Encoder

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,if fully meets the controlling requirements of the modern light industries. With the different shaft lengths available, the product can be use d in a wide variety of industrial environments. It's one of the most recommended choices when in consideration of 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 Characteristics

Shaft diameter（mm）	Φ4/Φ5g6
Protection acc. to EN 60529	IP50
Speed	6000, continuous
Max load capacity of the shaft	5Naxial，10Nradial
Shock resistance	30G/11ms
Vibration resistance	6G 10~2000HZ
Bearing life	10^9 revolution
Moment of inertia	approx.0.7×10^{-6} kgm^2
Starting torque	<0.01Nm
Body material	AL-alloy UNI9002-5
Housing material	AL-alloy UNI9002-5
Operating temperature	-20~+80°C
Storage temperature	-30~+85°C
Weight	100g

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

Electrical Characteristics

Output circuit	Push-pull	RS422	RS422
Resolution	Max. 600ppr	Max. 600ppr	Max. 600ppr
Supply voltage(VDC)	10-30V/5-30V	5V	10-30V
Power consumption (no load)	≤125mA	≤80mA	≤80mA
Permissible load (channel)	±80mA	±50mA	±50mA
Pulse frequency	Max. 300kHz	Max. 300kHz	Max. 300kHz
Signal level high	Min.Ub-1.5V	Min.3.4V	Min.3.4V
Signal level low	Max.0.8V	Max.0.4V	Max.0.4V
Rise time Tr	Max 1μs	Max 200ns	Max 200ns
Fall time Tr	Max 1μs	Max 200ns	Max 200ns

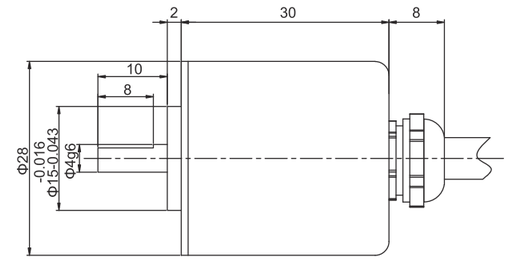
Terminal Assignment

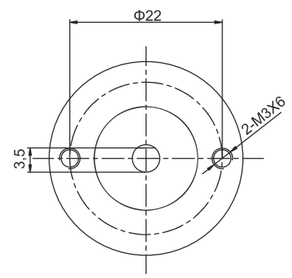
Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	⏚

Easydic Series Shaft Incremental Encoder EV28

Dimensions

EV28





Easydic Series Shaft Incremental Encoder EV28

Order Code

EV	28	A	4	–	L5	P	A	–	500	.	XXXX

Shaft diameter
4=Φ 4 mm
5=Φ 5 mm

Shaft diameter
A=Φ 15 mm clamping flange

Housing diameter
28=housing diameter

Series
EV＝Topydic incremental

Outlets direction
A=axial

Standard cable length
P= 0.5m

Resolution
Pulse/r ≤600
Note: for available pulse options please contact the company for further information

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

Encoder Output & Power Supply 1)

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

Please refer to output circuit structure and wiring for output configuration

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

Topydic Small Shaft Incremental Encoder EV40A

Descriptions

Topydic series small shaft incremental encoder-EV40A delivers oustanding performance in mechanical shock-resistance and is capable of withstanding higher axial and radial loads so as to meet variousindustrial environments. Its special position of cabling fits to the limited installation sapce. 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
- Rerverse connection protection; short circuit protection

Mechanical Characteristics

Shaft diameter (mm)	Φ6g6
Protection grade	IP66 standard, IP67 optional
Max. speed/minute	6000
Max. load capacity of the shaft	60N axial
	100N radial
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000HZ
Bearing life	10^9 revolution
Moment of inertia	1.9×10^{-6} kgm^2
Starting torque	<0.08Nm
Body material	Al-alloy
Housing material	Zn-alloy
Operating temperature	-20~+85°C
Storage temperature	-25~+100°C
Weight	110g

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

Note: Bold part is normally in stock. Other resolution are available only upon request.

Electrical Characteristics

Output circuit	RS422	Push-pull
Resolution	Max.5000ppr	Max.5000ppr
Supply voltage(VDC)	5±0.25 or 10-30	10-30
Power consumption(no load)	≤80mA	≤125mA
Permissible load(channel)	±50mA	±80mA
Pulse frequency	Max.800kHz	Max. 800kHz
Signal level high	Min. 3.4V	Min.Ub-1.8
Signal level low	Max. 0.4V	Max. 2.0V
Rise time Tr	Max. 200ns	Max 1μs
Fall time Tf	Max. 200ns	Max 1μs

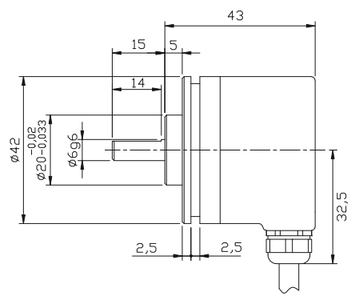
Topydic Small Shaft Incremental Encoder EV40A

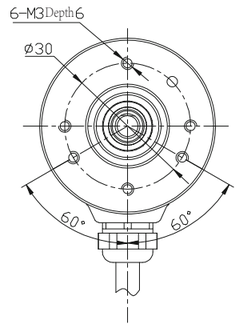
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	0V Sen	$+U_b$ Sen	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	GY/PK	RD/BU	⏚
Pin	10	12	5	6	8	1	3	4	11	2	PH

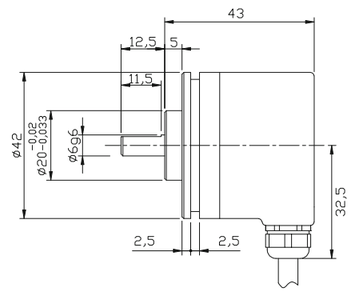
Dimensions

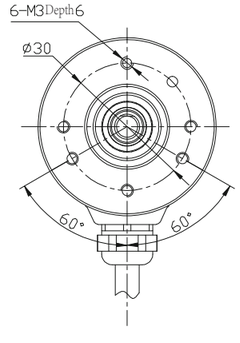
EV40A





EV40B

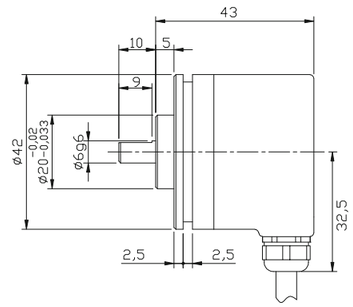


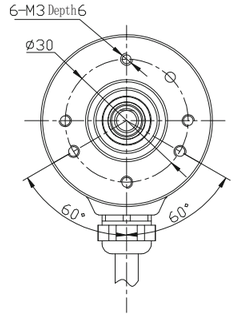


Topydic Small Shaft Incremental Encoder EV40A

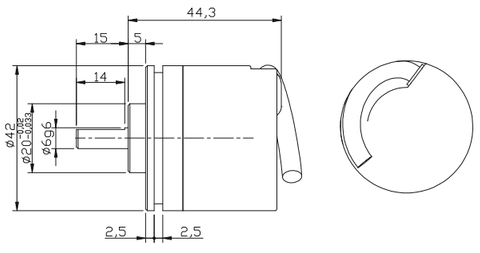
Dimensions

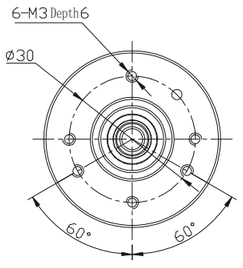
EV40C





EV40A side pre-wired cable





Topydic Small Shaft Incremental Encoder EV40A

Order Code:

EV 40 B 6 – L5 P R – 1024 TP . XXXX

Shaft diameter
6= Φ6mm

Outlets direction
R=radial

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

Side output cable length
TP=0.5m
Note:If blank here, it means P=0.5m

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

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

Standard cable length
P=0.5m

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 (without reverse signal)	10~30Vdc

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 UB=5V, it's pXremitted to connect to signal channals, 0V or UB;
if UB>5V, it's premitted to connect to signal channals or 0V.

Topydic Small Hollow Shaft Incremental Encoder EV40P

Descriptions

Topydic series small shaft incremental encoder-EV40P delivers oustanding performance in mechanical shock-resistance and is capable of withstanding higher axial and radial loads so as to meet variousindustrial environments. Its special position of cabling fits to the limited installation sapce. 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
- Rerverse connection protection; short circuit protection

Mechanical Characteristics

Shaft diameter (mm)	Φ6H7/Φ8H7
Protection grade	IP66 standard, IP67 optional
Max. speed/minute	6000
Max. load capacity of the shaft	60N axial
	100N radial
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000HZ
Bearing life	10^9 revolution
Moment of inertia	1.9×10^{-6} kgm^2
Starting torque	<0.08Nm
Body material	Al-alloy
Housing material	Zn-alloy
Operating temperature	-20~+85°C
Storage temperature	-25~+100°C
Weight	110g

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

Note: Bold part is normally in stock. Other resolution are available only upon request.

Electrical Characteristics

Output circuit	RS422	Push-pull
Resolution	Max.5000ppr	Max.5000ppr
Supply voltage(VDC)	5±0.25 or 10-30	10-30
Power consumption(no load)	≤80mA	≤125mA
Permissible load(channel)	±50mA	±80mA
Pulse frequency	Max.800kHz	Max. 800kHz
Signal level high	Min. 3.4V	Min.Ub-1.8
Signal level low	Max. 0.4V	Max. 2.0V
Rise time Tr	Max. 200ns	Max.1μs
Fall time Tf	Max. 200ns	Max.1μs

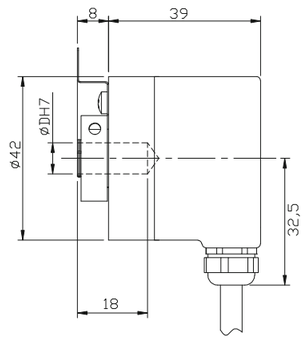
Topydic Small Hollow Shaft Incremental Encoder EV40P

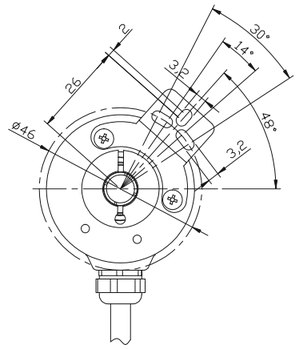
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	0V Sen	$+U_b$ Sen	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	GY/PK	RD/BU	⏚
Pin	10	12	5	6	8	1	3	4	11	2	PH

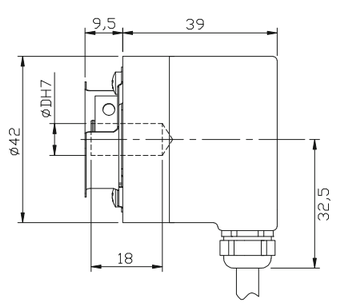
Dimensions

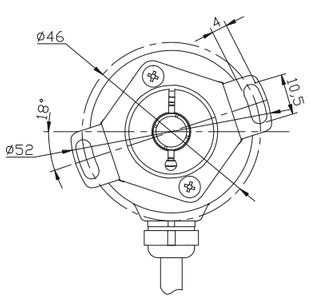
EV40P





EV40W

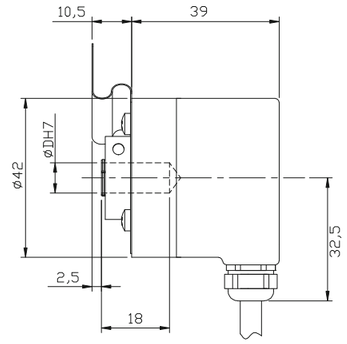


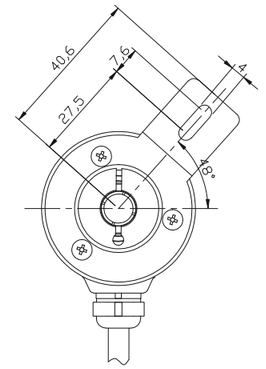


Topydic Small Hollow Shaft Incremental Encoder EV40P

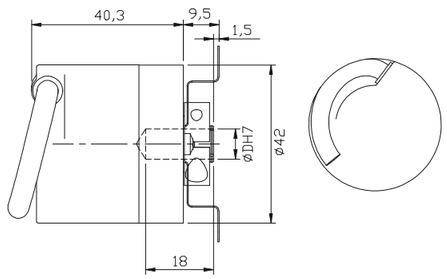
Dimensions

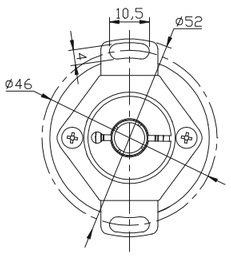
EV40H





EV40W side pre-wired cable





Topydic Small Hollow Shaft Incremental Encoder EV40P

Order Code:

EV 40 P 6 – L5 P R – 1024 TP . XXXX

Shaft diameter
6= Φ6mm
8= Φ8mm

Flange type
P=with single-wing fixing plate
W=with double-wing fixing plate
H=long fastening arm

Housing diameter
40=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 (without reverse signal)	10~30Vdc

Standard cable length
P=0.5m

Outlets direction
R=radial

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

Side output cable length
TP=0.5m
Note:If blank here,it means P=0.5m

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

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

Topydic Series Shaft Incremental EV50A

Descriptions

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

Features

- Resolution up to 5000ppr; pulse frequency up to 300kHz
- Hollow shaft diameter, Φ6~Φ12mm
- Be compatible with standard flange types-50mm and 58mm
- Φ50mm metal casting housing for limited installation space
- Operating temperature, -40~+85℃; IP67 protection grade 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 Characteristics

Shaft diameter	Φ6/Φ8/Φ10/Φ12/Φ1/4"/Φ3/8"
Protection Grade	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	40N axial
	80N radial
Shock resistance	50G/11ms
Vibration resistance	10G 10～2000HZ
Bearing life	10^9 revolution
Moment of inertia	1.9×10^{-6} kgm²
Starting torque	<0.01Nm (IP65)
	<0.05Nm (IP67)
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40～+85°C
Storage temperature	-45～+90°C
	approx. 400g
Weight	

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 standing inventory; others on request.

Electrical Characteristics

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

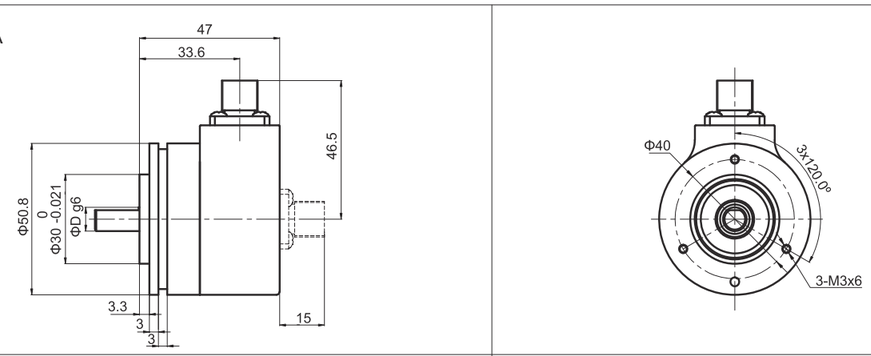
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	0V Sen	$+U_b$ Sen	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	GY/PK	RD/BU	⏚
Pin (12-pin)	10	12	5	6	8	1	3	4	11	2	PH
Pin (5-pin)	1	2	3	-	4	-	5	-			PH
Pin (8-pin)	1	2	3	4	5	6	7	8			PH

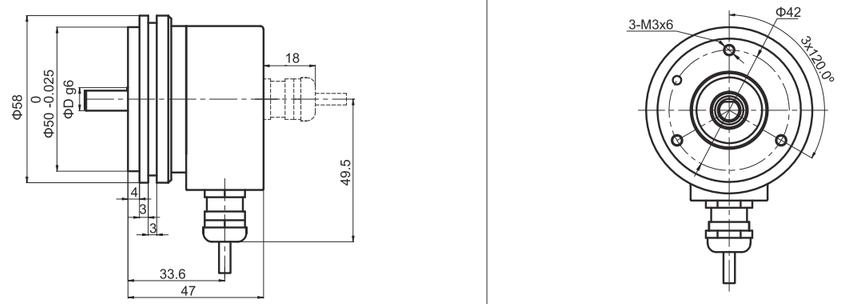
Topydic Series Shaft Incremental EV50A

Dimensions (mm)

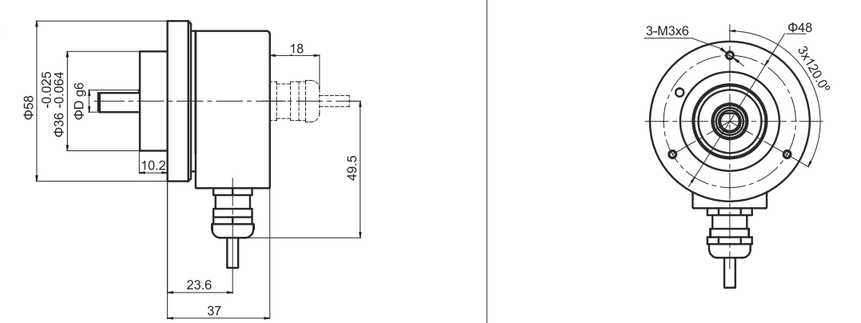
EV50A



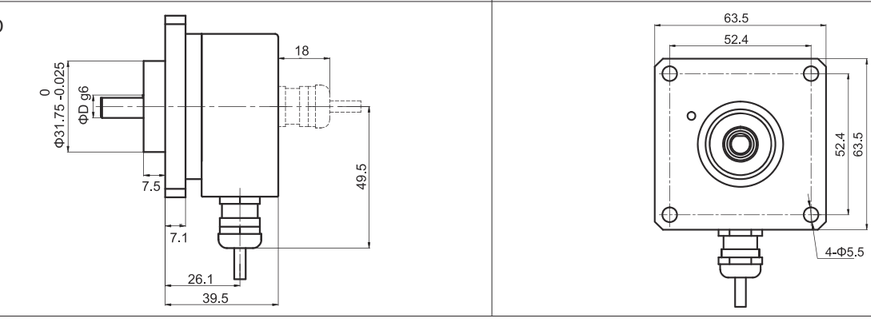
EV50B



EV50C



EV50D



Topydic Series Shaft Incremental EV50A

Order Code:

EV 50 B 6 – L5 P R – 1024 XX . XXXX

Shaft diameter
6= Φ6mm x 10mm
7= Φ1/4" x 5/8"
8= Φ8mm x 15mm
9= Φ3/8" x 5/8"
10= Φ10mm x 20mm
12= Φ12mm x 20mm
(8R,9R,10R,12R=IP67)

Flange type
A=Φ50.8 synchro flange
B=Φ58 synchro flange
C=Φ58 clamping flange
D=Φ63.5 square flange

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=1.5m

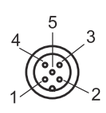
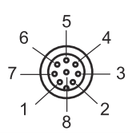
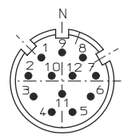
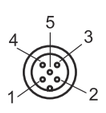
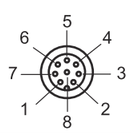
Outlets direction
R=radial
A=axial

Resolution
Pulse/r: 1-5000

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 requested)

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

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 5-core pre-molded connector with 2m PUR cable	TMSP1612F Field attachable connector	TMSP125PF Field attachable connector	TMSP128PF Field attachable connector

Topydic Series Shaft Incremental EV50P

Descriptions

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

Features

- Resolution up to 5000ppr; pulse frequency up to 300kHz
- Wide range of shaft diameter, Φ6~Φ15mm
- Hollow shaft installation, robust metal casting housing
- Operating temperature, -40~+85℃; IP67 protection grade for outdoors application
- Housing thickness up to 46.3mm 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

Mechanical Characteristics

Shaft diameter (mm)	Φ6/Φ8/Φ10/Φ12/Φ14/Φ15/Φ1/4"/Φ3/8"/Φ1/2"/Φ5/8"
Protection grade	IP65 (without oil seal)
	IP67 (with oil seal)
Speed	12000 (without oil seal)
	6000 (with oil seal)
Max. load capacity of the shaft	40N axial
	80N radial
Shock resistance	50G/11ms
Vibration resistance	10G 10～2000HZ
Bearing life	10^9 revolution
Moment of inertia	$6x10^{-6}kgm^2$
Starting torque	<0.03Nm (IP65)
	<0.08Nm (IP67)
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40～+85°C
Storage temperature	-45～+90°C
Weight	Approx. 400g

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

Note: other resolutions on request

Electrical Characteristics

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

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 premitted to connect to signal channals, 0V or UB; if U_B>5V, it's premitted to connect to signal channals or 0V.

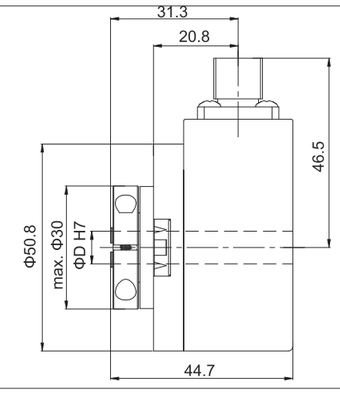
Topydic Series Shaft Incremental EV50P

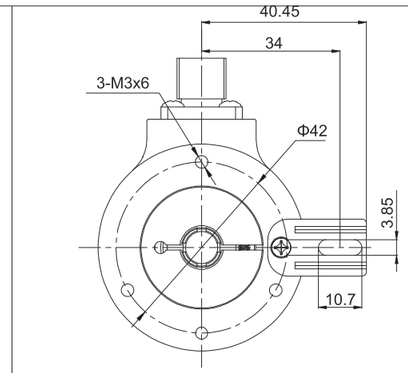
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	0V Sen	$+U_b$ Sen	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	GY/PK	RD/BU	⏚
Pin(12-pin)	10	12	5	6	8	1	3	4	11	2	PH
Pin(5-pin)	1	2	3	-	4	-	5	-			PH
Pin(8-pin)	1	2	3	4	5	6	7	8			PH

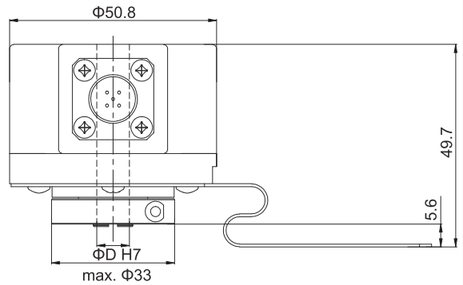
Dimensions

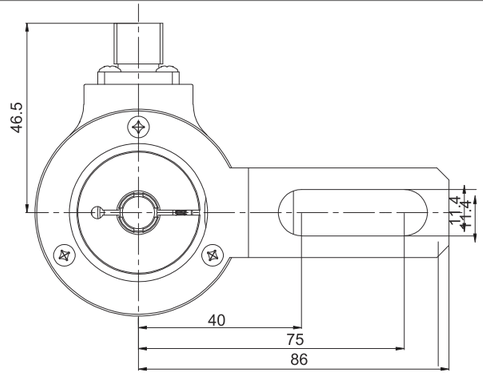
EV50K



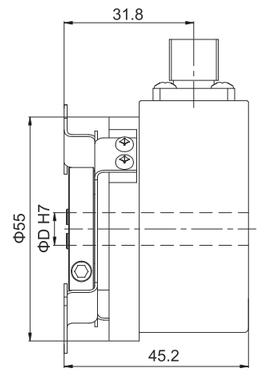


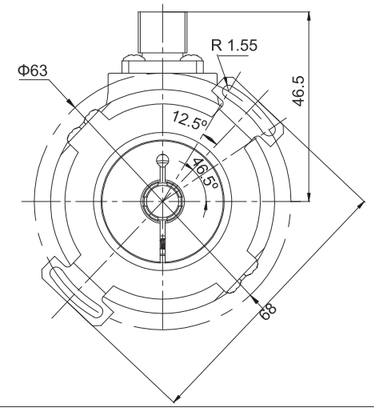
EV50H





EV50W





Topydic Series Shaft Incremental EV50P

Order Code:

EV 50 W 10 – L5 P R – 1024 XX . XXXX

Shaft diameter
6= Φ6mm
7= Φ1/4"
8= Φ8mm
9= Φ3/8"
10= Φ10mm
12= Φ12mm
13= Φ1/2"
14= Φ14mm
15= Φ15mm
16= Φ5/8"
(8R,9R,10R,12R=IP67)

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

Outlets direction
R= radial

Standard cable length
P=1.5m

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=1m
CN0020=2m

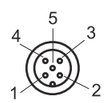
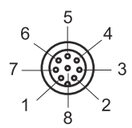
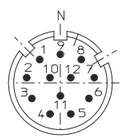
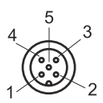
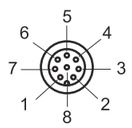
Output & Supply voltage[1)]

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

Housing diameter
50= housing diameter

Series
EV=Topydic incremental

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 Shaft Incremental Encoder EV58A

Descriptions

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 multiply types of flanges or servo motors. They are compatible with all control computers.

eatures

- Max resolution is up to 5000pulse/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 confined space mounting
- 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 Characteristics

Shaft diameter (mm)	Φ6g6/Φ8g6/Φ10g6
Protection grade	IP65
Speed	6000
Max. load capacity of the shaft	60N axial
	120N radial
Shock resistance	50G/11ms
Vibration resistance	10G 10～2000HZ
Bearing life	10^9revolution
Moment of inertia	$1.9x10^{-6}kgm^2$
Starting torque	<0.01Nm IP65
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-20～+90°C
Storage temperature	-40～+100°C
Weight	300g

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

Note: other resolutions on request

Electrical Characteristics

Output circuit	RS422	Push-pull
Resolution	Max.5000ppr	Max.5000ppr
Supply voltage(VDC)	5±0.25 or 10-30	10-30
Power consumption(no load)	≤80mA	≤125mA
Permissible load(channel)	±50mA	±80mA
Pulse frequency	Max.300kHz	Max.300kHz
Signal level high	Min.3.4V	Min. Ub-1.8
Signal level low	Max.0.4V	Max.2.0V
Rise time Tr	Max 200ns	Max 1μS
Fall time Tf	Max 200ns	Max 1μS

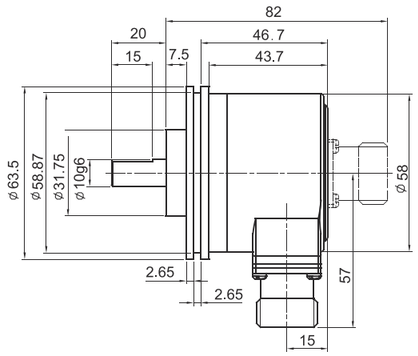
Topydic Series Shaft Incremental Encoder EV58A

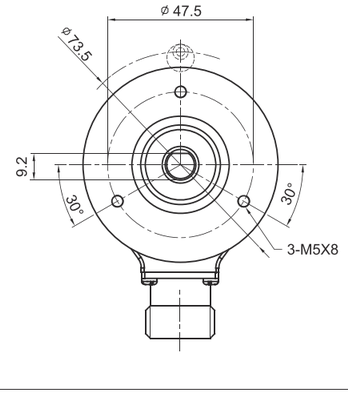
Terminal Configuration

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

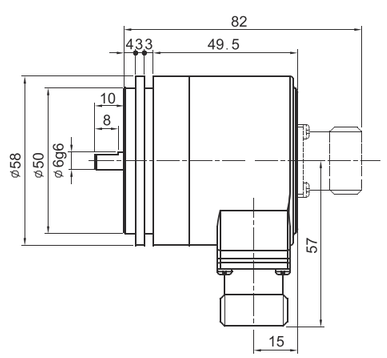
Dimensions

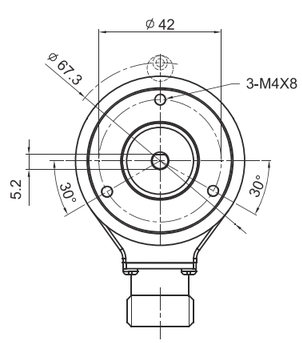
EV58A





EV58B

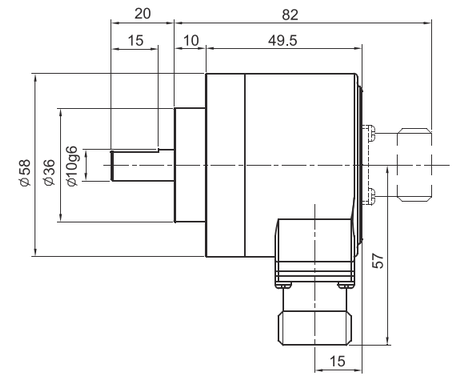


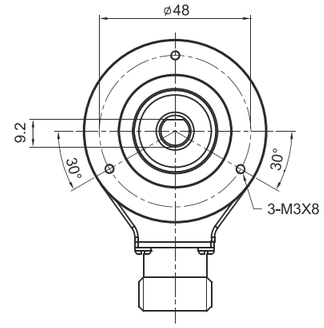


Topydic Series Shaft Incremental Encoder EV58A

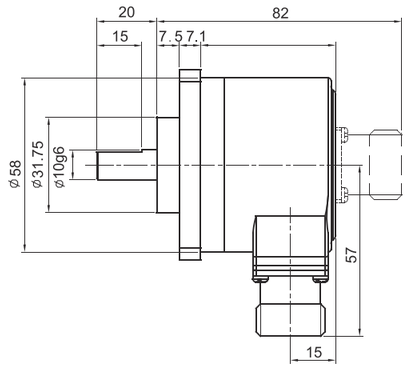
Dimensions

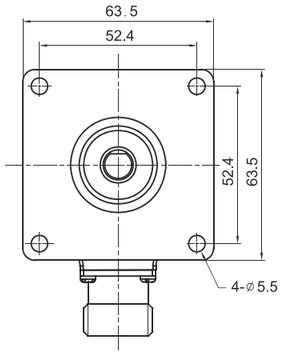
EV58C



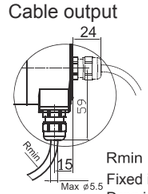


EV58D





Cable output



Rmin
Fixed installation: 55mm
Drag installation: 70mm

Topydic Series Shaft Incremental Encoder EV58A

Order Code:

EV 58 B 6 – L5 T R – 1024 . XXXX

Series
EV=Topydic incremental

Housing diameter
58= housing diameter

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

Shaft diameter
6=Φ6mm
(only for EIC58B)
8=Φ8mm
9=Φ9.52mm (3/8"×7/8")
10=Φ10mm

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

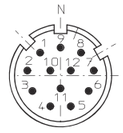
Standard cable length
P=1.5m
T=M23, 12-pin plug without connector

Outlets direction
R=radial
A=axial

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

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

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 pXremitted to connect to signal channals, 0V or U_B;
if U_B＞5V, it's premitted to connect to signal channals or 0V.

Matched connector:
For connection type "T": TMSP1612F

Topydic Series Hollow Shaft Incremental Encoder EV58P

Descriptions

Topydic series encoders EV58P, with double-bearing design, are widely used in industrial environments. It delivers outstanding preformance in mechanical shock resistance. It adopts stainless steel hollow shaft design with max. shaft diameter of Φ15mm and is able to withstand higher axial and radial loads. requirements. Its wide voltage range, reverse connection and short circuit protection can effectively

Features

- Resolution up to 5000ppr; pulse frequency up to 300kHz
- Wide range of shaft diameter, Φ8...Φ15mm
- 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 Characteristics

Shaft diameter (mm)	Φ8/Φ10/Φ12 /Φ14/Φ15
Protection Grade	IP65
Speed	6000rpm
Max. load capacity of the shaft	40N axial
	80N radial
Shock resistance	50G/11ms
Vibration resistance	10G 10...2000HZ
Bearing life	10^9 revolution
Moment of inertia	approx. $6x10^{-6}kgm^2$
Starting torque	<0.03Nm
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-20... +80°C
Storage temperature	-40... +95°C
Weight	approx. 400g

Regular resolution: 256，300，360，400，500，512，600，800，1000，1024，1200，1250，2000，2048，2500，3600，4096，5000
Note: other resolutions on request

Electrical Characteristics

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

1) When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment:
if U_B=5VDC, its premitted to connect to signal channals, 0VDC or U_B;
if U_B＞5VDC , its premitted to connect to signal channals or 0VDC.

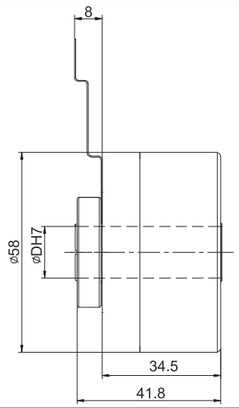
Topydic Series Hollow Shaft Incremental Encoder EV58P

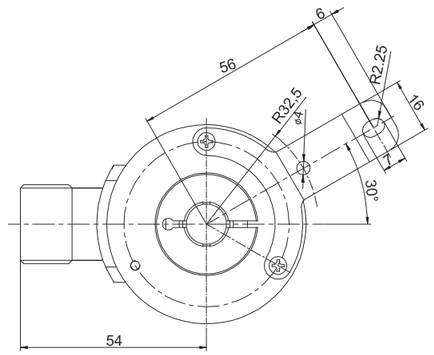
Terminal Assignment

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	0V Sen	$+U_b$ Sen	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	GY/PK	RD/BU	⏚
12-pin	10	12	5	6	8	1	3	4	11	2	PH

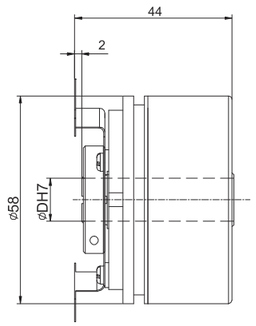
Dimensions (mm):

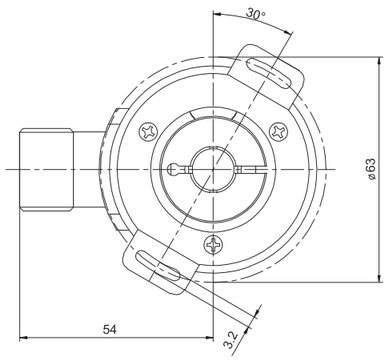
EV58P





EV58W





Topydic Series Hollow Shaft Incremental Encoder EV58P

Order Code:

EV 58 P 10 – L5 T R – 1024 . XXXX

Series
EV=Topydic incremental

Housing diameter
58=Housing diameter

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

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

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 (with reverse signal)	10...30VDC

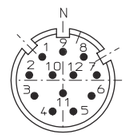
Standard cable length
P=1.5m
T=M23, 12-pin plug without connector

Outlets direction
R=radial

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

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

T type connection:
12-pin M23 Connector



TMSP1612F
Field attachable connector

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

Heavydic Large Hollow Shaft Incremental Encoder EV90P

Descriptions

Heavydic large hollow shaft incremental encoder EV90P are specially designed for heavy industries and heavy-loaded shaft applications. It delivers perfect perfornance 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 2500ppr, which ensures accurate control and application safety.

Features

- Robust metal housing against greater shock; compact structure for limited installation space
- Resolution up to 2500ppr; protection grade 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 maintemance; water-proof design to ensure safety
- Reverse connection / short circuit protetion

Mechanical Characteristics

Hollow shaft diameter (mm)	Φ25/Φ30/Φ38/Φ45H7
Protection Grade	IP65
Speed	3500 rpm
Max. load capacity of the shaft	80N axial
	140N radial
Shock resistance	50G/11ms
Vibration resistance	10G 10～2000HZ
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
Weight	approx. 900g

Regular resolution: 1024, 2048

Note: other resolutions on request

Electrical Characteristics

Output circuit	RS422	Push-pull
Resolution	Max 2500ppr	Max 2500ppr
Supply voltage (VDC)	5±0.25 or10-30	10-30
Power consumption (no load)	≤80mA	≤125mA
Permissible load	±20mA	±40mA
Pulse frequency	Max 300kHz	Max 300kHz
Signal level high	Min 3.4V	Min Ub-1.8
Signal level low	Max 0.4V	Max 2.0V
Rise time Tr	Max 200ns	Max 1μS
Fall time Tf	Max 200ns	Max 1μS

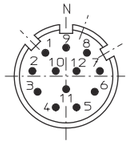
Terminal Configuration

Signal	0V	$+U_b$	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	0V Sen	$+U_b$ Sen	Shield
Color Code	WH	BN	GN	YE	GY	PK1	BU	RD	GY/PK	RD/BU	⏚
Pin	10	12	5	6	8	1	3	4	11	2	PH

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 premitted to connect to signal channals, 0V or U_B ;
if U_B>5V, it’s premitted to connect to signal channals or 0V.

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

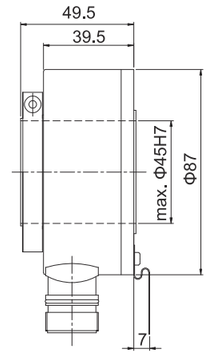
Topview of 12-pin plug

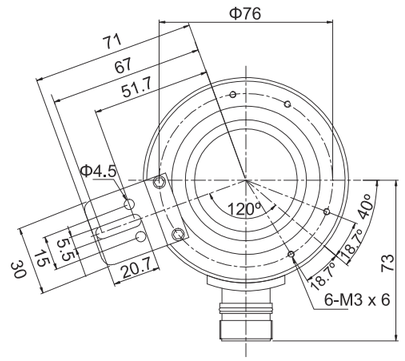


Heavydic Large Hollow Shaft Incremental Encoder EV90P

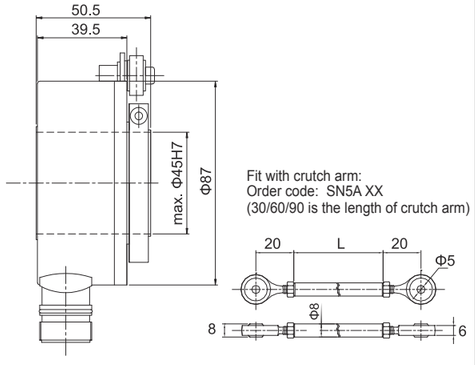
Dimensions (mm)

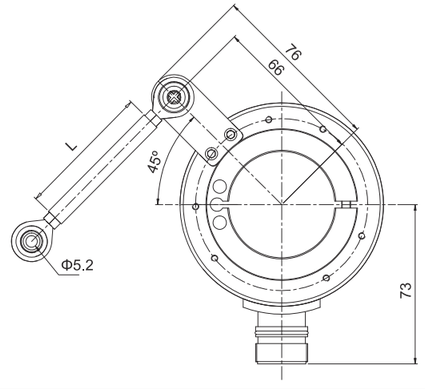
EV90P





EV90R





Order Code:

EV 90 P 30 – L5 T R – 1024 . XXXX

- Series: EV = heavydic incremental
- Housing diameter: 90= housing diameter
- Flange type: P= fixing sheet; R= crutch arm
- Hollow shaft diameter: 25=Φ25H7; 30=Φ30H7; 38=Φ38H7; 45=Φ45H7
- Output & Supply voltage:
  - 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=1.5m; T= M23, 12-pin plug with connector (order code for connector: TMSP1612F)
- Outlets direction: R=radial
- Resolution: Pulse/r: ≤2500
- XXXX=Special code

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 2048ppr, and guaranteen both precise measurement control and safety in loading. It is the most recommended product for its high quality and affordability.

Features

- Crutch are or block-pin accessories provide the greatest flexibilty
- Resolution 2048ppr,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.Short circuit protection

Mechanical Characteristics

Hollow shaft diameter(mm)	Φ60H7 — Φ80H7
Protection acc. to EN 60529	IP64
Speed	3000RPM
Max load capacity of the shaft	100N axial
	200N radial
Shock resistance	50G/11ms
Vibration resistance	10 G 10~2000Hz
Bearing life	10^9 revolution
Moment of inertia	<15 x 10^{-6}kgm^2
Starting torque	<0.25Nm max.
Body material	AL-alloy
Housing material	AL-alloy + green paint
Operating temperature	-20~+90°C
Storage temperature	-40~+100°C
Weight	1800g

Resolution: 1000，1024，2048
Attention: Bold part is in stock, others on request

Electrical Characteristics

Output circuit	RS422	Push-pull
Resolution	Max.2048ppr	Max.2048ppr
Supply voltage(VDC)	5±0.25 or 10-30	10-30
Power consumption (no load)	≤80mA	≤125mA
Permissible load (channel)	±50mA	±80mA
Pulse frequency	Max.800kHz	Max.800kHz
Signal level high	Min.3.4V	Min.Ub-1.8
Signal level low	Max.0.4V	Max.2.0V
Rise timeTr	Max 200ns	Max 1μs
Fall timeTf	Max 200ns	Max 1μs

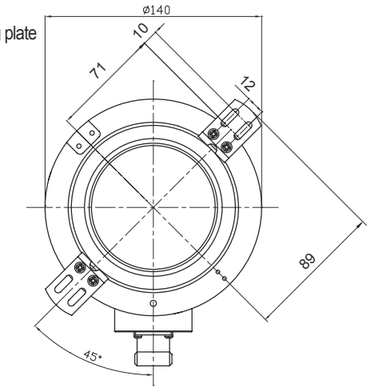
Terminal Assignment

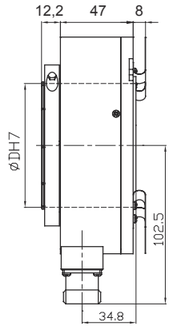
Signal	0V	$+U_b$	A	$\overline{A}$	B	$\overline{B}$	Z	$\overline{Z}$	0V Sen	$+U_b$ Sen	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	GY/ PK	RD/ BU	⏚
Pin	10	12	5	6	8	1	3	4	11	2	PH

Topydic Series Large Hollow Shaft Incremental Encoder EV150P

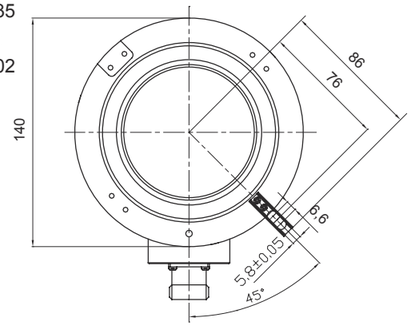
Dimensions

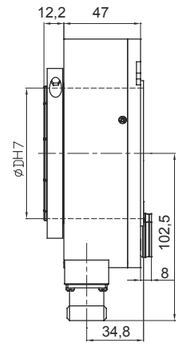
EV150P
Double-wing fixing plate
E41350013

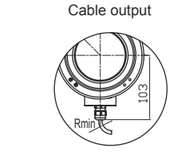




EV150K
Long torque support slot:
E41350035
Block pin:
E41220002

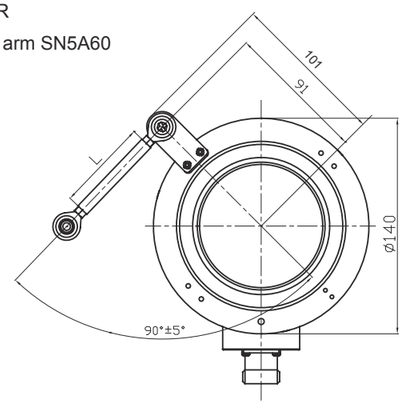


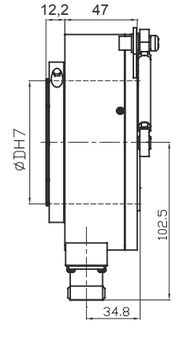




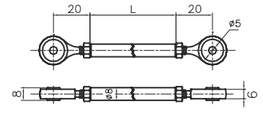
Rmin
Fix installation: 55mm
Draw installation: 70mm

EV150R
Torque arm SN5A60





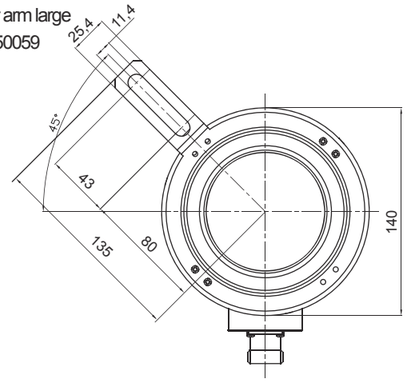
Crutch arm order
SN5A XX
(30,60,90means length)

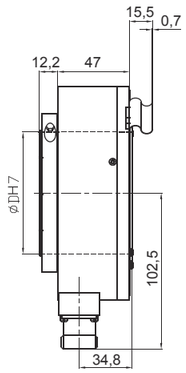


Topydic Series Large Hollow Shaft Incremental Encoder EV150P

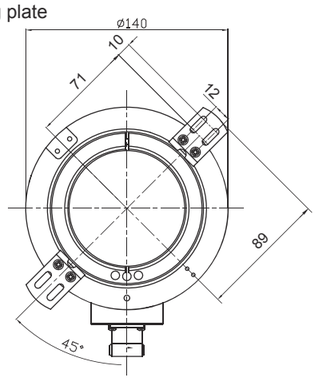
Dimensions

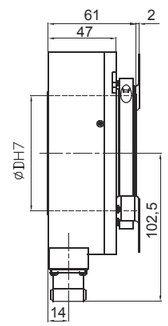
EV150H
Tether arm large
E41350059



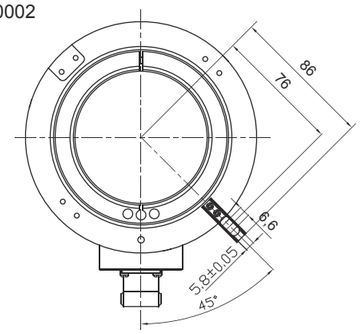


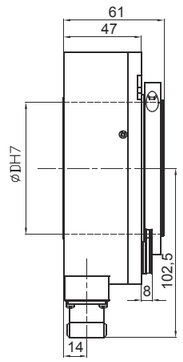
EV150RP
Double-wing fixing plate
E41350013



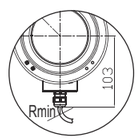


EV150RK
Long torque support slot:E41350035
Block pin:E41220002





Cable output

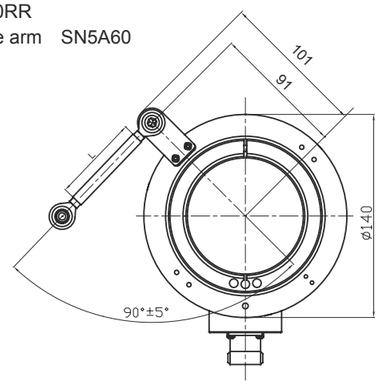


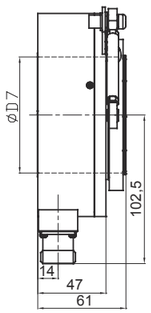
Rmin
Fix installation: 55mm
Draw installation: 70mm

Topydic Series Large Hollow Shaft Incremental Encoder EV150P

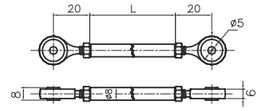
Dimensions

EV150RR
Torque arm SN5A60

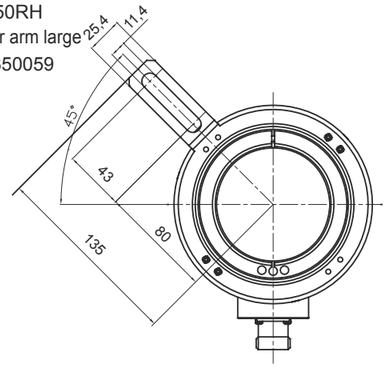


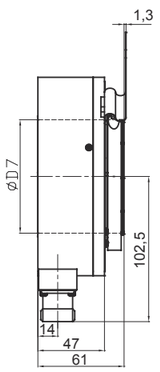


Crutch arm order:
SN5A XX
(30,60,90 means length)

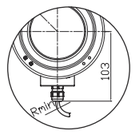


EV150RH
Tether arm large
E41350059



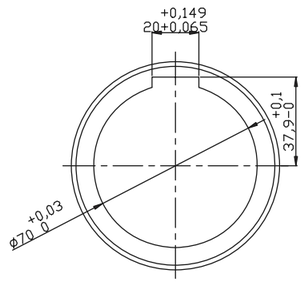


Cable output



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

Type of connection
P=Cable length 1.5m
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=1m
CN0020=2m

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

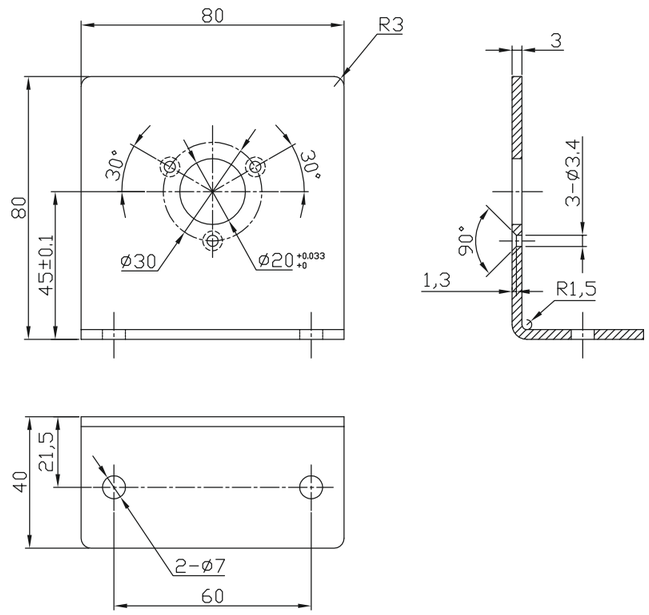
1) When the provided power voltage is correct:
Short-circuit to channel, 0V, or +UB is permitted when UB=5V;
Short-circuit to channel or 0V is permitted when UB=10…30V.

Connector order:
matching “T” connector: TMSP1612F

EVL Support

EVL support:

Type: EVL-L38A
Material: carbon steel
Surface treatment: zinc plating
Applicable for: shaft encoder 38 series
Installation: with flange

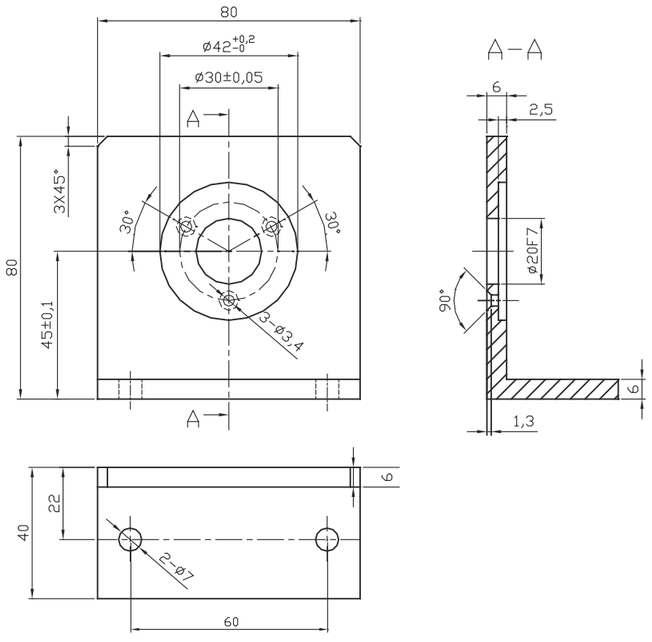


EVL support:

Applicable for shaft encoder 40 with clamping flange

Material: AI

Type:
EVL-L40A



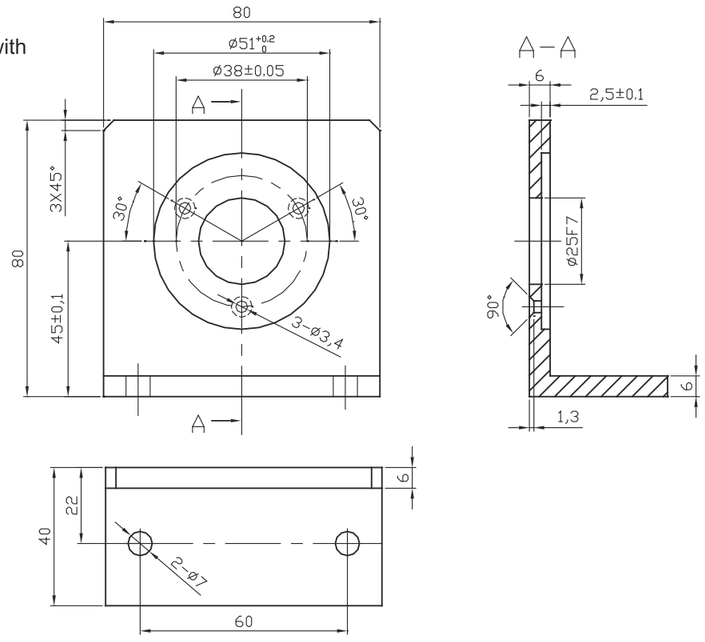
EVL Support

EVL support:

Applicable for shaft encoder 50A with clamping flange

Material: AI

Type:
EVL -L50A

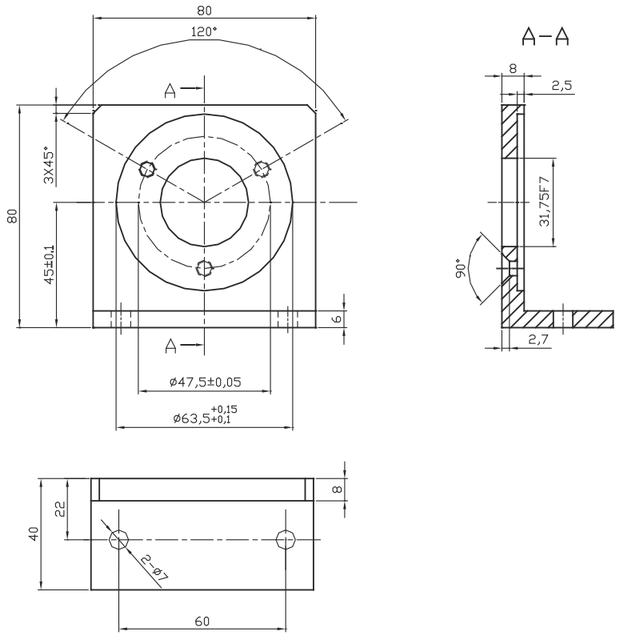


EVL support:

Applicable for shaft encoder 58A with clamping flange

Material: AI

Type:
EVL-L58A



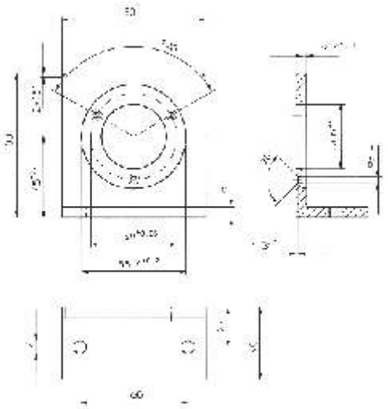
EVL Support

EVL support:

Applicable for shaft encoder 58 with clamping flange

Material: AI

Type:
EVL-L58C

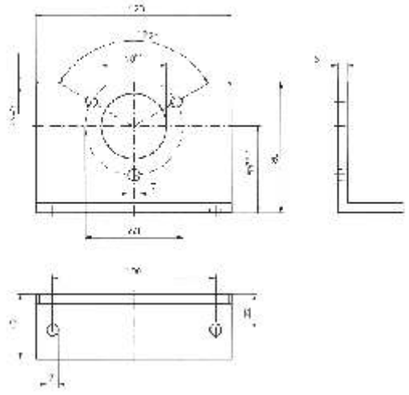


EVL support:

Applicable for shaft encoder 90 with clamping flange

Material: AI

Type:
EVL-L90A

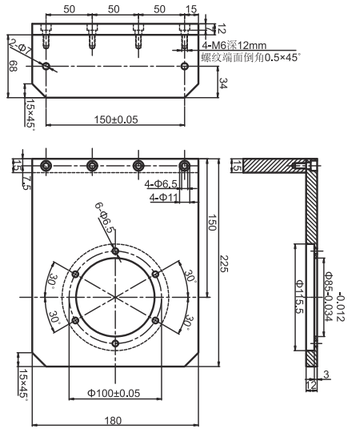


EVL support:

Applicable for shaft encoder 115 with clamping flange

Material: AI

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 6.12mm between the shafts.

Features

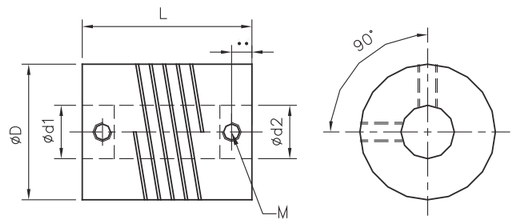
- Torsional rigidity
- Ability to support slight shaft misadjustments
- Ability to absorb small axial shift of the shaft

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

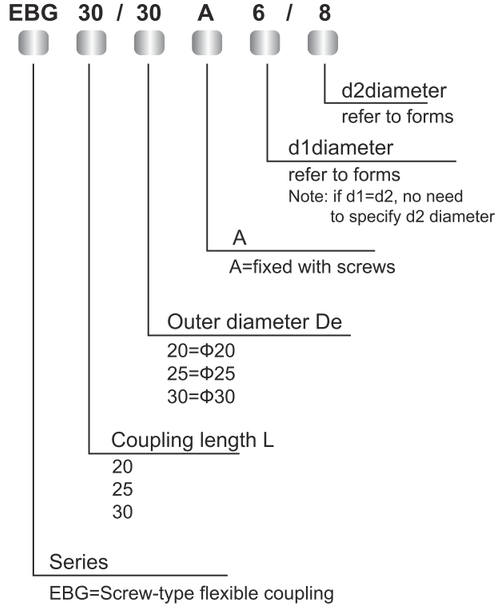
Screw flexible coupling:

Code	Φd1/Φd2Shaft 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	0.8N.m	1°	8000r/min	M3	AL-alloy
EBG25/25A□□□□	5 6 6.35(A1) 8 9.525(A2) 10	25	25	3.55	1.8N.m	1°	8000r/min	M4	AL-alloy
EBG30/30A□□□□	6 8 9.525(A2) 10 12 12.7(A3)	30	30	4.15	2.7N.m	1°	8000r/min	M5	AL-alloy
EBG38/38A□□□□	8 9.525(A2) 10 12 12.7(A3) 14 15	38	38	4.15	6.3N.m	1°	8000r/min	M5	AL-alloy
EBG50/50A□□□□	12 12.7(A3) 14 15 16 18 19	50	50	5.25	19.5N.m	1°	8000r/min	M6	AL-alloy

Coupling Dimensions:



Order Code

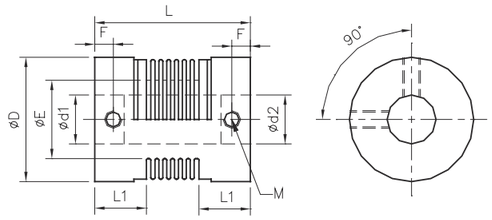


Coupling

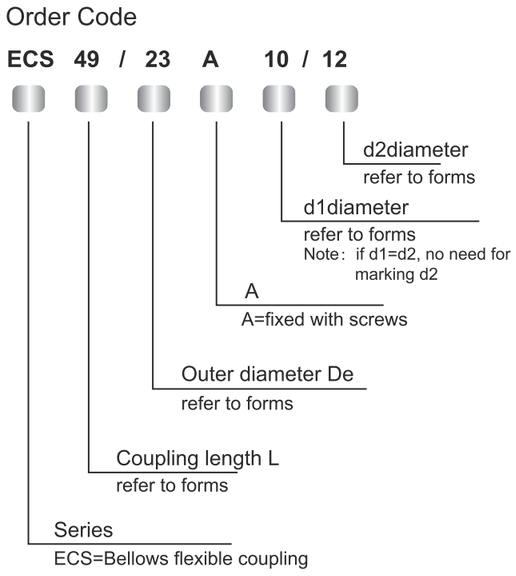
Bellow flexible coupling

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	0.5N.m	2°	6000r/min	M3	AL-alloy
ECS29/20A □□□□	5 6 6.35(A1) 8 9.525(A2) 10 12	20	29	8.5	3	12.5	0.6N.m	2°	6000r/min	M3	AL-alloy
ECS34/25A □□□□	6 6.35(A1) 8 9.525(A2) 10 12	25	34	10.5	4	15	1.7N.m	2°	6000r/min	M4	AL-alloy
ECS38/32 □□□□	6 8 9.525(A2) 10 12	32	38	11.5	4	21	1.7N.m	2°	6000r/min	M4	AL-alloy
ECS49/32 □□□□	6 8 9.525(A2) 10 12	32	49	11.5	4	21	1.7N.m	2°	6000r/min	M4	AL-alloy
ECS51/40 □□□□	10 11 12 14 15 16	40	51	12.5	4.5	27	3.5N.m	2°	6000r/min	M5	AL-alloy
ECS57/55A □□□□	12 14 15 16	50	57	13.5	5	40	9.0N.m	2°	6000r/min	M6	AL-alloy

Coupling Dimensions



Order Code



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 combined 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 Characteristics

shaft diameter（mm）	Φ6g6/Φ8g6
Protection acc. to EN 60529	Ip64
Speed（r/m ）	6000
Max load capacity of the shaft	
Axial load capacity	40N
Radial load capacity	80N
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000Hz
Bearing life	10^9revolution
Rotor moment of inertia	$1.8\times10^{-6}kgm^2$
Starting torque	<0.01Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20 ℃~~+80 ℃
Storage temperature	-25 ℃~~+85 ℃
Weight	330g

Resolution

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

Electrical Characteristics

Output circuit	PNP	PNP open collector	NPN	NPN open collector
Resolution	10 Bits	10 Bits	10 Bits	10 Bits
Supply voltage (Vdc)	10-30V/5V	10-30V/5V	10-30V/5V	10-30V/5V
Power consumption (no load)	≤125mA	≤125mA	≤80mA	≤80mA
Permissible load (channel)	±80mA	±80mA	±50mA	±50mA
Pulse frequency	Max300kHz	Max300kHz	Max300kHz	Max300kHz
Signal level high	MinUb-1.5V	MinUb-1.5V	MinUb-2.5V	MinUb*70%
Signal level low	Max0.4V	depends on pull-down resistor	Max0.4V	Max0.4V
Rise timeTr	Max 1 μs	Max 1 μs	Max 1 μs	Max 1 μs
Fall timeTf	Max 1 μs	Max 1 μs	Max 1 μs	Max 1 μs

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

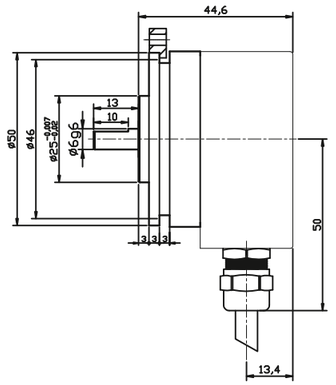
Terminal Configuration

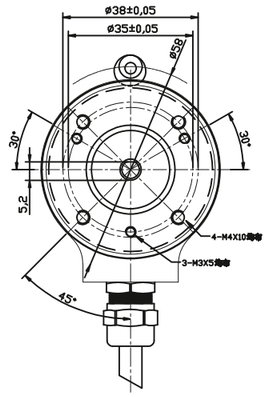
Signal	0V	$+U_b$	bit0	bit1	bit2	bit3	bit4	bit5	bit6	bit7	bit8	bit9	V/R *
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	BK	PL	GY/PK	RD/BU	YE/BN
Gray code	/	/	0	1	2	3	4	5	6	7	8	9	-

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

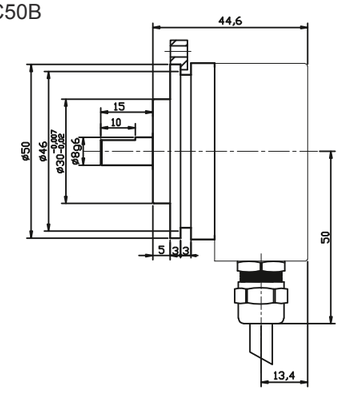
Dimensions

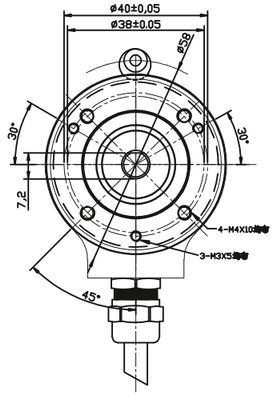
EAC50A





EAC50B





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

Order Code:

EAC 50 B 8 – G C6 N P R – 1024 EU . XXXX

Shaft diameter
6=Φ6mm(ECAS50A)
8=Φ8mm(ECAS50B)

Outlets direction
R=radial
A=axial

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

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

Miniature Absolute Singleturn Encoder

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

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

Resolution
Singleturn resolution
Max 1024 (10 bits)-parallel

Output & Supply voltage

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

Housing dimensions
50= housing dimensions

Series
EAC＝absolute singleturn

Output code type
G=Gray Code
B=Binary

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 Characteristics

Shaft diameter (mm)	Φ6g6	-58B
	Φ8g6	-58A/B
	Φ9.52(3/8")g6	-58A
	Φ10g6	-58C
Hollow shaft diameter (mm)	Φ8H7/Φ9.52H7/Φ10H7	-58/W
	Φ12H7/Φ14H7/ Φ15H7	-58/W
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°C~~+80°C	
Storage temperature	-45°C~~+85°C	
Weight	~800g	

Resolution 8192 4096

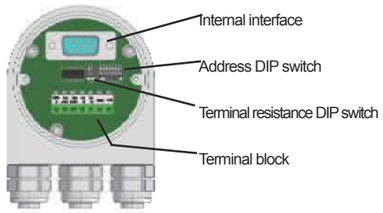
Electrical Characteristics

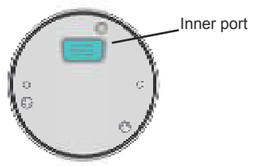
Resolution	8192 (13 bits)
Supply voltage	10~30 Vdc
Power consumption (no load)	300mA
Baud rate	12 Mbaud
Linearity	+/- 1/2 LSB
Output frequency	Max 100 KHz

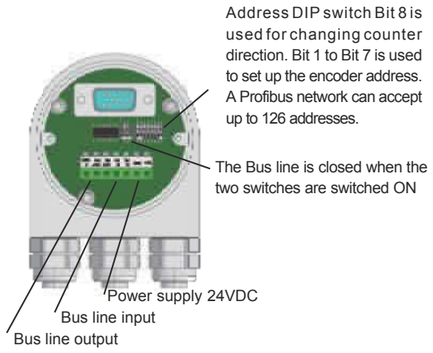
Connection

+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







Introduction

Profibus-DP interface absolute singleturn encoder (Identification number 0x0CCA) comforms 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
- Sett up the device address.
- If required, insert the terminal resistance into the bus.
- Change the counting direction

Installation

IInstalling the Profibus-DP encoder in a network requires the execution of the standard procedures necessary for configuring any Profibus-DP slave. The procesures 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.

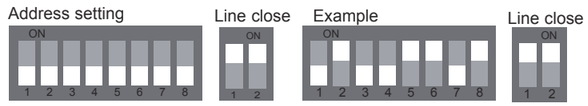
On the back cover of the encoder there are two LED indicators. The device’s operating status can be observed by the two LEDs. The green LED shows the power status and must be on constantly. The red LED only switches off during the periodic data exchange between the Profibus master and the encoder.

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.

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 1001101, 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 Characteristics

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

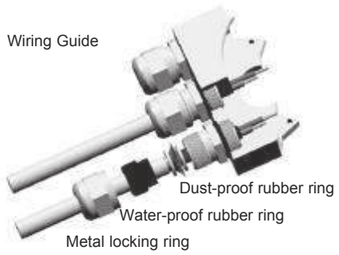
Parameter	A type cable
Characteristic resistance (Ω)	135…165 at a certain frequency (3…20Mhz)
Rated capacity (PF/m)	<30
Loop resistance (Ω/Km)	<=110
Core diameter (mm)	>0.64*)
Core cross-section (mm²)	>0.34*)

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	1200m	1200m	1200m	1000m	400m	200m	100m

Finally, the physical characteristics of a Profibus network are learned.

Profibus-DP Interface Absolute Singleturn Encoder EAC58



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

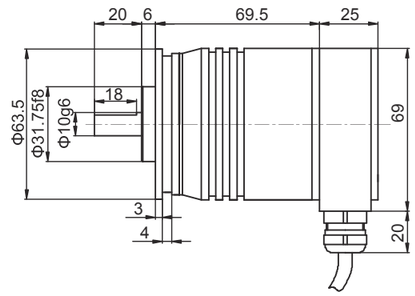
According to EN50170, a maximum of 4 repeaters are allowed between any two stations.Dependent on the repeater type and manufacturer, more than 4 repeaters may be allowed in some cases. Refer to the manufacturer's technical specification for details.

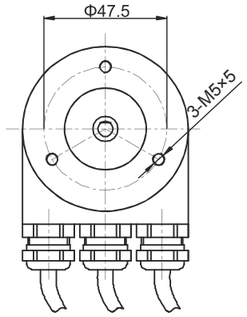
Wiring box

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

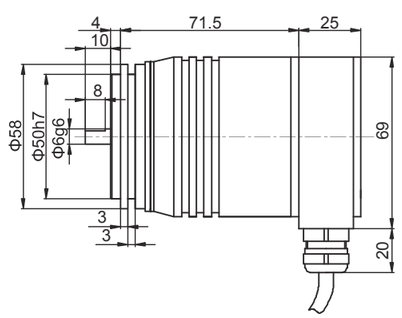
Dimensions

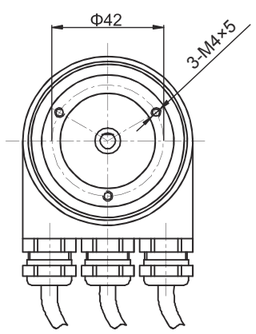
EAC58A





EAC58B

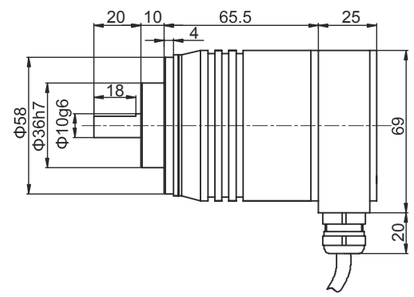


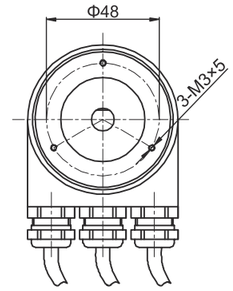


Profibus-DP Interface Absolute Singleturn Encoder EAC58

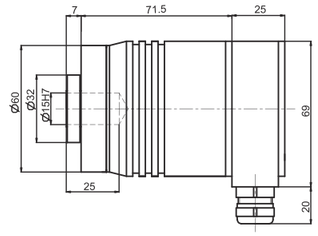
Dimensions

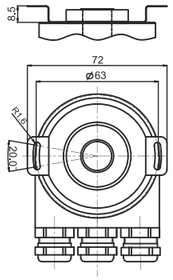
EAC58C





EAC58W





Profibus-DP Interface Absolute Singleturn Encoder EAC58

Order Code:

EAC 58 C 10 – B F6 X X R – 8192 DP

- **DP** — Profibus-DP Interface Absolute Encoder
- **8192** — Resolution: resolution (see previous pages for reference) standard8192 (13 bits)
- **R** — Outlets direction: R=radial
- **X** — Type of connection: X=integrated coupler terminal box with 3 PG7 threaded connectors; T=integrated coupler terminal box with 3 M12 plugs
- **X** — Output logic: X=nonsense
- **F6** — Output & Supply voltage: F6=Profibus-DP interface 10~30Vdc
- **B** — Code type: B=Binary
- **10** — Shaft/ Hollow shaft diameter: 6=Φ6g6mm (58B); 8=Φ8g6mm 58A/B; 9=Φ9.52g6mm 58A; 10=Φ10g6mm; Only for flange type 58W: 8 =Φ8H7mm, 9 =Φ9.52H7mm, 10=Φ10H7mm, 12=Φ12H7mm, 14=Φ14H7mm, 15=Φ15H7mm
- **C** — Flange type: A=round flange; B=synchro flange, shaft length 10mm; C=Φ36clamping flange,shaft length 20mm; W=blind hollow shaft flange, double-winged spring leaf installation
- **58** — Housing diameter: 58=Φ58flange
- **EAC** — 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 acompact structure with striong perfomance in withstanding mechanical damages and higher axial and radial loads. EACA58 series is equipped with the RESET function,and has the resolution up to 8192.4-20mA output is compatible with special PC controllers.

Features:

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

Mechanical Characteristics

Shaft diameter（mm）	Φ6g6/Φ10h8
Protection acc. to EN60529	IP65
Speed（r/m）	6000
Max load capacity of the shaft	
Axial load capacity	60N
Rsdial load capacity	120N
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000Hz
Bearing life	10^9revolution
Rotor moment of inertia	$1.8\times10^{-6}kgm^2$
Starting torque	<0.01Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20°C~~+80°C
Storage temperature	-25°C~~+85°C
Weight	360g

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

Electrical Characteristics

Type of Interface	4--20mA	0--10V
Supply voltage（Ub）	10--30VDC/5VDC	10--30VDC
Current consumption	70mA	70mA
Max.loading current	84mA	84mA
Word-updating frequency	Max15.000/s	Max. 15.000/s
Current loop	10 ... 30VDC	10 ... 30VDC
Analog signal	4 ... 20mA	0 ... 10V
Max.input resistance	200Ω	200Ω
Measuring range	0 ... 360°	0 ... 360°
Max.sensitivity（25°C）	0.2°	0.2°
Resolution	13 Bit	13 Bit
Setup time	Max. 2 ms	Max. 2 ms
Temperature effect	0.1°/10K	0.1°/10K
No-load current	≤3.5 mA	≤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

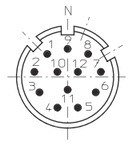
4…20mA Analog Output Absolute Singleturn Encoder EAC58

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	1	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 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 4mA

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 20mA

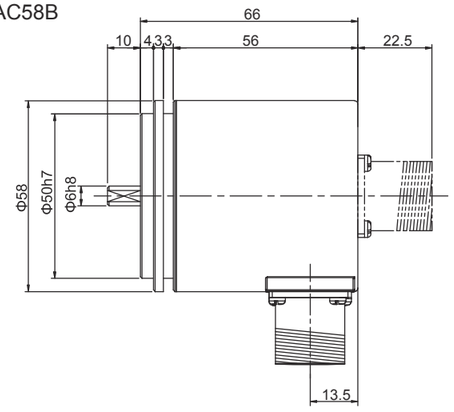
PH: Plug housing

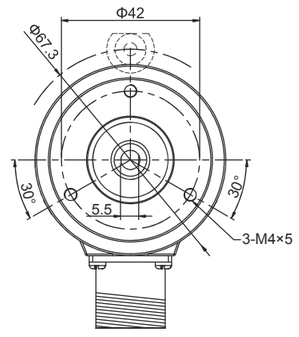
Attention: 1, Before initial start-up, unused outputs must be insulated..

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 4mA.

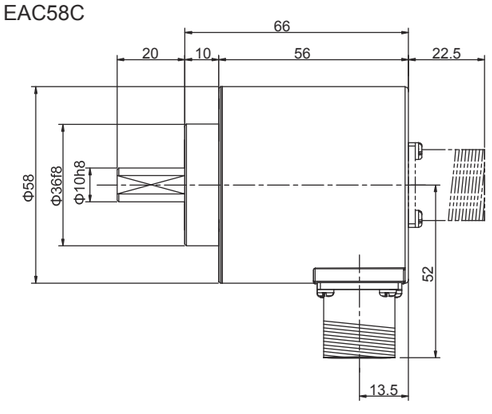
Dimensions

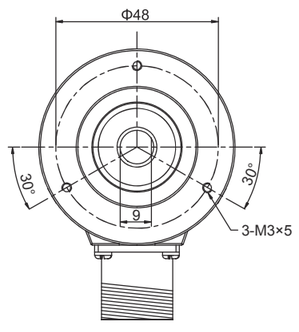
EAC58B





EAC58C





4…20mA Analog Output Absolute Singleturn Encoder EAC58

Order Code

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

Shaft diameter
6=Φ6mm
EAS58B
10=Φ10mm

Flange type
B=synchro flange,shaftΦ6 length10mm
C=Φ36clamping flange, shaft length 20mm

Housing diameter
58=housing diameter

Series
EAC=4--20mA analogue interface

Supply voltage
S6 = 10~30Vdc
S5 = 5Vdc

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

Outlets direction
R=radial
A=axial

Resolution
singleturn resolution 8192(13bits)

Output
EA=4~20mA
EV=0~10V

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

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 withstanding 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 resistanceMetal housing for shock resistance
- Protection class IP65
- Reverse connection protection and short circuit protection

Mechanical Characteristics

Shaft diameter（mm）	Φ6/Φ8/Φ9/Φ10h8
Protection acc. to EN 60529	Ip65
Speed (r/m)	6000
Max load capacity of the shaft	
Axial load capacity	60N
Radial load capacity	120N
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000Hz
Bearing life	10^9revolution
Rotor moment of inertia	$1.8\times10^{-6}kgm^2$
Starting torque	<0.01Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20 ℃~~+80 ℃
Storage temperature	-25 ℃~~+85 ℃
Weight	360g

Resolution

SSI：1024， 2048， 4096， 8192

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

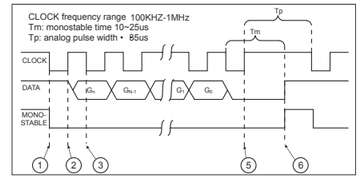
Electrical Characteristics

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 (Vdc)	10-30V	5V	10-30V	5V
Power consumption (no load)	≤200mA	≤200mA	≤200mA	≤200mA
Permissible load (channel)	±20mA	±20mA	±20mA	±2zhuo0mA
Pulse frequency	Max1MHz	Max1MHz	Max40kHz	Max40kHz
Signal level high	Typ.3.8V	Typ.3.8V	MinUb-2.8V	Min3.4V
Signal level low	Max0.5V	Max0.5V	Max2.0V	Max0.5V
Rise timeTr	Max 100ns	Max 100ns	Max 0.2μs	Max 0.2μs
Fall timeTf	Max 100ns	Max 100ns	Max 0.2μs	Max 0.2μs

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

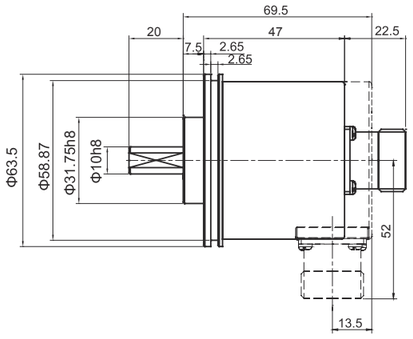
Signal	0V	$+U_b$	bit0	bit1	bit2	bit3	bit4	bit5	bit6	bit7	bit8	bit9	bit10	bit11	bit12	V/R *	ST *
Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	PL	GY/PK	RD/BU	WH/GN	BN/GN	WH/YE	YE/BN	WH/GY
17-pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Gray	/	/	1	2	3	4	5	6	7	8	9	10	11	12	13	/	/
Binary																	

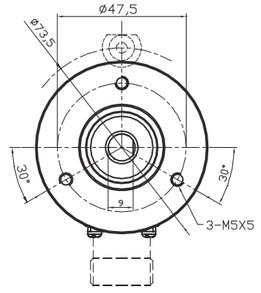
Attention

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

Dimensions

EAC58A

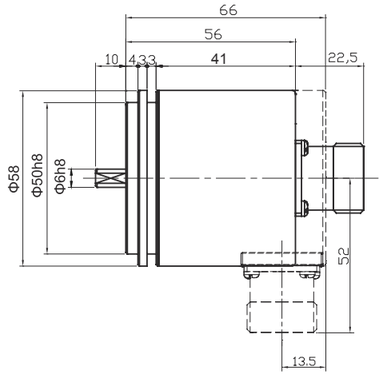


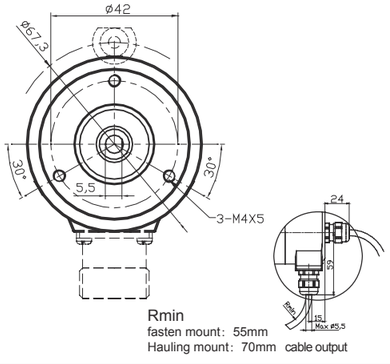


servo-restraint ring：

58PXL (see installation accessories for reference)

EAC58B





Rmin

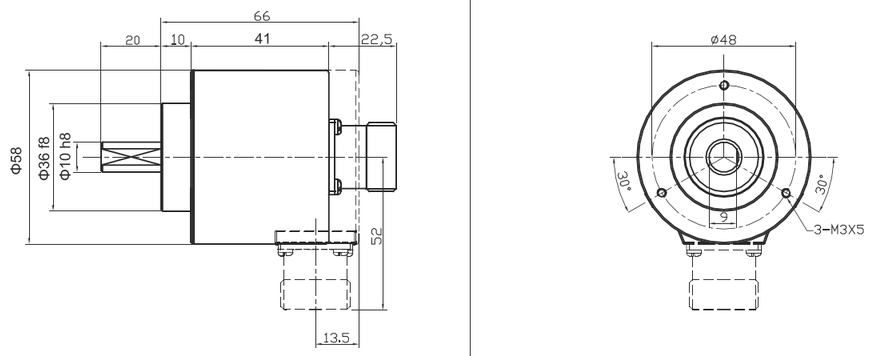
fasten mount：55mm

Hauling mount：70mm cable output

Standard Absolute Singleturn Encoder EAC58

Dimensions

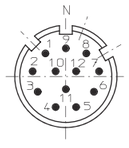
EAC58C



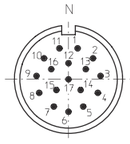
EAC58D

Note:Do not use excessive force during hardwiring between driving shaft,flange,and encoder to prevent shaft damage form overload.

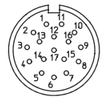
Top view of 12-pin encoder



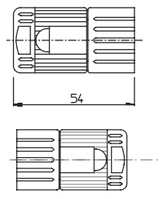
Top view of 17-pin encoder



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 20mm
B=synchronous flange, shaft length 10mm
C=Φ36 clamping flange, shaft length 20mm
D=63.5 spuare flange, Φ31.75,shaft length 20mm

Shaft diameter

6=Φ6mm(EACS58B)
8=Φ8mm
9=Φ9.52mm (3/8”)
10=Φ10mm

Output Code

G=Gray Code
B=Binary

Interface & Supply voltage

P6=push-pill（standard positive logic）	10~30Vdc
P5=push-pill（standard positive logic）	5Vdc
S6=SSI（synchronous serial interface）	10~30Vdc
S5=SSI（synchronous serial interface）	5Vdc
C6=NPN open collector（standard negative logic）	10-30Vdc

Output logic

P=positive logic (parallel)
N=negative logic (parallel)
X= ninsense (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)

Resolution

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

Standard Absolute Singleturn Encoder

Outlets direction

R=radial
A=axial

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 Characteristics

Hollow shaft diameter（mm）	Φ8/Φ10/Φ12H7
Protection acc. to EN 60529	IP65
Speed（r/m）	6000
Max load capacity of the shaft	
Axial load capacity	60N
Radial load capacity	1200N
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000Hz
Bearing life	10^9revolution
Rotor moment of inertia	1.8×10^{-6}kgm^2
Starting torque	<0.01Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20°C~~+80°C
Storage temperature	-25°C~~+85°C
Weight	360g

Resolution

SSI：1024，2048，4096，8192

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

Electrical Characteristics

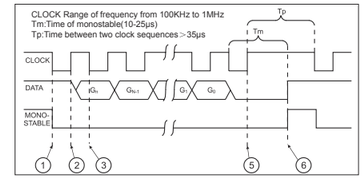
Output circuit	SSI	SSI	Parallel	Parallel
Output driver	RS422	RS422	Push-pull/NPN OC	
Resolution	13 Bits	13 Bits	13 Bits	13 Bits
Supply voltage (Vdc)	10-30V	5V	10-30V	5V
Power consumption (no load)	≤200mA	≤200mA	≤200mA	≤200mA
Permissible load (channel)	±20mA	±20mA	±20mA	±20mA
Pulse frequency	Max1MHz	Max1MHz	Max40kHz	Max40kHz
Signal level high	Typ.3.8V	Typ.3.8V	Typ.Ub-2.8V	Typ.3.4V
Signal level low	Max0.5V	Max0.5V	Max2.0V	Max0.5V
Rise timeTr	Max 100ns	Max 100ns	Max 0.2μs	Max 0.2μs
Fall timeTf	Max 100ns	Max 100ns	Max 0.2μs	Max 0.2μs

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

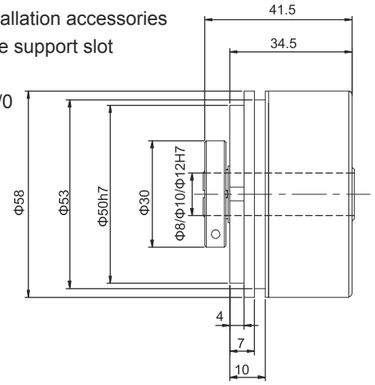
EAC58P(Q)

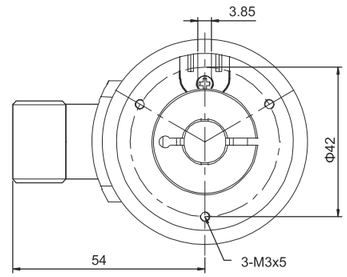
P without installation accessories

Q short torque support slot

Accessories:

E23230010A/0

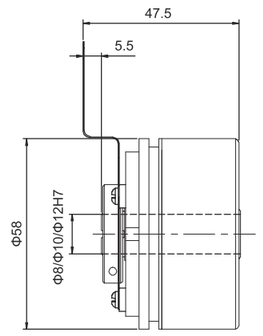


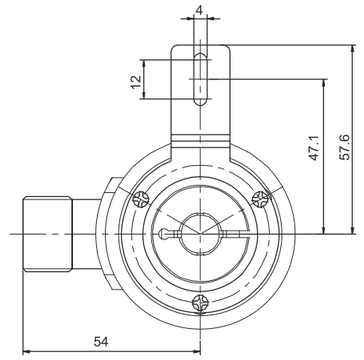


EAC58H

Accessories:

E41350050A/0

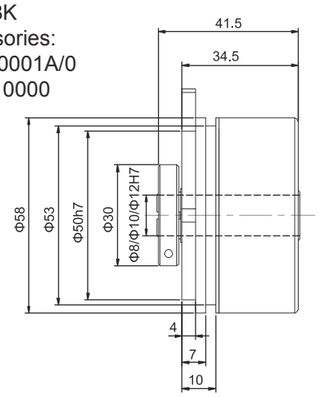


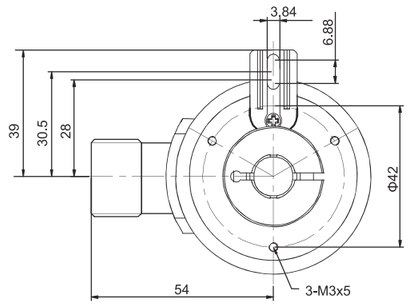


Standard Hollow Shaft Absolute Singleturn Encoder EAC58P

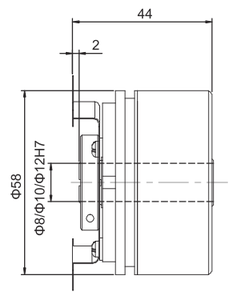
Mechanical Drawings

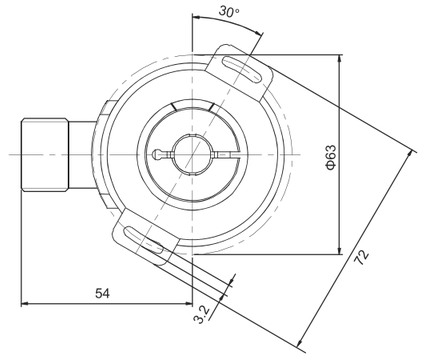
EAC58K
Accessories:
E41220001A/0
E4700 0000





EAC58W
Accessories:
E41350042A/1





Standard Hollow Shaft Absolute Singleturn Encoder EAC58P

Order Code:

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

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=Φ8mm
9=Φ9.52mm
10=Φ10mm
12=Φ12mm

Output Code
G=Gray Code
B=Binary

Interface & Supply voltage

P6=push-pill（standard positive logic）	10~30Vdc
P5=push-pill（standard positive logic）	5Vdc
S6=SSI（synchronous serial interface）	10~30Vdc
S5=SSI（synchronous serial interface）	5Vdc
C6=NPN open collector（standard negative logic）	10-30Vdc

Output logic
P=positive logic (parallel)
N=negative logic (parallel)
X= ninsense (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 product.
Please contact ELCO for further specification requests and requirements.

DeviceNet Absolute Multiturn Encoder EAM58

Descriptions

DeviceNet absolute multituren encoder EAM58 series is used in various industrial environment. It delivers excellent performance in withstanding mechaniclal damages. It complies with DeviceNet protocol and has a max. resolution of 8192 and max. revolution up to 4096. Its high speed communication and anti-interference function ensure steady performance during operatuion.

Features

DeviceNet®

- Pre-screwed holes, convenient for installation
- Water-proof seal, improve protection grade
- Optional shaft diameter; better load capacity thanks to stainless steel design
- Cable output, faciliate maintemance and installation
- Protection grade of IP65
- Metal housing for better shock resistance
- Comply with DeviceNet Bus protocol

Mechanical Characteristics

Shaft diameter (mm)	Φ6g6	-58B optional
	Φ8g6	-58A/B/C
	Φ9.52(3/8")g6	-58A/B/C
	Φ10g6	-58A/B/C
Hollow shaft diameter (mm)	Φ8H7/Φ9.52H7/Φ10H7	-58W
	Φ12H7/Φ14H7/ Φ15H7	-58W
Protection Grade	IP65	
Speed (r/m)	6000	
Axial load capacity	80N	
Radial load capacity	160N	
Shock resistance	50G/11ms	
Vibration resistance	10G 10~2000Hz	
Bearing life	10^9 revolution	
Moment of inertia	approx. 1.8×10^{-6} kgm^2	
Starting torque	<0.05Nm	
Housing material	AL UNI 9002/5 - (D11S)	
Cover material	AL 6060	
Flange material	AL UNI 9002/5 - (D11S)	
Operating temperature	-40°C~~+80°C	
Storage temperature	-45°C~~+85°C	
Weight	~800g	

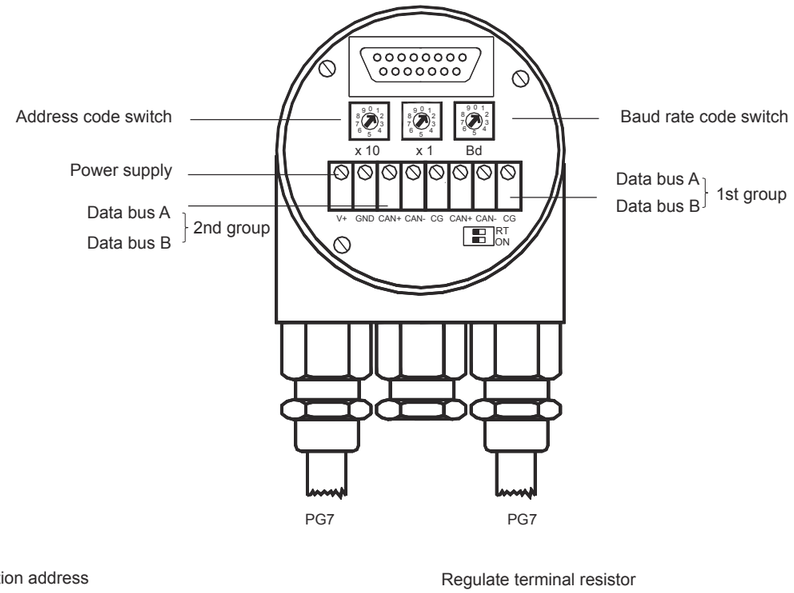
4096 (Max. revolution) × 8192 (Max. resolution of single turn)

Electrical Characteristics

Max.revolution	4096 (12 bits)
Max revsolution/revolution	8192 (13 bits)
Supply voltage (Vdc)	10~30 Vdc
Power consumption (no load)	350mA
Bus Max. rate	500K
Linearity	+/- 1/2 LSB
Protocal	DeviceNet Profile for Encoder Release V2.0

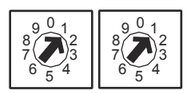
Terminal Assignment

V+	Power supply (24VDC)
GND	Power ground (24VDC)
CG	CAN GND
CAN-	CAN Low
CAN+	CAN High
CG	CAN GND
CAN-	CAN Low
CAN+	CAN High



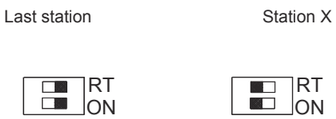
Regulate station address

The station address can be regulated by the swith and be distributed only once among the address 1 to 63.



Regulate terminal resistor

Set the terminal resistor (120 Ω) into the circuit by the DIP switch.



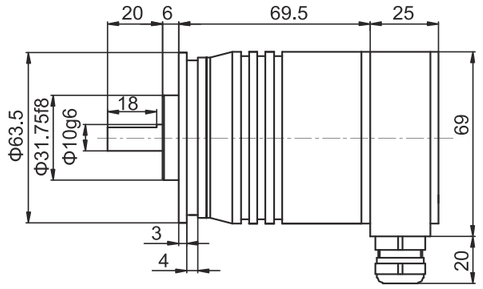
Regulate Baud rate

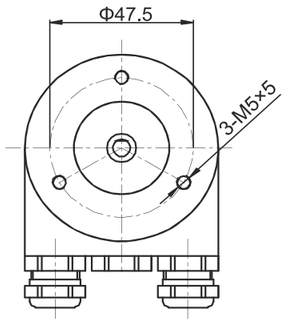
Baud rate k bit/s	Switch
125	0
250	1
500	2

DeviceNet Absolute Multiturn Encoder EAM58

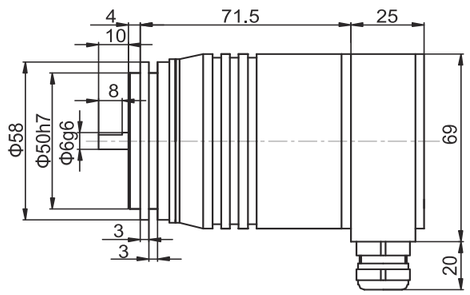
Dimensions (mm)

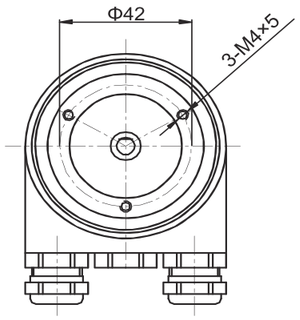
EAM58A





EAM58B

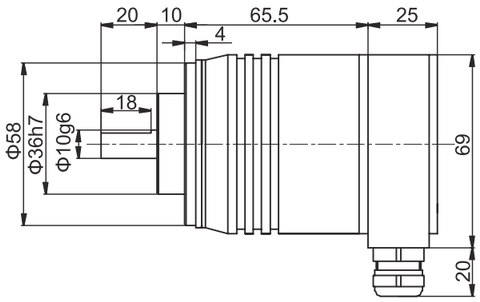


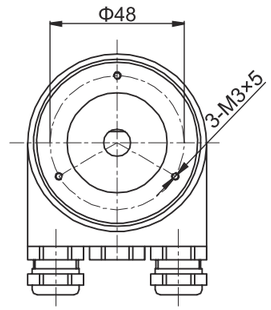


DeviceNet Absolute Multiturn Encoder EAM58

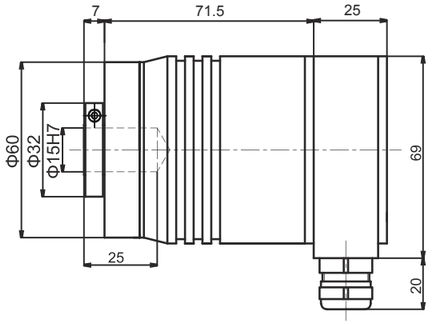
Dimensions (mm)

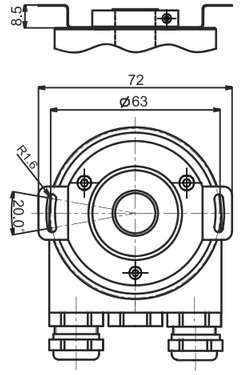
EAM58C





EAM58W





DeviceNet Absolute Multiturn Encoder EAM58

Order Code:

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

Series
EAM=absolute multiturn DeviceNET

Housing diameter
58=Φ58

Flange types
A=round flange (58A)
B=synchro flange, shaft length 10mm
C=Φ36 clamping flange,shaft length 20mm
W=blind hollow shaft flange, installed with double-winged fixing sheet

(Hollow) Shaft diameter
6=Φ6g6mm for 58B
8=Φ8g6mm for 58A/B/C
9=Φ9.52g6mm for 58A/B/C
10=Φ10g6mm for 58A/B/C

Only applicable for the axis aperture in flange type 58 W
8 =Φ8H7mm
9 =Φ9.52H7mm
10=Φ10H7mm
12=Φ12H7mm
14=Φ14H7mm
15=Φ15H7mm

Code type
B=Binary

Interface & Supply voltage
F6=Profibus-DP interface 10~30Vdc

Output logic
X=not applicable

Type of connection
X= terminal box 2 PG7 threaded connectors and integrated T-coupler
T= integrated coupler terminal box with 3 M12 plugs

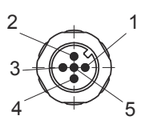
Outlets direction
R=radial

Resolution
Turns/Singleturn resolution (refer to previous pages)
Standard 4096/8192 (25 bits)

DeviceNet Absolute Encoder

M12 terminal assignment：

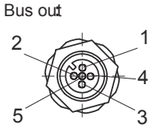
Bus in:



Signal	DRAIN	+ V DC	– V DC	CAN_H	CAN_L
Pin	1	2	3	4	5

For 5-core male plug, the order code of “T” connector is: TMSP12F-F5

Bus out:



Signal	DRAIN	+ V DC	– V DC	CAN_H	CAN_L
Pin	1	2	3	4	5

For 5-core female plug, the order code of “T” connector is: TMSP12F-M5

Profibus-DP Interface Absolute Multiturn Encoder EAM58

Description

Profibus-DP interface absolute multiturn encoder EAM 58 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 Characteristics

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°C~~+80°C	
Storage temperature	-45°C~~+85°C	
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)

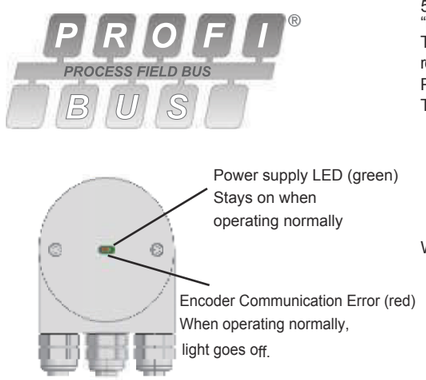
Electrical Characteristics

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

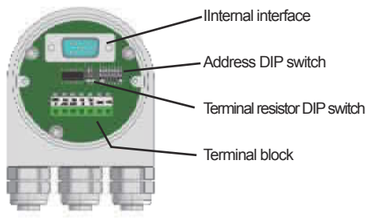
Terminal Assignement

+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)

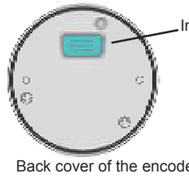
Profibus-DP Interface Absolute Multiturn Encoder EAM58



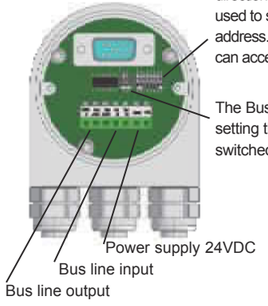
Back of the encoder wiring box



Inside of the encoder wiring box



Back cover of the encoder



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

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.

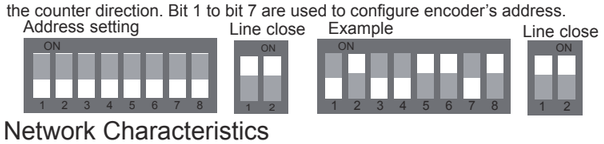
On the back cover of the encoder there are two LED indicators. The device's operating status can be observed by the two LED. The green LED shows the power status and must be on constantly. The red LED only switches off only during the periodic data exchange between the Profibus master and the encoder.

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.

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 1001101, 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.



Network Characteristics

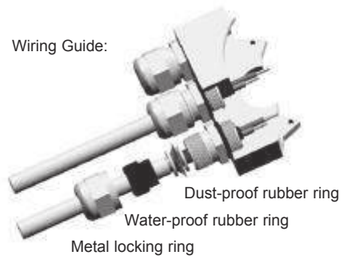
Usually, an A type cable is used to wire a DP/FMS network. This cable has to have the following characteristics:

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

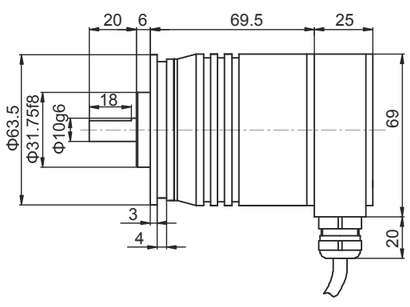
According to EN50170, a maximum of 4 repeaters are allowed between any two stations. Dependent on the repeater type and manufacturer, more than 4 repeaters may be allowed in some cases. Refer to the manufacturer's technical specification for details.

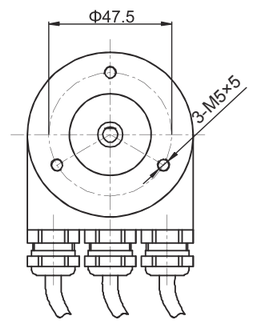
Wiring box

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

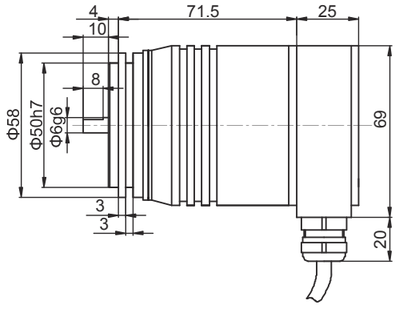
Dimensions

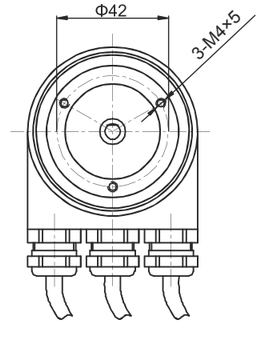
EAM58A





EAM58B

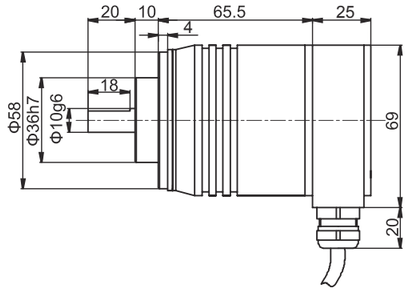


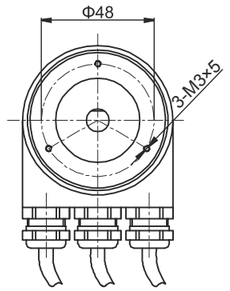


Profibus-DP Interface Absolute Multiturn Encoder EAM58

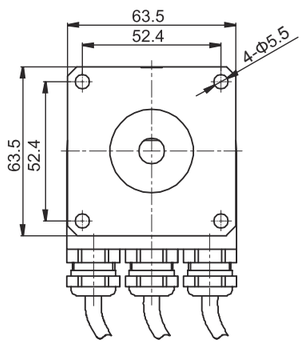
Dimensions

EAM58C

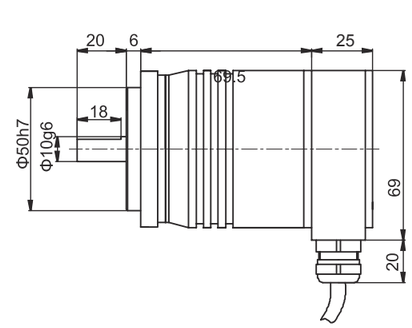


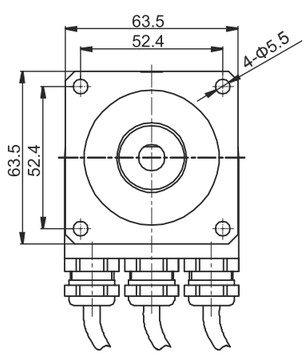


EAM58D



EAM58E

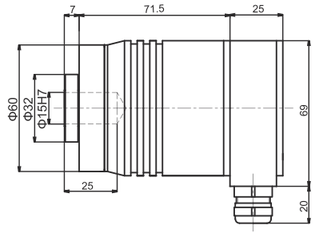


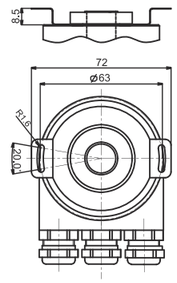


Profibus-DP Interface Absolute Multiturn Encoder EAM58

Dimensions

EAM58W





Order Code:

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

Series
EAM＝Profibus-DP interface absolute multiturn

Housing diameter
58=Φ58flange

Flange type
A=round flange
B=synchro flange, shaft length 10mm
C=Φ36clamping flange,shaft length 20mm
D=Φ63.5square flange，Φ31.75，shaft length20mm
E=Φ63.5quare flange，Φ50h7，shaft length20mm
W=blind hollow shaft flange, double-winged spring leaf installation

Shaft diameter
6=Φ6g6mm (58B)
8=Φ8g6mm 58A/B/D/E，
9=Φ9.52g6mm 58A/D/E，
Only applicable for axis aperture in flange type 58W
8 =Φ8H7mm
9 =Φ9.52H7mm
10=Φ10H7mm
12=Φ12H7mm
14=Φ14H7mm
15=Φ15H7mm

Code type
B=Binary

Interface & Power Supply
F6=Profibus-DP interface 10~30Vdc

Output logic
X= nonsense

Types of connection
X=integrated coupler terminal box with 3 PG7 threaded connectors
T=integrated coupler termianl box with 3 M12 plugs

Connection direction
R=radial

Resolution
resolution (see previous pages for reference
Standard 4096/8192(25 bits)

Profibus-DP Interface Absolute Encoder

4-20mA Analog Output Absolute Multiturn Encoder EAM58

Description:

4-20mA Analog output absolute multiturn encoder EAM58 series, designed with compact structure is capable of withstanding 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 Characteristics

Shaft diameter(mm)	Φ6g6/Φ8g6/Φ9g6/Φ10g6
Protection acc. to EN 60529	IP65
Speed(r/m)	6000
Max load capacity of the shaft	
Axial load capacity	80N
Radial load capacity	160N
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000Hz
Bearing life	10^9revolution
Rotor moment of inertia	$1.8\times10^{-6}kgm^2$
Starting torque	<0.01Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-40°C~~+80°C
Storage temperature	-45°C~~+85°C
Weight	360g~750g

Resolution 256 512 1024 2048 4096 8192

others on request

Electrical Characteristics

Output circuit	4--20mA	0--10V
Supply voltage(U_b)	10--30VDC／5VDC	10--30VDC
Power consumption typ.	70mA	70mA
No load Max.	84mA	84mA
Word change frequency	Max15.000/s	Max. 15.000/s
Current loop supply voltage	10 ... 30VDC	10 ... 30VDC
Analogue signal	4 ... 20mA	0 ... 10V
Max. input resistance	200Ω	200Ω
Measuring range	Determined based on on actual resolution	Determined based on on actual resolution
Max. sensitivity（25℃）	0.2°	0.2°
Resolution	16 Bit	16 Bit
Building up time	Max. 2 ms	Max. 2 ms
Temperature coefficient	0.1°/10K	0.1°/10K
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	1	12	PH

+I: Input of current loop　　0V/+U_b 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 4mA

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 20mA

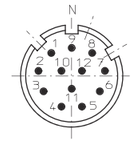
PH: Plug housing

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 4mA.

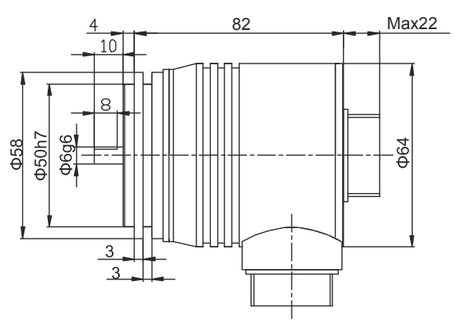
Top view of the connecting end on needle connector block

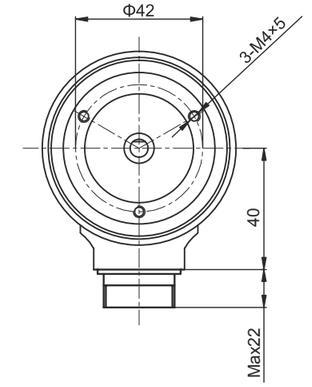
12-pin plug



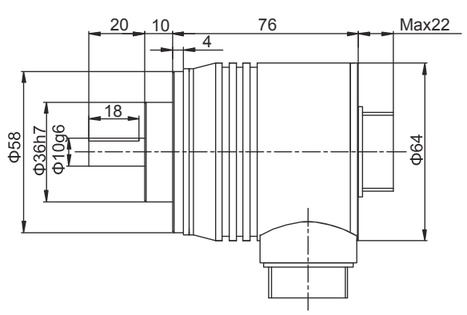
Dimensions

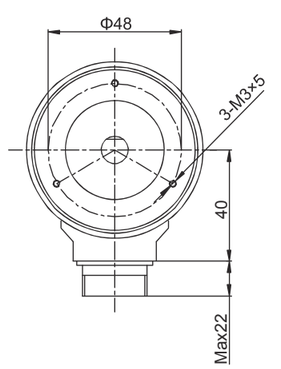
EAM58B





EAM58C





4-20mA Analog Output Absolute Multiturn Encoder EAM58

Order Code

EAM 58 C 10 – G S6 X PC R – 16/4096 EA . XXXX

- EAM — Series: EAM=4--20mA analogue interface
- 58 — Housing diameter: 58=housing diameter
- C — Flange type: B=synchro flange,shaftΦ6 length10mm; C=Φ36clamping flange, shaft length 20mm
- 10 — Shaft diameter: 6=Φ6mm EAS58B; 10=Φ10mm
- G — Supply voltage: S6 = 10~30Vdc; S5 = 5Vdc
- S6 — Type of connection: PC=12-core cable (1.5m); T=M23, 12-pin plug
- X — Outlets direction: R=radial; A=axial
- PC — Resolution: Singleturn resolution Max. 8192 (13bits); Multiturn resolution Max. 65536 (16bits); Note: Add "D" for including resolution cable box.
- R — Output: EA=4~20mA; EV=0~10V
- 16/4096 — Customized cable length; CN00XX=cable length; e.g. CN0010=1m, CN0020=2m
- EA — XXXX=Special code

Standard Absolute Multiiturn Encoder EAM58

Descriptions

The standard absolute multiturn encoder EAM58 series offers excellent performance to resist mechanical shocks and is capable of withstanding high axial and radial loads. Various flange types provide great convenience for installation; serial and parrallel interfaces are provided for various upper PC; optional turns, resolutions and code formats greatly facilitate customer's application.

Features

- Various types of flanges available
- Metal housing to resist shocks
- Pre-screwed holes convenient to installation
- Protection grade of IP65
- Waterproof seal provides higher IP grade
- Optional output connecting for easy use
- Optional shaft diameters facilate the application
- Varioius turns and resolutions

Mechanical Characteristics

Shaft diameter (mm)	Φ6g6/Φ8g6/Φ9g6/Φ10g6
Hollow shaft diameter (mm)	Φ8H7/Φ9.52H7/Φ10H7 -58W
	Φ12H7/Φ14H7/ Φ15H7 -58W
Protection Grade	IP65
Speed (r/m)	6000
Max. load capacity of the shaft	
Axial	80N
Radial	160N
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000Hz
Bearing life	10^9 revolution
Moment of inertia	$1.8\times10^{-6}kgm^2$
Starting torque	<0.01Nm
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40°C~~+80°C
Storage temperature	-45°C~~+85°C
Weight	approx. 400g

Regular resolution:

Turns available: 2，4，8，16，32，64，128，256，512，1024，2048，4096

Optional resolution per turn：2，4，8，16，32，64，128，256，512，1024，2048，4096，8192

ST：Reset input, the current position value is saved as the new "0"position.

VR：Up/Down input, once this input is activated, the shaft will turn clockwise, and the output value will decrease gradually.

Latch：Latch input, current output value is freezed.

Electrical Characteristics

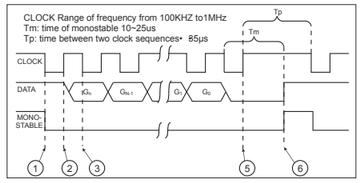
Output circuit	SSI	SSI	Parallel	Parallel
Output and driver	RS422	RS422	Push-Pull	Push-Pull
Resolution	13 Bits	13 Bits	13 Bits	13 Bits
Supply voltage (Vdc)	10-30V	5V	10-30V	5V
Power consumption (no load)	≤200mA	≤200mA	≤200mA	≤200mA
Max. load current	±20mA	±20mA	±20mA	±20mA
Max.output frequency	Max.15kHz	Max.15kHz	Max.40kHz	Max.40kHz
Signal level high	Typ.3.8V	Typ.3.8V	Min.Ub-2.8V	Min.3.4V
Signal level low	Max.0.5V	Max.0.5V	Max.2.0V	Max.0.5V
Rise time Tr	Max 100ns	Max 100ns	Max 1μs	Max 0.2μs
Fall time Tf	Max 100ns	Max 100ns	Max 1μs	Max 0.2μs

Standard Absolute Multiiturn Encoder EAM58

Terminal Assignment

SSI

Signal	0V	+U_b	+C	-C	+D	-D	ST *	V/R*	Latch	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	BK	⏚
12-pin	1	2	3	4	5	6	7	8	9	PH



Parallel

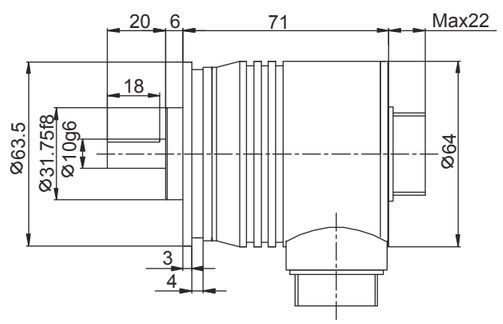
Signal	0V	+U_b	bit0	bit1	bit2	bit3	bit4	bit5	bit6	bit7	bit8	bit9	bit10	bit11	bit12
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	WH/GN	BN/GN	WH/YE	BN/YE	WH/GY
M32-pin	j	h	A	B	C	D	E	F	G	H	J	K	L	M	N
Gray	/	/	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13

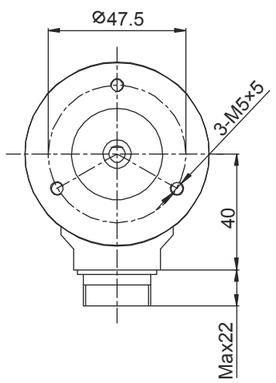
Signal	bit13	bit14	bit15	bit16	bit17	bit18	bit19	bit20	bit21	bit22	bit23	bit24	Latch	V/R*	ST
Color Code	BN/GY	WH/PK	BN/PK	WH/BU	BN/BU	WH/RD	BN/RD	WH/BK	BN/BK	GN/GY	YE/PK	GY/PK	YE/BK	RD/BU	GN/BU
M32-pin	P	R	S	T	U	V	W	X	Y	Z	a	d	e	g	f
Gray	G14	G15	G16	G17	G18	G18	G20	G21	G22	G23	G24	G25	/	/	/

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

Dimensions (mm)

EAM58A

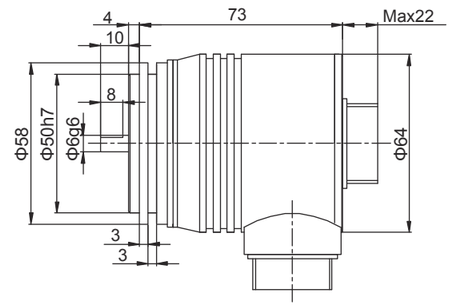


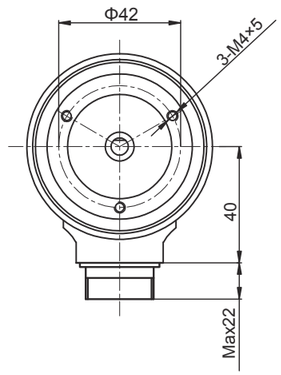


Standard Absolute Multiturn Encoder EAM58

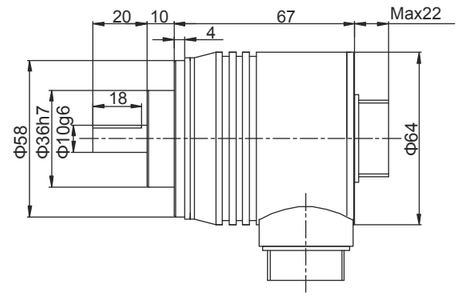
Dimensions (mm)

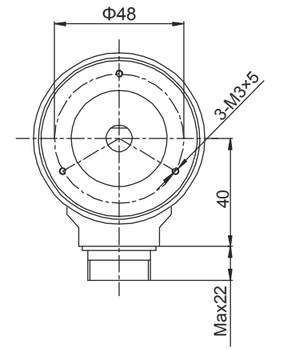
EAM58B



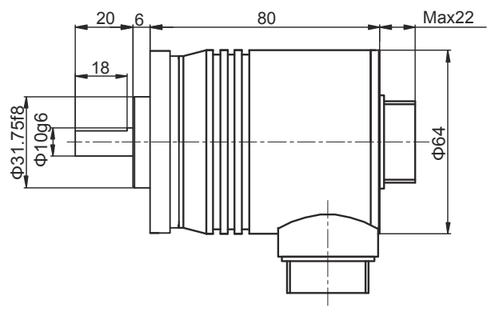


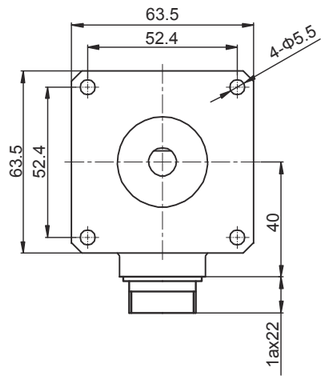
EAM58C





EAMS58D

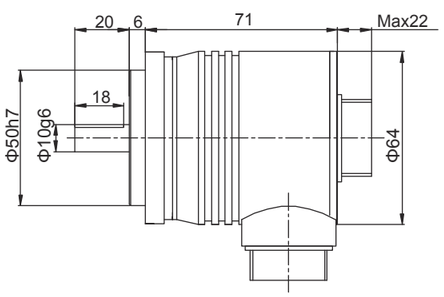


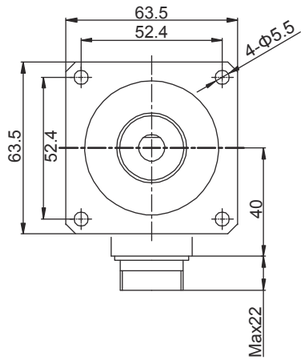


Standard Absolute Multiturn Encoder EAM58

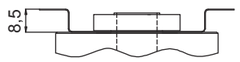
Dimensions (mm)

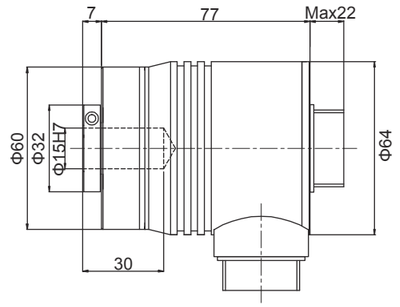
EAM58E

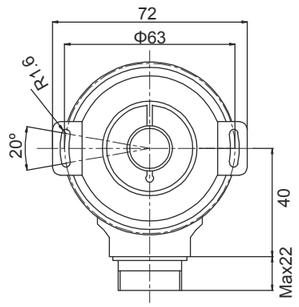




EAM58W
Matched accessory:
E41350042A/1







Standard Absolute Multiturn Encoder EAM58

Order Code ：

EAM 58 C 10 – G S6 X PC R – 4096/8192 EU . XXXX

Outlets direction
R=radial
A=axial

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

Standard Absolute Multiturn Encoder

Resolution
Turns/Singleturn resolution (refer to previous pages)
Standard 4096/8192 (25 bits)

Type of connection
PC=12-core cable (SSI), standard length 1.5m
T=M23, 12-pin plug (SSI),without matching connectors
PE=32-core cable (parallel), standard length 1.5m
MA=MS 19-pin plug
ME=MS 32-pin plug

Output logic
N=negative logic (parallel)
P=positive logic (parallel)
X=not applicable (SSI)

Interface & Supply voltage

P6=push-pull with short-circuit protection (standard positive logic)	10~30Vdc
P5=push-pull with short-circuit protection (standard positive logic)	5Vdc
S6=SSI（synchro serial interface）	10~30Vdc
S5=SSI（synchro serial interface）	5Vdc

Please contact us for other requirements.

Code type
G=Gray
B=Binary

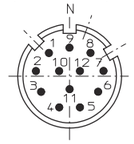
(Hollow) Shaft diameter
6=Φ6g6mm
58B
8=Φ8g6mm
58A/B/D/E
9=Φ9.52g6mm
58A/D/E
10=Φ10g6mm
Only applicable for the axis aperture in flange type 58W
8 =Φ8H7mm
9 =Φ9.52H7mm
10=Φ10H7mm
12=Φ12H7mm
14=Φ14H7mm
15=Φ15H7mm

Flange types
A=round flange
B=synchro flange, shaft length 10mm
C=Φ36 clamping flange,shaft length 20mm
D=Φ63.5 square flange，Φ31.75，shaft length20mm
E=Φ63.5square flange，Φ50，shaft length20mm
W=blind hollow shaft flange, installed with double-winged fixing sheet

Housing diameter
58=Φ58

Series
EAM＝standard absolute multiturn

Topview of 12-pin plug



Connection accessories:
Connectors matching with connection type “T”
Order code: TMSP1612F
Connectors matching with connection type “ME”
Order code: MS32FV
Connectors matching with connection type “MA”
Order code: MS19FV

This sample is only for reference;
It’s subject to the actual products.

ProfiNet Interface Absolute Multiturn Encoder EAM58

Desctiption

The ProfiNet Interface Absolute Multiturn Encoder EAM58 Series, has a good resistance to mechanical damage and is also capable of withstanding higher axial and radial loads. Various types of flanges can be used to meet different requirements. It complies with ProfiNet 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

- 6 Status indicators, for a fast and accurate understanding of the product status
- 3×M12 Connectors, implement a fast connection
- ProfiNet IO/RT interface with an intelligent diagnosis and high speed data transmission function
- Software configures the application of various parameters - convenient maintenance
- Faster data update, update time ≤1ms

Mechanical Characteristics

Shaft Diameter(mm)	Φ6g6	-58B
	Φ10g6	-58C
Hollow Shaft Diameter(mm)	Φ8H7/Φ10H7/Φ12H7	-58W
Degree of Protection	IP65	
Speed	6000	
Axial load capacity	40N	
Radial load capacity	80N	
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	AL UNI 9002/5 -(D11S)	
Housing material	AL 6060	
Flange material	AL UNI 9002/5 -(D11S)	
Operating temperature	-40°C~~+80°C	
Storage temperature	-45°C~~+85°C	
Weight	~600g	

Electrical Characteristics

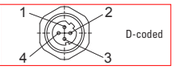
Max. number of laps	4096 (12 bits)
Max. resolution	8192 (13 bits)
Supply voltage	10~30 Vdc
Current consumption (without load)	200mA
Max. bus rate	100 Mbits/s
Linearity	12bits+/- 1/2 LSB
Interfaces	PROFINET IO/RT Class C
Encoder device protocol	V4.1 Class3

ProfiNet Interface Absolute Multiturn Encoder EAM58

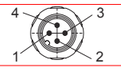
LED indicator light

Power light:	Green light for breakdown, no light for no power supply
Configuration lamp:	Red light for breakdown, no light for normal configuration
Interface 1/2:	Green/orange light for normal work, no light for not normal

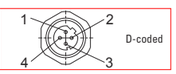
Data port 1:

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

Data port:

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

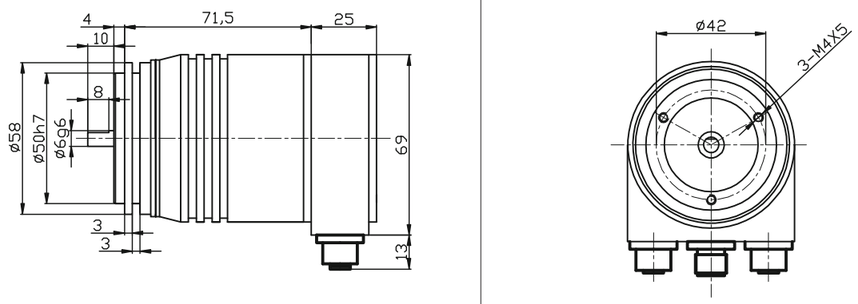
Data port 2:

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

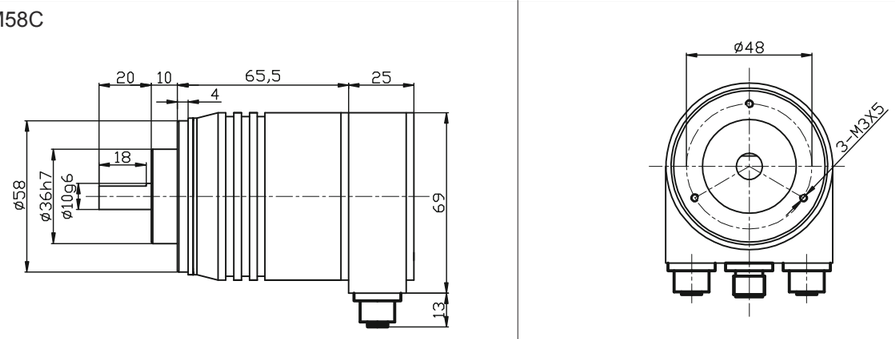
ProfiNet Interface Absolute Multiturn Encoder EAM58

Mechanical drawing

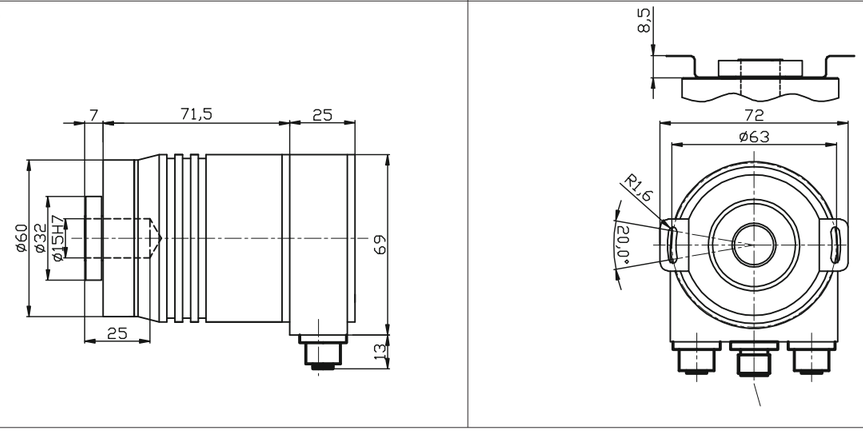
EAM58B



EAM58C



EAM58W



ProfiNet Interface Absolute Multiturn Encoder EAM58

Order Code:

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

Series
EAM = ProfiNET Interface Multiturn

Housing diameter
58 = Φ58 flange

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

Shaft diameter
6 = Φ6g6mm
58B optional
10 = Φ10g6mm
58C optional
Only for flange type 58W:
8 = Φ8H7mm
10 = Φ10H7mm
12 = Φ12H7mm

Code type
B = Binary

Output & supply voltage
F6 = Profinet IO Interface 10~30Vdc

Output logic
X = not applicable

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

Outlet directions
R = radial

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

ProfiNet Interface Absolute Encoder

Mating connectors code:
Power supply connector: TMSP 12F-F4
Bus input connector: ES06-52
Bus output connector: ES06-52

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 higher axial and radial loads. Through-hole installations and various types of shatfs diameters could meet the different repuirements 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 repuests. 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 Characteristics

Shaft diameter(mm)	Φ12H7/Φ15H7/Φ20H7//Φ24H7/Φ28H7/ Φ(5/8)"H7/Φ1"H7/Φ12g6X30
Protection acc. to EN 60529	IP 65
Speed(r/m)	Max.6000 continuous Max.3000
Max load capacity of the shaft	
axial	40 N
radial	80 N
Shock resistance	2500 m/s^2 6ms
Vibration resistance	100 m/s^2 10~2000 Hz
Bearing life	10^9revolution
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˚C ~ +80˚C
Storage temperature	-25˚C ~ +85˚C
Weight	~ 900g

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

Electrical Characteristics

Supply voltage(+Ub)	10~30 V DC
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.

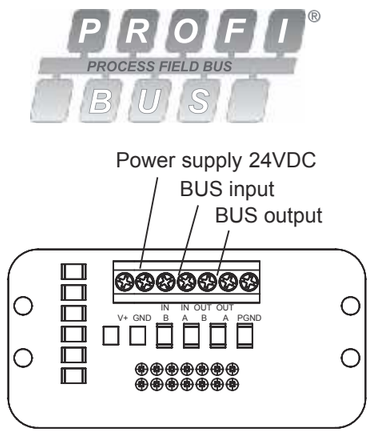
Programmable parameters:

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

Encoder with integrated coupler:

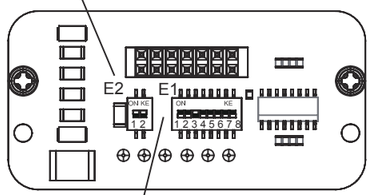
- Achieving current isolation through Fieldus DC/DC converter
- Including RS485 driver, max baud rate 12MB
- Configure Fieldbus address through DIP switch
- LED Diagnostic Display
- Equipped with Class1 & Class 2 functions

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 (16384 position per revolution, 16384 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).

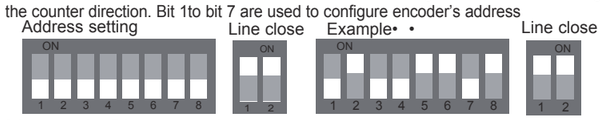
4- Preparing applications from the master and setting up the Profibus networ

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.

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.

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 1001101, 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 Characteristics

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

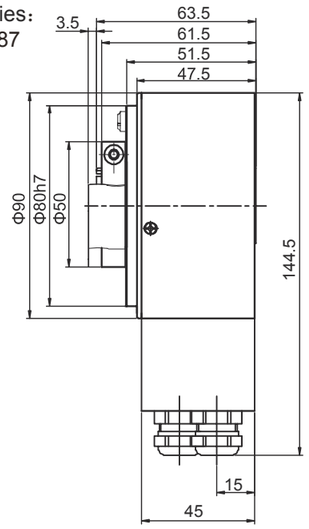
kbaud	9.6	19.2	93.75	187.5	500	1500	12000
Range/Segment	1200m	1200m	1200m	1000m	400m	200m	100m

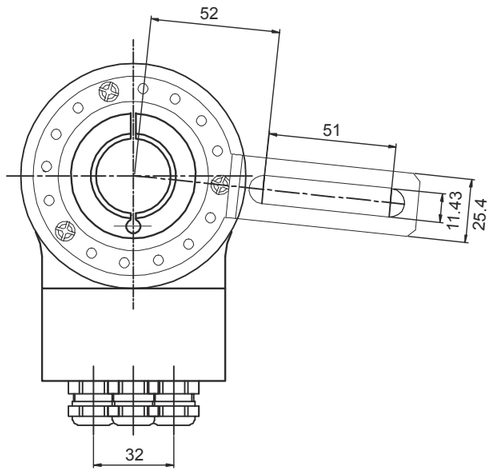
Finally, the physical characteristics of a Profibus network are now known.

Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder EAM90L

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

Series
EAM= Profibus-DP interface absolute multiturn

Housing diameter
90=housing diameter

Flange types
L=long tether arm

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

Code type
B=Binary

Output & Supply voltage
F6=Profibus-DP interface 10~30Vdc
Profibus Class 2

Output logic
X=nonsense

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

Outlets direction
R=radial

Resolution
revolution/resolution
4096/16384 (max26bits)
4096/8192 (standard25 bits)

Profibus-DP Interface Encoder

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 16384(14 bit) and the RESET function.

Features

- Gray or Binary available
- Space-saver hollow shaft design, “C” ring lock
- Durable stainless steel shaft Φ12~Φ28mm
- Waterproof seal provides greater IP level
- Metal housing can withstand higher axial and radial loads.
- Resolution up to 16384
- Protection class IP65

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

Mechanical Characteristics

Shaft diameter (mm)	Φ12H7/Φ15H7/Φ20H7/Φ24H7/Φ28H7/ Φ(5/8)"H7/Φ1"H7/Φ12g6X30
Protection acc. to EN 60529	IP65
Speed (r/m)	6000
Max load capacity of the shaft	
axial	40N
radial	80N
Shock resistance	50G/11ms
Vibration resistance	10G 10~2000Hz
Bearing life	10^9revolution
Moment of inertia	$1.8\times10^{-6}kgm^2$
Starting torque	<0.1Nm max
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20°C~~+80°C
Storage temperature	-25°C~~+85°C
Weigh	600g

Available conventional resolution:

Resolution per turn:

1024，2048，4096，8192，16384

Number of turns:

1024, 2048, 4096, 8192

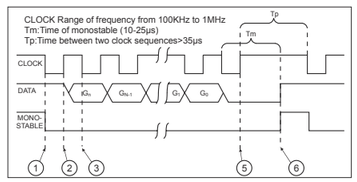
Electrical Characteristics

Output circuit	SSI
Output driver	RS422
Resolution	14 Bits
Supply voltage (Vdc)	10-30V
Power consumption (no load)	≤200mA
Permissible load (channel)	±20mA
Pulse of frequency	Max. 1MHz
Signal level high	Typ. 3.8V
Signal level low	Max. 0.5V
Rise timeTr	Max 100ns
Fall timeTf	Max 100ns

Terminal Configuration

SSI Wiring Guide

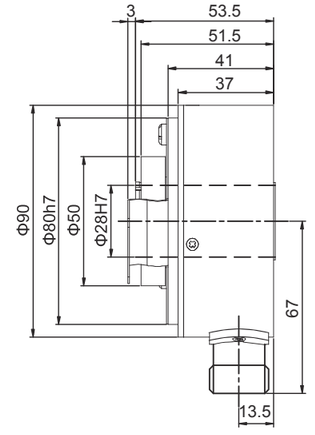
Signal	0V	+Ub	+C	-C	+D	-D	ST*	VR*	⏚
Color	WH	BN	GN	YE	GY	PK	BU	RD	
12-pin	1	2	3	4	5	6	7	8	PH

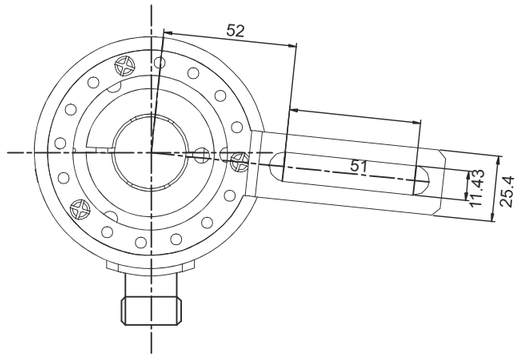


Large Hollow Shaft Absolute Multiturn Encoder EAM90L

Dimensions

EAM90L
Accessories
E41350087





Order Code

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

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

Large Hollow Shaft Absolute Encoder

Resolution
resolution max. 16384 (14 bits)
revolution 4096 (12 bits)

Outlets direction
R=radial

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

Output logic
X= N/A (SSI)

Interface and Power Supply
S4=SSI(synchro serial interface) 5~30Vdc

Code type
G=Gray
B=Binary

Shaft/ Hollow shaft diameter
12 = Φ12mmmmhollow shaft
15 = Φ15mmmmhollow shaft
20 = Φ20mmmmhollow shaft
24 = Φ24mmmmhollow shaft
28 = Φ28mmmmhollow shaft
15.9 = Φ5/8"mmmmhollow shaft

Flange type
L=long tether arm

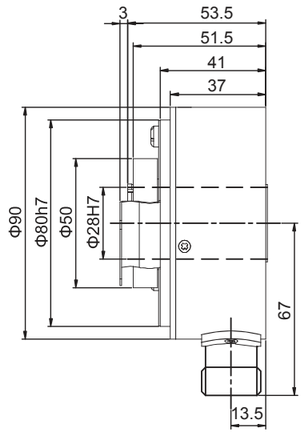
Housing diameter
90= housing dimension

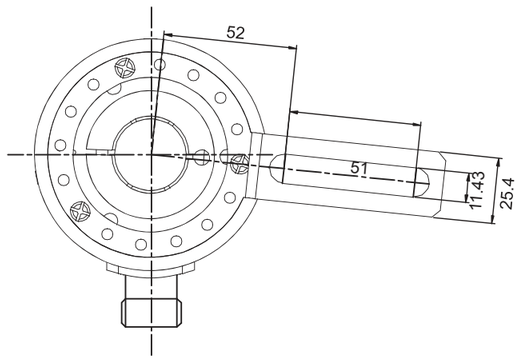
Series
EAM=standard absolute multiturn

Large Hollow Shaft Absolute Multiturn Encoder EAM90L

Dimensions

EAM90L
Accessories
E41350087





Order Code

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

- **Series**: EAM=standard absolute multiturn
- **Housing diameter**: 90= housing dimension
- **Flange type**: L=long tether arm
- **Shaft/ Hollow shaft diameter**:
  - 12 = Φ12mmmmhollow shaft
  - 15 = Φ15mmmmhollow shaft
  - 20 = Φ20mmmmhollow shaft
  - 24 = Φ24mmmmhollow shaft
  - 28 = Φ28mmmmhollow shaft
  - 15.9 = Φ5/8"mmmmhollow shaft
- **Code type**: G=Gray, B=Binary
- **Interface and Power Supply**: S4=SSI(synchro serial interface) 5~30Vdc
- **Output logic**: X= N/A (SSI)
- **Types of connection**: PC=12-core cable (SSI) standard length 1.5m; T=M23, 12-pin connector (SSI)
- **Outlets direction**: R=radial
- **Resolution**: resolution max. 16384 (14 bits), revolution 4096 (12 bits)
- **Large Hollow Shaft Absolute Encoder**
- **XXXX=Special code**: Customized cable length CN00XX= cable length e.g. CN0010=1m, CN0020=2m

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