring cage	good chemical and oil resistance	

Couplings

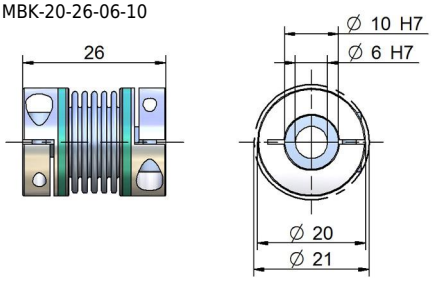
Bellows couplings are used for the free of backlash connection between an encoder and a shaft. The couplings are free of wear and compensate lateral, axial and angular shaft misalignment. The mounting on the shaft is done by clamping hubs.

The following bellow couplings are available:

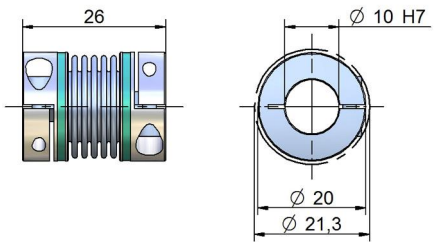
MBK-15.5-23-06-06



MBK-20-26-06-10



MBK-20-26-10-10



Different versions (e.g. axial pluggable) and other hole diameters are available on request.

Digital distance and speed measurement - PAX

Use PAX display to visualise the covered distance or the speed (tachometer sensor) of the position transducer. It enables a transmission of the measurement data to the computer via interface. The comparator allows a good-bad-evaluation (limit values function).

inputs:	incremental/ analogue, 2 independent counter, 1 tachometer sensor
analogue output:	0...20 mA, 4...20 mA, 0...10 V (plug in card)
serial interfaces:	RS485, RS232, DeviceNet, USB, Profibus (plug in cards)
Protection class (front panel):	IP65
display:	6 digits
power supply:	11...36 VDC or 85...250 VAC

For further information please see the data sheets of the PAX display series.

ORDER CODE

WP / WP-M — □ — □ — □ — □

measurement range		
90°	continuous rotation	90
180°	continuous rotation	180
320°	continuous rotation	320
3 Turn		3T
5 Turn		5T
10 Turn		10T
15 Turn		15T
20 Turn		20T
25 Turn		25T
30 Turn		30T
40 Turn		40T
45 Turn		45T
50 Turn		50T
60 Turn		60T
70 Turn		70T
75 Turn		75T
80 Turn		80T
90 Turn		90T
100 Turn		100T
120 Turn		120T

	version
-	standard
O	sensor with options

	connection
SA	axial M12 connector output
KA	axial cable output (2 m length)

	analogue output
10V	0...10 V voltage output
420A	4...20 mA current output
1R	1 kOhm potentiometer

	options
WP-L01	improved linearity 0.10 %
WP-L02	improved linearity 0.20 %
WP-L05	improved linearity 0.05 %
WP-IP65	protection class shaft input IP65
WP-IP67	(only WP) protection class shaft input IP67
WP-IN	inverted output
WP-CO	HARTCOAT coating
Temp-40	temperature option -40 °C

ACCESSORIES

cable with mating connector M12	
K4P2M-S-M12	2 m, straight connector
K4P5M-S-M12	5 m, straight connector
K4P10M-S-M12	10 m, straight connector
K4P2M-SW-M12	2 m, angular connector
K4P5M-SW-M12	5 m, angular connector
K4P10M-SW-M12	10 m, angular connector

mating connector M12 for self assembly	
D4-G-M12-S	straight
D4-W-M12-S	angular

extended cable for transducers with cable output	
KAB-1M-S-4L	additional meter of TPE-cable

couplings	
MBK-15.5-23-06-06	coupling, bore diameter: 2 x ø 6 mm
MBK-20-26-06-10	coupling, bore diameter: ø 6 mm, ø 10 mm
MBK-20-26-10-10	coupling, bore diameter: 2 x ø 10 mm

display	
PAX	digital display (please see separate data sheet)

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