ELCO
INDUSTRIAL AUTOMATION

Encoder

Contents

Easydic Series Shaft Incremental Encoder EV28

Description

Small economical shaft encoder EV28 is widely used in light industries where space for sensor installation is a concern. The resolution is up to 600, and with its small size, light weight and high precision, it fully meets the controlling requirements of the modern light industries. With the different shaft lengths available, the product can be used in a wide variety of industrial environments. It's one of the most recommended choices when considering performance and cost.

Features

- Flexible coupling connection avoids damage to the encoder
- Stainless steel shaft Φ4、Φ5 ensures high stability and protection
- Metal housing for better shock resistance
- Protection class IP50
- Reverse connection protection
- Short circuit protection
- Cable output, waterproof rubber end

Mechanical parameters

Shaft diameter	Φ4/Φ5g6 mm
Protection class	IP50
Speed	6000 rpm, continuous
Max load capacity of the shaft	5 N axial, 10 N radial
Shock resistance	30G/11 ms
Vibration resistance	6G 10...2000 HZ
Bearing life	10^9 revolution
Moment of inertia	approx. $0.7x10^{-6}$
Starting torque	＜0.01 Nm
Body material	AL - alloy UNI 9002-5
Housing material	AL - alloy UNI 9002-5
Operating temperature	-20...+80 °C
Storage temperature	-30...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	100 g

Resolution:
50,100,200,300,360,500,600

Electrical parameters

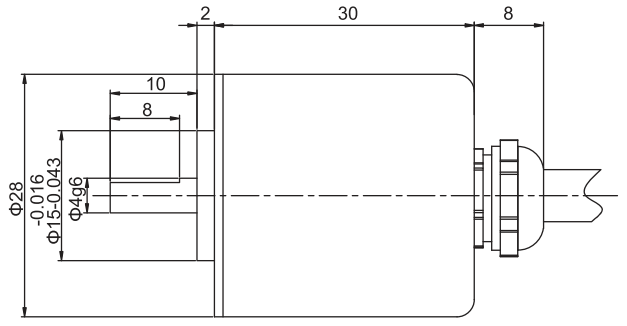
Output circuit	Push-pull	RS422	RS422
Resolution	Max. 600 ppr	Max. 600 ppr	Max. 600 ppr
Supply voltage	10...30 VDC / 5...30 VDC	5 VDC	10...30 VDC
Power consumption (no load)	≤100 mA	≤80 mA	≤80 mA
Permissible load (channel)	±30 mA	±50 mA	±50 mA
Pulse frequency	Max. 300 kHz	Max. 300 kHz	Max. 300 kHz
Signal level high	Min. U_b-1.5 V	Min. 3.4 V	Min. 3.4 V
Signal level low	Max. 0.8 V	Max. 0.4 V	Max. 0.4 V
Rise time Tr	Max. 1μs	Max. 200 ns	Max. 200 ns
Fall time Tr	Max. 1μs	Max. 200 ns	Max. 200 ns

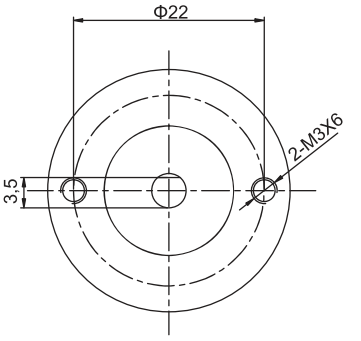
Terminal Assignment

Signal	0V	$+U_b$	A	$\overline{A}$	B	$\overline{B}$	Z	$\overline{Z}$	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚

Dimensions (mm)

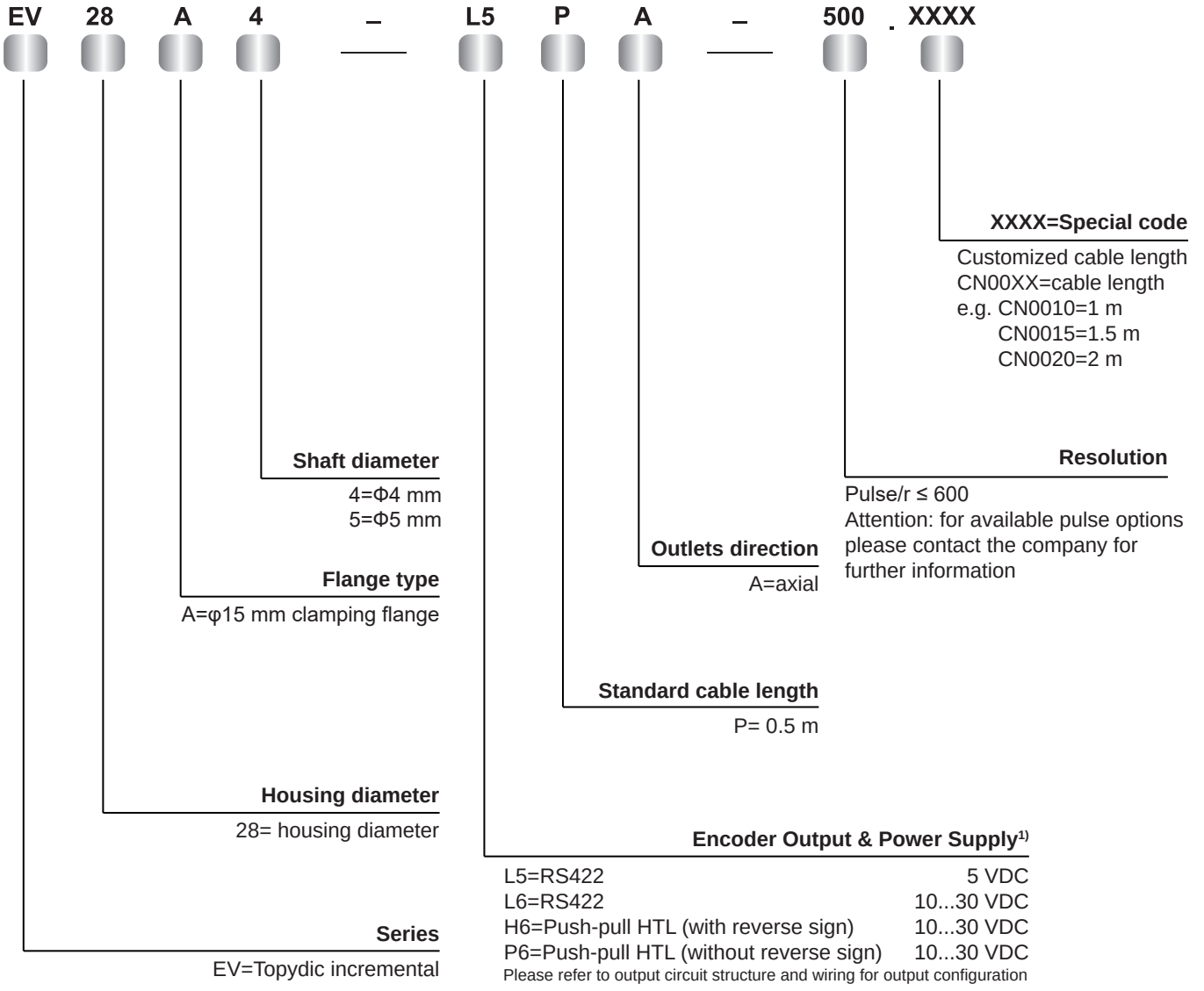
EV28





Easydic Series Shaft Incremental Encoder EV28

Order Code



1) When U_b=5 V,short-circuit to channel, 0 V, or + U_b is permitted;
When U_b is greater than 5 V, short-circuit to channel or 0 V is permitted.

Topydic Small Shaft Incremental Encoder EV40A

Description

Topydic series small shaft incremental encoder-EV40A delivers oustanding performance in mechanical shock-resistance and can withstand higher axial and radial loads to suit various industrial environments. Its special position of cabling fits to the limited installation space. Combining advanced signal processing technology with multiple types of electrical output, EV40A are capable of matching various upper control computers.

Features

- Stainless steel shaft ensures safety and stability in operation
- Optional types of flange connection offers more flexibility
- Metal casting housing for greater shock resistance
- Side cabling design greatly saves the installation space and simplifies wiring
- Reverse connection protection; short circuit protection

Mechanical parameters

Shaft diameter	Φ6g6 mm
Protection class	IP66 standard, IP67 optional
Max. speed/minute	6000 rpm
Max. load capacity of the shaft	60 N axial
	100 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 HZ
Bearing life	10^9 revolution
Moment of inertia	1.9×10^{-6} kgm^2
Starting torque	<0.08 Nm
Body material	Al-alloy
Housing material	Zn-alloy
Operating temperature	-20...+85 °C
Storage temperature	-25...+100 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	110 g

Regular resolution: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 2000, 4000, 2500, 5000, 2048

Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull
Resolution	Max.5000 ppr	Max.5000 ppr
Supply voltage	5±0.25 or 10...30 VDC	10...30 VDC
Power consumption(no load)	≤80 mA	≤100 mA
Permissible load(channel)	±50 mA	±30 mA
Pulse frequency	Max.800 kHz	Max. 800 kHz
Signal level high	Min. 3.4 V	Min.Ub-1.8 V
Signal level low	Max. 0.4 V	Max. 2.0 V
Rise time Tr	Max. 200 ns	Max. 1 μs
Fall time Tf	Max. 200 ns	Max. 1 μs

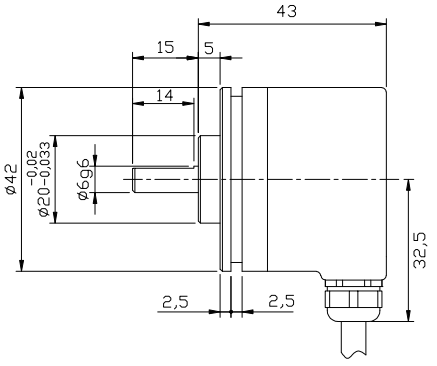
Topydic Small Shaft Incremental Encoder EV40A

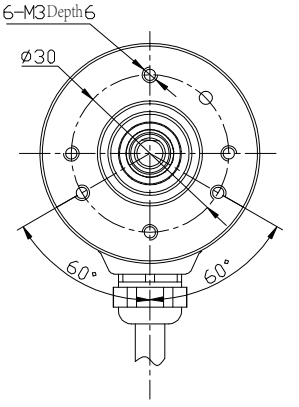
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚
Pin	10	12	5	6	8	1	3	4	PH

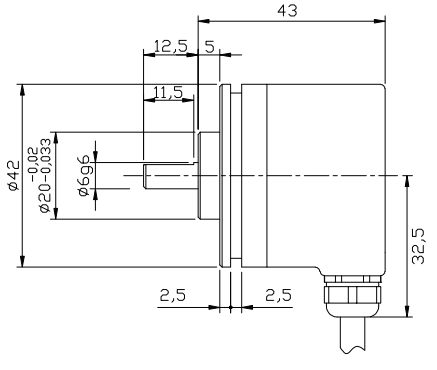
Dimensions (mm)

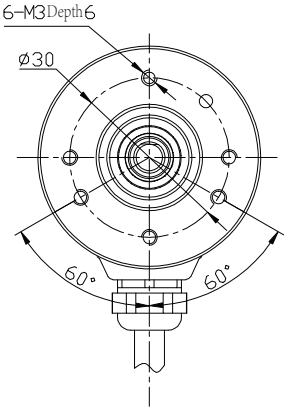
EV40A





EV40B

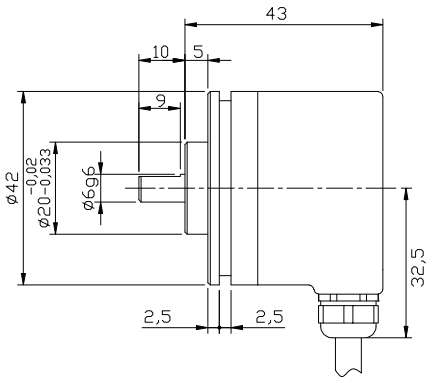


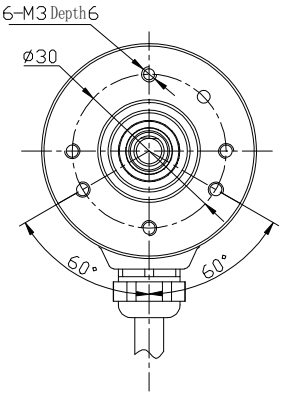


Topydic Small Shaft Incremental Encoder EV40A

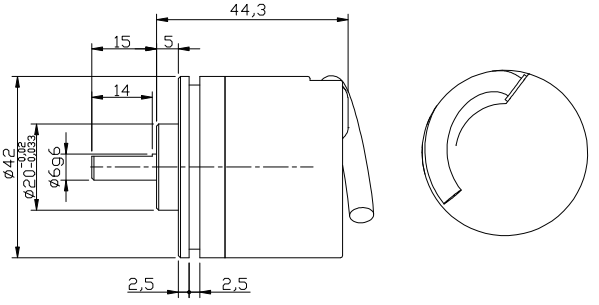
Dimensions (mm)

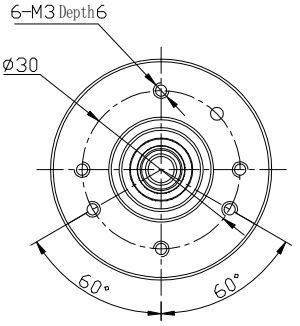
EV40C





EV40A side pre-wired cable





Topydic Small Shaft Incremental Encoder EV40A

Order Code

XXXX=Special code

Customized cable length
CN00XX= cable length
e.g. CN0010=1 m
CN0015=1.5 m
CN0020=2 m

Side output cable length

TP=0.5m
Attention:
If blank here, it means P=0.5 m

Shaft diameter

6= Φ6 mm

Outlets direction

R=radial

Flange type

A=Φ20 clamping flange with synchro flange ditch, axis length 15 mm
B=Φ20 clamping flange with synchro flange ditch, axis length 12.5 mm
C=Φ20 clamping flange with synchro flange ditch, axis length 10 mm

Standard cable length

P=0.5 m

Resolution

Pulse/r: ≤5000
Attention: for other available pulse options please contact us for further information

Output & Supply voltage[1)]

L5=RS422 (with reverse signal)	5 VDC
L6=RS422 (with reverse signal)	10...30 VDC
H6=Push-pull HTL (with reverse signal)	10...30 VDC
P6=Push-pull (without reverse signal)	10...30 VDC

Housing diameter

40=housing diameter

Series

EV= Topydic incremental

[1)] When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment:
if U_b=5V, it's permitted to connect to signal channels, 0V or U_b;
if U_b ＞5V, it's permitted to connect to signal channels or 0V.

Topydic Small Hollow Shaft Incremental Encoder EV40P

Description

Topydic series small shaft incremental encoder-EV40P delivers oustanding performance in mechanical shock-resistance and can withstand higher axial and radial loads to suit various industrial environments. Its special position of cabling fits to the limited installation space. Combining advanced signal processing technology with multiple types of electrical output, EV40P are capable of matching various upper control computers.

Features

- Stainless steel shaft ensures safety and stability in operation
- Optional types of flange connection offers more flexibility
- Metal casting housing for greater shock resistance
- Side cabling design greatly saves the installation space and simplifies wiring
- Reverse connection protection; short circuit protection

Mechanical parameters

Shaft diameter	Φ6H7/Φ8H7 mm
Protection class	IP66 standard, IP67 optional
Max. speed/minute	6000 rpm
Max. load capacity of the shaft	60 N axial
	100 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 HZ
Bearing life	10^9 revolution
Moment of inertia	1.9×10^{-6} kgm^2
Starting torque	<0.08 Nm
Body material	Al-alloy
Housing material	Zn-alloy
Operating temperature	-20...+85 °C
Storage temperature	-25...+100 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	110 g

Regular resolution:10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1250, 2000, 2500, 4000, 5000

Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull
Resolution	Max.5000 ppr	Max.5000 ppr
Supply voltage	5±0.25 or 10...30 VDC	10...30 VDC
Power consumption(no load)	≤80 mA	≤100 mA
Permissible load(channel)	±50 mA	±30 mA
Pulse frequency	Max.800 kHz	Max. 800 kHz
Signal level high	Min. 3.4 V	Min.Ub-1.8
Signal level low	Max. 0.4 V	Max. 2.0 V
Rise time Tr	Max. 200 ns	Max.1 μs
Fall time Tf	Max. 200 ns	Max.1 μs

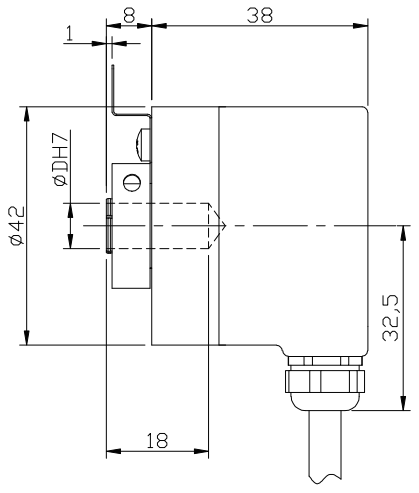
Topydic Small Hollow Shaft Incremental Encoder EV40P

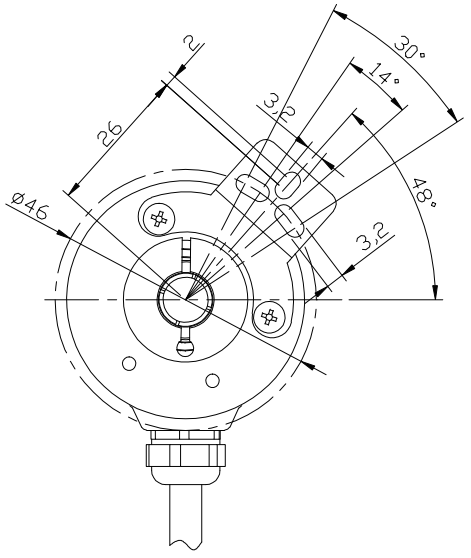
Terminal Configuration

Signal	0V	$+U_b$	A	$\overline{A}$	B	$\overline{B}$	Z	$\overline{Z}$	Shield
Color	WH	BN	GN	YE	BN	PK	BU	RD	⏚
Pin	10	12	5	6	8	1	3	4	PH

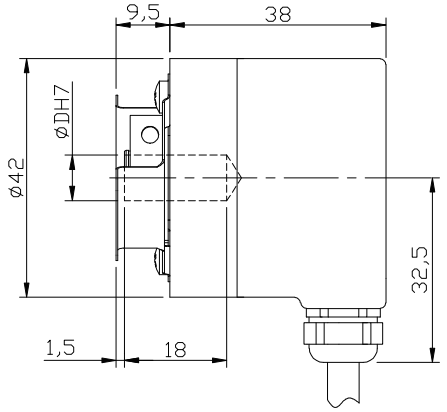
Dimensions (mm)

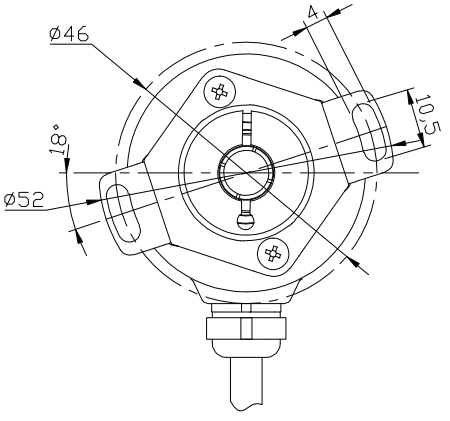
EV40P





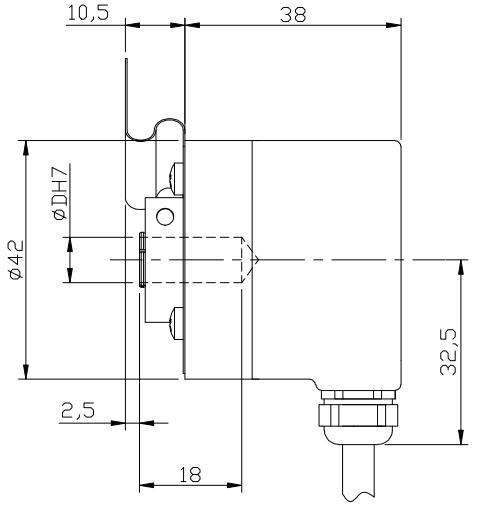
EV40W

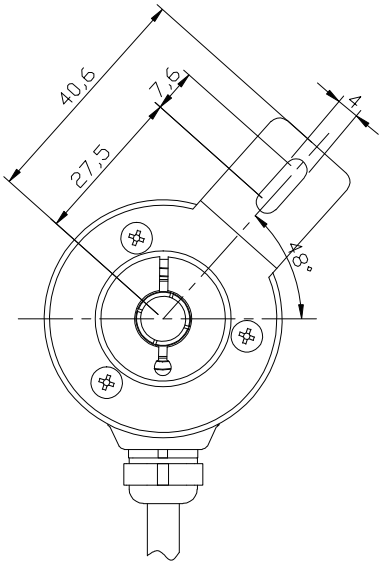




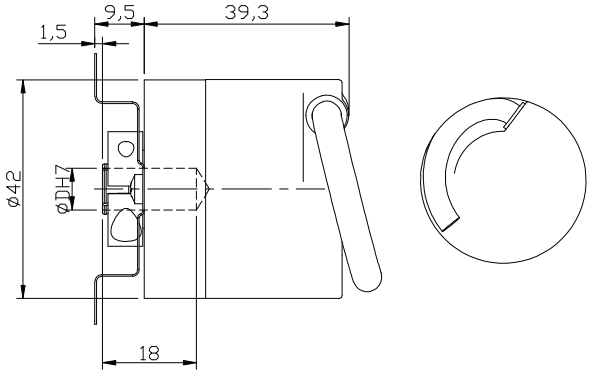
Dimensions (mm)

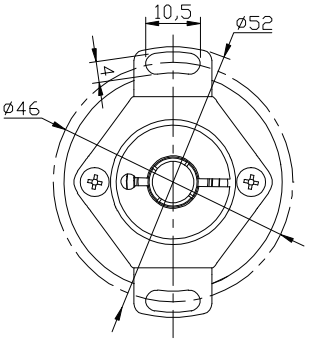
EV40H





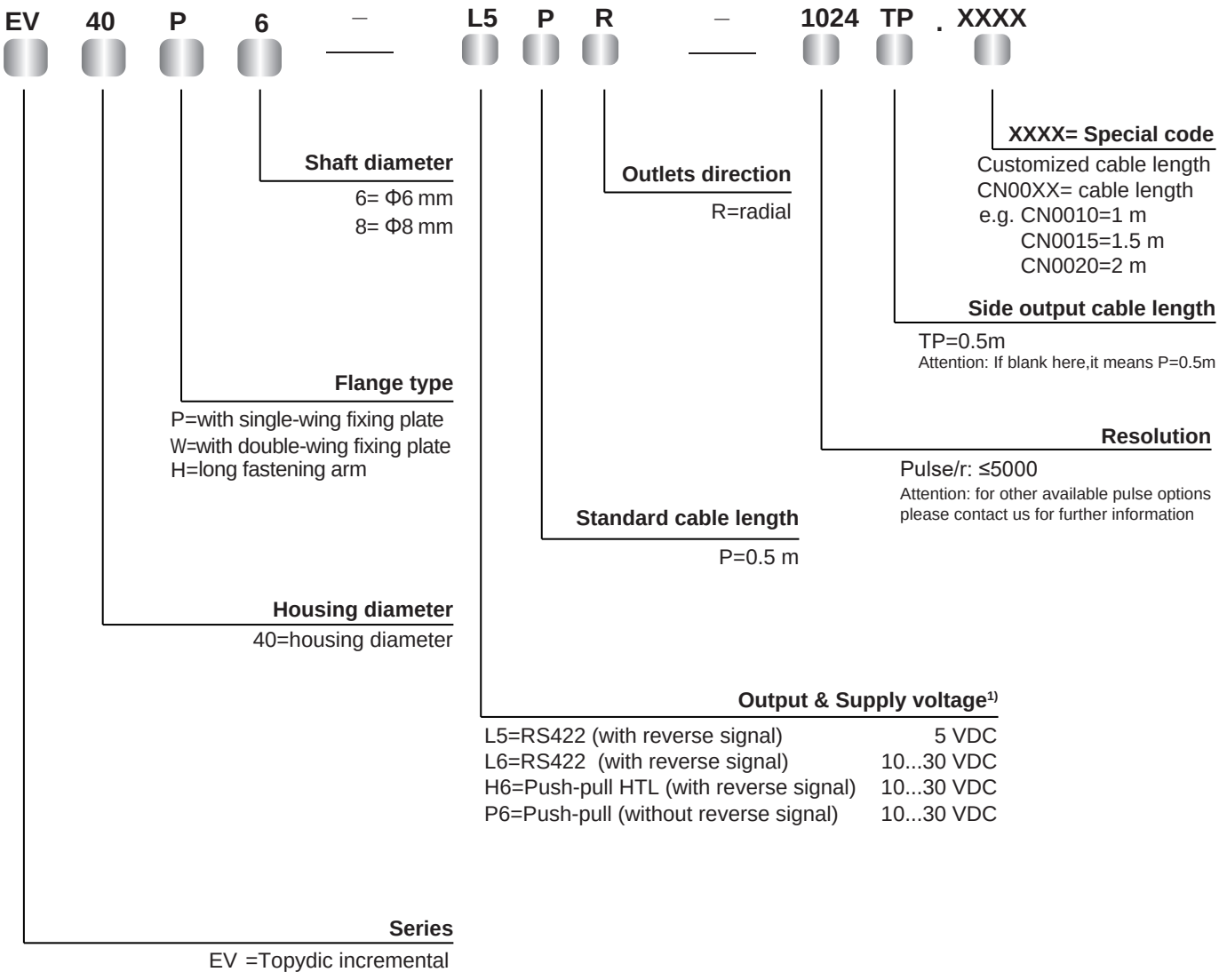
EV40W side pre-wired cable





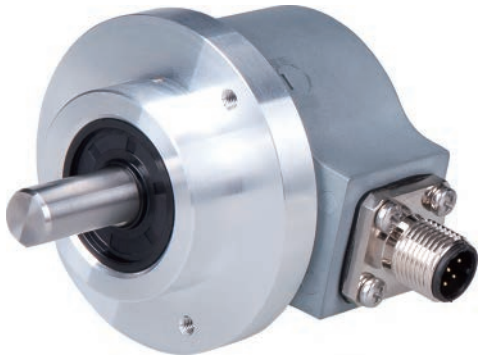
Topydic Small Hollow Shaft Incremental Encoder EV40P

Order Code:



1) When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment:
if U_b=5 V, it's permitted to connect to signal channels, 0V or U_b;
if U_b＞5 V, it's permitted to connect to signal channels or 0V.

Topydic Series Shaft Incremental EV50A



Description:

Topydic series shaft incremental encoder EV50A, with double-bearing and casting housing, has excellent performance to resist mechanical shocks and can be used in various industrial environments; being compatible with standard flange types-50 mm and 58 mm, it can meet different application requirements; its wide voltage range, reverse connection and short circuit protection can effectively avoid mis-wiring.

Features:

- Resolution up to 5000 ppr; pulse frequency up to 300 kHz
- Hollow shaft diameter, Φ6 - Φ12 mm
- Compatible with standard flange types-50 mm and 58 mm
- Φ50 mm metal casting housing for limited installation space
- Operating temperature, -40...+85 ℃; IP67 protection class for outdoors application
- Multi signal output interfaces to meet different types of data aquisition of upper computer
- Optional output types-with cable, M12 connector and M23 connector
- Reverse connection and short circuit protection to ensure the safety[1)]

Mechanical parameters

Shaft diameter	Φ6/Φ8/Φ10/Φ12/Φ1/4”/Φ3/8”
Protection class	IP65 (without oil seal)
	IP67 (withoil seal)
Speed	12000 rpm (without oil seal)
	6000 rpm (with oil seal)
Max. load capacity of the shaft	40 N axial
	80 N radial
Shock resistance	50G/ 11 ms
Vibration resistance	10G 10...2000 HZ
Bearing life	10^9 revolution
Moment of inertia	$1.9x10^{-6}$ kgm^2
Starting torque	＜0.01 Nm (IP65)
	＜0.05 Nm (IP67)
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40...+85 °C
Storage temperature	-45...+90 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	approx. 400 g

Resolution: 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1250, 2000, 2048, 2500, 3600, 4096, 5000

Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull
Supply voltage	5±0.25 or 10...30 VDC	10...30 VDC
Power consumption (no load)	typ. 40 mA	typ. 50 mA
	max. 90 mA	max. 100 mA
Permissible load (channel)	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level high	min. 2.5 V	min. Ub-1 V
Signal level low	max. 0.5 V	max. 0.5 V
Rise time Tr	max. 200 ns	max. 1 µs
Fall time Tf	max. 200 ns	max. 1 µs

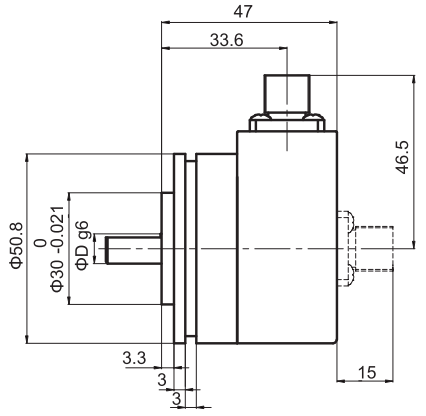
Terminal Configuration

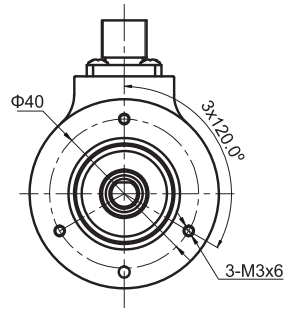
Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	⏚
Pin (12-pin)	10	12	5	6	8	1	3	4	PH
Pin (5-pin)	1	2	3	-	4	-	5	-	PH
Pin (8-pin)	1	2	3	4	5	6	7	8	PH

Topydic Series Shaft Incremental EV50A

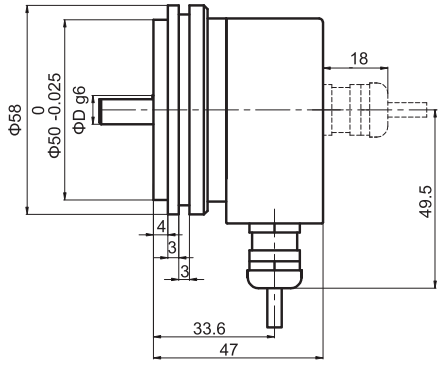
Dimensions (mm)

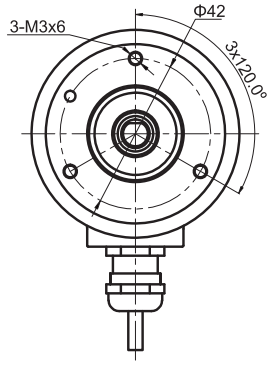
EV50A





EV50B





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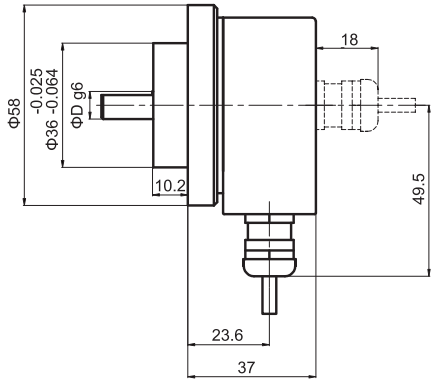

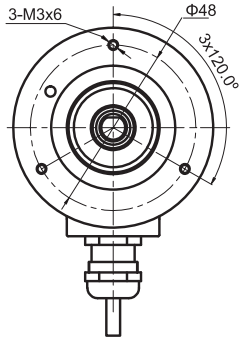

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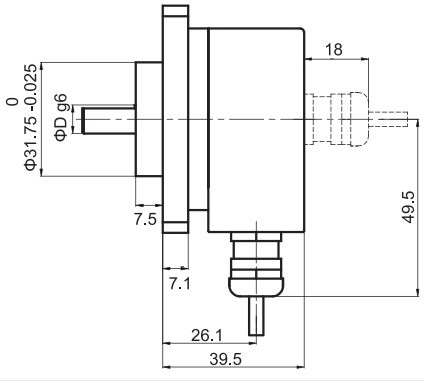
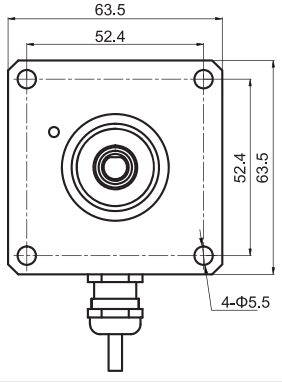




Topydic Series Shaft Incremental EV50A

Order Code

EV 50 B 6 – L5 P R – 1024 XX . XXXX

Shaft diameter
6= Φ6 mm x 10 mm
7= Φ1/4" x 5/8"
8= Φ8 mm x 15 mm
9= Φ3/8" x 5/8"
10= Φ10 mm x 20 mm
12= Φ12 mm x 20 mm
(8R,9R,10R,12R=IP67)

Flange type
A=φ50.8 synchro flange
B=φ58 synchro flange
C=φ58 synchro flange
D=φ63.5 synchro flange

Housing diameter
50= Housing diameter

Series
EV=Topydic incremental

Output & Supply voltage[1)]

L5=RS422 (with reverse signal)	5 Vdc
L6=RS422 (with reverse signal)	10~30 Vdc
H6= Push-pull HTL (with reverse signal)	10~30 Vdc
P6= Push-pull HTL (without reverse signal)	10~30 Vdc

Standard cable length
P=1.5 m

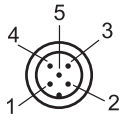
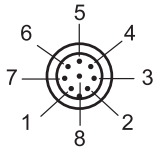
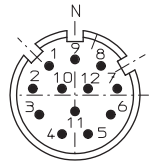
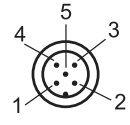
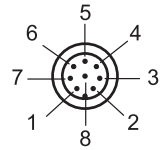
Outlets direction
R= radial
A=axial

Optional functions
M5=M12, 5-pin plug without connector
M8=M12, 8-pin plug without connector
T=M23, 12-pin plug without connector
(for other cable length, it's on request)

Resolution
Pulse/r: 1-5000

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

Top view of pin plug:

Connector Type	5-pin M12 Connector	8-pin M12 Connector	12-pin M23 Connector	5-pin M12 Connector	8-pin M12 Connector
Pin plug					
Matched connector	M125PSF-0020-W 5-core pre-molded connector with 2m PUR cable	M128PSF-0020-W 8-core pre-molded connector with 2m PUR cable	TMSP1612F Field attachable connector	TMSP125PF Field attachable connector	TMSP128PF Field attachable connector

Topydic Series Hollow Shaft Incremental EV50P

Description

Topydic series shaft incremental encoder EV50P, with double-bearing and casting housing, has excellent performance to resist mechanical shocks and can be used in various industrial environments; stainless steel through-hole, shaft diameter of up to 15mm; its wide voltage range, reverse connection and short circuit protection can effectively avoid mis-wiring.

Features

- Resolution up to 5000 ppr; pulse frequency up to 300 kHz
- Wide range of shaft diameter, Φ6~Φ15 mm
- Hollow shaft installation, robust metal casting housing
- Operating temperature, -40...+85 ℃; IP67 protection class for outdoors application
- Housing thickness up to 46.3 mm for limited installation space
- Multi signal output interfaces to meet different types of data aquisition of upper computer
- Optional output types-with cable, M12 connector and M23 connector
- Reverse connection and short circuit protection to ensure the safety[1)]

Mechanical parameters

Shaft diameter	Φ6/Φ8/Φ10/Φ12/Φ14/Φ15/Φ1/4"/Φ3/8"/Φ1/2"/Φ5/8" mm
Protection class	IP65 (without oil seal)
	IP67 (with oil seal)
Speed	12000 rpm (without oil seal)
	6000 rpm (with oil seal)
Max. load capacity of the shaft	40 N axial
	80 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10～2000 HZ
Bearing life	10^9 revolution
Moment of inertia	$6x10^{-6}$ kgm²
Starting torque	<0.03 Nm (IP65)
	<0.08 Nm (IP67)
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40 ... +85 °C
Storage temperature	-45 ... +90 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	Approx. 400 g

Regular resolution: 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1250, 2000, 2048, 2500, 3600, 4096, 5000

Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull
Supply voltage	5±0.25 or 10...30 VDC	10...30 VDC
Power consumption(no load)	typ. 40 mA	typ. 50 mA
	max. 90 mA	max. 100 mA
Permissible load(channel)	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level high	min. 2.5 V	min. Ub-1 V
Signal level low	max. 0.5 V	max. 0.5 V
Rise time Tr	max. 200 ns	max. 1 µs
Fall time Tf	max. 200 ns	max. 1 µs

1） When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment: if U_B=5V, it's permitted to connect to signal channels, 0V or UB; if U_B＞5V, it's permitted to connect to signal channels or 0V.

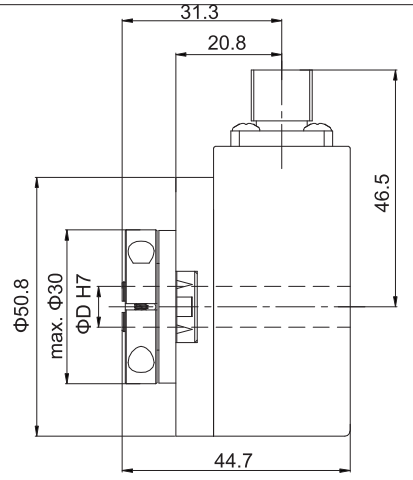
Topydic Series Hollow Shaft Incremental EV50P

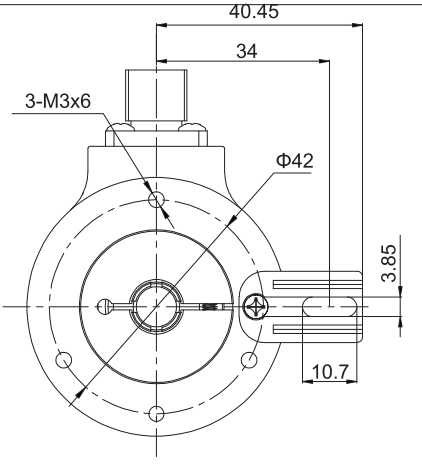
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚
Pin(12-pin)	10	12	5	6	8	1	3	4	PH
Pin(5-pin)	1	2	3	-	4	-	5	-	PH
Pin(8-pin)	1	2	3	4	5	6	7	8	PH

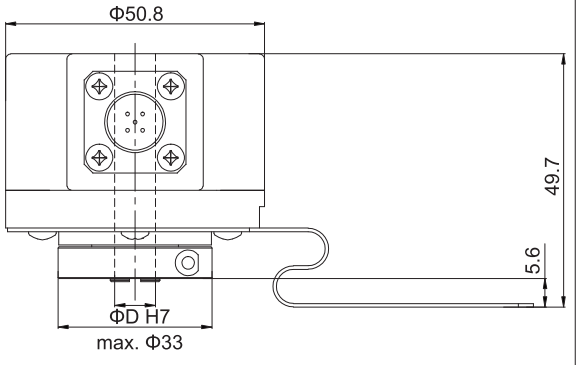
Dimensions(mm)

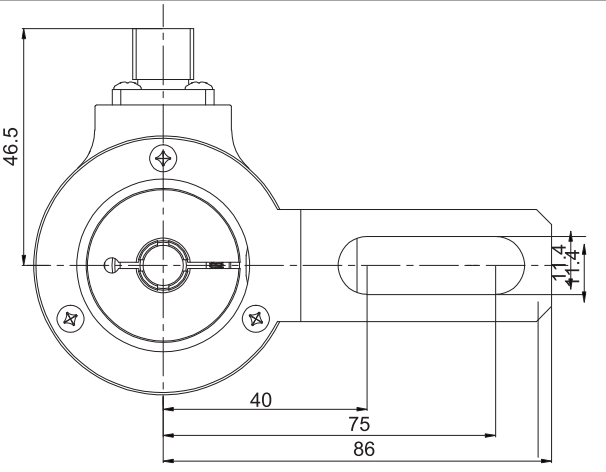
EV50K



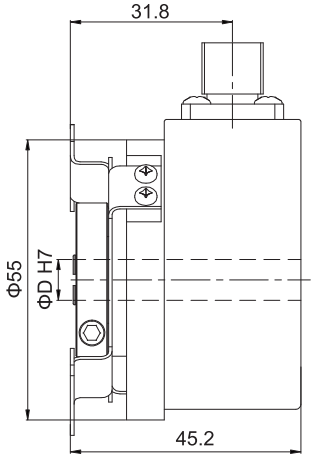


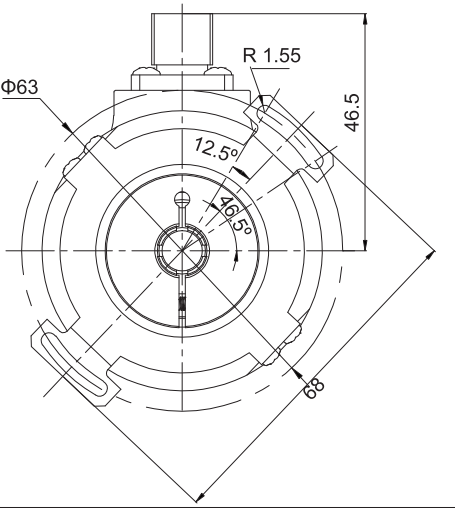
EV50H





EV50W





Topydic Series Hollow Shaft Incremental EV50P

Order Code:

EV 50 W 10 – L5 P R – 1024 XX . XXXX

Shaft diameter
6= Φ6 mm
7= Φ1/4"
8= Φ8 mm
9= Φ3/8"
10= Φ10 mm
12= Φ12 mm
13= Φ1/2"
14= Φ14 mm
15= Φ15 mm
16= Φ5/8"
(8R,9R,10R,12R=IP67)

Flange type
K= long torque support slot
H= long fastening arm
W=double-wing fixing plate

Housing diameter
50= housing diameter

Series
EV=Topydic incremental

Output & Supply voltage[1)]

L5=RS422 (with reverse signal)	5Vdc
L6=RS422 (with reverse signal)	10~30Vdc
H6= Push-pull HTL (with reverse signal)	10~30Vdc
P6= Push-pull HTL (without reverse signal)	10~30Vdc

Standard cable length
P=1.5 m

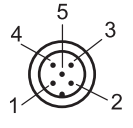
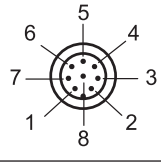
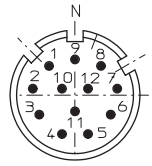
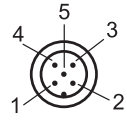
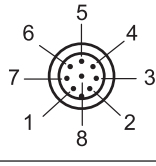
Outlets direction
R= radial

Resolution
Pulse/r: 1-5000

Optional functions
TP=tangential output cable length 1.5m (only applicable to L5,L6)
M5=M12, 5-pin plug without connector
M8=M12, 8-pin plug without connector
T=M23, 12-pin plug without connector
(for other cable length, it's on requested)

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

Top view of pin plug:

Connector type	5-pin M12 connector	8-pin M12 connector	12-pin M23 connector	5-pin M12 connector	8-pin M12 connector
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	TMSP1612F Field attachable connector	TMSP125PF Field attachable connector	TMSP128PF Field attachable connector

Topydic Series Shaft Incremental Encoder EV58A

Description:

Topydic series encoders EV58A are widely used in industrial environments. It delivers outstanding performance in mechanical shock resistance and is capable of withstanding higher axial and radial loads. Its flexible and variant mechanical structure & electrical circuit designs ensure perfect matches with multiple types of flanges or servo motors. They are compatible with all control computers.

Features:

- Max resolution is up to 5000 pulse/r, output frequency is up to 300 kHz
- Stainless steel shaft Φ6/Φ8/Φ10, flexible coupling connection ensures encoder safety during operation
- Various types of flanges, including imperial sizes
- Metal housing for greater shock resistance; compact structure is suited for limited installation space
- Protection class IP65
- Direct cable output or connector is more flexible and easy for maintenance
- The waterproof rubber ends ensure safety during operation
- Reverse connection protection, short circuit protection

Mechanical parameters

Shaft diameter	Φ6g6/Φ8g6/Φ10g6 mm
Protection class	IP65
Speed	6000 rpm
Max. load capacity of the shaft	60 N axial
	120 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10～2000 HZ
Bearing life	10^9 revolution
Moment of inertia	$1.9x10^{-6}$ kgm^2
Starting torque	<0.01 Nm IP65
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-20 ... +90 °C
Storage temperature	-40 ... +100 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	300g

Regular resolution: 360, 400, 500, 512, 600, 800, 1000,
1024, 2000, 2500, 4000, 2048, 4096, 5000

Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

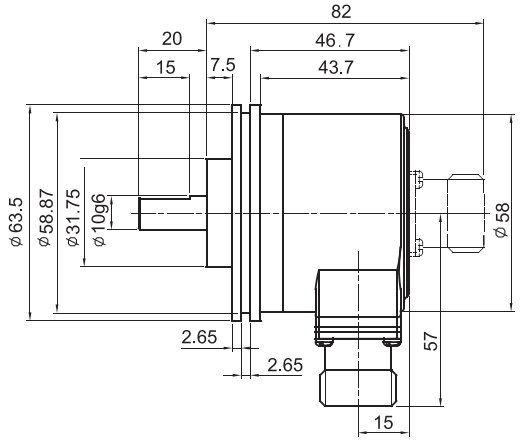
Output circuit	RS422	Push-pull
Resolution	Max.5000 ppr	Max.5000ppr
Supply voltage	5±0.25 or 10...30 VDC	10...30 VDC
Power consumption(no load)	≤80 mA	≤100 mA
Permissible load(channel)	±50 mA	±30 mA
Pulse frequency	Max.300 kHz	Max.300 kHz
Signal level high	Min.3.4 V	Min. Ub-1.8
Signal level low	Max.0.4V	Max.2.0 V
Rise time Tr	Max 200 ns	Max 1μS
Fall time Tf	Max 200 ns	Max 1μS

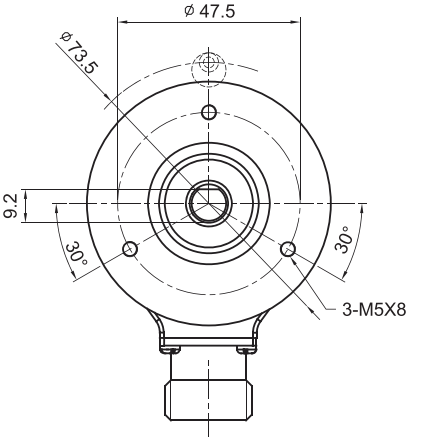
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚
Pin	10	12	5	6	8	1	3	4	PH

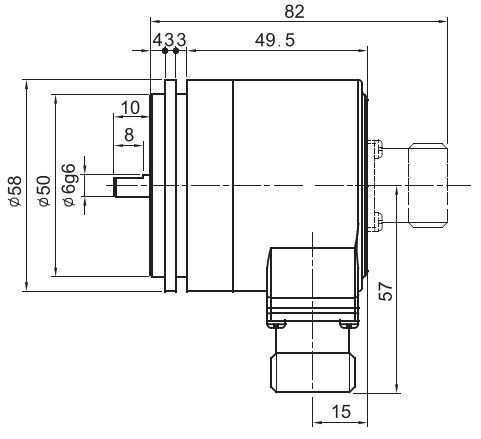
Dimensions (mm)

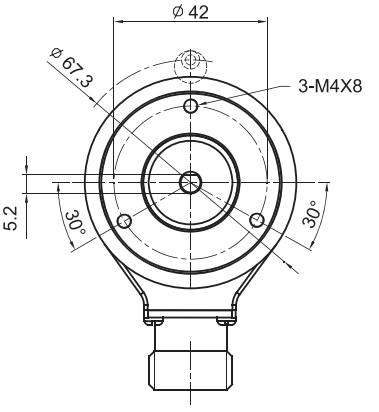
EV58A





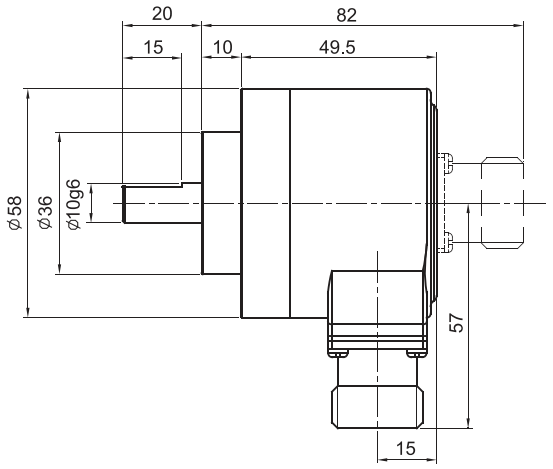
EV58B

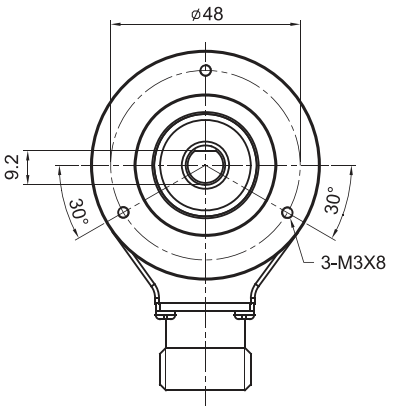




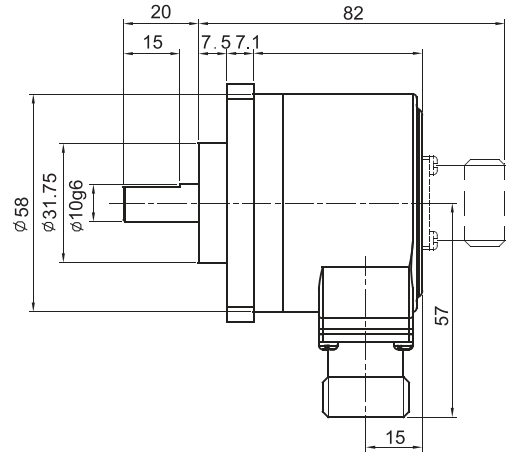
Dimensions (mm)

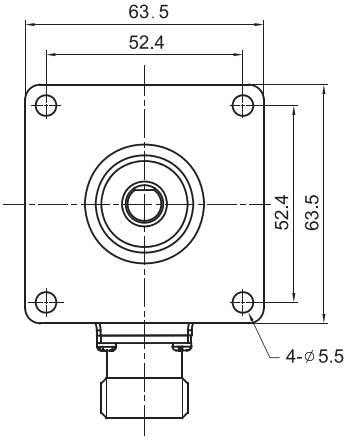
EV58C



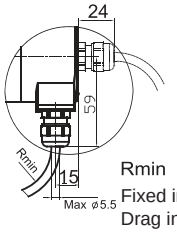


EV58D





Cable output



Rmin
Fixed installation: 55mm
Drag installation: 70mm

Order Code:

EV 58 B 6 – L5 T R – 1024 . XXXX

Outlets direction
R=radial
A=axial

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

Standard cable length
P=1.5 m
T=M23, 12-pin plug without connector

Resolution
Pulse/r: ≤5000
Attention: for other available pulse options please contact us for further information

Output & Supply voltage[1)]

L5=RS422 (with reverse signal)	5 Vdc
L6=RS422 (with reverse signal)	10...30 Vdc
H6=Push-pull HTL (with reverse signal)	10...30 Vdc
P6=Push-pull HTL (without reverse signal)	10...30 Vdc

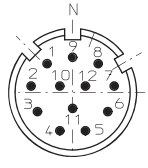
Shaft diameter
6=Φ6mm
(only for EV58B)
8=Φ8mm
9=Φ9.52mm (3/8"×7/8")
10=Φ10mm

Flange type
A=Φ31.75 clamping flange, shaft length 20 mm
B=synchro flange, only for shaft Φ6, shaft length 10 mm
C=Φ36 clamping flange, shaft length 20 mm
D=Φ63.5 square flange, shaft Φ31.75, shaft length 20 mm

Housing diameter
58= housing diameter

Series
EV=Topydic incremental

Topview of 12-pin Connector



[1)] When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment:
if U_b=5V, it's permitted to connect to signal channels, 0V or U_b;
if U_b＞5V, it's permitted to connect to signal channels or 0V.

Matched connector:
For connection type "T": TMSP1612F

Topydic Series Hollow Shaft Incremental Encoder EV58P

Description

Topydic series encoders EV58P, with double-bearing design, are widely used in industrial environments. It delivers outstanding performance in mechanical shock resistance. It adopts stainless steel hollow shaft design with max. shaft diameter of Φ15 mm and is able to withstand higher axial and radial loads. requirements. Its wide voltage range, reverse connection and short circuit protection can effectively avoid mis-wiring.

Features

- Resolution up to 5000 ppr; pulse frequency up to 300 kHz
- Wide range of shaft diameter, Φ8...Φ15 mm
- Operating temperature, -20...+80℃; IP65
- Thickness of 34.5mm, applicable for installation with limited space
- Multi signal output interfaces to meet diferent types of data aquisition of upper computer
- Reverse connection and short circuit protection to ensure the safety[1)]

Mechanical parameters

Shaft diameter	Φ8/Φ10/Φ12 /Φ14/Φ15 mm
Protection class	IP65
Speed	6000 rpm
Max. load capacity of the shaft	40 N axial
	80 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10... 2000 HZ
Bearing life	10^9 revolution
Moment of inertia	approx. $6x10^{-6}$ kgm²
Starting torque	<0.03 Nm
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-20 ... +80 °C
Storage temperature	-40 ... +95 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	approx.400g

Regular resolution: 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1250, 2000, 2048, 2500, 3600, 4096, 5000
Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull
Supply voltage	5±0.25 or 10...30 VDC	10...30 VDC
Power consumption (no load)	typ. 40 mA	typ. 50 mA
	max. 90 mA	max. 100 mA
Permissible load	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level high	min. 2.5 VDC	min. Ub-1 VDC
Signal level low	max. 0.5 VDC	max. 0.5 VDC
Rise time Tr	max. 200 ns	max. 1 µs
Fall time Tf	max. 200 ns	max. 1 µs

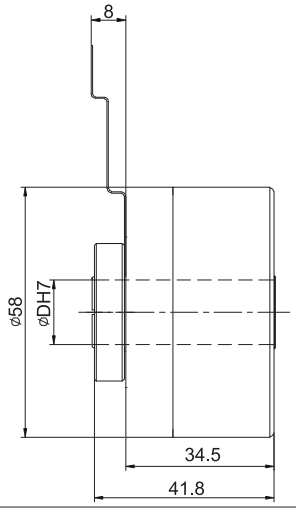
1）When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment:
if U_b=5 VDC, it's permitted to connect to signal channels, 0 VDC or U_b;
if U_b＞5 VDC, it's permitted to connect to signal channels or 0 VDC.

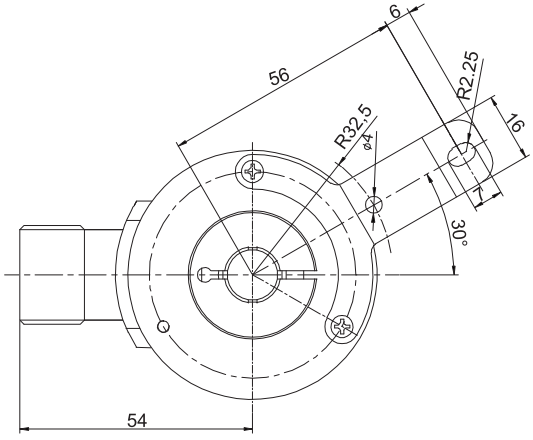
Terminal Assignment

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	⏚
12-pin	10	12	5	6	8	1	3	4	PH

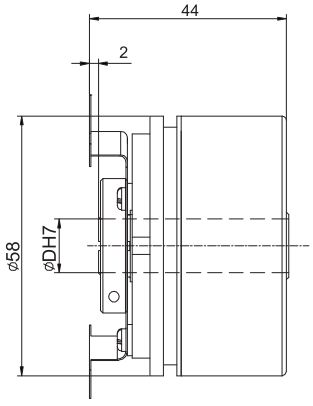
Dimensions (mm)

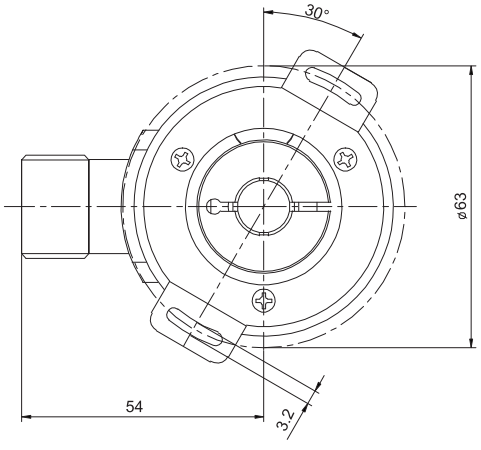
EV58P





EV58W





Order Code

EV 58 P 10 – L5 T R – 1024 . XXXX

Shaft diameter
8=Φ8mm
10=Φ10mm
12=Φ12mm
14=Φ14mm
15=Φ15mm

Outlets direction
R=radial

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

Resolution
Pulse/r: ≤5000
Attention: for other available pulse options please contact us for further information

Flange type
P=hollow shaft with fixing sheet
W=double-winged fixing sheet

Standard cable length
P=1.5 m
T=M23, 12-pin plug without connector

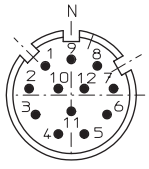
Housing diameter
58=Housing diameter

Output & Supply voltage[1)]

L5=RS422 (with reverse signal)	5 VDC
L6=RS422 (with reverse signal)	10...30 VDC
H6=Push-pull HTL (with reverse signal)	10...30 VDC
P6=Push-pull HTL (without reverse signal)	10...30 VDC

Series
EV=Topydic incremental

T type connection:
12-pin M23 Connector



TMSP1612F
Field attachable connector

[1)] When provided power voltage is correct:
Short-circuit to channel, 0V, or $+U_b$ is permitted when U_b = 5 VDC;
Short-circuit to channel or 0V is permitted when U_b =10…30 VDC

Heavydic Large Hollow Shaft Incremental Encoder EV90P

Description

Heavydic large hollow shaft incremental encoder EV90P are specially designed for heavy industries and heavy-loaded shaft applications. It delivers perfect performance of mechanical shock resistance, and is capable of withstanding higher axial and radial loads. It can be directly installed onto the drive shaft with crutch arm or fixing sheet for flexible connection. Its resolution is up to 2500 ppr,which ensures accurate control and application safety.

Features

- Robust metal housing against greater shock; compact structure for limited installation space
- Resolution up to 2500 ppr; protection class of IP65
- Compact hollow shaft design to save both space and cost
- Crutch arm and fixing sheet provide greater flexibility
- Stainless steel hollow shaft with diameter of Φ25/Φ30/Φ38/Φ45; installed by "C" lock ring
- Flexible connecting with cable or connector for easy maintenance; water-proof design to ensure safety
- Reverse connection / short circuit protection[1)]

Mechanical parameters

Hollow shaft diameter	Φ20/Φ24/Φ25/Φ28/Φ30/Φ38/Φ40/Φ45H7 mm
Protection class	IP65
Speed	3500 rpm
Max. load capacity of the shaft	80 N axial 140 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10～2000 HZ
Bearing life	10^9 revolution
Moment of inertia	approx.15×10^{-6} kgm^2
Starting torque	<0.1Nm with oil seal
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-20 ... +80 °C(-40 ... +80 °C optional)
Storage temperature	-45 ... +85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	Approx. 900 g

Regular resolution: 1024, 2048
Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

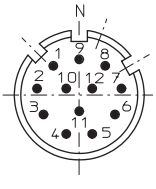
Output circuit	RS422	Push-pull
Resolution	Max 2500 ppr	Max 2500 ppr
Supply voltage	5 ± 0.25 or 10...30 VDC	10...30 VDC
Power consumption (no load)	≤80 mA	≤100 mA
Permissible load	±20 mA	±30 mA
Pulse frequency	Max 300 kHz	Max 300 kHz
Signal level high	Min 3.4 V	Min Ub-1.8
Signal level low	Max 0.4 V	Max 2.0 V
Rise time Tr	Max 200 ns	Max 1 µs
Fall time Tf	Max 200 ns	Max 1 µs

Terminal Configuration

Signal	0V	+Ub	A	A	B	B	Z	Z	Shield
Color Code	WH	BN	GN	YE	GY	PK1	BU	RD	⏚
Pin	10	12	5	6	8	1	3	4	PH

Matched connector:
the compatible connector with type of connection "T" is TMS1612F.

Topview of 12-pin plug

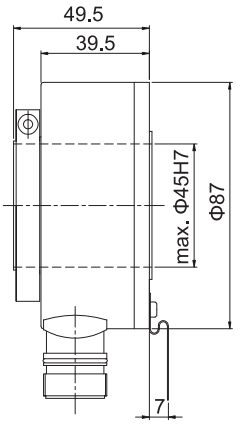


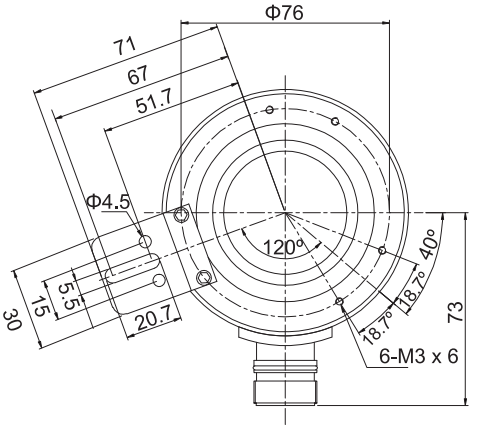
[1)] When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment:
if U_b = 5 V, it's permitted to connect to signal channels, 0 V or U_b,
if U_b > 5 V, it's permitted to connect to signal channels or 0 V.

Heavydic Large Hollow Shaft Incremental Encoder EV90P

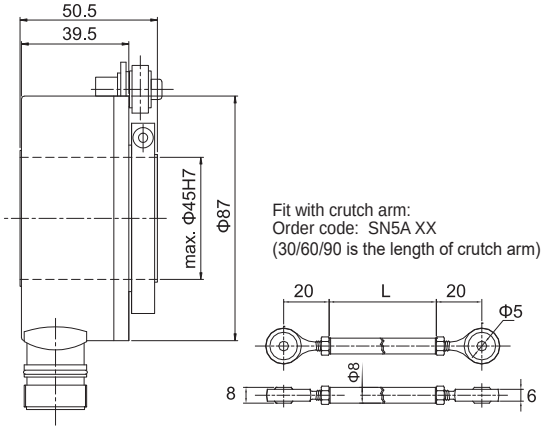
Dimensions (mm)

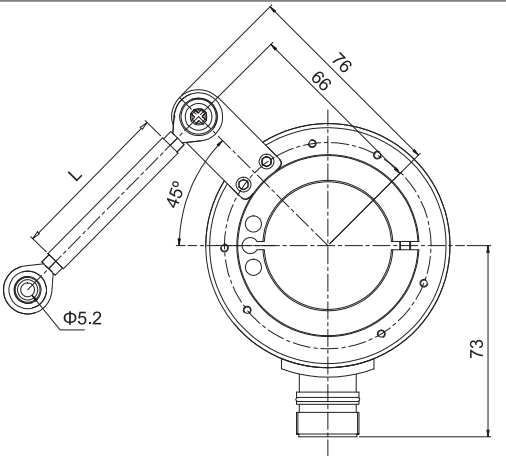
EV90P
Fixing sheet
E41350136A/0





EV90R





Order Code:

EV 90 P 30 _ L5 T R _ 1024 . XXXX

Hollow shaft diameter
20=Φ20H7
24=Φ24H7
25=Φ25H7
28=Φ28H7
30=Φ30H7
38=Φ38H7
40=Φ40H7
45=Φ45H7

Flange type
P= fixing sheet
R= crutch arm

Housing diameter
90=housing diameter

Series
EV=heavydic incremental

Outlets direction
R=radial

Resolution
Pulse/r: ≤2500

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

Standard cable length
P=1.5 m
T=M23, 12-pin plug with connector
(order code for connector: TMSP1612F)

Output & Supply voltage

L5=RS422 (with reverse signal)	5 VDC
L6=RS422 (with reverse signal)	10...30 VDC
H6=Push-pull HTL (with reverse signal)	10...30 VDC
P6=Push-pull HTL (without reverse signal)	10...30 VDC

Topydic Series Large Hollow Shaft Incremental Encoder EV150P

Description

Topydic series large hollow shaft encoders EV150P are widely used in industrial environments in which direct installation on the drive shaft for speed feedback is required. It delivers excellent performance in withstanding mechanical shock and higher axial and radial loads. Hollow shaft structure could be directly installed onto the drive shaft, and crutch arm or block-pin accessories provide greater flexibility to prolong the usability of the encoder. EV150P delivers resolution up to 2048 ppr, and guarantees both precise measurement control and safety in loading. It is the most recommended product for its high quality and affordability.

Features

- Crutch arm or block-pin accessories provide the greatest flexibilty
- Resolution 2048 ppr, IP64 guarantees precision and safety
- Compact hollow shaft design is both a space and cost-saver
- Metal housing for greater shock resistance,compact structure is suited for confined mounting space
- Stainless steel hollow shaft Φ60H7 — Φ80H7 ,"C"lock ring
- Cable output or connector is flexible and easy for maintenance
  The waterproof rubber ends ensures safety
- Reverse connection protection and short circuit protection

Mechanical parameters

Hollow shaft diameter	Φ60H7 — Φ80H7 mm
Protection class	IP64
Speed	3000 rpm
Max load capacity of the shaft	100 N axial 200 N radial
Shock resistance	50G/11 ms
Vibration resistance	10 G 10~2000 Hz
Bearing life	10^9 revolution
Moment of inertia	<15 x 10^{-6} kgm^2
Starting torque	<0.25 Nm max.
Body material	AL-alloy
Housing material	AL-alloy + green paint
Operating temperature	-20 ... +90 °C
Storage temperature	-40 ... +100 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	1800 g

Resolution: 1000，1024，2048
Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

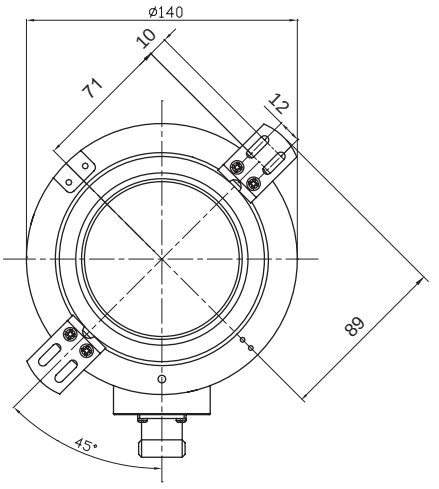
Output circuit	RS422	Push-pull
Resolution	Max.2048 ppr	Max.2048 ppr
Supply voltage	5±0.25 or 10...30 VDC	10...30 VDC
Power consumption (no load)	≤80 mA	≤100 mA
Permissible load (channel)	±50 mA	±30 mA
Pulse frequency	Max.800 kHz	Max.800 kHz
Signal level high	Min.3.4 V	Min.Ub-1.8
Signal level low	Max.0.4 V	Max.2.0 V
Rise timeTr	Max 200 ns	Max 1 μs
Fall timeTf	Max 200 ns	Max 1 μs

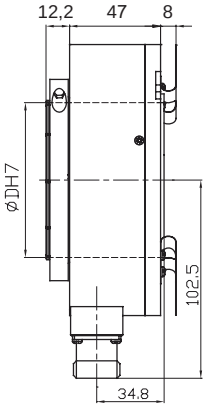
Terminal Assignment

Signal	0V	$+U_b$	A	$\overline{A}$	B	$\overline{B}$	Z	$\overline{Z}$	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚
Pin	10	12	5	6	8	1	3	4	PH

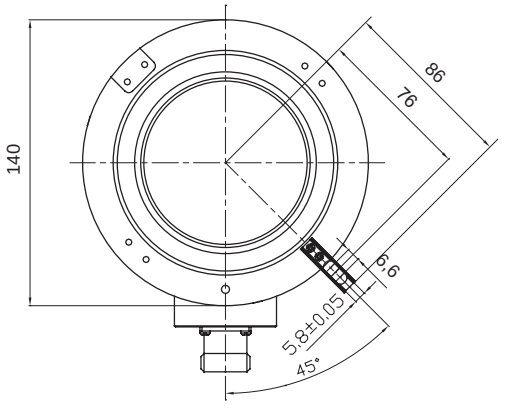
Dimensions (mm)

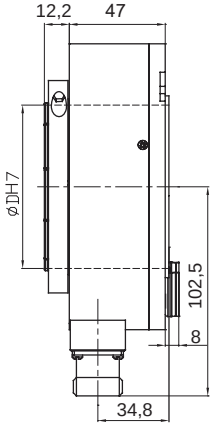
EV150P
Double-wing fixing plate
E41350013



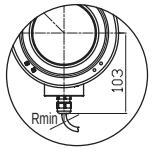


EV150K
Long torque support slot:
E41350035
Block pin:
E41220002



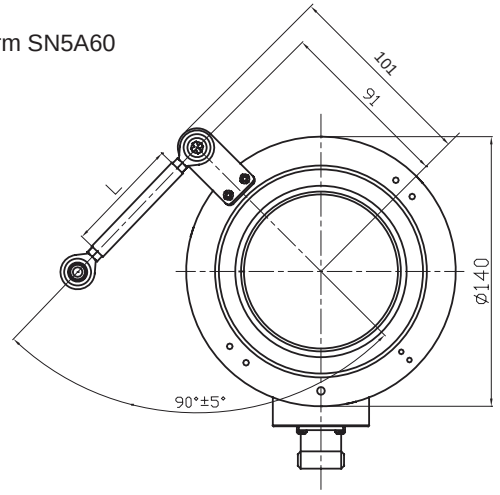


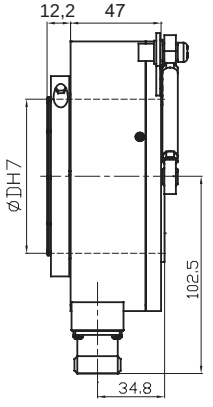
Cable output



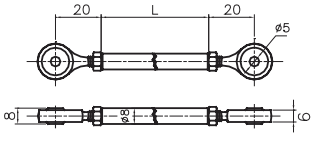
Rmin
Fix installation: 55mm
Draw installation: 70mm

EV150R
Torque arm SN5A60





Crutch arm order
SN5A XX
(30,60,90means length)

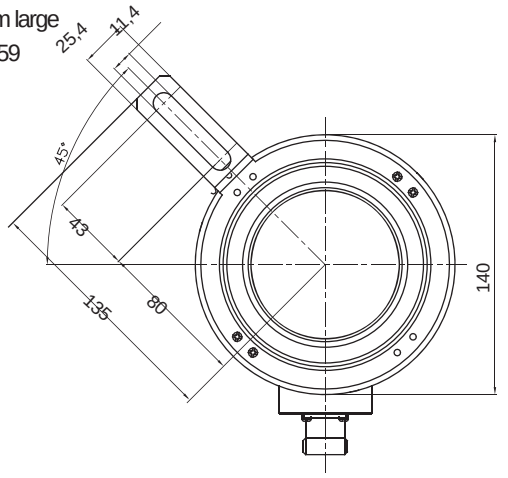


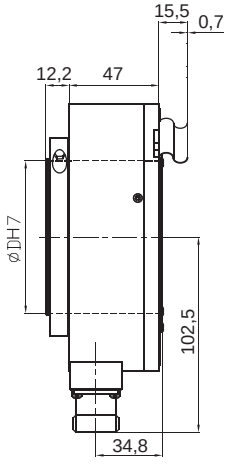
Dimensions (mm)

EV150H

Tether arm large

E41350059

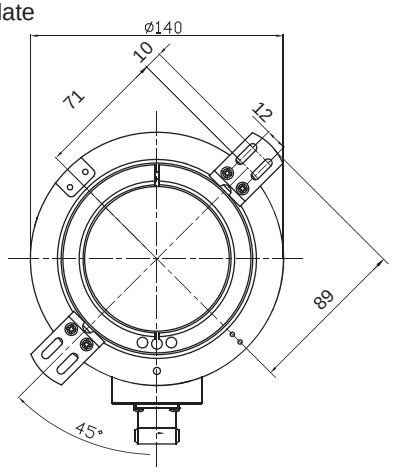


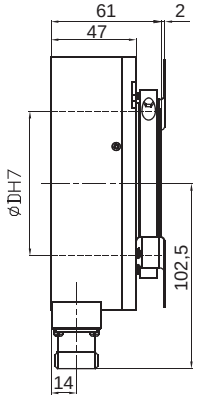


EV150RP

Double-wing fixing plate

E41350013

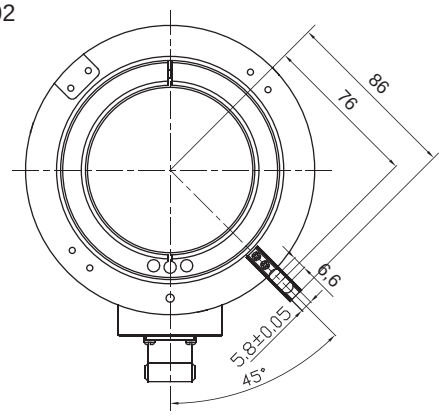


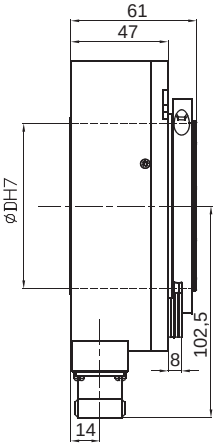


EV150RK

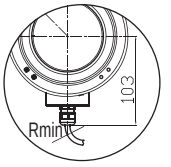
Long torque support slot:E41350035

Block pin:E41220002





Cable output



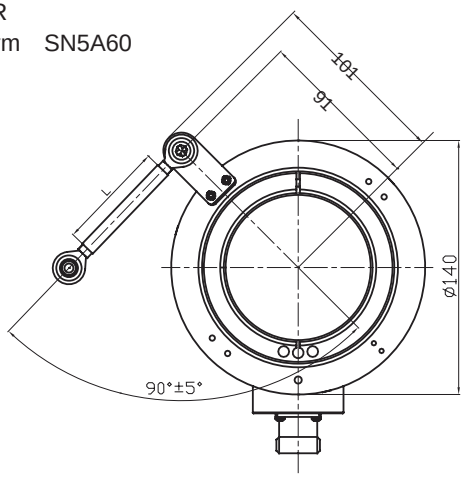
Rmin

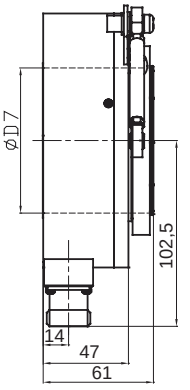
Fix installation: 55mm

Draw installation: 70mm

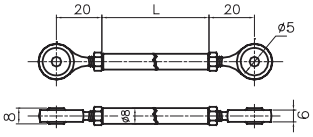
Dimensions (mm)

EV150RR
Torque arm SN5A60

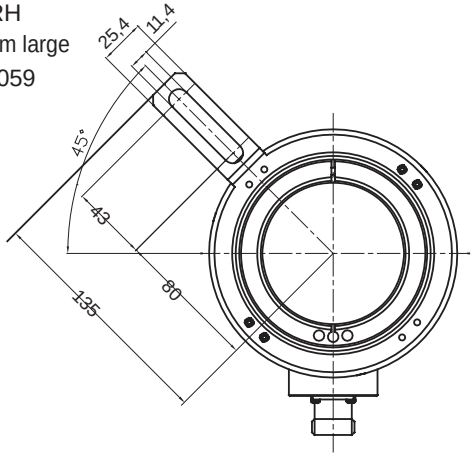


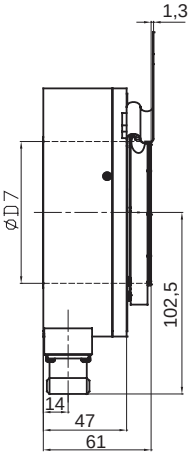


Crutch arm order:
SN5A XX
(30,60,90 means length)

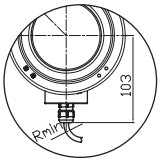


EV150RH
Tether arm large
E41350059



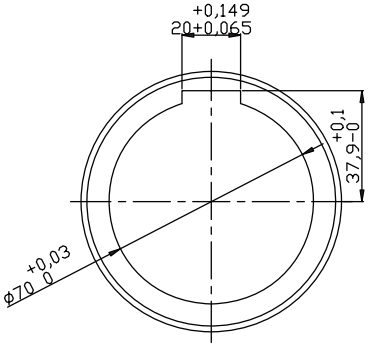


Cable output



Rmin
Fix installation: 55mm
Draw installation: 70mm

Keyway shaft



EV150P Keyway

Topydic Series Large Hollow Shaft Incremental Encoder EV150P

Order Code:

EV 150 P 70 – L5 T R – 1024 . XXXX

Series
EV=Topydic incremental

Housing diameter
150=housing diameter

Flange type
P=hollow shaft with spring
K=long torque support slot
R=universal torque arm (SN5A60)
H=tether arm large
RP=hollow shaft with spring
RK=long torque support slot
RR=universal torque arm (SN5A60)
RH=tether arm large

Shaft diameter
60=Φ60H7
65=Φ65H7
70=Φ70H7
75=Φ75H7
80=Φ80H7
Adding "K" to a shaft diameter means it is a hollow shaft with keyway, eg.
60K=Φ60F7 keyway (≤70) without fixed lock ring for keyway mounting

Output & Supply voltage[1)]

L5=RS422 (with reverse signal)	5 VDC
L6=RS422 (with reverse signal)	10...30 VDC
H6=Push-pull HTL (with reverse signal)	10...30 VDC
P6=Push-pull HTL (without reverse signal)	10...30 VDC

Type of connection
P=Cable length 1.5 m
T=M23,12-pin plug without connector
(other cable length are available upon request)

Outlets direction
R=radial

Resolution
Pulse/r ≤2048
Attention: for pulse scale pls contact our company

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

Diameter	Lock ring	Screw
Φ60	E41230053	M4×16
Φ65	E41230059	M4×16
Φ70	E41230058	M4×16
Φ75	E41230057	M4×16
Φ80	E41230056	M4×16

1) When the provided power voltage is correct:
Short-circuit to channel, 0 V, or +U_b is permitted when U_b=5 V;
Short-circuit to channel or 0 V is permitted when U_b=10…30 V.

Connector order:
matching "T" connector: TMSP1612F

EVL support:

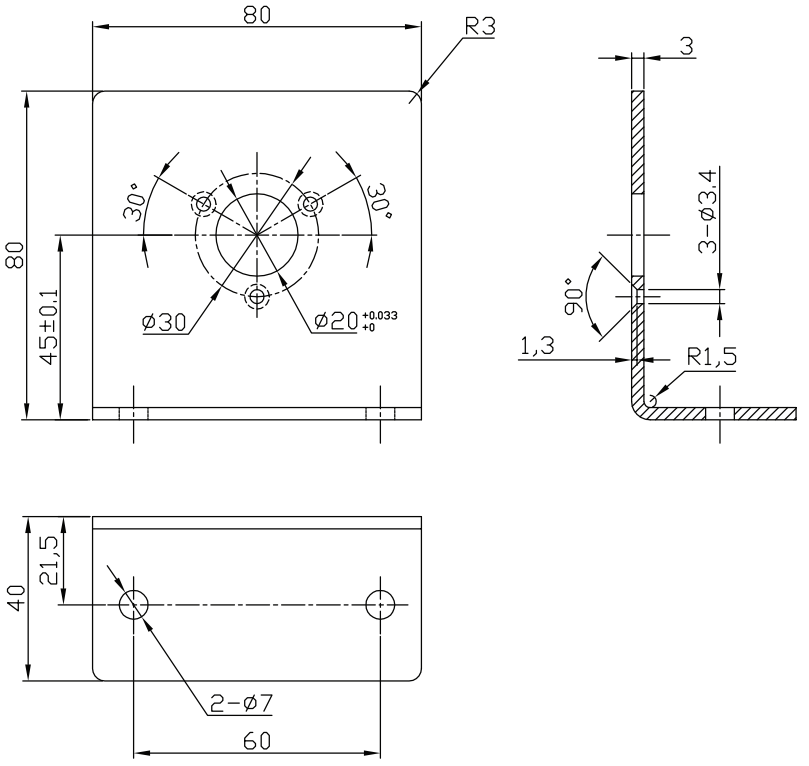
Type: EVL-L38A

Material: carbon steel

Surface treatment: zinc plating

Applicable for: shaft encoder 38 series

Installation: with flange



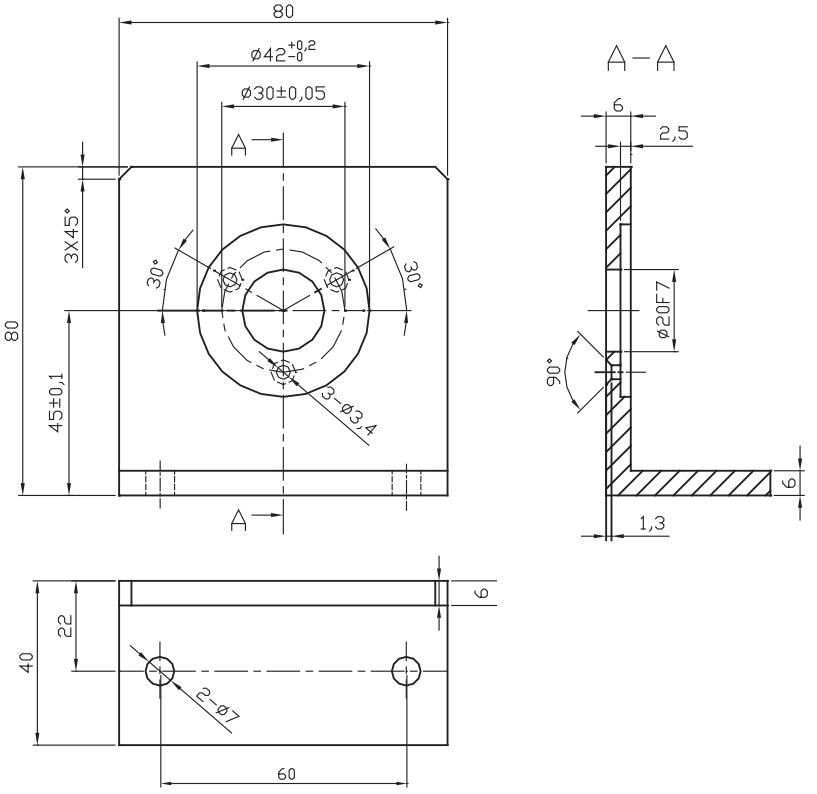
EVL support:

Applicable for shaft encoder 40 with clamping flange

Material: Al

Type:

EVL-L40A



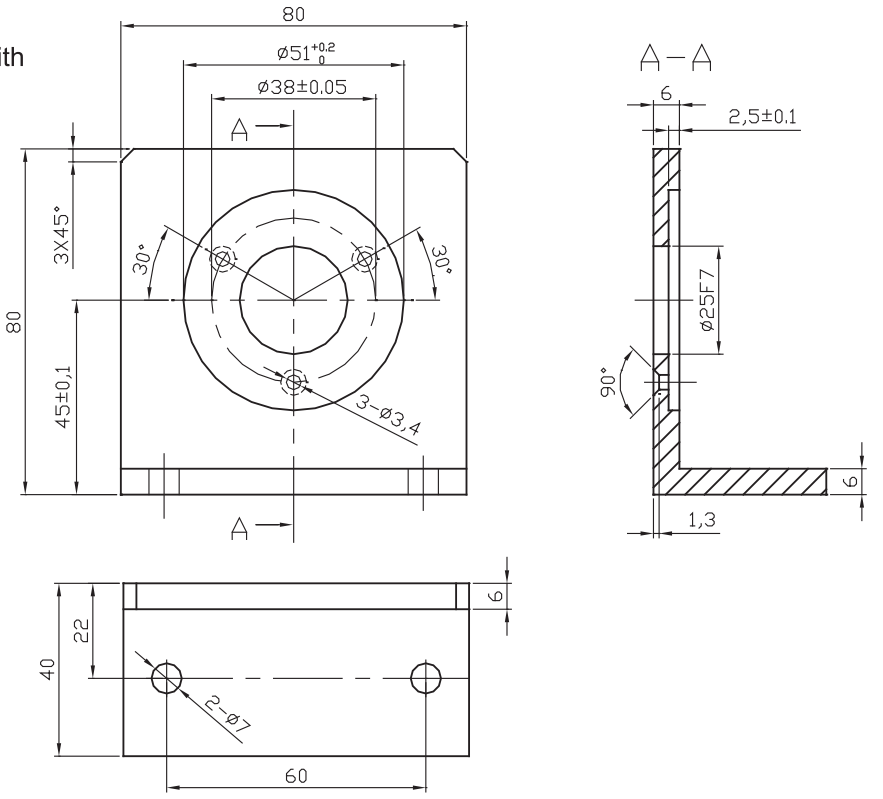
EVL Support

EVL support

Applicable for shaft encoder 50A with clamping flange

Material: Al

Type:
EVL -L50A

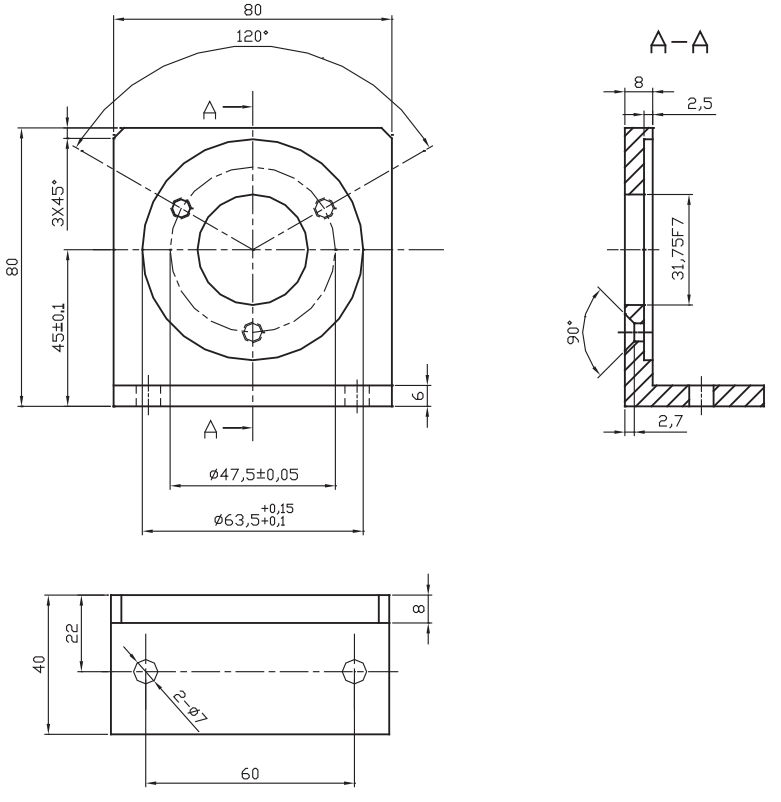


EVL support

Applicable for shaft encoder 58A with clamping flange

Material: Al

Type:
EVL-L58A



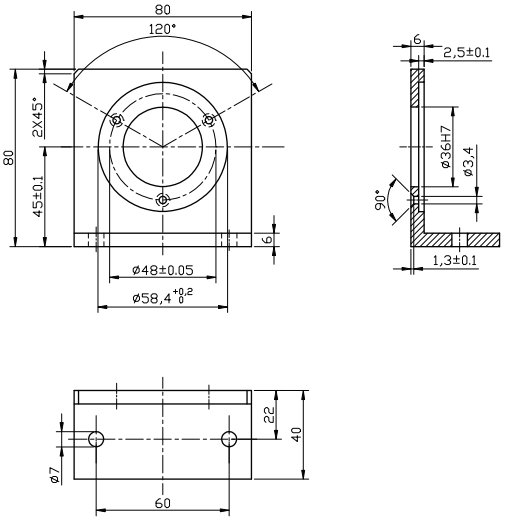
EVL support

Applicable for shaft encoder 58 with clamping flange

Material: AL

Type:

EVL-L58C



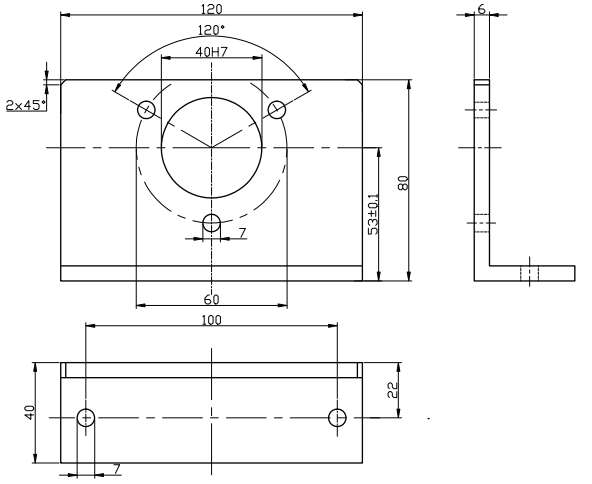
EVL support

Applicable for shaft encoder 90 with clamping flange

Material: AL

Type:

EVL-L90A



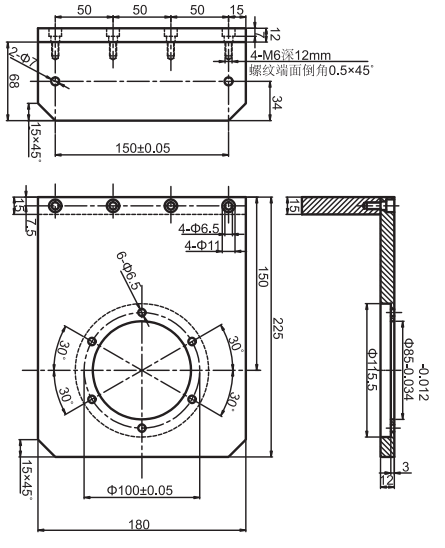
EVL support

Applicable for shaft encoder 115 with clamping flange

Material: AL

Type:

EVL-L115A



Coupling

Description:

Flexible precision couplings are essential parts for the transmission of rotational motion to the encoder shaft. Couplings are designed in AL-alloy and are composed by a cylindrical body on which there is a helicoidal groove. With the perfect balancing of the rotating body, the couplings do not have critical points subject to breakage and are completely frictionless. Moreover, they perfectly transmit the rotation motion, even in the case of axial misadjustment and misalignment. The couplings do not require any maintenance. The internal drain allows the coupling to have the minimum distance of 6.12 mm between the shafts.

Features:

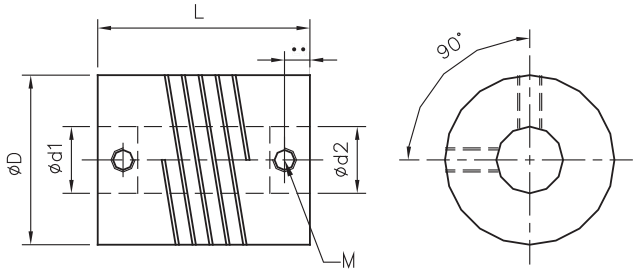
- Torsional rigidity
- Ability to support slight shaft misadjustments
- Ability to absorb small axial shift of the shaft

Attention: Metric and Imperial sizes: A1=6.35 mm A2=9.525 mm A3=12.7 mm

Screw flexible coupling

Code	Φd1/Φd2 Shaft diameter	ΦD	L	L1	Twisting moment	Max. angular displacement	Max. speed	Screw(M)	Material
EBG20/20A □□□□	3 4 5 6 6.35(A1)	20	20	2.55	0.8 N.m	1°	8000 r/min	M3	AL-alloy
EBG25/25A □□□□	5 6 6.35(A1) 8 9.525(A2) 10	25	25	3.55	1.8 N.m	1°	8000 r/min	M4	AL-alloy
EBG30/30A □□□□	6 8 9.525(A2) 10 12 12.7(A3)	30	30	4.15	2.7 N.m	1°	8000 r/min	M5	AL-alloy
EBG38/38A □□□□	8 9.525(A2) 10 12 12.7(A3) 14 15	38	38	4.15	6.3 N.m	1°	8000 r/min	M5	AL-alloy
EBG50/50A □□□□	12 12.7(A3) 14 15 16 18 19	50	50	5.25	19.5 N.m	1°	8000 r/min	M6	AL-alloy

Coupling Dimensions



Order Code

EBG 30 / 30 A 6 / 8

d2 diameter
refer to forms

d1 diameter
refer to forms
Attention: if d1=d2,no need to specify d2 diameter

A
A=fixed with screws

Outer diameter De
20=φ20
25=φ25
30=φ30

Coupling length L
20
25
30

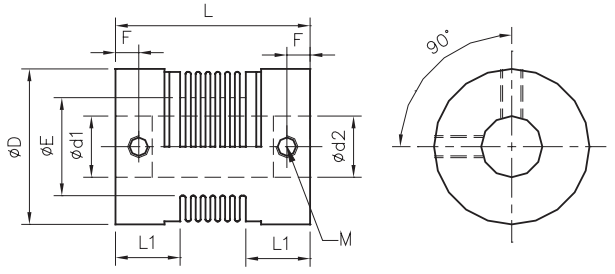
Series
EBG=Screw-type flexible coupling

Coupling

Bellow flexible coupling

Code	Φd1/Φd2 Shaft diameter	ΦD	L	L1	F	E	Twisting moment	Max. angular displacement	Max. speed	Screw(M)	Material
ECS27/16A □□□□	4 5 6 6.35(A1) 8	16	27	8.5	3	9.5	0.5 N.m	2°	6000 r/min	M3	AL-alloy
ECS29/20A □□□□	5 6 6.35(A1) 8 9.525(A2) 10 12	20	29	8.5	3	12.5	0.6 N.m	2°	6000 r/min	M3	AL-alloy
ECS34/25A □□□□	6 6.35(A1) 8 9.525(A2) 10 12	25	34	10.5	4	15	1.7 N.m	2°	6000 r/min	M4	AL-alloy
ECS38/32 □□□□	6 8 9.525(A2) 10 12	32	38	11.5	4	21	1.7 N.m	2°	6000 r/min	M4	AL-alloy
ECS49/32 □□□□	6 8 9.525(A2) 10 12	32	49	11.5	4	21	1.7 N.m	2°	6000 r/min	M4	AL-alloy
ECS51/40 □□□□	10 11 12 14 15 16	40	51	12.5	4.5	27	3.5 N.m	2°	6000 r/min	M5	AL-alloy
ECS57/55A □□□□	12 14 15 16	50	57	13.5	5	40	9.0 N.m	2°	6000 r/min	M6	AL-alloy

Coupling Dimensions



Order Code

ECS 49 / 23 A 10 / 12

d2 diameter
refer to forms

d1 diameter
refer to forms
Attention: if d1=d2,no need for marking d2

A
A=fixed with screws

Outer diameter De
refer to forms

Coupling length L
refer to forms

Series
EBG=Bellows flexible coupling

Compact Absolute Multiturn Encoder EMM36

Description:

EMM36 series of compact multiturn encoder with outer diameter of only 36 mm. The product uses stable magnetic chip technology, single-turn re solution is 12 bits, the maximum revolution can be achieved 12 bits, a variety of communication interface can be chosen, widely used in logistics, packaging machinery and machinery manufacturing industries.

Features:

- Stable magnetic chip technology can provide multiple communication interfaces.
- Metal casting housing can bear higher radial force and axial force.
- Protection class IP65
- Output cable or connector available for easy maintenance
- Customized -40 °C products for environmental applications

Mechanical parameters

Shaft diameter(mm)	Φ6f7 Φ6F7/Φ8F7/Φ10F7
Protection class	IP65
Max. speed	6000 rpm
Max. load capacity of shaft	20 N（axial）
	40 N（radial）
Shock resistance	100 G/6ms
Vibration resistance	20G 100...2000 Hz
Bearing life	10^9 revolution
Moment of inertia	2.5×10^{-6} kgm^2
Starting torque	<0.01 Nm
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40...+80 °C
Storage temperature	-45...+85 °C
Relative humidity / condensation	90%, Condensation not permitted
Weight	About 400 g (except cable)

Electrical parameters

Output circuit	SSI
Output driver	RS422
Single turn resolution	12 bits
Revolution	12 bits
Supply voltage	10...30 VDC
Power consumption (no load)	Max. 200 mA
Maximum load current	±20mA
Output frequency	Max. 15 KHz
Signal level high	Typ. 3.8 V
Signal level low	Max. 0.5 V
Rise time Tr	Max. 100 ns
Fall time Tf	Max. 100 ns

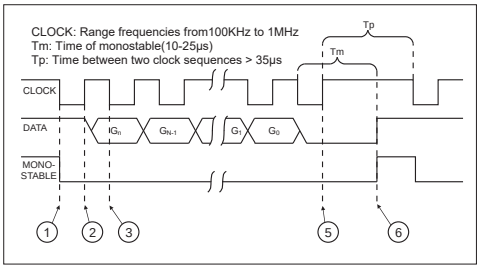
Interface	CANopen Profile DSP 406
	with additional function
Profile	CAN HIGH-Speed to ISO/DIS
	1898, Basic and Full-CAN
	CAN specification 2.0B
Code	Binary
Linearity	±1/2 LSB (12bits), ±1LSB(13bits)
Baud rate	20...800 Kbits/s (Pre-factory setting)
Single turn resolution	Max. 16 bits
Revolution	Max. 16 bits
Supply voltage	10...30 VDC
Maximum load current	Max.290 mA
Programming Functions	Resolution, preset,counting direction

Compact Absolute Multiturn Encoder EMM36

Terminal Assignment

SSI

Signal	0V	$+U_b$	+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



ST: Reset input and store the current position value as new zero bit.
V/R: Up/Down input, this input triggers, when the encoder axis rotates clockwise, the output value decreases.

Canopen

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

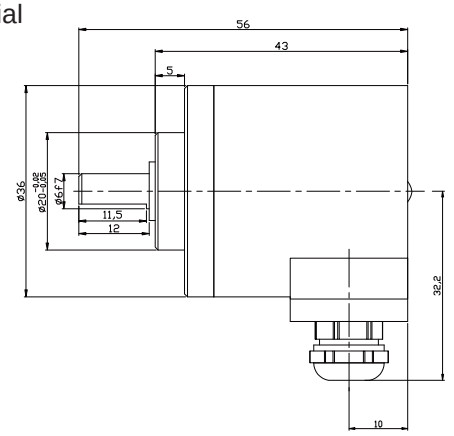
RESET: Set +24V for 2 seconds, encoder restore factory Settings
The factory baud rate of the encoder is set to 250K,
the communication ID is set to NODE ID=32, and the cycle time is 100ms.

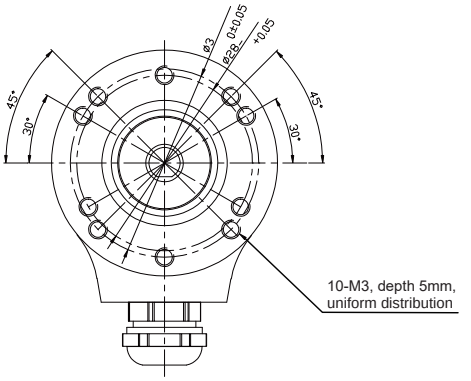
CANopen Matching Plug: M125PSF-00XX-W

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

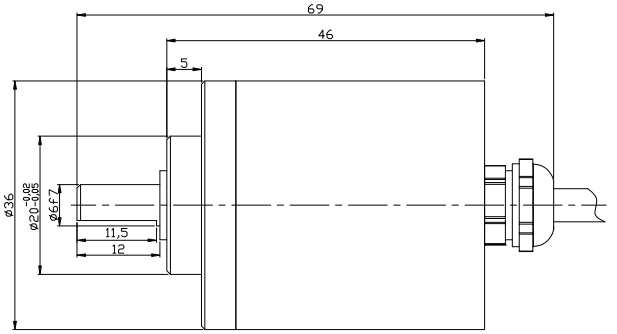
Dimensions(mm)

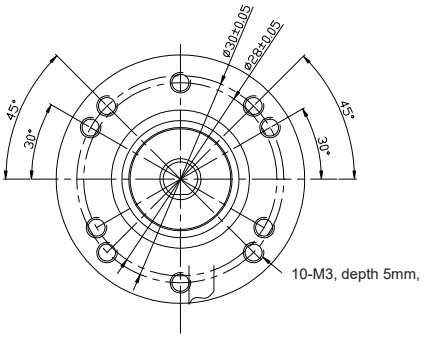
36A Radial





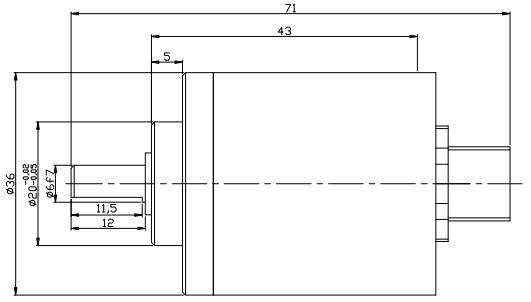
36A Axial

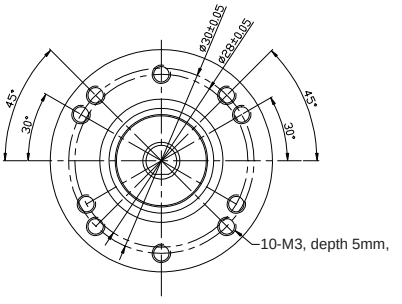




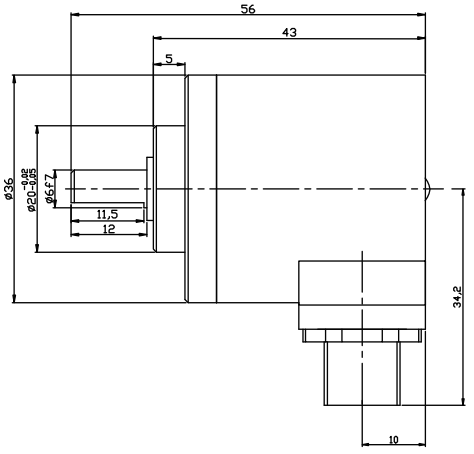
Compact Absolute Multiturn Encoder EMM36

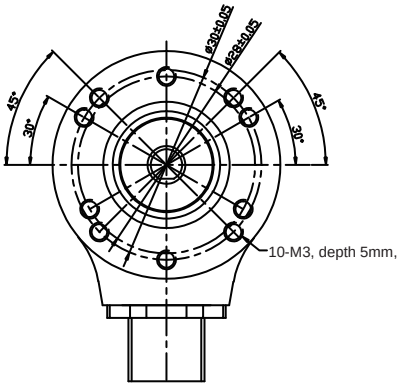
36A M5/M8 Axial



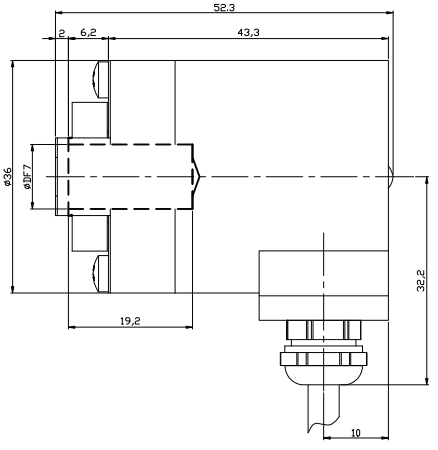


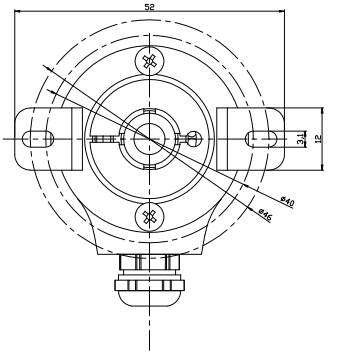
36A M5/M8 Radial



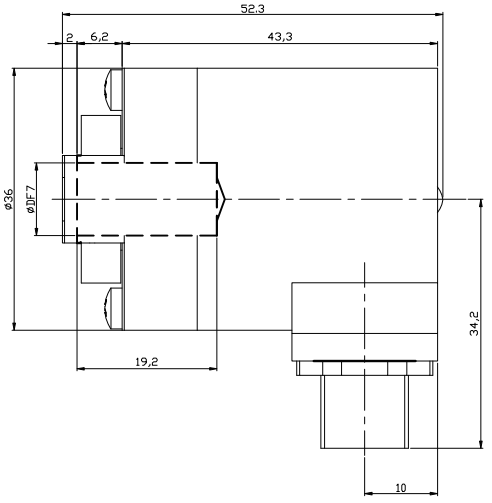


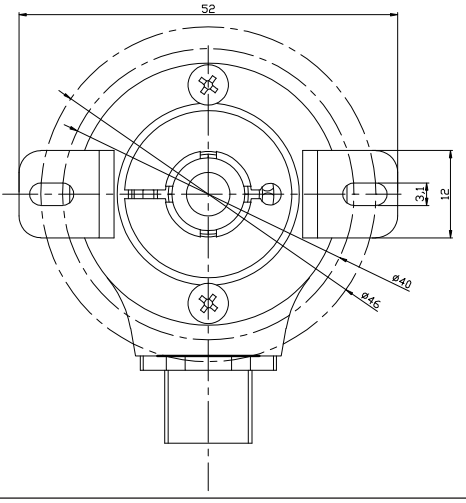
36W Radial



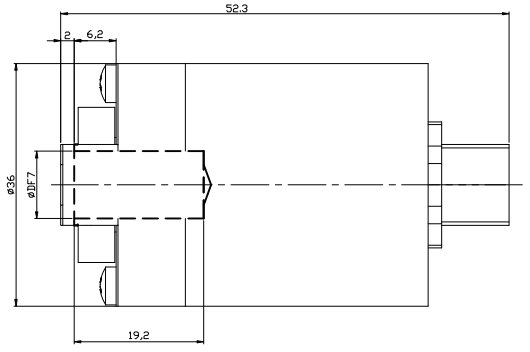


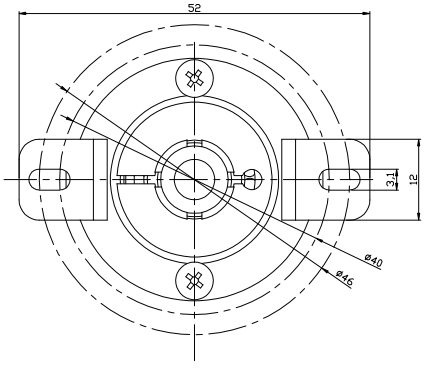
36W M5/M8 Radial



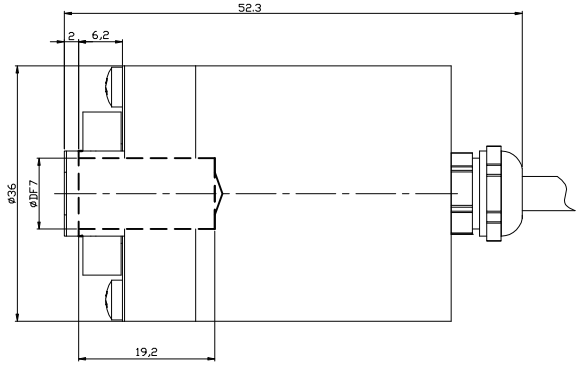


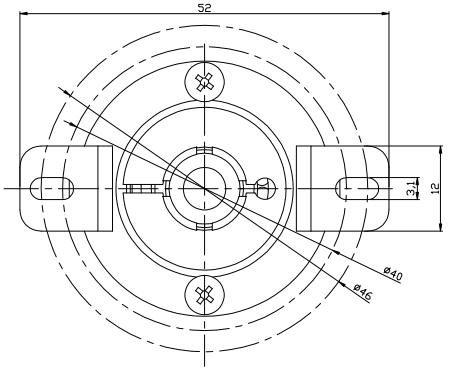
36W M5/M8 Axial





36W Axial





Compact Absolute Multiturn Encoder EMM36

Order Code

EMM 36 A 6 – G S6 X PC R – 4096EUND . XXXX

XXXX = special code

Resolution

EUND-SSI
CAND-CANopen
interface protocol

Outlets direction

R = Radial
A = Axial

Types 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 and supply voltage

S6 = SSI	10...30VDC
F6 = CANopen	10...30VDC

Output code

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

Housing dimension

36 = Φ36 mm

Flange type

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

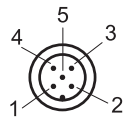
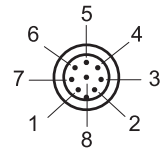
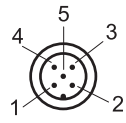
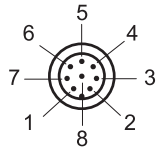
Shaft/hollow shaft diameter

Shaft
6 = Φ6f7mm
Hollow shaft
6 = Φ6F7mm
8 = Φ8F7mm
10 = Φ10F7mm

Series

EMM = magneto electric multiturn encoder

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 Field attachable connector	TMSP128PF Field attachable connector

Miniature Absolute Singleturn Encoder EAC50

Description

Miniature absolute singleturn encoder EAC50 series can withstand a higher axial and radial load with its reasonable and compact structure. The standard flange combines the clamping and synchronous flanges together, while leaving multiple types of pre-screwed holes for easy installation. The EAC50 series can be widely used in angular and positioning measurement, particularly in the textile industry.

Features

- Pre-screwed holes for easy installation
- Clamping and synchronous flanges combined
- Durable stainless steel shaft
- Metal housing for shock resistance
- Waterproof metal wiring for greater IP level
- Protection class IP64
- Reverse connection protection

Mechanical parameters

Shaft diameter	Φ6g6/Φ8g6 mm
Protection class	IP64
Speed	6000 rpm
Max load capacity of the shaft	
Axial load capacity	40 N
Radial load capacity	80 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10^9 revolution
Rotor moment of inertia	1.8×10^{-6} kgm^2
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20 ... +80 °C
Storage temperature	-25 ... +85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	330 g

Resolution

2, 4, 8, 16, 32, 64, 90, 128, 180, 250, 256, 360, 500, 512, 720, 1024

Electrical parameters

Output circuit	PNP	PNP open collector	NPN	NPN open collector
Resolution	10 Bits	10 Bits	10 Bits	10 Bits
Supply voltage	10-30 VDC/5 VDC	10-30 VDC/5 VDC	10-30 VDC/5 VDC	10-30 VDC/5 VDC
Power consumption (no load)	≤125 mA	≤125 mA	≤80 mA	≤80 mA
Permissible load (channel)	±80 mA	±80 mA	±50 mA	±50 mA
Pulse frequency	Max300 kHz	Max300 kHz	Max. 300 kHz	Max. 300 kHz
Signal level high	Min. U_b-1.5 V	Min. U_b-1.5 V	Min. U_b-2.5 V	MinU_b*70%
Signal level low	Max. 0.4V	depends on pull-down resistor	Max. 0.4 V	Max. 0.4 V
Rise timeTr	Max. 1 μs	Max.1 μs	Ma x.1 μs	Ma x.1 μs
Fall timeTf	Max. 1 μs	Max.1 μs	Ma x.1 μs	Ma x.1 μs

*): NPN open collector is depending on the pull-up resistor. 4.7 kΩ is the recommended resistance. 8.2 kΩ is the recommended resistance for PNP open collector.

**): NPN (PNP) open collector is depending on pull-up (down) resistor and cable length

Miniature Absolute Singleturn Encoder EAC50

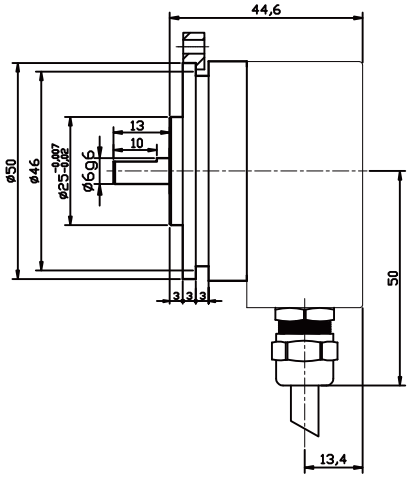
Terminal Configuration

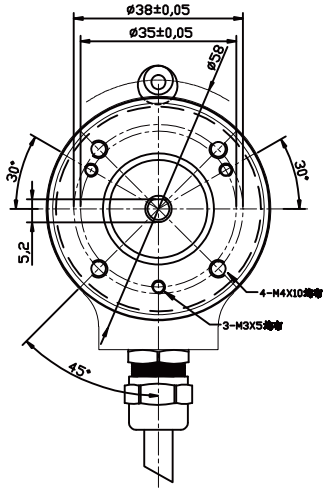
Signal	0V	$^{+}U_b$	bit0	bit1	bit2	bit3	bit4	bit5	bit6	bit7	bit8	bit9	V/R *
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	BK	PL	GY/PK	RD/BU	YE/BN
Gray code	/	/	0	1	2	3	4	5	6	7	8	9	-

Attention
Bite definition of parallel interface for an absolute encoder is：bit0=MSB, bit1=MSB-1,bit2=MSB-2, ...

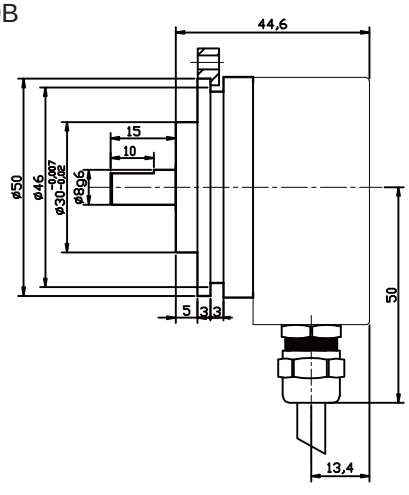
Dimensions (mm)

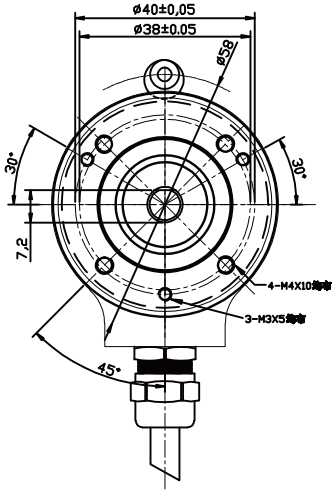
EAC50A





EAC50B





servo-restraint ring：50PXL（see installation accessories for reference）

Miniature Absolute Singleturn Encoder EAC50

Order Code:

Series
EAC=absolute singleturn

Housing dimensions
50=housing dimensions

Flange type
A=round flangeΦ25 mm
B=round flangeΦ30 mm

Shaft diameter
6=Φ6 mm(EAC50A)
8=Φ8 mm(EAC50B)

Output code type
G=Gray Code
B=Binary

Output & Supply voltage

N6=NPN（standard negative logic）	10...30 VDC
N5=NPN（standard negative logic）	5 VDC
C6=NPN open collector（standard negative logic）	10...30 VDC
C5=NPN open collector（standard negative logic）	5 VDC
R6=PNP（standard positive logic）	10...30 VDC
R5=PNP（standard positive logic）	5 VDC
U6=PNP open collector（standard positive logic）	10...30 VDC
U5=PNP open collector（standard positive logic）	5 VDC

Output logic
N=negative logic (parallel)
P=positive logic (parallel)

Type of connection
P=cable output
(standard length 0.5 m)

Outlets direction
R=radial
A=axial

Resolution
Singleturn resolution
Max 1024 (10 bits)-parallel

Miniature Absolute Singleturn Encoder

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

Profibus-DP Interface Absolute Singleturn Encoder EAC58

Description

Profibus-DP interface absolute singleturn encoder EAC58 series provides outstanding performance in withstanding mechanical damages and higher axial and radial loads. Various types of flanges are available to meet different requirements. The series complies with Profibus protocol, and its maximum resolution is up to 8192. Its high speed communication and anti-interference deliver strong and stable operation.

Features

- Various types of flanges are available
- Pre-screwed holes are convenient for installation
- Waterproof seal provides greater IP level
- Direct cable output, which is convenient for installation and maintenance
- Protection class IP65
- Metal housing for better shock resistance
- Conforming to Profibus-DP protocol

Mechanical parameters

Shaft diameter	Φ6g6 mm	-58B
	Φ8g6 mm	-58A/B
	Φ9.52(3/8")g6 mm	-58A
	Φ10g6 mm	-58C
Hollow shaft diameter	Φ8H7/Φ9.52H7/Φ10H7 mm	-58/W
	Φ12H7/Φ14H7/ Φ15H7 mm	-58/W
Protection class	IP65	
Speed	6000 rpm, continuous	
Axial load capacity	80 N	
Radial load capacity	160 N	
Shock resistance	50G/11 ms	
Vibration resistance	10G 10~2000 Hz	
Bearing life	10^9 revolution	
Rotor moment of inertia	approx.1.8×10^{-6} kgm^2	
Starting torque	<0.05 Nm	
Body material	ALUNI 9002/5 -(D11S)	
Housing material	AL6060	
Flange material	ALUNI 9002/5 -(D11S)	
Operating temperature	-40...+80 °C	
Storage temperature	-45...+85 °C	
Relative humidity/condensation	90%, Condensation not permitted	
Weight	~800 g	

Resolution 8192 4096

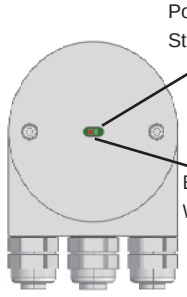
Electrical parameters

Resolution	8192 (13 bits)
Supply voltage	10~30 Vdc
Power consumption (no load)	300 mA
Baud rate	12 Mbaud
Linearity	+/- 1/2 LSB
Output frequency	Max 100 KHz

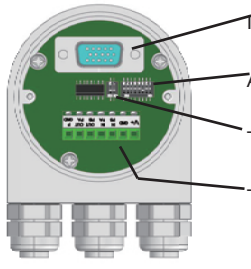
Connection

+V	Supply voltage(24 VDC)
0V	Ground
A	Profibus-DPline output (GN)
B	Profibus-DPline output (RD)
A	Profibus-DPline input (GN)
B	Profibus-DPline input (RD)

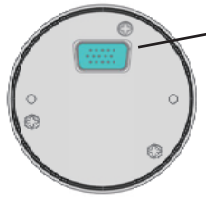
Profibus-DP Interface Absolute Singleturn Encoder EAC58



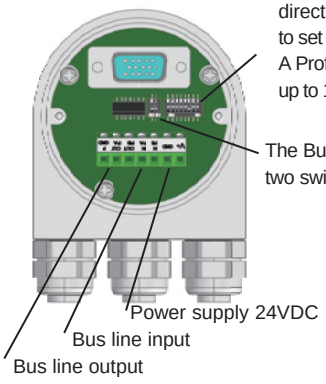
Back of the encoder wiring box



Inside of the encoder wiring box



Back cover of the encoder



Introduction

Profibus-DP interface absolute singleturn encoder (Identification number 0x0CCA) conforms to the Profibus-DP standard as described on the European Standard EN 50170 Vol. 2. The encoders are designed according to “Profibus Profile for Encoders, Order No. 3062”.

The Profibus-DP interface has the same maximum resolution and features (8192 position/revolution) of the stand-along version, and it also has the advantages of the Profibus-DP network.Through the Profibus-DP network is possible to:

- During the periodic data exchange, obtaining the angular position from the encoder.
- Resolution and the revolution are configurable now (please refer to the corresponding chapters for configuring the parameters).
- Changing the default increment count direction (change between CW/CCW when configuring the parameters).
- Perform the Preset operation (Set the encoder to read a specific position).
- Read the diagnosis status.
- Getting info about the code supplied by the device.

From 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, insert the terminal resistance into the bus.
- Change the counting direction

Installation

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 the device has in the bus.

3- Directly set up the address (which must be unique in the network and as the same as the device) for the slave.

4- Prepare the applications at the master side and set up the Profibus network.

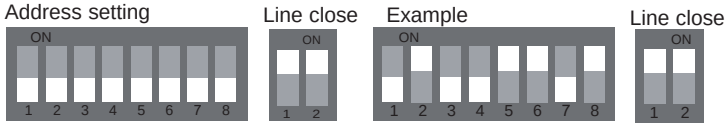
On the back cover of the encoder there are two LED indicators. The device’s operating status can be observed by the two LEDs. The green LED shows the power status and must be on constantly. The red LED only switches off during the periodic data exchange between the Profibus master and the encoder.

Attention： To set and configure the slave into the Profibus-DP master, it is necessary to use the “gsd” file delivered with the encoder. The file can be found on the CD.

DIP-switch setup (configuring slave address)

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 top digit, and bit 1 is the lowest digit. Bit 8 is used for changing the counter direction. Bit 1 to bit 7 are used to configuring encoder’s address.



Network parameters

Usually, an A type cable is used to wire a DP/FMS network. This cable has to have the following characteristics:

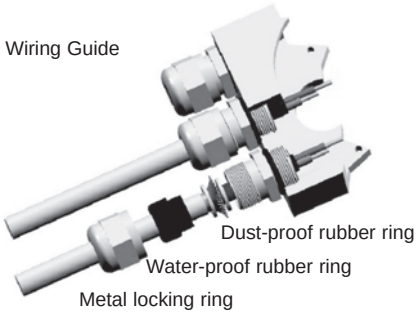
Parameter	A type cable
Characteristic resistance (Ω)	135…165 at a certain frequency (3…20Mhz)
Rated capacity （PF/m）	<30
Loop resistance （Ω/Km)	<=110
Core diameter (mm)	>0.64*)
Core cross-section (mm²)	>0.34*)

This cable allows the optimal network utilization. In fact, it is possible to reach the maximum communication speed allowed (12Mbaud). 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 learned.

Profibus-DP Interface Absolute Singleturn Encoder EAC58



Max. number of station participating	DP: 126 (Address 0-125)
in the exchange of user data	FMS: 127 (Address 0-126)
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

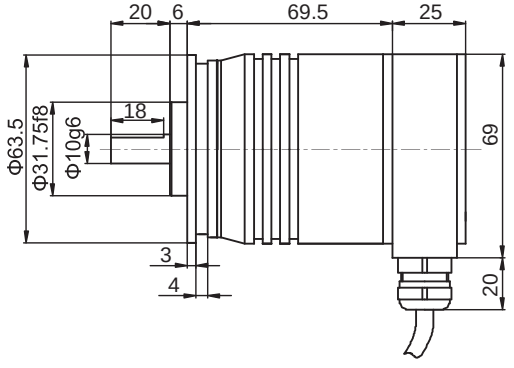
According to EN50170, a maximum of 4 repeaters are allowed between any two stations.Dependent on the repeater type and manufacturer, more than 4 repeaters may be allowed in some cases. Refer to the manufacturer's technical specification for details.

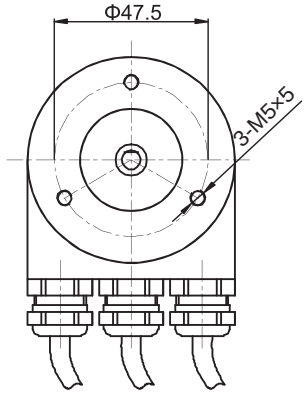
Wiring box

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

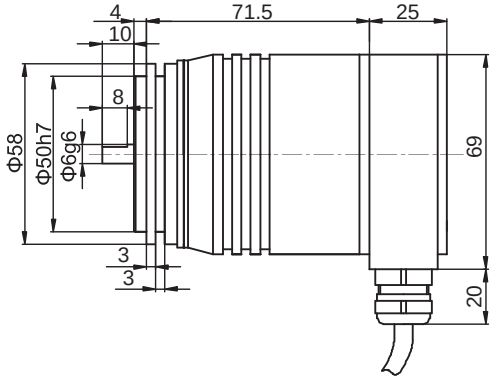
Dimensions (mm)

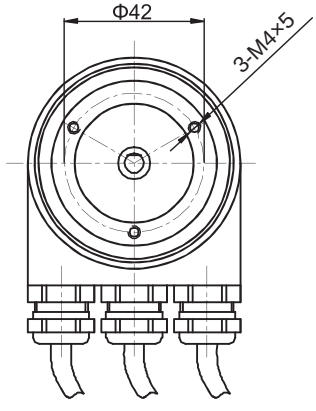
EAC58A





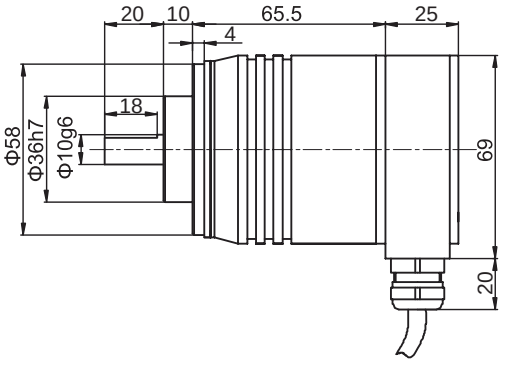
EAC58B

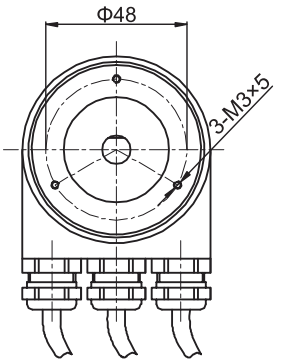




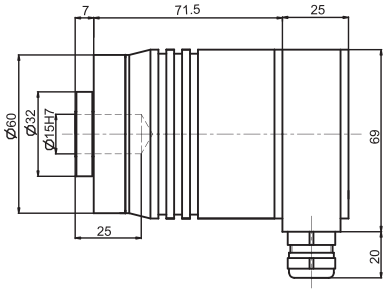
Dimensions (mm)

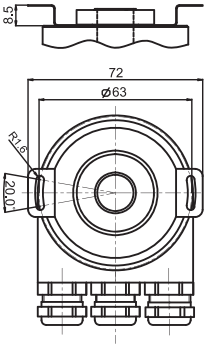
EAC58C





EAC58W





Profibus-DP Interface Absolute Singleturn Encoder EAC58

Order Code

Profibus-DP Interface
Absolute Encoder

Resolution

resolution (see previous pages for reference)
standard 8192 (13 bits)

Outlets direction

R=radial

Type of connection

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

Output logic

X= No definition

Output & Supply voltage

F6=Profibus-DP interface 10...30 Vdc

Code type

B=Binary

Shaft/ Hollow shaft diameter

6=Φ6g6 mm (58B)
8=Φ8g6 mm 58A/B
9=Φ9.52g6 mm 58A
10=Φ10g6 mm
Only for flange type 58W
8 =Φ8H7 mm
9 =Φ9.52H7 mm
10=Φ10H7 mm
12=Φ12H7 mm
14=Φ14H7 mm
15=Φ15H7 mm

Flange type

A=round flange
B=synchro flange, shaft length 10 mm
C=Φ36clamping flange,shaft length 20 mm
W=blind hollow shaft flange, double-winged spring leaf installation

Housing diameter

58=Φ58flange

Series

EAC=Profibus-DP interface absolute singleturn

4…20mA Analog Output Absolute Singleturn Encoder EAC58

Description

The 4-20mA Analog output absolute singleturn encoder EAC58 series features a compact structure with strong perfomance in withstanding mechanical damages and higher axial and radial loads. EAC58 series is equipped with the RESET function, and has the resolution up to 8192. 4-20mA output is compatible with special PC controllers.

Features

- Waterproof seal provides greater IP level
- Pre-screwed holes for convenience purpose
- Durable stainless steel shaft
- Metal housing for better shock resistance
- Protection class IP65
- Staring and finishing points calibration function equipped

Mechanical parameters

Shaft diameter	Φ6/Φ10g6 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
Axial load capacity	60 N
Radial load capacity	120 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10^9 revolution
Rotor moment of inertia	1.8×10^{-6} kgm^2
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20...+80 °C
Storage temperature	-25...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360 g

Resolution: 8192. For other resolution requests please contact us for further information.

Electrical parameters

Type of Interface	4...20 mA
Supply voltage（U_b）	10...30 VDC/5 VDC
Current consumption	70 mA
Max.loading current	84 mA
Word-updating frequency	Max. 15.000/s
Current loop	10...30 VDC
Analog signal	4...20 mA
Max.input resistance	200 Ω
Measuring range	0...360°
Max.sensitivity（25°C）	0.2°
Resolution	13 Bit
Setup time	Max. 2 ms
Temperature effect	0.1°/10 K
No-load current	≤3.5 mA
Sensor should be electrically isolated form current loop	

Conforms to CE requirements of EN 61000-6-1，EN 61000-6-4 and EN 61000-6-3

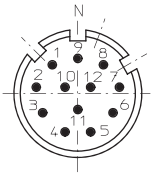
4…20 mA Analog Output Absolute Singleturn Encoder EAC58

Terminal Configuration

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

Top view of the connecting end on needle connector block

12-pin plug



+I: Input of current loop **0V/+Ub and VIN+/VIN-**: can be powered together or seperately

-I: Output of current loop **VOUT+/VOUT-**: voltage output **VIN-/VOUT-**: connected in circuit

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 input: SET input (signal level remains high for 2 sec), the output current is set to 20 mA

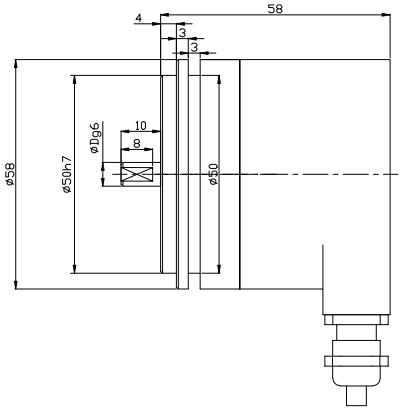
PH: Plug housing

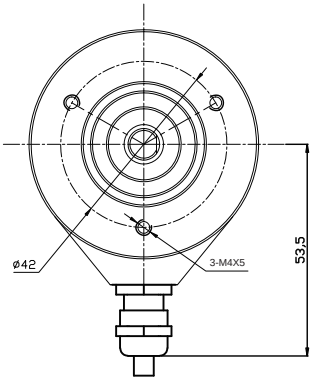
Attention: 1, Before initial start-up, unused outputs must be insulated.

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.

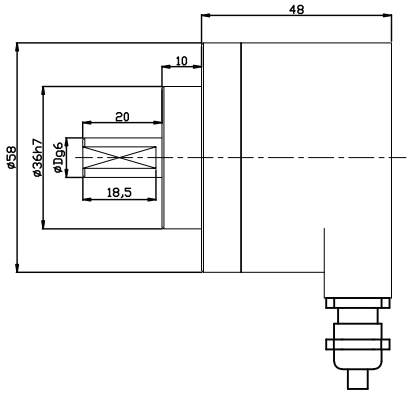
Dimensions (mm)

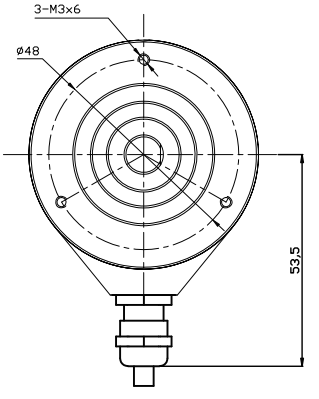
EAC58B Radial





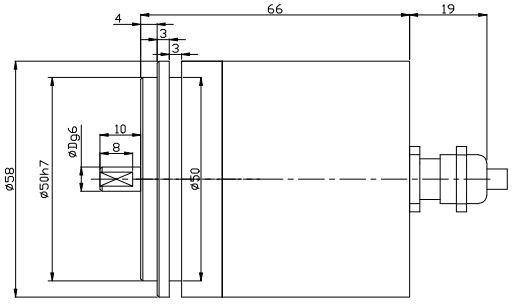
EAC58C Radial

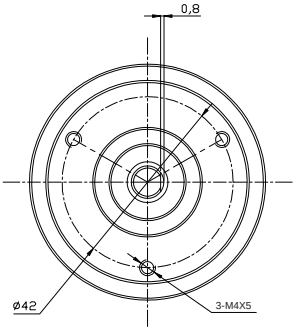




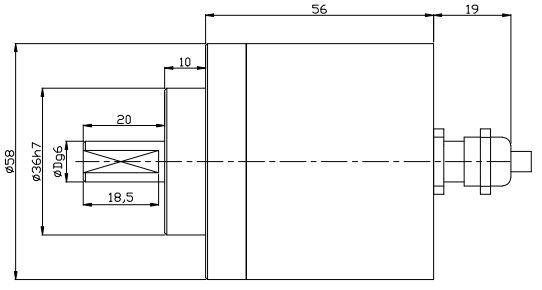
Dimensions (mm)

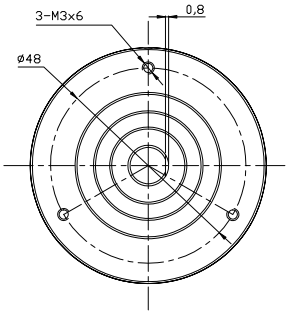
EAC58B Axial



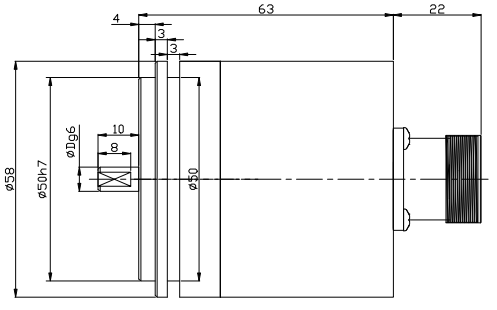


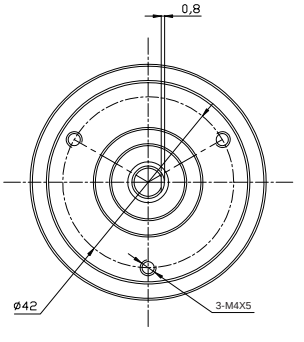
EAC58C Axial





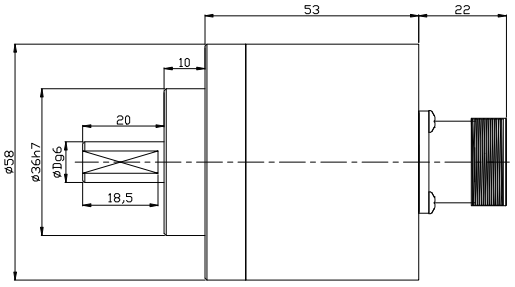
EAC58B M23 Axial

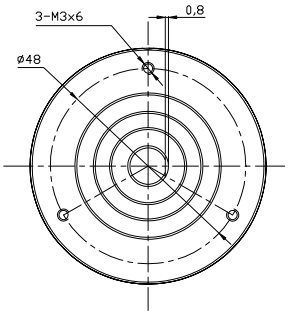




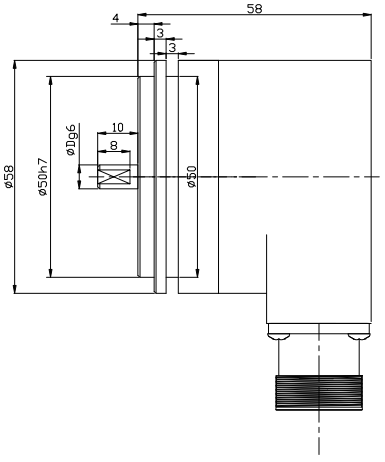
Dimensions (mm)

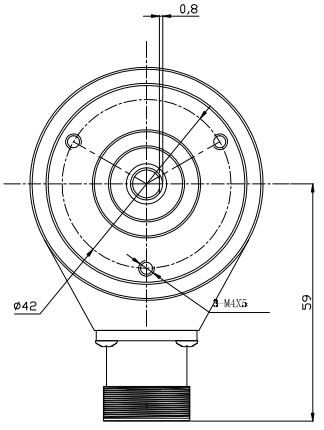
EAC58C M23 Axial



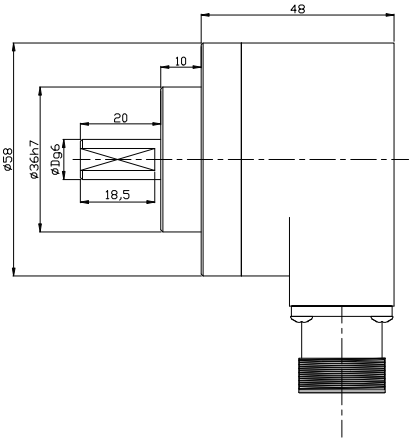


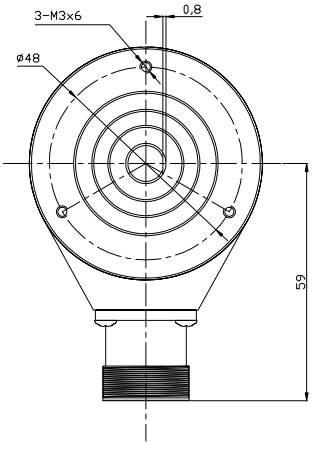
EAC58B M23 Radial





EAC58C M23 Radial





4…20 mA Analog Output Absolute Singleturn Encoder EAC58

Order Code

Shaft diameter
6 = Φ6 mm
EAC58B
10 = Φ10 mm

Outlets direction
R = radial
A = axial

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

Flange type
B = synchro flange, shaft Φ6 length10 mm
C = Φ36 clamping flange, shaft length 20 mm

EAND = 4...20 mA

Resolution
Singleturn resolution 8192 (13 bits)

Housing diameter
58=housing diameter

Type of connection
PC = 12-core cable (1.5 m)
T = M23, 12-pin plug

Series
EAC = 4...20 mA analogue interface

Supply voltage
S6 = 10...30 VDC
S5 = 5 VDC

Standard Absolute Singleturn Encoder EAC58

Description

Standard absolute singleturn encoder EAC58 series can be widely used in various industrial environments. The series also has a good performance against mechanical damage and can withstand higher axial and radial load. Various flange types and connections are available. EAC58 series also has the RESET function and resolution up to 8192.

Features

- Pre-screwed holes for easy installation
- Waterproof seal provides greater IP level
- Durable stainless steel shaft
- Metal housing for shock resistance
- Protection class IP65
- Reverse connection protection and short circuit protection

Mechanical parameters

Shaft diameter	Φ6/Φ8/Φ9/Φ10h8 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
Axial load capacity	60 N
Radial load capacity	120 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10^9 revolution
Rotor moment of inertia	1.8×10^{-6} kgm^2
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20...+80 °C
Storage temperature	-25...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360 g

Resolution

SSI: 1024, 2048, 4096, 8192

Parallel: 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192

Electrical parameters

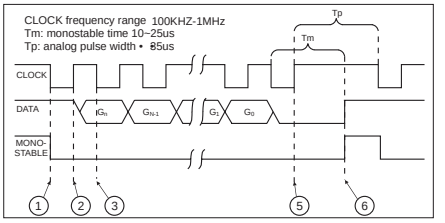
Output circuit	SSI	SSI	Parallel	Parallel
Output driver	RS422	RS422	Push-pull/NPN open collector	
Resolution	13 Bits	13 Bits	13 Bits	13 Bits
Supply voltage	10...30 VDC	5 VDC	10...30 VDC	5 VDC
Power consumption (no load)	≤200 mA	≤200 mA	≤200 mA	≤200 mA
Permissible load (channel)	±20 mA	±20 mA	±20 mA	±20 mA
Pulse frequency	Max. 1 MHZ	Max. 1 MHZ	Max. 40 kHz	Max. 40 kHz
Signal level high	Typ.3.8 V	Typ.3.8 V	MinUb-2.8 V	Min. 3.4.V
Signal level low	Max. 0.5 V	Max. 0.5 V	Max. 2.0 V	Max. 0.5 V
Rise time Tr	Max. 100 ns	Max. 100 ns	Max. 0.2 μs	Max. 0.2 μs
Fall time Tf	Max. 100 ns	Max. 100 ns	Max. 0.2 μs	Max. 0.2 μs

Standard Absolute Singleturn Encoder EAC58

Terminal Configuration

SSI Wiring Guide

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



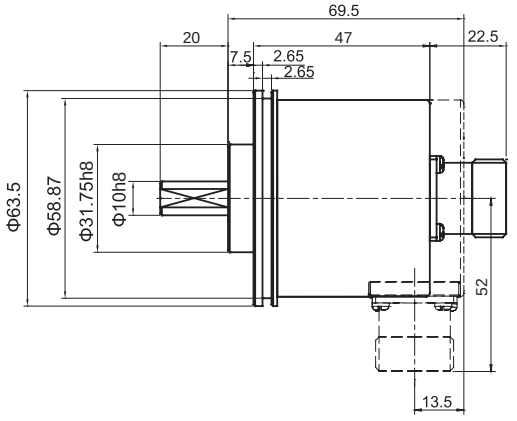
Parallel Wiring Guide

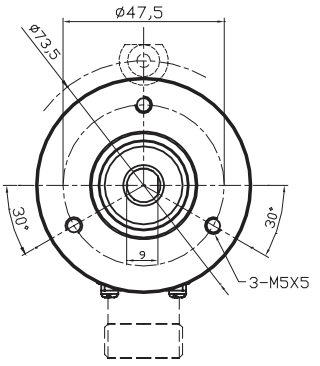
Signal	0V	+U_b	bit0	bit1	bit2	bit3	bit4	bit5	bit6	bit7	bit8	bit9	bit10	bit11	bit12	V/R *	ST *
Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	PL	GY/PK	RD/BU	WH/GN	BN/GN	WH/YE	YE/BN	WH/GY
17-pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Gray	/	/	1	2	3	4	5	6	7	8	9	10	11	12	13	/	/
Binary																	

Attention
Bite definition of parallel interface for an absolute encoder is：bit0=MSB,bit1=MSB-1,bit2=MSB-2,.....

Dimensions (mm)

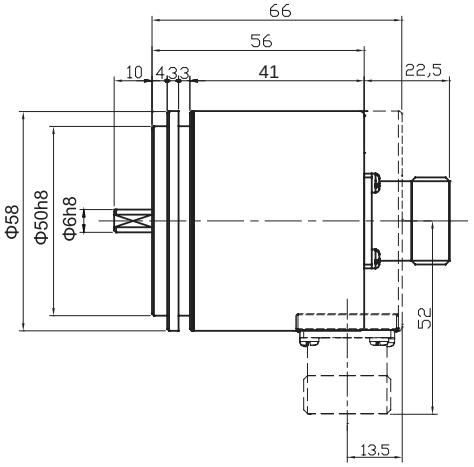
EAC58A

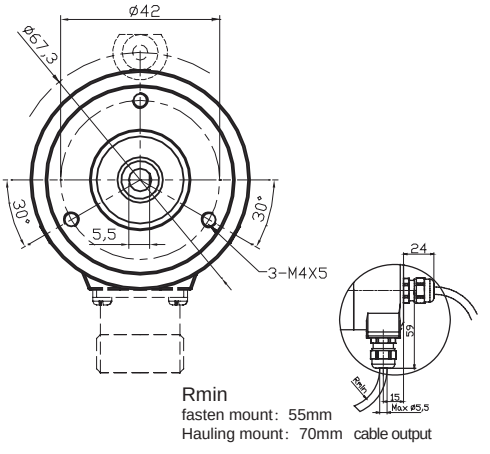




servo-restraint ring：
58PXL (see installation accessories for reference)

EAC58B

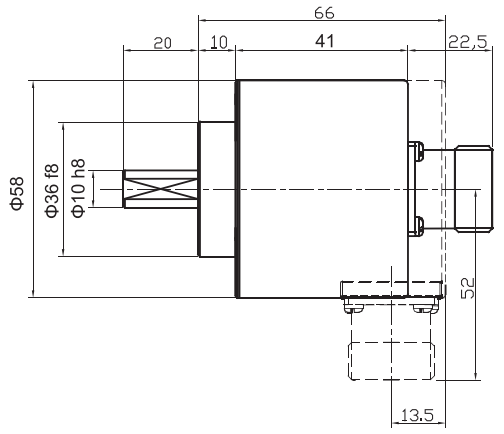


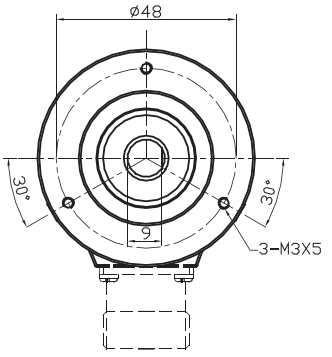


Rmin
fasten mount：55mm
Hauling mount：70mm cable output

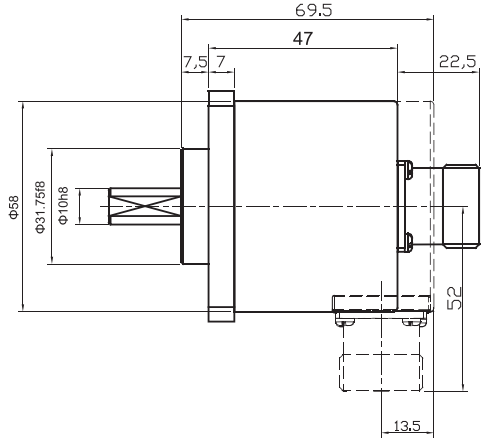
Dimensions (mm)

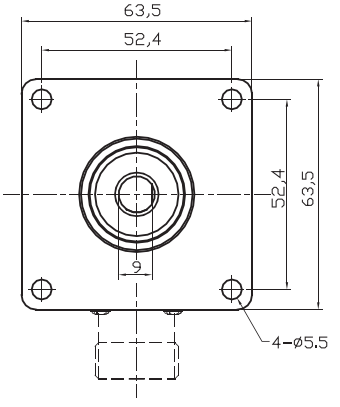
EAC58C





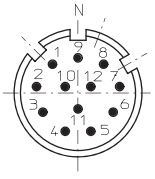
EAC58D



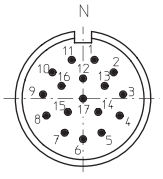


Attention:Do not use excessive force during hardwiring between drive shaft, flange and encoder to prevent shaft damage from overload.

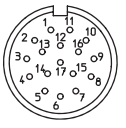
Top view of 12-pin encoder



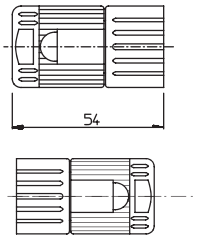
Top view of 17-pin encoder



Hole arrangement for of 17-pin connector



Size



Standard Absolute Singleturn Encoder EAC58

Order Code:

EAC 58 C 10 – G S6 X PC R – 8192 EU . XXXX

Series
EAC=absolute singleturn series

Housing dimensions
58= housing dimensions

Flange type
A=Φ31.75 clamping flange, shaft length 20 mm
B=synchronous flange, shaft length 10 mm
C=Φ36 clamping flange, shaft length 20 mm
D=63.5 square flange, Φ31.75,shaft length 20 mm

Shaft diameter
6=Φ6 mm (EAC58B)
8=Φ8 mm
9=Φ9.52 mm (3/8")
10=Φ10 mm

Output Code
G=Gray Code
B=Binary

Interface & Supply voltage

P6=Push-Pull (standard positive logic)	10...30 VDC
P5=Push-Pull (standard positive logic)	5 VDC
S6=SSI (synchronous serial interface)	10...30 VDC
S5=SSI (synchronous serial interface)	5 VDC
C6=NPN open collector (standard negative logic)	10...30 VDC

Output logic
P=Positive logic (parallel)
N=Negative logic (parallel)
X= No definition(SSI)

Types of connection
PC=12-core cable (SSI) standard length 1.5m
T=M23, 12-pin connector (SSI)
PD=18-core cable (parallel) standard length 1.5m
TA=M23, 17-pin connector (parallel)

Outlets direction
R=radial
A=axial

Resolution
singleturn resolution
(see previous pages for reference)
Max 8192 (13 bits)-parallel
standard 8192 (13 bits)-SSI

Standard Absolute Singleturn Encoder

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

Connector accessories
Connectors matching with "T" wiring
Ordering code：TMSP1612F
Connectors matching with "TA" wiring
Ordering code：TMSP1617F

This sample is for reference only, please subject to the actual products.
Please contact ELCO for further specification requests and requirements.

Standard Hollow Shaft Absolute Singleturn Encoder EAC58P

Description

Standard absolute singleturn encoder EAC58P series can be widely used in various industrial environments. The series also has a good performance against mechanical damage, and withstanding higher axial and radial load. Various flange types and connections are available. EAC58P series is also equipped with the RESET function with resolution up to 8192.

Features

- Hollow shaft installation saves space with "C" ring lock
- Φ8/10/12 hollow shaft for easy applications
- Waterproof seal provides greater IP level
- Metal housing is capable of withstanding higher axial and radial loads
- Protection class IP65
- Output cables or connectors are available for easy maintenance

Mechanical parameters

Hollow shaft diameter	Φ8/Φ10/Φ12H7 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
Axial load capacity	60 N
Radial load capacity	1200 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10^9 revolution
Rotor moment of inertia	1.8×10^{-6} kgm^2
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20...+80 °C
Storage temperature	-25...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360 g

Resolution

SSI: 1024, 2048, 4096, 8192

Parallel: 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192

Electrical parameters

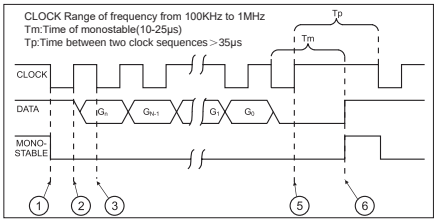
Output circuit	SSI	SSI	Parallel	Parallel
Output driver	RS422	RS422	Push-pull/NPN OC	
Resolution	13 Bits	13 Bits	13 Bits	13 Bits
Supply voltage	10...30 VDC	5 VDC	10...30 VDC	5 VDC
Power consumption (no load)	≤200 mA	≤200 mA	≤200 mA	≤200 mA
Permissible load (channel)	±20 mA	±20 mA	±20 mA	±20 mA
Pulse frequency	Max. 1 MHZ	Max. 1 MHZ	Max. 40 kHz	Max. 40 kHz
Signal level high	Typ. 3.8 V	Typ. 3.8 V	Typ.Ub-2.8 V	Typ. 3.4 V
Signal level low	Max. 0.5 V	Max. 0.5 V	Max. 2.0 V	Max. 0.5 V
Rise timeTr	Max. 100 ns	Max. 100ns	Max. 0.2 μs	Max. 0.2 μs
Fall timeTf	Max. 100 ns	Max. 100ns	Max. 0.2 μs	Max. 0.2 μs

Standard Hollow Shaft Absolute Singleturn Encoder EAC58P

Terminal Configuration

SSI Wiring Guide

Signal	0V	+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



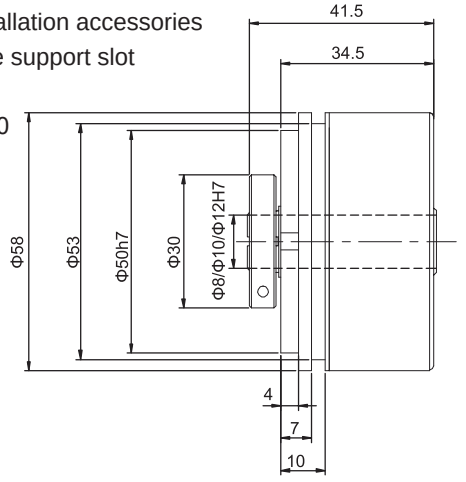
Parallel

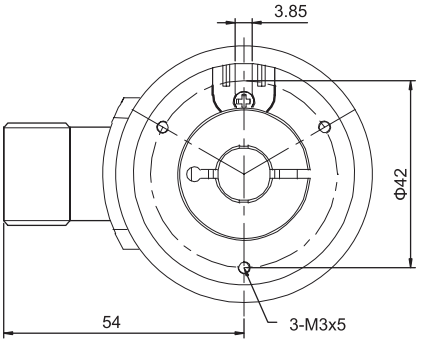
Signal	0V	+U_b	bit0	bit1	bit2	bit3	bit4	bit5	bit6	bit7	bit8	bit9	bit10	bit11	bit12	V/R*	ST *
Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY/PK	RD/BU	WH/GN	BN/GN	WH/YE	YE/BN	WH/GY
12-pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Gray	/	/	1	2	3	4	5	6	7	8	9	10	11	12	13	/	/
Binary																	

Attention
Bite definition of parallel interface for an absolute encoder is: bit0=MSB, bit1 =MSB-1, bit2=MSB-2,

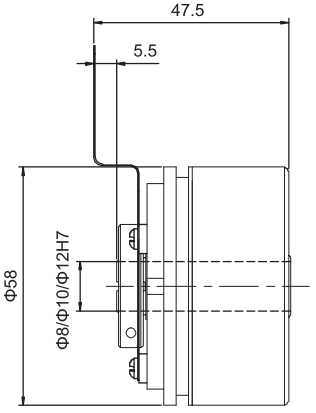
Dimensions (mm)

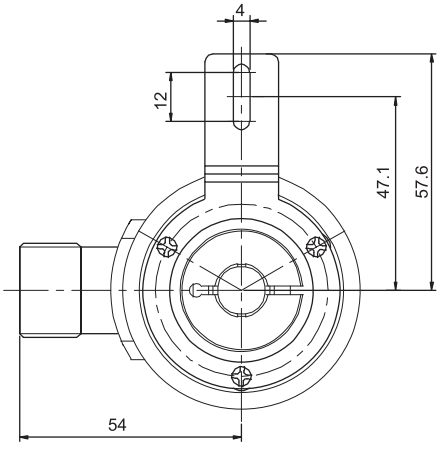
EAC58P(Q)
P without installation accessories
Q short torque support slot
Accessories:
E23230010A/0





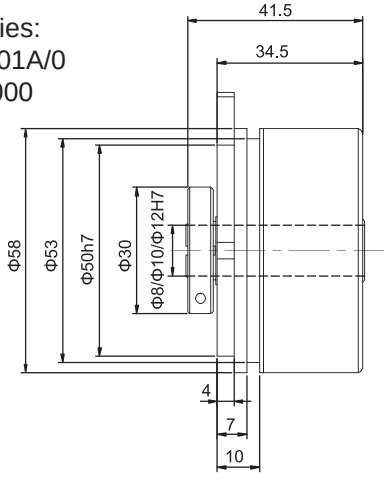
EAC58H
Accessories:
E41350050A/0

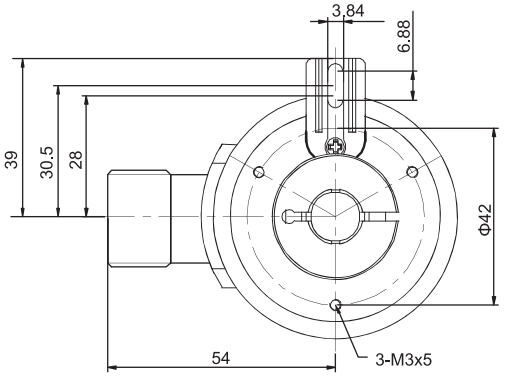




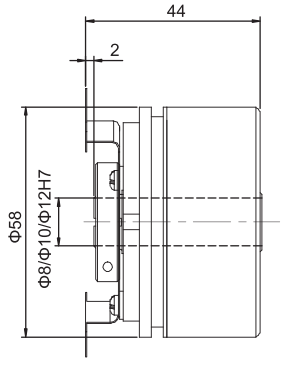
Dimensions (mm)

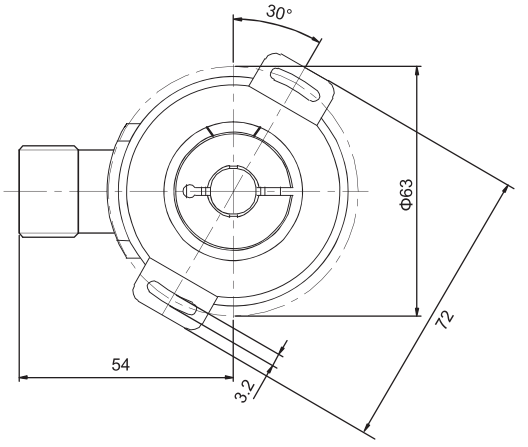
EAC58K
Accessories:
E41220001A/0
E4700 0000





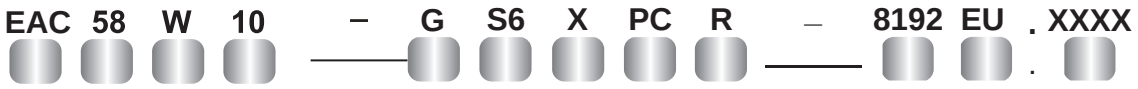
EAC58W
Accessories:
E41350042A/1





Standard Hollow Shaft Absolute Singleturn Encoder EAC58P

Order Code:



Series
EAC = standard absolute singleturn

Housing dimensions
58=housing diameter

Flange type
P=without installation accessories
H=tether arm
Q=short torque support slot
K=long torque support slot
W=double-winged stator coupling

Hollow Shaft diameter
8=Φ8 mm
9=Φ9.52 mm
10=Φ10 mm
12=Φ12 mm

Output Code
G=Gray Code
B=Binary

Interface & Supply voltage

P6=Push-Pull (standard positive logic)	10...30 VDC
P5=Push-Pull (standard positive logic)	5 VDC
S6=SSI (synchronous serial interface)	10...30 VDC
S5=SSI (synchronous serial interface)	5 VDC
C6=NPN open collector (standard negative logic)	10...30 VDC

Output logic
P=Positive logic (parallel)
N=Negative logic (parallel)
X= No definition(SSI)

Types of connection
PC=12-core cable (SSI)
standard length 1.5 m
T=M23, 12-pin connector (SSI)
PD=18-core cable (parallel)
standard length 1.5 m
TA=M23, 17-pin connector (parallel)

Outlets direction
R=radial
A=axial

Resolution
singleturn resolution
(see previous pages for reference)
Max 8192 (13 bits)-parallel
standard 8192 (13 bits)-SSI

Standard Absolute Singleturn Encoder

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

Connector accessories
Connectors matching with "T" wiring
Ordering code: TMSP1612F
Connectors matching with "TA" wiring
Ordering code: TMSP1617F

This sample is for reference only, please subject to the actual product.
Please contact ELCO for further specification requests and requirements.

4...20mA Analog Output Absolute Multiturn Encoder EAM58

Description

4...20mA Analog output absolute multiturn encoder EAM58 series, designed with compact structure is capable to withstand higher axial and radial loads. European standard flanges provide great convenience in installation. The encoder can provide 16 bits and 4...20mA analog and data outputs to meet the specific interface needs of PC. Multiple configurations of resolution and number of turns are available to meet different application requirements.

Features

- European standard flange
- Waterproof seal provides greater IP level
- Pre-screwed holes for convenience purpose
- Durable stainless steel shaft
- Metal housing for better shock resistance
- Protection class IP65
- Output cables or connectors are available for easy installation and maintenance
- 4...20mA Analog output

Mechanical parameters

Shaft diameter	Φ6g6/Φ8g6/Φ10g6 mm
Hollow shaft diameter	Φ8H7/Φ10H7/Φ12H7/Φ15H7 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
Axial load capacity	80 N
Radial load capacity	160 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10^9 revolution
Rotor moment of inertia	1.8×1^{-6} kgm^2
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	Zn AL-alloy
Operating temperature	-40...+80 °C
Storage temperature	-45...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360...750 g

Electrical parameters

Output circuit	4...20 mA	0...10 V
Supply voltage(U_b)	10...30 VDC/5 VDC	10...30 VDC
Power consumption typ.	70 mA	70 mA
No load Max.	84 mA	84 mA
Word change frequency	Max 15.000/s	Max. 15.000/s
Current loop supply voltage	10...30 VDC	10...30 VDC
Analogue signal	4... 20 mA	0...10 V
Max. input resistance	200 Ω	200 Ω
Measuring range	Based on actual resolution	Based on actual resolution
Max. sensitivity (25˚C)	0.2°	0.2°
Resolution	16 Bit	16 Bit
Building up time	Max. 2 ms	Max. 2 ms
Temperature coefficient	0.1° /10 K	0.1° /10 K
Power consumption (no load)	≤3.5 mA	≤3.5 mA
Sensors must be electrically insulated from current loop.		

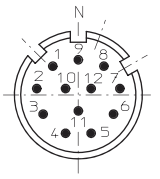
Conforms to CE requirements: EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3

4...20mA Analog Output Absolute Multiturn Encoder EAM58

Terminal Configuration

Voltage signal	0V	$+U_b$	VOUT+	VOUT-	VIN+	VIN-	STZ	VR	STT	—	—	—	⏚
Current Signal	0V	$+U_b$	—	—	+I	-I	STZ	VR	STT	—	—	—	⏚
Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY/PK	RD/BU	
Gray	1	2	3	4	5	6	7	8	9	10	11	12	PH

Top view of the connecting end on needle connector block 12-pin plug



+I: Input of current loop

0V/+U_b and VIN+/VIN-: can be powered together or separately

-I: Output of current loop

VOUT+/VOUT-: voltage output

VIN-/VOUT-: connected in circuit

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

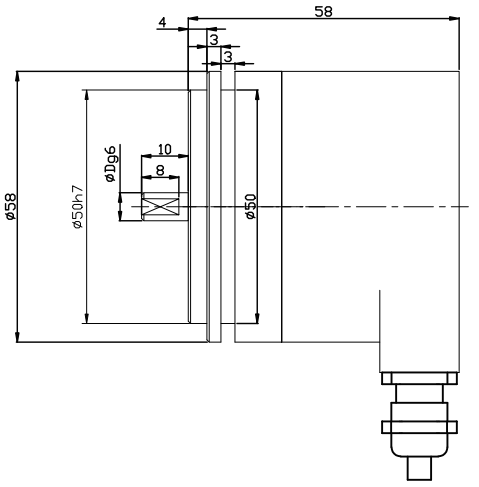
STT input: SET input (signal level remains high for 2 sec), the output current is set to 20 mA

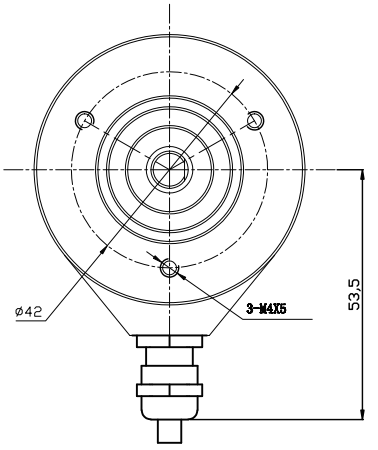
PH: Plug housing

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...20 mA, and the present position output is at 4 mA.

Dimensions (mm)

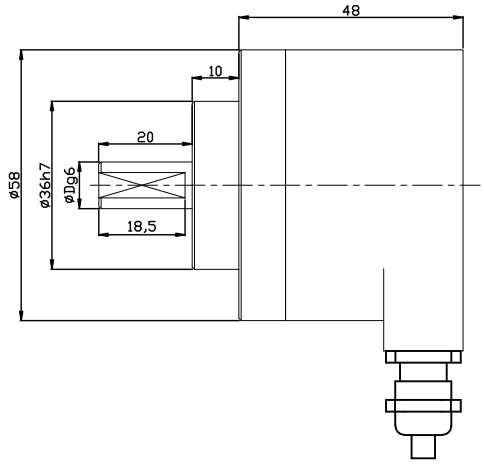
EAM58B

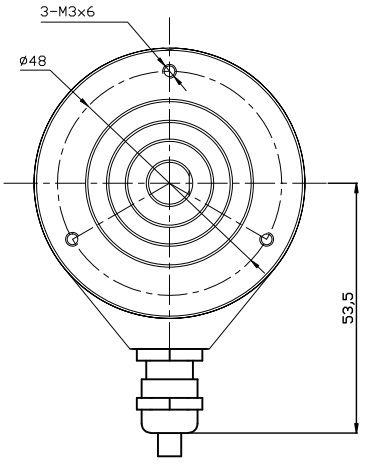




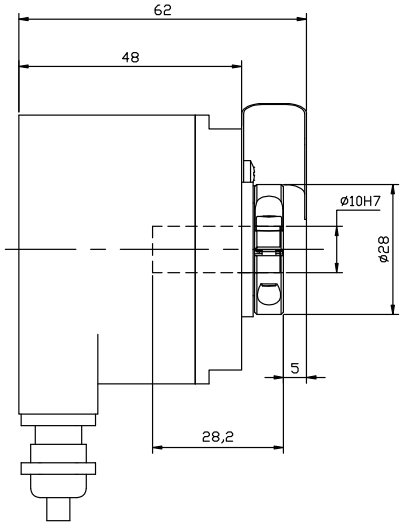
Dimensions (mm)

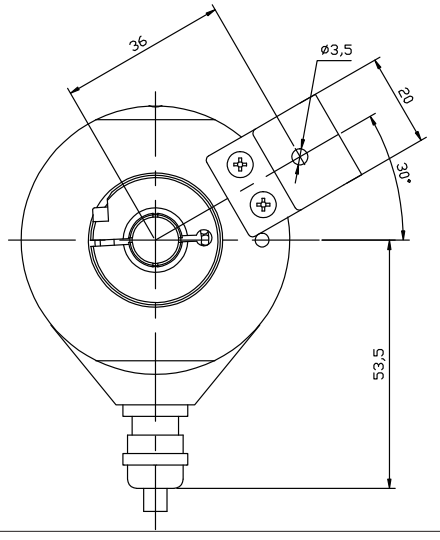
EAM58C





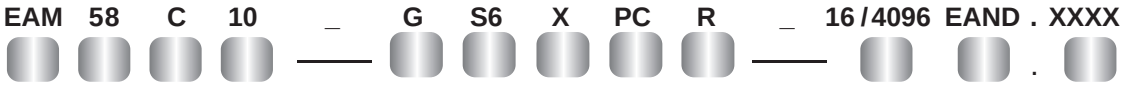
EAM58F





4...20mA Analog Output Absolute Multiturn Encoder EAM58

Order Code



Series
EAM=4...20 mA analogue interface

Housing diameter
58=housing diameter

Flange type
B = synchro flange,
shaft Φ6 length 10 mm
C = Φ36 clamping flange,
shaft length 20 mm
F = hollow shaft flange,
single-winged spring
leaf installation

Shaft diameter
6=Φ6 mm
EAM58B
10=Φ10 mm

EAM58F
8=Φ8H7 mm
10=Φ10H7 mm
12=Φ12H7 mm
15=Φ15H7mm

Supply voltage
S6 = 10...30 VDC
S5 = 5 VDC

Type of connection
PC=12-core cable (1.5 m)
T=M23, 12-pin plug

Outlets direction
R=radial
A=axial

Resolution
Singleturn resolution Max. 8192 (13 bits)
Multiturn resolution Max. 65536 (16 bits)
Attention: Add “D” for including resolution cable box.

EAND=4...20 mA
EVND=0...10 V

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

Standard Absolute Multiturn Encoder EAM58

Description

Standard absolute multi-turn encoder EAM58 series has good performance against mechanical damage and can withstand higher axial and radial load. By using gear suite with unique algorithm to realize the compact structure and hollow shaft diameter up to Φ 15mm. The special processing chip with high accuracy and high stability is adopted, to ensure the single-turn resolution up to 19 bit and meet the high-precision control requirement of the field.

Features

- Various flanges available
- Mechanical multi-turn design
- Waterproof seal improves IP level
- Hollow shaft diameter up to Φ15 mm
- Metal housing for shock resistance
- Protection class IP65
- Output cable or connector available
- Various revolutions and resolutions available

Mechanical parameters

Shaft diameter	Φ6g6/Φ8g6/Φ10g6 mm
Hollow shaft diameter	Φ8H7/Φ10H7/Φ12H7/Φ15H7 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
Axial load capacity	80 N
Radial load capacity	160 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10...2000 Hz
Bearing life	10^9 revolution
Rotor moment of inertia	1.8×10^{-6} kgm^2
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	Zn AL-alloy
Operating temperature	-40...+80 ˚C
Storage temperature	-45...+85 ˚C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360...750 g

Electrical parameters

Output circuit	SSI	SSI
Output driver	RS422	RS422
Resolution	Max.19 bits	Max.19 bits
Revolution	12bits	12 bits
Supply voltage	10-30 VDC	5 VDC
Power consumption (no load)	≤200 mA	≤200 mA
Permissible load (channel)	±20 mA	±20 mA
Pulse frequency	Max15 kHz	Max15 kHz
Signal level high	Typ.3.8 V	Typ.3.8 V
Signal level low	Max. 0.5 V	Max. 0.5 V
Rise timeTr	Max 100 ns	Max 100 ns
Fall timeTf	Max 100 ns	Max 100 ns

Terminal Assignment

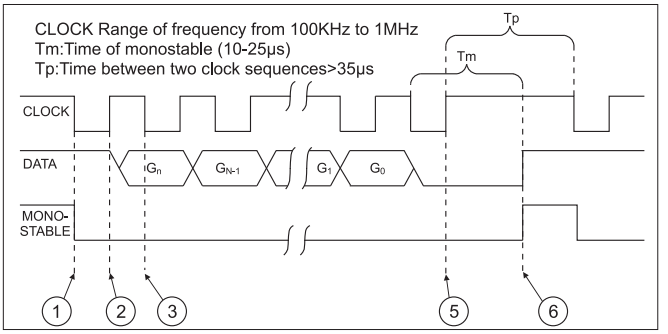
SSI

Signal	0V	+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

ST: Reset input, the current position value is stored as new zero position

VR:Up/down input, as this input is active, decreasing code values are transmitted when shaft turning clockwise.

Operating principle

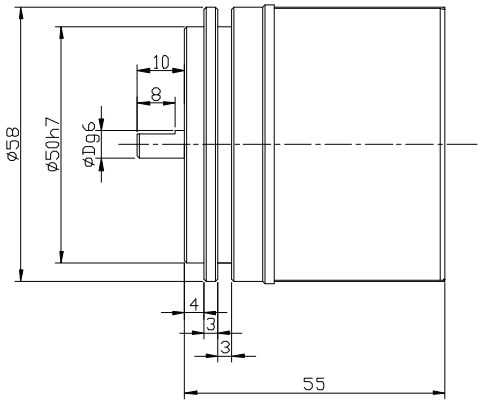


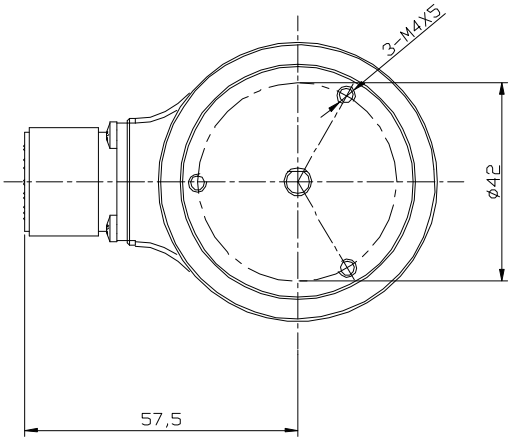
In rest conditions, the CLOCK and DATA lines are at a high logical level and the mono-stablecircuit is disabled (high level).

1. 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.
2. On the CLOCK signal ascent front, the most significant bit (MSB) is placed in the output on the DATA line.
3. 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.
4. 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.
5. 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.
6. Once the mono-stable time (Tm) has elapsed, the DATA line returns to a high logical level and the mono-stable disables itself.

Dimensions (mm)

EAM58B

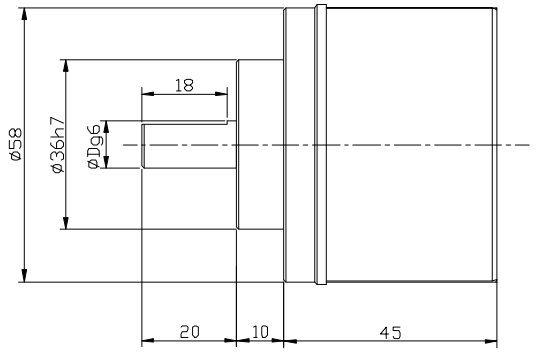


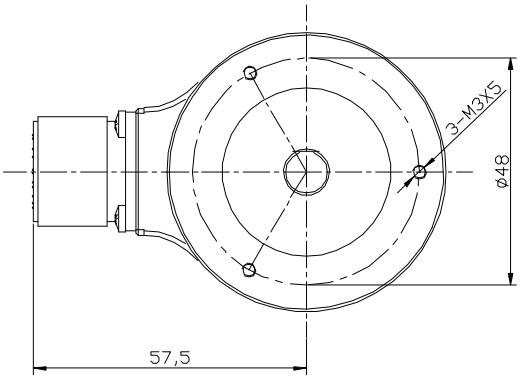


Standard Absolute Multiturn Encoder EAM58

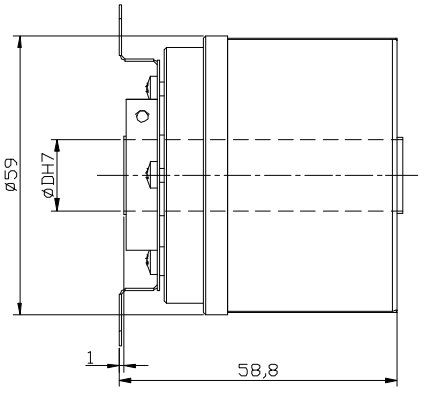
Dimensions (mm)

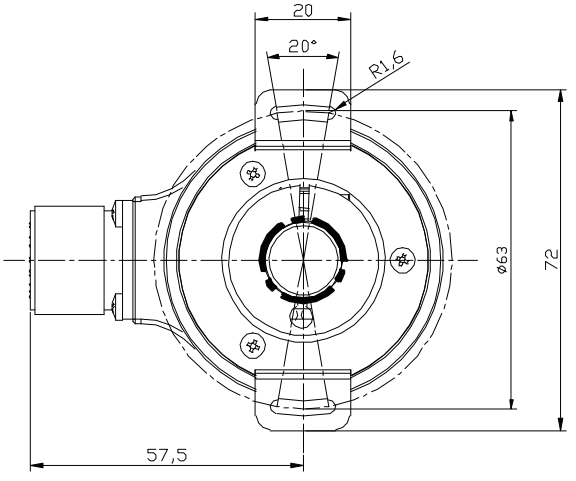
EAM58C





EAM58W





Standard Absolute Multiturn Encoder EAM58

Order Code

EAM 58 C 10 — G S6 X PC R — 4096/8192 EU

Series

EAM = standard absolute multiturn

Housing diameter

58 = Φ58

Flange type

B = synchro flange, shaft length 10mm

C = Φ36 clamping flange, shaft length 20mm

W = hollow shaft flange,double-winged spring leaf installation

Shaft/Hollow Shaft diamter

Only for flange type 58B, 58C

6=Φ6g6mm

8=Φ8g6mm

10=Φ10g6mm

Only for flange type 58W

8=Φ8H7mm

10=Φ10H7mm

12=Φ12H7mm

15=Φ15H7mm

Code type

G=Gray

B=Binary

Output & Supply voltage

S6=SSI(synchro serial interface) 10...30 VDC

S5=SSI(synchro serial interface) 5 VDC

Output logic

X= No definition(SSI)

Type of connection

PC=12-core cable(SSI), standard length 1.5m

T=M23,12-pin connector(SSI)

Outlets direction

R=radial

Resolution

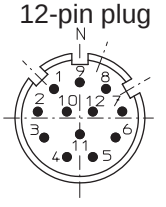
revolution/singleturn resolution

revolution:12bits

resolution: max. 19bits

Standard absolute multiturn

12-pin plug



Connection accessories

Connection matching with“T”wiring

Ordering code: TMSP1612F

This sample is for reference only,take products as the standard

Profibus-DP Interface Absolute Multiturn Encoder EAM58

Description

Profibus-DP interface absolute multiturn encoder EAM58 series are capable of withstanding mechanical damage and higher axial and radial loads. Various types of flanges can be adapted to meet different requirements. It complies with Profibus protocol,and has the max resolution up to 8192 and the max revolution up to 4096. The resolution and revolution can be configured in accordance with customer requirements. Its high speed communication and anti-interference capabilities deliver stable operation.

Features

- Various types of flanges available
- Pre-screwed holes for the convenience of customer
- Waterproof seal provides greater IP level
- Cable output, convenient in installation and maintenance
- Protection class IP65
- Metal housing for better shock resistance
- Conforming to Profibus-DP protocol, programmable revolution and resolution

Mechanical parameters

Shaft diameter (mm)	Φ6g6	-(58B)
	Φ8g6	-58A/B/D/EA
	Φ9.52(3/8")g6	-58A/D/E
	Φ10g6	-58C
Hollow shaft diameter (mm)	Φ8H7/Φ9.52H7/Φ10H7	-58W
	Φ12H7/Φ14H7/ Φ15H7	-58W
Protection acc. to EN 60529	IP65	
Speed	6000，continuous	
Axial load capacity	80N	
Radial load capacity	160N	
Shock resistance	50G/11ms	
Vibration resistance	10G 10~2000Hz	
Bearing life	10^9 revolution	
Rotor moment of inertia	approx.1.8×10^{-6} kgm^2	
Starting torque	<0.05Nm	
Body material	ALUNI 9002/5 -(D11S)	
Housing material	AL6060	
Flange material	ALUNI 9002/5 -(D11S)	
Operating temperature	-40 ... +80 °C	
Storage temperature	-45 ... +85 °C	
Relative humidity/condensation	90%, Condensation not permitted	
Weight	~800g -58B/C, 63A/D/E	

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

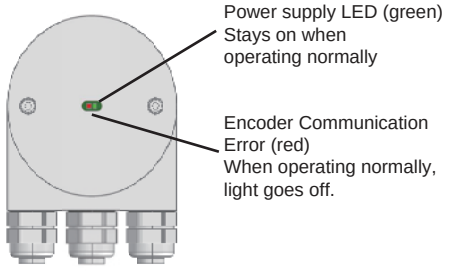
Electrical parameters

Revolution	4096 (12 bits)
Resolution/revolution	8192 (13 bits)
Supply voltage	10...30 Vdc
Power consumption (no load)	300 mA
Baud rate	12 Mbaud
Linearity	+/- 1/2 LSB
Output frequency	Max 100 KHz

Terminal Assignement

+V	Supply voltage (24VDC)	
0V	Ground	
A	Profibus-DPline output	(GN)
B	Profibus-DPline output	(RD)
A	Profibus-DPline input	(GN)
B	Profibus-DPline input	(RD)

Profibus-DP Interface Absolute Multiturn Encoder EAM58



Back of the encoder wiring box

Introduction

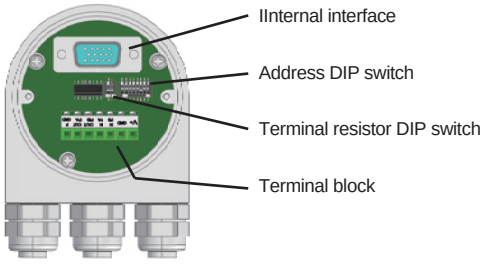
The Profibus-DP Bus multiturn absolute encoder (identification code 0x0CCA) conforms to the Profibus-DP standards as described in the European Standard EN 50170 volume 2. It also complies with the existing encoder regulation document: “Profibus Profile for Encoders, Order No. 3062”.
The Profibus-DP interface 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.

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



Inside of the encoder wiring box

Installation

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).

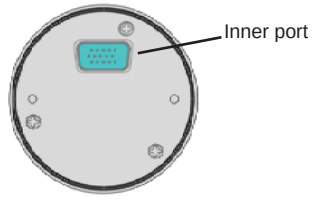
2- Wire the encoder into the Profibus network. Whether wiring it in the middle or at the terminal are depending on the physical position of the device in the bus.

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.

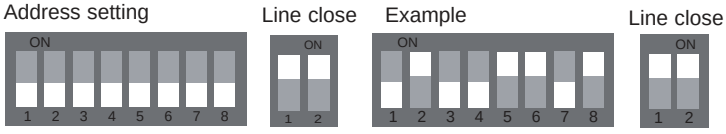
Note: To set and configure the slave into the Profibus-DP master, it is necessary to use the “gsd” file delivered with the encoder. The file can be found on the CD.



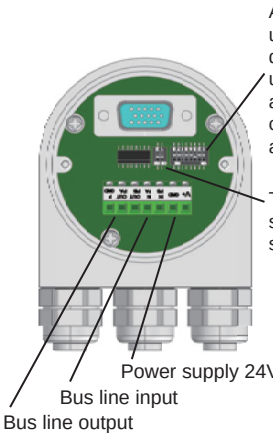
Back cover of the encoder

DIP-switches setup (configuring slave address)

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 top digit, and bit 1 is the lowest digit. Bit 8 is used for changing the counter direction. Bit 1 to bit 7 are used to configure encoder’s address.



Profibus-DP Interface Absolute Multiturn Encoder EAM58



DIP-switches setup (configuring slave address)

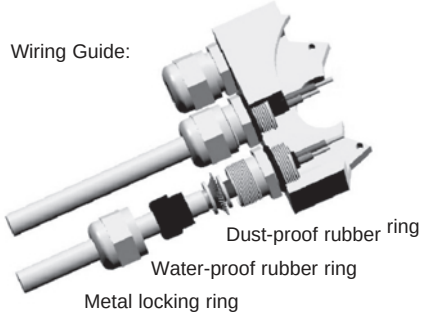
Usually, an A type cable is used to wire a DP/FMS network. This cable has to have the following characteristics:

Parameter	A type cable
Characteristic resistance（Ω）	135…165at a certain frequency（3…20Mhz）
Rated capacity（PF/m）	<30
Loop resistance （Ω/Km）	<=110
Core diameter（mm）	>0.64*）
Core cross-section（mm^2）	>0.34*）

This cable allows the optimal network utilization. In fact, it is possible to reach the maximum communication speed allowed (12Mbaud). 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	1200m	1200m	1200m	1000m	400m	200m	100m

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

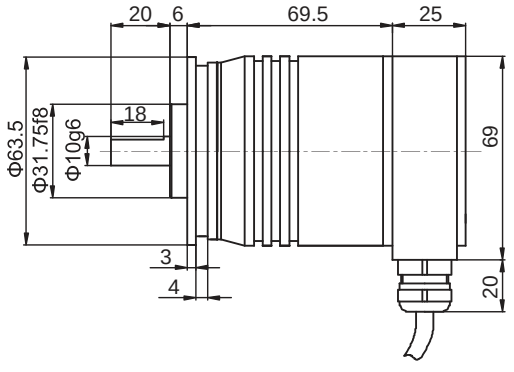
According to EN50170, a maximum of 4 repeaters are allowed between any two stations. Dependent on the repeater type and manufacturer, more than 4 repeaters may be allowed in some cases. Refer to the manufacturer's technical specification for details.

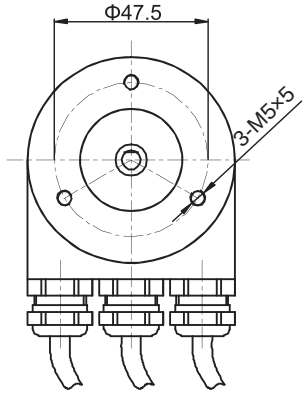
Wiring box

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

Dimensions (mm)

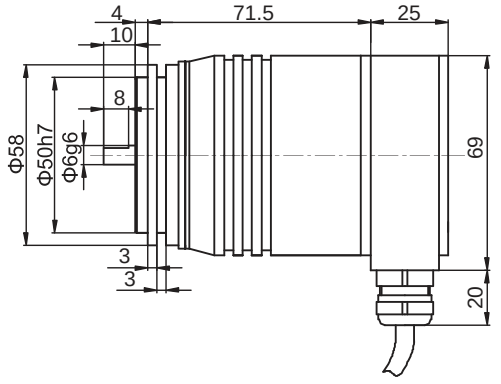
EAM58A

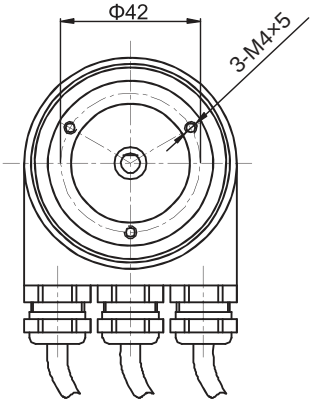




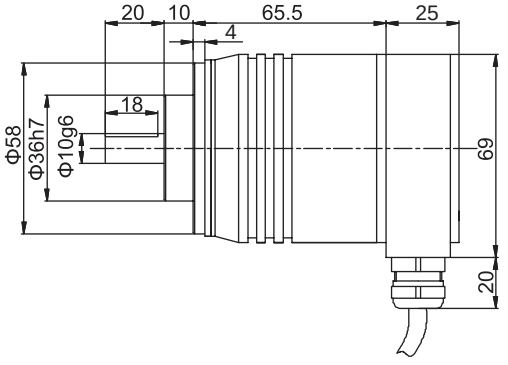
Dimensions (mm)

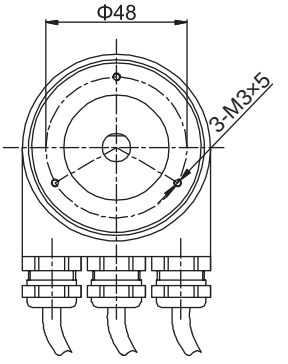
EAM58B



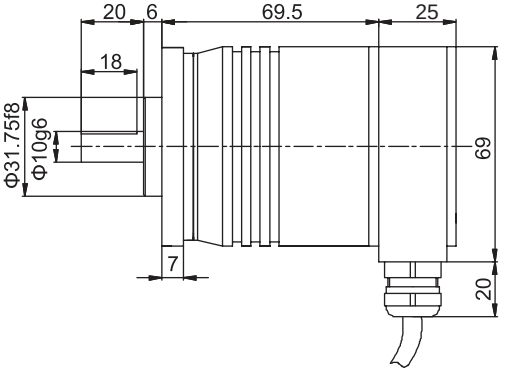


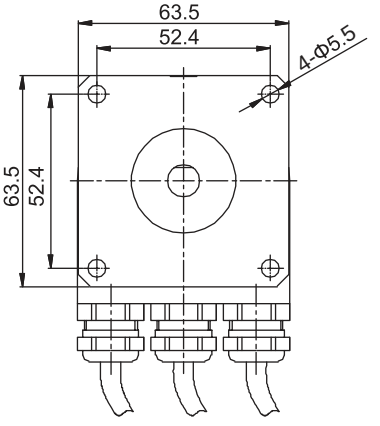
EAM58C





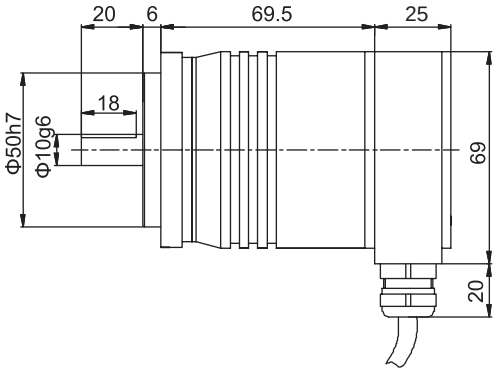
EAM58D

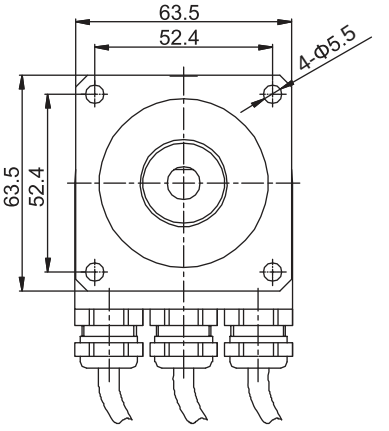




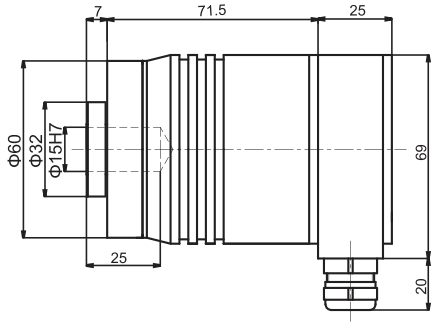
Dimensions (mm)

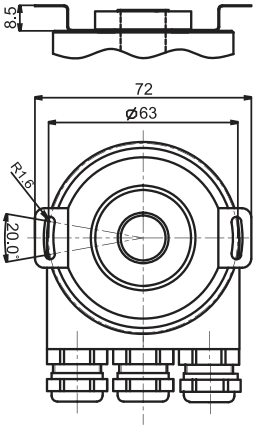
EAM58E





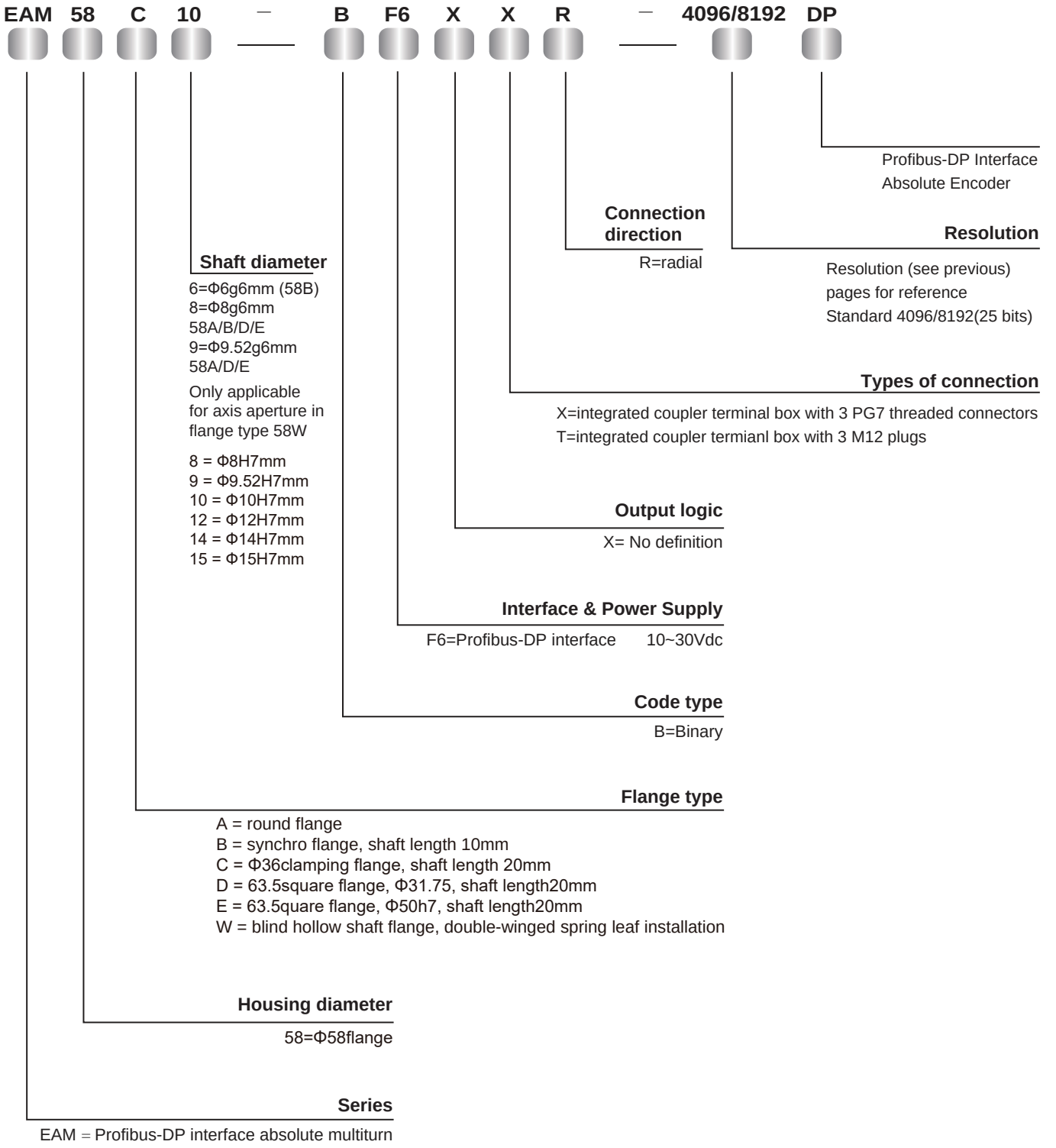
EAM58W





Profibus-DP Interface Absolute Multiturn Encoder EAM58

Order Code:



Profinet Absolute Multiturn Encoder

Description

Profinet absolute multiturn encoder has good performance against mechanical damage and can withstand higher axial and radial load. Various flanges could meet different requirements, conforming to Profinet IO protocol to ensure the max. resolution of 262144 and max. revolution of 4096, which can be adjusted according to customer's field requirements. Its high speed communication and good anti-interference ability make the operation of customer's equipment more stable.

Features

- 4 × LED status indicator, easy-to-read monitoring status
- 3 × M12 connector, fast connection
- PROFINET IO/RT has the function of intelligent diagnosis and high-speed data transmission
- Application parameters are configured via software to facilitate debugging and maintenance
- High speed data transmission, update time ≤1ms

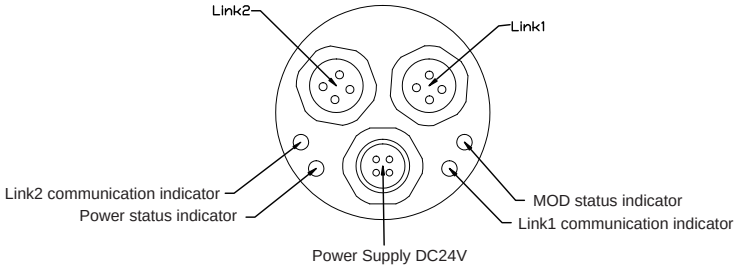
Mechanical parameters

Shaft diameter	Φ6g6 mm -58B Φ10g6 mm -58C
Hollow shaft diameter	Φ10H7 mm -58W
Protection class	IP65
Max. speed (r/m)	6000
Shaft load(axial)	40 N
Shaft load(radial)	80 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10...2000 Hz
Bearing life	10^9 revolution
Moment of inertia	Approx. $1.8x10^{-6}$ kgm^2
Starting torque	<0.05 Nm
Housing material	Al-alloy UNI 9002/5 -(D11S)
Cover material	Al-alloy 6060
Flange material	Al-alloy UNI 9002/5 -(D11S)
Operating temperature	-40...+80 °C
Storage temperature	-45...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	~600 g

Electrical parameters

Max. revolution	4096 (12 bits)
Max. resolution	262144 (18 bits)
Supply voltage	10...30 VDC
Current consumption (no load)	200 mA
Max. rate	100 Mbits/s
Linearity	12 bits+/- 1/2 LSB
Interface	PROFINET IO/RT Class C
Data transmission rate	10/100 Mbit/s
Encoder sub-protocol	V4.1 Class3

Profinet Absolute Multiturn Encoder

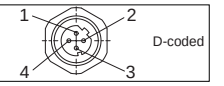


LED indicator

Power indicator	Green light on is normal, red light on is power failure, light off is no power
Communication indicator	Green light on is normal connection, blinking is data transmission in progress, light off is not connected
MOD status indicator	Green light on is working normally and the light off is abnormal

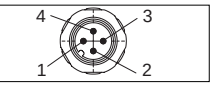
Data port 1

Signal	T×D+	R×D+	T×D-	R×D-
Pin No.	1	2	3	4



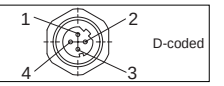
Power interface

Signal	+V	—	-V	—
Pin No.	1	—	3	—



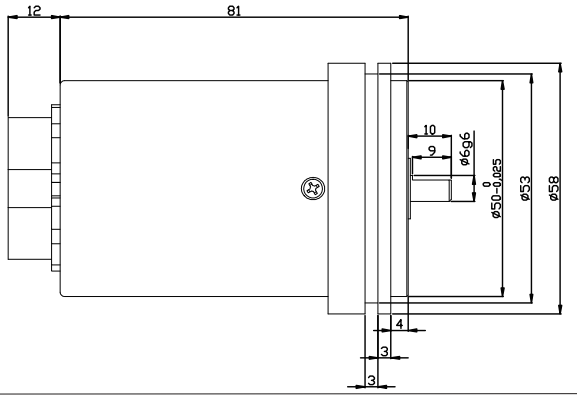
Data port 2

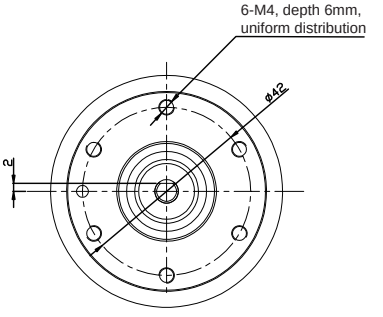
Signal	T×D+	R×D+	T×D-	R×D-
Pin No.	1	2	3	4



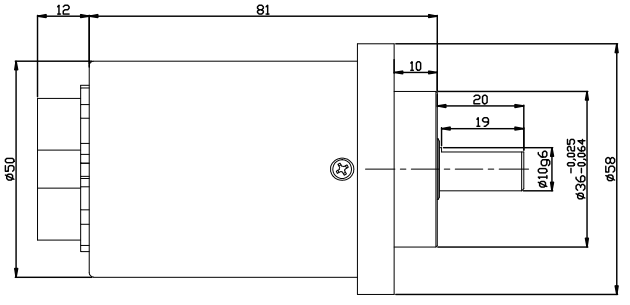
Dimensions (mm)

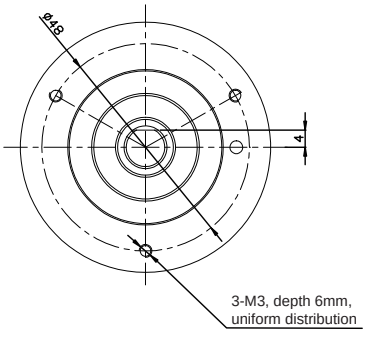
EAM58B Axial





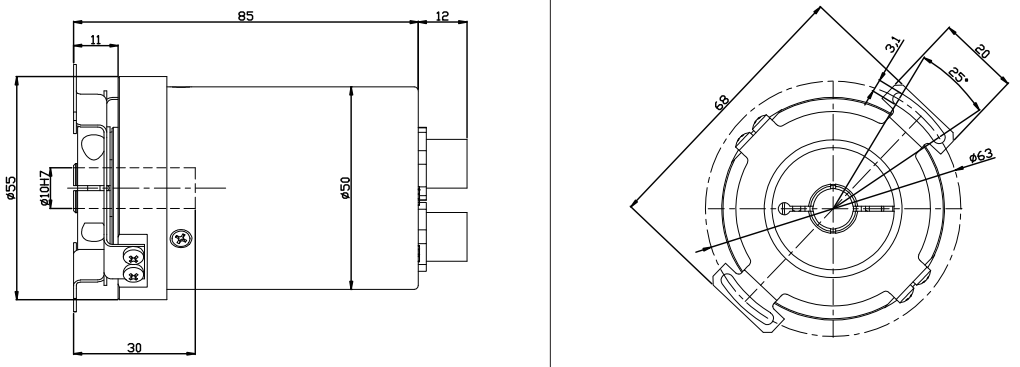
EAM58C Axial



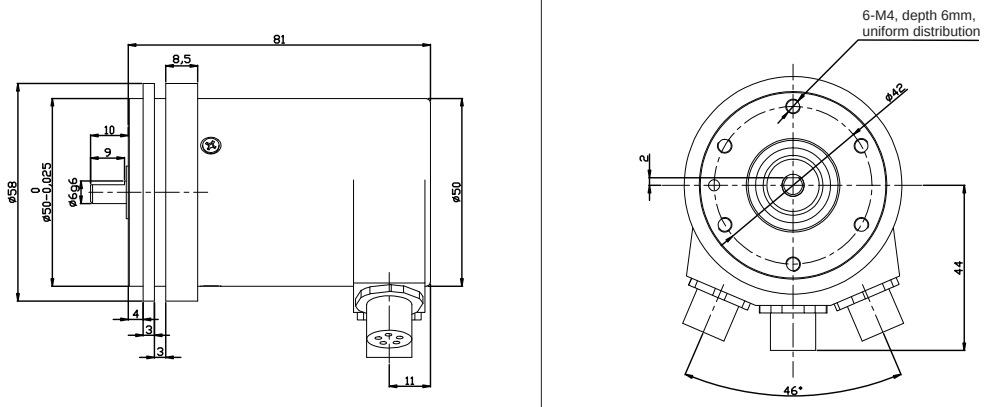


Dimensions (mm)

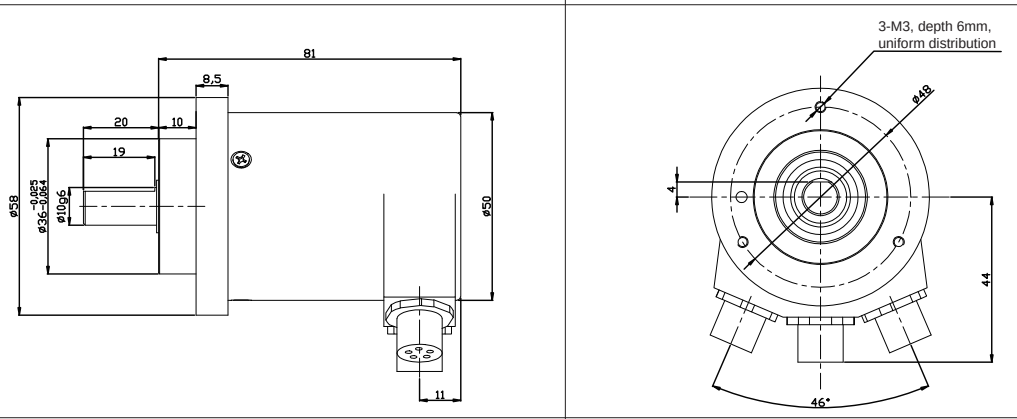
EAM58W Axial



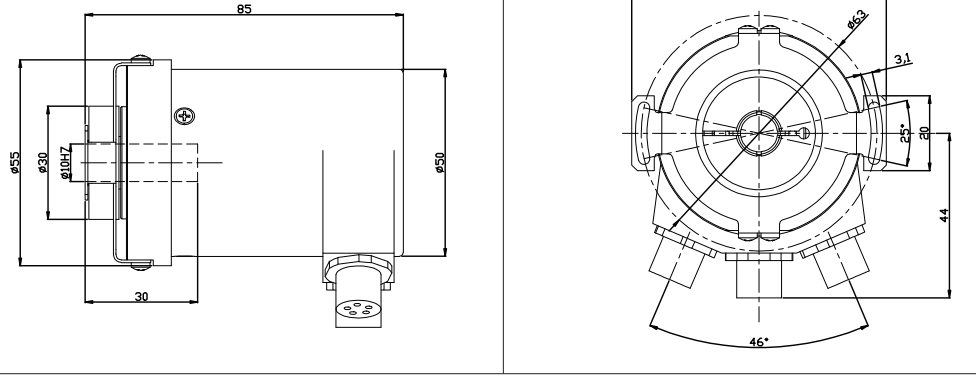
EAM58B Radial



EAM58C Radial



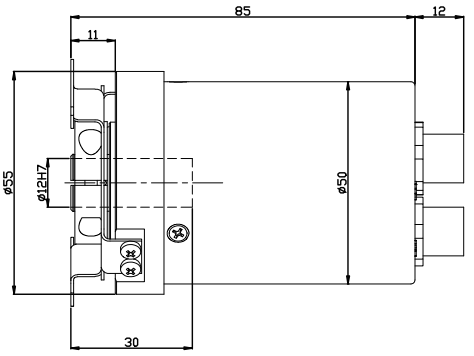
EAM58W Radial

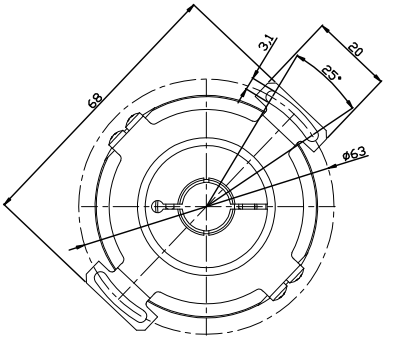


Profinet Absolute Multiturn Encoder

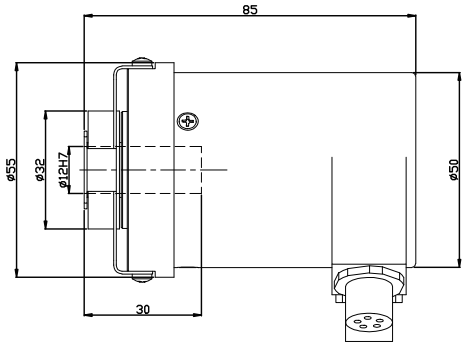
Dimensions (mm)

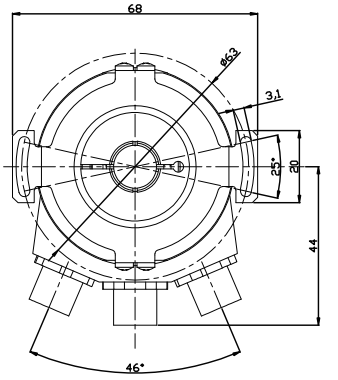
PNM50W12 Axial





PNM50W12 Radial





Order Code

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

XXXX=Special code

Outlets direction
No definition

PNOM: Profinet RT

Types of connection
T= Integrated bus coupler terminal with 3 of M12 socket

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

Shaft/hollow shaft diameter
6=Φ6g6mm —58B
10=Φ10g6mm —58C
10=Φ10H7mm —58W

Output logic
R= Radial
X= Axial

Output and Supply voltage
F6=Profinet IO 10...30Vdc

Output code
B=Binary

Flange type
B = Synchronous flange, shaft length:10mm
C = Φ36 Clamping flange, shaft length:20mm
W = Blind hole hollow shaft flange, double wing spring plate installation

Housing dimension
58 =Φ58

Series
EAM = Profinet absolute multiturn encoder

Matching connector code:
Power terminal connector: TMSP 12F-F4
Bus input connector: TMSP 12FD-M4
Bus output connector: TMSP 12FD-M4

Profinet Protocol Absolute Multi-turn Encoder EAM58

Description

Profinet protocol absolute multi-turn encoder EAM58 series has good performance against mechanical damage and can withstand higher axial and radial load. Various flanges could meet different requirements. The product adopts high precision and high stability chip to ensure the maximum single-turn resolution 18 bit, which can meet the accuracy control requirement of field.

Features

- Various flanges available
- Waterproof seal improves IP level
- 3*M12 connector output, convenient for installation and maintenance
- Protection class IP65
- Metal housing for shock resistance
- Conforming to industrial Profinet RT & IRT protocol and programmable

Mechanical parameters

Shaft diameter	Φ6g6/Φ8g6/Φ10g6 mm
Hollow shaft diameter	Φ8H7/Φ10H7/Φ12H7/Φ15H7 mm
Protection class	IP65
Speed（r/m）	6000
Max.load capacity of shaft	
Axial	80 N
Radial	160 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Service life of bearing	10^9 revolution
Rotor moment of inertia	1.8×10^{-6} kgm^2
Starting torque	<0.01Nm
Body material	AL-alloy
Housing material	Zn Al-alloy
Operating temperature	-40...+80 ℃
Storage temperature	-45...+85 ℃
Relative humidity/condensation	90%, Condensation not permitted
Weight	360...750 g

Electrical parameters

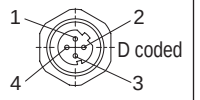
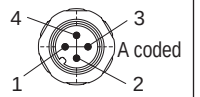
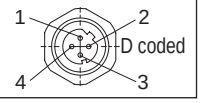
Interface	Profinet
Programming function	Resolution, speed value, counting direction, preset value
Transmission speed	10/100 Mbit
Interface period time	>1ms
No. of turns	4096 (12 bits)
Single-turn resolution	8192 (13 bits，MAX.18bits)
Supply voltage	10~30 Vdc
Current consumption	≤230 mA-10V DC, ≤100 mA-24V DC
Total power	≤2.5 W
Start time	<250 ms
Precision (INL)	±0.0439º

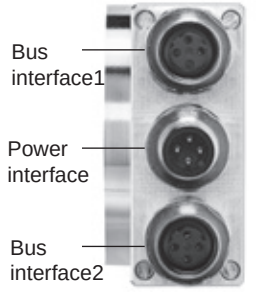
Electrical connection

Connection direction	Radial
Bus interface 1	M12, female, 4-pin, D-coded
Power interface	M12, male, 5-pin, A-coded
Bus interface 2	M12,female, 4-pin, D-coded

Profinet Protocol Absolute Multi-turn Encoder EAM58

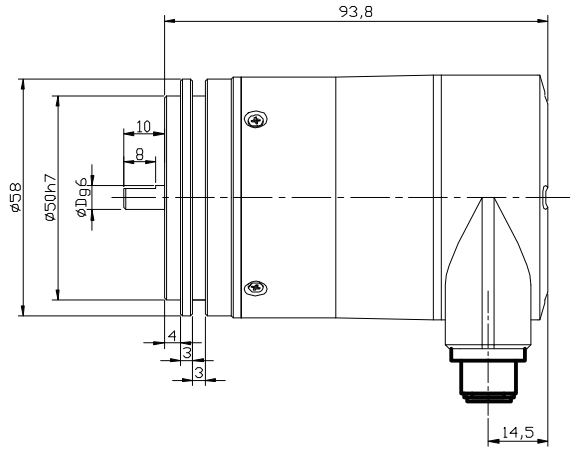
Terminal Configuration

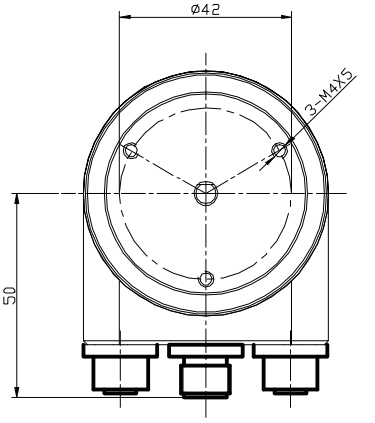
Function	M12 connector					
Bus interface1	Signal	Data sending+	Data receiving+	Data sending -	Data receiving -	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin	1	2	3	4	
Power interface	Signal	Voltage +	–	Voltage –	–	
	Abbreviation	+ V	–	0 V	–	
	Pin	1	2	3	4	
Bus interface2	Signal	Data sending+	Data receiving+	Data sending -	Data receiving -	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin	1	2	3	4	



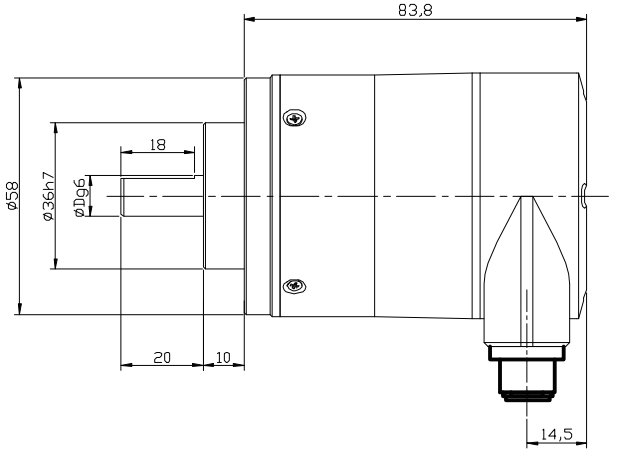
Dimensions (mm)

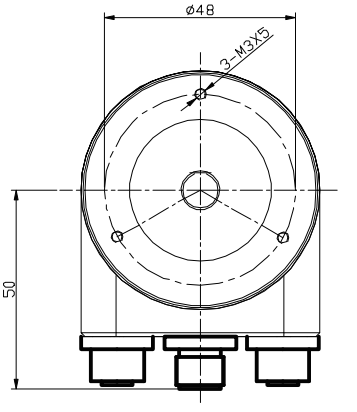
EAM58B





EAM58C

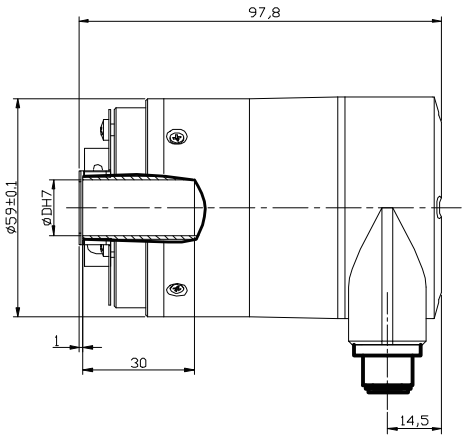


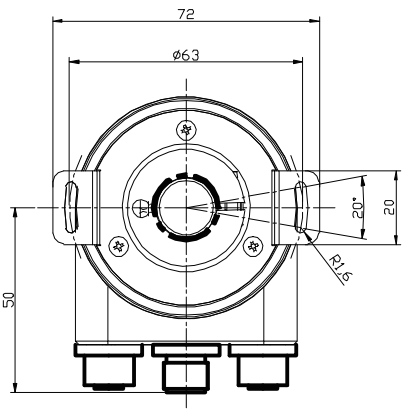


Profinet Protocol Absolute Multi-turn Encoder EAM58

Dimensions (mm)

EAM58W





Order Code

EAM 58 C 10 — B F6 X T R — 4096/8192 PN

Shaft diameter

6=Φ6g6mm
58B optional
8=Φ8g6mm
10=Φ10g6mm

8 =Φ8H7mm
10=Φ10H7mm
12=Φ12Hmm
15=Φ15H7mm

Flange type

B=Synchronous flange
C=Clamping flange
W=Hollow shaft flange, double-wing spring mounting

Housing dimension

58=Φ58 Flange

Series

EAM=Profinet protocol absolute multi-turn encoder

Output code

B=Binary

Interface& Supply voltage

F6= General industrial Ethernet interface 10-30V DC

Output logic

X= No definition

Types of connection

T= Integrated bus coupler terminal with 3 of M12 socket

Outlets direction

R= Radial

Resolution

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

PN: Profinet RT
PNMC: Profinet RT & IRT

Matching connectors code

Power supply connector	TMSP 12F-F4
Bus input connector	TMSP12FD-M4
Bus output connector	TMSP12FD-M4

EtherNet/IP Interface Absolute Multiturn Encoder EAM58

Description

EtherNet/IP interface absolute multiturn encoder EAM58 series has good performance against mechanical damage and can withstand higher axial and radial load. Various flanges could meet different requirements. It complies with common industrial protocol, max resolution 8192, max revolution 4096. The resolution and revolution can be set in accordance with customer requirements. High speed communication and anti-interference ensure stable operation.

Features

- Various flanges available
- Waterproof seal improves IP level
- Connector output, convenient for installation and maintenance
- Protection class IP65
- Metal housing for shock resistance
- Conforming to Common Industrial Protocol, programming functions

Mechanical parameters

Shaft diameter	Φ6/Φ8/Φ10g6 mm (Solid Shaft)
Hollow Shaft diameter	Φ8/Φ10/Φ12/Φ15H7 mm
Protection class	IP65
Max. Permissible Mechanical Speed	6000 r/min
Max. Shaft load	Axial 40 N, Radial 110 N
Shock resistance	≤100 g (half sine 6ms, EN60068-2-27)
Vibration resistance	≤10g (10Hz - 1000Hz, EN60068-2-6)
Bearing life	10^9 revolution
Rotor moment of inertia	≤30 gcm²
Starting torque	≤3 Ncm
Body material	Aluminum
Housing material	Steel with cathodic corrosion protection
Flange material	Aluminum
Operating temperature	-40...+85 °C
Storage temperature	-45...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	~400 g

Electrical parameters

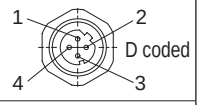
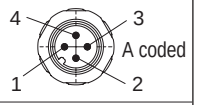
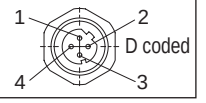
Interface	EtherNet/IP
Programming Functions	Resolution, time base and filter for velocity, preset, counting direction, IP-Adress
Transmission Rate	10/100 Mbit
Interface Cycle Time	>1 ms
Revolution	4096 (12 bits)
Resolution/revolution	8192 (13 bits)
Supply voltage	10...30 VDC
Current Consumption	≤230 mA-10 VDC, ≤100 mA-24 VDC
Power Consumption	≤2.5 W
Start-Up Time	<250 ms
Accuracy (INL)	±0.0439°

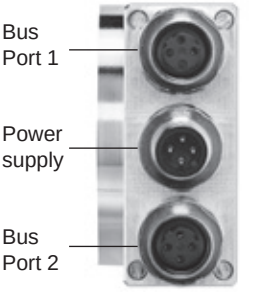
Electrical Connection

Connection Orientation	Radial
Bus Port 1	M12,Female-4 pin,D-coded
Power Supply	M12,Male-4 pin,A-coded
Bus Port 2	M12,Female-4 pin,D-coded

EtherNet/IP Interface Absolute Multiturn Encoder EAM58

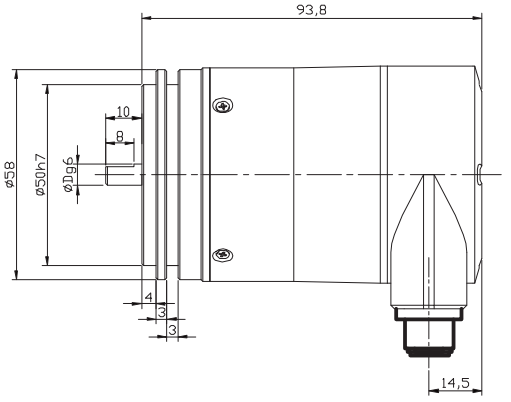
Terminal Assignment

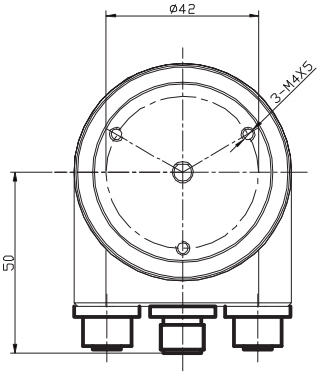
Function	M12 connector					
Bus Port 1	Signal:	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation:	TxD+	RxD+	TxD-	RxD-	
	Pin Number:	1	2	3	4	
Power Supply	Signal:	Voltage +	–	Voltage –	–	
	Abbreviation	+ V	–	0 V	–	
	Pin Number:	1	2	3	4	
Bus Port 2	Signal:	Transmit data+	Receive data+	Transmit data-	Receive data-	
	Abbreviation	TxD+	RxD+	TxD-	RxD-	
	Pin Number:	1	2	3	4	



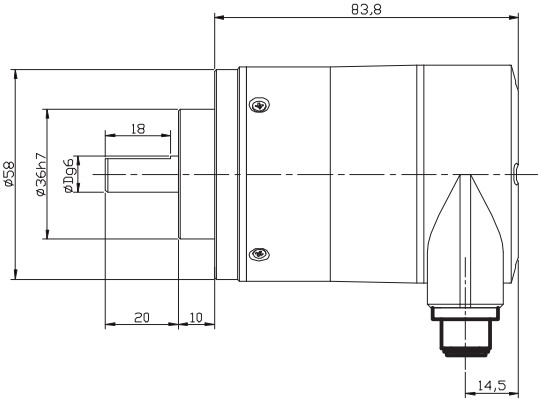
Dimensions (mm)

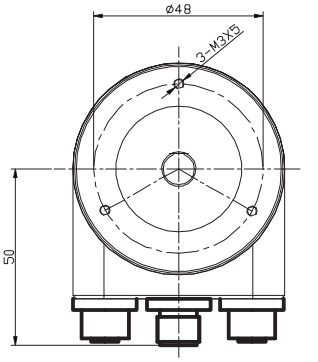
EAM58B





EAM58C

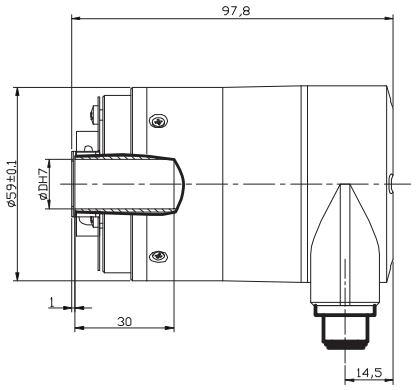


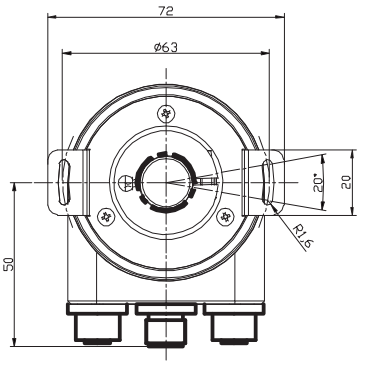


EtherNet/IP Interface Absolute Multiturn Encoder EAM58

Dimensions (mm)

EAM58W





Order Code

EAM 58 C 10 – B F6 X T R – 4096/8192 ENND

Shaft diameter
6 = Φ6g6 mm
58B optional
10 = Φ10g6 mm
58C optional
Only for flange type 58W:
8 = Φ8H7 mm
10 = Φ10H7 mm
12 = Φ12H7 mm

Code type
B = Binary

Flange types
B = synchro flange, shaft lenght 10mm
C = φ36 clamping flange, shaft length 20 mm
W = shaft length, double-wiged spring leaf installation

Housing diameter
58 mm = φ58 flange

Series
EAM = EtherNet/IP interface multiturn

Output & supply voltage
F6 = interface 10...30 VDC

Output logic
X = No definition

Type of connection
T = integrated coupler terminal box with 3xM12 plugs

Outlet directions
R = radial

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

ENND:
EtherNet/IP
interface protocol

Mating connectors code:
Power supply connector: TMSP 12F-F4
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4

EtherCAT Interface Absolute Multiturn Encoder EAM58

Description

The EtherCAT interface absolute multiturn encoder EAM58 series has a good resistance to mechanical damage and can withstand higher axial and radial loads. Various types of flanges can be used to meet different requirements. It complies with industrial Ethercat interface protocol and has a max. resolution of 8192 and a max. revolution of 4096. The resolution and revolution can be programmed according to customer requirements. The high speed communication and anti-interference features ensure steady performance during operation.

Features

- 4 status indicators, for a fast and accurate understanding of the product status
- 3xM12 connectors, implement a fast connection
- Industrial Ethercat interface with an intelligent diagnosis and high speed data transimission function
- Software configures the application of various parameters - convenient maintenance
- Faster interface cycle time

Mechanical parameters

Shaft Diameter	Φ6g6 mm	-58B
	Φ10g6 mm	-58C
Hollow Shaft Diameter	Φ8H7/ Φ10H7/ Φ12H7 MM	-58W
Protection class	IP65	
Speed	6000 r/m	
Axial load capacity	40 N	
Radial load capacity	80 N	
Shock resistance	50G/ 11 ms	
Vibration resistance	10G 10...2000 Hz	
Bearing life	10^9 revolution	
Rotor moment of inertia	approx. $1.8x10^{-6}$ kgm^2	
Starting torque	0＜.05 Nm	
Body material	AL UNI 9002/5 -(D11S)	
Housing material	AL 6060	
Flange material	AL UNI 9002/5 -(D11S)	
Operating temperature	-40...+80 °C	
Storage temperature	-45...+85 °C	
Relative humidity/condensation	90%, Condensation not permitted	
Weight	600 g	

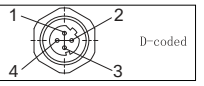
Electrical parameters

Interface	EtherCAT
Profile	CoE (CANopen over EtherCAT, DS-301 + DS-406)
Programming Functions	Resolution, preset, counting direction
Supply voltage	10...30 VDC
Current consumption (without load)	200 mA
Power Consumption	≤ 2.5 W
Max. bus rate	100 Mbits/s
Interface cycle time	≥ 62.5 μs
Code	Binary
Max. number of laps	4096 (12 bits)
Max. resolution	8192 (13 bits)

Terminal configuration

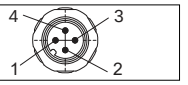
Data port 1:

Signal	T×D+	R×D+	T×D-	R×D-	
Needle number	1	2	3	4	



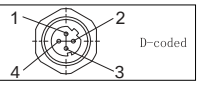
Power port:

Signal	+V	—	-V	—	
Needle number	1	—	3	—	



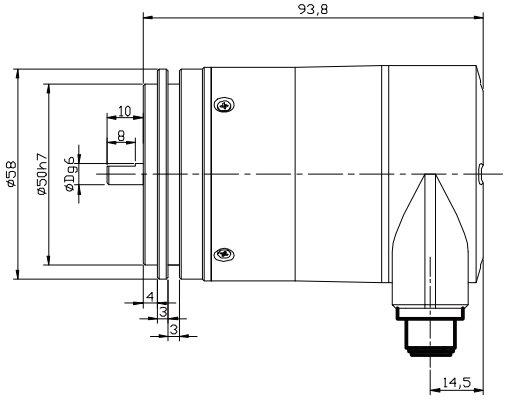
Data port 2:

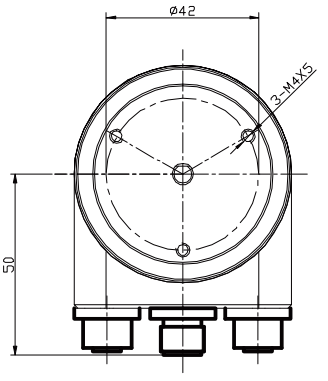
Signal	T×D+	R×D+	T×D-	R×D-	
Needle number	1	2	3	4	



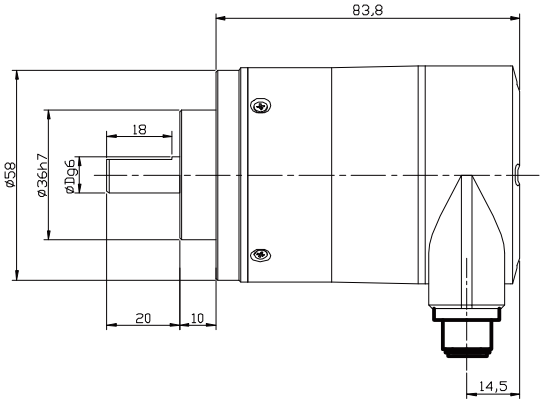
Dimensions (mm)

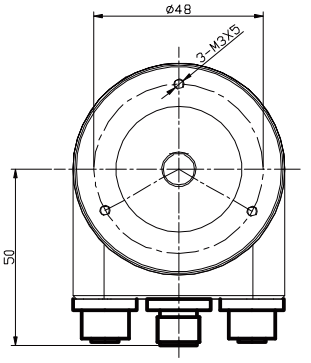
EAM58B





EAM58C

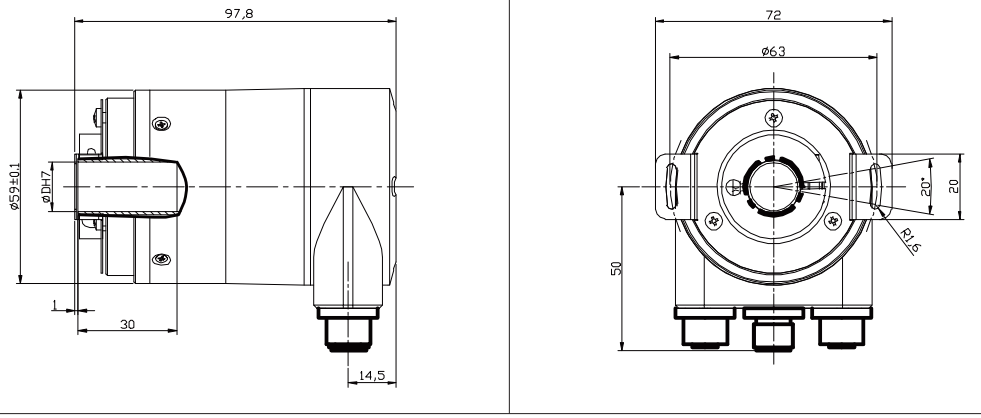




EtherCAT Interface Absolute Multiturn Encoder EAM58

Dimensions (mm)

EAM58W



Order Code:

EAM 58 C 10 – B F6 X T R – 4096/8192 ECND

ECND:
EtherCAT
interface protocol

Outlet directions
R = radial

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

Shaft diameter
6 = Φ6g6 mm
58B optional
10 = Φ10g6 mm
58C optional
Only for flange
type 58W:
8 = Φ8H7 mm
10 = Φ10H7 mm
12 = Φ12H7 mm

Type of connection
T = integrated coupler terminal
box with 3xM12 plugs

Output logic
X = No definition

Output & supply voltage
F6 = Ethercat interface 10...30 VDC

Code type
B = Binary

Flange types
B = synchro flange, shaft lenght 10mm
C = Φ36 clamping flange, shaft length 20 mm
W = shaft length, double-wiged spring leaf installation

Housing diameter
58 mm = φ58 flange

Series
EAM = Ethercat interface multiturn

Matching connectors code:
Power supply connector: TMSP 12F-F4
Bus input connector: TMSP12FD-M4
Bus output connector: TMSP12FD-M4

CANopen Interface Absolute Multiturn Encoder EAM58

Description

EAM58 series is used in industrial environments with special needs. It has good resistance to mechanical damage and its shaft can withstand high axial and radial loads. High-speed communication and good ability make the customer's equipment run more stable.anti-interference

Features

- Various types of flanges are available
- Waterproof seal improves IP level
- Protection class IP65
- Metal housing for shock resistance
- Conforming to industrial CANopen protocol
- Pre-screw hole, convenient for usage
- Durable stainless steel shaft

Mechanical parameters

Shaft diameter (mm)	Φ6g6Φ8g6
	Φ15H7 -58W
Protection class	IP65
Max.speed (r/m)	3000
Max.load capacity of shaft	80 N(axial)
	160 N(radial)
Shock resistance	50G/11 ms
Vibration resistance	10G 10...2000Hz
Bearing life	10^9 revolution
Moment of inertia	$1.8x10^{-6}$ kgm^2
Starting torque	＜0.05 Nm
Body material	Al-alloy UNI 9002/5 - (D11S)
Housing material	Al-alloy 6060
Flange material	Al-alloy UNI 9002/5
Operating temperature	-40 ...+80 °C
Storage temperature	-45 ...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	~800 g

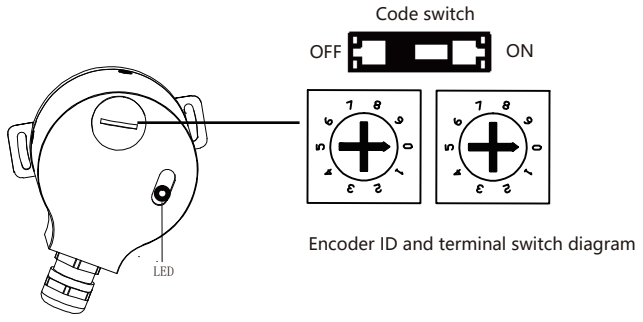
Electrical parameters

Supply voltage	10...30 V DC
Current	Max. 0.29 A
Linearity	±1/2 LSB(12 bit); ±1 LSB(13 bit)
Code	Binary
Interface	CAN HIGH-Speed to ISO/DIS 11898, Basic and
	Full-CAN; CAN specification 2.0 B
Protocol	CANopen Profile DSP 406 with additional function
Baud rate	250K (Pre-factory setting)
	CAN DNET 125 / 250 / 500 kBit/s
Add.	Add. set: 1~99 32(Pre-factory setting)
Termination resistors	120Ω

CANopen Interface Absolute Multiturn Encoder EAM58

Terminal Assignment

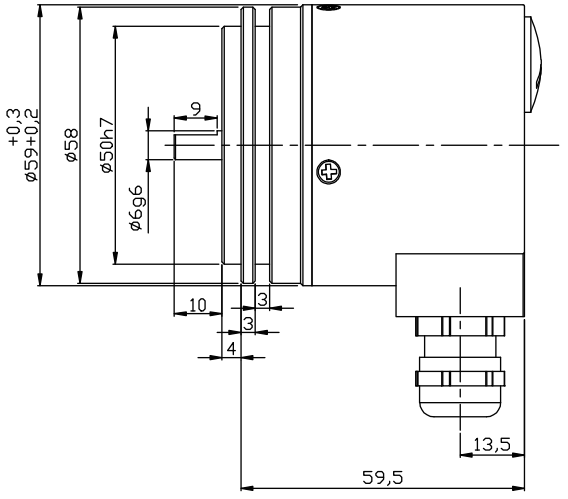
Signal	0V	+Ub	CAN+	CAN-	Shield
Color	WH	BN	GN	GY	

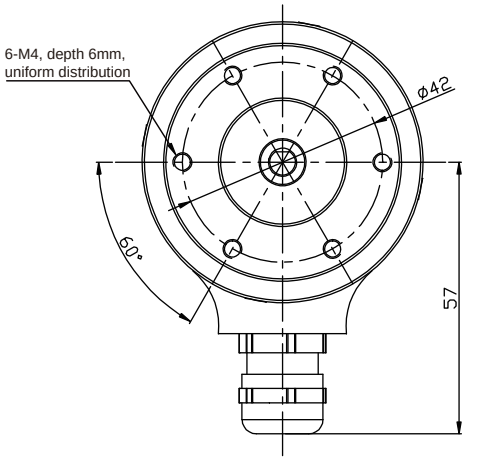


Encoder ID and terminal switch diagram

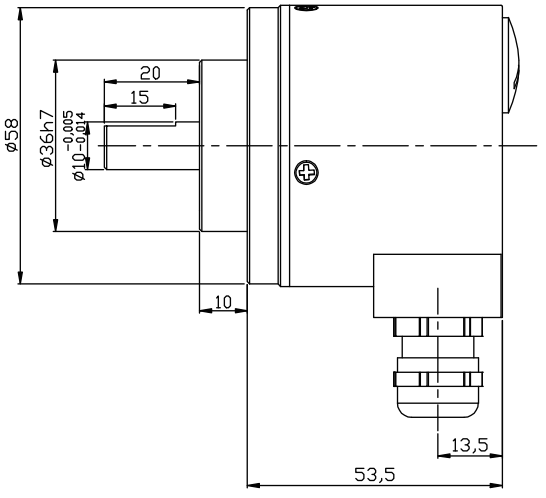
Dimensions(mm)

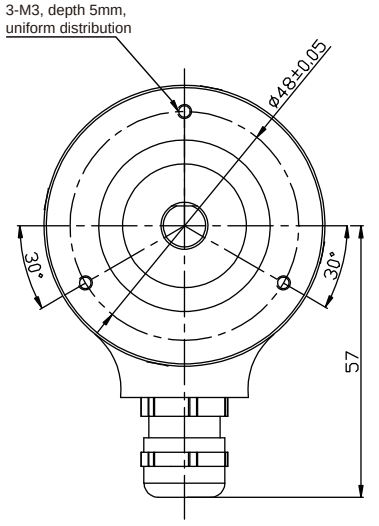
EAM58B





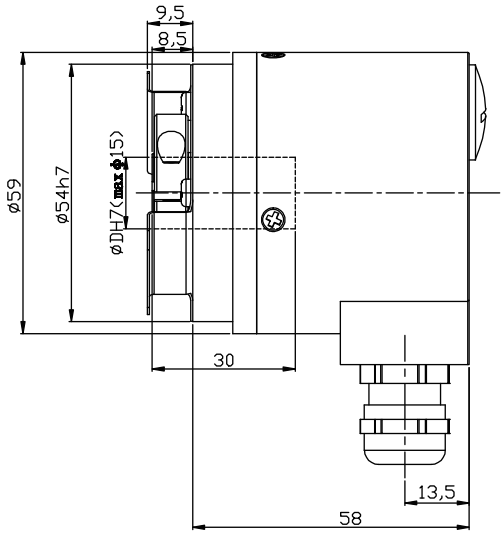
EAM58C

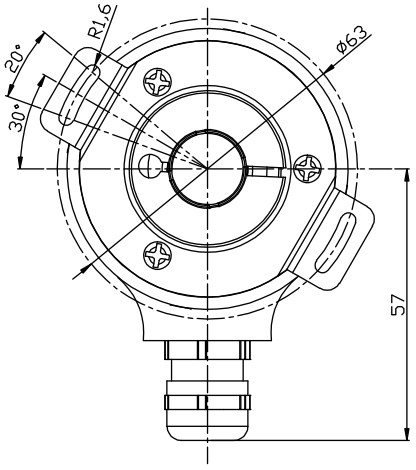




CANopen Interface Absolute Multiturn Encoder EAM58

EAM58W





Order Code

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

Shaft/hollow shaft diameter
6=Φ6g6mm -58B
10=Φ10g6mm-58C
12=Φ12H7mm-58W
15=Φ15H7mm-58W

Output code
B=Binary

Flange type
B=Φ50mm synchro flange, shaft length 10 mm
C=Φ36clamping flange,shaft length 20 mm
W=Hollow shaft flange,
double-wing spring mounting

Housing dimension
58=Φ58 mm

Series
EAM= CANopen multiturn

Output and supply voltage
F6= CANopen 10...30 VDC

Output logic
X= No definition

Types of connection
X= Direct outlet 1.5 meters

Outlets direction
R=Radial

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

CAND:CANopen interface protocol

XXXX= special code

Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder EAM90L

Description

Profibus-DP interface absolute multiturn encoder EAM90L series delivers outstanding performance in withstanding mechanical damages and higher axial and radial loads. Through-hole installations and various types of shafts diameters could meet the different requirements of customers. It complies with Profibus protocol and has a maximum resolution of 16384 and revolution of 4096. The resolution and revolution can be programmed on request. Its high speed communication and anti-interference performance ensure a steady operation.

Features

- Waterproof seal provides greater IP level
- Various types of stainless steel shafts diameters
- Metal housing for better shock resistance
- Direct cable output, convenient for installation and maintenance
- Protection class IP65
- Conforming to the Profibus protocol
- Programmable revolution and resolution

Mechanical parameters

Shaft diameter	Φ12H7/Φ15H7/Φ20H7//Φ24H7/Φ28H7/
	Φ(5/8)"H7/Φ1"H7/Φ12g6X30 mm
Protection class	IP65
Speed	Max.6000 r/m continuous Max.3000 r/m
Max load capacity of the shaft	
axial	40 N
radial	80 N
Shock resistance	2500 m/s^2 6 ms
Vibration resistance	100 m/s^2 10...2000 Hz
Bearing life	10^9 revolution
Moment of inertia	~72 x 10^{-6} kgm^2
Starting torque	hollow shaft < 0.2 Nm
	shaft < 0.05 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20...+80 ˚C
Storage temperature	-25...+85 ˚C
Relative humidity/condensation	90%, Condensation not permitted
Weight	~ 900 g

Resolution
4096 (revolution) ×8192 (resolution)
4096 (revolution) ×4096 (resolution)
Revolution and resolution are programmable in PLC (see operation manual for programming steps)

Electrical parameters

Supply voltage(+Ub)	10...30 VDC
Power consumption	Max.0.29 A
Linearity	± 1/2 LSB (± 1 LSB 13/14 bit)2
Interface	RS 485
Protocols	Profibus-DP, encoder profile class 2
Baud rate	Max. 12 Mbit/s
Address	programmable via DIP switches

Conforms to CE acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3
Conforms to EMC acc. to EN 61000-4, 5

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.

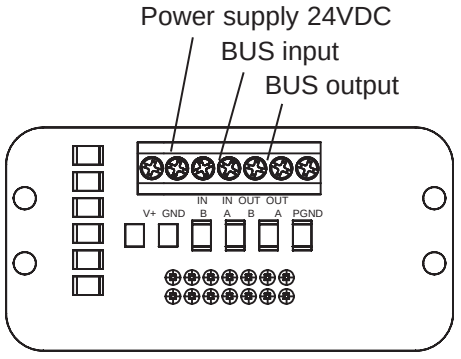
Programmable parameters:

- Rotation Direction
- Proportional factor
  - Single turn resolution
  - Total resolution
- Preset position
- Diagnostic mode

Encoder with integrated coupler:

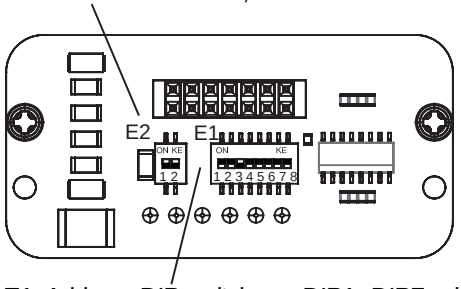
- Achieving current isolation through Fieldus DC/DC converter
- Including RS485 driver, max baud rate 12MB
- Configure Fieldbus address through DIP switch
- LED Diagnostic Display
- Equipped with Class1 & Class 2 functions

Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder EAM90L



Terminal wiring block of an encoder

E2: Line close DIP switch —— Default OFF DIP1-DIP2, the BUS is closed when setting the two switches ON,120Ω.



E1: Address DIP switch——DIP1- DIP7 address setting switch, binary operation, the default address is 4 as illustrated in the diagram, a maximum number of 126 addresses are acceptable in Profibus network. DIP8: CW/CCW

Connection

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

Introduction

Profibus-DP interface absolute multiturn encoder (Identification number 0x0CCA) complies with the Profibus-DP standards as described on the European Standard EN 50170 volume 2. The encoders also conform to “Profibus Profile for Encoders, Order No. 3062”.

The Profibus-DP interface maintains the same maximum resolution (8192 position per revolution, 8192 revolutions) and the features of a stand-along unit with the bonus of the Profibus-DP network.

Through the Profibus-DP network it is able to:

- Obtain the angular position from the encoder during the periodic data exchange.
- Program the resolution and revolution (refer to corresponding chapters for parameter setup).
- Change the default incremental direction (convert between CW/CCW during parameter setup).
- Perform the Preset operation (program the encoder to read a specific position).
- Read the diagnostic status.
- Obtain info about the code came with the device.

With the device’s class, it is able to:

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

Installation

Installing the Profibus-DP encoder in a network requires the execution of a typical procedure necessary for configuring any Profibus-DP slave. The procedure is as follows

1- Commissioning the slave onto the master (see corresponding chapter).

2- Wiring the encoder into the Profibus network using the physical location of the device in the bus.

3- Configuring slave’s address (which must be unique in the network and the same as the device).

4- Preparing applications from the master and setting up the Profibus networ

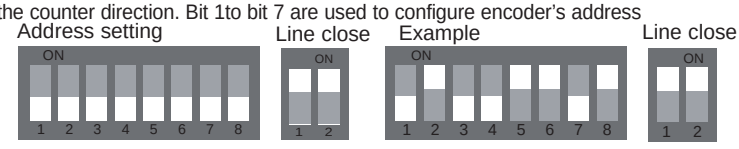
On the back cover of the encoder there are two LED indicators. The device’s operating status can be observed by the two LED. The green LED shows the power status and must be on constantly. The red LED only switches off during the periodic data exchange between the Profibus master and the encoder.

Attention: To set and configure the slave into the Profibus-DP master it is necessary to use the “gsd” file delivered with the encoder. The file can be found on the CD.

DIP-switches setup (configuring slave address)

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 top digit, and bit 1 is the lowest digit Bit 8 is used for changing the counter direction. Bit 1to bit 7 are used to configure encoder’s address



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…165at a certain frequency（3…20Mhz）
Rated capacity（PF/m）	<30
Loop resistance（Ω/Km）	<=110
Core diameter（mm）	>0.64*)
Core cross-section（mm^2）	>0.34*)

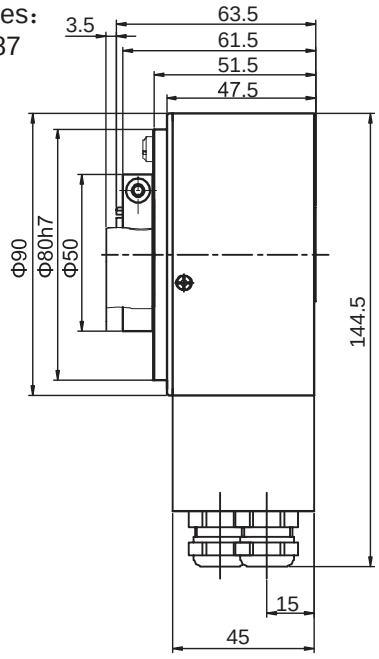
This cable allows the optimal network utilization. In fact, it is possible to reach the maximum communication speed allowed (12Mbaud). However, there are some limitations due to the maximum physical dimensions of a bus segment as follows

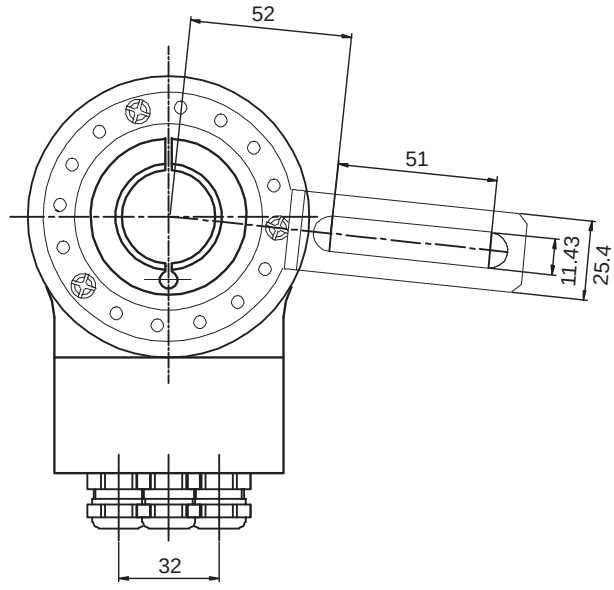
kbaud	9.6	19.2	93.75	187.5	500	1500	12000
Range/Segment	1200 m	1200 m	1200 m	1000 m	400 m	200 m	100 m

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

Dimensions (mm)

EAM90L
Accessories：
E41350087





Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder EAM90L

Order Code

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

Profibus-DP Interface Encoder

Resolution

revolution/resolution
Standard 4096/8192 (25 bits)

Outlets direction

R=radial

Types of connection

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

Output logic

X= No definition

Output & Supply voltage

F6=Profibus-DP interface 10...30 VDC
Profibus Class 2

Code type

B=Binary

Hollow shaft/ Shaft diameter

12 = Φ12 mm hollow shaft
15 = Φ15 mm hollow shaft
16 = Φ16 mm hollow shaft
20 = Φ20 mm hollow shaft
24 = Φ24 mm hollow shaft
25 = Φ25 mm hollow shaft
28 = Φ28 mm hollow shaft
15.9 = Φ5/8" hollow shaft
1E = Φ1"hollow shaft
1C = Φ12 x 30 mm shaft

Flange types

L=long tether arm

Housing diameter

90=housing diameter

Series

EAM= Profibus-DP interface absolute multiturn

Accessories
Installation accessories
Various types of connection
Please see the enclosed CD for GSD documents and operation manual.

Large Hollow Shaft Absolute Multiturn Encoder EAM90L

Description

Large hollow shaft absolute multiturn encoder EAM90L series delivers good performance in withstanding mechanical damages and higher axial and radial loads. Its unique hollow shaft structure, various types of shafts diameters are available for different applications. It is equipped with resolution up to 8192(13 bit) and the RESET function.

Features

- Gray or Binary available
- Space-saver hollow shaft design, “C” ring lock
- Durable stainless steel shaft Φ12~Φ28 mm
- Waterproof seal provides greater IP level
- Metal housing can withstand higher axial and radial loads.
- Resolution up to 8192
- Protection class IP65

  Equipped with short-circuit and reverse connection protection
- Output cables or connectors are available for easy maintenance

Mechanical parameters

Shaft diameter	Φ12H7/Φ15H7/Φ20H7/Φ24H7/Φ28H7/ Φ(5/8)"H7/Φ1"H7/Φ12g6X30 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
axial	40 N
radial	80 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10^9 revolution
Moment of inertia	$1.8\times10^{-6}kgm^2$
Starting torque	<0.1 Nm max
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20...+80 °C
Storage temperature	-25...+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	600 g

Electrical parameters

Output circuit	SSI
Output driver	RS422
Resolution	13 Bits
Supply voltage	10...30 VDC
Power consumption (no load)	≤200 mA
Permissible load (channel)	±20 mA
Pulse of frequency	Max. 1 MHz
Signal level high	Typ. 3.8 V
Signal level low	Max. 0.5 V
Rise timeTr	Max 100 ns
Fall time Tf	Max 100 ns

Available conventional resolution:

Resolution per turn:

1024，2048，4096，8192

Number of turns:

1024，2048，4096，8192

Terminal Assignment

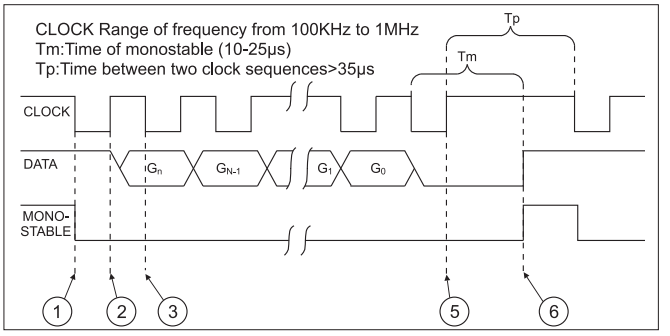
SSI

Signal	0V	+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

ST: Reset input, the current position value is stored as new zero position

VR:Up/down input, as this input is active, decreasing code values are transmitted when shaft turning clockwise.

Operating principle



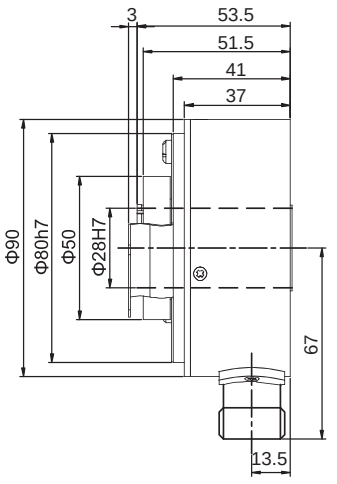
In rest conditions, the CLOCK and DATA lines are at a high logical level and the mono-stablecircuit is disabled (high level).

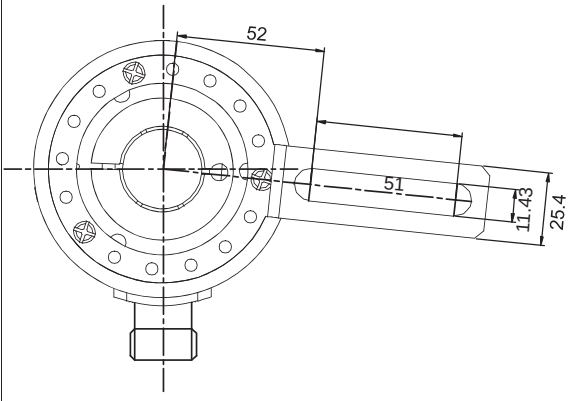
1. On the first CLOCK signal descent front, the mono-stable is activated and the parallel value present at the input to the P/S converter is memorized in the shift register.
2. On the CLOCK signal ascent front, the most significant bit (MSB) is placed in the output on the DATA line.
3. On the CLOCK descent 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.
4. 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.
5. 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.

6.Once the mono-stable time (Tm) has elapsed, the DATA line returns to a high logical level and the mono-stable disables itself.

Dimensions (mm)

EAM90L
Accessories
E41350087





Large Hollow Shaft Absolute Multiturn Encoder EAM90L

Order Code

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

XXXX=Special code

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

Large Hollow Shaft Absolute Encoder

Resolution

resolution max. 8192 (13 bits)
revolution 4096 (12 bits)

Outlets direction

R=radial

Types of connection

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

Output logic

X= No definition (SSI)

Interface and Power Supply

S4=SSI(synchro serial interface) 5...30 VDC

Code type

G=Gray
B=Binary

Shaft/ Hollow shaft diameter

12 = Φ12 mm hollow shaft
15 = Φ15 mm hollow shaft
20 = Φ20 mm hollow shaft
24 = Φ24 mm hollow shaft
28 = Φ28 mm hollow shaft
15.9 = Φ5/8" mm hollow shaft

Flange type

L=long tether arm

Housing diameter

90= housing dimension

Series

EAM=standard absolute multiturn

Draw Wire Mechanics EVD Series

Description

Draw wire mechanics used together with encoders is designed for checking the mechanical action at certain distance. It converts the cable rotating movement into linear movement, and the encoder does the counting and ultimately transmits the signal to host computers. Standard type flange 58B is used to facilitate the connection with the encoder, the distance is up to 20 m, suitable for working in high-loaded harsh industrial environments.

Features

- Round universal head, reduces friction, and increases speed
- Optional flange 58B series encoder
- Compatible with a variety of encoders for measuring the length and speed
- Waterproof seal improves IP level
- High repetition up to 0.05 mm
- Robust AL-alloy housing
- Max. measuring range 20 m

EVD series parameters

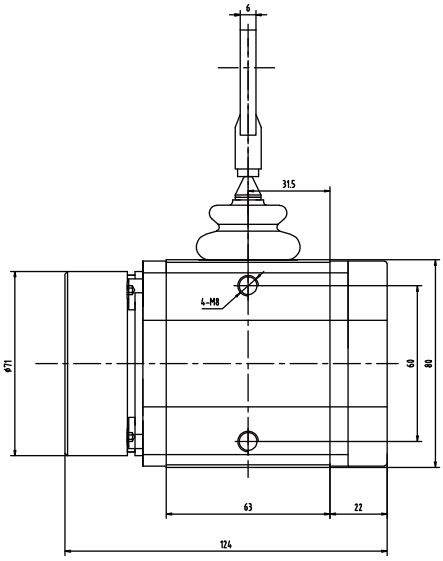
High strength AL-alloy housing
Reliable wire winding system
Flange facilitates the connection with all encoders

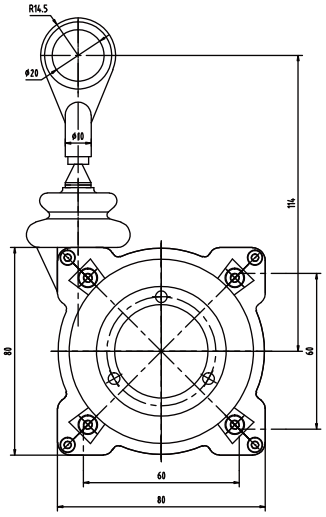
Mechanical parameters

Measuring range	max. 3 m
Dimensions	80 x 80 mm
Length/round	200 mm
Wire diameter	1.3 mm
Device accuracy	±0.1%
Adjustable speed	4 m/s
Telescopic spring force	4-16 N
Body material	aluminium
Protection class	IP64
Wire material	stainless steel
Weight (without encoder)	1.3 kg
Working and storage temperature	-30...+70 °C

Draw Wire Mechanics EVD Series

Dimensions (mm)



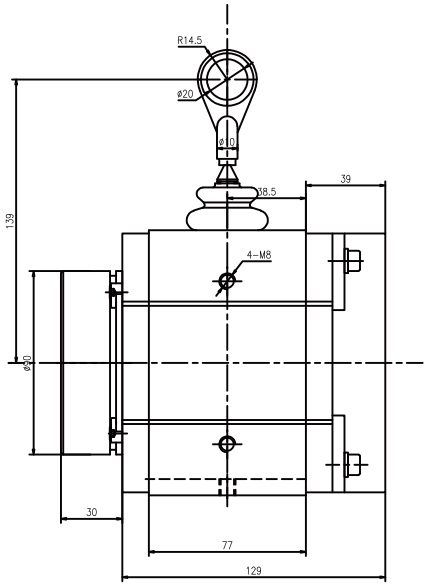


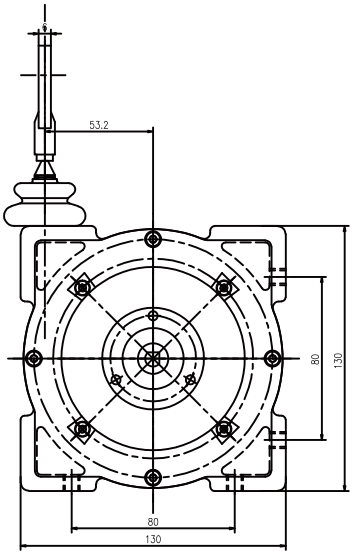
Mechanical parameters

Measuring range	max.6 m
Dimensions	130x130 mm
Length/round	333.34 mm
Wire diameter	1.3 mm
Device accuracy	±0.1 %
Adjustable speed	4 m/s
Telescopic spring force	4 - 16 N
Body material	aluminium
Protection class	IP64
Wire material	stainless steel
Weight (without encoder)	4.5 kg
Working and storage temperature	-30...+70 °C

Draw Wire Mechanics EVD Series

Dimensions (mm)



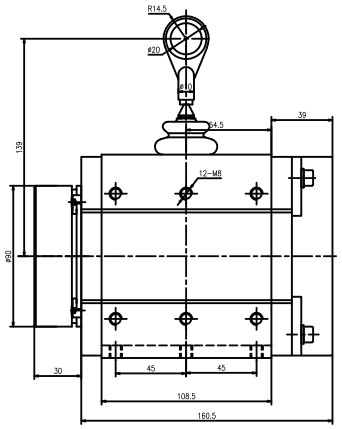


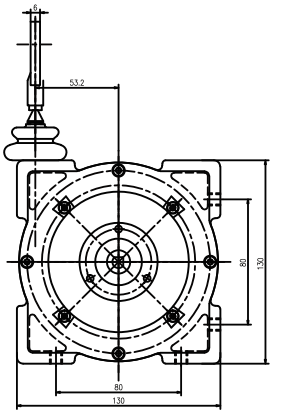
Mechanical parameters

Measuring range	8-10 m	15 m	20 m
Dimensions	130x130 mm	130x130 mm	130x130 mm
Length/round	333.34 mm	333.34 mm	333.34 mm
Wire diameter	1.35 mm	1.35 mm	1.35 mm
Device accuracy	±0.1 %	±0.1 %	±0.1 %
Adjustable speed	4 m/s	4 m/s	4 m/s
Telescopic spring force	4 - 16 N	4 - 16 N	4 - 16 N
Body material	aluminium	aluminium	aluminium
Protection class	IP64	IP64	IP64
Wire material	stainless steel	stainless steel	stainless steel
Weight (without encoder)	5 kg	6.2 kg	6.4 kg
Working and storage temperature	-30...+70 °C	-30...+70 °C	-30...+70 °C

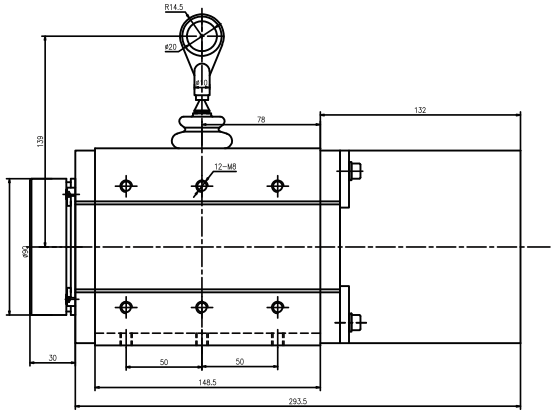
Dimensions (mm)

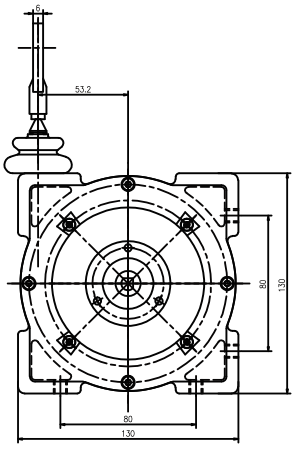
8...10m



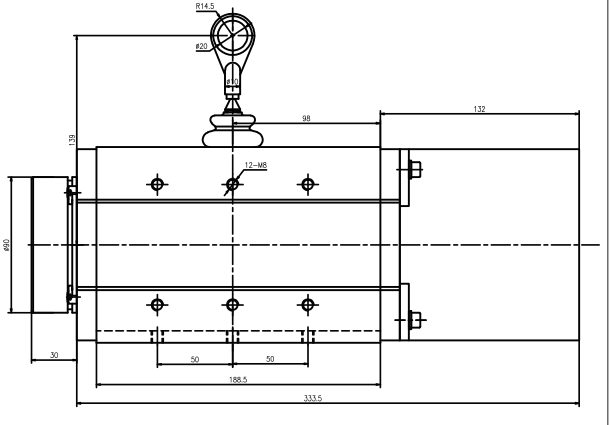


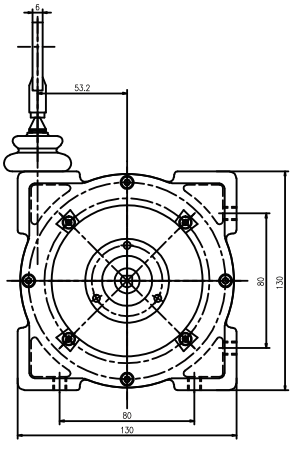
15m





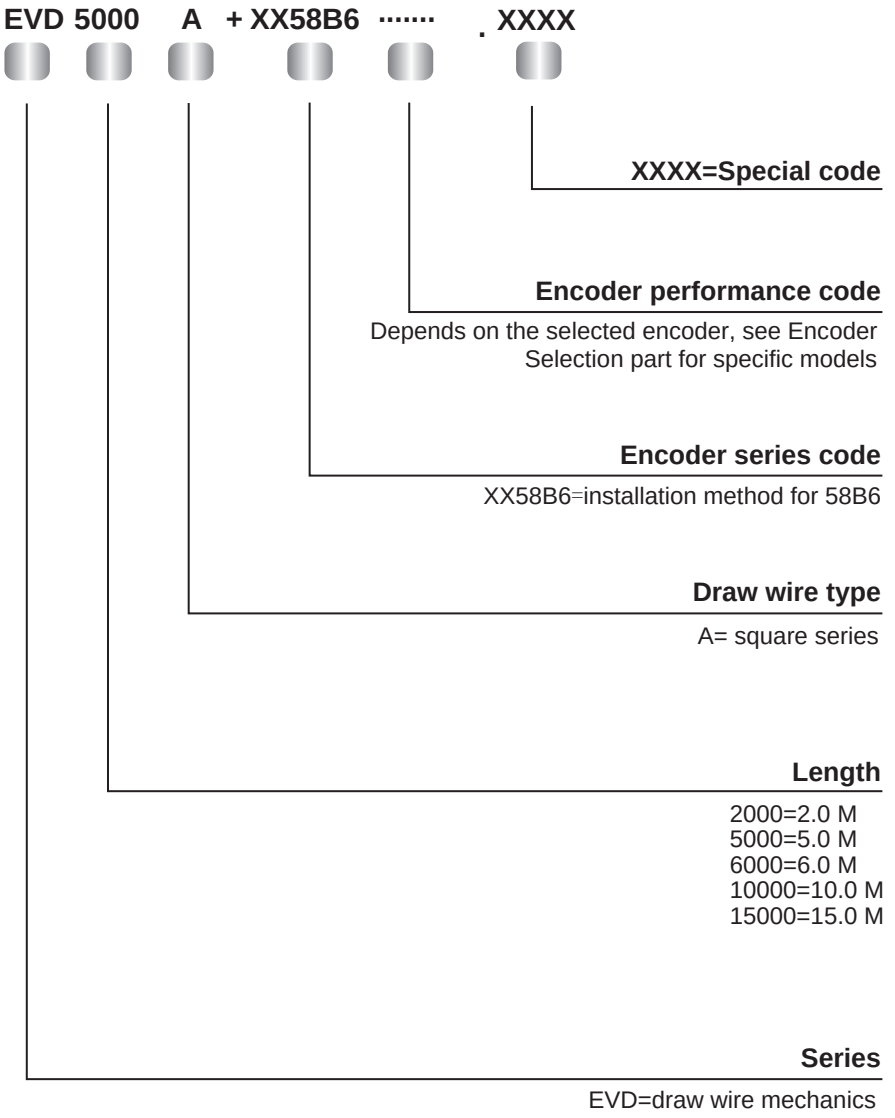
20m





Draw Wire Mechanics EVD Series

Order Code：



Attention：ELCO's installation accessories are recommended, rigid couplings mustn't be used among driving shaft, flange and encoder to protect shaft from overload.

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