

# Rotary Measuring Technology

## Absolute Multiturn Encoder with Profibus-DP interface

### Multiturn Type 5860 Profibus-DP



- Field bus interface: **PROFIBUS-DP**
- Shaft  $\varnothing$  6 or  $\varnothing$  10 mm
- Shock resistant up to 250 g
- Housing  $\varnothing$  58 mm
- Patented Integrated Technology<sup>®</sup>
- Divisions: up to 8192 (13 bits) per revolution, 4096 (12 bits) revolutions
- Protection to IP 65
- Integrated T-Coupler
- Contactless multiturn gear with new patented Intelligent-Sensing-Technology

- (IST). This technology is perfectly resistant to EMI and increases battery life. The battery outlasts bearing life. The technology feature safety system with redundant multiturn sensorsn diagnosis and alarm outputs
- Additionally to Profibus DP 2.0 standard the interface supports the diagnostic and alarm monitoring.
  - available as explosion proof zone 2 and 22

#### Mechanical characteristics:

|  |   |
|--|---|
| Speed <sup>1)</sup> :                        | max. 6000 min <sup>-1</sup>                 |
| Rotor moment of inertia:                     | appr. $1,8 \times 10^{-6}$ kgm <sup>2</sup> |
| Starting torque:                             | < 0,01 Nm                                   |
| Load capacity of shaft am Wellenende:        | radial: 80 N, axial: 40 N                   |
| Weight:                                      | appr. 0,7 kg                                |
| Protection acc. to EN 60 529:                | IP 65                                       |
| Working temperature:                         | -20° C ... +80 °C                           |
| Working temperature:                         | -20° C ... +85 °C                           |
| Shaft:                                       | stainless steel                             |
| Shock resistance acc. to DIN-IEC 68-2-27:    | 2500 m/s <sup>2</sup> , 6 ms                |
| Vibration resistance acc. to DIN-IEC 68-2-6: | 100 m/s <sup>2</sup> , 10 ... 2000 Hz       |

<sup>1)</sup> for continuous operation 3000 min<sup>-1</sup> at the max. temperature



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

#### Electrical characteristics:

|  |   |
|--|---|
| Supply voltage (U <sub>B</sub> ):  | 10 ... 30 V DC  |
| Power consumption:   | max. 0,29 A   |
| recommended fuse:  | T 0,315 A   |
| Linearity:   | $\pm 1/2$ LSB ( $\pm 1$ LSB at 13, 14, 25 bit resolution) |
| Code:  | Binary  |
| Interface:   | RS 485  |
| Protocol:  | <b>Profibus-DP, encoderprofile class C2</b>               |
| 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 and EN 61000-4-8 |   |
| Performance against magnetic influence acc. to EN61000-4, 5                                      |   |

#### Profibus Encoder-Profile:

The basic functions of the PROFIBUS-DP are only described in extracts in here. For additional information, please refer to the standards on PROFIBUS-DP, i.e. DIN 19245-3 and EN 50170 respectively or see page 35 in the encoder catalogue.

#### The following parameters can be programmed:

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

#### The following functionality is integrated:

- Galvanic insulation of the Fieldbus-stage-with DC/DC converter
- Line driver according to RS 485 max. 12 MB
- Addressing by means of rotary switches
- Diagnostics LED
- Full Class 1 and Class 2 functionality

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### Multiturn Type 5860 Profibus-DP

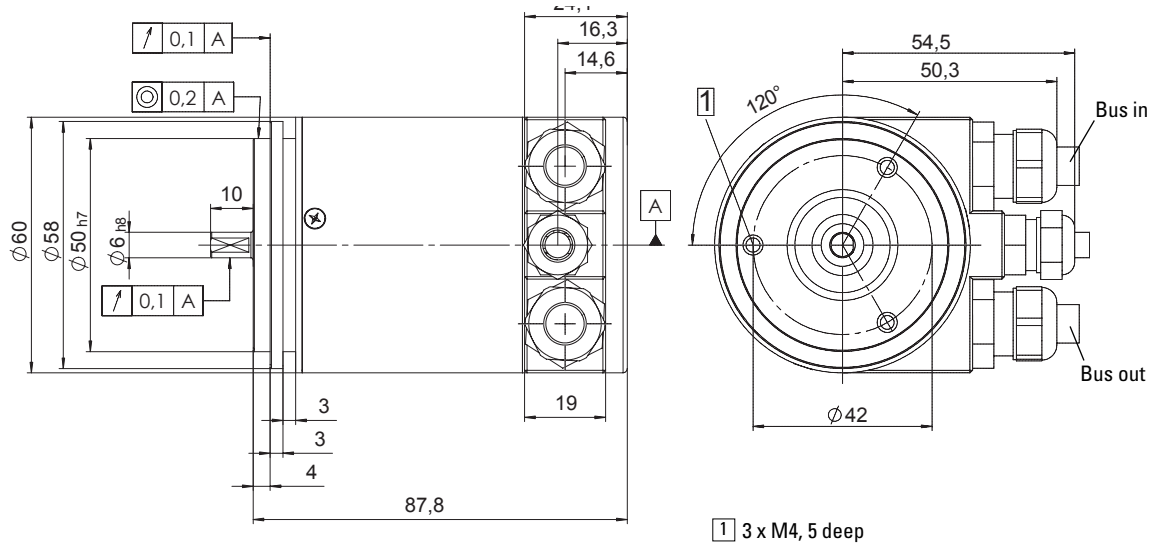
#### Terminal assignment with terminal box:

| 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    |

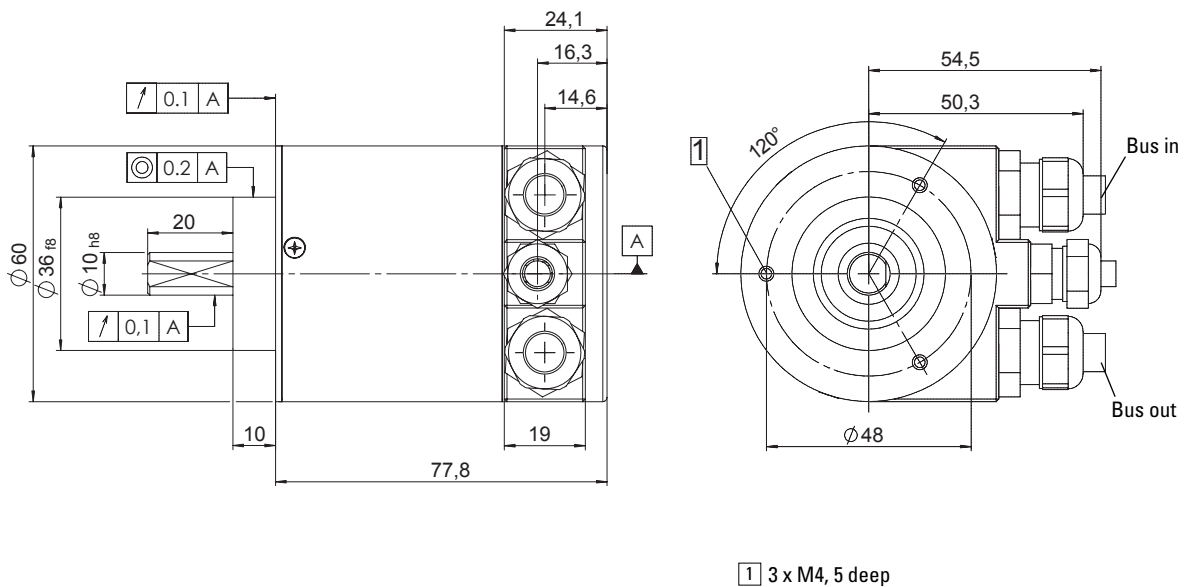
Shield must be connected to the PG gland

#### Dimension (Terminal box version):

##### Synchronous flange



##### Clamping flange



Cable diameter

Supply voltage, max. cable diameter 4,5 ... 6,5 mm

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

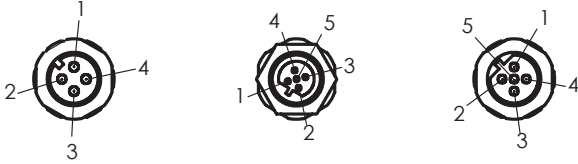
# Rotary Measuring Technology

## Absolute Multiturn Encoder with Profibus-DP interface



### Multiturn Type 5860 Profibus-DP with M12 connector

Terminal assignment M12 connector version:



Supply voltage:

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

Bus in:

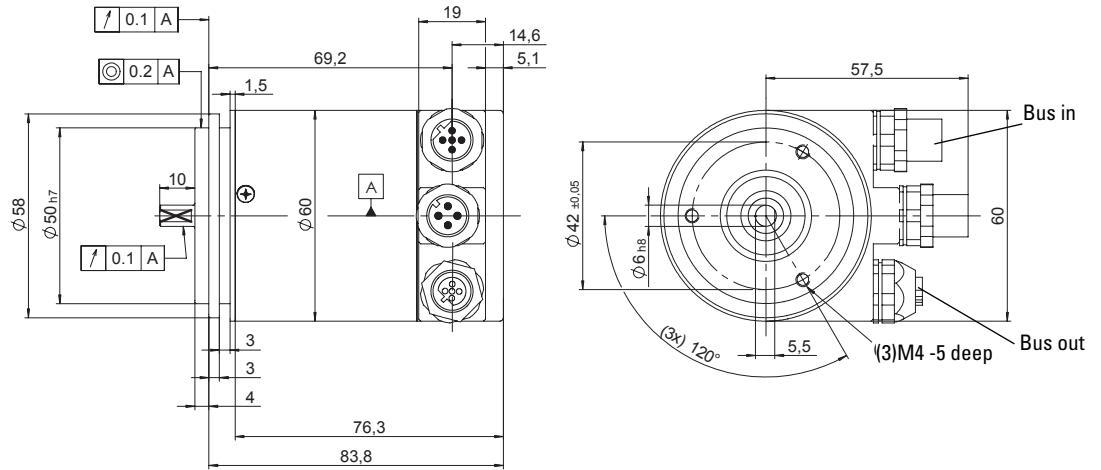
|          |   |       |   |       |   |
|----------|---|-------|---|-------|---|
| Signal : | - | BUS-A | - | BUS-B | - |
| Pin:     | 1 | 2     | 3 | 4     | 5 |

Bus out:

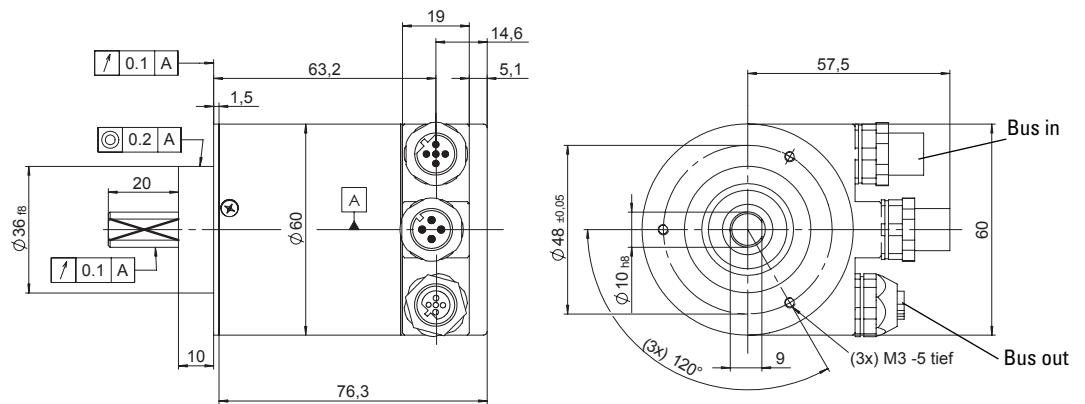
|          |         |       |         |       |        |
|----------|---------|-------|---------|-------|--------|
| Signal : | BUS_VDC | BUS-A | BUS_GND | BUS-B | Shield |
| Pin:     | 1       | 2     | 3       | 4     | 5      |

Dimension (M12 connector version):

Synchronous flange



Clamping flange



Rotary Measurement Technology  
Absolute Encoders

# Rotary Measuring Technology

## Absolute Multiturn Encoder with Profibus-DP interface

### Multiturn Type 5860 Profibus-DP

Kübler is working consistently **at high integration of all units** and intelligent sensing systems. The basics of our encoders are two patented technologies:

**Patented "Integrated Technology®" uses single board construction, deliberate assembly techniques, and two ASIC design:**

- Shock up to 250gs
- Higher vibration specs and thermal shock performance
- Lower parts count, elimination of potentiometers
- Higher resistance to EMI

**Electronic multiturn increases performance, eliminates gears**

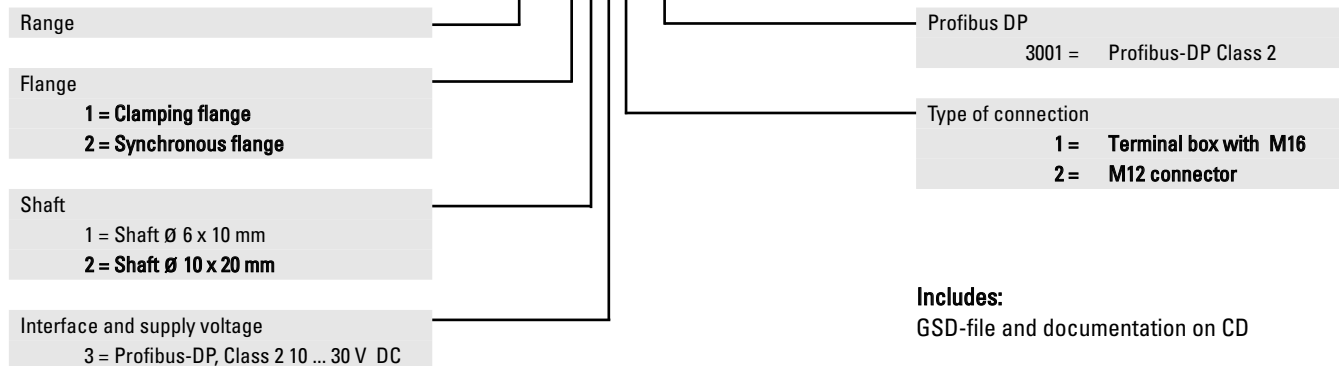
- Reliability - No backlash errors, resistant to EMI, lower parts count
- Higher life - No mechanical wear, lower internal temperature
- Higher performance - Higher operating speeds
- Lower profile - compact size, hollow shaft
- Economical - Lower cost

**Patented "Intelligent Sensing Technology®"**

- Multiturn design that protects encoder from EMI.
- The battery outlasts both application requirements and system components (LEDs & bearings)
- Redundant multiturn sensors and counters increase reliability & life
- Active system output monitoring using digital filters to compare data to logical & target bits.

Order code:

**8.5860.XXXX.3001**



**Includes:**  
GSD-file and documentation on CD

**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.BM.WS.8151-8.5  
Bus-Out: Connector 05.BMSWS.8151-8.5

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

**Profibus DP encoder at the end of the network, with external terminating resistor**

