Absolute encoders - bus interfaces
Ex approval Ex II 2D/2G (ATEX)
Optical multiturn encoders 13 bit ST / 16 bit MT

X 700 - Profibus

X 700 with Profibus

Features

– **Encoder multiturn / Profibus / ATEX**
– **Optical sensing method**
– **Resolution: singleturn 13 bit, multiturn 16 bit**
– **Clamping flange with solid shaft ø10 mm**
– **Explosion protection per Ex II 2D/2G (ATEX)**
– **Device class 2 / zone 1 (gas), zone 21 (dust)**
– **Maximum resistant against magnetic fields**

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤100 mA (24 VDC)
Initializing time typ.	250 ms after power on
Interface	Profibus-DPV0
Function	Multiturn
Device adress	Rotary switches in bus cover
Steps per revolution	≤8192 / 13 bit
Number of revolutions	≤65536 / 16 bit
Absolute accuracy	±0.025 °
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

Size (flange)	ø70 mm
Shaft type	ø10 mm solid shaft (clamping flange)
Flange	Clamping flange
Protection DIN EN 60529	IP 67
Operating speed	≤6000 rpm (mechanical) ≤6000 rpm (electric)
Starting acceleration	≤1000 U/s²
Starting torque	≤0.4 Nm (+25 °C)
Admitted shaft load	≤60 N axial ≤50 N radial
Materials	Housing: stainless steel Flange: stainless steel
Operating temperature	-20...+70 °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
Explosion protection	Ex II 2G Ex d IIC T6 Ex II 2D
Weight approx.	1500 g
Connection	Bus cover

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Part number

X 700.P	1	1	3P33

Interface
3P33 Profibus-DPV0 / cable gland

Voltage supply / signals
1 10...30 VDC / 13 + 16 bit

Flange / Solid shaft
1 Clamping flange / ø10 mm, IP 67

CD with file descriptions is not included in the delivery. You may order them on CD as accessory.

Accessories

Programming accessories

10146710	CD with describing files & manuals (Z 150.022)

Profibus-DP features

| Bus protocol	Profibus-DPV0
Device profile	Device Class 1 and 2
Cyclic data exchange	Communication in line with DPV0
Input data	Position value. In addition optionally speed signal parametering (output of current rotation speed).
Output data	Preset
Preset	Parameter for setting the encoder to a requested position value assigned to a defined shaft position of the system. Storage non-volatile.
Rotating direction	Parameter for defining the rotating direction in which there have to be ascending or descending position values.
Scaling	Parameter defining the steps per turn as well as the total resolution.
Diagnosis	The encoder supports the following error warnings: - Position and parameter error - Lithium battery voltage control (Multiturn)
Default	User address 00 Termination OFF

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X 700 - Profibus

View inside bus cover
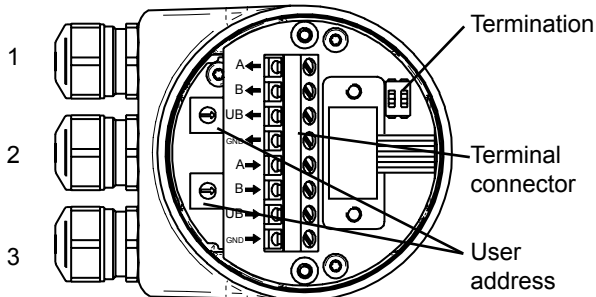
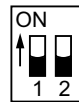
Cable: 1, 2 = ø5...10 mm (Profibus) / 3 = ø3...6.5 mm (UB)

Terminal assignment

Cable gland

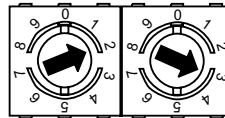|	
UB	Voltage supply 10...30 VDC
GND	Ground connection relating to UB
A	Negative data line
B	Positive data line

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.
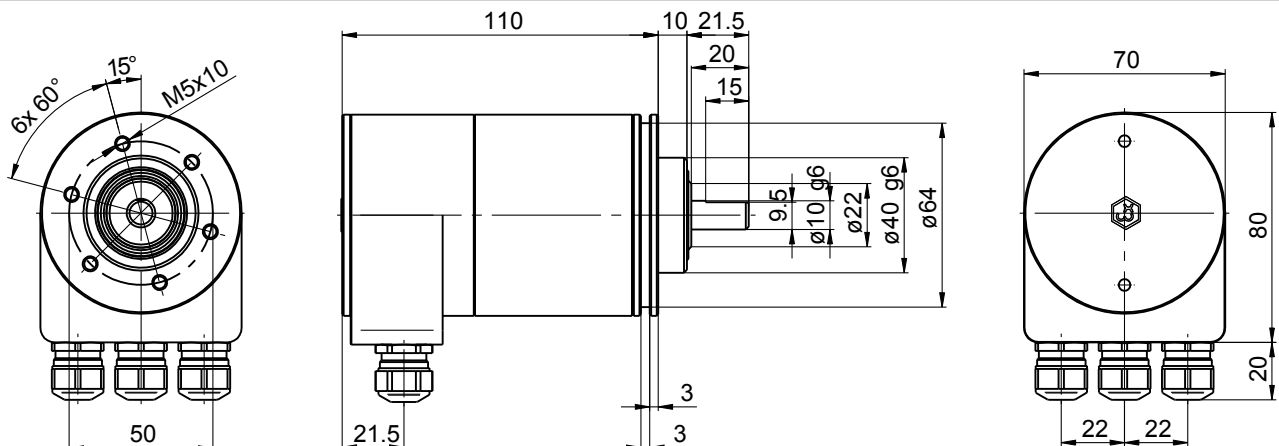
Termination

both ON = final user
both OFF = user X

User address (identifier)

Defined by rotary switch.
Example: User address 23

Dimensions

The electrical outlet may provide a ±15° shift to the bore pattern

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Checklist for EX protection data collection

For the design of explosion-proof encoders of the X 700 series according to EU Directive 2014/34/EU,
it is absolutely necessary to complete this checklist in order to be able to resolve all open questions regarding explosion protection and application conscientiously.

Company: _____

Address: _____

Department: _____ Phone-No.: _____

Clerk/Technician: _____

Email: _____ Fax: _____

Responsibility:
The operator is responsible for maintaining the performance limit of the devices (see datasheet)

Equipment group:			Please select
Equipment group I,	**M2**	Mining (underground /above-ground mining)	
Equipment group II,	**2G/2D**	all other areas	

Equipment Use / Field Application: (i.e.: paint line, process engineering, gas storage etc.)

_____

_____

Information on operating temperature and ambient temperature		Enter values
Expected operating temperature:		
Operating temperature:	Standard: -20...+70 °C, optional 100 °C	datasheet
Ambient temperature in the field:		

Mechanical load			Enter values
Numbers of Revolutions:	RMP	max. 3000 RMP	
Axial shaft load:	(N)		
Radial shaft load:	(N)		
Environmental influences (Salt, alkalis, etc.):			

Date:	Stamp:
Signature:	