



Model Number

AVE14

Features

- 12 Bit singleturn
- ATEX approval
- Flameproof enclosure
- Galvanically isolated RS 422 interface

Description

The AVE14 singleturn absolute encoder transmits a position value corresponding to the shaft setting via the SSI interface (Synchronous Serial Interface). The resolution of the AVE14 is 4096 steps per revolution.

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

It is possible to select the direction of rotation by using the function inputs.

The shaft is specially equipped with a feather key groove for receiving a belt pulley or similar device. The permissible radial force is 80 N, while the permissible axial force is 60 N.

One special feature is the mechanical versatility of the flange. The absolute encoder has one centering shoulder with a diameter of 40 mm and one with a diameter of 80 mm. Three M6 holes are available for fastening.

Technical data

Electrical specifications

Operating voltage U_B	18 ... 30 V DC
No-load supply current I_0	max. 140 mA
Linearity	± 2 LSB
Output code	Gray code, binary code
Code course (counting direction)	cw descending (clockwise rotation, code course descending)

Interface

Interface type	SSI
Monoflop time	$20 \pm 10 \mu\text{s}$
Resolution	
Single turn	12 Bit
Transfer rate	0.05 ... 1.5 MBit/s
Standard conformity	RS 422

Input

Input type	Selection of counting direction (V/R)
Signal voltage	
High	11 ... 30 V
Low	0 ... 2 V
Input current	< 6 mA
Switch-on delay t_{on}	< 0.1 ms
Switch-off delay t_{off}	< 0.1 ms

Connection

Cable	$\varnothing 11.2$ mm, 9-core, 2 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	DIN EN 61000-6-4
Noise immunity	DIN EN 61000-6-2
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	-20 ... 55 °C (-4 ... 131 °F)
Storage temperature	-25 ... 85 °C (-13 ... 185 °F)

Mechanical specifications

Material	
Housing	aluminum
Flange	aluminum
Shaft	Stainless steel
Mass	approx. 3240 g
Rotational speed	max. 6000 min ⁻¹
Moment of inertia	400 gcm ²
Starting torque	≤ 5 Ncm
Shaft load	
Axial	40 N
Radial	60 N

Data for application in connection with

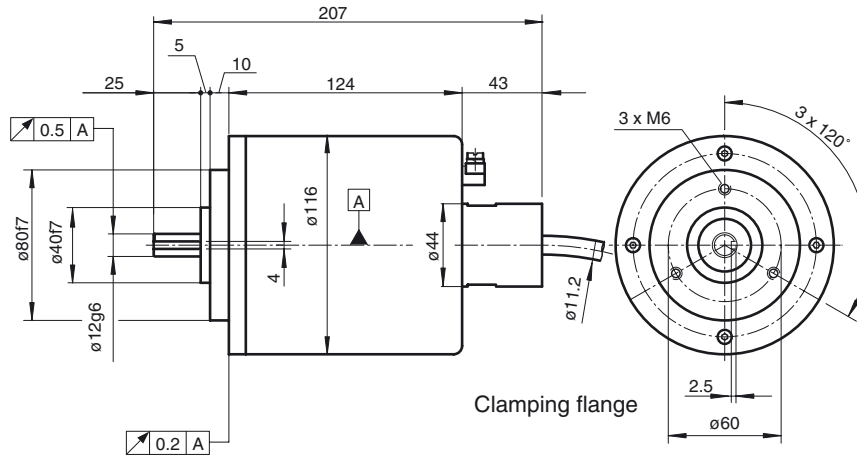
Ex-areas

EC-Type Examination Certificate	ZELM 02 ATEX 0078
Group, category, type of protection	II 2G EEx d IIC T6 II 2D IP66 T80°C

Directive conformity

Directive 94/9/EC	EN 50014, EN 50018, EN 50281-1-1
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Dimensions



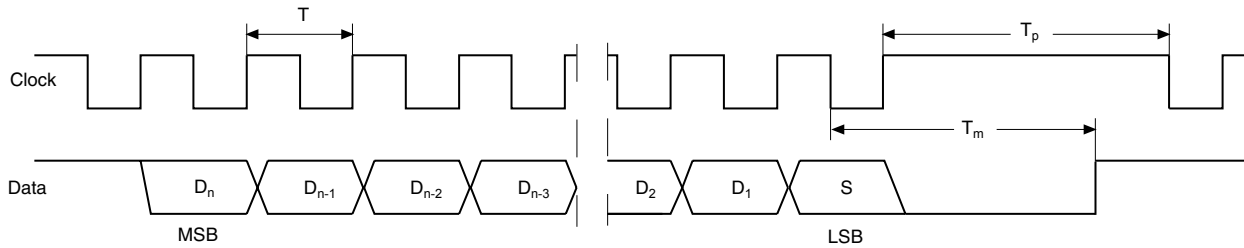
Electrical connection

Signal	Cable Ø11.2 mm, 9-core
Protective conductor	Green/Yellow
GND (rotary encoder)	1
+U _b (rotary encoder)	2
Clock (+)	3
Clock (-)	4
Data (+)	5
Data (-)	6
GND-DP	7
Counting direction	8

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.

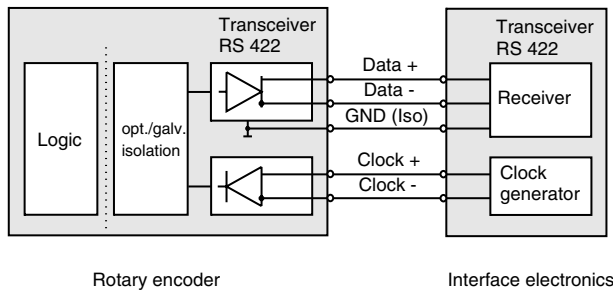
SSI data transfer



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

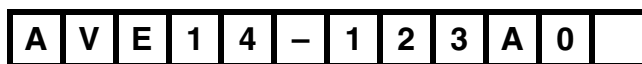
Block diagram



Line length

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

Order code



- Output code**
 - B Binary
 - G Gray
- Special bit**
 - 0 Transfer of 0
- Connection type**
 - 3 Cable Ø11.2 mm, 8-core and protective conductor, 2 m
- Principle of operation**
 - E Singleturn
- Shaft version**
 - V Solid shaft
- Data format**
 - A SSI (Synchronous Serial Interface)

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