

Rotary Measuring Technology

Absolute Multiturn Encoder with CANopen/DeviceNet interface



Multiturn Type 5860 CANopen/DeviceNet

- 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
- CANopen according to Profile DSP 406 with additional functions or DeviceNet Profile for Encoders Release V 2.0

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

- also available as explosion proof Zones 2 and 22

New: Now also with blind hollow shaft

Mechanical characteristics:

Speed ¹⁾ :	max. 6000 min ⁻¹
Rotor moment of inertia:	approx. 1.8 x 10 ⁻⁶ kgm ²
Starting torque shaft version:	< 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

CANopen
DeviceNet.

Electrical characteristics:

Supply voltage (U _B):	10 ... 30 V DC
Current 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 resolution 13, 14, 25 Bit)
Code:	Binary
Interface:	CAN HIGH-Speed to ISO/DIS 11898, Basic and Full-CAN; CAN specification 2.0 B (11 and 29 Bit Identifier)
Protocols:	CANopen Profile DSP 406 with additional function DeviceNet Profile for Encoder Release V 2.0
Baud rate:	programmable via DIP switches 10 ... 1000 Kbits/s CAN DNET 125/250/500 kBit/s
Basic identifier/node number:	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	

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CANopen - Device Profile:

General description

The CANopen Device Profiles describe the functionality of the communication and of that part of the CANopen fieldbus system specific to the manufacturer. Device Profile DSP 406 applies to encoders and defines the individual objects independently of the manufacturer. In addition the profile makes provision for additional extended functions specific to the manufacturer; using devices that interface with CANopen offers the advantage of acquiring systems today that are prepared for the needs of the future.

The following functionality is integrated:

- Class C2 functionality
- NMT Slave
- Diagnostics (internal)
- CAN-LED for Bus status
- CAN-LED for operating mode
- Additional Event Mode

The following parameters can be programmed:

- Polling mode or auto mode with adjustable time
- Direction
- Scaling factor
 - Number of pulses/rotation 1 ... 8192
 - Total resolution
- Number of revolutions 1 ... 4096
- Preset value
- Diagnostics mode
- Reset Mode action
- Event Mode action

DeviceNet Encoder Profile:

General description:

The DeviceNet Device Profile describes the functionality of the communication and of that part of the DeviceNet fieldbus system specific to the manufacturer. The Encoder Profile applies to encoders and defines the individual objects independently of the manufacturer. In addition the profile makes provision for additional extended functions specific to the manufacturer.

The following parameters can be programmed:

- Direction of rotation
- Scaling factor
 - Number of pulses/rotation 1 ... 8192
 - Total resolution
- Number of revolutions 1 ... 4096
- Preset value
- Diagnostics mode

The following functionality is integrated:

- Galvanic isolation of the Fieldbus-stage with DC/DC converter
- Addressing via DIP switches or software
- Diagnostics LED network and mode
- Baud rate 125, 250 and 500 kbit/s programmable via DIP switches
- Node address 0 ... 63 and baud rate programmable via DIP switches
- Polled mode
- Cyclic mode
- Change of state mode (COS)
- Combination of Polled mode and Cyclic mode
- Combination of Polled mode and COS mode
- Offline connection set
- Device heartbeat

“Out of box” Configuration

- MAC-ID and Baud rate preset value
MAC-ID = 63
- Baud rate = 125 kBit/s
- 2 I/O Assembly
 - Position value
 - Position value and status

Fieldbus encoders can be used in the following applications:

Elevators, construction machines, cranes, agricultural vehicles, special-purposes vehicles, industrial automatisations

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Multiturn Type 5860 CANopen – shaft version

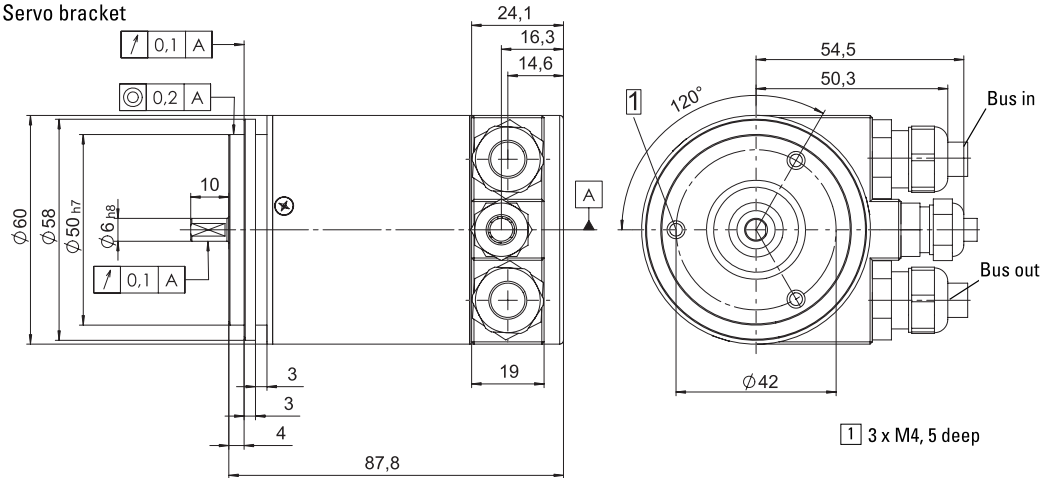
Terminal assignment with terminal box:

Signal :	ENC.		BUS IN		BUS OUT		ENC.			
	+V DC	GND	GND	CAN_H	CAN_L	CAN_L	CAN_H	GND	GND	+V DC
Clip :	1	2	3	4	5	6	7	8	9	10

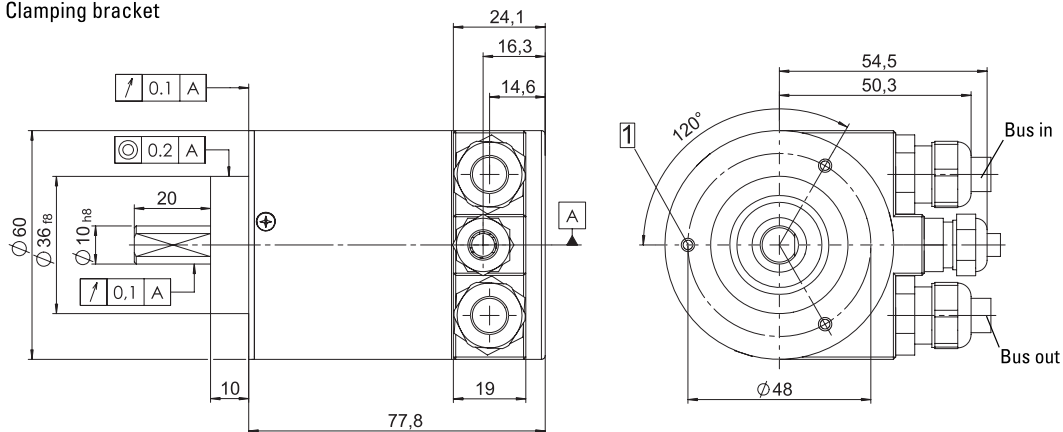
Shield must be connected to the cable gland (with the contact surface as large as possible).

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

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)®

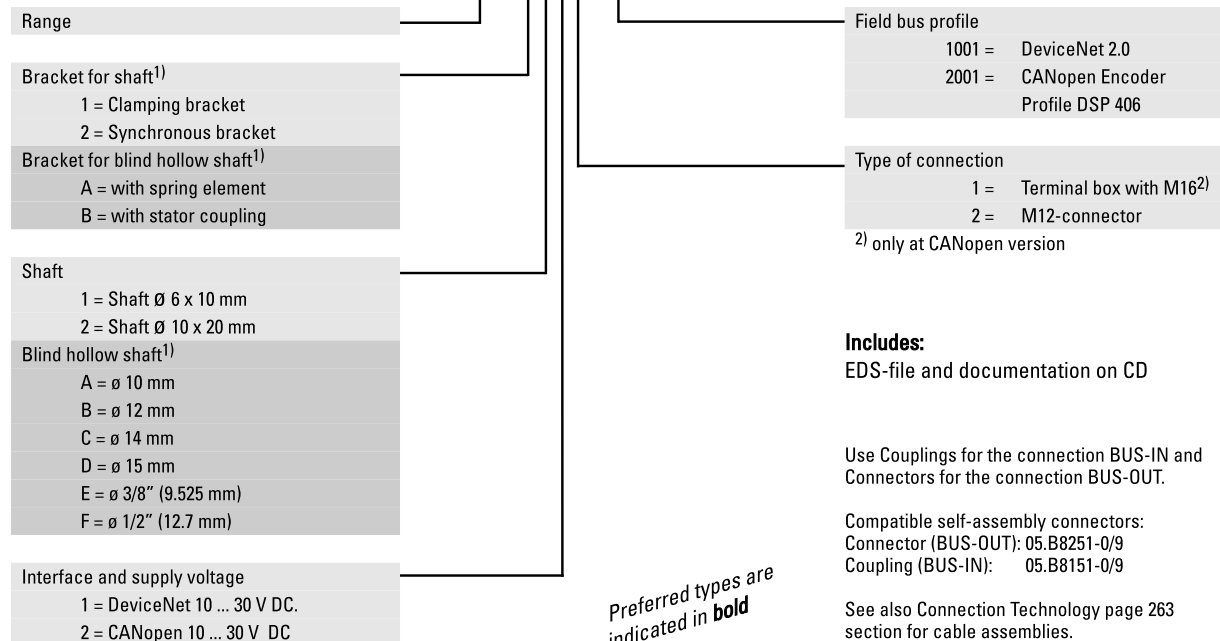
An innovative principle of operation based on a non-contact electronic multiturn stage overcomes system disadvantages previously associated with encoders that had mechanical gears or with traditional electronic gear technology.

Advantages:

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

Order code:

8.5860.XXXX.X001



¹⁾ Figures and letters can not be combined

Includes:

EDS-file and documentation on CD

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

Compatible self-assembly connectors:
 Connector (BUS-OUT): 05.B8251-0/9
 Coupling (BUS-IN): 05.B8151-0/9

See also Connection Technology page 263 section for cable assemblies.