

Model Number

AVM78E-011YYRYGI-1213

Features

- 25-bit multiturn
- ATEX approval
- IECEx approval
- Flameproof enclosure
- Galvanically isolated RS 422 interface
- Removable connection cap

Description

This multiturn absolute encoder transmits a position value corresponding to the shaft setting via the SSI interface (Synchronous Serial Interface). The maximum resolution is 8192 steps per revolution at 4096 revolutions.

The control module sends a clock bundle to the absolute encoder to obtain the position data. The rotary encoder then sends the position data synchronous to the cycles of the control module.

Technical data

Electrical specifications

Operating voltage U_B	10 ... 30 V DC
No-load supply current I_0	max. 90 mA
Linearity	± 0.5 LSB at 12 Bit ± 1 LSB at 13 Bit
Output code	Gray code
Code course (counting direction)	cw descending (clockwise rotation, code course descending)

Interface

Interface type	SSI
Monoflop time	20 ± 10 µs

Resolution

Single turn	13 Bit
Multiturn	12 Bit
Overall resolution	25 Bit
Transfer rate	0.05 ... 1.5 MBit/s
Standard conformity	RS 422

Connection

Cable	Ø9.6 mm, 7-core, 10 m
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Standard conformity

Protection degree	DIN EN 60529, IP66
Climatic testing	DIN EN 60068-2-3, no moisture condensation
Emitted interference	EN 61000-6-4:2007
Noise immunity	EN 61000-6-2:2005
Shock resistance	DIN EN 60068-2-27, 100 g, 3 ms
Vibration resistance	DIN EN 60068-2-6, 10 g, 10 ... 2000 Hz

Ambient conditions

Operating temperature	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)

Mechanical specifications

Material	
Housing	Stainless steel 1.4401 / AISI 316
Flange	Stainless steel 1.4401 / AISI 316
Shaft	Stainless steel 1.4401 / AISI 316
Mass	approx. 5000 g
Rotational speed	max. 3000 min ⁻¹
Moment of inertia	180 gcm ²
Starting torque	≤ 4 Ncm
Shaft load	
Axial	60 N
Radial	80 N

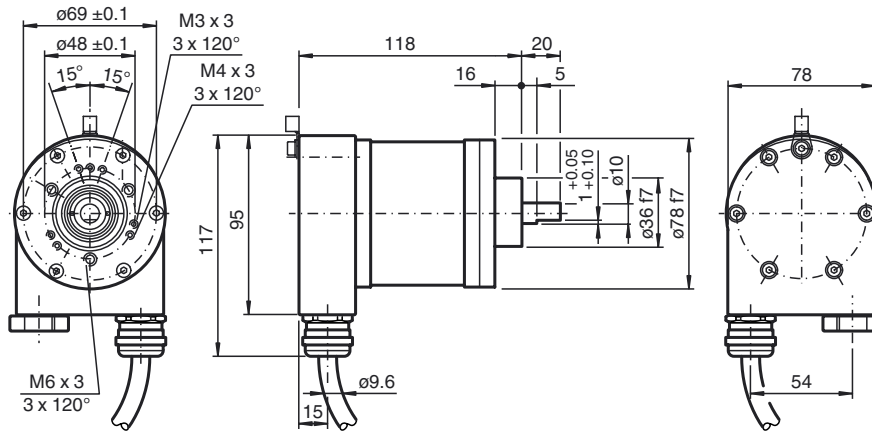
Data for application in connection with Ex-areas

EC-Type Examination Certificate	TÜV 11 ATEX 084272X IECEX TUN 11.0017X
Group, category, type of protection	Ex II 2G Ex d IIC T5 Gb Ex II 2D Ex tb IIIC T100°C Db IP6X

Directive conformity

Directive 94/9/EC	IEC 60079-0:2007 EN 60079-0:2009 IEC 60079-1:2007 EN 60079-1:2007 IEC 60079-31:2008 EN 60079-31:2009
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Dimensions



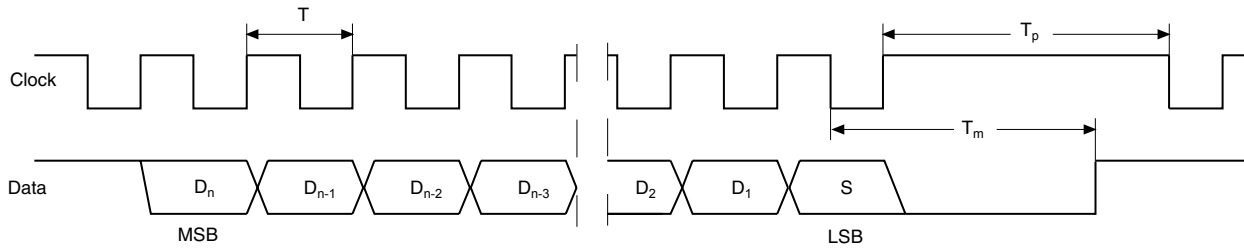
Electrical connection

Signal	Cable Ø9.6 mm, 7-core
Protective conductor	Green/Yellow
GND (rotary encoder)	1
+U _b (rotary encoder)	2
Clock (+)	3
Clock (-)	4
Data (+)	5
Data (-)	6

Description

The Synchronous Serial Interface was specially developed for transferring the output data of an absolute encoder to a control device. The control module sends a clock bundle and the absolute encoder responds with the position value. Thus only 4 lines are required for the clock and data, no matter what the resolution of the rotary encoder is. The RS 422 interface is galvanically isolated from the power supply.

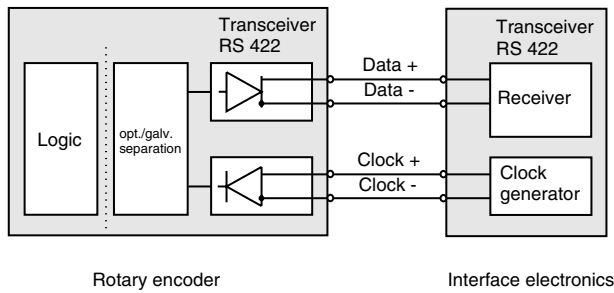
SSI data transfer



D₁, ..., D_n: Position data
 S: Special bit
 MSB: Most significant bit
 LSB: Least significant bit

T = 1/f: Duration of period, f < 1.5 MHz
 T_m: Monoflop time 20 μs
 T_p: Clock pause > 25 μs

Block diagram



Line length

Line length in m	Baudrate in kHz
< 50	< 400
< 100	< 300
< 200	< 200
< 400	< 100

Order code

A V M 7 8 E - 0 1 1 Y Y R Y G I - 1 2 1 3

