EMM36-EUND (CAND)

ARTICLE PROPERTIES

TYPE	Compact absolute multiturn encoder
SIZE	Ø 36

TECHNICAL DATA

SHAFT DIAMETER	Ø 6f7 mm Ø 6F7 mm / Ø 8F7 mm / Ø 10F7 mm	**STARTING TORQUE**	< 0.01 N·m
SPEED	6000 rpm	**BODY MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**HOUSING MATERIAL**	Aluminum
MOMENT OF INERTIA	2.5 x 10^{-6} kgm^2	**WEIGHT**	400 g (except cable)

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	20 N axial, 40 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	100 g, 6 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	20 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

OUTPUT CIRCUIT	SSI	**INTERFACE**	CANopen Profile DSP 406 with additional function
OUTPUT DRIVER	RS422		
SINGLE TURN RESOLUTION	12 bits	**PROFILE**	CAN HIGH-Speed to ISO/DIS 1898, Basic and Full-CAN CAN specification 2.0 B
REVOLUTION	12 bits		
SUPPLY VOLTAGE	10 ... 30 VDC	**CODE**	Binary
POWER CONSUMPTION (NO LOAD)	Max. 200 mA	**LINEARITY**	±1/2 LSB (12bits),±1LSB(13bits)
MAXIMUM LOAD CURRENT	±20 mA	**BAUD RATE**	20...800 Kbits/s (Pre-factory setting)
OUTPUT FREQUENCY	Max. 15 KHz	**SINGLE TURN RESOLUTION**	Max. 16 bits
SIGNAL LEVEL HIGH	Typ. 3.8 V	**REVOLUTION**	Max. 16 bits
SIGNAL LEVEL LOW	Max. 0.5 V	**SUPPLY VOLTAGE**	10 ... 30 V DC
RISE TIME TR	Max. 100 ns	**MAXIMUM LOAD CURRENT**	Max. 290 mA
FALL TIME TF	Max. 100 ns	**PROGRAMMING FUNCTIONS**	Resolution, preset, counting direction

EMM36-EUND (CAND)

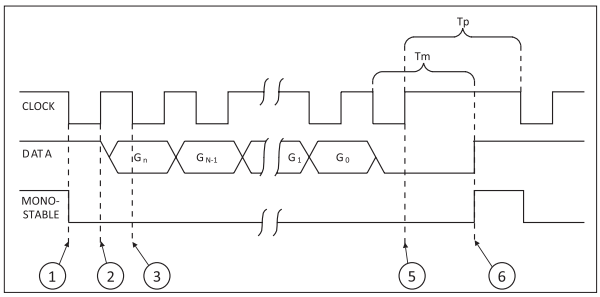
STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR EN IEC 61000-6-2
EN IEC 61000-6-4

APPROVALS

CE

TERMINAL ASSIGNMENT (SSI)



CLOCK Range of frequency from 100 KHz to 1 MHz
Tm: Time of monostable (10 ... 25 µs)
Tp: Time between two clock sequences > 35 µs

Signal	0 V	+U_B	+C	-C	+D	-D	ST*	V/R*	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚
8-pin	1	2	3	4	5	6	7	8	Housing

C: Colck Signal
D: Data Signal
ST: SET input, the high level will last 2 s and this position will be stored as new zero position.
V/R: Up/down input, in the normally open state, the encoder's counting function can be switched.
Observe the shaft end, in the normally closed state, the encoder's counting will increase when the shaft turning clockwise, in the normally open state, the encoder's counting will decrease when the shaft turning clockwise.

TERMINAL ASSIGNMENT (CANOPEN)

Signal	0 V	+U_B	RESET	CAN_H	CAN_L
Color	WH	BN	BU	GN	GY
5-pin	3	2	1	4	5

RESET: Set +24 V for 2 seconds, encoder restore factory settings.
The factory baud rate of the encoder is set to 250 K, the communication ID is set to NODE ID = 32, and the cycle time is 100 ms.

CANOPEN MATCHING CONNECTOR: M125PSF-XXXX-W

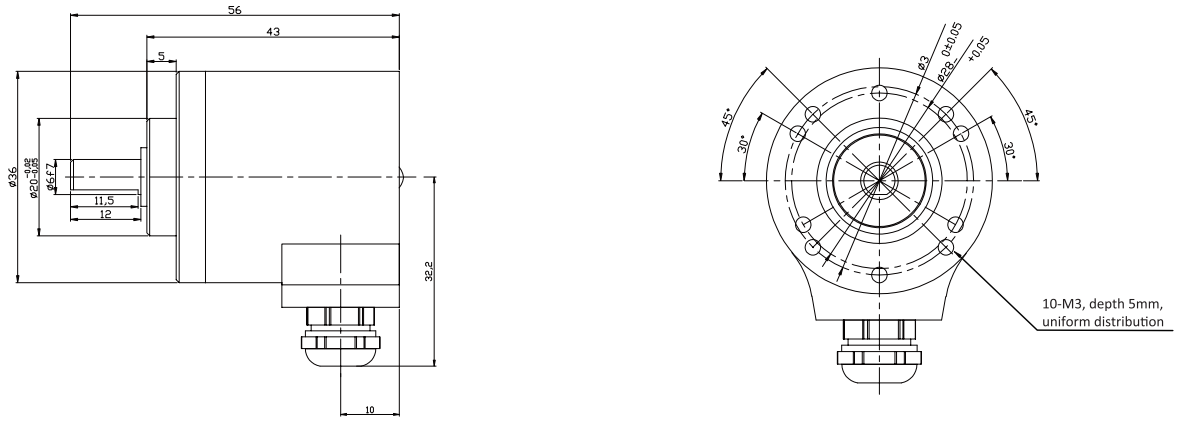
Signal	0 V	+U_B	RESET	CAN_H	CAN_L
Color	GN	BN	WH	GY	BU
5-pin	3	2	1	4	5

e.g:
xxxx = 0020 = 2 m cable length
xxxx = 0025 = 2.5 m cable length

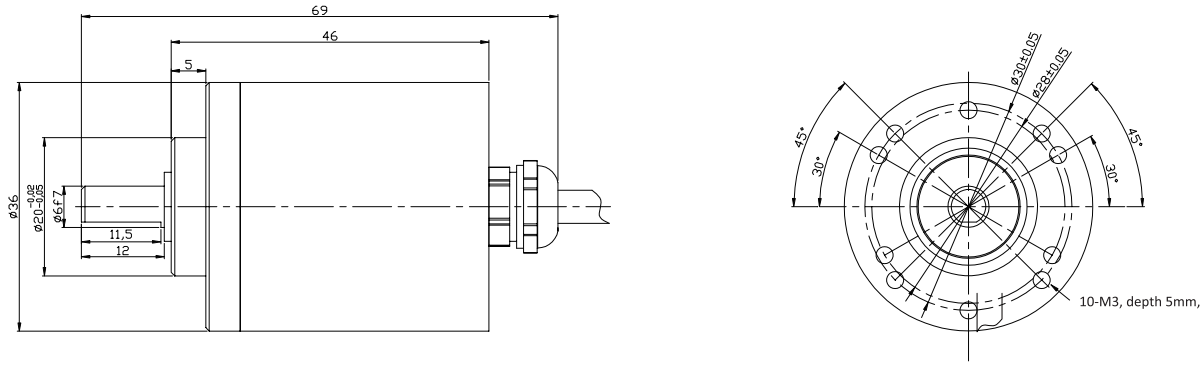
EMM36-EUND (CAND)

DIMENSIONS (mm)

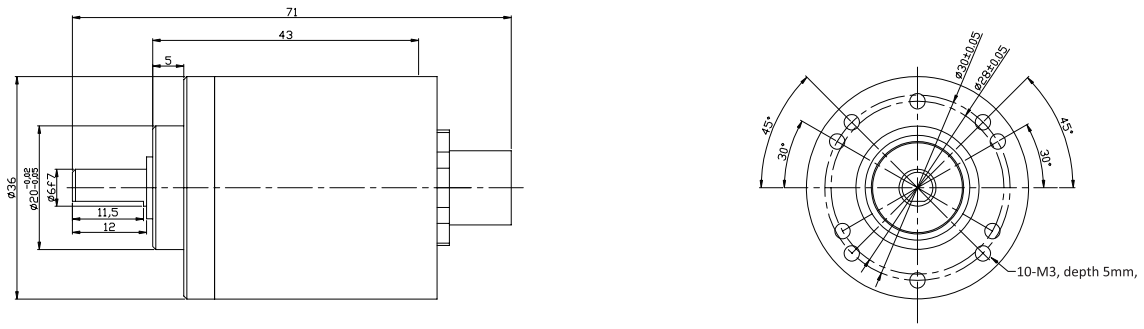
36A Radial



36A Axial



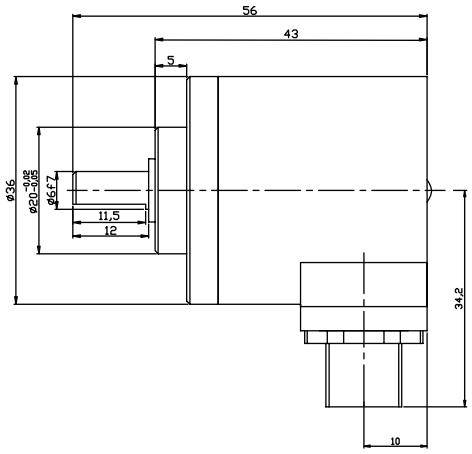
36A M5/M8 Axial

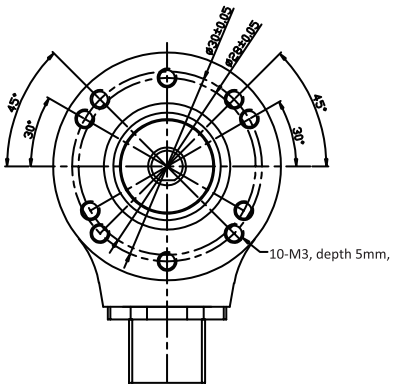


EMM36-EUND (CAND)

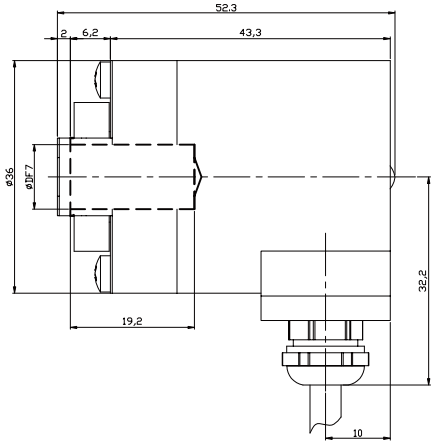
DIMENSIONS (mm)

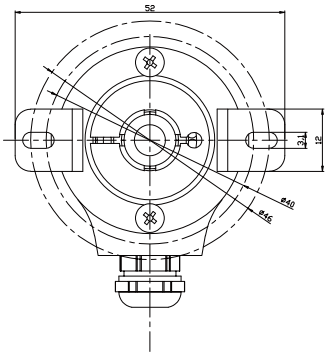
36A M5/M8 Radial



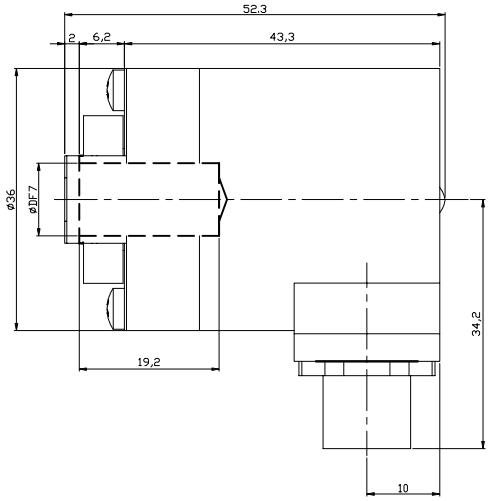


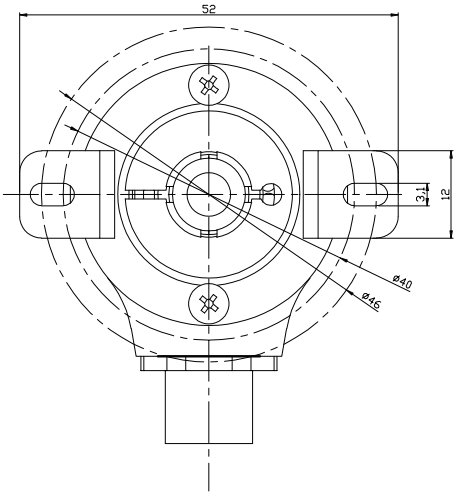
36W Radial





36W M5/M8 Radial

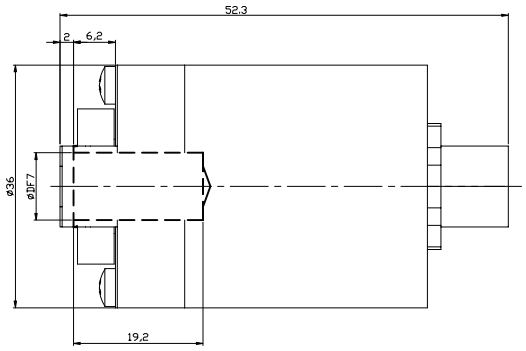


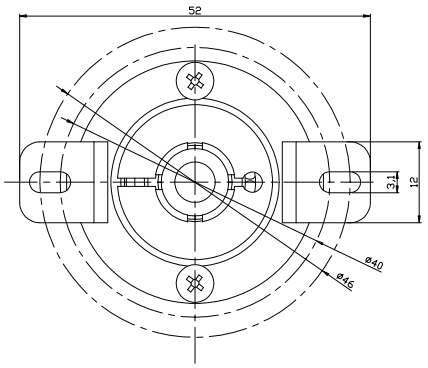


EMM36-EUND (CAND)

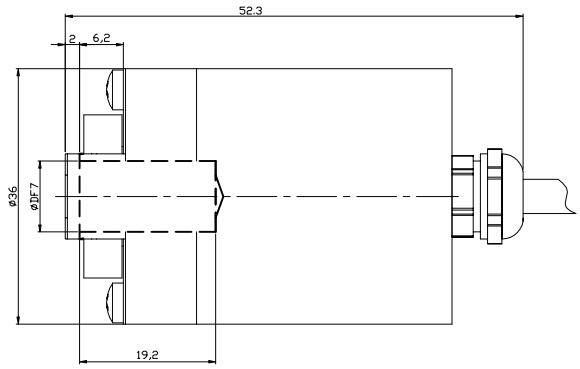
DIMENSIONS (mm)

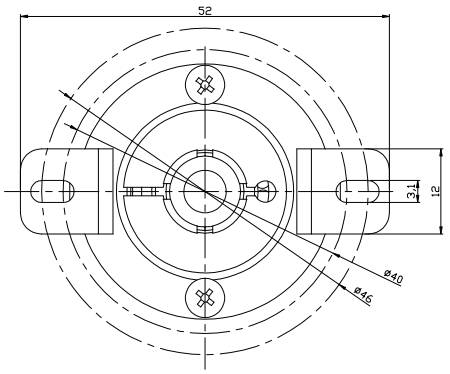
36W M5/M8 Axial





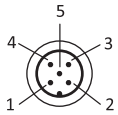
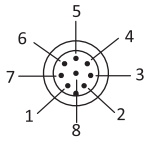
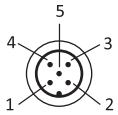
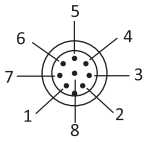
36W Axial





EMM36-EUND (CAND)

TOP VIEW OF PIN PLUG

Connector type	5 pin M12 connector CANopen	8 pin M12 connector SSI	5 pin M12 connector CANopen	8 pin M12 connector SSI
Pin plug				
Matched connector	M125PSF-0020-W 5-core pre-molded connector with 2 m PUR cable	M128PSF-0020-W 8-core pre-molded connector with 2 m PUR cable	TMSP125PF Fielc attachable connector	TMSP128PF Fielc attachable connector

ORDER CODE

EMM 36 A 6 - G S6 X PC R - 4096/8192 EUND . XXXX

Shaft diameter
6 = Ø 6f7 mm Hollow shaft
6 = Ø 6F7 mm
8 = Ø 8F7 mm
10 = Ø 10F7 mm

Flange type
A= round flange
W= Hollow shaft flange, double-wing spring mounting

Housing diameter
36 = Housing diameter

Series
EMM = Magnetoelectric multiturn encoder

Outlets direction
R = Radial
A = Axial

Type of connection
PC = Direct outlet 0.5 meters
M5 = M12 5 pin connector output (CANopen)
M8 = M12 8 pin connector output (SSI)

Output logic
X = No definition

Output & Supply voltage
S6 = SSI 10 ... 30 V DC
F6 = CANopen 10 ... 30 V DC

Code type
G = Gray (SSI)
B = Binary (SSI / CANopen)

Resolution
Revolution / single turn resolution
Standard 4096/4096

EUND / CAND
EUND: SSI
CAND: CANopen interface protocol

XXXX = Special code
Customized cable length
CN00XX = Cable length
e.g. CN0010 = 1 m
CN0020 = 2 m

EAM58-EU

ARTICLE PROPERTIES

TYPE	Standard absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 mm / Ø 8g6 mm / Ø 10g6 mm	**STARTING TORQUE**	< 0.01 N·m
HOLLOW SHAFT DIAMETER	Ø 8H7 mm / Ø 10H7 mm / Ø 12H7 mm / Ø 15H7 mm		
SPEED	6000 rpm	**BODY MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**HOUSING MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	360 ... 750 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 160 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

OUTPUT CIRCUIT	SSI	**PERMISSIBLE LOAD (CHANNEL)**	± 20 mA
OUTPUT DRIVER	RS422	**PULSE FREQUENCY**	Max. 15 kHz
RESOLUTION	Max. 19 bits	**SIGNAL LEVEL HIGH**	Typ. 3.8 V
REVOLUTION	12 bits	**SIGNAL LEVEL LOW**	Max. 0.5 V
SUPPLY VOLTAGE	5 V DC / 10 ... 30 V DC	**RISE TIME TR**	Max. 100 ns
POWER CONSUMPTION (NO LOAD)	≤ 200 mA	**FALL TIME TF**	Max. 100 ns

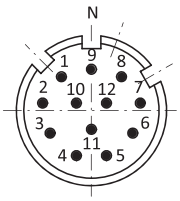
STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

EAM58-EU

APPROVALS

TERMINAL ASSIGNMENT (SSI)

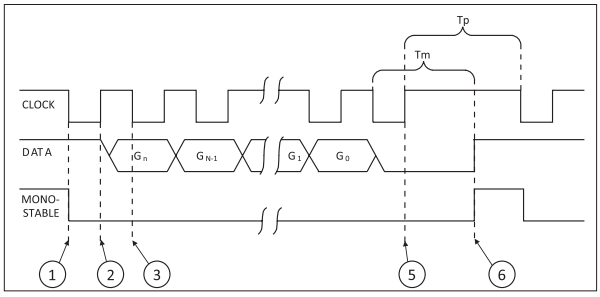


M23 12pin layout (Male)

Signal	0 V	+U_B	+C	-C	+D	-D	ST*	V/R*	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚
12-pin	1	2	3	4	5	6	7	8	PH

C: Colck Signal
D: Data Signal
ST: SET input, the high level will last 2 s and this position will be stored as new zero position.
V/R: Up/down input, in the normally open state, the encoder's counting function can be switched.
Observe the shaft end, in the normally closed state, the encoder's counting will increase when the shaft turning clockwise, in the normally open state, the encoder's counting will decrease when the shaft turning clockwise.
LH: LATCH input, freeze current value.

OPERATING PRINCIPLE



CLOCK Range of frequency from 100 KHz to 1 MHz
Tm: Time of monostable (10 ... 25 µs)
Tp: Time between two clock sequences > 35 µs

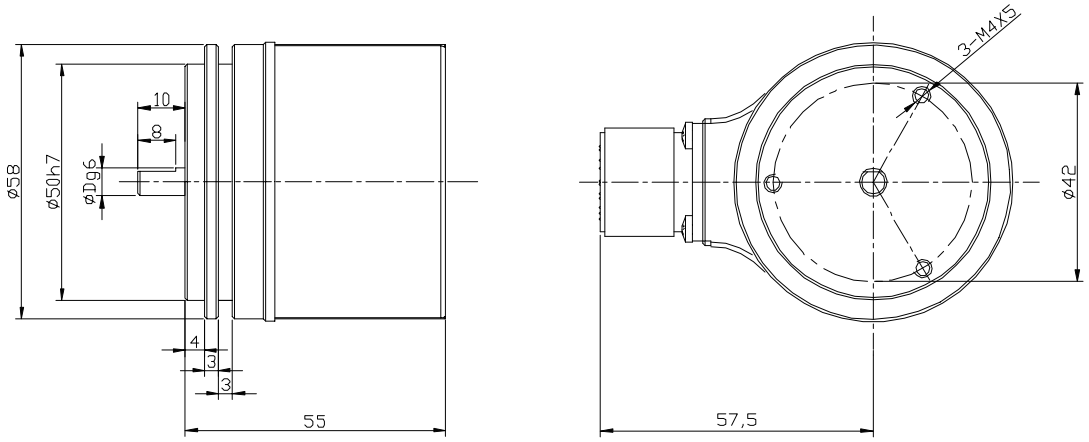
In rest conditions, the CLOCK and DATA lines are at a high logical level and the mono-stablecircuit is disabled (high level).

- On the first CLOCK signal descent front, the mono-stable is activated and the parallel value present at the input to the P/S converter is memorized in the shift register.
- On the CLOCK signal ascent front, the most significant bit (MSB) is placed in the output on the DATA line.
- On the CLOCK descent front when the signal is stable the controller acquires the level from the DATA line, which is the value of the most significant bit (MSB), the mono-stable is re-activated.
- On each further ascent front of the CLOCK impulse sequence, the successive bits up to the least significant one are place in the output on the DATA line and acquired by the control on the descent front.
- At the end of the CLOCK impulse sequence when the external control has also acquired the value of the least significant (LSB) the CLOCK impulse sequence is interrupted and therefore the mono-stable is no longer re-activated.
- Once the mono-stable time (Tm) has elapsed, the DATA line returns to a high logical level and the mono-stable disables itself.

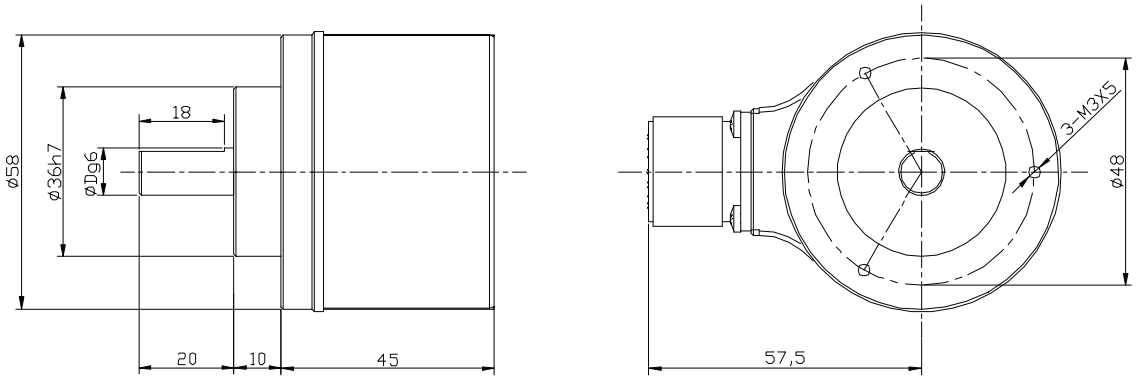
EAM58-EU

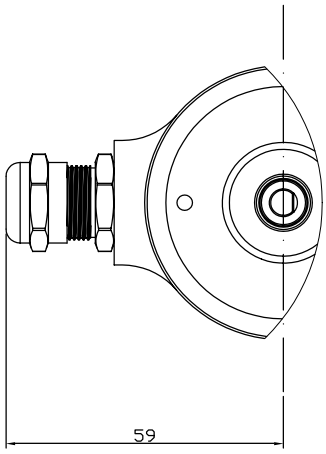
DIMENSIONS (mm)

EAM58B



EAM58C

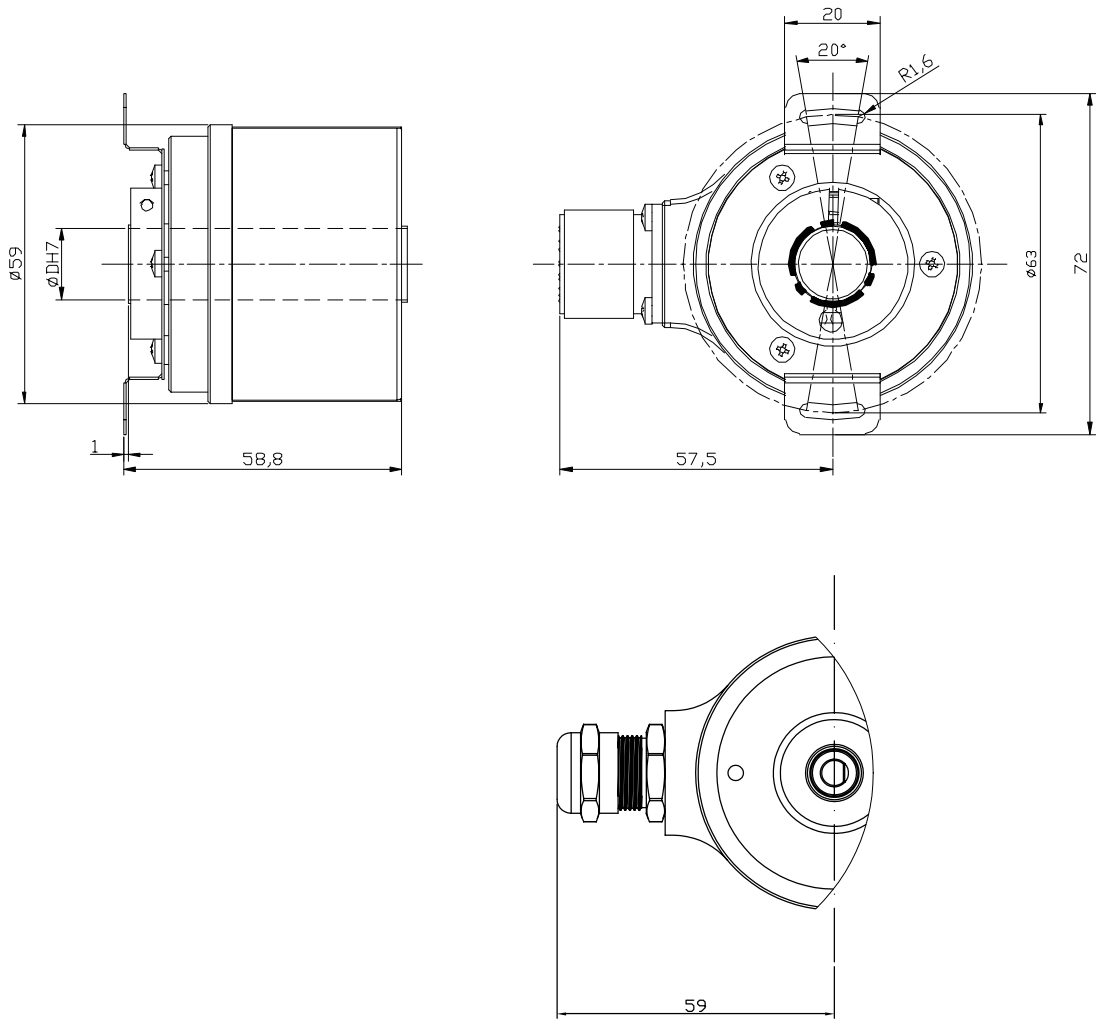




EAM58-EU

DIMENSIONS (mm)

EAM58W



EAM58-EU

ORDER CODE

EAM 58 W 10 - G S6 X PC R - 4096/8192 EU . XXXX

Shaft diameter
Only for flange type 58B, 58C
6 = Ø 6g6 mm
8 = Ø 8g6 mm
10 = Ø 10g6 mm
Only for flange type 58W
8 = Ø 8H7 mm
10 = Ø 10H7 mm
12 = Ø 12H7 mm
15 = Ø 15H7 mm

Flange type
B = Synchro flange, shaft length 10 mm
C = Ø 36 clamping flange, shaft length 20mm
W = Hollow shaft flange, double-winged spring leaf installation

Housing diameter
58 = Housing diameter

Series
EAM = Standard absolute multiturn

Outlets direction
R = Radial

Type of connection
PC = 12-core cable (SSI), standard length 1.5m
T = M23, 12-pin connector(SSI)

Output logic
X = No definition (SSI)

Supply voltage
S6 = SSI (synchro serial interface) 10 ... 30 V DC
S5 = SSI (synchro serial interface) 5 V DC

Output Code
G = Gray
B = Binary

Resolution
Revolution / singleturn resolution
Revolution: 12 bits
Resolution: max. 19 bits

Standard absolute multiturn encoder

XXXX = Special code
Customized cable length
CN00XX = Cable length
e.g. CN0010 = 1 m
CN0020 = 2 m

Matched connector: For connection type “T”: TMSP1612F

EAM58-EAND

ARTICLE PROPERTIES

TYPE	4 … 20 mA analog output absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 / Ø 8g6 / Ø 10g6 mm	**STARTING TORQUE**	< 0.01 N·m
HOLLOW SHAFT DIAMETER	Ø 8H7 / Ø 10H7 / Ø 12H7/ Ø 15H7 mm	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**WEIGHT**	360 ... 750 g
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2		

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 160 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

OUTPUT CIRCUIT	4 ... 20 mA	**MAX. INPUT RESISTANCE**	200 Ω
SUPPLY VOLTAGE (U_B)	10 ... 30 V DC / 5 V DC	**MEASURING RANGE**	Based on actual resolution
POWER CONSUMPTION TYP.	70 mA	**MAX. SENSITIVITY (25 °C)**	0.2°
NO LOAD MAX.	84 mA	**RESOLUTION**	16 Bit
WORD CHANGE FREQUENCY	Max 15.000/s	**BUILDING UP TIME**	Max. 2 ms
CURRENT LOOP SUPPLY VOLTAGE	10 ... 30 VDC	**TEMPERATURE COEFFICIENT**	0.1° / 10 K
ANALOGUE SIGNAL	4 ... 20 mA	**POWER CONSUMPTION (NO LOAD)**	≤ 3.5 mA

EAM58-EAND

STANDARDS AND DIRECTIVES

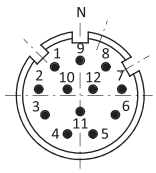
LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

EN IEC 61000-6-2
EN IEC 61000-6-4

APPROVALS

CE

TERMINAL ASSIGNMENT



M23 12pin layout (Male)

Current signal	0 V	+Ub	-	-	I+	I-	STZ	VR	STT	-	-	-	⏚
Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY/PK	RD/BU	
12Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

0 V / +Ub	Can be powered together or seperately
I+	Input of current loop
I-	Output of current loop
STZ	SET input (signal level remains high for 2 sec), the output current is set to 4 mA
VR	Up/down input, as the input is activated, decreasing current values are transmitted when shaft turning clockwise
STT	SET input (signal level remains high for 2 sec), the output current is set to 20 mA
PH	Plug housing
Attention: 1, Before initial start-up, unused outputs must be insulated. 2, Shaft remains static, and at the same time set STZ & STT signal at high level; singleturn resumes to 4-20mA, and the present position output is at 4 mA.	

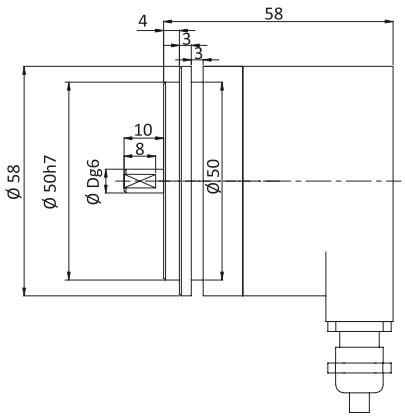
WIRING PRINCIPLE

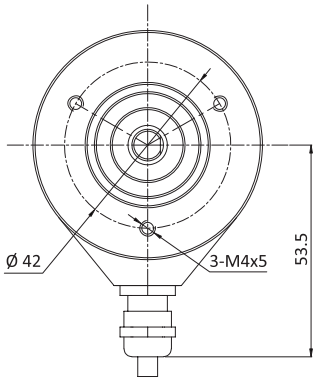
1. The encoder operates using a 2-wire system. The power supply (DC) and signal output (4 ... 20 mA current) share the same wiring.
2. Connect the power terminals according to their functional definitions. Additionally, the positive power terminal (+V) can be connected in parallel to the encoder's"I+"terminal.
3. Connect the encoder's "I-"terminal to the "I+" terminal of the receiving device (e.g., PLC analog input module, display instrument, etc.).
4. The "I-" terminal of the receiving device is connected to the 0V (COM / GND) of the power supply, forming a circuit.

EAM58-EAND

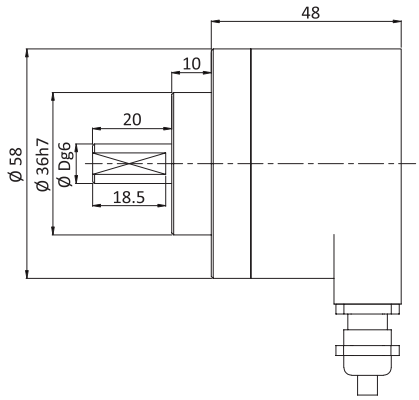
DIMENSIONS (mm)

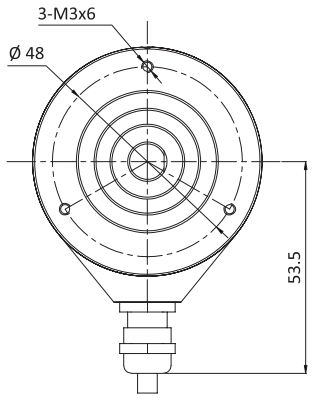
EAM58B Radial



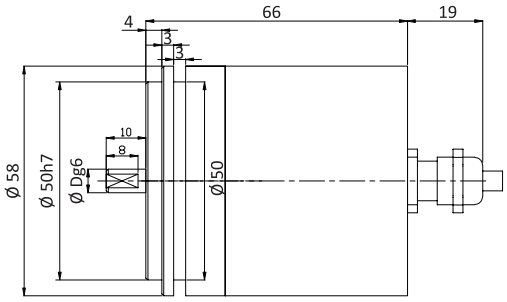


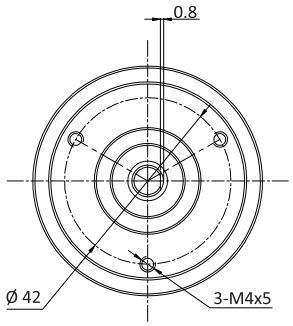
EAM58C Radial





EAM58B Axial

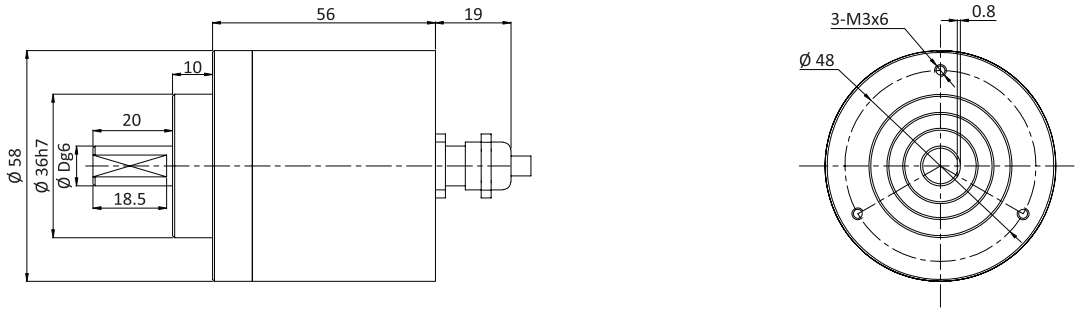




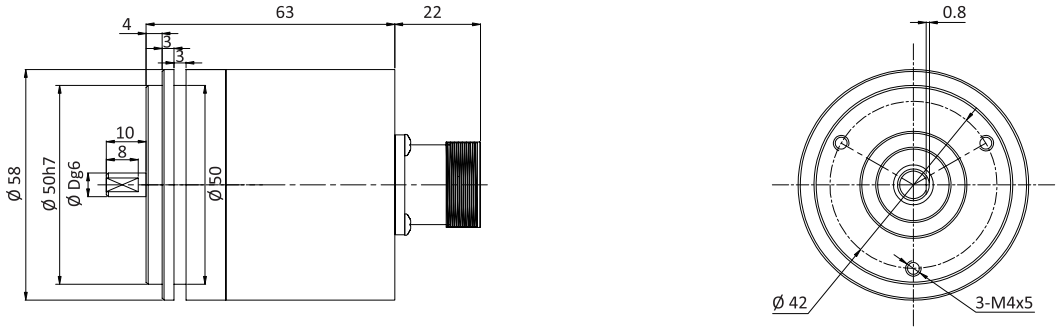
EAM58-EAND

DIMENSIONS (mm)

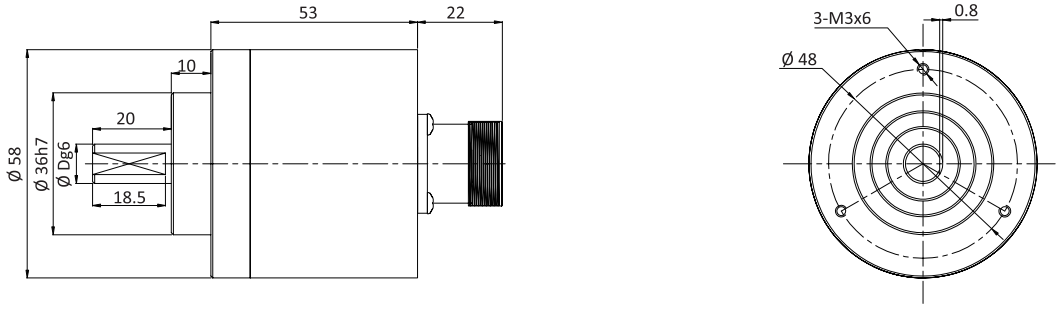
EAM58C Axial



EAM58B M23 Axial



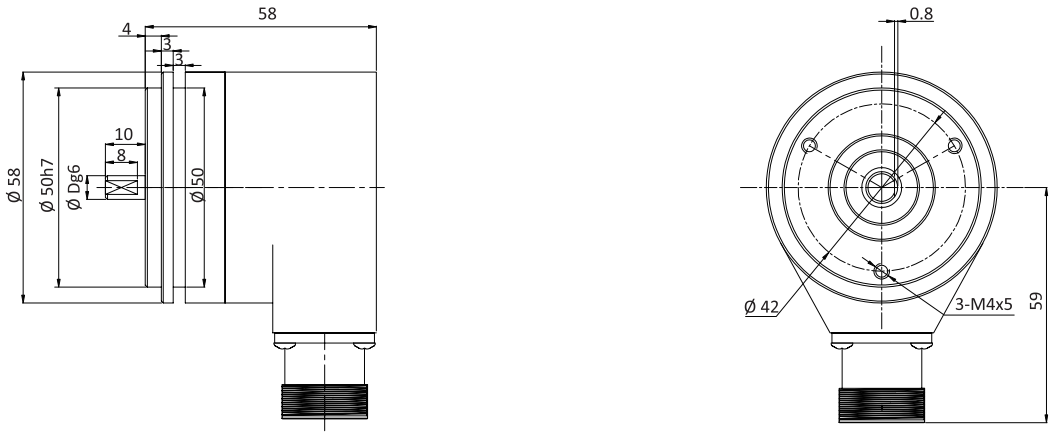
EAM58C M23 Axial



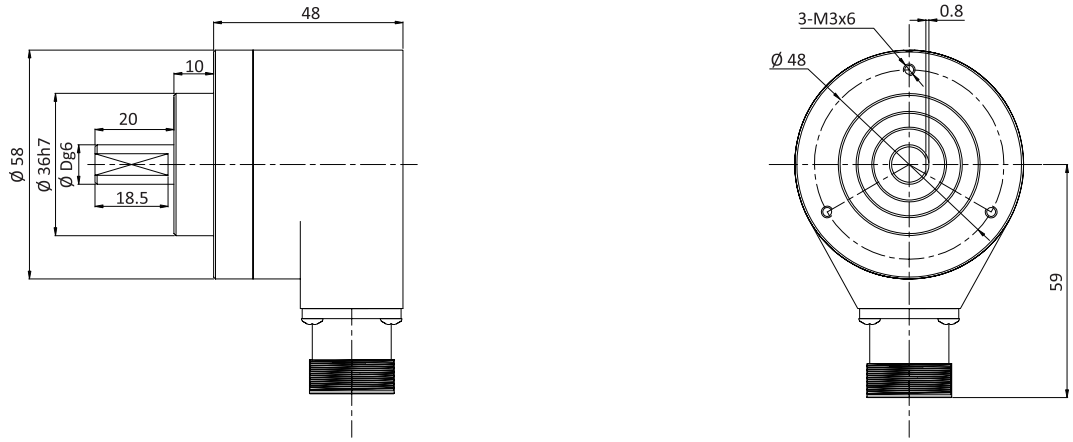
EAM58-EAND

DIMENSIONS (mm)

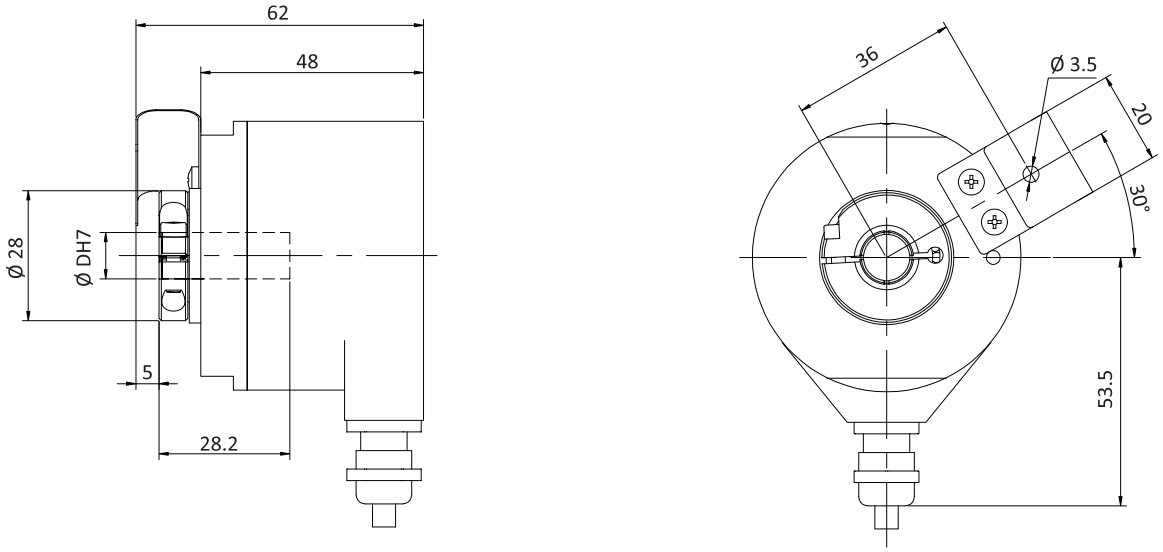
EAM58B M23 Radial



EAM58C M23 Radial



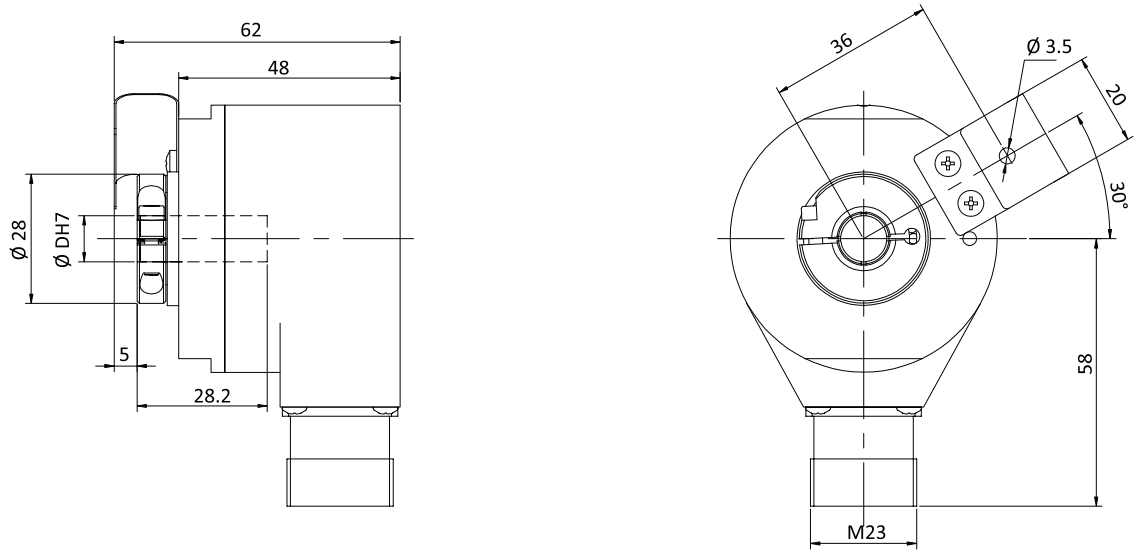
EAMS58F Radial



EAM58-EAND

DIMENSIONS (mm)

EAMS58F M23 Radial



EAM58-EAND

ORDER CODE

EAM 58 C 10 - G S6 X PC R - 16 /4096 EAND . XXXX

Shaft diameter

Shaft
6 = Ø 6g6 mm EAM58B
10 = Ø 10g6 mm EAM58C
Hollow shaft
8 = Ø 8H7 mm
10 = Ø 10H7 mm
12 = Ø 12H7 mm
15 = Ø 15H7mm

Flange type

B = Synchro flange, shaft length 10 mm
C = Ø 36 clamping flange, shaft length 20 mm
F = Hollow shaft flange, single-winged spring leaf installation

Housing diameter

58 = Housing diameter

Series

EAM = 4 ... 20 mA analogue interface

Outlets direction

R = Radial
A = Axial

Type of connection

PC = 12 core cable (1.5 m)
T = M23, 12 pin plug

Supply voltage

S6 = 10 ... 30 V DC
S5 = 5 V DC

Resolution

Singleturn resolution max. 8192 (13 bits)
Multiturn resolution max. 65536 (16 bits)

XXXX = Special code

Customized cable length
CN00XX = Cable length
e.g. CN0010 = 1 m
CN0020 = 2 m

EAND = 4 ... 20 mA

EAM58-DP

ARTICLE PROPERTIES

TYPE	Profibus-DP interface absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 (58B) mm Ø 8g6 (58A/B/D/E) mm Ø 9.52 (3/8")g6 (58A/D/E) mm Ø 10g6 (58C) mm	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	Ø 8H7 / Ø 9.52H7 / Ø 10H7 mm (58W) Ø 12H7 / Ø 14H7 / Ø 15H7 mm (58W)	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm, continuous	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**FLANGE MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	800 g (58B/C, 63A/D/E)

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 160 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

Resolution 4096 (revolution) × 8192 (resolution), 4096 (revolution) × 4096 (resolution)
Revolution and resolution can be programmed in PLC (see operation manual for configurations)

ELECTRICAL PARAMETERS

REVOLUTION	4096 (12 bits)	**BAUD RATE**	12 Mbaud
RESOLUTION / REVOLUTION	8192 (13 bits)	**LINEARITY**	±1/2 LSB
SUPPLY VOLTAGE	10 ... 30 V DC	**OUTPUT FREQUENCY**	Max. 100 KHz
POWER CONSUMPTION (NO LOAD)	300 mA		

STANDARDS AND DIRECTIVES

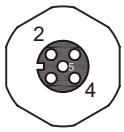
LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

EAM58-DP

APPROVALS

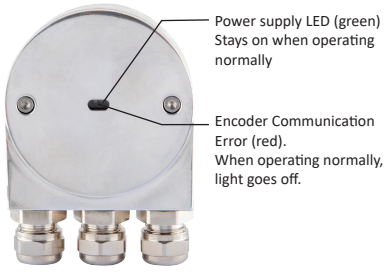
CE

TERMINAL ASSIGNMENT

Signal				Terminal configuration of M12 plug		
+V	Supply voltage	24 V DC	1			
0 V	Ground		3			
A	Profibus-DP output	GN	2			
B	Profibus-DP output	RD	4			
A	Profibus-DP input	GN	2			
B	Profibus-DP input	RD	4	Bus input	Power	Bus output

INTRODUCTION

The Profibus-DP Bus multiturn absolute encoder (identification code 0 x 0CCA) conforms to the Profibus-DP standards as described in the European Standard EN 50170 volume 2. It also complies with the existing encoder regulation document: “Profibus Profile for Encoders, Order No. 3062”.
The Profibus-DP interface maintains the same maximum resolution and characteristics (8192 position / revolution, 4096 revolution) of the stand-along version, and it also adds on the extra feature of the Profibus-DP network.



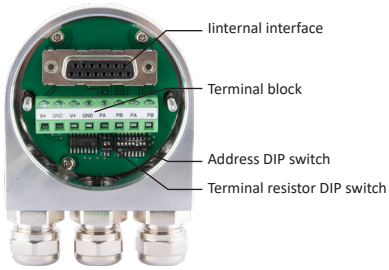
Back of the encoder wiring box

Through the Profibus-DP network, it is possible to:

- Obtain the angular position information from the encoder during the periodic data exchange.
- Program the resolution and the revolution (refer to corresponding chapters for parameter setting).
- Change the default increment counting direction (switch between CW/CCW when configuring the parameters).
- Perform the Preset operation (Set the encoder to read a specific position).
- Read the diagnosis status.
- Obtain info about the code supplied by the device.

EAM58-DP

INTRODUCTION



Inside of the encoder wiring box

When using the device, it is possible to:

- Display the ON / OFF status.
- Display the device activity on the bus.
- Activate the Reset function.
- Set up the device address.
- If required, inserting the terminal resistor into the bus.
- Change the counting direction.

Obtain info about the code supplied by the device.Installing the Profibus-DP encoder in a network requires the execution of the standard procedures necessary for configuring any Profibus-DP slave. The procedures are as follows.
1- Add the slave onto the master (please see corresponding chapter).
2- Wire the encoder into the Profibus network. Whether wiring it in the middle or at the terminal are depending on the physical position of the device in the bus.
3- Directly set up the address (which must be unique in the network and as same as the device) for the slave.
4- Prepare the applications at the master side and set up the Profibus network.

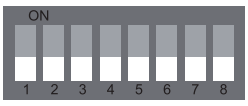
On the back cover of the encoder there are two LED indicators. The device's operating status can be observed by the two LED. The green LED shows the power status and must be on constantly.

The red LED only switches off only during the periodic data exchange between the Profibus master and the encoder.

DIP-SWITCHES SETUP (CONFIGURING SLAVE ADDRESS)

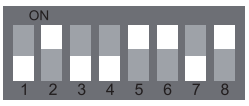
Back cover of the encoder

Besides the address and the standard position of a terminal DIP switch, a configuration example of Profibus and the devices is illustrated below.
In this example, device's address is set up as 1011001, with the corresponding decimal address as 77. Bit 7 is the most significant bit, and bit 1 is the least significant bit. Bit 8 is used for changing the counter direction. Bit 1 to bit 7 are used to configure encoder's address.



Address setting

Line close

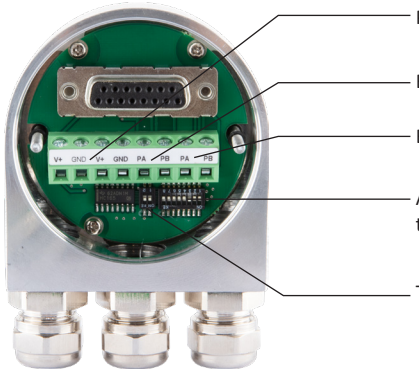


Example

Line close

EAM58-DP

NETWORK PARAMETERS



Usually, an A type cable is used to wire a DP / FMS network. This cable has to have the following characteristics:	
Parameter	A type cable
Characteristic resistance (Ω)	135 … 165 at a certain frequency (3 … 20 Mhz)
Rated capacity (PF/m)	< 30
Loop resistance (Ω/Km)	≤ 110
Core diameter (mm)	> 0.64*)
Core cross-section (mm2)	> 0.34*)

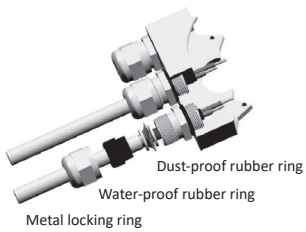
This cable allows the optimal network utilization. In fact, it is possible to reach the maximum communication speed allowed (12 Mbaud). However, there are some limitations due to the maximum physical dimensions of a bus segment as follows:

kbaud	9.6	19.2	93.75	187.5	500	1500	12000
Range / Segment	1200 m	1200 m	1200 m	1000 m	400 m	200 m	100 m

Finally, the physical characteristics of a Profibus network are now known.	
Max. number of station participating	DP: 126 (Address 0 ... 125)
in the exchange of user data	FMS: 127 (Address 0 ... 26)
Max. number of stations per segment	32
Available data transfer rates (kbit/s)	9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000
Max. segments	6000, 12000

According to EN50170, a maximum of 4 repeaters are allowed between any two stations.
Dependent on the repeater type and manufacturer, more than 4 repeaters may be allowed in some cases. Refer to the manufacturer's technical specification for details.

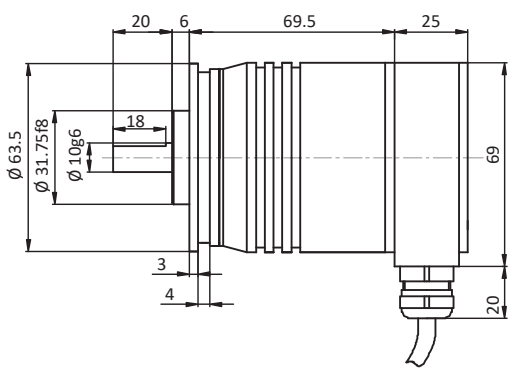
WIRING BOX

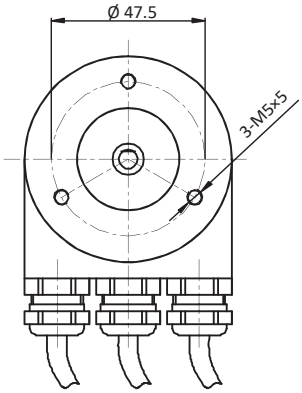
Wiring Guide	
	Unscrew the back cover and wire the cables (power cable, input and output bus) according to the instructions on the cover wiring. The cable will pass through the metal locking ring, water-proof rubber ring, and dust-proof rubber ring into the metal notch. Lock the metal ring to fasten the cables.

EAM58-DP

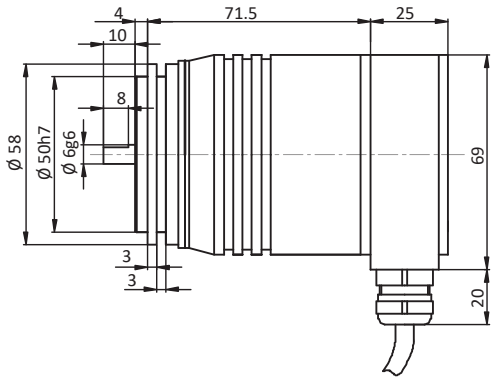
DIMENSIONS (mm)

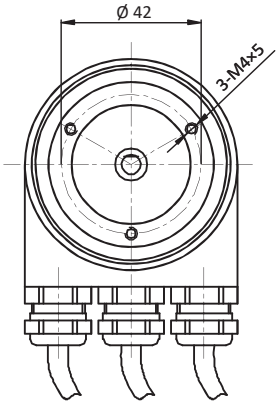
EAM58A



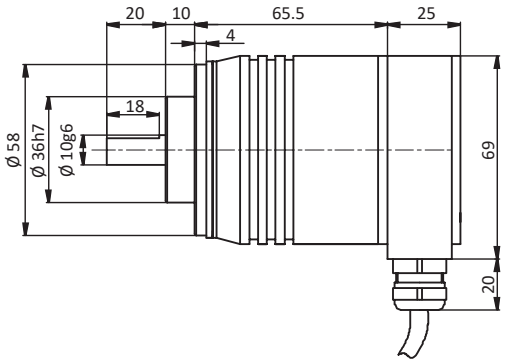


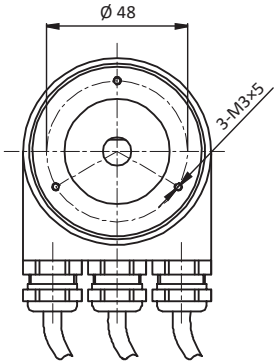
EAM58B





EAM58C

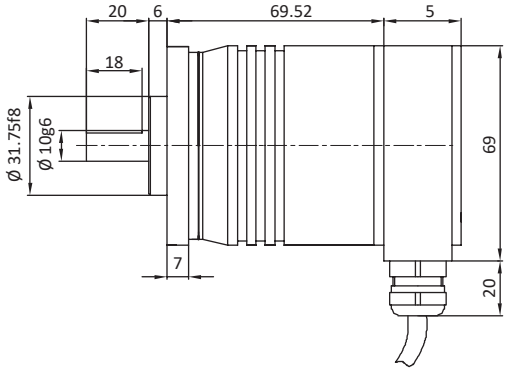


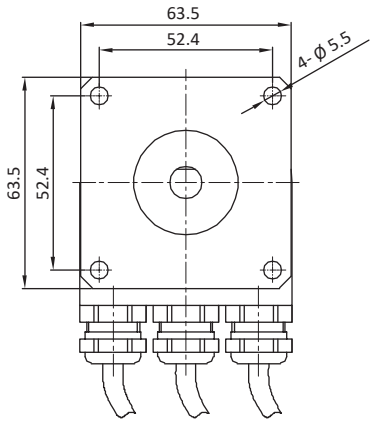


EAM58-DP

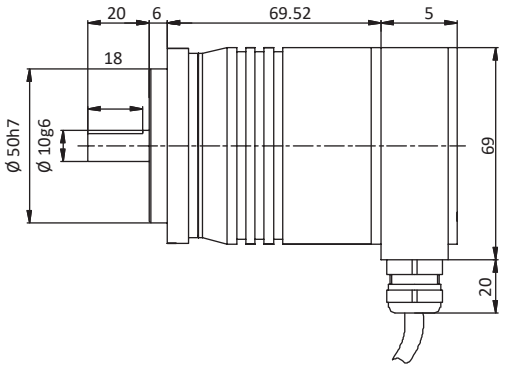
DIMENSIONS (mm)

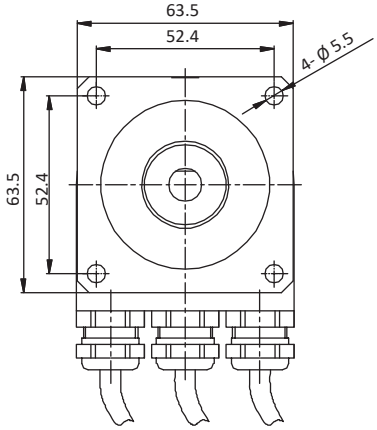
EAM58D



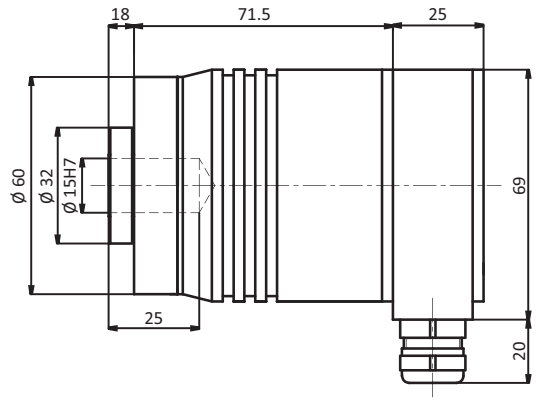


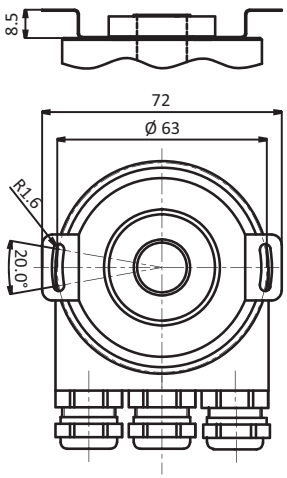
EAM58E





EAM58W





EAM58-DP

ORDER CODE

EAM 58 C 10 - B F6 X X R - 4096/8192 DP

Shaft diameter

6 = Ø 6g6 mm 58B
8 = Ø 8g6 mm
58A/B/D/E
9 = Ø 9.52g6 mm
58A/D/E
10 = Ø10g6 mm 58C
Only for flange type 58G, F, W
8 = Ø 8H7 mm
9 = Ø 9.52H7 mm
10 = Ø 10H7 mm
12 = Ø 12H7 mm
14 = Ø 14H7 mm
15 = Ø 15H7 mm

Flange type

A = Round flange
B = Synchro flange, shaft length 10 mm
C = Ø 36 clamping flange,
shaft length 20 mm
D = 63.5 square flange, Ø 31.75,
shaft length 20 mm
E = 63.5quare flange, Ø 50h7,
shaft length 20 mm
W = Blind hollow shaft flange, double-
winged spring leaf installation

Housing diameter

58 mm = Ø 58 flange

Series

EAM = Profibus-DP interface absolute multiturn

Code type

B=Binary

Output & Supply voltage

F6 = Profibus-DP interface 10 ... 30 V DC

Output logic

X = No definition

Type of connection

X = Integrated coupler terminal box with 3 PG7 threaded connectors
T = Integrated coupler termianl box with 3 M12 plugs

Outlets direction

R = Radial

Resolution

Resolution (see previouspages for reference)
Standard 4096/8192(25 bits)

Profibus-DP interface
absolute encode

EAM58-PN

ARTICLE PROPERTIES

TYPE	Profinet protocol absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 mm / Ø 8g6 mm / Ø 10g6 mm	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	Ø 8H7 mm / Ø 10H7 mm / Ø 12H7 mm / Ø 15H7 mm	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**WEIGHT**	360...750 g
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2		

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 160 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

INTERFACE	Profinet	**SUPPLY VOLTAGE**	10 ... 30 V DC
PROGRAMMING FUNCTIONS	Resolution, speed value, counting direction, preset value	**CURRENT CONSUMPTION**	≤ 230 mA ... 10 V DC ≤ 100 mA ... 24 V DC
TRANSMISSION RATE	10/100 Mbit	**POWER CONSUMPTION**	≤ 2.5 W
INTERFACE CYCLE TIME	> 1 ms	**START-UP TIME**	< 250 ms
REVOLUTION	4096 (12 bits)	**ACCURACY (INL)**	±0.0439°
RESOLUTION/REVOLUTION	8192 (13 bits, max. 18 bits)		

ELECTRICAL CONNECTION

CONNECTION ORIENTATION	Radial	**POWER SUPPLY**	M12, 4-pin, A-coded, Male
BUS PORT 1	M12, 4-pin, D-coded, Female	**BUS PORT 2**	M12, 4-pin, D-coded, Female

EAM58-PN

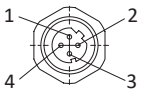
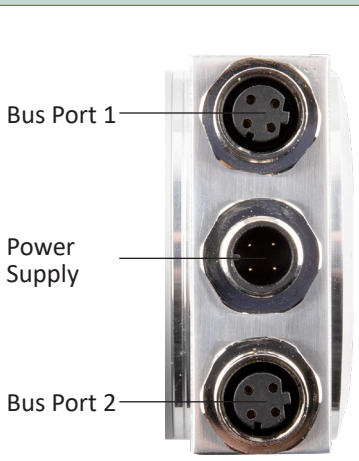
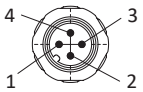
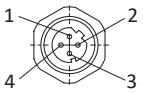
STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

EN IEC 61000-6-2
EN IEC 61000-6-4

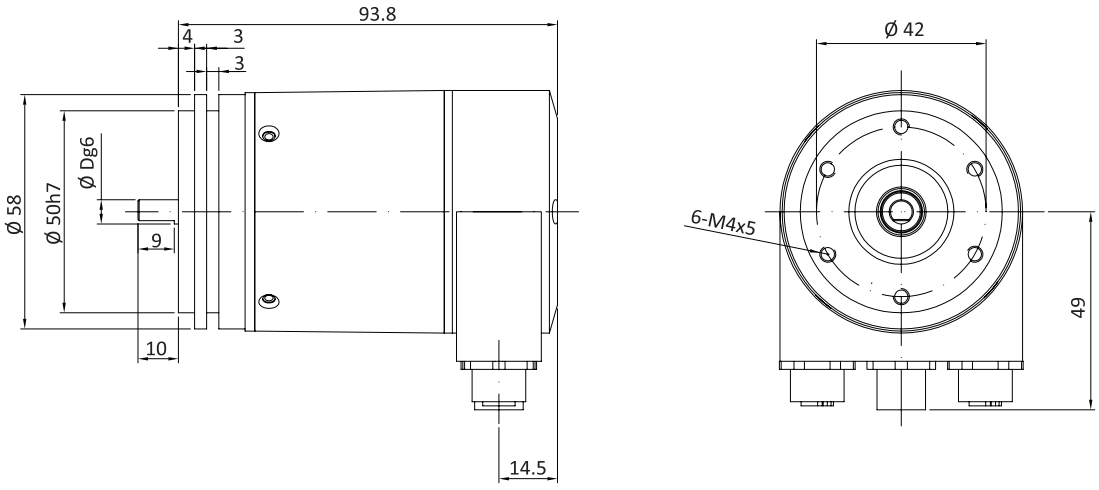
APPROVALS

TERMINAL ASSIGNMENT

Function	M12 connector						
Bus Port 1	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-		
	Abbreviation	TxD+	RxD+	TxD-	RxD-		
	Pin number	1	2	3	4	D coded	
Power Supply	Signal	Voltage+	-	Voltage-	-		
	Abbreviation	+V	-	0 V	-		
	Pin number	1	2	3	4	A coded	
Bus Port 2	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-		
	Abbreviation	TxD+	RxD+	TxD-	RxD-		
	Pin number	1	2	3	4	D coded	

DIMENSIONS (mm)

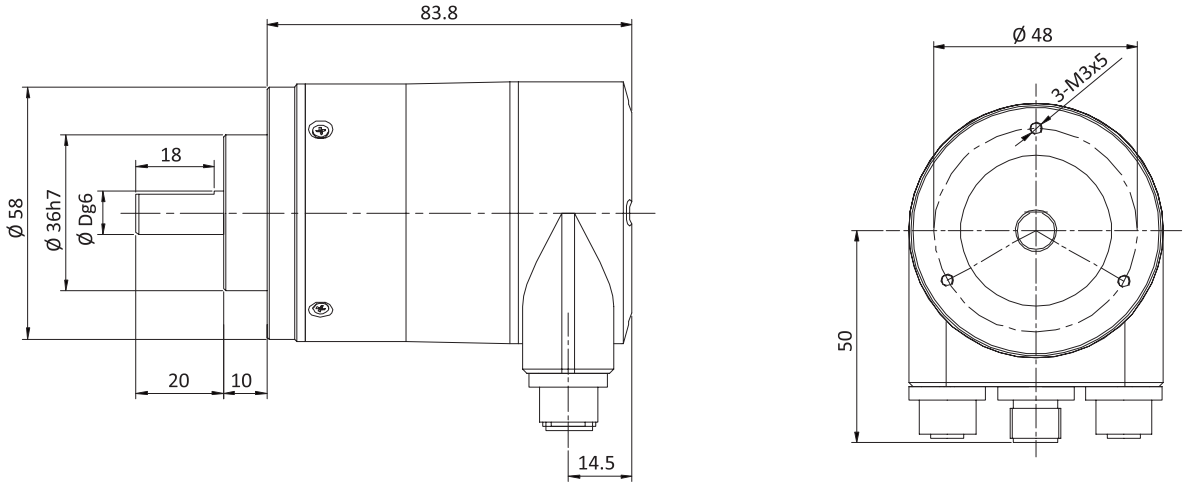
EAM58B



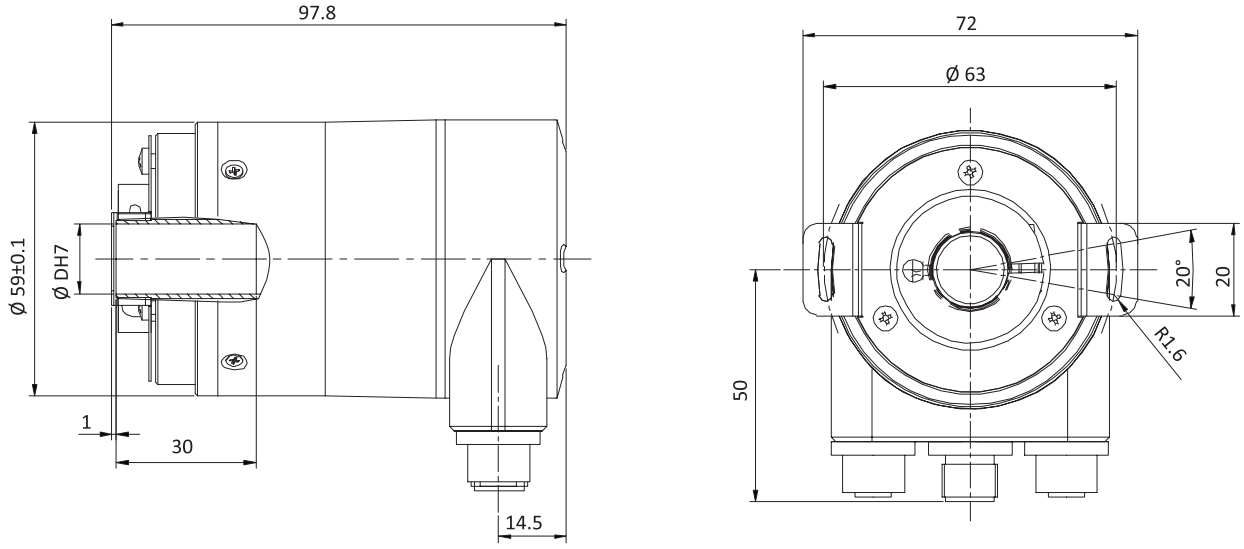
EAM58-PN

DIMENSIONS (mm)

EAM58C



EAM58W



EAM58-PN

ORDER CODE

EAM 58 C 10 - B F6 X T R - 4096/8192 PN . XXXX

Shaft diameter
6 = Ø 6g6 mm
58B optional
8 = Ø 8g6 mm
10 = Ø 10g6 mm
58C optional
Only for flange type 58W:
8 = Ø 8H7 mm
10 = Ø 10H7 mm
12 = Ø 12H7 mm
15 = Ø 15H7 mm

Flange type
B = Synchro flange, shaft length 10 mm
C = Ø 36 clamping flange, shaft length 20 mm
W = Double-wing spring mounting

Housing diameter
58 mm = Ø 58 flange

Series
EAM = Profinet protocol absolute multiturn encoder

Code type
B = Binary

Output & Supply voltage
F6 = Profinet 10 ... 30 V DC

Output logic
X = No definition

Type of connection
T = Integrated coupler terminal box with 3 x M12 plugs

Outlets direction
R = Radial

Resolution
Standard 4096/8192 (25 Bits)
Optional 4096/262144 (30 Bits)

PN: Profinet RT
PNMC: Profinet RT & IRT

XXXX = Special code

Matching connectors code:
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4
Power supply connector: TMSP12F-F4

EAM58-PNOM

ARTICLE PROPERTIES

TYPE	Profinet absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 mm 58B Ø 10g6 mm 58C	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	Ø 8H7 mm / Ø 10H7 mm / Ø 12H7 mm 58W	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**COVER MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	600 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	40 N axial, 80 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

MAX. REVOLUTION	4096 (12 bits)	**LINEARITY**	12 bits±1/2 LSB
MAX. RESOLUTION	262144 (18 bits)	**INTERFACE**	PROFINET IO/RT Class C
SUPPLY VOLTAGE	10 ... 30 VDC	**DATA TRANSMISSION RATE**	10/100 Mbit/s
CURRENT CONSUMPTION (NO LOAD)	200 mA	**ENCODER SUB-PROTOCOL**	V4.1 Class3
MAX. RATE	100 Mbits/s		

STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

APPROVALS

CE

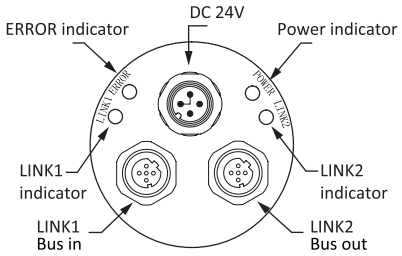
EAM58-PNOM

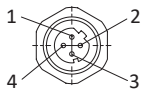
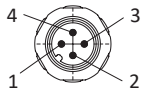
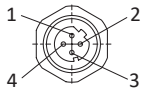
LED INDICATOR

POWER INDICATOR Green light on is normal, red light on is power failure, light off is no power

ERROR INDICATOR Green light on is normal, red light on or off is failure

COMMUNICATION INDICATOR Slow orange flashing indicates normal communication, fast orange flashing indicates data transmission in progress, and off indicates no connection

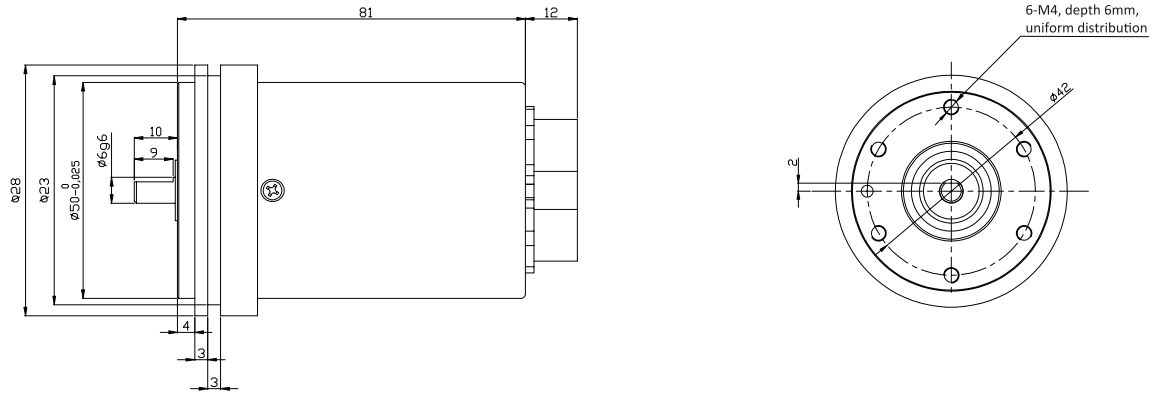


Function	M12 connector					
Bus Port 1	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin number	1	2	3	4	D coded
Power Supply	Signal	Voltage+	-	Voltage-	-	
	Abbreviation	+V	-	0 V	-	
	Pin number	1	2	3	4	A coded
Bus Port 2	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin number	1	2	3	4	D coded

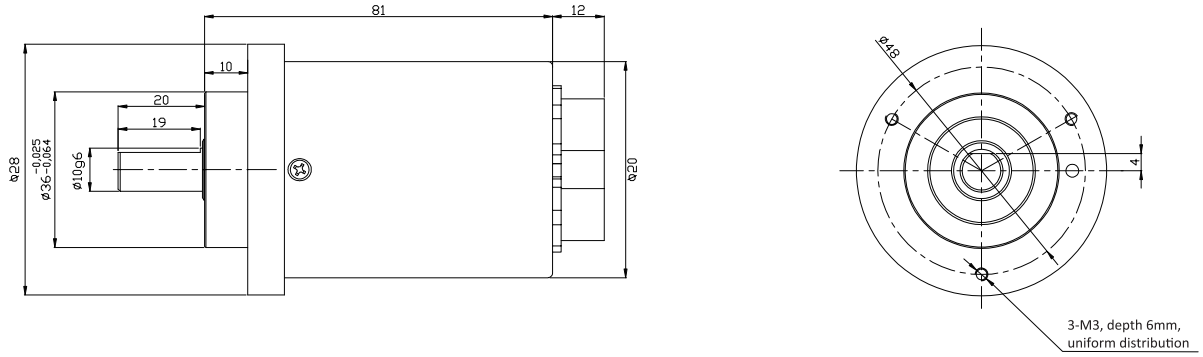
EAM58-PNOM

DIMENSIONS (mm)

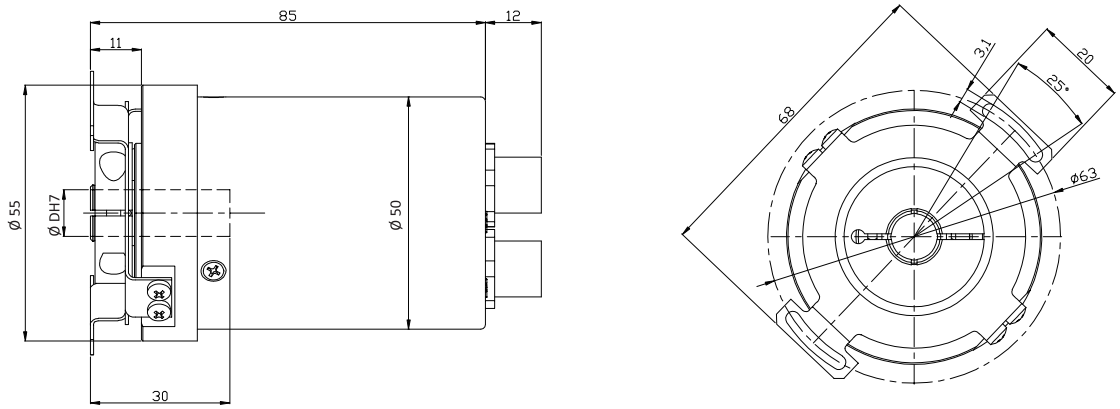
EAM58B Axial



EAM58C Axial



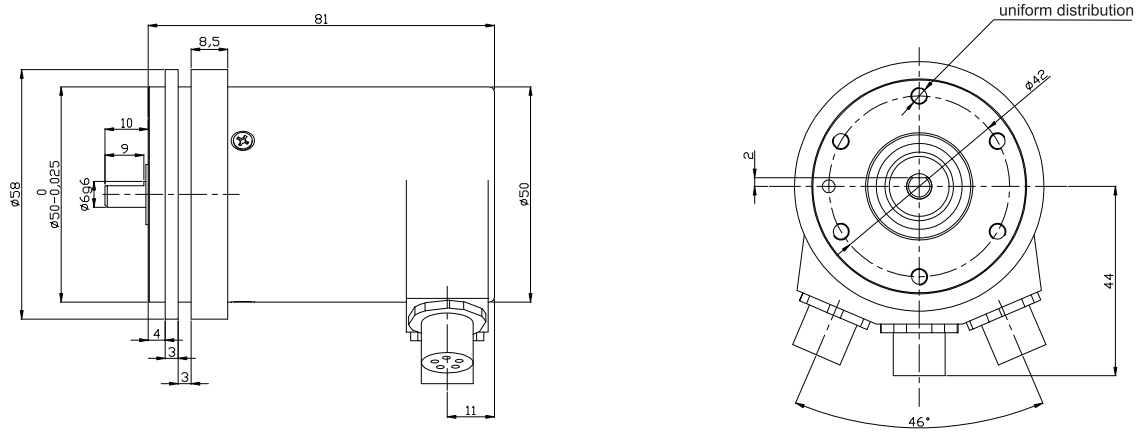
EAM58W8/10 Axial



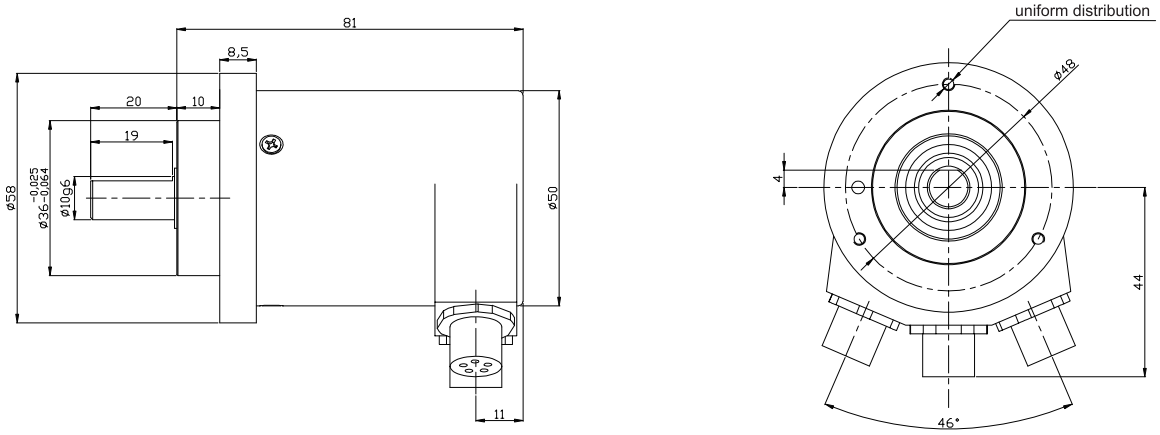
EAM58-PNOM

DIMENSIONS (mm)

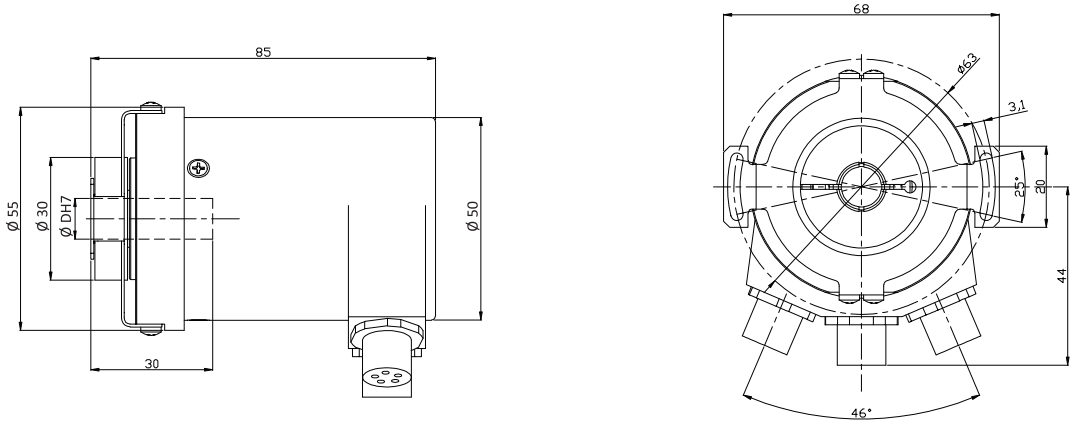
EAM58B Radial



EAM58C Radial



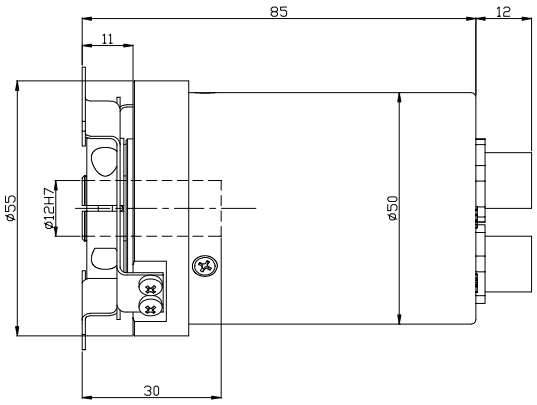
EAM58W8/10 Radial

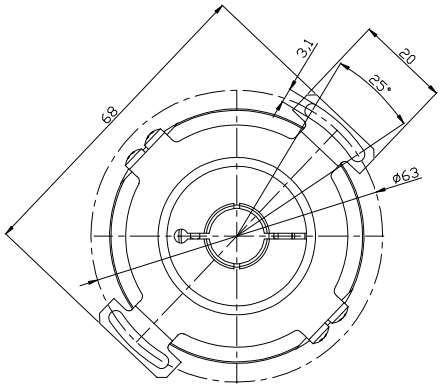


EAM58-PNOM

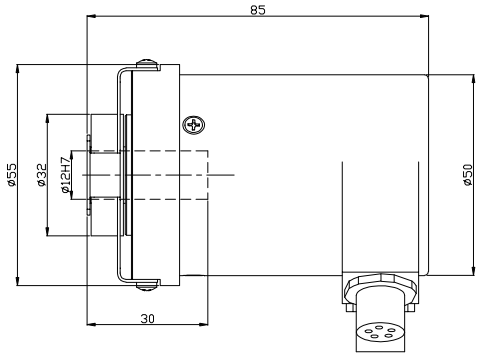
DIMENSIONS (mm)

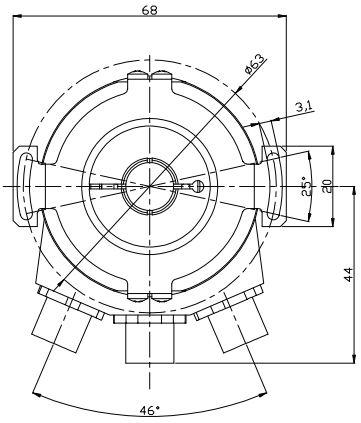
EAM58W12 Axial





EAM58W12 Radial





EAM58-PNOM

ORDER CODE

EAM 58 C 10 - B F6 X T R - 4096/8192 PNOM . XXXX

Series
EAM = Profinet absolute multiturn encoder

Housing diameter
58 = Housing diameter

Flange type
B = Synchronous flange, shaft length 10 mm
C = Ø 36 Clamping flange, shaft length 20 mm
W = Blind hollow shaft flange, double wing spring plate installation

Shaft / hollow shaft diameter
6 = Ø 10g6 mm (58B)
10 = Ø 10g6 mm (58C)
8 = Ø 8H7 mm (58W)
10 = Ø 10H7 mm (58W)
12 = Ø 12H7 mm (58W)

Output Code
B = Binary

Supply voltage
F6 = Profinet IO 10 ... 30 V DC

Outlets direction
R = Radial
X = Axial

Type of connection
T = Integrated coupler terminal box with 3 x M12 plugs

Output logic
R = No definition

Resolution
Standard 4096/8192 (25 Bits)
Optional 4096/262144 (30 Bits)

PNOM: Profinet RT

XXXX = Special code

Matching connector code:
Power terminal connector: TMSP12F-F4
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4

EAM58-ENND

ARTICLE PROPERTIES

TYPE	EtherNet/IP interface absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6 / Ø 10g6 mm (Solid Shaft)	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	Ø 8 / Ø 10/ Ø 12 / Ø 15H7 mm	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**FLANGE MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	600 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 160 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 1000 Hz		

ELECTRICAL PARAMETERS

INTERFACE	EtherNet/IP	**SUPPLY VOLTAGE**	10 ... 30 V DC
PROGRAMMING FUNCTIONS	Resolution, time base and filter for velocity, preset, counting direction, IP-Adress	**CURRENT CONSUMPTION**	≤ 230 mA ... 10 V DC ≤ 100 mA ... 24 V DC
TRANSMISSION RATE	10 / 100 Mbit	**POWER CONSUMPTION**	≤ 2.5 W
INTERFACE CYCLE TIME	> 1 ms	**START-UP TIME**	< 250 ms
REVOLUTION	4096 (12 bits)	**ACCURACY (INL)**	±0.0439°
RESOLUTION/REVOLUTION	8192 (13 bits)		

ELECTRICAL CONNECTION

CONNECTION ORIENTATION	Radial	**POWER SUPPLY**	M12, 4-pin, A-coded, Male
BUS PORT 1	M12, 4-pin, D-coded, Female	**BUS PORT 2**	M12, 4-pin, D-coded, Female

EAM58-ENND

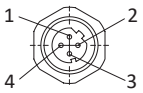
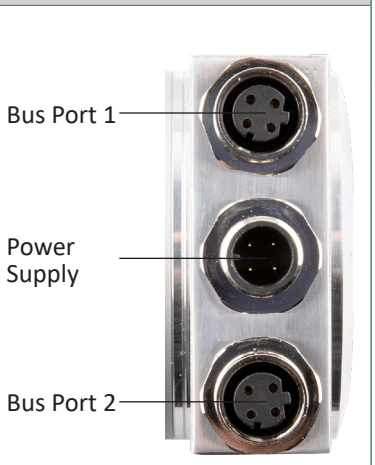
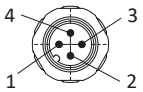
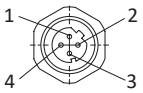
STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

EN IEC 61000-6-2
EN IEC 61000-6-4

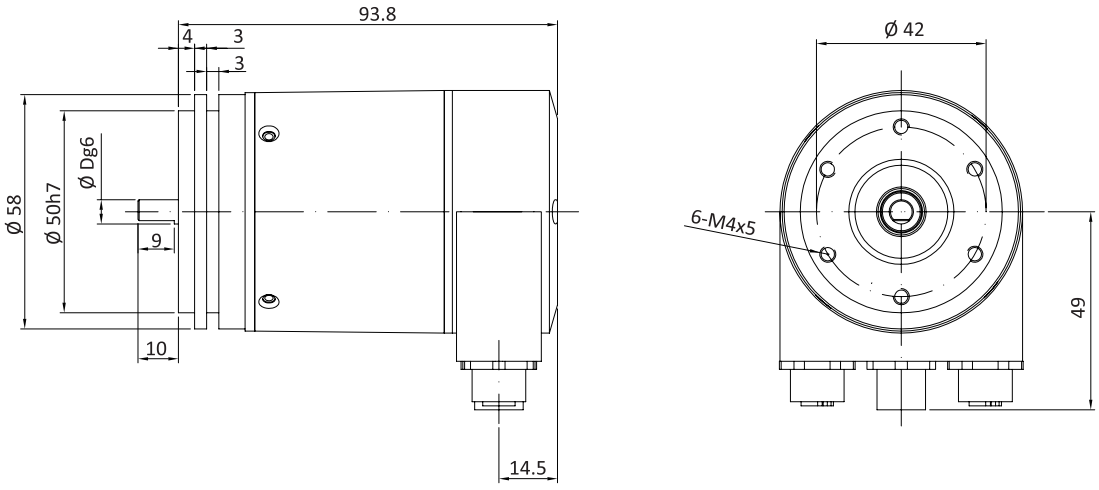
APPROVALS

TERMINAL ASSIGNMENT

Function	M12 connector						
Bus Port 1	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-		
	Abbreviation	TxD+	RxD+	TxD-	RxD-		
	Pin number	1	2	3	4	D coded	
Power Supply	Signal	Voltage+	-	Voltage-	-		
	Abbreviation	+V	-	0 V	-		
	Pin number	1	2	3	4	A coded	
Bus Port 2	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-		
	Abbreviation	TxD+	RxD+	TxD-	RxD-		
	Pin number	1	2	3	4	D coded	

DIMENSIONS (mm)

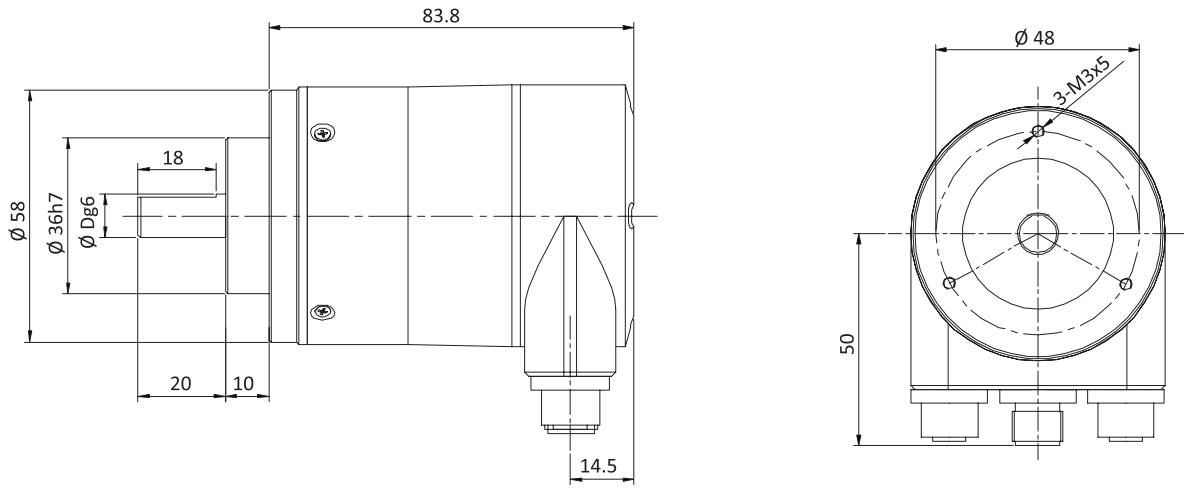
EAM58B



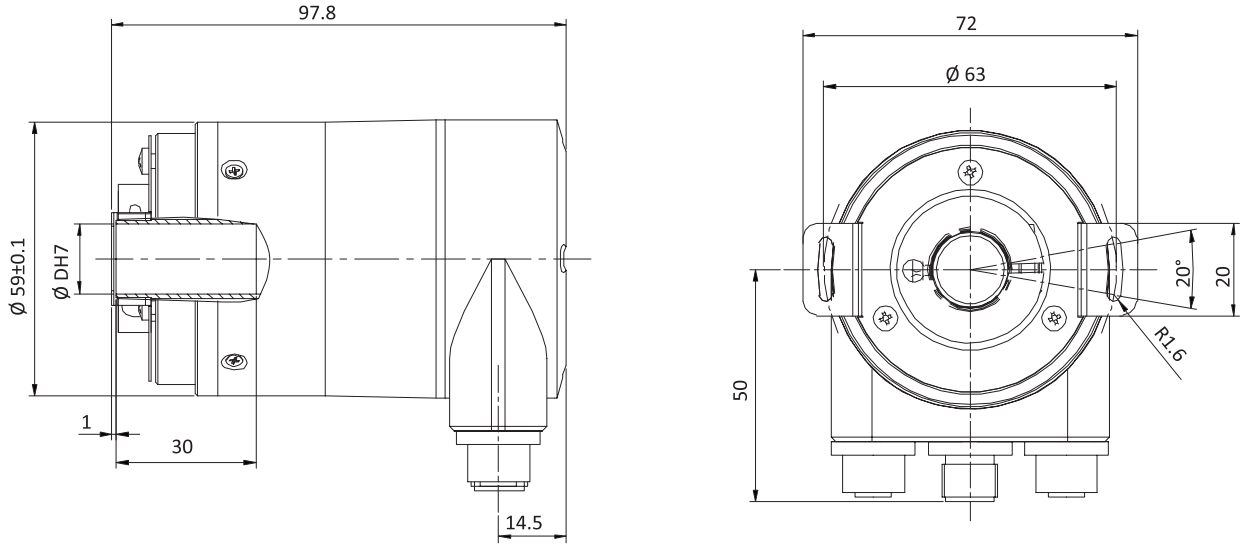
EAM58-ENND

DIMENSIONS (mm)

EAM58C



EAM58W



EAM58-ENND

ORDER CODE

EAM 58 C 10 - B F6 X T R - 4096/8192 ENND . XXXX

Shaft diameter
6 = Ø 6g6 mm
58B optional
10 = Ø 10g6 mm
58C optional
Only for flange type 58W:
8 = Ø 8H7 mm
10 = Ø 10H7 mm
12 = Ø 12H7 mm
15 = Ø 15H7 mm

Flange type
B = Synchro flange, shaft length 10 mm
C = Ø 36 clamping flange, shaft length 20 mm
W =Double-wing spring mounting

Housing diameter
58 mm = Ø 58 flange

Series
EAM = EtherNet/IP interface multiturn

Outlets direction
R = Radial

Type of connection
T = Integrated coupler terminal box with 3 x M12 plugs

Output logic
X = No definition

Output & Supply voltage
F6 = Interface 10 ... 30 V DC

Code type
B = Binary

Resolution
Turns / Singleturn resolution
(see previous pages for reference)
standard 4096/8192 (25 bits)

ENND: EtherNet/IP interface protocol

XXXX = Special code

Matching connectors code:
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4
Power supply connector: TMSP12F-F4

EAM58-ENOM

ARTICLE PROPERTIES

TYPE	EtherNet/IP absolute multi-turn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 mm 58B Ø 10g6 mm 58C	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	Ø 8H7 mm / Ø 10H7 mm / Ø 12H7 mm 58W	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**COVER MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	600 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	40 N axial, 80 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

INTERFACE	EtherNet/IP	**MAX. BUS RATE**	100 Mbits/s
PROGRAMMING FUNCTIONS	Resolution, preset, counting direction	**INTERFACE CYCLE TIME**	≥ 62.5 µs
SUPPLY VOLTAGE	10...30 VDC	**CODE**	Binary
CURRENT CONSUMPTION (WITHOUT LOAD)	200 mA	**MAX. NUMBER OF LAPS**	4096 (12 bits)
POWER CONSUMPTION	≤ 2.5 W	**MAX. RESOLUTION**	8192 (13 bits)

STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

APPROVALS

CE

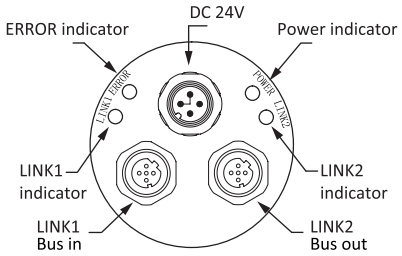
EAM58-ENOM

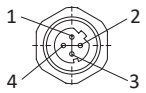
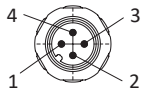
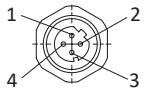
LED INDICATOR

POWER INDICATOR Green light on is normal, red light on is power failure, light off is no power

ERROR INDICATOR Green light on is normal, red light on or off is failure

COMMUNICATION INDICATOR Slow orange flashing indicates normal communication, fast orange flashing indicates data transmission in progress, and off indicates no connection

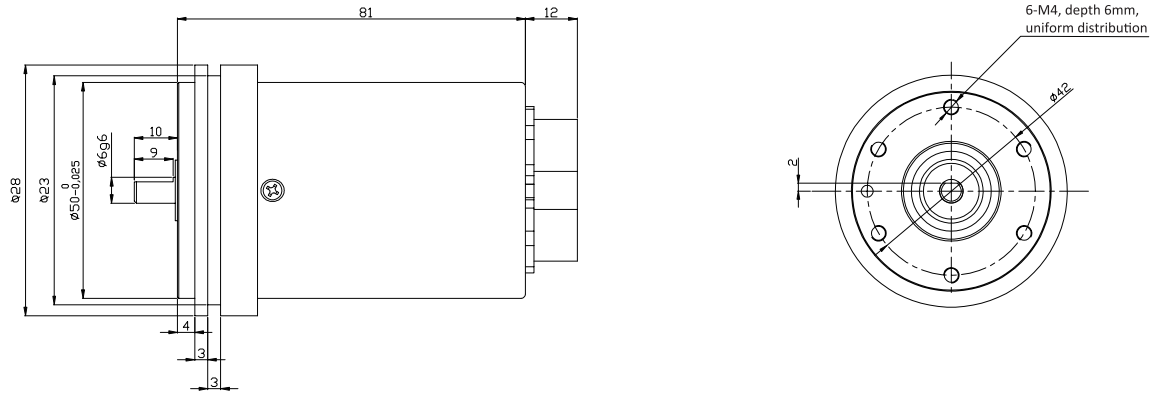


Function	M12 connector					
Bus Port 1	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin number	1	2	3	4	D coded
Power Supply	Signal	Voltage+	-	Voltage-	-	
	Abbreviation	+V	-	0 V	-	
	Pin number	1	2	3	4	A coded
Bus Port 2	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin number	1	2	3	4	D coded

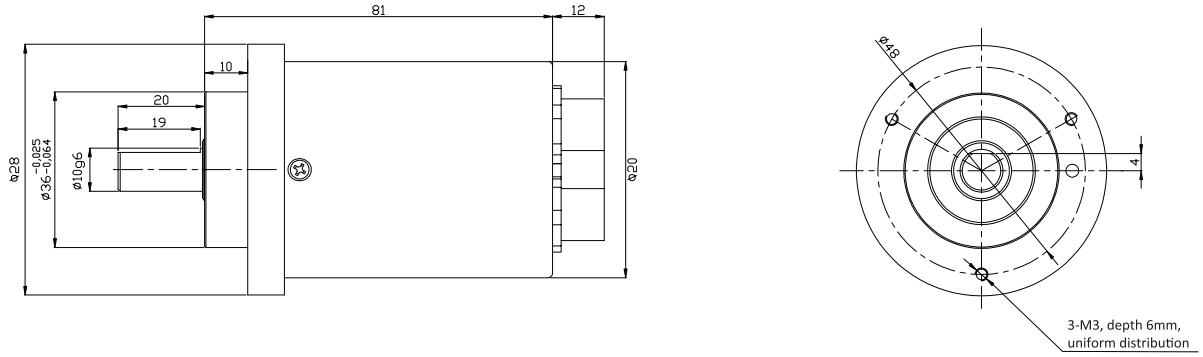
EAM58-ENOM

DIMENSIONS (mm)

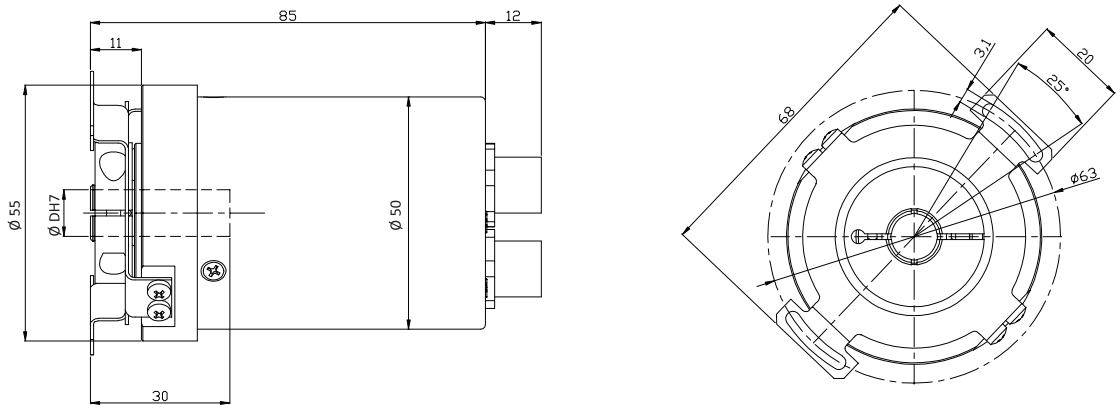
EAM58B Axial



EAM58C Axial



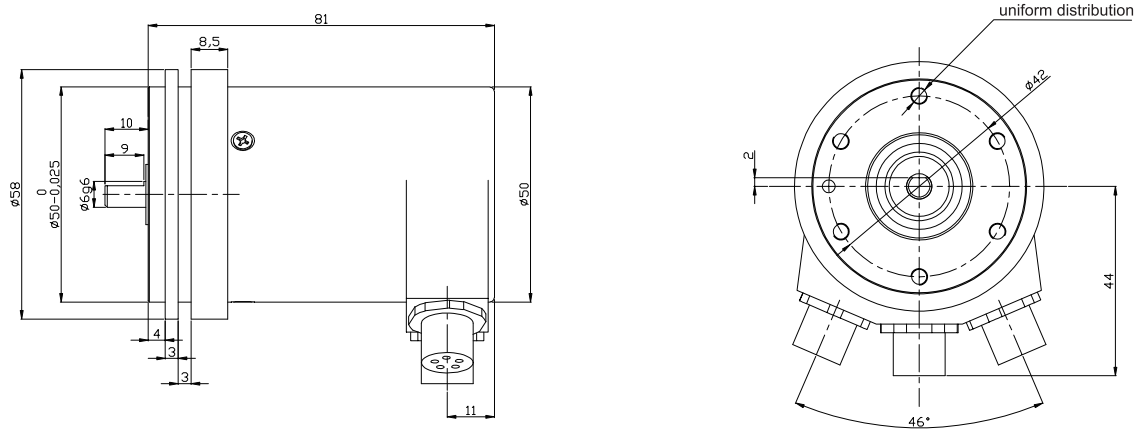
EAM58W8/10 Axial



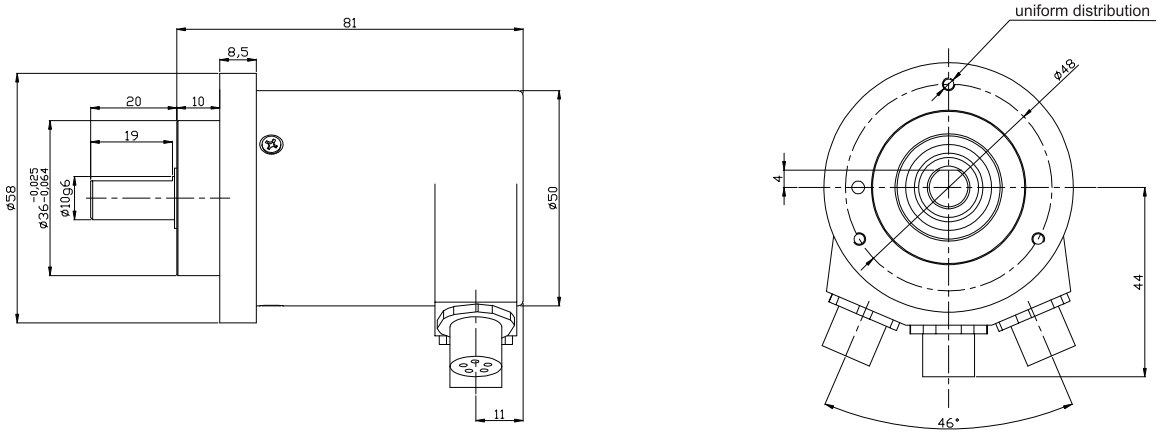
EAM58-ENOM

DIMENSIONS (mm)

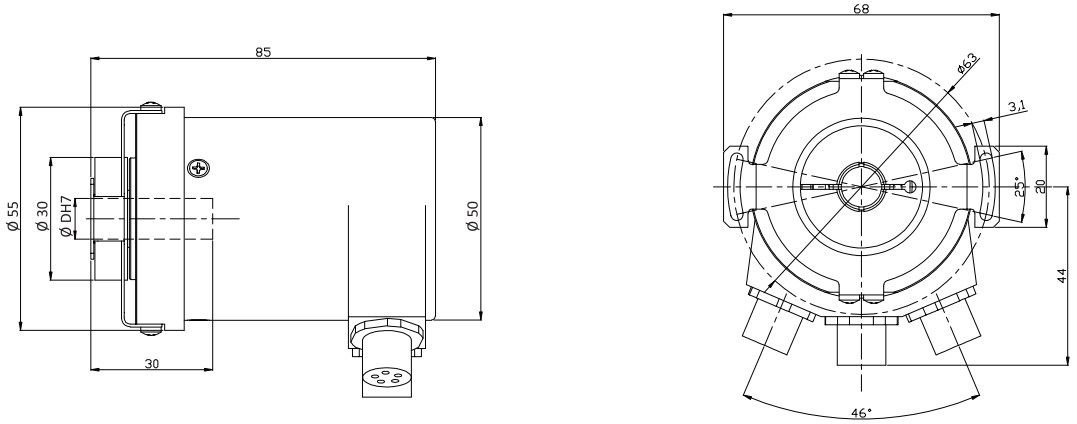
EAM58B Radial



EAM58C Radial



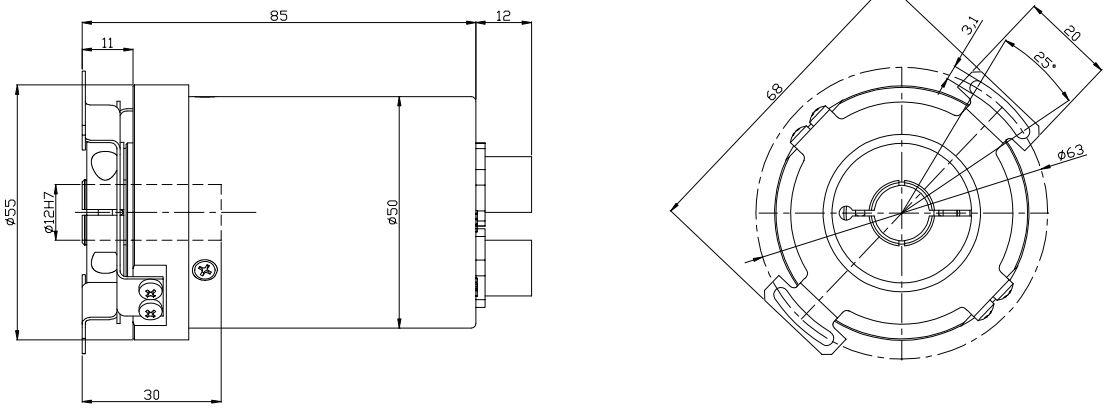
EAM58W8/10 Radial



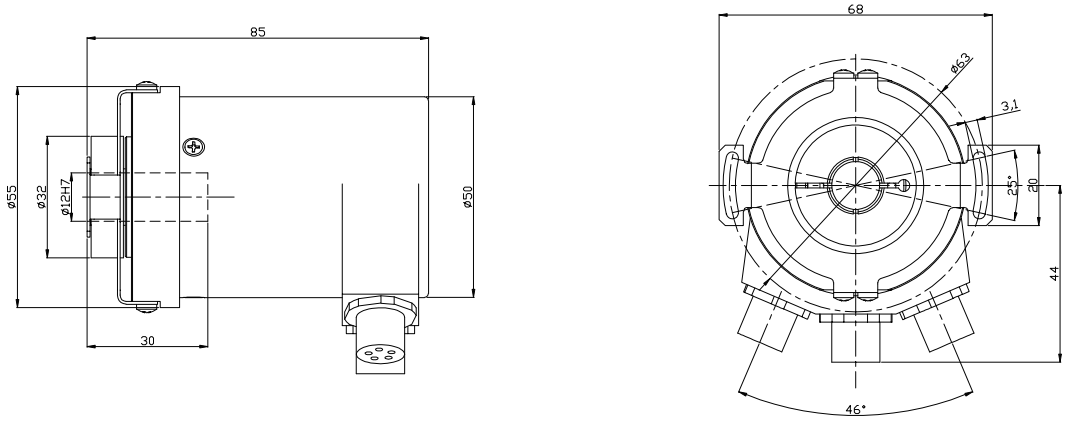
EAM58-ENOM

DIMENSIONS (mm)

EAM58W12 Axial



EAM58W12 Radial



EAM58-ENOM

ORDER CODE

EAM 58 C 10 - B F6 X T R - 4096/8192ENOM . XXXX

Series
EAM = EtherNet/IP absolute multiturn encoder

Housing diameter
58 = Housing diameter

Flange type
B = Synchronous flange, shaft length 10 mm
C = Ø 36 Clamping flange, shaft length 20 mm
W = Blind hollow shaft flange, double wing spring plate installation

Shaft / hollow shaft diameter
6 = Ø 10g6 mm (58B)
10 = Ø 10g6 mm (58C)
8 = Ø 8H7 mm (58W)
10 = Ø 10H7 mm (58W)
12 = Ø 12H7 mm (58W)

Output Code
B = Binary

Supply voltage
F6 = EtherNet/IP 10 ... 30 V DC

Output logic
X = No definition

Type of connection
T = Integrated coupler terminal box with 3 x M12 plugs

Outlets direction
R = Radial
A = Axial

Resolution
Standard 4096/8192 (25 Bits)

XXXX = Special code

Matching connector code:
Power terminal connector: TMSP12F-F4
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4

EAM58-ECND

ARTICLE PROPERTIES

TYPE	EtherCAT interface absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	58B: Ø 6g6 mm 58C: Ø 10g6 mm	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	58W: Ø 8H7 / Ø 10H7 / Ø 12H7 / Ø 15H7 mm	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**FLANGE MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	600 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 160 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

INTERFACE	EtherCAT	**MAX. BUS RATE**	100 Mbits/s
PROFILE	CoE (CANopen over EtherCAT, DS-301 + DS-406)	**INTERFACE CYCLE TIME**	≥ 62.5 µs
PROGRAMMING FUNCTIONS	Resolution, preset, counting direction	**CODE**	Binary
SUPPLY VOLTAGE	10 ... 30 V DC	**MAX. NUMBER OF LAPS**	4096 (12 bits)
CURRENT CONSUMPTION (WITHOUT LOAD)	200 mA	**MAX. RESOLUTION**	8192 (13 bits)
POWER CONSUMPTION	≤ 2.5 W		

ELECTRICAL CONNECTION

CONNECTION ORIENTATION	Radial	**POWER SUPPLY**	M12, 4-pin, A-coded, Male
BUS PORT 1	M12, 4-pin, D-coded, Female	**BUS PORT 2**	M12, 4-pin, D-coded, Female

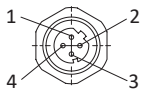
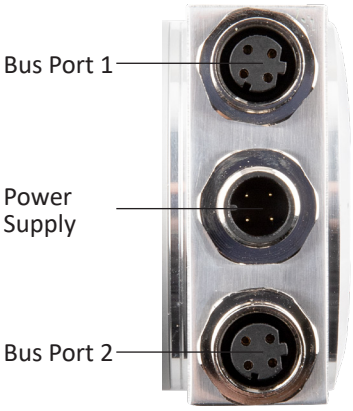
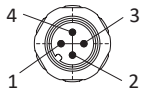
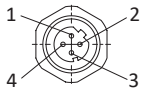
EAM58-ECND

STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR
EN IEC 61000-6-2
EN IEC 61000-6-4

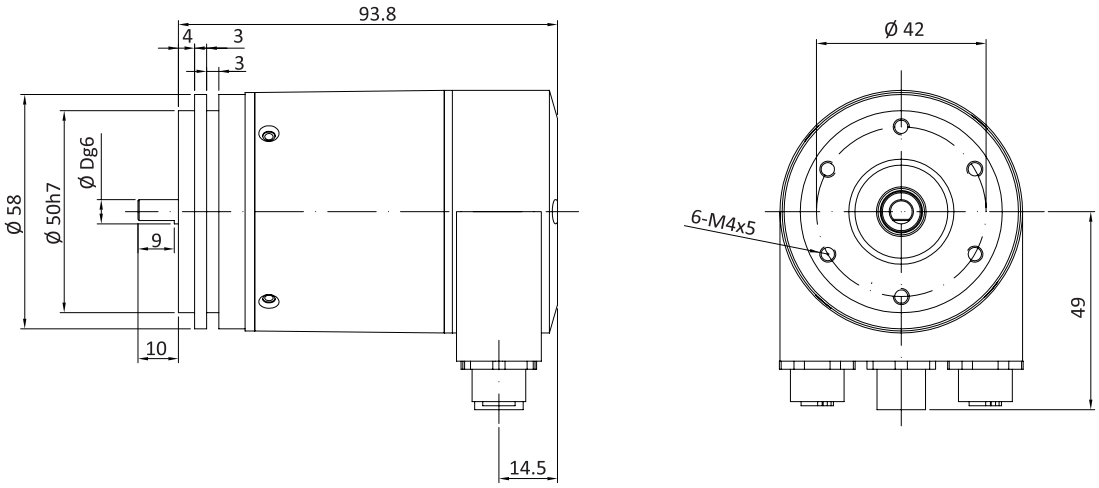
APPROVALS

TERMINAL ASSIGNMENT

Function	M12 connector						
Bus Port 1	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-		
	Abbreviation	TxD+	RxD+	TxD-	RxD-		
	Pin number	1	2	3	4	D coded	
Power Supply	Signal	Voltage+	-	Voltage-	-		
	Abbreviation	+V	-	0 V	-		
	Pin number	1	2	3	4	A coded	
Bus Port 2	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-		
	Abbreviation	TxD+	RxD+	TxD-	RxD-		
	Pin number	1	2	3	4	D coded	

DIMENSIONS (mm)

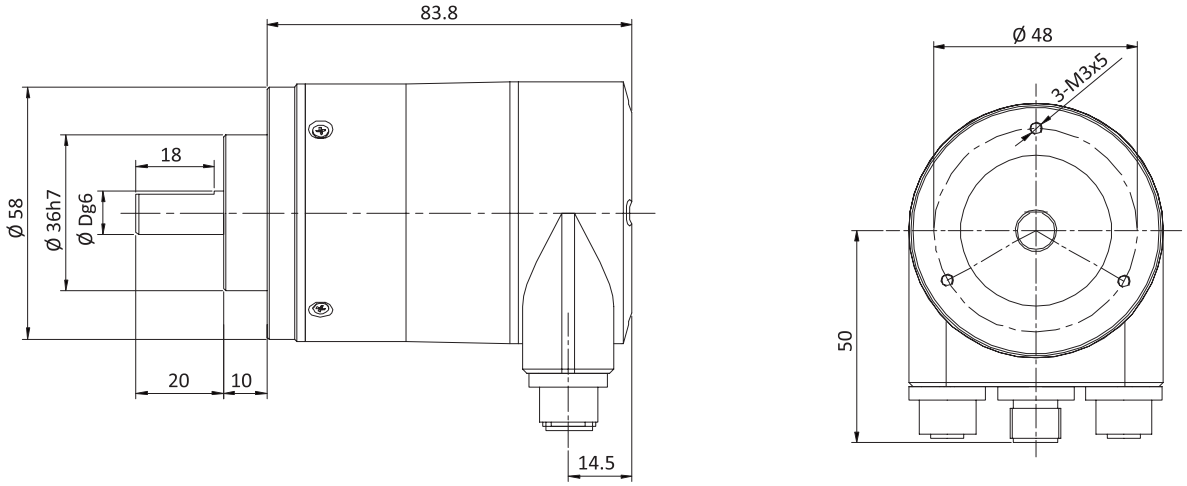
EAM58B



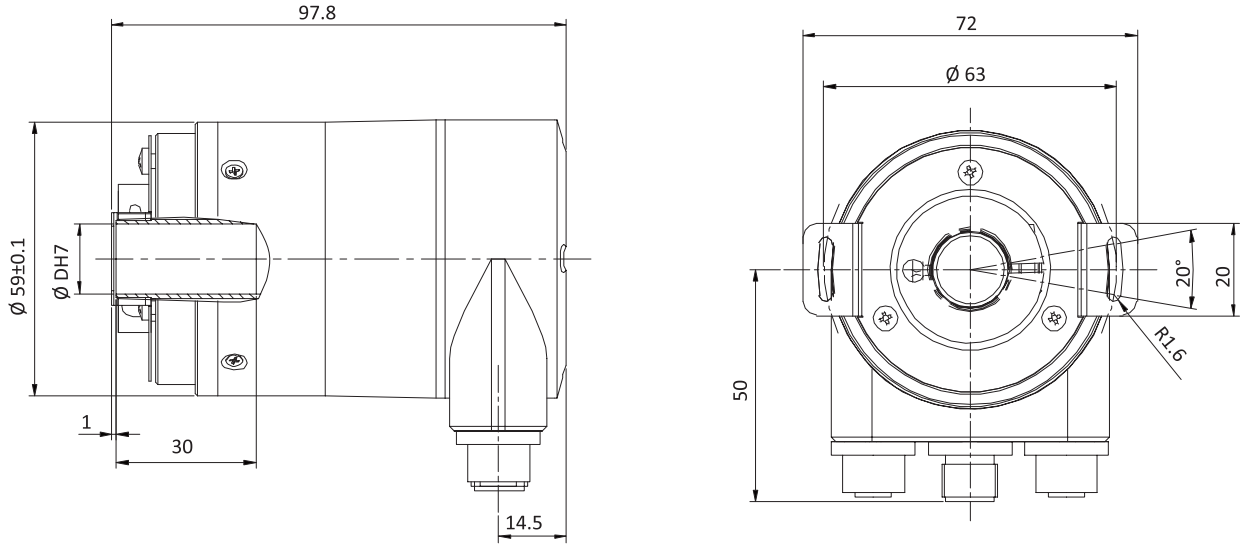
EAM58-ECND

DIMENSIONS (mm)

EAM58C



EAM58W



EAM58-ECND

ORDER CODE

EAM 58 C 10 - B F6 X T R - 4096/8192 ECND . XXXX

Shaft diameter
6 = Ø 6g6 mm
58B optional
10 = Ø 10g6 mm
58C optional
Only for flange type 58W:
8 = Ø 8H7 mm
10 = Ø 10H7 mm
12 = Ø 12H7 mm
15 = Ø 15H7 mm

Flange type
B = Synchro flange, shaft length 10 mm
C = Ø 36 clamping flange, shaft length 20 mm
W = Double-wing spring mounting

Housing diameter
58 mm = Ø 58 flange

Series
EAM = EtherCAT interface multiturn

Outlets direction
R = Radial

Type of connection
T = Integrated coupler terminal box with 3 x M12 plugs

Output logic
X = No definition

Output & Supply voltage
F6 = EtherCAT interface 10 ... 30 V DC

Code type
B = Binary

Resolution
Turns / Singleturn resolution
(see previous pages for reference)
standard 4096/8192 (25 bits)

XXXX = Special code

ECND: EtherCAT interface protocol

Matching connectors code:
Power supply connector: TMSP12F-F4
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4

EAM58-ECOM

ARTICLE PROPERTIES

TYPE	EtherCAT absolute multiturn encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 mm 58B Ø 10g6 mm 58C	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	Ø 8H7 mm / Ø 10H7 mm / Ø 12H7 mm 58W	**BODY MATERIAL**	Aluminum
SPEED	6000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**COVER MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	600 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	40 N axial, 80 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

INTERFACE	EtherCAT	**MAX. BUS RATE**	100 Mbits/s
PROFILE	CoE (CANopen over EtherCAT, DS-301 + DS-406)	**INTERFACE CYCLE TIME**	≥ 62.5 µs
PROGRAMMING FUNCTIONS	Resolution, preset, counting direction	**CODE**	Binary
SUPPLY VOLTAGE	10...30 VDC	**MAX. NUMBER OF LAPS**	4096 (12 bits)
CURRENT CONSUMPTION (WITHOUT LOAD)	200 mA	**MAX. RESOLUTION**	8192 (13 bits)
POWER CONSUMPTION	≤ 2.5 W		

STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

EAM58-ECOM

APPROVALS

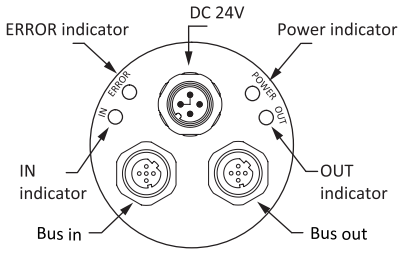
CE

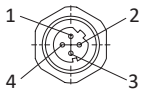
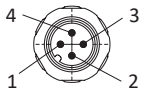
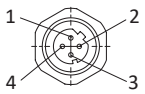
LED INDICATOR

POWER INDICATOR Green light on is normal, red light on is power failure, light off is no power and communication

ERROR INDICATOR Light off is normal, red light on or off is failure

COMMUNICATION INDICATOR Slow orange flashing indicates normal communication, fast orange flashing indicates data transmission in progress, and off indicates no connection

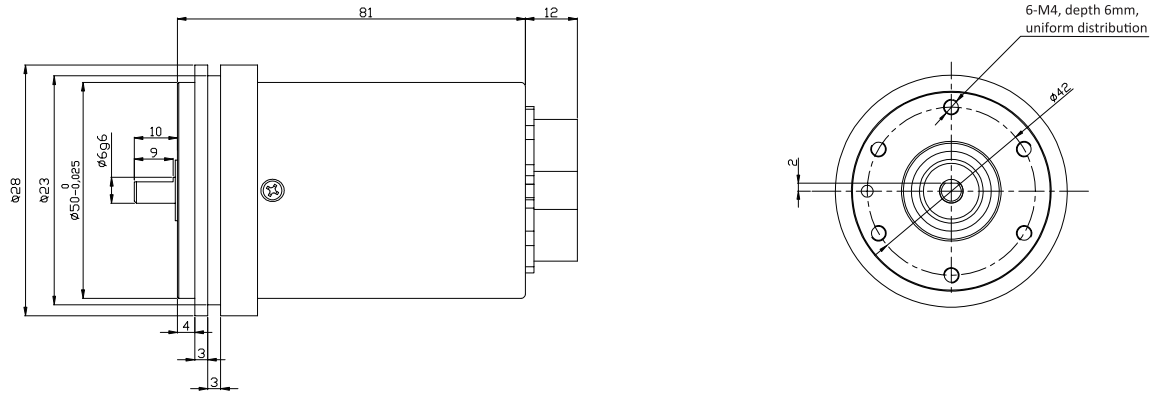


Function	M12 connector					
Bus Port 1	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin number	1	2	3	4	D coded
Power Supply	Signal	Voltage+	-	Voltage-	-	
	Abbreviation	+V	-	0 V	-	
	Pin number	1	2	3	4	A coded
Bus Port 2	Signal	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin number	1	2	3	4	D coded

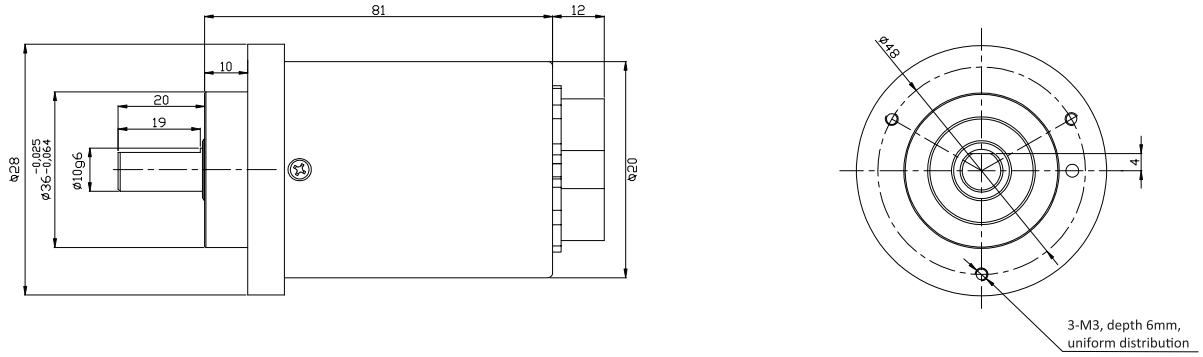
EAM58-ECOM

DIMENSIONS (mm)

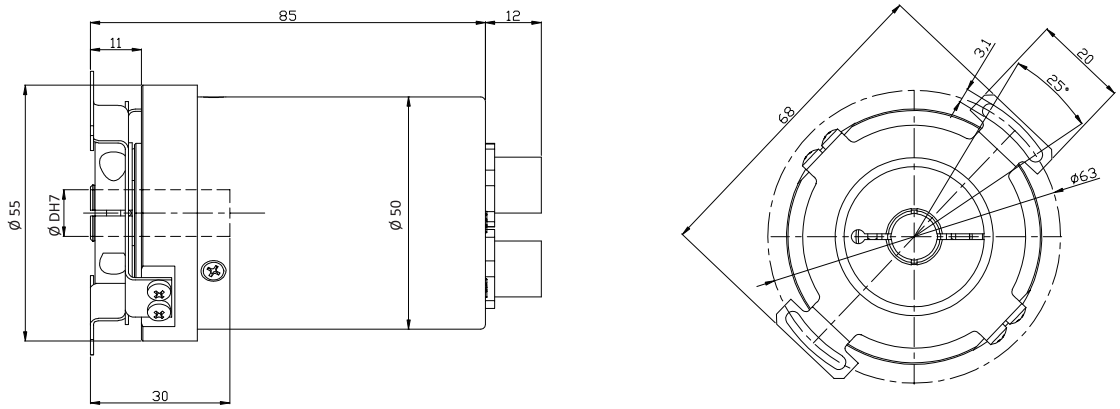
EAM58B Axial



EAM58C Axial



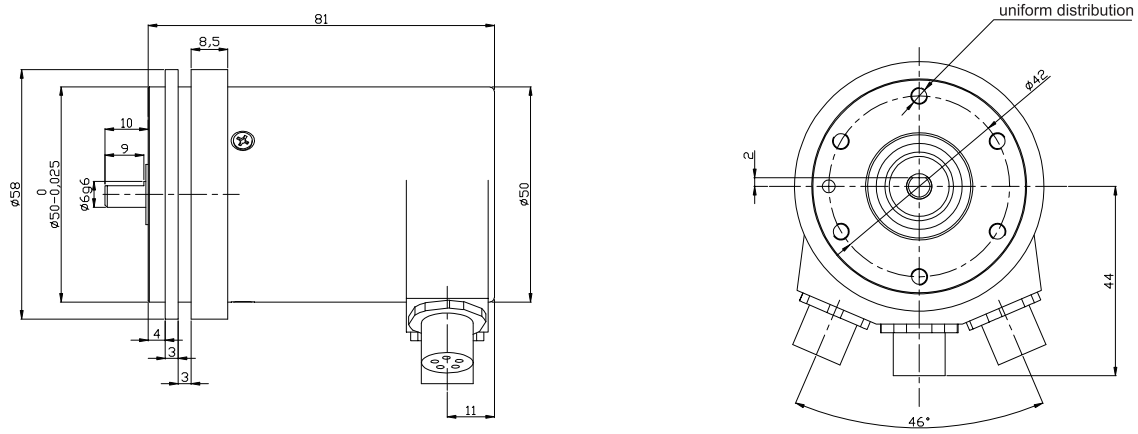
EAM58W8/10 Axial



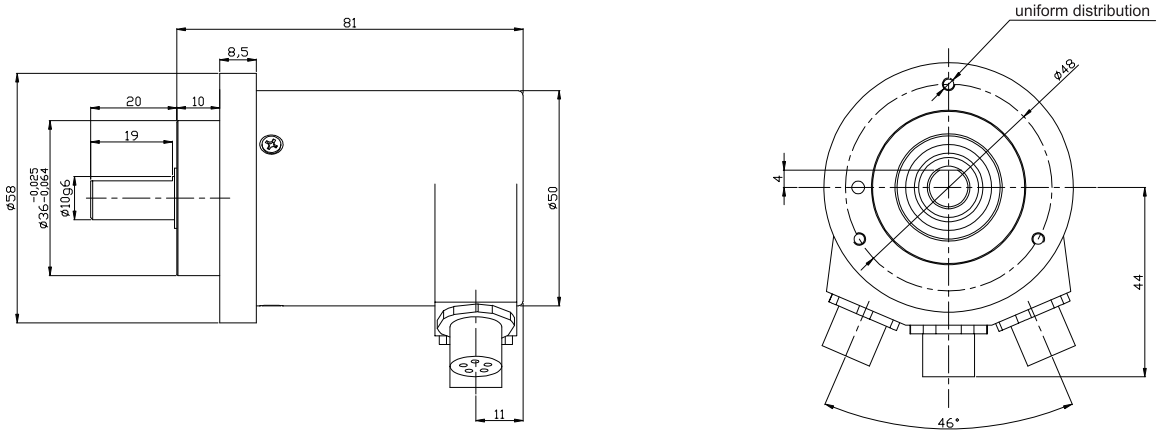
EAM58-ECOM

DIMENSIONS (mm)

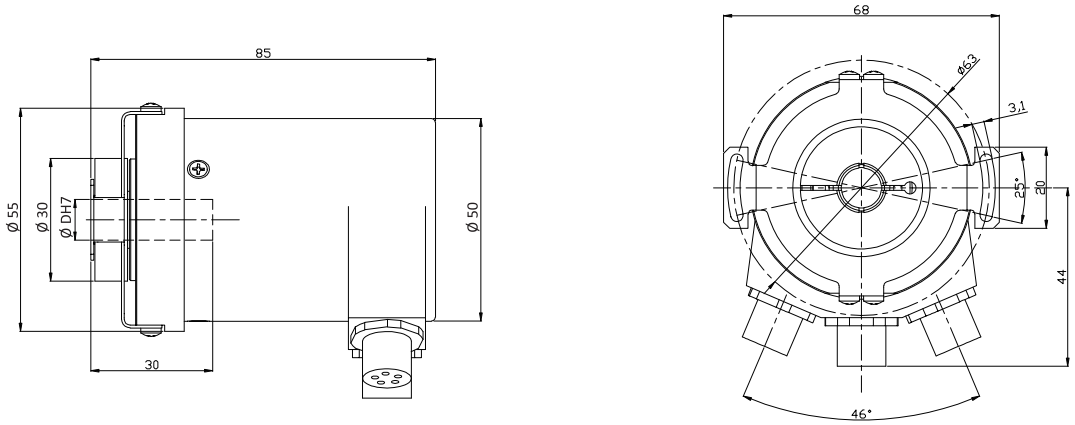
EAM58B Radial



EAM58C Radial



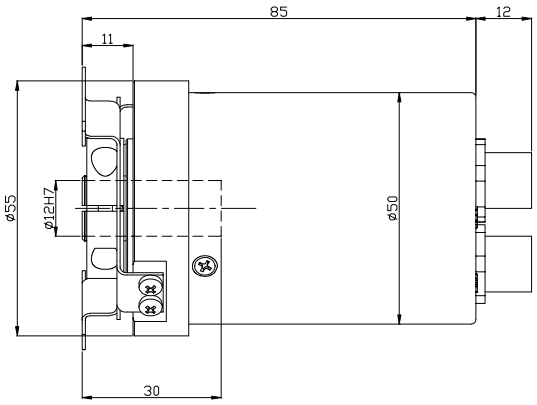
EAM58W8/10 Radial

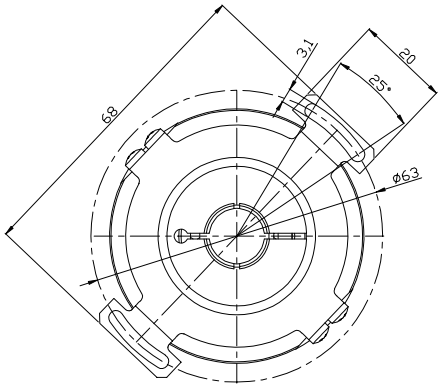


EAM58-ECOM

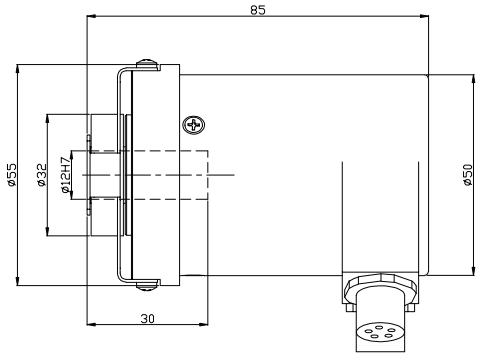
DIMENSIONS (mm)

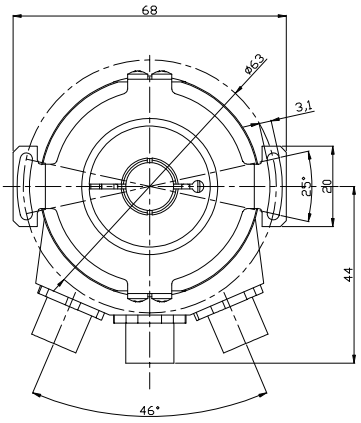
EAM58W12 Axial





EAM58W12 Radial





EAM58-ECOM

ORDER CODE

EAM 58 C 10 - B F6 X T R - 4096/8192ECOM . XXXX

Shaft / hollow shaft diameter
6 = Ø 10g6 mm (58B)
10 = Ø 10g6 mm (58C)
8 = Ø 8H7 mm (58W)
10 = Ø 10H7 mm (58W)
12 = Ø 12H7 mm (58W)

Flange type
B = Synchronous flange, shaft length 10 mm
C = Ø 36 Clamping flange, shaft length 20 mm
W = Blind hollow shaft flange, double wing spring plate installation

Housing diameter
58 = Housing diameter

Series
EAM = EtherCAT absolute multiturn encoder

Outlets direction
R = Radial
A = Axial

Type of connection
T = Integrated coupler terminal box with 3 x M12 plugs

Output logic
X = No definition

Supply voltage
F6 = EtherCAT 10 ... 30 V DC

Output Code
B = Binary

XXXX = Special code

Resolution
Standard 4096/8192 (25 Bits)

Matching connector code:
Power terminal connector: TMSP12F-F4
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4

EAM58-CAND

ARTICLE PROPERTIES

TYPE	CANopen Interface Absolute Multiturn Encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 / Ø 10g6 mm	**STARTING TORQUE**	< 0.05 N·m
HOLLOW SHAFT DIAMETER	Ø 10H7 / Ø 12H7/ Ø 15H7 mm	**BODY MATERIAL**	Aluminum
SPEED	3000 rpm	**HOUSING MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**FLANGE MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	800 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-40 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 160 N radial	**STORAGE TEMPERATURE**	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

SUPPLY VOLTAGE	10 ... 30 V DC	**PROTOCOL**	CANopen Profile DSP 406 with additional function
CURRENT	Max. 0.29 A	**BAUD RATE**	Based 250 K (Pre-factory setting) CAN DNET 125 / 250 / 500 kBit/son actual resolution
LINEARITY	±1/2 LSB (12 bit) ±1 LSB (13 bit)	**ADD.**	Add. set: 1 ... 99 32 (Pre-factory setting)
CODE	Binary	**TERMINATION RESISTORS**	120 Ω
INTERFACE	CAN HIGH-Speed to ISO/DIS 11898, Basic and Full-CAN; CAN specification 2.0 B		

STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

EAM58-CAND

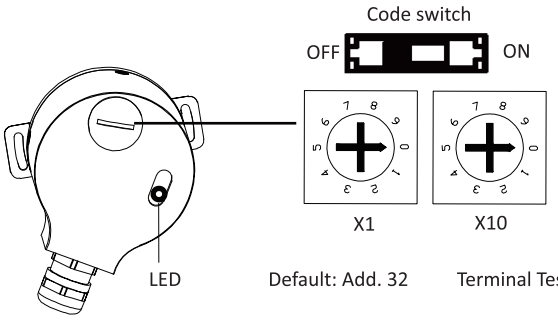
APPROVALS

CE

TERMINAL ASSIGNMENT

Signal	0 V	+Ub	CAN_H	CAN_L	Shield
Color	WH	BN	GN	GY	⏚

Encoder ID and terminal switch diagram

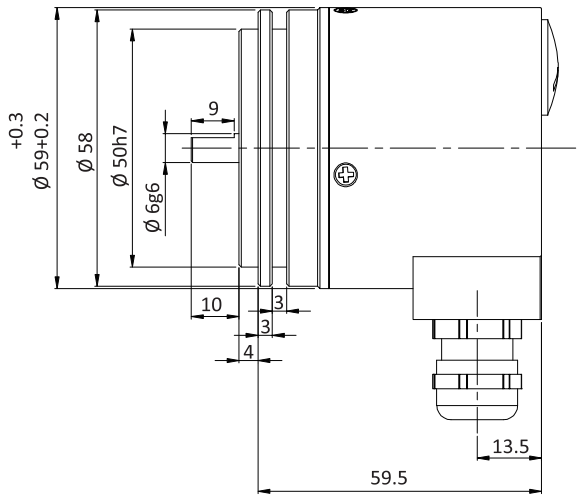


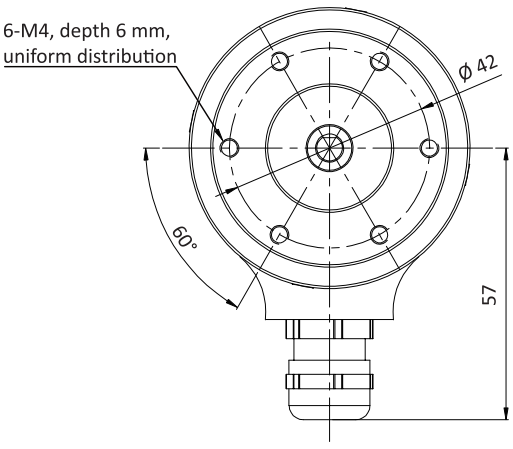
Default: Add. 32

Terminal Tesistance: 120 Ω

DIMENSIONS (mm)

EAM58B

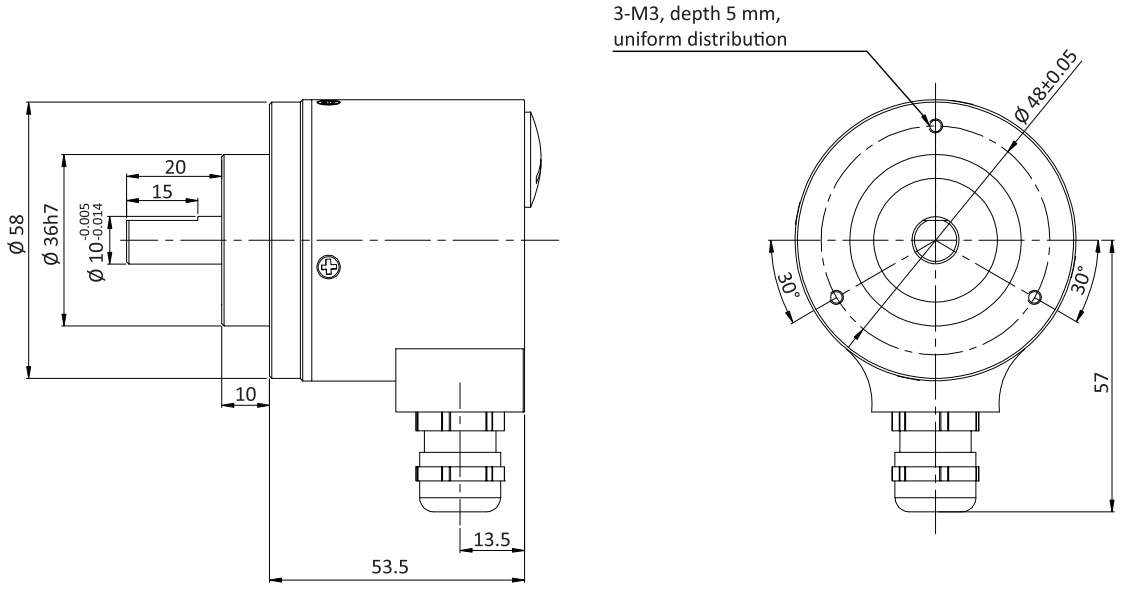




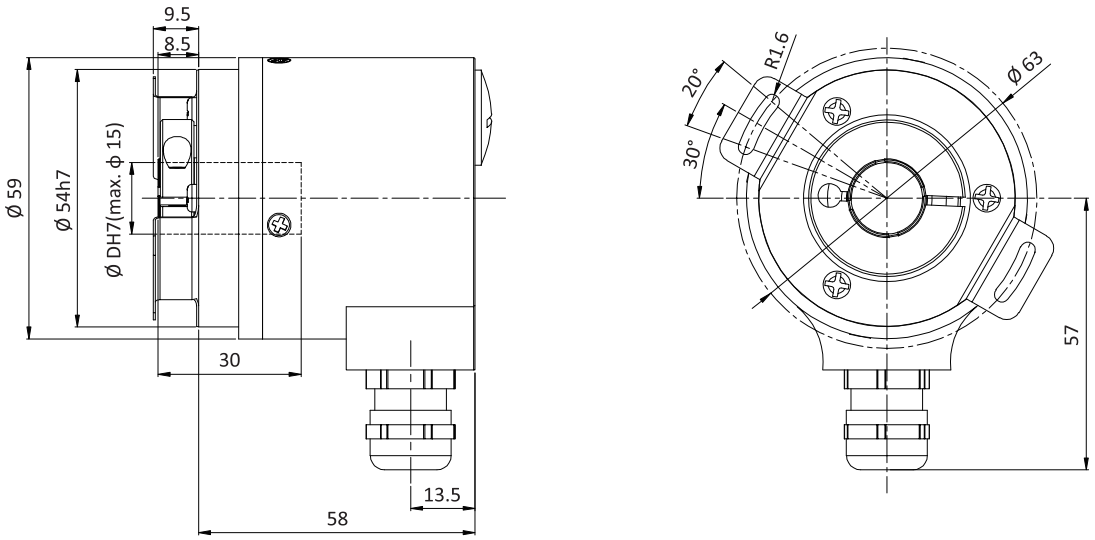
EAM58-CAND

DIMENSIONS (mm)

EAM58C



EAM58W



EAM58-CAND

ORDER CODE

EAM 58 C 10 - B F6 X X R - 4096/8192 CAND . XXXX

Shaft / hollow shaft diameter

6 = Ø 6g6 mm	-58B
10 = Ø 10g6 mm	-58C
10 = Ø 10H7 mm	-58W
12 = Ø 12H7 mm	-58W
15 = Ø 15H7 mm	-58W

Flange type

B = Ø 50 mm synchro flange, shaft length 10 mm
C = Ø 36 clamping flange, shaft length 20 mm
W = Hollow shaft flange, double-wing spring mounting

Housing diameter

58 = Housing diameter

Series

CAMM = CANopen multiturn

Outlets direction

R = Radial

Type of connection

X = Direct outlet 1.5 meters

Output logic

X = No definition

Output and supply voltage

F6 = CANopen 10 ... 30 V DC

Output code

B = Binary

XXXX = Special code

XXXX = Special code

CAND = CANopen interface protocol

Resolution

Revolution / single turn resolution
Standard 4096 / 8192 (25 bits)

EAM90-SS

ARTICLE PROPERTIES

TYPE	Large hollow shaft absolute multiturn encoder
SIZE	Ø 90

TECHNICAL DATA

SHAFT DIAMETER	Ø 12H7 mm / Ø 15H7 mm / Ø 20H7 mm / Ø 24H7 mm / Ø 28H7 mm / Ø (5/8)"H7 mm / Ø 1"H7 mm	**STARTING TORQUE**	< 0.1 N·m
SPEED	6000 rpm	**BODY MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**HOUSING MATERIAL**	Aluminum
MOMENT OF INERTIA	1.8 x 10^{-6} kgm^2	**WEIGHT**	600 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-20 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	40 N axial, 80 N radial	**STORAGE TEMPERATURE**	-25 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

OUTPUT CIRCUIT	SSI	**PULSE FREQUENCY**	Max. 1 MHz
OUTPUT DRIVER	RS422	**SIGNAL LEVEL HIGH**	Typ. 3.8 V
RESOLUTION	14 bits	**SIGNAL LEVEL LOW**	Max. 0.5 V
SUPPLY VOLTAGE	10 ... 30 V DC	**RISE TIME TR**	Max. 100 ns
POWER CONSUMPTION (NO LOAD)	≤ 200 mA	**FALL TIME TF**	Max. 100 ns
PERMISSIBLE LOAD (CHANNEL)	± 20 mA		

Available conventional resolution:
Resolution per turn: 1024, 2048, 4096, 8192
Number of turns: 1024, 2048, 4096, 8192

STANDARDS AND DIRECTIVES

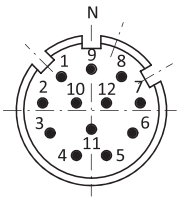
LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

EAM90-SS

APPROVALS

CE

TERMINAL ASSIGNMENT (SSI)

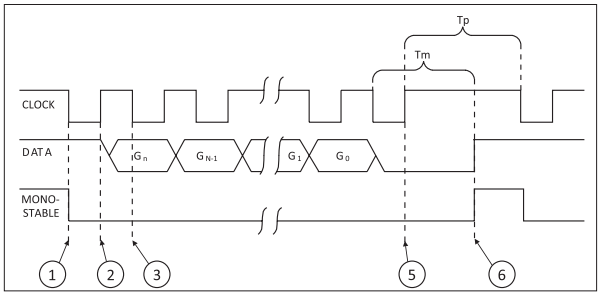


M23 12pin layout (Male)

Signal	0 V	+U_B	+C	-C	+D	-D	ST*	V/R*	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚
12-pin	1	2	3	4	5	6	7	8	PH

C: Colck Signal
D: Data Signal
ST: SET input, the high level will last 2 s and this position will be stored as new zero position.
V/R: Up/down input, in the normally open state, the encoder's counting function can be switched.
Observe the shaft end, in the normally closed state, the encoder's counting will increase when the shaft turning clockwise, in the normally open state, the encoder's counting will decrease when the shaft turning clockwise.

OPERATING PRINCIPLE



CLOCK Range of frequency from 100 KHz to 1 MHz
Tm: Time of monostable (10 ... 25 µs)
Tp: Time between two clock sequences > 35 µs

In rest conditions, the CLOCK and DATA lines are at a high logical level and the mono-stablecircuit is disabled (high level).

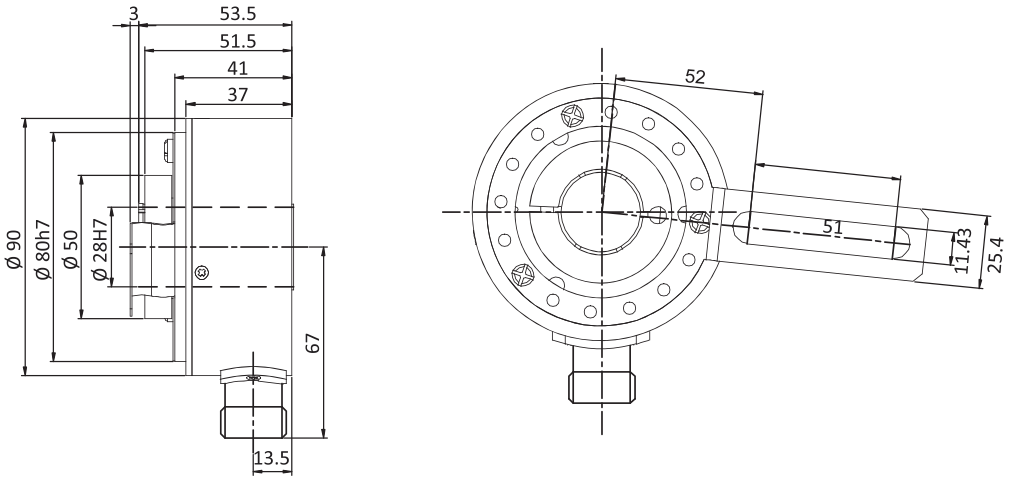
- On the first CLOCK signal descent front, the mono-stable is activated and the parallel value present at the input to the P/S converter is memorized in the shift register.
- On the CLOCK signal ascent front, the most significant bit (MSB) is placed in the output on the DATA line.
- On the CLOCK descent front when the signal is stable the controller acquires the level from the DATA line, which is the value of the most significant bit (MSB), the mono-stable is re-activated.
- On each further ascent front of the CLOCK impulse sequence, the successive bits up to the least significant one are place in the output on the DATA line and acquired by the control on the descent front.
- At the end of the CLOCK impulse sequence when the external control has also acquired the value of the least significant (LSB) the CLOCK impulse sequence is interrupted and therefore the mono-stable is no longer re-activated.
- Once the mono-stable time (Tm) has elapsed, the DATA line returns to a high logical level and the mono-stable disables itself.

EAM90-SS

DIMENSIONS (mm)

EAM90L

Accessories:
E41350087



EAM90-SS

ORDER CODE

EAM 90 L 20 - G S4 X PC R - 4096/8192 SS . XXXX

Hollow shaft diameter
12 = Ø 12 mm
15 = Ø 15 mm
20 = Ø 20 mm
24 = Ø 24 mm
28 = Ø 28 mm
15.9 = Ø 5/8" mm
1E = Ø 1" mm

Outlets direction
R = Radial

XXXX = Special code
Customized cable length
CN00XX = Cable length
e.g. CN0010 = 1 m
CN0020 = 2 m

Type of connection
PC = 12-core cable (SSI)
standard length 1.5 m
T = M23, 12-pin connector (SSI)

Large hollow shaft absolute encoder

Flange type
L = Long tether arm

Output logic
X = No definition

Resolution
Resolution max. 16384 (14 bits)
Revolution 4096 (12 bits)

Housing diameter
90 = Housing diameter

Output & Supply voltage
S4 = SSI (synchro serial interface) 5 ... 30 V DC

Series
EAM = Standard absolute multiturn

Code type
G = Gray
B = Binary

EAM90-DP

ARTICLE PROPERTIES

TYPE	Large hollow shaft Profibus-DP interface absolute multiturn encoder
SIZE	Ø 90

TECHNICAL DATA

HOLLOW SHAFT DIAMETER	Ø 12H7 mm / Ø 15H7 mm / Ø 20H7 mm / Ø 24H7 mm / Ø 28H7 mm / Ø (5/8)"H7 mm / Ø 1"H7 mm	**STARTING TORQUE**	Hollow shaft < 0.2 N·m Shaft < 0.05 N·m
SPEED	Max. 6000 r/m (Max. 3000 r/m continuous)	**BODY MATERIAL**	Aluminum
BEARING LIFE	10^9 revolution	**HOUSING MATERIAL**	Aluminum
MOMENT OF INERTIA	72 x 10^{-6} kgm^2	**WEIGHT**	900 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	**OPERATING TEMPERATURE**	-20 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	40 N axial, 80 N radial	**STORAGE TEMPERATURE**	-25 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	250 g, 6 ms	**RELATIVE HUMIDITY / CONDENSATION**	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

SUPPLY VOLTAGE(+UB)	10 ... 30 V DC	**PROTOCOLS**	Profibus-DP, encoder profile class 2
POWER CONSUMPTION	Max. 0.29 A	**BAUD RATE**	Max. 12 Mbit/s
LINEARITY	± 1/2 LSB (± 1 LSB 13/14 bit)	**ADDRESS**	Programmable via DIP switches
INTERFACE	RS485		

STANDARDS AND DIRECTIVES

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4

APPROVALS

CE

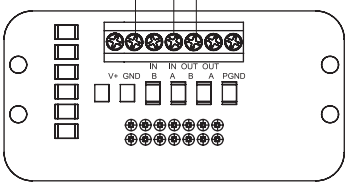
EAM90-DP

Profibus Documentations for field bus Encoders:
Please refer to PROFIBUS-DP for detailed information, i.e. DIN 19245-3 and EN 50170, and OVERVIEW for other information.

Profibus Documentations for field bus Encoders:
- Rotation direction
- Proportional factor: - Single turn resolution, - Total resolution
- Preset position
- Diagnostic mode

Profibus Documentations for field bus Encoders:
- Achieving current isolation through Fieldus DC/DC converter
- Including RS485 driver, max baud rate 12 MB
- Configure Fieldbus address through DIP switch
- LED diagnostic display
- Equipped with Class1 & Class 2 functions

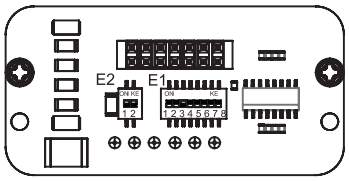
INTRODUCTION

PROFI PROCESS FIELD BUS	The Profibus-DP Bus multiturn absolute encoder (identification code 0 x 0CCA) conforms to the Profibus-DP standards as described in the European Standard EN 50170 volume 2. It also complies with the existing encoder regulation document: “Profibus Profile for Encoders, Order No. 3062”. The Profibus-DP interface maintains the same maximum resolution and characteristics (8192 position / revolution, 8192 revolution) and the features of a stand-along unit with the bonus of the Profibus-DP network.
Power supply 24 V DC Bus line input Bus line output  Terminal block	Through the Profibus-DP network, it is possible to: • Obtain the angular position information from the encoder during the periodic data exchange. • Program the resolution and the revolution (refer to corresponding chapters for parameter setting). • Change the default increment counting direction (switch between CW/CCW when configuring the parameters). • Perform the Preset operation (Set the encoder to read a specific position). • Read the diagnosis status. • Obtain info about the code supplied by the device. When using the device, it is possible to: • Display the ON / OFF status. • Display the device activity on the bus. • Activate the Reset function. • Set up the device address. • If required, inserting the terminal resistor into the bus. • Change the counting direction.

EAM90-DP

EQUIPMENT INSTALLATION

E2: Line close DIP switch-Default OFF DIP1-DIP2, the Bus-line is closed when setting the two switches ON, 220 Ω.

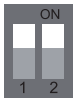


E1: Address DIP switch – DIP1-DIP7 address setting switch, binary operation, default address 4 in the diagram, max 126 acceptable ty Profibus network.
DIP8: CW/CCW

Installing the Profibus-DP encoder in a network requires the execution of the standard steps necessary for configuring any Profibus-DP slave. The sequence of steps is as follows:
1-Commissioning the slave on the master (see corresponding paragraph).
2-Wiring the encoder into the Profibus network using or not terminations depending on the physical position the device has in the bus.
3-Directly set the address (which much the unique in the network and the same as the one chosen in point 1) for the slave.
4-Preparing the master side application and setting up the Profibus network. On the back cover of the encoder there is a LED inspection window. The device operating status can be controlled by the two LED through the window. The green one shows the power presence and must be permanently switched on. The red LED switches off only during the periodic data exchange between the Profibus master and the encoder.
Note: To set and configure the slave into the Profibus-DP master it is necessary to use the “gsd” file delivered with the encoder.

DIP-SWITCHES SETUP (CONFIGURING SLAVE ADDRESS)

Below it is reported an example of the standard position of address and termination DIP switches as well as settings for closing a Profibus line. In this example, device address 1011001,77 denary, bit 7 top digit, bit lowest order, bit 8 using for converting count direction, bit 1 to bit 7 setting the encoder address, binary operation.

			
Address setting	Line close	Example	Line close

NETWORK PARAMETERS

Usually, an A type cable is used to wire a DP / FMS network. This cable has to have the following characteristics:	
Parameter	A type cable
Characteristic resistance (Ω)	135 … 165 at a certain frequency (3 … 20 Mhz)
Rated capacity (PF/m)	< 30
Loop resistance (Ω/Km)	≤ 110
Core diameter (mm)	> 0.64*)
Core cross-section (mm2)	> 0.34*)

This cable allows the optimal network utilization. In fact, it is possible to reach the maximum communication speed allowed (12 Mbaud). However, there are some limitations due to the maximum physical dimensions of a bus segment as follows:

kbaud	9.6	19.2	93.75	187.5	500	1500	12000
Range / Segment	1200 m	1200 m	1200 m	1000 m	400 m	200 m	100 m

Finally, the physical characteristics of a Profibus network are now known.

EAM90-DP

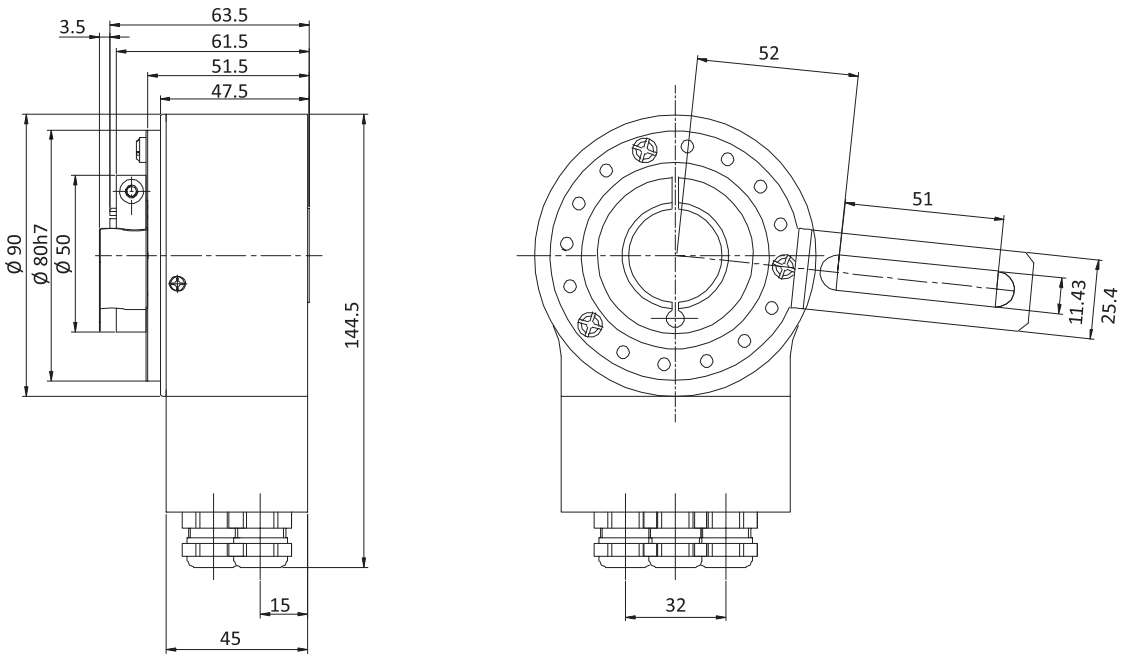
CONNECTION

V+	Supply voltage
GND	Ground
B	Profibus-DP line input(RD)
A	Profibus-DP line input(GN)
B	Profibus-DP line output(RD)
A	Profibus-DP line output(GN)

DIMENSIONS (mm)

EAM90L

Accessories:
E41350087



EAM90-DP

ORDER CODE

EAM 90 L 20 - B F6 X X R - 4096/8192 DP

Hollow shaft diameter
12 = Ø 12 mm
15 = Ø 15 mm
16 = Ø 16 mm
20 = Ø 20 mm
24 = Ø 24 mm
25 = Ø 25 mm
28 = Ø 28 mm
15.9 = Ø 5/8" mm
1E = Ø 1" mm

Outlets direction
R = Radial

Profibus-DP Interface Encoder

Type of connection
X= integrated coupler terminal box with 3 PG7 threaded connectors
T = Integrated coupler terminal box with 3 x M12 plugs

Resolution
Revolution / resolution
Standard 4096/8192 (25 bits)

Flange type
L = Long tether arm

Output logic
X = No definition

Housing diameter
90 = Housing diameter

Output & Supply voltage
F6 = Profibus-DP interface profibus Class 2 10 ... 30 V DC

Series
EAM = Profibus-DP interface absolute multiturn

Code type
B = Binary

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