



**Industrial standard housing Ø58 mm**

**13 Bit singleturn**

**Galvanically isolated RS 422 interface**

**Servo or clamping flange**

The AVS 58 singleturn absolute value rotary encoder transmits a position value corresponding to the shaft setting via the SSI interface. The resolution of the AVS 58 is 4096 increments per revolution.

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

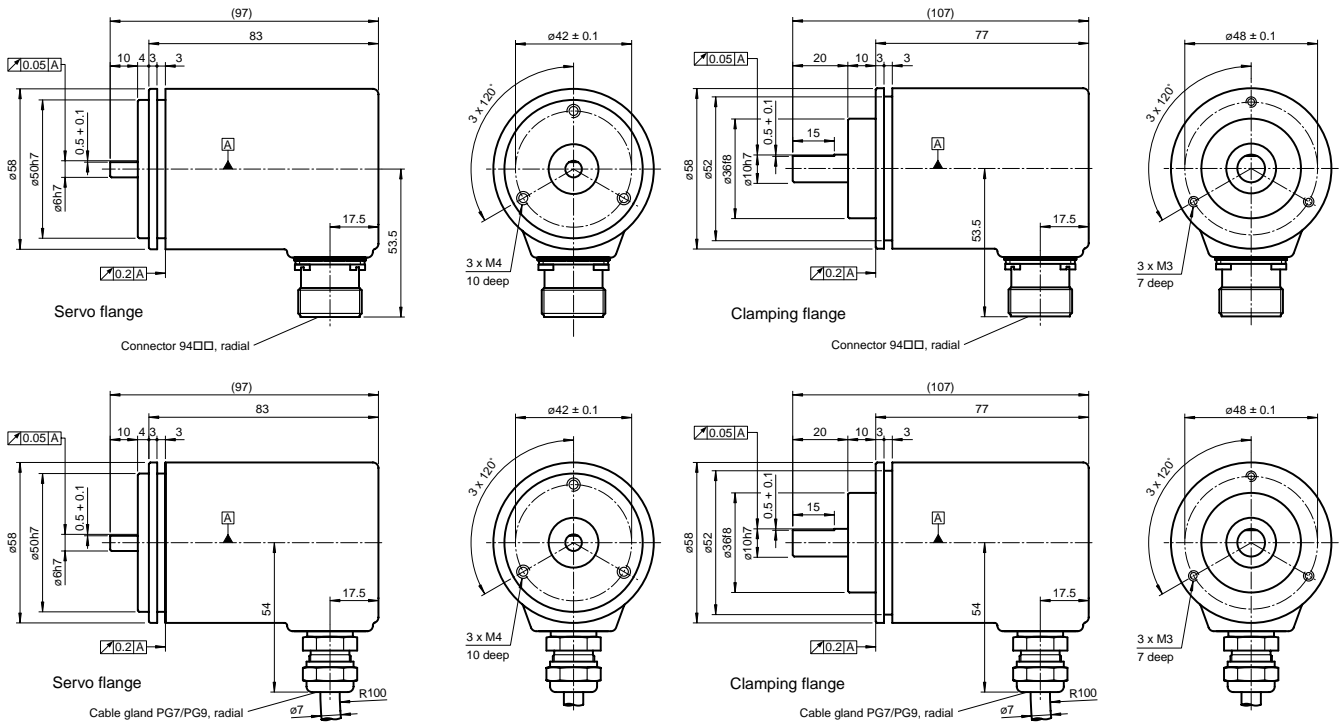
It is possible to select the following items with function inputs

- the direction of rotation and
- the zero-set function (preset value)

This singleturn absolute value rotary encoder is available either in clamp flange design with a shaft 10 mm in diameter x 20 mm or in servo flange design with a shaft 6 mm in diameter x 10 mm. The electrical connection is made by a 12-pin round plug connector. It is also possible to obtain a version with a 1 m cable connector.



Dimensions



Electrical connection

Signal	Cable Ø7 mm, 12-core	Connector 9416, 12-pin	Connector 9416L, 12-pin	Explanation
GND (encoder)	White	1	1	Power supply
U <sub>b</sub> (encoder)	Brown	2	8	Power supply
Clock (+)	Green	3	3	Positive cycle line
Clock (-)	Yellow	4	11	Negative cycle line
Data (+)	Grey	5	2	Positive transmission data
Data (-)	Pink	6	10	Negative transmission data
Reserved	Blue	7	12	Not wired, reserved
V/R	Red	8	5	Input for selection of counting direction
PRESET	Black	9	9	Zero setting input
Reserved	Violet	10	4	Not wired, reserved
Reserved	Grey/Pink	11	6	Not wired, reserved
Reserved	Red/Blue	12	7	Not wired, reserved

Singleturn absolute encoder AVS 58



## Technical data

AVS 58	
<b>Electrical specifications</b>	
Operating voltage	18 ... 30 V DC
No-load supply current	max. 140 mA
Linearity	± 1 LSB
Output code	Gray code, Binary code
Code course (counting direction)	cw descending
<b>Interface</b>	
Interface type	SSI
Transfer rate	0.05 ... 1.5 MBaud
Monoflop time	20 ± 10 µs
Resolution	
Singleturn	12 Bit
Standard conformity	RS 422
<b>Input 1</b>	
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	< 0.1 ms
Switch-off delay	< 0.1 ms
<b>Input 2</b>	
Input type	PRESET 1
Signal voltage	
High	11 ... 30 V
Low	0 ... 2 V
Input current	< 6 mA
Switch-on delay	< 0.1 ms
Switch-off delay	< 0.1 ms
<b>Connection type</b>	
Connector	Type 9416, 12-pin, Type 9416L, 12-pin
Cable	Ø7 mm, 6 x 2 x 0,14 mm <sup>2</sup> , radial, 1 m
<b>Ambient conditions</b>	
Operating temperature	-20 ... +70 °C
Storage temperature	-25 ... +85 °C
<b>Standard conformity</b>	
Climatic testing	DIN EN 60068-2-3, no moisture condensation
Emitted interference	DIN EN 50081-1
Interference rejection	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
Protection degree	DIN EN 60529, IP65
<b>Mechanical specifications</b>	
<b>Material</b>	
Combination 1	Housing: aluminium, powder-coated Flange: aluminium 3.1645 Shaft: stainless steel 1.4305
Combination 2 (Inox)	Housing: stainless steel 1.4305 Flange: stainless steel 1.4305 Shaft: stainless steel 1.4305
Mass	approx. 460 g (combination 1) approx. 750 g (combination 2)
Rotational speed	max. 6000 min <sup>-1</sup>
Moment of inertia	30 gcm <sup>2</sup>
Starting torque	≤ 1.5 Ncm
Shaft load	
Axial	40 N
Radial	60 N

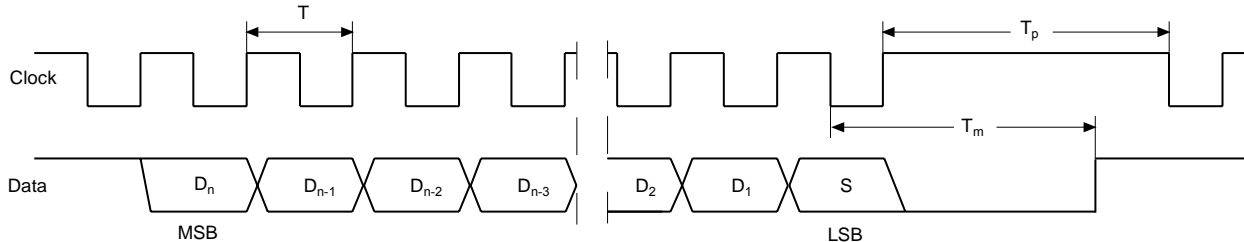


**Description**

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.

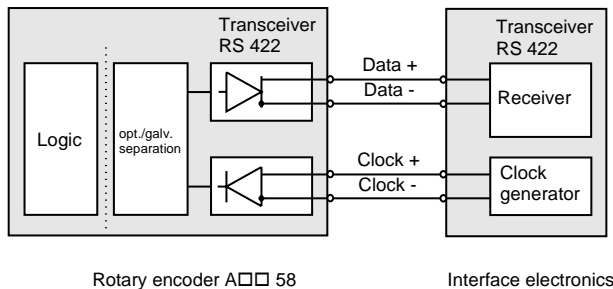
Thus only 4 lines are required for the clock and data, no matter what the resolution of the rotary encoder is. The RS 422 interface is galvanically isolated from the power supply.

**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,  $f < 1.5 \text{ MHz}$
- $T_m$ : Monoflop time  $20 \mu\text{s}$
- $T_p$ : Clock pause  $> 25 \mu\text{s}$

**Block diagram**



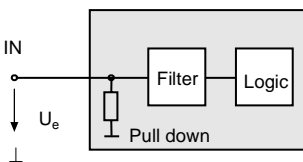
**Line length**

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

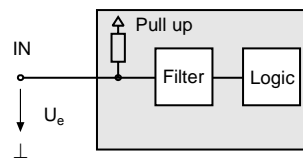
**Inputs**

The selection of the counting direction input is activated with 0-level. The PRESET input is activated with 1-level.

PRESET input



Input for selection of counting direction



**Clock input (2-wire):**

Optically and galvanically isolated clock input in accordance with I/O Standard RS 422. The control module clock synchronises the data transfer between the encoder and the interface electronics. A terminal resistor with a resistance of  $120 \Omega$  is incorporated between the clock lines "Clock +" and "Clock -".



The pulse diagram is shifted by exchanging the clock lines.



Accessories

For type	Accessories	Name/defining feature	Order code
AVS58□-011	Couplings	D1: Ø10 mm, D2: Ø10 mm	9401
		D1: Ø10 mm, D2: Ø10 mm	9404
		D1: Ø10 mm, D2: Ø10 mm	9409
		D1: Ø10 mm, D2: Ø10 mm	KW
	Measurement wheels with circumference of 500 mm	Plastic	9101, 10
		Pimpled rubber	9102, 10
		Knurled aluminium	9103, 10
		Knurled plastic	9112, 10
	Measurement wheels with circumference of 200 mm	Plastic	9108, 10
		Pimpled rubber	9109, 10
		Knurled aluminium	9110, 10
		Knurled plastic	9113, 10
	Mounting aids	Mounting bracket	9203
		Mounting bracket	9213
AVS58□-032	Couplings	D1: Ø6 mm, D2: Ø6 mm	9401
		D1: Ø6 mm, D2: Ø6 mm	9402
		D1: Ø6 mm, D2: Ø6 mm	9404
		D1: Ø6 mm, D2: Ø6 mm	9409
		D1: Ø6 mm, D2: Ø6 mm	KW
	Mounting aids	Mounting bracket and set	9300 and 9311-3
		Eccentric clamping elements	9310-3
All	Connectors	Cable socket	9416
		Cable socket	9416L

For additional information on the accessories, please see the "Accessories" section.

Order code



Number of bits singleturn  
12 4096

Output code

- B Binary
- G Gray

Exit position

- R radial

Connection type

- K1 Cable Ø7 mm, 6 x 2 x 0,14 mm<sup>2</sup>, 1 m
- AA Plug connector type 9416, 12-pin
- AB Plug connector type 9416L, 12-pin

Shaft dimension/flange version

- 011 Shaft Ø10 mm x 20 mm with clamping flange
- 032 Shaft Ø6 mm x 10 mm with servo flange

Housing material

- N Aluminium, powder coated
- I Inox\*

Principle of operation

- S Singleturn

Shaft version

- V Solid shaft

Data format

- A SSI (synchronous serial interface)

\*Housing material I only available with axial exit position.

Singleturn absolute encoder AVS 58