



Model Number

AVM58N-086AARHGY-1212/310ms

Features

- Industrial standard housing Ø58 mm
- Hardware encoder
- Optically isolated RS 422 interface

Description

This multiturn absolute encoder with modern fast technology transmits a position value corresponding to the shaft setting via the SSI interface (Synchronous Serial Interface). The resolution is 4096 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. It is possible to select the counting direction with the function input.

This multiturn absolute encoder comes with a shaft diameter of 12 mm x 25 mm with single side flattening. The electrical connection is made by a 12-pin round plug connector.

Technical data

General specifications

Detection type	photoelectric sampling
Device type	Multiturn absolute encoder

Nominal ratings

Accuracy	± 0.5 LSB at 12 Bit
----------	---------------------

Electrical specifications

Operating voltage U_B	4.5 ... 30 V DC
No-load supply current I_0	max. 180 mA
Time delay before availability t_v	310 ms ± 10 ms
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	12 Bit
Multiturn	12 Bit
Overall resolution	up to 24 Bit
Voltage drop	$U_B - 2.5 V$
Standard conformity	RS 422 / RS 485
Code change frequency	max. 100 kHz

Input 1

Input type	Selection of counting direction (cw/ccw)
Signal voltage	
High	unconnected or ≥ 4.5 V (cw descending)
Low	≤ 0.8 V (cw ascending)
Input current	< 6 mA
Switch-on delay	< 10 ms

Connection

Connector	type 9416 (M23), 12-pin
-----------	-------------------------

Standard conformity

Degree of protection	DIN EN 60529, IP65
Climatic testing	DIN EN 60068-2-3, no moisture condensation
Noise immunity	DIN EN 61000-6-2
Shock resistance	DIN EN 60068-2-27, 100 g, 6 ms

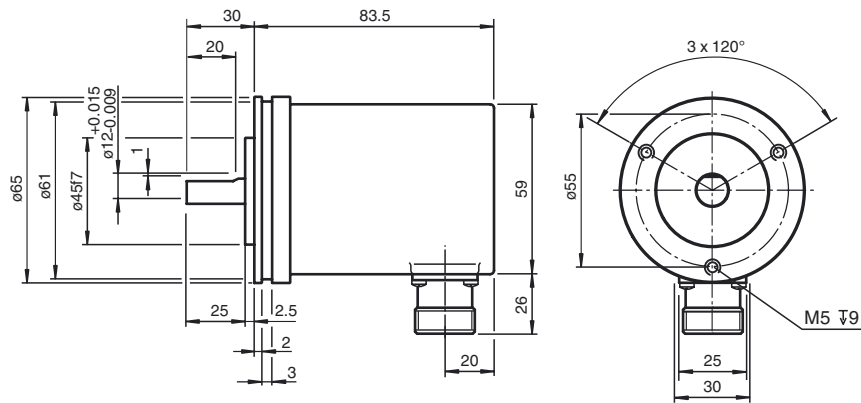
Ambient conditions

Operating temperature	-40 ... 85 °C (-40 ... 185 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	98 % , no moisture condensation
Shock resistance	≤ 100 g (half sine wave, 6 ms)

Mechanical specifications

Shaft dimensions Ø x l	12 mm x 25 mm with flat area 1 x 20
Material	housing: powder coated aluminum flange: aluminum shaft: stainless steel
Mass	approx. 300 g
Rotational speed	max. 6000 min ⁻¹
Moment of inertia	50 gcm ²
Starting torque	< 5 Ncm
Shaft load	
Axial	20 N
Radial	110 N

Dimensions



Electrical connection

Signal	Connector 9416, 12-pin	Explanation
GND (encoder)	1	Power supply
U _b (encoder)	2	Power supply
Clock (+)	3	Positive cycle line
Clock (-)	4	Negative cycle line
Data (+)	5	Positive transmission data
Data (-)	6	Negative transmission data
Reserved	7	Not wired, reserved
cw/ccw	8	Input for selection of counting direction
Reserved	9	Not wired, reserved
Reserved	10	Not wired, reserved
Reserved	11	Not wired, reserved
Reserved	12	Not wired, reserved

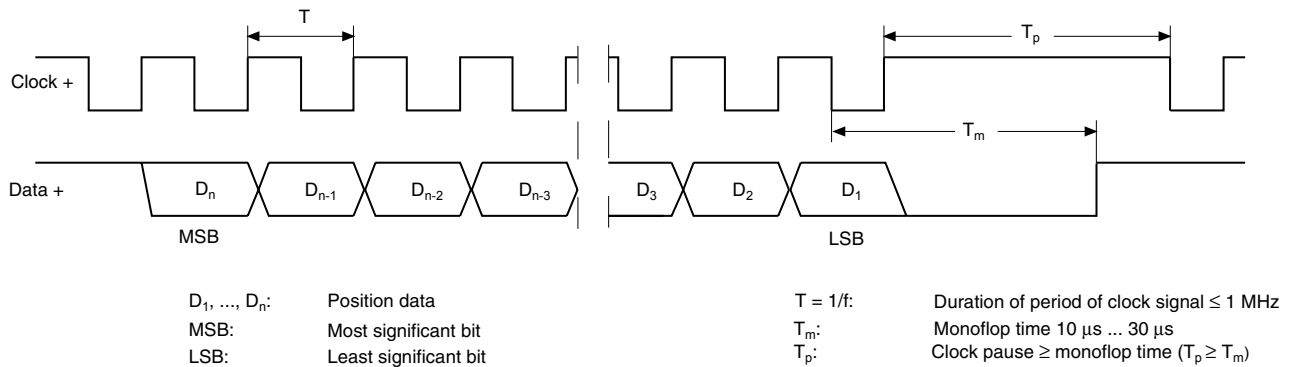
Release date: 2014-04-15 10:07 Date of issue: 2014-04-15 253685_eng.xml

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 optically isolated from the power supply.

SSI signal course Standard



SSI output format Standard

- At idle status signal lines "Data +" and "Clock +" are at high level (5 V).
- The first time the clock signal switches from high to low, the transfer of the encoders current position is introduced by latching of the position data.
- The highest order bit (MSB) is applied to the serial data output of the encoder with the first rising pulse edge.
- The next successive lower order bit is transferred with each following rising pulse edge.
- After the lowest order bit (LSB) has been transferred the data line switches to low until the monoflop time T_m has expired.
- No subsequent data transfer can be started until the data line switches to high again or the time for the clock pause T_p has expired.
- After the clock sequence is complete, the monoflop time T_m is triggered with the last falling pulse edge.
- The monoflop time T_m determines the lowest transmission frequency.

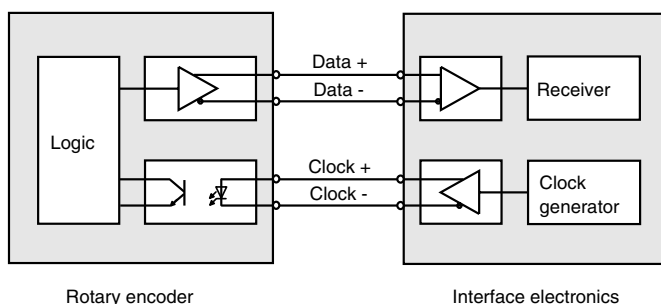
SSI output format ring slide operation (multiple transmission)

- In ring slide operation, multiple transmission of the same data word over the SSI interface makes it possible to offer the possibility of detecting transmission errors.
- In multiple transmission, 25 bits are transferred per data word in standard format.
- If the clock change is not interrupted after the last falling pulse edge, ring slide operation automatically becomes active. This means that the information that was stored at the time of the first clock change is generated again.
- After the first transmission, the 26th pulse controls data repetition. If the 26th pulse follows after an amount of time greater than the monoflop time T_m , a new current data word will be transmitted with the following pulses.



If the pulse line is exchanged, the data word is generated offset. Ring slide operation is possible up to max. 13 bits.

Block diagram



Line length

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

Release date: 2014-04-15 10:07 Date of issue: 2014-04-15 253685_eng.xml