

ABSOLUTE ROTARY ENCODER HEAVY DUTY DESIGN CANOPEN



Main Features

- Compact and heavy-duty industrial model
- Interface: CANopen / CAN
- Housing: 58 mm Ø
- Shaft: 6 or 10 mm Ø
- 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.
- protective element against condensate inside housing

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

Programmable Parameters

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

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	9 - 35 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 program. via SDO telegrams, opt. LSS
Accuracy of division	$\pm \frac{1}{2}$ LSB
Step frequency LSB	Max. 100 kHz (valid code)
Electrical lifetime	$> 10^5$ h
Node number	programmable via SDO telegrams, optional LSS (DSP305)
Identifier	Standard 11 bit identifier, passive to 29 bit identifier

Mechanical Data

Housing	Aluminum			
Minimum Lifetime	Fa \leq 250 N, Fr \leq 250 N: $1 \cdot 10^8$ revolutions			
	Fa \leq 40 N, Fr \leq 110 N: $3 \cdot 10^9$ Umdrehungen			
Inertia of rotor	$\approx 50 \text{ gcm}^2$			
RPM	Max. 6,000 (continuously)			
Shock (EN 60068-2-27)	$\leq 30 \text{ g}$ (halfsine, 11 ms)			
Permanent shock (EN 60028-2-29)	$\leq 10 \text{ g}$ (halfsine, 16 ms)			
Vibration (EN 60068-2-6)	$\leq 10 \text{ g}$ (10 Hz ... 1,000 Hz)			
Weight single-turn / multi-turn	$\sim 500 \text{ g} / \sim 700 \text{ g}$			
Friction torque	$\leq 5 \text{ Ncm}$			
Flange	Synchro(Y)	Clamp(F), Synchro(Z)	Special(P)	Hollow shaft (H)
Shaft diameter	6 mm	10 mm	10 mm	12 mm
Shaft length	10 mm	20 mm	16 mm	-
Hollow shaft depth min./max.	-		-	15 / 30 mm

Environmental Conditions

Operating temperature	-40 ... + 80 °C
Storage temperature	- 40 ... + 85 °C
Humidity	98 % (without liquid state)
Protection class (EN 60529)	
Casing side	IP 67
Shaft side	IP 66* * up to 0.5 bar

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Interface

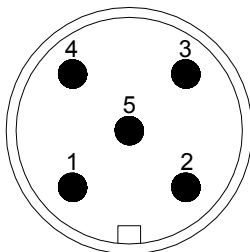
Configuration

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.

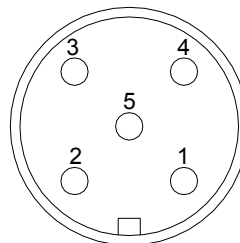
Electrical Interface

The encoder can be connected via two 5 pin circular plug M12. For Bus In a male and for Bus Out a female connector is used. Within the encoder a T-coupler is integrated, whereby the electrical connector are direct connected. If the encoder is the last device within the network an external terminal resistor of 120 Ohm must be used at the female connector.

Signal	Bus In 5 pin male circular connector	Bus Out 5 pin female circular connector
(CAN Ground)	1	1
24 V power supply	2	2
0 V power supply	3	3
CAN High	4	4
CAN Low	5	5



Bus In
5 pin circular connector M12
Pinning (Male)



Bus Out
5 pin circular connector M12
Pinning (Female)

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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 measuring range. The same functionality is realised like a mechanical cam unit.

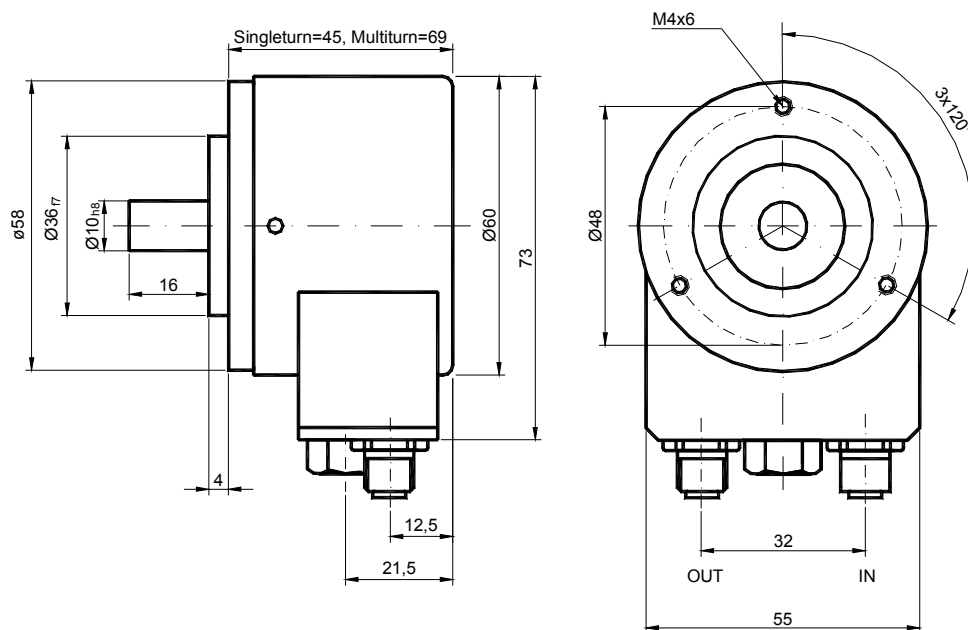
Programmable CAN Transmission Modes

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

P-Flange (P)



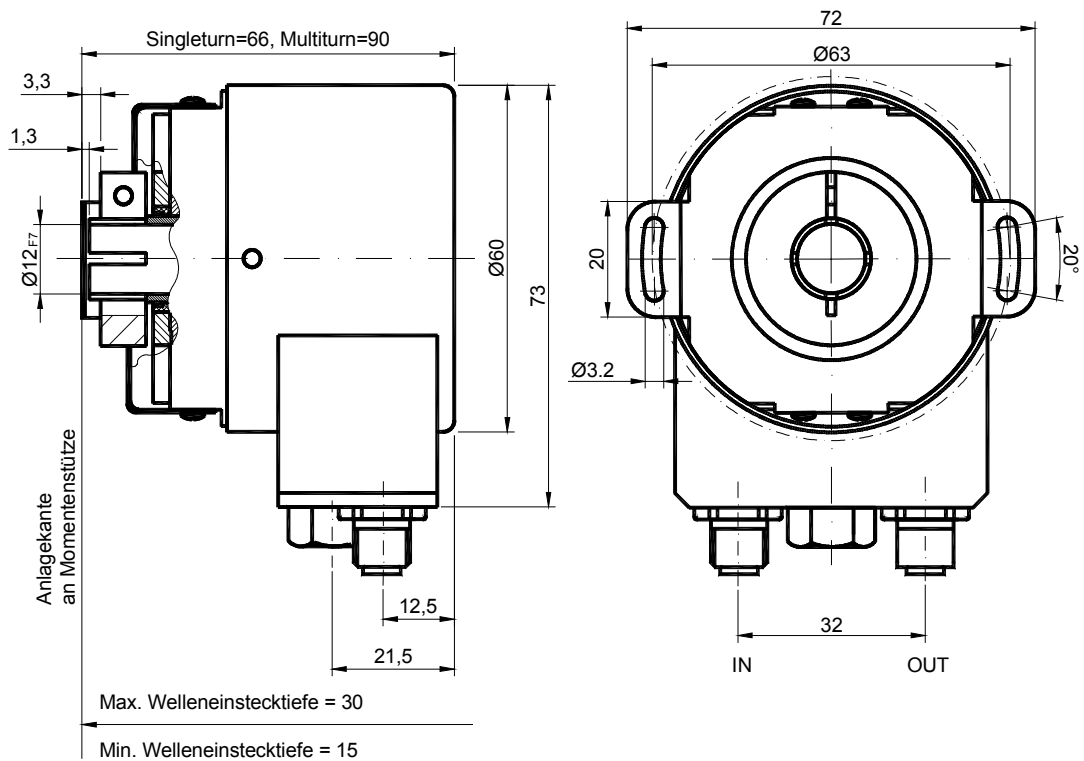
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Mechanical Drawings

Hollow Shaft (H)

Allowed shaft movement of drive element is listed in the table.

	Axial	Radial
Static	± 0,3 mm	± 0,5 mm
Dynamic	± 0,1 mm	± 0,2 mm



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Models/Ordering Description

Description	Type Key									
Absolute rotary encoder	AWC	58	B	B1	C5	W	2BW-E
Diameter in mm										
Steps per revolution	4096	12								
	8192	13								
No. Of revolutions	1		1							
	4096		4096							
Flange	P Flange (Shaft = 10 mm Ø)					P				
	H Flange (Hollow Shaft = 12 mm Ø)					H				
Code	Binary					B				
Version							B1			
Interface	CAN	programmable						C5		
	Shaft sealing (not possible for Z-Flange)								W	
Connection	Male/ Female connector radial exit, 5 pin, M12									2BW-E
	Option protective element integrated									

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
Protective cap	Protective cap for male connector M12	SK-S
Protective cap	Protective cap for female connector M12	SK-B
Terminal resistor	External terminal resistor for female connector	TR-B
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.

We do not assume responsibility for technical inaccuracies or omissions. Specifications are subject to change without notice.