ABSOLUTE ROTARY ENCODER
SPECIAL DESIGN CANOPEN

Main Features

- Compact and heavy-duty industrial model
- Interface: CANopen / CAN
- Housing: 58 mm $\varnothing$
- Shaft: 6 or 10 mm $\varnothing$
- Resolution: Max. 25 Bit = 33,554,432 steps over 4,096 revolutions
- Code: Binary

Suited for high quantities and standardized configuration of node number, baud rate.

Programmable Parameters

- Direction of rotation (complement)
- Resolution per revolution
- Total resolution
- Preset value
- Cams
- Two limit switches
- Baud-rate and CAN-identifier
- Transmission mode: Polled mode, cyclic mode, sync mode, or cos mode

Mechanical Structure

- Flange and housing of Aluminum
- Shaft of stainless steel
- Precision ball bearings with sealing or cover rings
- Code disc made of unbreakable and durable plastic

Electrical Features

- Temperature insensitive IR-opto-receiver-array
- Optional status indication with two LEDs
- Only one IR-transmitter-diode per opto-array
- Highly integrated circuit in SMD-technology
- Polarity inversion protection
- Over-voltage-peak protection

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Technical Data

Electrical Data

Supply voltage	10 - 30 V DC (absolute limits)
Power consumption	Max. 2.2 Watt
EMC	EN 50081-2, EN 61000-6-2
Bus connection	CAN transceiver acc. to ISO 11898, galvanically isolated
Transmission rate	20 kBaud ... 1 MBaud (programmable via SDO telegrams)
Accuracy of division	$\pm$ ½ LSB
Step frequency LSB	Max. 100 kHz (valid code)
Electrical lifetime	> 10^5 h
Node number	programmable via SDO telegrams
Identifier	Standard 11 bit identifier, passive to 29 bit identifier

Mechanical Data

Housing	Aluminum	
Lifetime	> 10^5 h at 1,000 rpm	
Inertia of rotor	$\approx$ 50 gcm^2	
RPM	Max. 6,000 (continuously)	
Shock (EN 60068-2-27)	$\leq$ 30 g (halfsine, 11 ms)	
Permanent shock (EN 60028-2-29)	$\leq$ 10 g (halfsine, 16 ms)	
Vibration (EN 60068-2-6)	$\leq$ 10 g (10 Hz ... 1,000 Hz)	
Shaft loading	Axial 20 N, radial 110 N	
Weight single-turn / multi-turn	~ 500 g / ~ 700 g	
Friction torque	$\leq$ 5 Ncm	
Flange	**Synchro (Y)**	**Clamp (F), synchro (Z)**
Shaft diameter	6 mm	10 mm
Shaft length	10 mm	20 mm

Environmental Conditions

Operating temperature	0 ... + 70 °C	
Storage temperature	- 40 ... + 85 °C	
Humidity	98 % (without liquid state)	
Protection class (EN 60529)		
Casing side	IP 65	
Shaft side	IP 65*	* up to 0.5 bar

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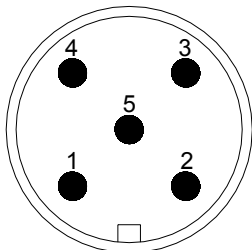# SPECIAL DESIGN CANOPEN

Interface

Configuration

The standard configuration of the encoder is: node number 32 and baud rate 20KBaud. For adapting the encoder for a respective application the customer could use SDO telegrams. Allowable baud rate range is 20 KBaud up to 1MBaud and for the node number from 0 to 89. The encoder adds internal 1 to the adjusted device address.

Electrical Interface

The encoder can be connected in the following versions: 5 pin circular plug M12, 12 pin circular plug or as cable exit.

Signal	5 pin circular connector	12 pin circular connector	open cable
(CAN Ground)	1	3	green
24 V power supply	2	12	white 0,5 mm²
0 V power supply	3	10	brown 0,5 mm²
CAN High	4	7	yellow
CAN Low	5	2	pink

5 pin circular connector M12
Pinning (Male)
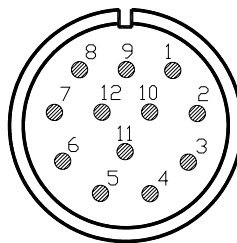
12 pin circular connector
Pinning (Male)

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Programmable Encoder - Parameter

Operating Parameters	As operating parameters the code sequence (complement) can be programmed. This parameter determines the counting direction, in which the output code increases or decreases.
Resolution per Revolution	The parameter resolution per revolution is used to program the desired number of steps per revolution. Each value between 1 and 4,096 can be programmed.
Total Resolution	This parameter is used to program the desired number of measuring units over the total measuring range. This value may not exceed the total resolution of the absolute rotary encoder. If the encoder is used in a continuous measuring application, certain rules for the setting of this parameter must be followed. These rules are outlined in the manual.
Preset Value	The preset value is the desired position value, which should be reached at a certain physical position of the axis. The position value is set to the desired process value by the parameter pre-set.
Limit Switch, Min. and Max.	Two position values can be programmed as limit switches. By reaching these values one bit of the 32 bit process value is set to high.
Cam	One free programmable cam can be set in the total measaring range. The same functionality is realised like a mechanical cam unit.

Programmable CAN Transmission Modes

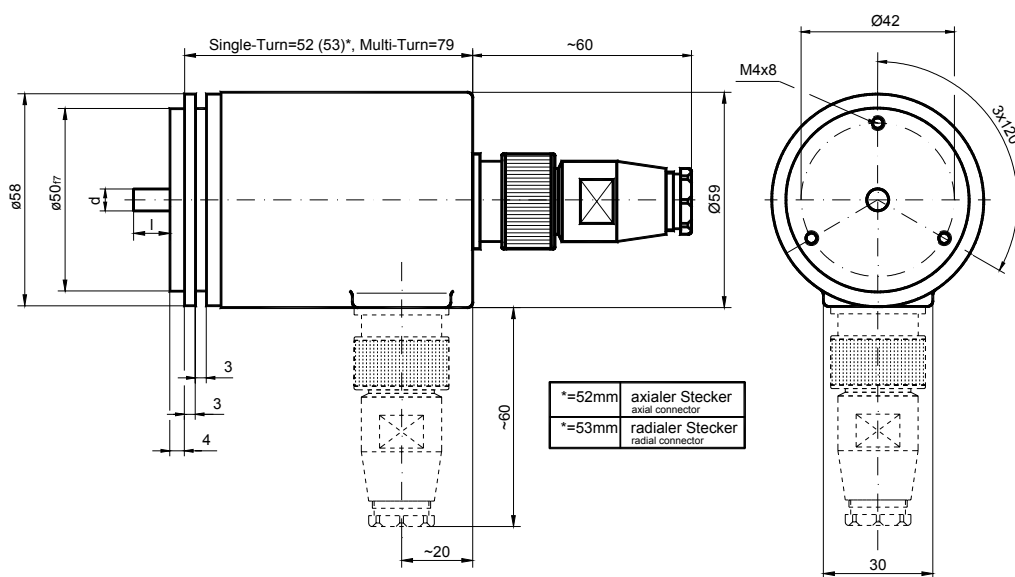|	
Polled Mode	By a remote-transmission-request telegram the connected host calls for the current process value. The absolute rotary encoder reads the current position value, calculates eventually set-parameters and sends back the obtained process value by the same identifier.
Cyclic Mode	The absolute rotary encoder transmits cyclically - without being called by the host - the current process value. The cycle time can be programmed in milliseconds for values between 1 ms and 65536 ms.
Sync Mode	After receiving a sync telegram by the host, the absolute rotary encoder answers with the current process value. If more than one node number (encoder) shall answer after receiving a sync telegram, the answer telegrams of the nodes will be received by the host in order of their node numbers. The programming of an offset-time is not necessary. If a node should not answer after each sync telegram on the CAN network, the parameter sync counter can be programmed to skip a certain number of sync telegrams before answering again.

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Mechanical Drawings

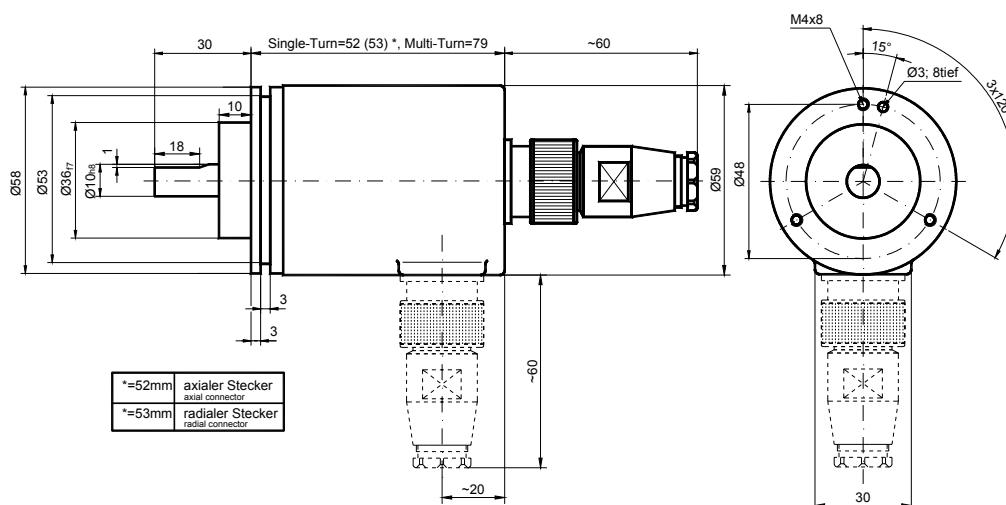**Synchro Flange (Y,Z), 12 pin circular connector**

The only difference between the Y- and Z-Flange is the shaft size (refer to the table besides).

	d [mm]	l [mm]
Y-Flange	6_{f6}	10
Z-Flange	10_{h8}	20

Single-Turn=52 (53)*, Multi-Turn=79   ~60

Ø58 Ø50r7 d l

Ø42 M4x8 3x120° Ø59

3 3 4 ~60 ~20 30

| *=52mm | axialer Stecker axial connector |
| *=53mm | radialer Stecker radial connector |

Clamp Flange (F), 12 pin circular connector

30   Single-Turn=52 (53) *, Multi-Turn=79   ~60

10 18 1 Ø58 Ø53 Ø36r7 Ø10h8 Ø59

M4x8 15° Ø3; 8tief 3x120° Ø48

3 3 ~60 ~20 30

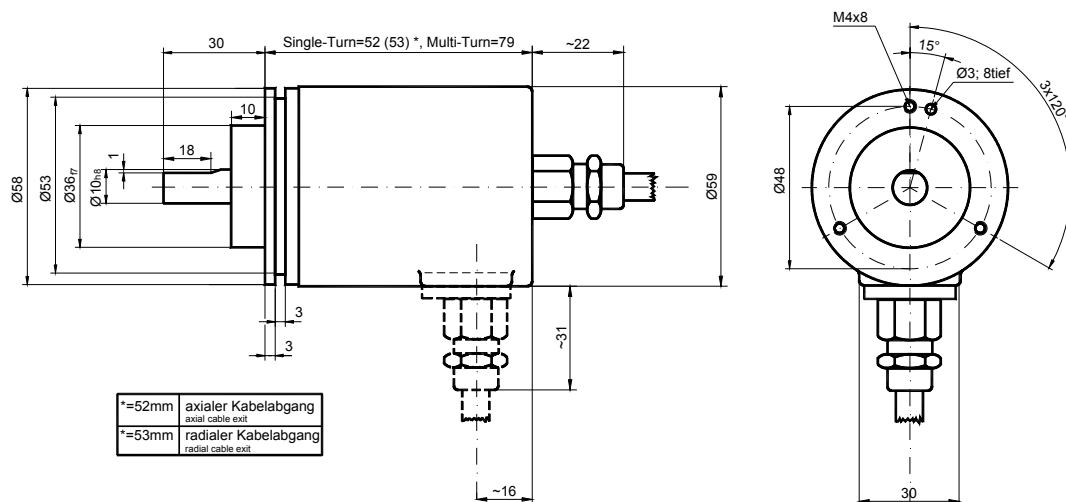| *=52mm | axialer Stecker axial connector |
| *=53mm | radialer Stecker radial connector |

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Clamp Flange (F), 5 pin circular connector M12
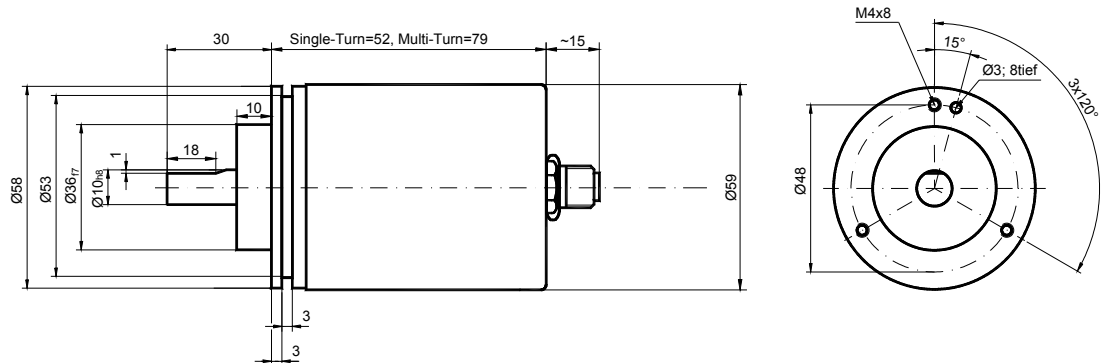
Clamp Flange (F), Cable exit

*=52mm	axialer Kabelabgang axial cable exit
*=53mm	radialer Kabelabgang radial cable exit

Synchro Flange (Y,Z), 5 pin circular connector, cable exit

The dimensions of encoder housing in the versions cable exit, 12 pin circular connector and 5 pin connector from clamp flange are also valid for the synchro flange.

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Models/Ordering Description

Description	Type Key										
Absolute rotary encoder	**AWC**	**58**	. . -	. . . . -	.	B	B1	. .	.	. . .
Diameter in mm										
Steps per revolution	4096	**12**								
	8192	13								
No. Of revolutions	1	**1**								
	4096		**4096**							
Flange	Clamp Flange (Shaft = 10 mm ∅)		**F**							
	Synchro Flange (Shaft = 6 mm ∅)		**Y**							
	Synchro Flange (Shaft = 10 mm ∅)		Z							
Code	Binary			**B**						
Version					**B1**					
Interface	CAN programmable					**C5**				
Options	Without						**0**			
	Shaft sealing (not possible for Z-Flange)						W			
Connection	Cable radial, 1m							**00R**		
	Cable axial, 1m							00A		
	Circular connector axial, 5 pin, M12							1BG		
	Circular connector axial, 12 pin							1KG		
	Circular connector radial, 12 pin							1KW		

Standard = bold, further models on request

Accessories and Documentation

Description		Type
Shaft coupling	Drilling: 10 mm	GS 10
	Drilling:: 6 mm	GS 06
Clamp disc	4 pcs. / AWC	SP 15
Clamp ring	2 pcs. / AWC	SP H
User Manual*)	Installation and configuration manual, German	UMD-CA
User Manual*)	Installation and configuration manual, English	UME-CA
EDS-File*)	Disc containing EDS-file for coniguration.	DK-CA

*) These can be downloaded free of charge from our Homepage www.posital.de.

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