

# Absolute encoders - bus interfaces

EX approval ATEX EEx d IIC T6

Optical multiturn encoders 13 bit ST / 16 bit MT

## X 700 - Profibus



X 700 with Profibus

### Features

- Encoder multiturn / Profibus / ATEX
- Optical sensing
- Resolution: singleturn 13 bit, multiturn 16 bit
- Clamping flange with shaft  $\varnothing 10$  mm
- Explosion protection per EEx d IIC T6
- Area of application: EX I/II 2 GD / ATEX 133213X
- Device class 2 / zone 1 (gas), zone 21 (dust)

### Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	$\leq 100$ mA (24 VDC)
Initializing time (typ.)	250 ms after power on
Interface	Profibus-DPV0
Function	Multiturn
User address	Rotary switch in bus cover
Steps per turn	$\leq 8192$ / 13 bit
Number of turns	$\leq 65536$ / 16 bit
Absolute accuracy	$\pm 0.025^\circ$
Sensing method	Optical
Code	Binary
Code sequence	CW/CCW programmable
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Programmable parameters	Operating modes Total resolution Scaling Rotation speed monitoring
Diagnostic functions	Position or parameter error Multiturn sensing

### Technical data - mechanical design

Dimensions (flange)	$\varnothing 70$ mm
Shaft	$\varnothing 10$ mm (clamping flange)
Flange	Clamping flange
Protection DIN EN 60529	IP 67
Operating speed	$\leq 6000$ rpm (mechanical) $\leq 6000$ rpm (electric)
Starting torque	$\leq 0.4$ Nm
Shaft loading	$\leq 60$ N axial $\leq 50$ N radial
Materials	Housing: stainless steel Flange: stainless steel
Operating temperature	$-25...+60^\circ\text{C}$
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 16-2000 Hz DIN EN 60068-2-27 Shock 200 g, 6 ms
Weight approx.	1500 g
Connection	Bus cover



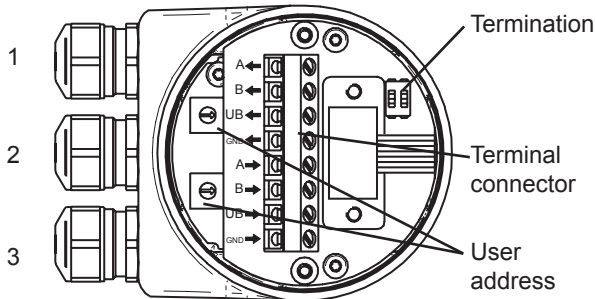
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### View inside bus cover



Cable: 1, 2 = Ø5...10 mm (Profibus) / 3 = Ø3...6.5 mm (UB)

### Terminal assignment

#### Cable gland

UB	Voltage supply 10...30 VDC
GND	Ground connection relating to UB
A	Negative data line
B	Positive data line

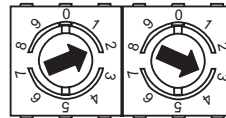
Terminals of the same significance are internally connected and identical in their functions. Max. load on the internal terminal connections UB-UB and GND-GND is 1 A each.

#### Termination



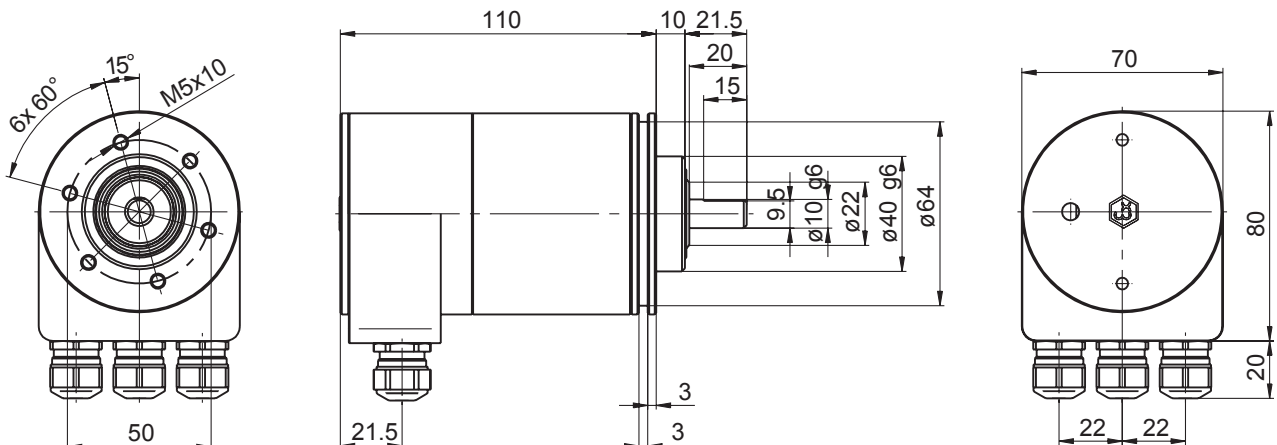
both ON = final user  
both OFF = user X

#### User address (identifier)



Defined by rotary switch.  
Example: User address 23

### Dimensions



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## Check list for EX-approval

In compliance with EU standards 94/9/EG for potentially explosive areas it is imperative that the present checklist is duly completed and that all pending questions relating to explosion protection and application are clarified.

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Division: \_\_\_\_\_

In charge: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

e-mail: \_\_\_\_\_

Product name:	Version:	Resolution (ppr / code):	Supply voltage:
Kind of e-connection:	Length of cable (m):	Output circuit:	Special options:

### Responsibility

- Our customer will receive all relevant information to verify a correct application.
- Our customer has to clarify all relevant criterions and characteristics.
- The operator shall be responsible for not exceeding the maximum performance limits of our devices (see data sheet).

**Device utilization/application** (E.g.: Lacquering line, manufacturing tech., gas storing vessel etc.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Device group, device category and zone classification

**Device group** please tick

Device group I

Device group II

Category / Zone	Ex-atmosphere prevailing	
Category 1 (= Zone 0/20)	... permanently, long-term or frequently	<input type="checkbox"/>
Category 2 (= Zone 1/21)	... only now and then	<input type="checkbox"/>
Category 3 (= Zone 2/22)	... rarely or seldom	<input type="checkbox"/>

**Zone classification**

G (gases)	Zone 0, zone 1, zone 2	<input type="checkbox"/>
D (dusts)	Zone 20, zone 21, zone 22	<input type="checkbox"/>

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## Check list for EX-approval

### Ignition protection

please tick

Ex d	Flameproof (pressure-proof capsule)	<input type="checkbox"/>
Ex ia	Intrinsic safety	<input type="checkbox"/>
Ex ib	Intrinsic safety	<input type="checkbox"/>

### Gas explosion group

Gases are classified into explosion groups. Danger increases from group II A to II C.

please tick

II A	Propane	<input type="checkbox"/>
II B	Ethylene	<input type="checkbox"/>
II C	Hydrogen, Acetylene	<input type="checkbox"/>

### Temperature classes and groups of explosion

Temperature class	Max. surface temperature of operating equipment (°C)	Max. ignition temperature of combustible substances (°C)	please tick
T1	450	> 450	void
T2	300	>300...< 450	void
T3	200	>200...< 300	void
<b>T4</b>	135	>135...< 200	<input type="checkbox"/>
T5	100	>100...< 135	void
<b>T6</b>	85	> 85...< 100	<input type="checkbox"/>

### Information on ambient and operating temperature

Expected operating temperature:

to be clarified

Field ambient temperature:

to be clarified

### Mechanical strain

Rotation speed (rpm)

Axial shaft load (N)

Radial shaft load (N)

Ambient impacts (salt, lye, etc.)

Date

Signature

Stamp:

Date

Release EExB / trained sales