

Model Number

AVS14

Features

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

Description

The AVS14 singleturn absolute encoder transmits a position value corresponding to the shaft setting via the SSI interface (Synchronous Serial Interface). The resolution of the AVS14 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 counting and to set the zero position 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

General specifications

Detection type	photoelectric sampling
Device type	Singleturn absolute encoder

Functional safety related parameters

MTTF _d	40 a
Mission Time (T _M)	20 a
L _{10h}	6.8 E+9 at 6000 rpm
Diagnostic Coverage (DC)	0 %

Electrical specifications

Operating voltage U _B	10 ... 30 V DC
No-load supply current I ₀	max. 90 mA
Linearity	± 0.5 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 ± 10 μs
Resolution	
Single turn	12 Bit
Transfer rate	0.05 ... 1.5 MBit/s
Standard conformity	RS 422

Input 1

Input type	Selection of counting direction (cw/ccw)
Signal voltage	
High	10 ... 30 V
Low	0 ... 2 V
Input current	< 6 mA
Switch-on delay	< 0.1 ms
Switch-off delay	< 0.1 ms

Input 2

Input type	zero-set (PRESET 1)
Signal voltage	
High	10 ... 30 V
Low	0 ... 2 V
Signal duration	≥ 100 ms
Switch-on delay	< 10 ms

Connection

Cable	Ø11.2 mm, 9-core, 2 m
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Standard conformity

Degree of protection	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	
Gas Ex-area	-40 ... 55 °C (-40 ... 131 °F)
Dust Ex-area	-30 ... 55 °C (-22 ... 131 °F)
Storage temperature	
Gas Ex-area	-40 ... 70 °C (-40 ... 158 °F)
Dust Ex-area	-30 ... 70 °C (-22 ... 158 °F)

Mechanical specifications

Material	
Housing	aluminum
Flange	aluminum
Shaft	Stainless steel
Mass	approx. 3400 g
Rotational speed	max. 6000 min ⁻¹
Moment of inertia	400 gcm ²
Starting torque	≤ 5 Ncm
Shaft load	
Axial	60 N
Radial	80 N

Data for application in connection with

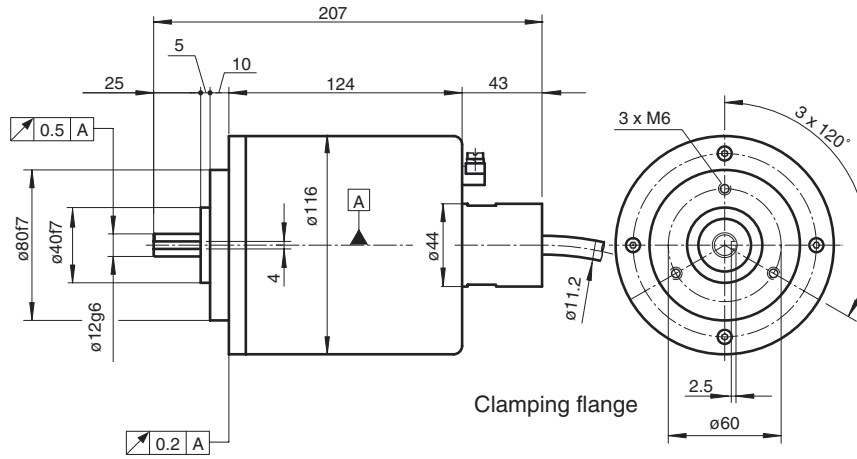
Ex-areas

EC-Type Examination Certificate	ZELM 02 ATEX 0078 X
Group, category, type of protection	Ex II 2G Ex db IIC T6 Gb Ex II 2D Ex tb IIIC T80°C Db IP66

Directive conformity

Directive 94/9/EC	EN 60079-0:2012 EN 60079-1:2007 EN 60079-31:2009
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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
Preset	7
Counting direction	8

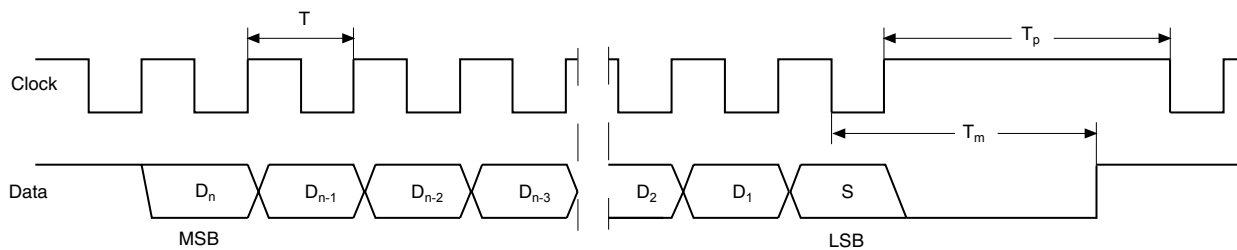
Release date: 2014-06-17 10:48 Date of issue: 2014-06-17 t30845_eng.xml

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.

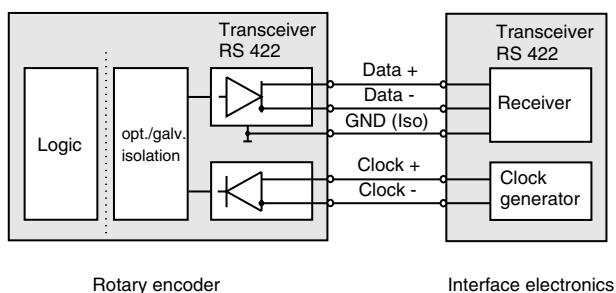
SSI data transfer



D_1, \dots, 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 μ s
 T_p : Clock pause > 25 μ s

Block diagram



Line length

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

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Order code

A V S 1 4 N - 0 5 M K 2 A 0 N - 0 0 1 2

