Multiturn absolute encoder

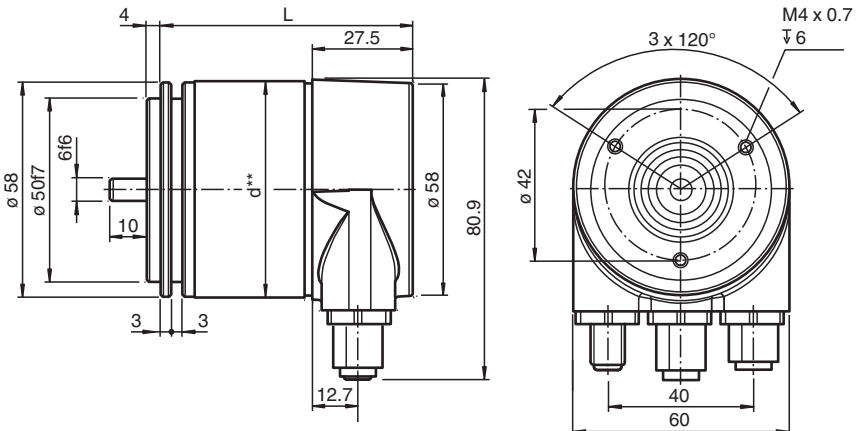
EVM58-PN

- Industrial standard housing Ø58 mm
- PROFINET IRT
- 30 Bit multiturn
- Servo or clamping flange
- Network loop through by means of integrated 2 port switch (IRT capable)
- IP address resettable
- No DIP switches for address setting
- Mechanical compatibility with all major encoders with fieldbus interface
- Status LEDs

Function

Absolute multiturn rotary encoders deliver an absolute step value for each angle setting.
This device has a maximum basic resolution of 65536 steps per revolution (16 bits) and codes up to 16384 revolutions (14 bits). Thus the overall resolution amounts to 30 bits. On account of the high number of measuring steps resulting (more than 1 billion), this type of encoder can be used to divide very long linear distances into small measuring steps.
The device is designed for shaft assembly and is available in servo flange or clamping flange design.

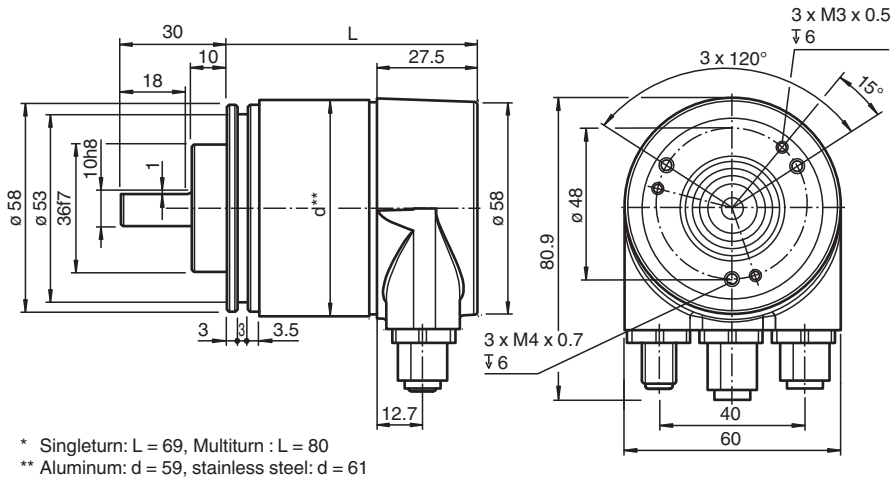
Dimensions



* Singleturn: L = 69, Multiturn : L = 80
** Aluminum: d = 59, stainless steel: d = 61

Release date: 2022-12-12 Date of issue: 2022-12-12 Filename: t37196_eng.pdf

Dimensions



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Technical Data

General specifications		
Detection type		photoelectric sampling
Device type		Multiturn absolute encoder
UL File Number		E223176 "For use in NFPA 79 Applications only" , if UL marking is marked on the product.
Functional safety related parameters		
$MTTF_d$		120 a
Mission Time (T_M)		20 a
L_{10}		1.9 E+11 at 6000 rpm and 20/40 N axial/radial shaft load
Diagnostic Coverage (DC)		0 %
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Power consumption	P_0	max. 4 W
Linearity		± 2 LSB (up to 16 Bit)
Output code		binary code
Code course (counting direction)		programmable, cw ascending (clockwise rotation, code course ascending) cw descending (clockwise rotation, code course descending)
Interface		
Interface type		PROFINET IO
Resolution		
Single turn		up to 16 Bit
Multiturn		14 Bit
Overall resolution		up to 30 Bit
Physical		Ethernet
Transfer rate		100 MBit/s
Cycle time		≤ 1 ms (IRT) ; ≤ 10 ms (RT)
Connection		
Connector		Ethernet: 2 sockets M12 x 1, 4-pin, D-coded Supply: 1 plug M12 x 1, 4-pin, A-coded
Standard conformity		
Degree of protection		DIN EN 60529, Aluminum version: shaft side: IP64 (without shaft seal)/IP66 (with shaft seal) housing side: IP65 Stainless steel version (INOX): completely IP67
Climatic testing		DIN EN 60068-2-3, no moisture condensation
Emitted interference		EN 61000-6-4:2007
Noise immunity		EN 61000-6-2:2005

Release date: 2022-12-12 Date of issue: 2022-12-12 Filename: t37196_eng.pdf

Technical Data

Shock resistance	DIN EN 60068-2-27, 100 *g*, 6 ms
Vibration resistance	DIN EN 60068-2-6, 10 *g*, 10 ... 2000 Hz
Approvals and certificates	
UL approval	cULus Listed, General Purpose, Class 2 Power Source , if UL marking is marked on the product.
Ambient conditions	
Operating temperature	-40 ... 85 °C (-40 ... 185 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications	
Material	housing: powder coated aluminum flange: aluminum shaft: stainless steel
Combination 1	housing: powder coated aluminum flange: aluminum shaft: stainless steel
Combination 2 (Inox)	housing: stainless steel 1.4305 / AISI 303 flange: stainless steel 1.4305 / AISI 303 shaft: stainless steel 1.4305 / AISI 303
Combination 3 (A)	housing: stainless steel 1.4404 / AISI 316L flange: stainless steel 1.4404 / AISI 316L shaft: stainless steel 1.4112 / AISI 440B
Mass	approx. 370 g (Aluminum version) approx. 860 g (Stainless steel version)
Rotational speed	max. 12000 min $^{-1}$ for IP64 max. 3000 min $^{-1}$ for IP66/IP67
Moment of inertia	30 gcm^2
Starting torque	≤ 3 Ncm (version without shaft seal)
Shaft load	
Axial	40 N
Radial	110 N

Type Code

Structure of the type code

E	V	M	5	8	(1)	–	(2)	(2)	(3)	P	N	R	0	B	N	-	(4)	(4)	(5)	(5)

E	Data format
E	Ethernet

V	Shaft version
V	Solid shaft

M	Function principle
M	Multiturn

58	Housing diameter
58	58 mm

1	Housing material
N	Aluminum, powder coated
W	Aluminum, powder coated with shaft seal
I	Stainless steel 1.4305 / AISI 303
A	Stainless steel 1.4404 / AISI 316L (only with shaft dimension/flange 01/1 und 03/2)

(2) (2)	Shaft dimensions
01	Shaft Ø10 mm x 20 mm
03	Shaft Ø6 mm x 10 mm

Note housing material when selecting shaft dimension

(3)	Flange
1	Clamping flange
2	Servo flange

Note housing material when selecting flange

Release date: 2022-12-12 Date of issue: 2022-12-12 Filename: t37196_eng.pdf

Type Code

PN	Connection type / protocol
PN	Profinet protocol, 1 female connector/1 male connector, M12 x 1

R	Exit position
R	Radial

0	Option
0	None

B	Output code
B	Binary

N	Temperature
N	Normal

(4) (4)	Number of bits multiturn
12	12 Bits : 4096 pulses (Standard)
14	14 Bits : 16384 pulses

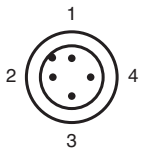
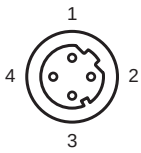
(5) (5)	Number of bits singleturn
13	13 Bits : 8192 pulses (standard)
16	16 Bits : 65536 pulses

Accessories

	**9203**	Angled flange
	**9300**	Mounting bracket for servo flange

Release date: 2022-12-12 Date of issue: 2022-12-12 Filename: t37196_eng.pdf

Connection

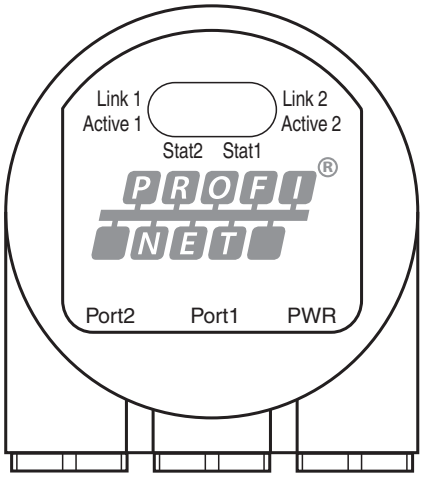
Pin	Male connector M12 x 1, 4-pin, A-coded	Female connector M12 x 1, 4-pin, D-coded
1	Supply voltage +U_B	Tx +
2	-	Rx +
3	0 V	Tx -
4	-	Rx -
		

Indication

Diagnostic LEDs

LED	Color	Description for LED = ON
Active1	Yellow	Incoming and outgoing data traffic for port 1
Link1*	Green	Connection to other Ethernet devices on port 1
Active2	Yellow	Incoming and outgoing data traffic for port 2
Link2*	Green	Connection to other Ethernet devices on port 2
Stat1	Green	Status 1, details see table below
Stat2	Red	Status 2, details see table below

* flashes with 2 Hz if engineering identification call is activated and link connection is available



Stat1 (green)	Stat2 (red) bus failure	Meaning	Cause
off	off	No power	
on	on	No connection to another device Criteria: no data exchange	• bus disconnected • Master not available / switched off
on	flashes [1)]	Parameterization fault, no data exchange Criteria: data exchange correct. However, the slave did not switch to the data exchange mode.	• Slave not configured yet or wrong configuration • Wrong station address assigned (but not outside the permitted range) • Actual configuration of the slave differs from the nominal configuration
on	off	Data exchange. Slave and operation ok.	

1) flashing frequency 0.5 Hz for at least 3 seconds

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