Standard		
programmable, optical / magnetic	**5862 / 5882 (Shaft / Hollow shaft)**	**SSI**

The multiturn encoders **5862** and **5882**, with SSI interface and combined optical and magnetic sensor technology, offer a maximum resolution of 25 bits.

These encoders are programmable via the Ezturn software.

The hollow shaft version boasts a minimal installation depth, facilitating use where space is tight.

High rotational speed	Temperature range	High protection level	High shaft load capacity	Shock / vibration resistant	Short circuit proof	Reverse polarity protection

Compact
- Hollow shaft version with just 43 mm installation depth
- Hollow shaft version up to 12 mm diameter

Flexible
- With SSI interface
- Programmable via Ezturn
- Numerous connection options due to wide range of connection types

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Order code
Shaft version

$$\underset{\text{Type}}{8.5862} . \underset{\textbf{a}}{X}\underset{\textbf{b}}{X}\underset{\textbf{c}}{X}\underset{\textbf{d}}{X} . \underset{\textbf{e}}{XXXX}$$

ⓐ *Flange*
1 = clamping flange, ø 58 mm [2.28"]

ⓑ *Shaft (ø x L), with flat*
2 = ø 10 x 20 mm [0.39 x 0.79"]

ⓒ *Interface / Power supply*
2 = SSI / 5 ... 30 V DC, with 4 status outputs

ⓓ *Type of connection*
4 = M23 connector, radial, 12-pin, without mating connector

ⓓ *SSI interface [1]*
2004 = 8192 x 4096 (25 bit), Gray

Order code
Hollow shaft

$$\underset{\text{Type}}{8.5882} . \underset{\textbf{a}}{X}\underset{\textbf{b}}{X}\underset{\textbf{c}}{X}\underset{\textbf{d}}{X} . \underset{\textbf{e}}{XXXX}$$

ⓐ *Flange*
1 = through hollow shaft with spring element short
3 = through hollow shaft with stator coupling, ø 63 mm [2.48"]

ⓑ *Hollow shaft*
8 = ø 12 mm [0.47"]

ⓒ *Interface / Power supply*
2 = SSI / 5 ... 30 V DC, with 4 status outputs

ⓓ *Type of connection*
2 = M23 connector, radial, 12-pin, without mating connector

ⓓ *SSI interface [1]*
2004 = 8192 x 4096 (25 bit), Gray

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1) This factory set (default) resolution (25 bit, Gray, cw) can be changed by using the Ezturn programming software.

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Mounting accessory for shaft encoders		Order No.
Coupling	Bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]	**8.0000.1101.1010**

Mounting accessory for hollow shaft encoders		
Cylindrical pin, long for torque stops	With fixing thread	**8.0010.4700.0000**

Connection technology		
Connector, self-assembly (straight)	M23 female connector with coupling nut, 17-pin	**8.0000.5012.0000**
Cordset, pre-assembled	M23 female connector with coupling nut, 2 m [6.56'] PVC cable	**8.0000.6901.0002.0031**

Programming set		
Including: - Interface converter USB-CAN - Connection cable from interface converter to encoder - Power supply 90 ... 250 V AC - DVD with Ezturn® software	Minimum System Requirements Operating system: WinXP SP3 or higher Processor: 1 GHz RAM: 512 MB Required disk space: 500 MB	**8.0010.9000.0004**

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories

Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology

Absolute Encoders
Multiturn

Technical data

Mechanical characteristics

Speed		max. 6.000 min^{-1} [1]
Moment of inertia	shaft version	approx. 1.8 x 10^{-6} kgm^2
	hollow shaft version	approx. 6 x 10^{-6} kgm^2
Starting torque	shaft version	< 0.01 Nm
at 20°C [68°F]	hollow shaft version	< 0.05 Nm
Load capacity of shaft	radial [2]	80 N
	axial [2]	40 N
Weight		approx. 0.4 kg [14.11 oz]
Protection acc. to EN 60529		IP65
Temperature range		-20°C ... +85°C [-4°F ... +185°F]
Material	shaft / hollow shaft	stainless steel h8
Shock resistance acc. EN 60068-2-27		2500 m/s^2, 6 ms
Vibration resistance acc. EN 60068-2-6		100 m/s^2, 10...2000 Hz

Electrical characteristics

Power supply (+V)		5.0 ... 30 V DC [5]
Power consumption (no load)	typ.	89 mA
	max.	138 mA
Short circuit proof outputs [3]		yes [4]
Reverse polarity protection of the power supply (+V)		yes
UL approval		File 224618
CE compliant acc. to		EMC guideline 2004/108/EC
RoHS compliant acc. to		guideline 2011/65/EU

SSI Interface

Output driver		RS485
Permissible load / channel		max. +/- 20 mA
Update rate for position data		approx. 1600/s
SSI clock rate		100 kHz / 500 kHz
Signal level	HIGH	typ. 3.8 V
	LOW (I$_{Load}$ = 20 mA)	typ. 1.3 V
Singleturn resolution		13 bit programmable 1 ... 8192
Number of revolutions		12 bit programmable 1 ... 4096
Rising edge time t$_r$ (without cable)		max. 100 ns
Falling edge time t$_f$ (without cable)		max. 100 ns

1) Hollow shaft version: For continuous operation max. 3000 min^{-1}
2) At shaft end
3) If power supply +V correctly applied
4) Only one channel allowed to be shorted-out:
   at +V = 5 V DC short circuit to channel, 0 V, or +V is permitted.
   at +V ≥ 5 V DC short circuit to channel or 0 V is permitted.
5) The power supply at the encoder input must not be less than 4.75 V (5 V - 5%)

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Control inputs (V/R, SET)

Voltage		5 ... 30 V DC = +V
Response time		10 ms
Switching level	LOW	max. 25% +V
	HIGH	min. 60% +V, max. +V
Max. input current		≤ 0.5 mA

Control outputs

Output driver		Push-Pull
Max. Output current		± 9.0 mA
Signal level	HIGH	min. +V - 3.0 V
	LOW	max. 1.5 V
Rising edge time t_r		max. 240 µs
Falling edge time t_f		max. 300 µs

Control inputs

Up/Down input to switch the counting direction

The encoder can output increasing code values when the shaft is rotated either clockwise or counter-clockwise (when looking from the shaft side).

There are two methods for selecting the appropriate option:

1. Via a hardware configuration of the V/R input BEFORE powering up the encoder
2. By programming the device using the Kübler „Ezturn®" programming tool.

The following table shows the choice of functions determined by the hardware and software settings:

Hardware configuration of the V/R input	Programmed selection using the EzTurn® programming tool	Function: increasing code value when the shaft is in the following direction:
„LOW" (0V) on the V/R-input (=cw)	cw	cw
„HIGH" (+V) on the V/R-input (= ccw)	cw	ccw
„LOW" (0V) on the V/R-input (=cw)	ccw	ccw
„HIGH" (+V) on the V/R-input (= ccw)	ccw	ccw

Notes:

- Any hardware configuration of the V/R input must take place BEFORE powering up the encoder!
- If the V/R input is not configured, then a 0 V configuration will apply (default condition)!
- If the direction of rotation is changed due to the V/R configuration, without activating the SET function again, and if the encoder is also then powered up again, a new position value may be outputted, even if the physical shaft position of the encoder has not moved! This is due to internal conversion processes.
- The start-up procedure for the encoder should therefore follow this sequence:
  1. Determine the count direction of the encoder either via the V/R input or via programming
  2. Apply power to the encoder
  3. Activate the SET function, if desired (see SET input below)
- If using a cable wire to configure the V/R input, then for EMC reasons the wire should not remain open but should be tied either to 0 V or +V!
- The response time of the V/R input with +V = 5 ... 30 V DC power supply is 10 ms.

SET input

This input is used for a one-time alignment (zeroing) of the encoder immediately after installation. A high control pulse (+V) applied to this input for a minimum of 10 ms will reset the current encoder position to the pre-programmed setpoint value.

The programming of the setpoint can be carried out with Kübler's Ezturn® programming software or can, on request, be done in advance at the factory. The default value is zero. However anyvalue within the encoder's measuring range can be defined.

Notes:

- The SET function should only be implemented when the encoder shaft is at rest.
- For the duration of the SET pulse the SSI interface does not function and therefore does not output any valid position values! In order to avoid malfunctions, no SSI clock pulse should occur during the SET pulse.
- If a cable wire is used to configure the SET input, then for EMC reasons the wire should not remain open but should if at all possible be tied to 0 V, provided no SET pulse is triggered!
- The response time of the SET input with +V = 5 ... 30 V DC power supply is 10 ms.

Outputs [1]

Output	Default-function [2]
A1	battery control
A2	not activated
A3	not activated [3]
A4	not activated [3]

The outputs are not activated in the factory setting (default). They can be activated and defined with the optional Ezturn® programming software e.g. limit switch, overspeed and temperature control etc.

[1] Not available for versions with incremental track
[2] Programmable with optional programming software Ezturn®
[3] With the order code Interface 9 assigned to the sense outputs.

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Functionality of the Ezturn® software

- Configuration function
- Setting of the communication parameters
- Setting of a drive factor by means of the modification of the resolution per revolution, the number of revolutions and the total resolution
- Programming of the direction of rotation and code type
- Setting of a preset/electronic zero point

- Setting of diagnostic functions
- Setting of the outputs A1 ... A4
  - Limit switch values, max. 2
  - Alarm and status information
  - Battery monitoring
- Limiting max. number of bit to interface with PLCs
- Diagnostics and information for the set-up operation

- Data transmission from the PC to the encoder and inversely, also during operation
- Print-out of the current data and set parameters
- Convenient position output with the current set data
- Terminal operation for direct instructions via the keyboard
- Diagnostics of the encoder connected

Terminal assignment

Synchronous serial interface

Interface	Type of connection	Feature	M23 connector												
2	5862: 4 5882: 2	SET	Signal:	0 V	+V	C+	C-	D+	D-	ST	VR	A1	A2	A3 [1] 0 V sens	A4 [1] +V sens	⏚
			Pin:	1	2	3	4	5	6	7	8	9	10	11	12	PH

+V: Encoder power supply +V DC
0 V: Encoder power supply ground GND (0 V)
C+, C-: Clock signal
D+, D-: Data signal
ST: Set input. The current position becomes defined as position zero.
VR: Up/down input. As long as this input is active, decreasing code values are transmitted when shaft turning clockwise.
A1, A2, A3, A4: Outputs, can be modified using Ezturn®
PH ⏚: Plug connector housing (Shield)

Top view of mating side, male contact base
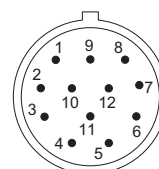
M23 connector, 12-pin

[1] With the order code interface 9 these outputs are assigned to the sense outputs. The sensor circuits are internally tied to the power supply. Special power supply units control the voltage drop in long cable runs via the voltage feedback. If the circuits are not being used, then they should be individually isolated and not connected.

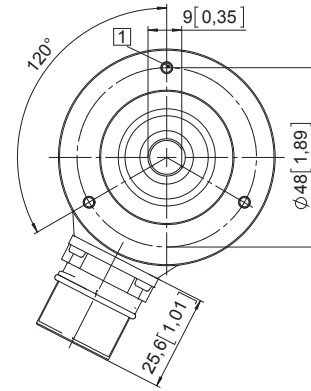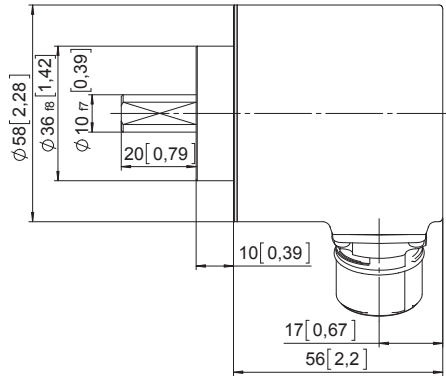| Standard		
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Dimensions shaft version
Dimensions in mm [inch]

Clamping flange, ø 58 [2.28]
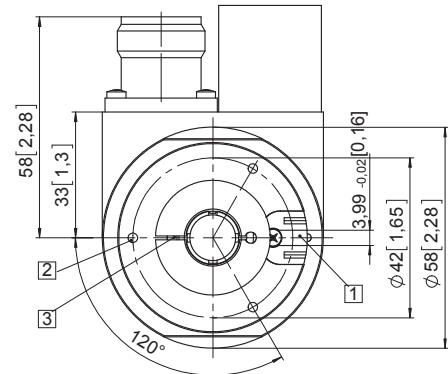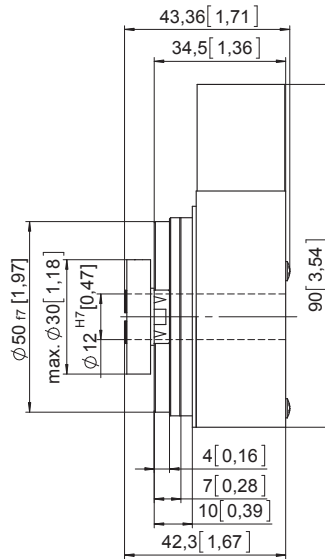**Flange type 1**

1 M3, 5 [0.20] deep

Dimensions hollow shaft version
Dimensions in mm [inch]

Through hollow shaft
with spring element short
Flange type 1

1 Torque stop slot,
Recommendation:
Cylindrical pin DIN 7, ø 4 [0.16]

2 M3, 5 [0.20] deep

3 Recommended torque for the
clamping ring 0.6 Nm

Through hollow shaft
with stator coupling, ø 63 [2.48]
Flange type 3

1 Recommended torque for the
clamping ring 0.6 Nm