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Important Note

The information shown in these documents is for guidance only. No liability is accepted for any errors or omissions. The designer or user is solely responsible for the safe and proper application of the parts, assemblies or equipment described.

Explosion-proof Shaft Encoder RX70 /RX71 with IP64



HENGSTLER

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Introduction

These installation instructions are provided for the connection and starting procedure of your shaft encoder.

This encoder is EX-tested and licensed. On request we will be pleased to send you the respective certificate of conformity PTB00 ATEX 1107.

Safety and Operating instruction

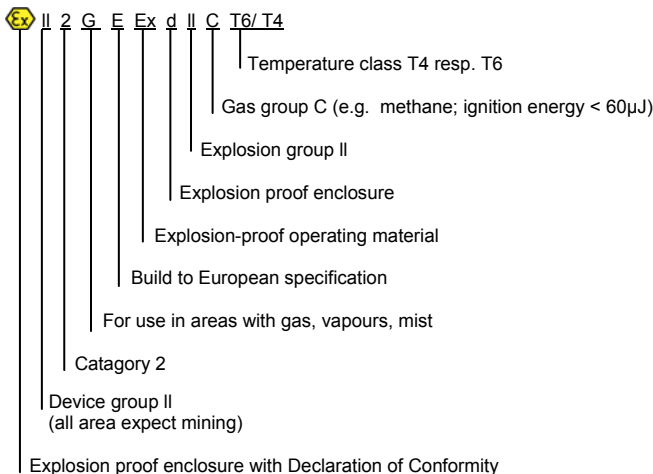
- The shaft encoders of the type RX 70/ RX71 model series are quality products manufactured in accordance with established electrical engineering standards. The units have been delivered from the factory in perfect conformance to safety regulations. To maintain this condition and to ensure trouble-free operation, please observe the technical specifications of this document.
- Installation and mounting may only be performed by an electrotechnical expert!**
- The units may only be operated within the limits specified by the technical data.
- Maximum operating voltages must not be exceeded!**
- The units are designed complying with EN 61010.1, protection class III. To prevent dangerous structure-borne currents, the equipment has to be run on safety extra-

- Fields of application: industrial processes and controls.
- Overvoltage at the connecting terminals must be limited to overvoltage-class-II values.
- Please avoid shocks to the housing - especially to the encoder shaft- and axial or radial overload to the encoder shaft.
- Maximum accuracy and durability of our shaft encoders is only granted when using suitable couplings.
- The high-quality EMC-specifications are only valid together with standard-type cables and plugs. When using screened cables, the screen must broadly be connected with ground on both ends. Likewise, the voltage-supply cables should entirely be screened. If this is not possible you will have to take appropriate filtering measures.
- Installation environment and wiring are influential on the encoders EMC: Thus the installer must secure EMC of the whole facility (device).
- Transient peaks on the power supply leads are to be limited by the preconnected power unit to a maximum of 1000 V.
- In electrostatically threatened areas please take care for neat ESD-protection of plug and connecting cable during installation work.
- The connecting cable is only suitable for fixed installation (no haulage operating). The facility installer is responsible for cable selection with consideration of EX-rules.
- The pressure-proofly encapsulated encoder housing must not be opened.**

EX-Classification

Hengstler Explosion-Proof shaft encoders are classified according to Ex II 2G EEx d IIC T6/ T4.

The PTB has assured with the Declaration of Conformity that the RX 70 / 71 meets the requirements of safety and health according to EN 50014 and EN 50018. Therefore it is approved in explosive areas, code „Ex II 2 G EEx d II C T6/ T4“. For applications under tough environmental conditions and food industry the stainless steel version RX 71 is available.



T4 = Highest permissible surface temperature + 130 °C¹⁾
 T6 = Highest permissible surface temperature +85°C²⁾

¹⁾ E Ex d IIC T4: max. speed = 10000 min⁻¹ and ambient temperature -10...+60°C
²⁾ E Ex d IIC T4: max. speed = 6000 min⁻¹ and ambient temperature -10...+40°C

Mechanical data

Shaft diameter	10 mm
Shaft load	radial 100 N, axial 40 N
Max. speed	10.000 RPM EEx d IIC T4), 6.000 RPM EEx d IIC T6)
Torque	≤ 1 Ncm
Moment of inertia	20 gcm ² approx.
Protection class (EN 60529)	housing IP 65, bearing IP 64 ¹⁾
Ambient temperature	-10 ... +60 °C EEx d IIC T4 -10 ... +40 °C EEx d IIC T6
Storage temperature	-25 ... +85 °C
Vibration performance (IEC 68-2-6)	100 m/s ² (10...60 Hz 1,5 mm; 60...2.000 Hz 100m/s ²)
Shock resistance (IEC 68-2-27)	1,000 m/s ² (6 ms)
connection	cable axial or radial for fixed installation
Size	Ø 70 mm
Mounting	clamping flange, bores 3 x M6
Weight without cable	RX70 1400 gr approx.; RX71 4.800 gr appr.

¹⁾ no standing water allowed at the shaft entrance, the ball bearing or at the cable entrance

Electrical data

General design	As per EN 61010-1, protection class III, Contamination level 2, overvoltage class II					
screening	Connected to housing					
Noise emission	As per EN 50081-2 (edition 1993)					
Noise immunity	As per EN 50082-2 (edition 1995)					
Power consumption	5V/40mA, 24V/30mA, 10V/60mA					
Supply voltage UB	5 V DC (SELV) ±10%		10...30V DC (SELV)			
Output circuit ¹⁾	PP	PP	RS422	PP	PP compl.	RS422
Code letter	K	D	R, T	K	I	R
Output load [mA]	±10	±30	±30	±30	±30	±30
Output level [V]	High Low	≥2,5 ≤0,5	≥2,5 ≤0,5	≥2,5 ≤0,5	UB-3 ≤2	UB-3 ≤2,5 ≤0,5
Pulse rise time [ns]	250	100	100	2000	2000	100
max. pulse frequency [kHz]	300	300	300	200	200	300
Pole protection of UB	yes	no	no	yes	yes	yes
Short circuit proof	yes	1 chan.	1 chan.	yes	yes	yes
Pulse duty factor	1 : 1					
Pulse width error	±25° electrical					
Phase shift	90° (dist. from chan. A to B is at least 0.45μs at 300 kHz)					
Pulse shape	rectangular					
Alarm output	Open collector, NPN (5mA, 24 V max. with UB = 5 V DC; 5mA, 32 V max. with UB = 10...30 V DC)					

¹⁾ PP = Push-pull; PP compl.= Push-pull complementary; RS422=Line driver

Explosion-proof Shaft Encoder RX70TP/RX71TP



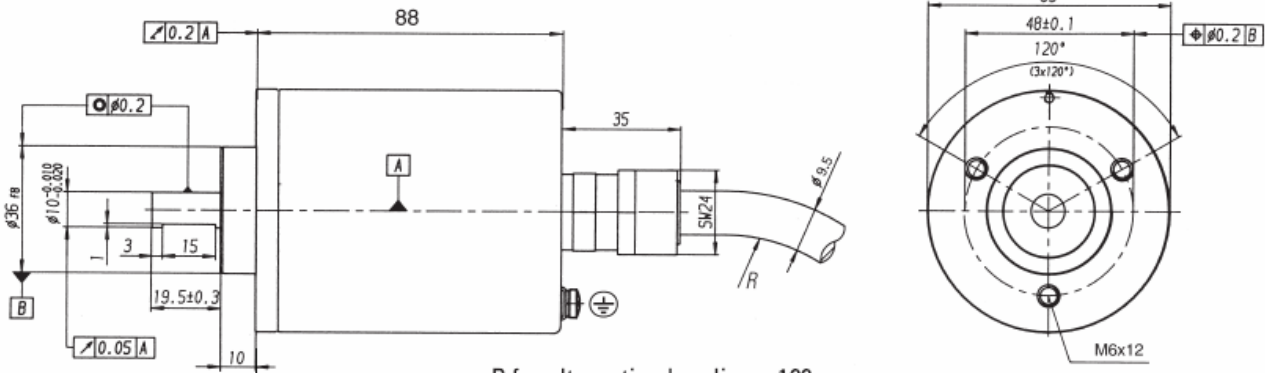
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Connection diagram RX70 / RX71 TI

cable	output			
No.	RS422 + Sense (T)	RS422 + Alarm (R)	Push-pull (K)	Push-pull complementary (I)
12 brn/grn	5 V DC	5/10...30 V DC	10...30 V DC	10...30 V DC
11 wht/grn	GND	GND	GND	GND
10 blu	Sense Vcc			
9 wht	Sense GND			
1 brn	channel A	channel A	channel A	channel A
2 grn	channel \bar{A}	channel \bar{A}		channel \bar{A}
3 gry	channel B	channel B	channel B	channel B
4 pnk	channel \bar{B}	channel \bar{B}		channel \bar{B}
5 red	channel N	channel N	channel N	channel N
6 black	channel \bar{N}	channel \bar{N}		channel \bar{N}
7 vi		Alarm	Alarm	Alarm
screen	Cable screen connected to housing			
Terminal screw	For additional connection of an earth conductor			

Dimensioned Drawing



R for alternating bending > 100 mm
R for permanent bending > 40 mm

Dimensions in mm

Ordering Code

Type	Resolution	Supply Voltage	Flange, Protection, Shaft	Output	Connection
RX70TI Aluminum RX71TI Stainless steel	1...10.000 Increments	A DC 5 V ¹ E DC 10-30 V ²	K.42 Clamping flange, IP64, 10 mm	K Push-pull T RS 422 + Sense I Push-pull complementary R RS 422 + Alarm	A PVC-Kabel axial (5m)

¹ with output T, R
² with output K, I, R