SCANCON
Industrial Encoders

**Absolute Rotary Mining Encoder - Explosion Proof Stainless Steel enclosure
Shaft or Hollow shaft**

Type: EXME - Device Net

ATEX

Ex

CE

Main Features

- Approval:
  CE 0539 (Ex) I M2 Ex d I/II T6
- Heavy-duty industrial model
- Interface: Device Net
- Max. 8192 steps per revolution (16 Bit)
- Max. 16384 revolutions (14 Bit)
- Code: Binary

Programmable Parameters

- Direction of rotation (complement)
- Resolution per revolution
- Total resolution
- Preset value
- Transmission mode:
  Polled mode, Change of State, Cyclic

Mechanical Structure

- Ex-proof, flameproof enclosure
- 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

- Address and baudrate setting via rotary switches
- Connection via connection cap
- Temperature insensitive IR-opto-receiver-ASIC
  with integrated signal conditioning
- Highly integrated circuit in SMD-technology
- Polarity inversion protection
- Over-voltage-peak protection

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Certified by Epsilon

Epsilon

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Technical Data

Electrical Data

Interface	Transceiver according ISO/DIS 11898, up to 64 nodes galvanically isolated by opto-couplers
Transmission rate	150 kBaud, 250 kBaud, 500kBaud
Device addressing	Adjustable by rotary switches in connection cap
Supply voltage	10 – 30 V DC (absolute limits) *
Current consumption	max. 230 mA with 10 V DC, max. 100 mA with 24 V DC
Power consumption	max. 2.5 Watts
Step frequency LSB	800 kHz
Accuracy of division	$\pm$ ½ LSB (12 bit), ± 2 LSB (16 bit)
EMC	Emitted interference: EN 61000-6-4
	Noise immunity: EN 61000-6-2
Electrical lifetime	> 10^5 h

* Supply voltage according to EN 50 178 (safety extra-low voltage)

Mechanical Data

Housing	Aluminum	
Max. shaft loading	Axial 50 N, radial 50 N	
Inertia of rotor	$\leq$ 35 gcm^2	
Friction torque	IP65	$\leq$ 0.05 Nm at 25°C
	IP67	$\leq$ 0.2 Nm at 25°C
RPM max.	IP65	3,000 RPM
	IP54	6,000 RPM
	IP67	1,200 RPM
Shock (EN 60068-2-27)	$\leq$ 100 g (halfsine, 11 ms)	
Vibration (EN 60068-2-6)	$\leq$ 10 g (10 Hz ... 2,000 Hz)	
Weight (standard version)	Approx. 1200 g	

Flange	**Clamp (C)**
Shaft diameter	10 mm
Shaft length	20 mm

Environmental Conditions

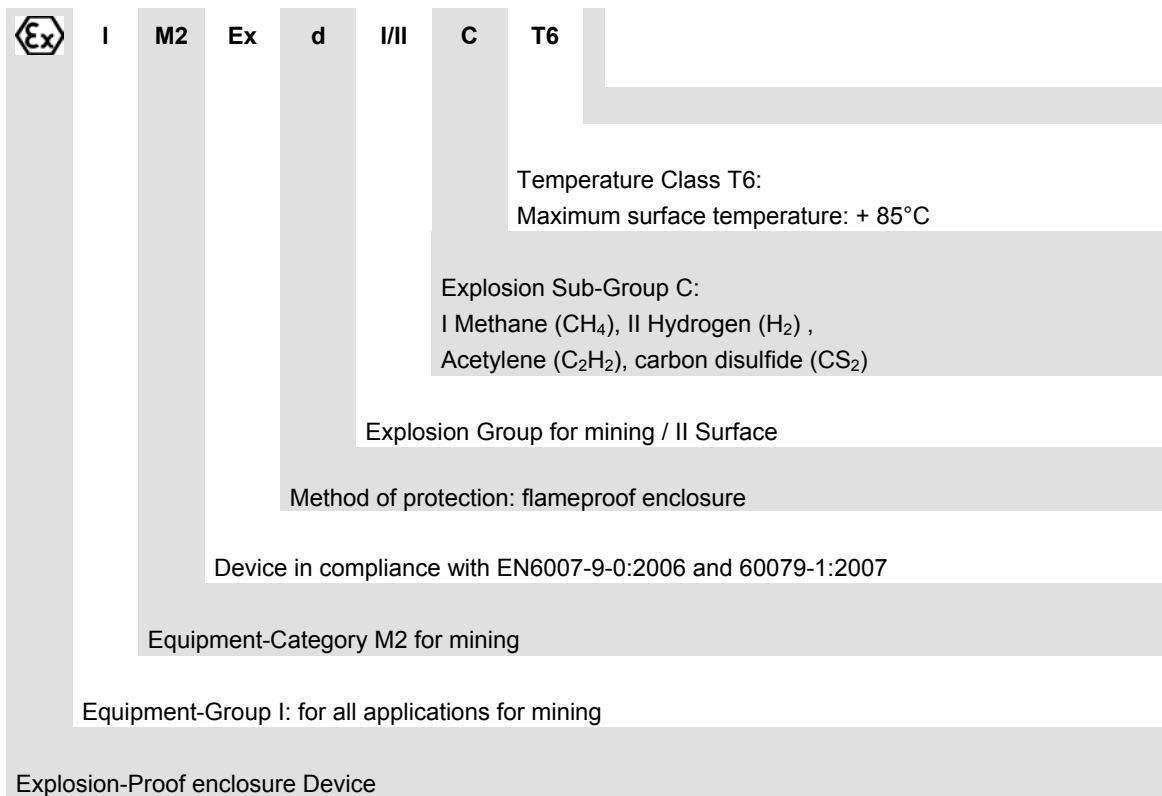| Operating temperature	- 40 .. + 70°C
Storage temperature	- 40 .. + 85 °C
Humidity	98 % (without liquid state)
Protection class (EN 60529)	IP 65 (others on request)

EXME - Device Net

Note:
For ambient temperatures below –10°C and above +60°C use field wiring suitable for both minimum and maximum ambient temperature.

Ex-Protection

SCANCON encoders type series EXME are classified according to ⟨Ex⟩ I M2 Ex d I/IIC T6

⟨Ex⟩	I	M2	Ex	d	I/II	C	T6

Temperature Class T6:
Maximum surface temperature: + 85°C

Explosion Sub-Group C:
I Methane (CH_4), II Hydrogen (H_2) ,
Acetylene (C_2H_2), carbon disulfide (CS_2)

Explosion Group for mining / II Surface

Method of protection: flameproof enclosure

Device in compliance with EN6007-9-0:2006 and 60079-1:2007

Equipment-Category M2 for mining

Equipment-Group I: for all applications for mining

Explosion-Proof enclosure Device

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Interface

Installation connection cap

The rotary encoder is connected with 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 (unused cable entries have to be closed with a blind plug-> accessories). Two cable glands are suitable for cable diameters from 8 up to 9.5 mm (bus cable), one cable gland is suitable for cable diameters from 6.5 up to 8 mm (power supply).

Follow the instructions in the installation manual carefully, otherwise the ATEX-certification will repealed!
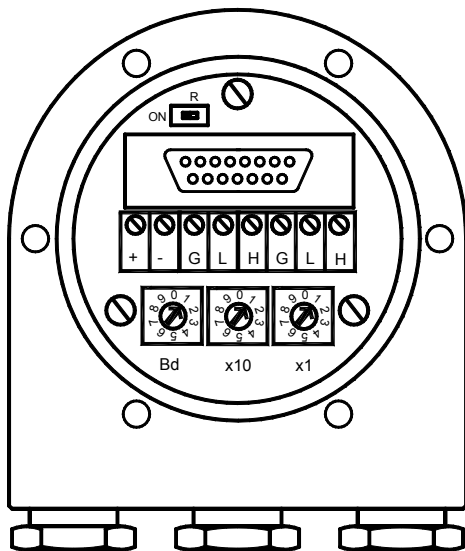
Clamp		Description	
$\perp$		Ground	
+		24 V Supply voltage	
-		0 V Supply voltage	
G	(left)	CAN Ground	(Bus In)
L	(left)	CAN Low	(Bus In)
H	(left)	CAN High	(Bus In)
G	(right)	CAN Ground	(Bus Out)
L	(right)	CAN Low	(Bus Out)
H	(right)	CAN High	(Bus Out)

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.

The baudrate is set with the third rotary switch in the cap.

The connection cap can be opened for installation by removing the six cap screws.

A termination resistor is integrated in the cap. The resistor must be switched on if the encoder is connected at the end or at the beginning of the bus:

device X   last device

Separation of Bus In and Bus Out signals if termination resistor is activated.

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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.

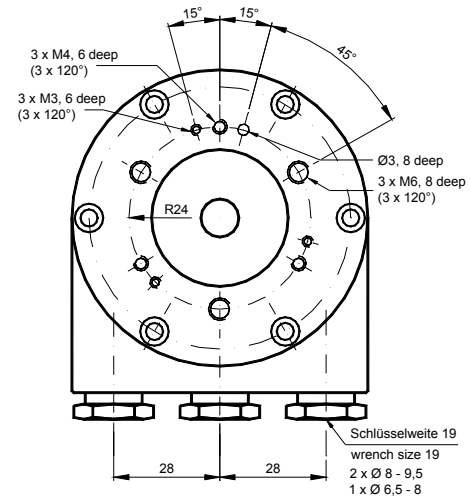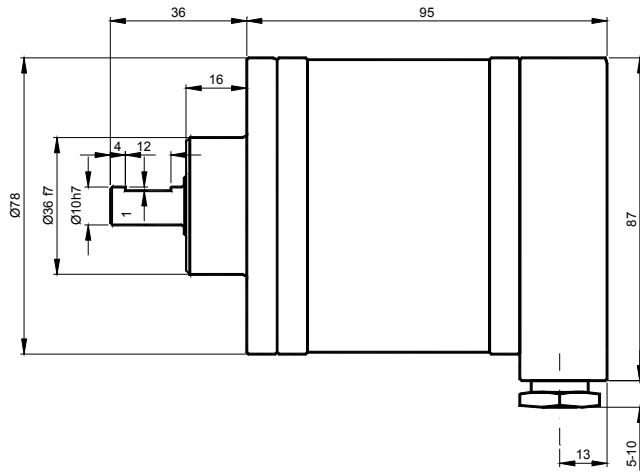**Programmable Transmission Modes**

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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Mechanical Drawings
Clamp flange (C) Shaft
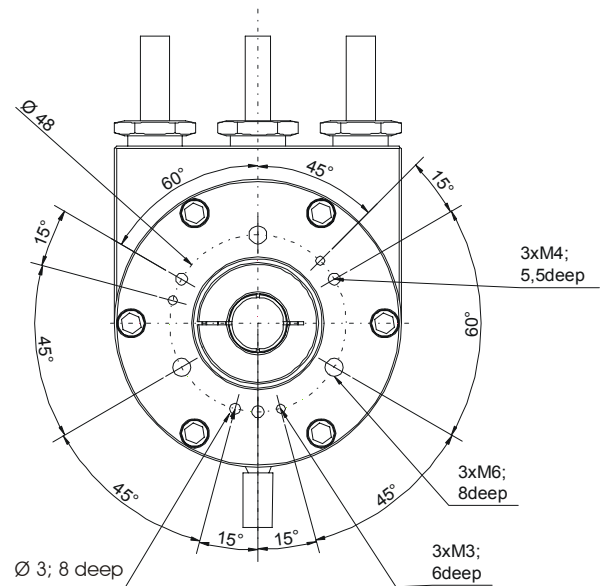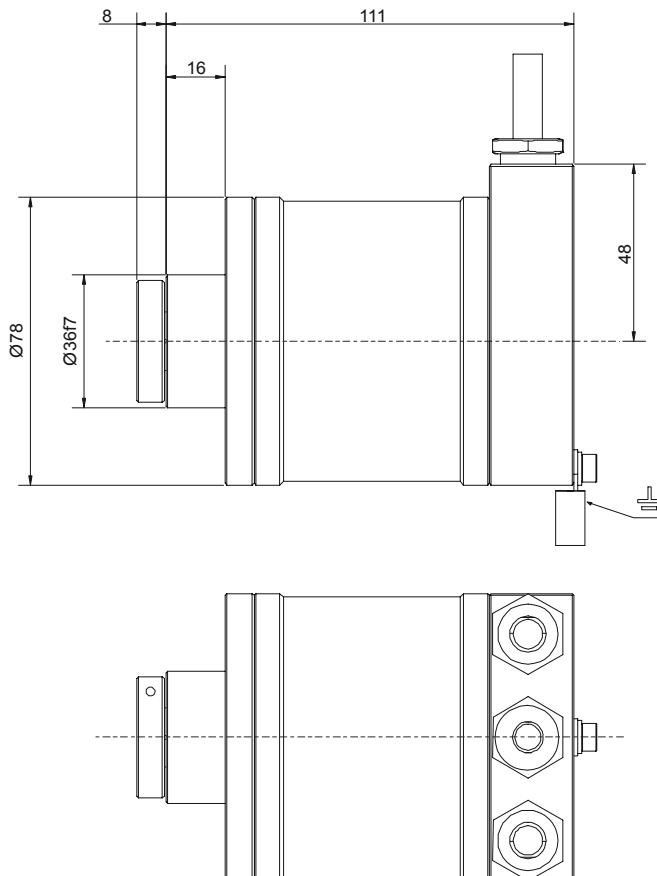
3 x M4, 6 deep
(3 x 120°)

3 x M3, 6 deep
(3 x 120°)

Ø3, 8 deep

3 x M6, 8 deep
(3 x 120°)

R24

Schlüsselweite 19
wrench size 19
2 x Ø 8 - 9,5
1 x Ø 6,5 - 8

Hollow Shaft

3xM4;
5,5deep

3xM6;
8deep

3xM3;
6deep

Ø 3; 8 deep

![Scancon Industrial Encoders logo]

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Models/Ordering Description

Description	Type key											
Ex-Proof Optocode	**EXME-**	_ _	_ _ -	_ _	_ _ -	_ -	_ _ -	_ _ -	_ _ -	_ _ -	_ -	_ _
Interface	DeviceNet **D2**											
Version	**B1**											
Code	Binary	**B**										
Revolutions (Bits)	Singleturn		**00**									
	Multiturn (4096 revolutions)		**12**									
	Multiturn (16384 revolutions)		14									
Steps per Revolution	4096			12								
(Bits)	8192			**13**								
Shaft or	Solid Shaft				**A**							
Hollow Shaft	Hollow Shaft				H							
Material	Stainless Steel					VA						
Shaft diameter	10 mm						**10**					
Shaft length	20 mm						**20**					
Hollow shaft diameter	14 mm							**14**				
Deep	35 mm							**35**				
IP Rating	IP66								66			
	IP67								67			
Flange	Clamping Flange									**C**		
Connection	-Connection Cap Field Bus – radial cable outlets											
	2 x Ø 8-9.5 mm / 1 x Ø 6.5 - 8 mm											**FS**
	-Connection Cap Field Bus – radial cable outlets											**FA**
	-2 x M20 x 1,5 for commercial cable glands											**FA00**
	-2 x Scancon cable gland for protecting Hydraulic Hose											
	Cable Ø6,5 mm to Ø8 mm											**FA08**
	Cable Ø8 mm to Ø10 mm											**FA10**
	Cable Ø10 mm to 11,5 mm											**FA12**

Standard = bold, further models on request

Accessories and Documentation

Description		Type
EDS-File*	Disc containing EDS-file for configuration.	
Blind Plug	Blind plug for unused cable entries	**EXAG-BL**

*   Can be downloaded free of charge from our homepage www.scancon.dk

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