

Rotary Measuring Technology

Absolute Multiturn Encoder with Profibus-DP interface



Multiturn Type 5860 Profibus-DP

- Very compact (only 87.8 mm installation depth); Ideal for dynamic applications thanks to its non-contact multiturn stage
- Solid shaft or blind hollow shaft
- Long service life thanks to high shock and vibration resistance
- Profibus DP with Encoder Profile Class 2 C

Compact and Rugged:

- minimal installation depth
- high shock and vibration values

Versatile and Easy:

- Many options (no need for adapter sleeves)
- Fully programmable
- Integrated Fieldbus node with T-Coupler



Fast and Safe:

- Certificated connection technology
- Plug & Play cable assemblies
- Diagnostics and alarm functions

New: Now also with blind hollow shaft



- also available as explosion proof Zones 2 and 22

Mechanical characteristics:

Speed ¹⁾ :	max. 6000 min ⁻¹
Rotor moment of inertia:	approx. 1.8 x 10 ⁻⁶ kgm ²
Starting torque:	< 0.01 Nm
Load capacity of shaft at shaft extension ³⁾ :	radial: 80 N, axial: 40 N
Weight:	approx. 0.7 kg
Protection acc. to EN 60 529:	IP 65
Working temperature:	-20° C ... +80 °C ²⁾
Operating temperature:	-20° C ... +85 °C ²⁾
Shaft:	stainless steel
Shock resistance acc. to DIN-IEC 68-2-27:	2500 m/s ² , 6 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	100 m/s ² , 10 ... 2000 Hz

¹⁾ For continuous operation 3000 min⁻¹ at the max. temperature

²⁾ Non-condensing
³⁾ Solid shaft version



Specification to Profibus-DP 2.0 Standard (DIN 19245 Part 3)

Electrical characteristics:

Supply voltage (U _B):	10 ... 30 V DC
Power consumption:	max. 0.29 A
recommended fuse:	T 0.315 A
Divisions:	up to 8192 (13 bits) per revolution, 4096 (12 bits) revolutions
Linearity:	± 1/2 LSB (±1 LSB at 13, 14, 25 bit resolution)
Code:	Binary
Interface:	RS 485
Protocol:	Profibus-DP, encoder profile class C2
Baud rate:	max: 12 Mbits/s
Address:	programmable via DIP switches
Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3	
Performance against magnetic influence acc. to EN61000-4, 8, severity of inspection 5	

Profibus Encoder-Profile:

The encoder profile describes the functionality of the communication and the manufacturer specific additional functions. Here the different objects are defined independently of the manufacturer.

The following parameters can be programmed:

- Direction of rotation
- Scaling factor
 - number of pulses/rotation
 - total resolution
- Preset value
- Diagnostic mode

The following functionality is integrated:

- Full Class 1 and Class 2 functionality
- Galvanic isolation of the Fieldbus-stage with DC/DC converter
- Line driver according to RS 485 max. 12 Mbit/s
- Addressing by means of DIP switches
- Diagnostic LED's

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Multiturn Type 5860 Profibus-DP – shaft version

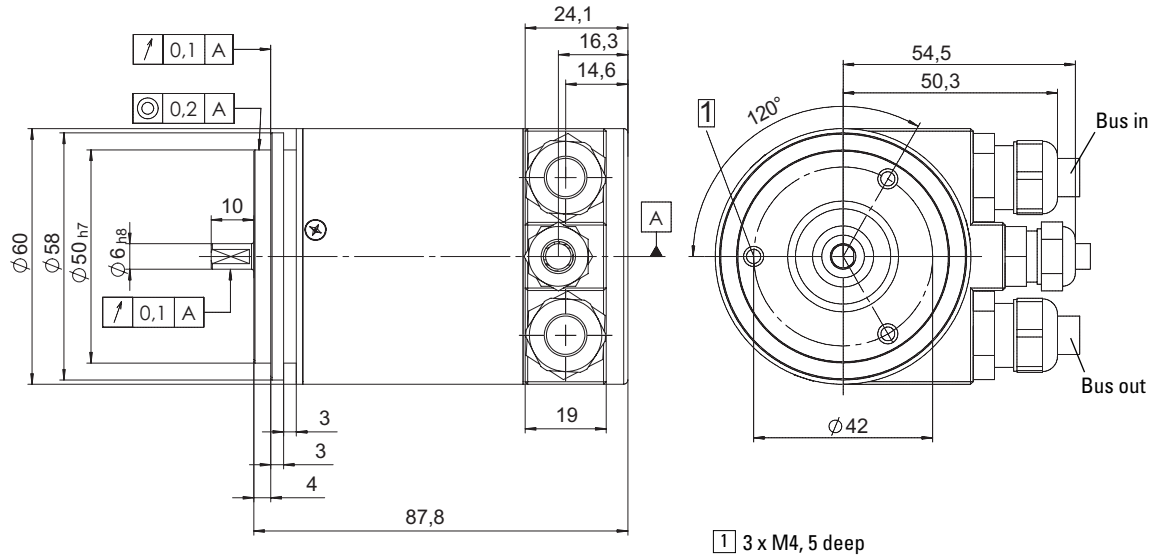
Terminal assignment with terminal box:

Signal :	ENC.		BUS IN			BUS OUT			ENC.	
	+V DC	GND	GND	B	A	A	B	GND	GND	+V DC
Pin :	1	2	3	4	5	6	7	8	9	10

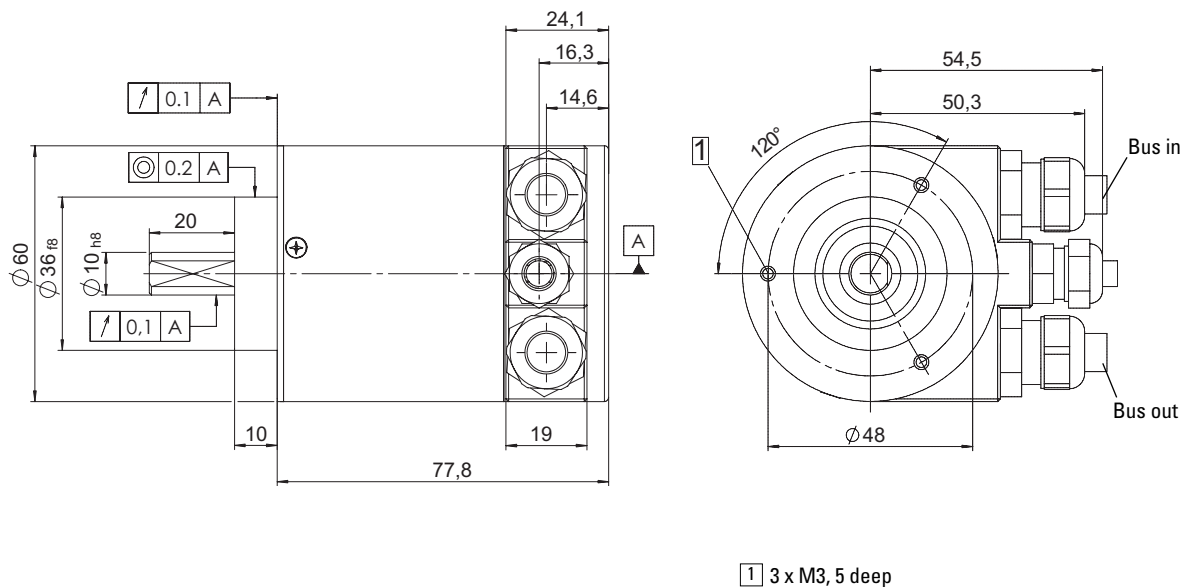
Shield must be connected to the cable gland (with the contact surface as large as possible).

Dimension (Terminal box version):

Servo bracket



Clamping bracket



- Suitable cable diameter
- Supply voltage, cable diameter 4.5 ... 6.5 mm
- Data transmission line, cable diameter 8 ... 10 mm

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Absolute Encoders

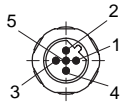
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Absolute Multiturn Encoder with Profibus-DP interface



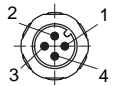
Multiturn Type 5860 Profibus-DP – shaft version with M12 connector

Terminal assignment M12 connector version:



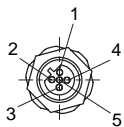
Bus in:

Signal :	–	BUS-A	–	BUS-B	Shield
Pin:	1	2	3	4	5



Supply voltage:

Signal :	U_B	–	0 V	–
Pin:	1	2	3	4



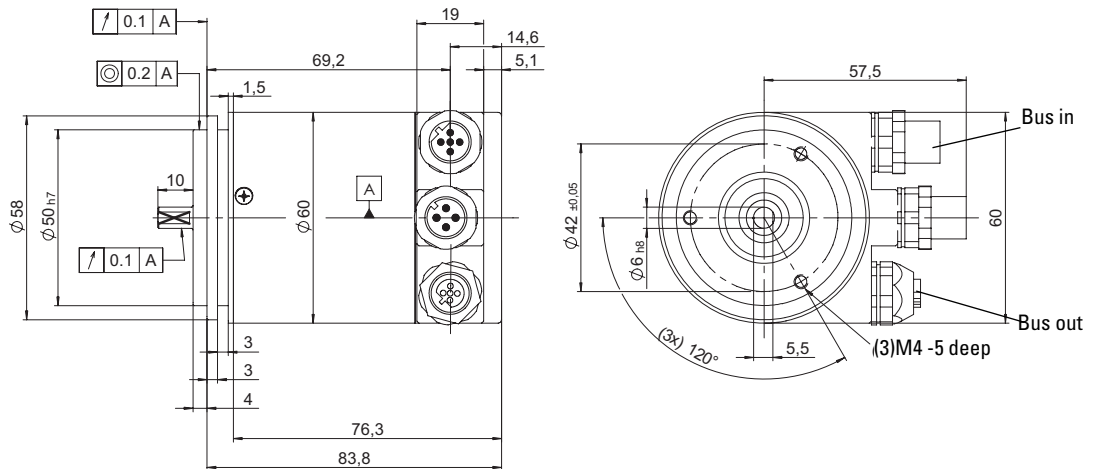
Bus out:

Signal :	BUS_VDC ¹⁾	BUS-A	BUS_GND ¹⁾	BUS-B	Shield
Pin:	1	2	3	4	5

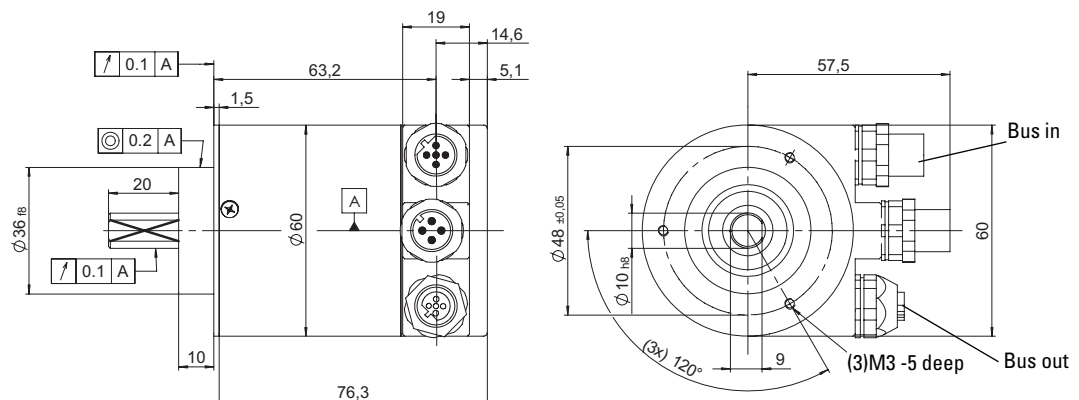
¹⁾to supply the external Profibus-DP terminating resistor

Dimension (M12 connector version):

Servo bracket



Clamping bracket



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Absolute Multiturn Encoder with Profibus-DP interface



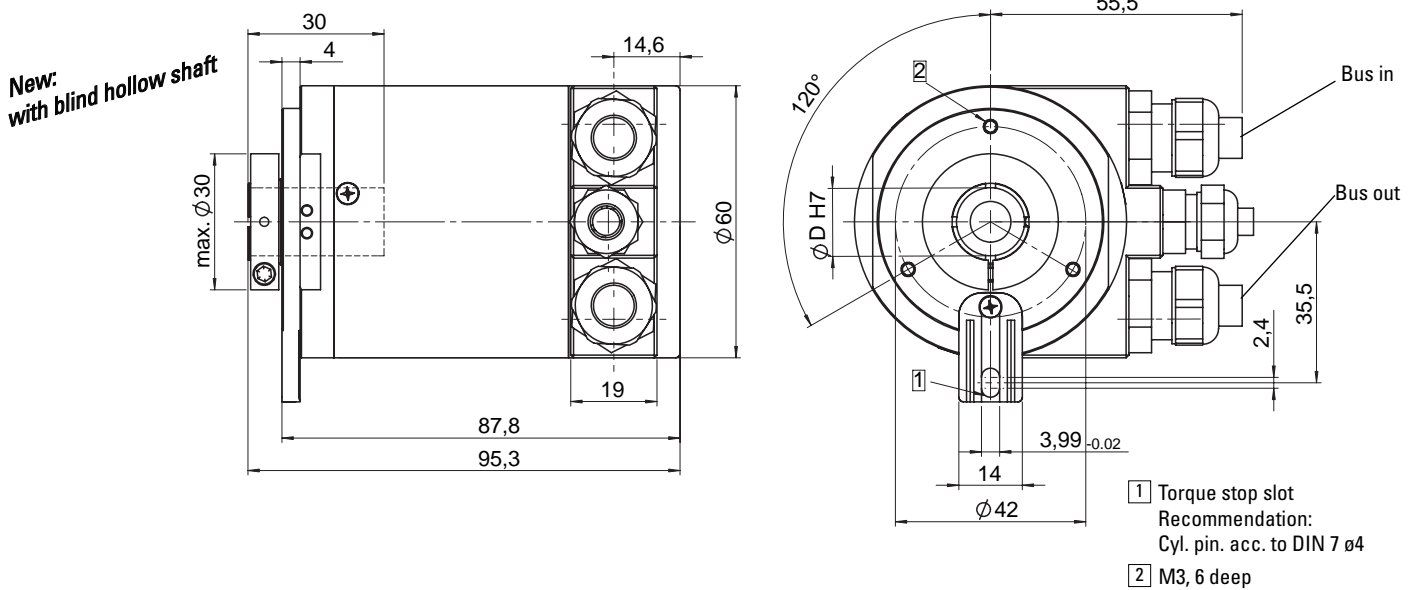
Multiturn Type 5860 Profibus-DP – blind hollow shaft version

Terminal assignment with terminal box:

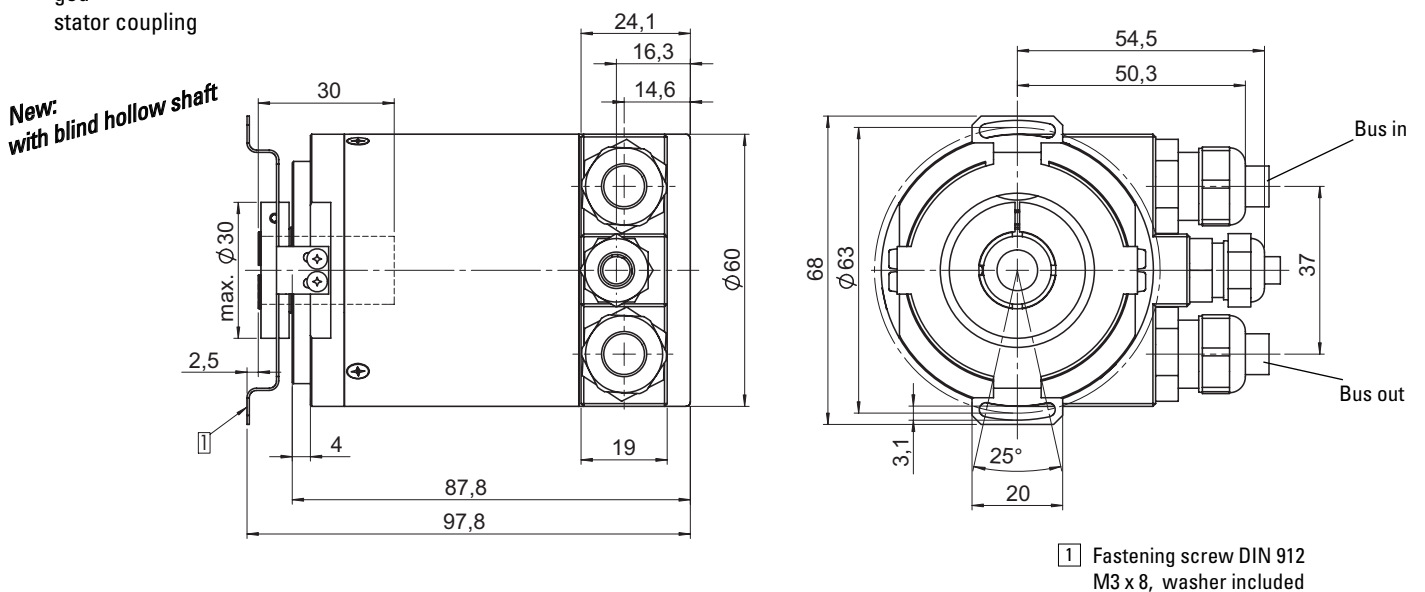
Signal :	ENC.		BUS IN			BUS OUT			ENC.	
	+V DC	GND	GND	B	A	A	B	GND	GND	+V DC
Pin :	1	2	3	4	5	6	7	8	9	10

Shield must be connected to the cable gland (with the contact surface as large as possible).

Dimension (Terminal box version):
Blind hollow shaft version
flat bracket with spring element



Blind hollow shaft version
Flat bracket with double-winged
stator coupling



Suitable cable diameter

Supply voltage, cable diameter 4.5 ... 6.5 mm

Data transmission line, cable diameter 8 ... 10 mm

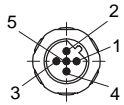
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Absolute Multiturn Encoder with Profibus-DP interface



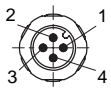
Multiturn Type 5860 Profibus-DP – blind hollow shaft version with M12 connector

Terminal assignment M12 connector version:



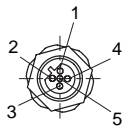
Bus in:

Signal :	-	BUS-A	-	BUS-B	-
Pin:	1	2	3	4	5



Supply voltage:

Signal :	U_B	-	0 V	-
Pin:	1	2	3	4



Bus out:

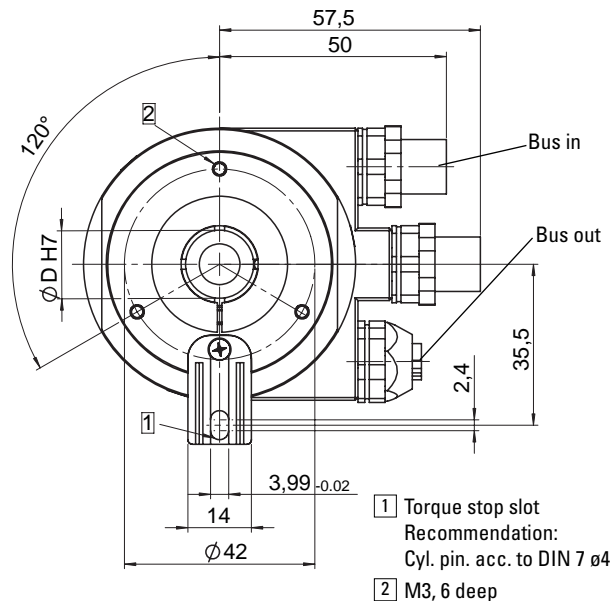
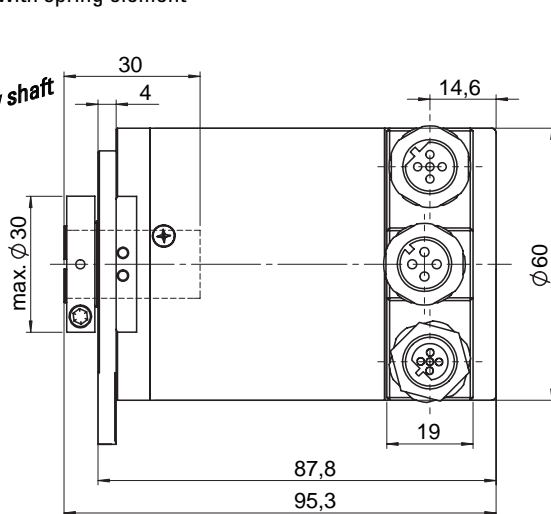
Signal :	BUS_VDC ¹⁾	BUS-A	BUS_GND ¹⁾	BUS-B	Shield
Pin:	1	2	3	4	5

¹⁾to supply the external Profibus-DP terminating resistor

Dimension (M12 connector version):

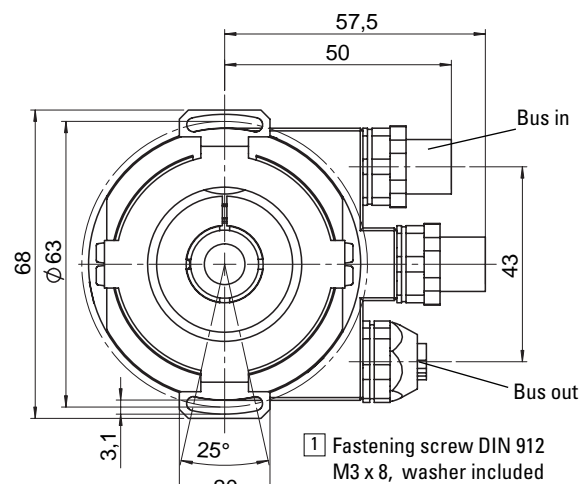
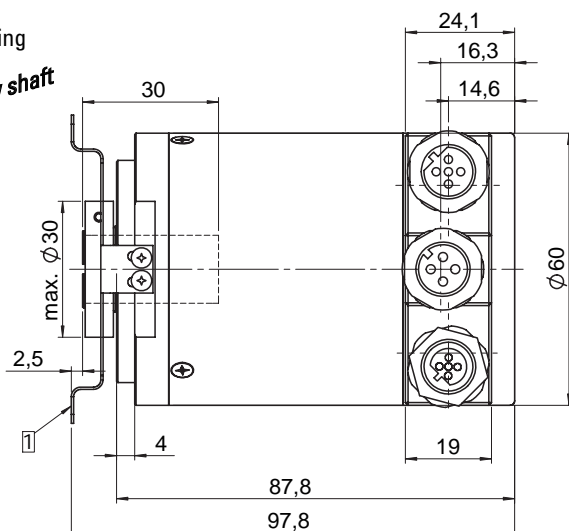
Blind hollow shaft version
flat bracket with spring element

*New:
with blind hollow shaft*



Blind hollow shaft version
Flat bracket with double-winged
stator coupling

*New:
with blind hollow shaft*



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Multiturn Type 5860 Profibus-DP

Kübler is constantly striving to **integrate fully all units** and intelligent sensing systems. Two patented technologies form the basis for our encoders:

Patented Integrative Technology®:

Integrative Technology, developed and patented by Kübler, is a package of measures that ensures compact construction, high signal quality, high shock resistance - up to 2500 m/s², high reliability and a high level of immunity to EMC.

This is achieved using an Opto ASIC, a multilayer board and an especially shock resistant and space-saving method of mounting the sensor unit. In addition the use of a highly optimized interface ASIC ensures the integration of several hundred individual components. Components that had previously been needed to balance the system, such as balancing potentiometers, can be dispensed with.

Patented Intelligent-Sensing-Technology (IST)®

An innovative principle of operation based on a non-contact electronic multiturn stage overcomes system disadvantages previously associated with encoders that had mechanical gears or with traditional electronic gear technology.

Advantages:

- High operational reliability
- Logic filter and innovative principle of operation compensate for high EMC interference
- Free from wear

Profibus DP encoder, integrated in the network

Also suitable for mounting on our draw wire devices.



Use Couplings for the connection BUS-IN and Connectors for the connection BUS-OUT.

Compatible self-assembly connectors:
 Bus-In: Coupling 05.BMWS.8151-8.5
 Bus-Out: Connector 05.BMSWS.8151-8.5

Terminating resistor: 05.RSS4.5-PDP-TR
 Power supply: 05.BMSWS-0
 See Connection Technology section for cable assemblies and additional connectors.

Order code:

8.5860.XXXX.3001

Range	
Bracket for shaft ¹⁾	
1 = Clamping bracket	
2 = Servo bracket	
Bracket for blind hollow shaft ¹⁾	
A = with spring element	
B = with double-winged stator coupling	
Shaft ¹⁾	
1 = Shaft ø 6 x 10 mm	
2 = Shaft ø 10 x 20 mm	
Blind hollow shaft ¹⁾	
A = ø 10 mm	
B = ø 12 mm	
C = ø 14 mm	
D = ø 15 mm	
E = ø 3/8" (9.525 mm)	
F = ø 1/2" (12.7 mm)	
Interface and supply voltage	
3 = Profibus-DP, Class 2 10 ... 30 V DC	

Field bus profile:	
3001 = Profibus-DP Class 2	
Type of connection	
1 = Terminal box with M16	
2 = M12 connector	

Includes:
 GSD-file and documentation on CD

Use Couplings for the connection BUS-IN and Connectors for the connection BUS-OUT.

Compatible self-assembly connectors:
 Bus-In: Coupling 05.BMWS.8151-8.5
 Bus-Out: Connector 05.BMSWS.8151-8.5

Power supply: 05.H8141-0
 See Connection Technology section page 263 for cable assemblies and additional connectors.

*Preferred types are indicated in **bold***

¹⁾ Figures and letters can not be combined