POSITAL
FRABA

ABSOLUTE ROTARY ENCODER
DEVICE NET

Main Features

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

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
- Transmission mode: Polled mode, cyclic mode, or cos mode

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- **Electrical Features**
- Temperature insensitive IR-opto-receiver-array
- status indication with two LEDs in the connection cap
- 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, up to 64 nodes
Transmission rate	150, 250, 500kBaud (programmable in connection cap)
Accuracy of division	$\pm$ ½ LSB
Step frequency LSB	Max. 100 kHz (valid code)
Electrical lifetime	$> 10^5$ h
Node number	Programmable by 2 turn-switches in connection cap

Mechanical Data

Housing	Aluminum		
Lifetime	$> 10^5$ h at 1,000 rpm		
Inertia of rotor	≈ 50 gcm^2		
RPM	Max. 6,000 (continuously)		
Shock (EN 60068-2-27)	≤ 30 g (halfsine, 11 ms)		
Permanent shock (EN 60028-2-29)	≤ 10 g (halfsine, 16 ms)		
Vibration (EN 60068-2-6)	≤ 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	≤ 5 Ncm		
Flange	**Synchro (Y)**	**Clamp (F), Synchro (Z)**	**Square (Q)**
Shaft diameter	6 mm	10 mm	9,52 mm
Shaft length	10 mm	20 mm	21,6 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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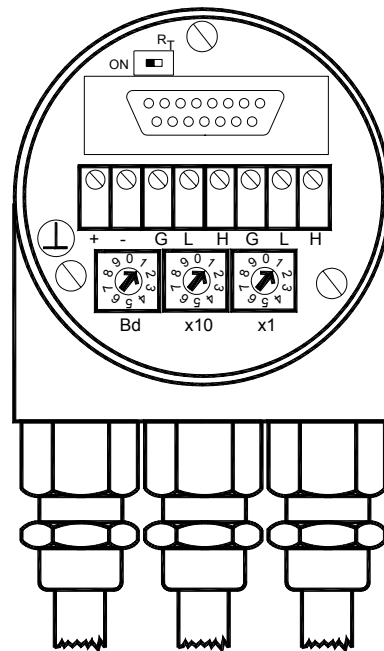# DEVICE NET

Interface

Installation connection cap

The rotary encoder is connected by two or three cables depending on whether the power supply is integrated into the bus cable or connected separately. If the power supply is integrated into the bus cable, one of the cable glands can be fitted with a plug. The cable glands are suitable for cable diameters from 5.5 up to 9 mm.

Clamp		Description	
⊥		Ground	
+		24 V Supply voltage	
-		0 V Supply voltage	
G	(left)	CAN Ground	(Bus In)
L	(left)	CAN Low	(Bus In)
H	(left)	CAN High	(Bus In)
G	(right)	CAN Ground	(Bus Out)
L	(right)	CAN Low	(Bus Out)
H	(right)	CAN High	(Bus Out)

Configuration connection cap

The setting of the node number is achieved by 2 turn-switches in the connection cap. Possible addresses lie between 0 and 63 whereby every address can only be used once. Inside the encoder the defined address is increased by one.The connection cap can easily be opened for installation by removing the two cap screws.

A termination resistor is integrated in the connection cap. The resistor must be switched on if the encoder is connected at the end or at the beginning of the bus. Separation of Bus In and Bus Out signals if termination resistor is activated.
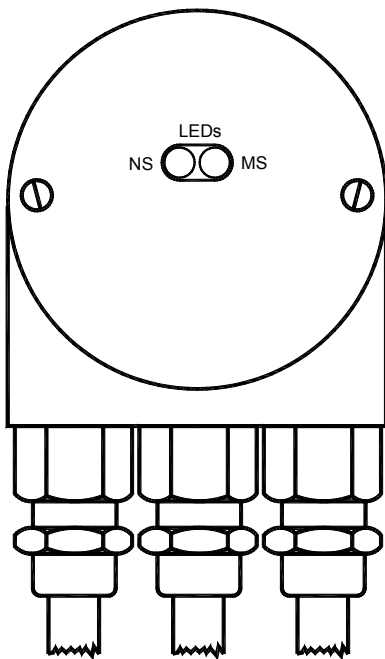Resistor:

ABSOLUTE ROTARY ENCODER
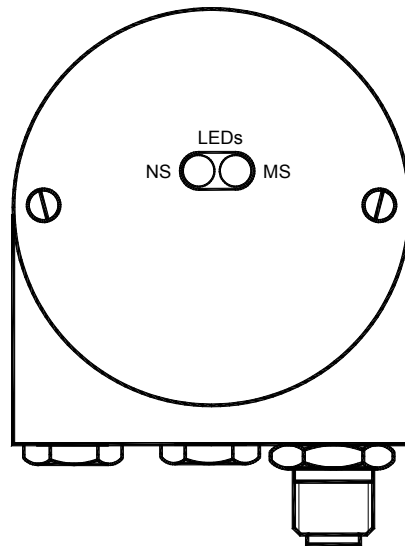# DEVICE NET

Diagnostic connection cap

Two LEDs on the backside of the connection cap show the operating status of the encoder.

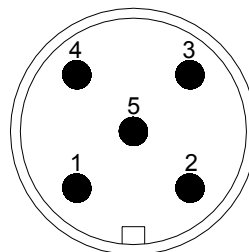This can be very useful for installing and setting-up the encoder.

Connection cap with round connector

The connection cap type AH58-B1DA-1BW is equipped with a 5 pole connector in M12 dimensions. All other cable glands are replaced by blind caps.

Following table indicates pinning of the micro style connector:

Pin number	Signal
1	(CAN Ground)
2	24 V Supply voltage
3	0 V Supply voltage
4	CAN High
5	CAN Low

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.

Programmable CAN Transmission Modes

|	
Polled Mode	By a 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.
Change of State	The absolute rotary encoder transmits the actual process value. The process value is transmitted when the position changes. This is useful to reduce the bus activity.
Cyclic	The absolute rotary encoder transmits the actual process value event controlled by an internal timer. This is also useful to reduce the bus activity.

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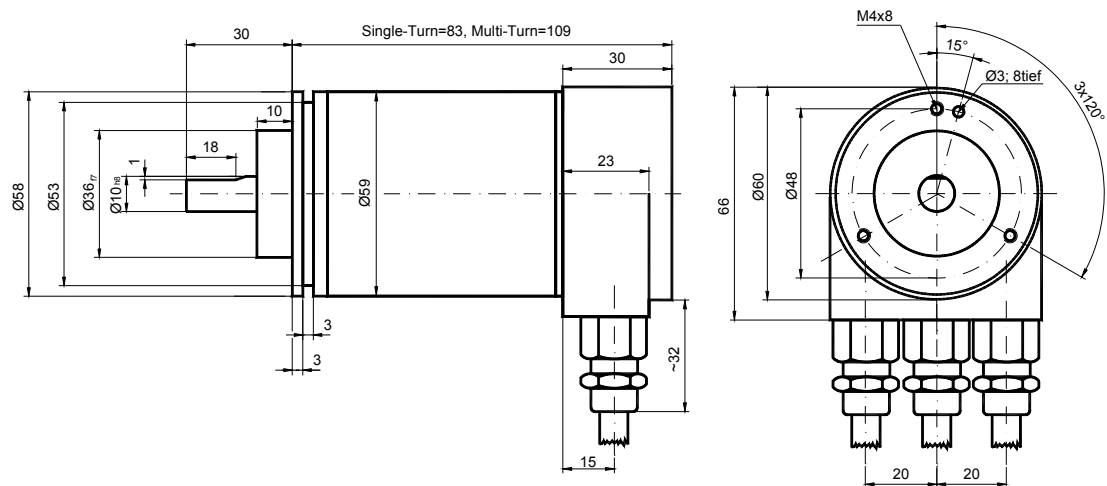## DEVICE NET

Mechanical Drawings

Synchro Flange (Y,Z)

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

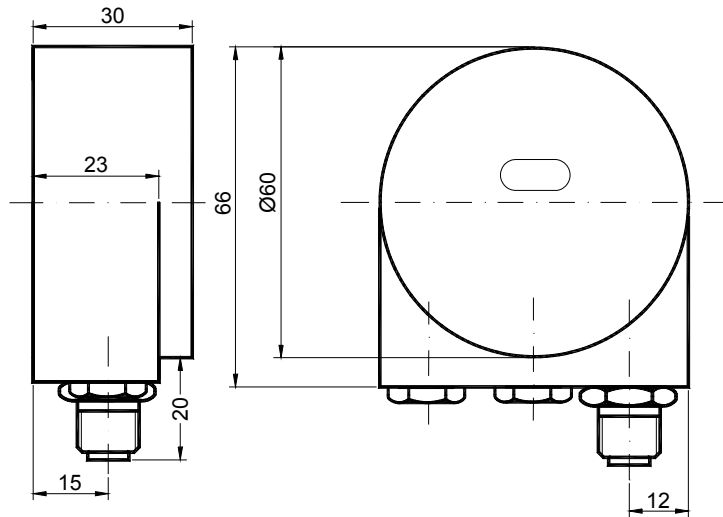|	d [mm]	l [mm]
Y-Flange	6_{f6}	10
Z-Flange	10_{h8}	20
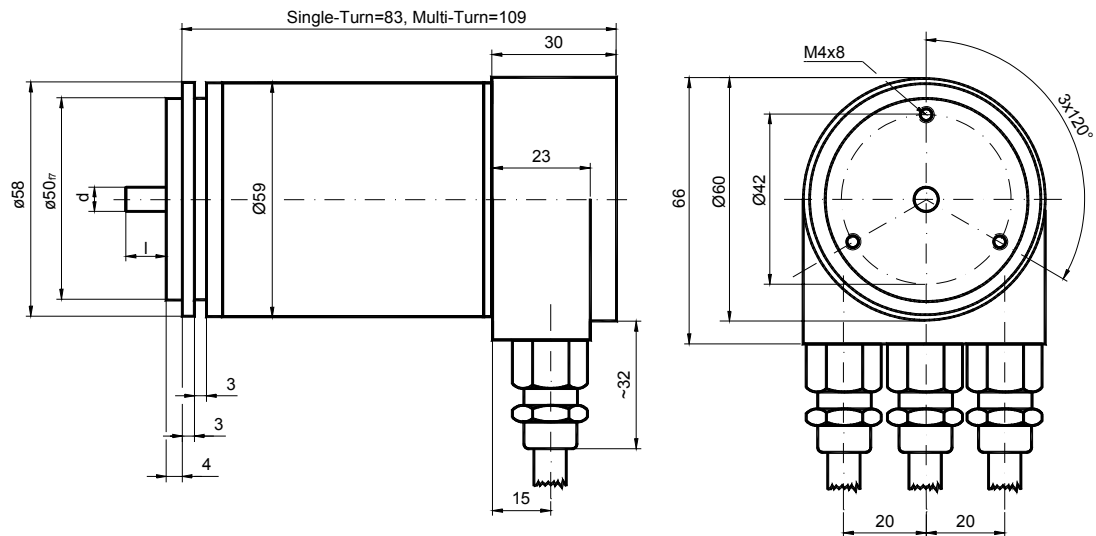
Clamp Flange (F)

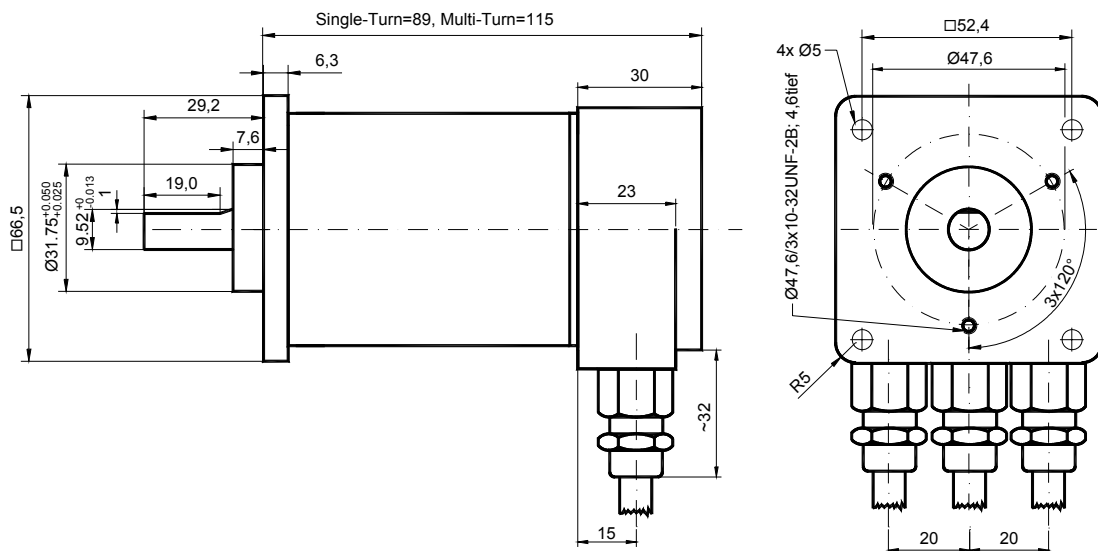# ABSOLUTE ROTARY ENCODER
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Connection cap AH58-B1DA-1BW, 5pin round connector M12, Micro style

Square Flange (Q)

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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				
	Square Flange (Shaft = 9,52 mm ∅)				Q				
Code	Binary					**B**			
Version							**B1**		
Interface	DeviceNet programmable							**D2**	
Options	Without								**0**
	Shaft sealing (not possible for Z-Flange)								W
	Stainless steel configuration (flange, housing, cap)								Q
Connection	Realized with connection cap *1)								**3PG**

*1) The connection cap has to be ordered separately !

Standard = bold, further models on request

Accessories and Documentation

Description		Type
Connection cap*1)	T-coupling-functionality with integrated address setting is necessary to use the encoder	
	Standard	AH 58-B1DA-3PG
	Stainless steel configuration	AH 58-B1DA-3PG-VA
	Connection with 5pin round connector, Micro style	AH 58-B1DA-1BW
- special version -	2 cable glands for cable diameter: 9 - 13 mm	AH58-B1DA-2M20
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*2)	Installation and configuration manual, German	UMD-DN
User Manual*2)	Installation and configuration manual, English	UME-DN
EDS-File*2)	Disc containing EDS-file for coniguration.	DK-D2

*2) 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.