

ELCO Industrie Automation GmbH Benzstrasse 7 71720 Oberstenfeld Deutschland E-Mail: info@elco-automation.de



www.elco-automation.de

TIANJIN ELCO AUTOMATION CO., LTD No.12, 4th XEDA Branch Road Xiqing Economic-Technological Development Area Tianjin 300385, P. R. China E-Mail: info@elco.cn



www.elco-holding.com.cn



Encoder

EN-2403-001

COMPANY PROFILE

Company Profile

Tianjin Elco Automation Co., Ltd. is a leading enterprise in industrial automation in China. It was established in 2003 with a sales and service network covering the whole country. As a provider of domestic industrial automation products and intelligent manufacturing solutions, Elco holds a leading position in various fields such as automobiles, automotive parts, engineering machinery, new energy, logistics equipment, food & pharmaceuticals, printing & packaging, textile machinery, electronic manufacturing, etc.

From the system layer, control layer, network layer to execution layer, Elco provides a full range of services for intelligent manufacturing top to bottom. Ous products and solutions include but are not limited to cloud platforms, MES manufacturing execution systems, industrial fieldbus, industrial Ethernet, industrial wireless communication, IoT gateways, automated production lines composed of robots and intelligent devices, integration of automated electrical control systems, intelligent logistics warehousing systems, IoT integrated solutions and services, industrial technology software based mobile solutions, Elco Cloud - Industrial Internet Platform, etc., comprehensively help enterprises achieve intelligent manufacturing.

From 2016, Elco won the bid for the National Ministry of Industry and Information Technology's major intelligent manufacturing project for two consecutive years. In 2018, Elco was honorably selected and became a nationally recommended and supported intelligent manufacturing system solution supplier. From 2019, Elco won the bid for the Ministry of Industry and Information Technology's high quality development project for two consecutive years. In 2020, Elco's application for the "Industrial Internet Platform for the Automobile Manufacturing Industry" was rated as a national level specialized industrial Internet platform. In 2021, Elco was honorably selected as the professional, refined, characteristic and Innovative key "Little Giant" enterprise by the Ministry of Industry and Information Technology of China. In 2022, Elco was selected as the National Enterprise Technology Center.

Elco defines "automation+digital factory+industrial internet" as an important development strategy. In 2017, under the guidance of the Tianjin Municipal Science and Technology Commission, Elco initiated the establishment of the Tianjin Automation and Information Technology Innovation Strategic Alliance, and relied on the alliance's investment to establish the Elco • XEDA Industrial Internet Application Innovation Promotion Center.

Nowadays, with the coming of the industrial internet era, traditional industrial models have been impacted unprecedentedly, and the integration of the internet and manufacturing industry has gradually been elevated to a strategic level. Elco will promote the development of industrial Internet with unremitting innovation pursuit, accelerate the process of intelligent manufacturing, and build a new ecosystem of industrial Internet+intelligent manufacturing.



Contents

e	Easydic Series Shaft Incremental Encoder EV28 ······
e	Topydic Small Shaft Incremental Encoder EV40A
C	Topydic Small Hollow Shaft Incremental Encoder EV40P
C	Topydic Series Shaft Incremental EV50A ······
C	Topydic Series Shaft Incremental EV50P ······
C	Topydic Series Shaft Incremental Encoder EV58A ······
C	Topydic Series Hollow Shaft Incremental Encoder $EV58P\cdots$
C	Heavydic Large Hollow Shaft Incremental Encoder EV90P ·
C	Topydic Series Large Hollow Shaft Incremental Encoder EV
C	EVL Support ·····
C	Coupling ·····

e	Compact absolute multiturn encoder EMM36 ·····
e	Miniature Absolute Singleturn Encoder EAC50 ·····
e	Profibus-DP Interface Absolute Singleturn Encoder EAC58
e	420mA Analog Output Absolute Singleturn Encoder EAC
e	Standard Absolute Singleturn Encoder EAC58 ······
e	Standard Hollow Shaft Absolute Singleturn Encoder EAC58
e	420mA Analog Output Absolute Multiturn Encoder EAM58
e	Standard Absolute Multiturn Encoder EAM58 ······
e	Profibus-DP Interface Absolute Multiturn Encoder EAM58
e	Profinet Absolute Multiturn Encoder ·····
e	Profinet Protocol Absolute Multi-turn Encoder EAM58 ·····
e	EtherNet/IP Interface Absolute Multiturn Encoder EAM58 ·
e	EtherCAT Interface Absolute Multiturn Encoder EAM58 ····
e	CANopen Interface Absolute Multiturn Encoder EAM58 ····
e	Large Hollow Shaft Profibus-DP Interface Absolute Multiture
e	Large Hollow Shaft Absolute Multiturn Encoder EAM90L · ·
e	Draw Wire Mechanics EVD Series



	 	 			 		 •		 	•	 •			 •	•					04
	 	 	•••					 • •	 		 •					• •	•	• •	•	07
	 	 			 			 •	 											11
	 	 		•••	 				 	•		 •	 •	 •	•					18
																				-
	 	 			 		 •		 • •											28
/150F																				
	 	 	•					 •	 											35
	 	 	•					 •	 										•	38

	• •	• •	•	• •	• •	•	• •	• •	•		•	•	• •	• •	•	•	• •	•	•	 •	•	 •	•	• •	•	•	• •	•	•	• •	•	•	• •	•	• •	• •	2	11
												•				•							•			•					•	•					2	15
			•								•				-			•							•	-			• •			-				•	2	18
58			•																•		•								•								Ę	53
												•			•	•							•			•						•		•			Ę	58
BP												•				•							•									•		•			6	62
3.			•																•		•								•							•	6	66
			•																•																	•	7	70
							•													 •														•			7	74
			•																•		•	 •							•							•	8	30
			•			•			•		•				•			•	•	 •					•	•					•	•				•	8	34
			•			•			•		•				•			•							•	•					•	•				•	8	37
						-	•					•				•							•		•	•			•			•		•	• •		ç	90
							•				• •	•				-							•		•									•			ç	93
n E	n	0	de	ər	E	A	N	19	90)L									•		•								•							•	ç	96
			•																						•	•										•	10	00
																																					10)3

Easydic Series Shaft Incremental Encoder EV28



Description

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

Features

• Flexible coupling connection avoids damage to the encoder

•Stainless steel shaft $\Phi 4 \sqrt{\Phi 5}$ ensures high stability and protection

•Metal housing for better shock resistance

Protection class IP50

Reverse connection protection

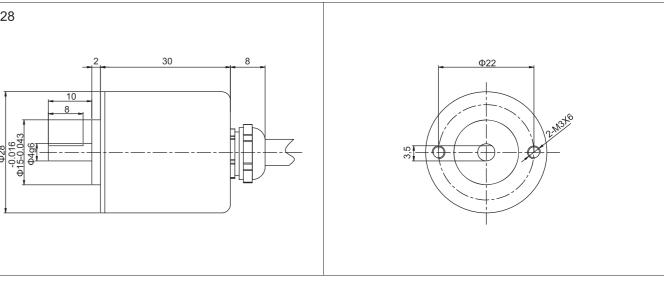
Short circuit protection

·Cable output, waterproof rubber end

Easydic Series Shaft Incremental Encoder EV28

Dimensions (mm)

EV28



Mechanical parameters

Shaft diameter	φ4/φ5g6 mm	
Protection class	IP50	
Speed	6000 rpm, continuous	
Max load capacity of the shaft	5 N axial, 10 N radial	
Shock resistance	30G/11 ms	
Vibration resistance	6G 102000 HZ	
Bearing life	10 ⁹ revolution	
Moment of inertia	approx. 0.7x10 ⁻⁶	
Starting torque	<0.01 Nm	
Body material	AL - alloy UNI 9002-5	
Housing material	AL - alloy UNI 9002-5	
Operating temperature	-20+80 °C	
Storage temperature	-30+85°C	
Relative humidity/condensation	90%, Condensation not permitted	
Weight	100 g	

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

Electrical parameters

Output circuit	Push-pull	RS422	RS422
Resolution	Max. 600 ppr	Max. 600 ppr	Max. 600 ppr
Supply voltage	1030 VDC / 530 VDC	5 VDC	1030 VDC
Power consumption (no load)	≤100 mA	≤80 mA	≤80 mA
Permissible load (channel)	±30 mA	±50 mA	±50 mA
Pulse frequency	Max. 300 kHz	Max. 300 kHz	Max. 300 kHz
Signal level high	Min. U _b -1.5 V	Min. 3.4 V	Min. 3.4 V
Signal level low	Max. 0.8 V	Max. 0.4 V	Max. 0.4 V
Rise time Tr	Max. 1µs	Max. 200 ns	Max. 200 ns
Fall time Tr	Max. 1µs	Max. 200 ns	Max. 200 ns

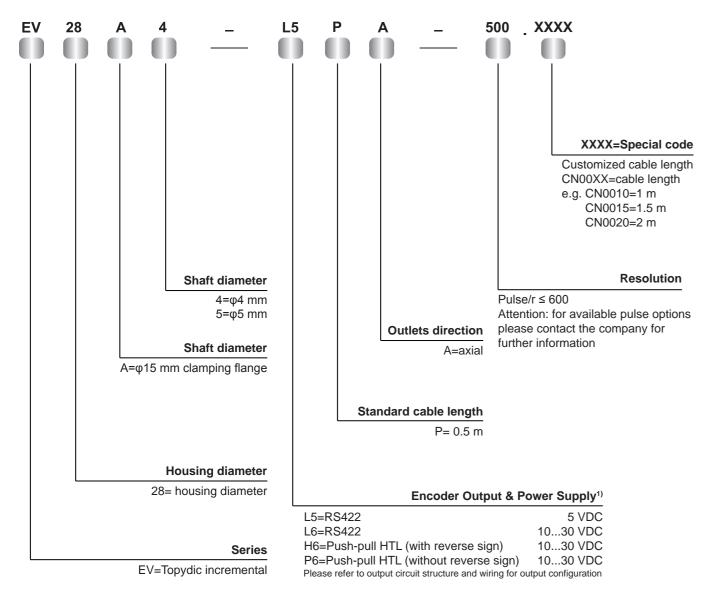
Terminal Assignment

Signal	0V	+Ub	А	Ā	В	B	Z	Ī	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	Ŧ



Easydic Series Shaft Incremental Encoder EV28

Order Code



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

Topydic Small Shaft Incremental Encoder EV40A

Description

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

Features

- Metal casting housing for greater shock resistance
- · Side cabling design greatly saves the installation space and simplifies wiring
- Reverse connection protection; short circuit protection

Mechanical parameters

-		
	Shaft diameter	Ф6g6 mm
	Protection class	IP66 standard, IP
	Max. speed/minute	6000 rpm
_	Max. load capacity of the shaft	60 N axial
		100 N radial
	Shock resistance	50G/11 ms
	Vibration resistance	10G 10~2000 HZ
	Bearing life	109 revolution
	Moment of inertia	1.9×10 ⁻⁶ kgm ²
	Starting torque	<0.08 Nm
	Body material	Al-alloy
	Housing material	Zn-alloy
	Operating temperature	-20+85 °C
	Storage temperature	-25+100 °C
	Relative humidity/condensation	90%, Condensati
	Weight	110 g

Regular resolution: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 2000, 4000, 2500, 5000, 2048 Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull	
Resolution	Max.5000 ppr	Max.5000 ppr	
Supply voltage	5±0.25 or 1030 VDC	1030 VDC	
Power consumption(no load)	≤80 mA	≤100 mA	
Permissible load(channel)	±50 mA	±30 mA	
Pulse frequency	Max.800 kHz	Max. 800 kHz	
Signal level high	Min. 3.4 V	Min.Ub-1.8 V	
Signal level low	Max. 0.4 V	Max. 2.0 V	
Rise time Tr	Max. 200 ns	Max. 1 µs	
Fall time Tf	Max. 200 ns	Max. 1 µs	



- Stainless steel shaft ensures safety and stability in operation
- · Optional types of flange connection offers more flexibility

P67 optional tion not permitted

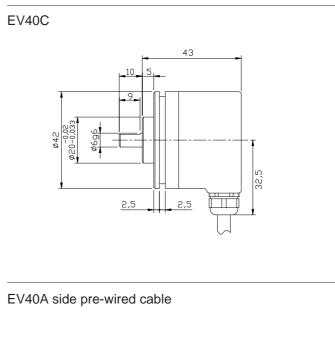
Topydic Small Shaft Incremental Encoder EV40A

Terminal Configuration

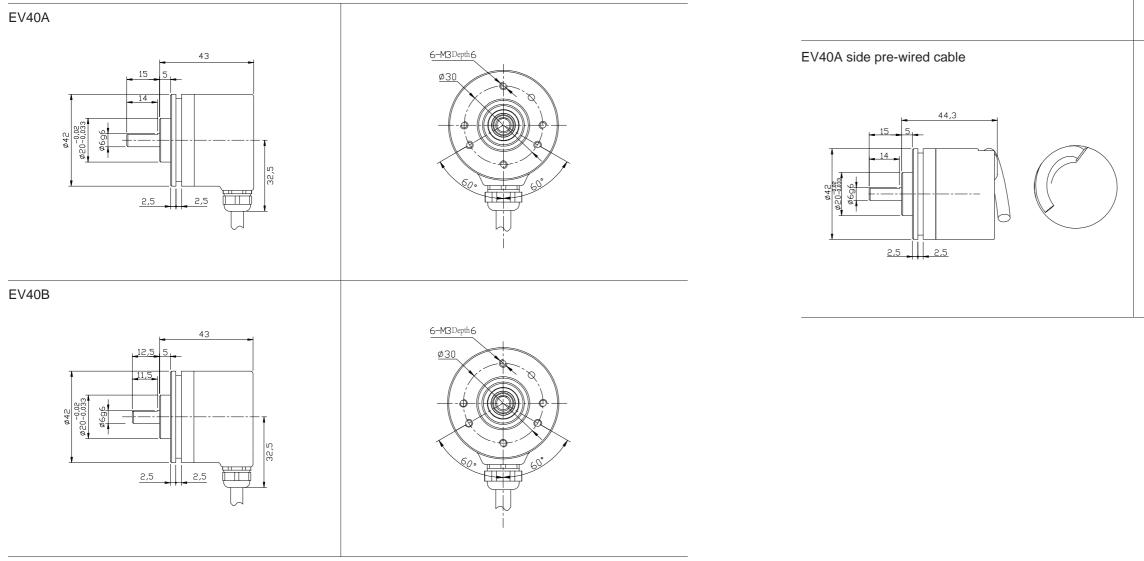
Signal	0V	+Ub	А	Ā	В	B	Z	Ī	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	÷
Pin	10	12	5	6	8	1	3	4	PH

Topydic Small Shaft Incremental Encoder EV40A

Dimensions (mm)

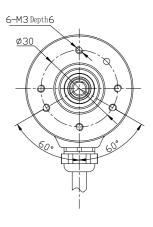


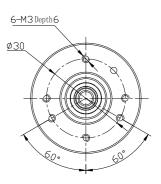
Dimensions (mm)





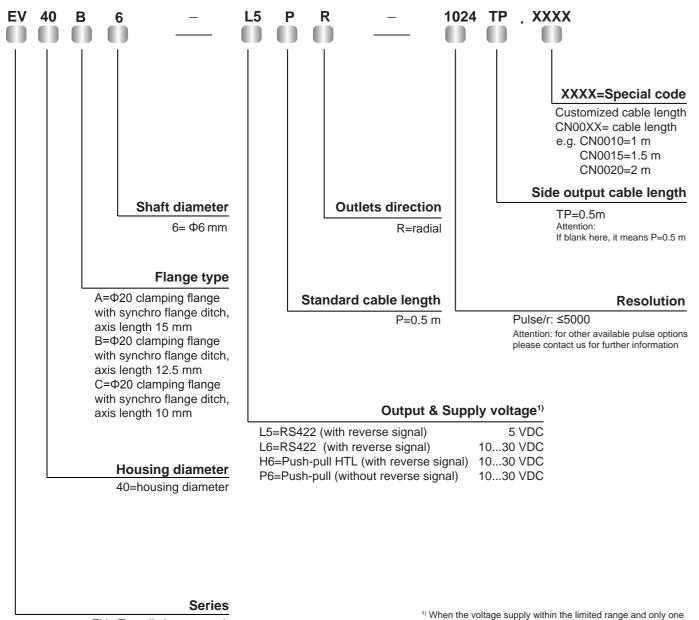






Topydic Small Shaft Incremental Encoder EV40A

Order Code



EV= Topydic incremental

signal channel is connected improperly at certain moment: if $U_b=5V$, it's permitted to connect to signal channels, 0V or U_b ; if $U_b > 5V$, it's permitted to connect to signal channels or 0V.

Topydic Small Hollow Shaft Incremental Encoder EV40P

Description

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

Features

- Optional types of flange connection offers more flexibility
- · Metal casting housing for greater shock resistance
- Side cabling design greatly saves the installation space and simplifies wiring
- Reverse connection protection; short circuit protection

Mechanical parameters

Shaft diameter	Ф6Н7/Ф8Н7 mr
Protection class	IP66 standard,
Max. speed/minute	6000 rpm
Max. load capacity of the shaft	60 N axial
	100 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 H
Bearing life	10 ⁹ revolution
Moment of inertia	1.9×10 ⁻⁶ kgm ²
Starting torque	<0.08 Nm
Body material	Al-alloy
Housing material	Zn-alloy
Operating temperature	-20+85 °C
Storage temperature	-25+100 °C
Relative humidity/condensation	90%, Condensa
Weight	110 g

Regular resolution:10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1250, 2000, 2500, 4000, 5000 Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull	
Resolution	Max.5000 ppr	Max.5000 ppr	
Supply voltage	5±0.25 or 1030 VDC	1030 VDC	
Power consumption(no load)	≤80 mA	≤100 mA	
Permissible load(channel)	±50 mA	±30 mA	
Pulse frequency	Max.800 kHz	Max. 800 kHz	
Signal level high	Min. 3.4 V	Min.Ub-1.8	
Signal level low	Max. 0.4 V	Max. 2.0 V	
Rise time Tr	Max. 200 ns	Max.1 µs	
Fall time Tf	Max. 200 ns	Max.1 µs	



• Stainless steel shaft ensures safety and stability in operation

n
IP67 optional
HZ
ation not permitted

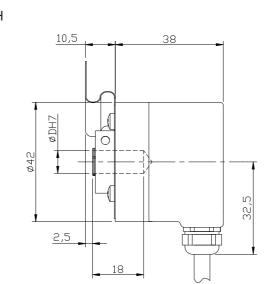
Topydic Small Hollow Shaft Incremental Encoder EV40P

Terminal Configuration

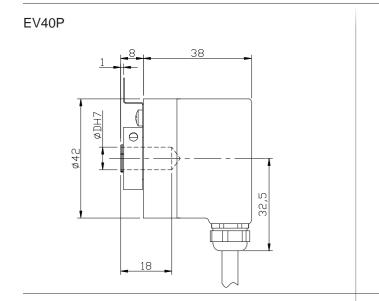
Signal	0V	+Ub	А	Ā	В	B	Z	Ī	Shield
Color	WH	BN	GN	YE	BN	PK	BU	RD	÷
Pin	10	12	5	6	8	1	3	4	PH

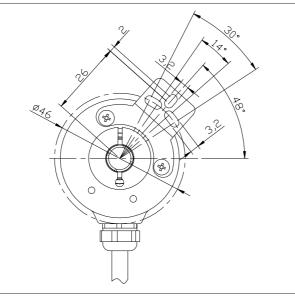
Topydic Small Hollow Shaft Incremental Encoder EV40P

Dimensions (mm)

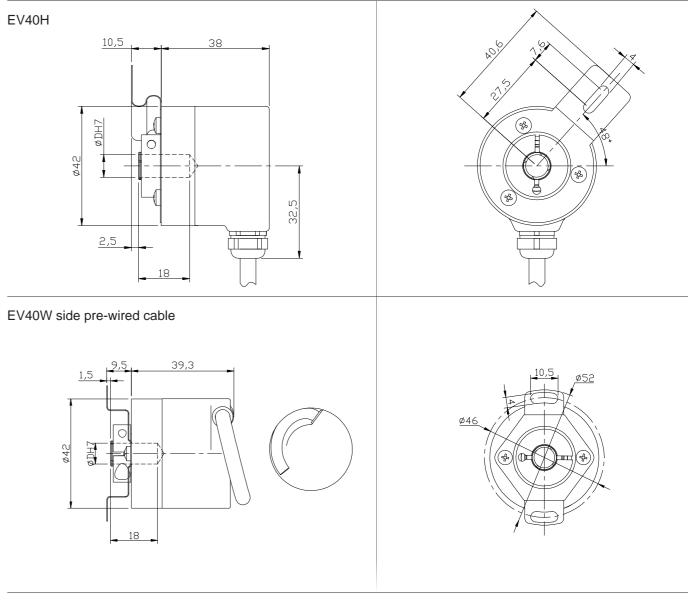


Dimensions (mm)

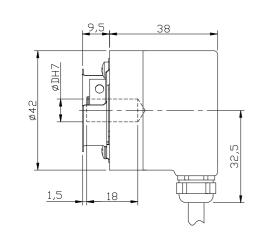


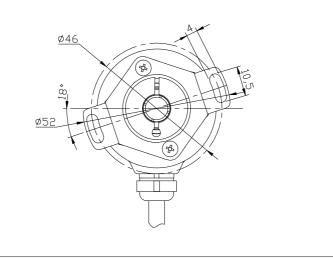


EV40W side pre-wired cable



EV40W

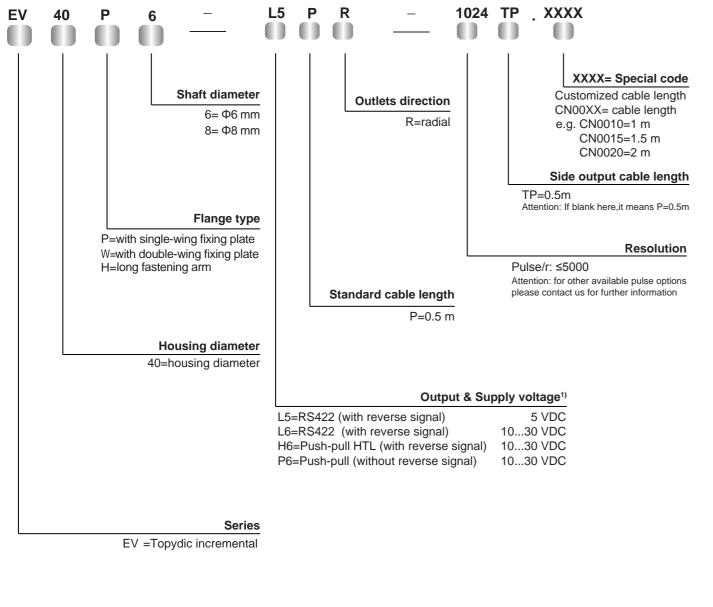






Topydic Small Hollow Shaft Incremental Encoder EV40P

Order Code:



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

Topydic Series Shaft Incremental EV50A



Features:

Mechanical parameters

•	
Shaft diameter	φ6/φ8/φ10/φ12/φ1/4"/φ3/8"
Protection class	IP65 (without oil seal)
	IP67 (withoil seal)
Speed	12000 rpm (without oil seal)
	6000 rpm (with oil seal)
Max. load capacity of the shaft	40 N axial
	80 N radial
Shock resistance	50G/ 11 ms
Vibration resistance	10G 102000 HZ
Bearing life	10 ⁹ revolution
Moment of inertia	1.9x10 ⁻⁶ kgm ²
Starting torque	<0.01 Nm (IP65)
	<0.05 Nm (IP67)
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40+85°C
Storage temperature	-45+90 [°] C
Relative humidity/condensation	90%, Condensation not permitted
Weight	approx. 400 g
Resolution: 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000	, 1024, 1200, 1250, 2000, 2048, 2500, 3600, 4096, 5000

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

Electrical parameters

Output circuit	RS422	Push-pull
Supply voltage	5±0.25 or 1030 VDC	1030 VDC
Power consumption (no load)	typ. 40 mA	typ. 50 mA
	max. 90 mA	max. 100 mA
Permissible load (channel)	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level high	min. 2.5 V	min. Ub-1 V
Signal level low	max. 0.5 V	max. 0.5 V
Rise time Tr	max. 200 ns	max. 1 µs
Fall time Tf	max. 200 ns	max. 1 µs

Terminal Configuration

	0								
Signal	0V	+Ub	А	Ā	В	B	Z	Ī	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	÷
Pin (12-pin)	10	12	5	6	8	1	3	4	PH
Pin (5-pin)	1	2	3	-	4	-	5	-	PH
Pin (8-pin)	1	2	3	4	5	6	7	8	PH



Description:

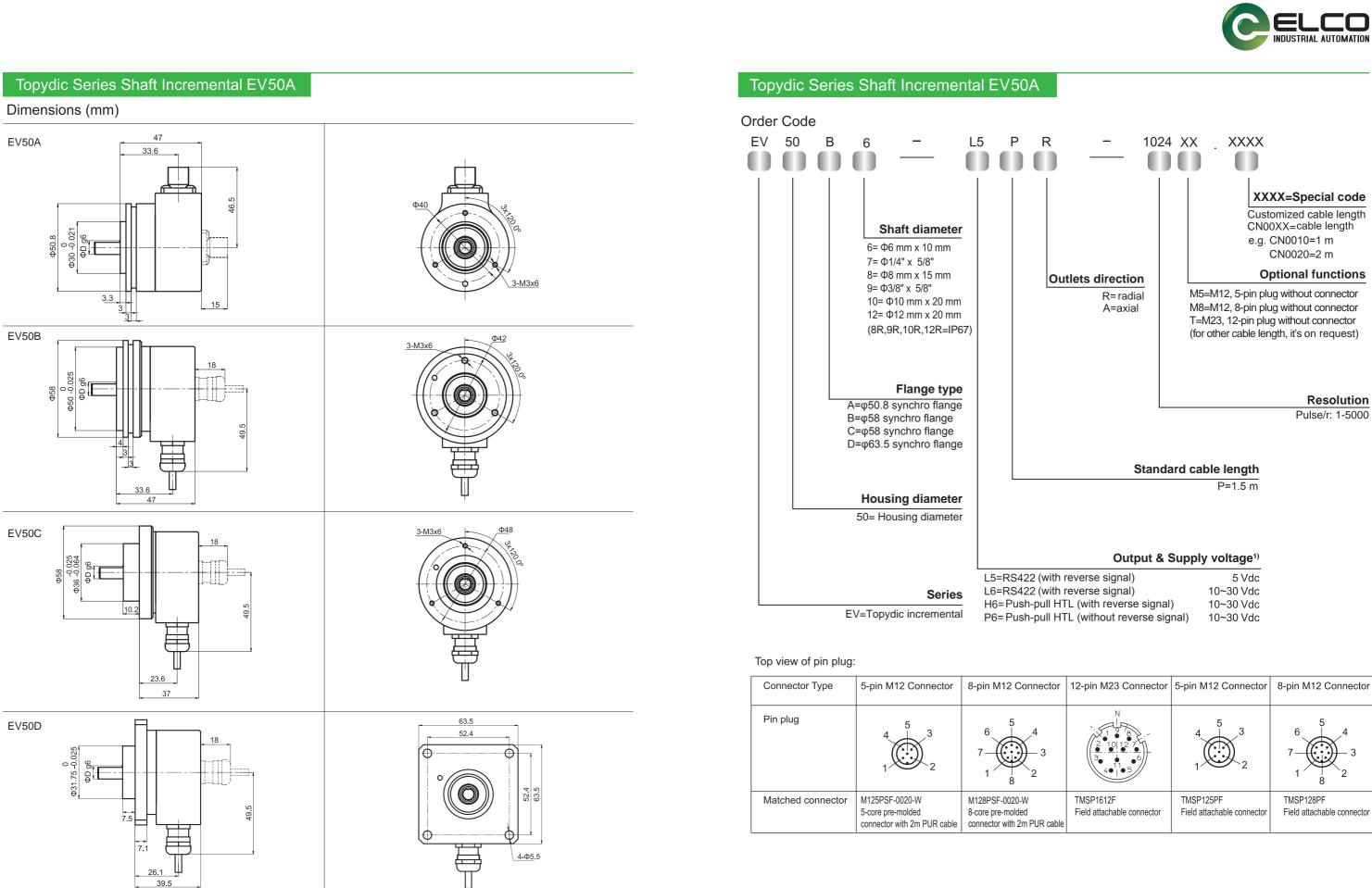
Topydic series shaft incremental encoder EV50A, with double-bearing and casting housing, has excellent performance to resist mechanical shocks and can be used in various industrial environments; being compatible with standard flange types-50 mm and 58 mm, it can meet different application requirements;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

- Resolution up to 5000 ppr; pulse frequency up to 300 kHz
- Hollow shaft diameter, φ6-φ12 mm
- Compatible with standard flange types-50 mm and 58 mm
- φ50 mm metal casting housing for limited installation space
- Operating temperature, -40...+85 °C; IP67 protection class for outdoors application
- · Multi signal output interfaces to meet different types of data aquisition of upper computer
- Optional output types-with cable, M12 connector and M23 connector
- Reverse connection and short circuit protection to ensure the safety¹⁾

0/φ12/φ1/4"/φ3/8"
nout oil seal)
noil seal)
n (without oil seal)
(with oil seal)
al
ns
2000 HZ
Ition
gm²
n (IP65)
n (IP67)
C
C

- ndensation not permitted
- 00 g





ith reverse signal)	5 Vdc
ith reverse signal)	10~30 Vdc
HTL (with reverse signal)	10~30 Vdc
HTL (without reverse signal)	10~30 Vdc

tor	12-pin M23 Connector	5-pin M12 Connector	8-pin M12 Connector
	N 1 9 8 2 10/127 3 6 4 1 5	4 1 2	$7 \xrightarrow{6}{1} \xrightarrow{5}{4}{3}$
cable	TMSP1612F Field attachable connector	TMSP125PF Field attachable connector	TMSP128PF Field attachable connector

Topydic Series Shaft Incremental EV50P



Description

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

Features

- Resolution up to 5000 ppr; pulse frequency up to 300 kHz
- Wide range of shaft diameter, Φ6~Φ15 mm
- Hollow shaft installation, robust metal casting housing
- Operating temperature, -40...+85 $^\circ\!\!\!C$; IP67 protection class for outdoors application
- · Housing thickness up to 46.3 mm for limited installation space
- · Multi signal output interfaces to meet different types of data aquisition of upper computer
- Optional output types-with cable, M12 connector and M23 connector
- Reverse connection and short circuit protection to ensure the safety¹⁾

Mechanical parameters

Shaft diameter	Φ6/Φ8/Φ10/Φ12/Φ14/Φ15/Φ1/4"/Φ3/8"/Φ1/2"/Φ5/8" mm
Protection class	IP65 (without oil seal)
	IP67 (with oil seal)
Speed	12000 rpm (without oil seal)
	6000 rpm (with oil seal)
Max. load capacity of the shaft	40 N axial
	80 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 HZ
Bearing life	10 ⁹ revolution
Moment of inertia	6x10 ⁻⁶ kgm ²
Starting torque	<0.03 Nm (IP65)
	<0.08 Nm (IP67)
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40∼+85 °C
Storage temperature	-45∼+90 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	Approx. 400 g
Regular resolution: 100, 200, 300, 360, 400, 500, 512, 6	00 800 1000 1024 1200 1250 2000 2048 2500 3600 4096 5000

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

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

Electrical parameters

•		
Output circuit	RS422	Push-pull
Supply voltage	5±0.25 or 1030 VDC	1030 VDC
Power consumption(no load)	typ. 40 mA	typ. 50 mA
	max. 90 mA	max. 100 mA
Permissible load(channel)	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level high	min. 2.5 V	min. Ub-1 V
Signal level low	max. 0.5 V	max. 0.5 V
Rise time Tr	max. 200 ns	max. 1 µs
Fall time Tf	max. 200 ns	max. 1 µs

1) When the voltage supply within the limited range and only one signal channel is connected improperly at certain moment:

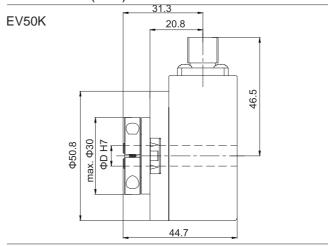
if UB=5V, it's permitted to connect to signal channels, 0V or UB; if UB>5V, it's permitted to connect to signal channels or 0V.

Topydic Series Shaft Incremental EV50P

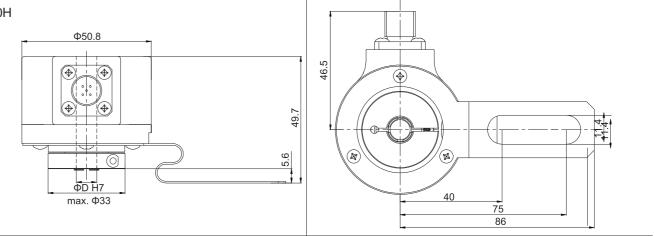
Terminal Configuration

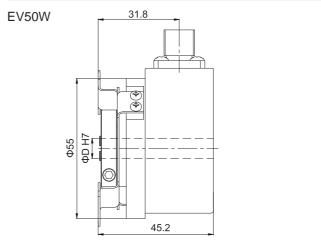
Signal	0V	+Ub	А	Ā	В	Ē	Z	Ī	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	÷
Pin(12-pin)	10	12	5	6	8	1	3	4	PH
Pin(5-pin)	1	2	3	-	4	-	5	-	PH
Pin(8-pin)	1	2	3	4	5	6	7	8	PH

Dimensions(mm)

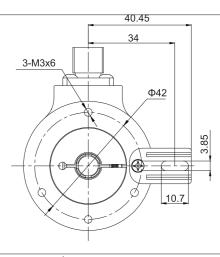


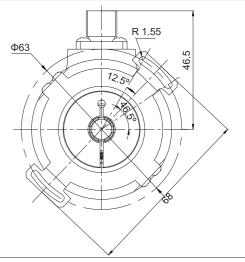
EV50H

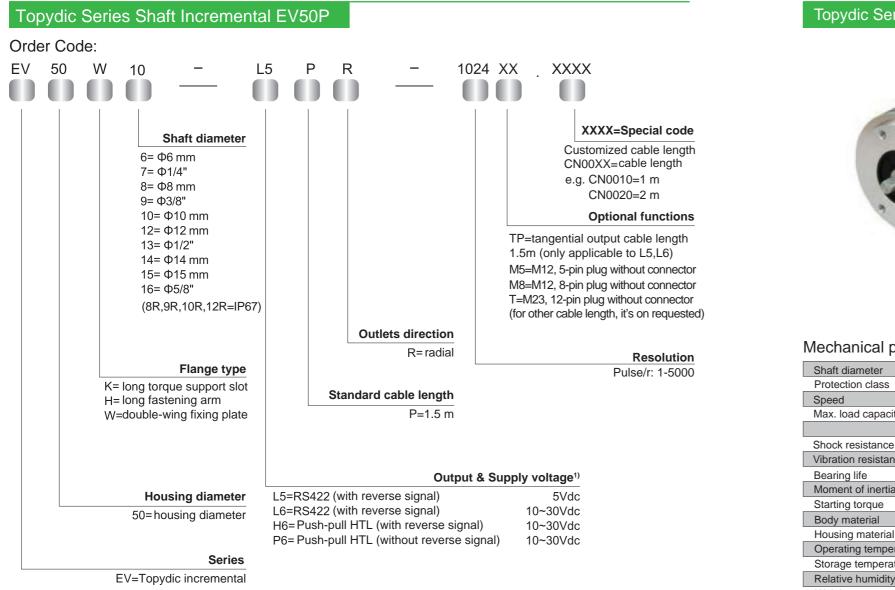












Top view of pin plug:

Connector type	5-pin M12 connector	8-pin M12 connector	12-pin M23 connector	5-pin M12 connector	8-pin M12 connector
Pin plug			$ \begin{array}{c} N \\ 1 \\ 2 \\ 10 \\ 12 \\ 3 \\ 4 \\ 1 \\ 5 \\ 4 \\ 1 \\ 5 \\ 4 \\ 1 \\ 5 \\ 1 \\ 1 \\ 5 \\ 1 \\ 1 \\ 5 \\ 1 \\ 1 \\ 1 \\ 5 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$		
Matched connector	M125PSF-0020-W 5-core pre-molded connector with 2 m PUR cable	M128PSF-0020-W 8-core pre-molded connector with 2 m PUR cable	TMSP1612F Field attachable connector	TMSP125PF Field attachable connector	TMSP128PF Field attachable connector

Topydic Series Shaft Incremental Encoder EV58A

Description:

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

Features:

- Stainless steel shaft φ6/φ8/φ10, flexible coupling connection ensures encoder safety during operation
- Various types of flanges, including imperial sizes
- · Metal housing for greater shock resistance; compact structure is suited for
- limited installation space Protection class IP65
- Direct cable output or connector is more flexible and easy for maintenance
- The waterproof rubber ends ensure safety during operation
- Reverse connection protection, short circuit protection

Mechanical parameters

Shaft diameter	Ф6g6/Ф8g6/Ф10g6 mm	
Protection class	IP65	
Speed	6000 rpm	
Max. load capacity of the shaft	60 N axial	
	120 N radial	
Shock resistance	50G/11 ms	
Vibration resistance	10G 10~2000 HZ	
Bearing life	10 ⁹ revolution	
Moment of inertia	1.9x10 ⁻⁶ kgm ²	
Starting torque	<0.01 Nm IP65	
Body material	Al-alloy	
Housing material	Al-alloy	
Operating temperature	-20∼+90 °C	
Storage temperature	-40~+100 °C	
Relative humidity/condensation	90%, Condensation not permitted	
Weight	300g	

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

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

Electrical parameters

Output circuit	RS422	Push-pull
Resolution	Max.5000 ppr	Max.5000ppr
Supply voltage	5±0.25 or 1030 VDC	1030 VDC
Power consumption(no load)	≤80 mA	≤100 mA
Permissible load(channel)	±50 mA	±30 mA
Pulse frequency	Max.300 kHz	Max.300 kHz
Signal level high	Min.3.4 V	Min. Ub-1.8
Signal level low	Max.0.4V	Max.2.0 V
Rise time Tr	Max 200 ns	Max 1µS
Fall time Tf	Max 200 ns	Max 1µS



- Max resolution is up to 5000 pulse/r, output frequency is up to 300 kHz

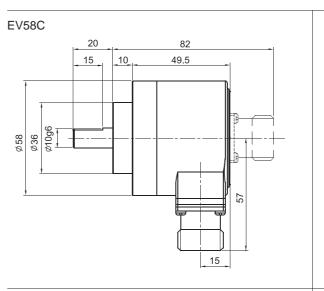
Topydic Series Shaft Incremental Encoder EV58A

Terminal Configuration

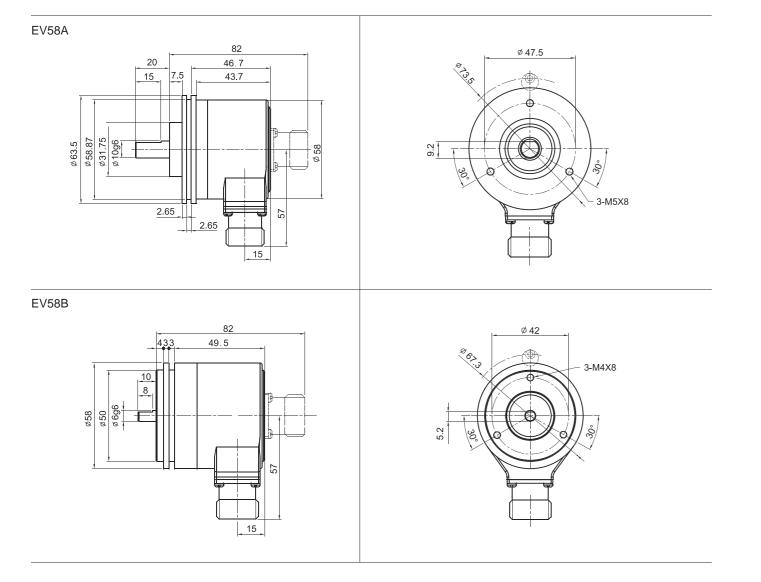
Signal	0V	+Ub	А	Ā	В	B	Z	Ī	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	÷
Pin	10	12	5	6	8	1	3	4	PH

Topydic Series Shaft Incremental Encoder EV58A

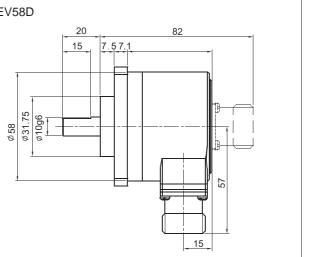
Dimensions (mm)



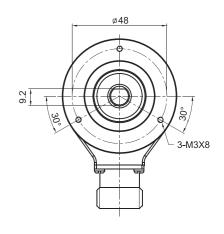
Dimensions (mm)

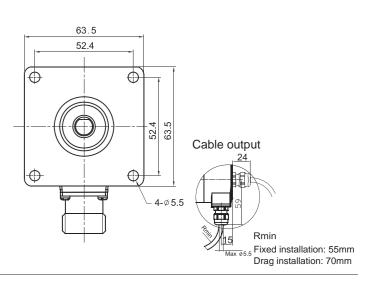


EV58D









Topydic Series Hollow Shaft Incremental Encoder EV58P

Topydic series encoders EV58P, with double-bearing design, are widely used in industrial environments. It delivers outstanding performance in mechanical shock resistance. It adopts stainless steel hollow shaft design with max. shaft diameter of Φ 15 mm and is able to withstand higher axial and radial loads. requirements. Its wide voltage range, reverse connection and short circuit protection can effectively avoid mis-wiring.

Features

- Resolution up to 5000 ppr; pulse frequency up to 300 kHz
- Operating temperature, -20...+80°C; IP65
- Multi signal output interfaces to meet diferent types of data aquisition of upper computer

Mechanical parameters

Chaft diamatan	
Shaft diameter	Φ8/Φ10/Φ12 /Φ14/Φ15 mm
Protection class	IP65
Speed	6000 rpm
Max. load capacity of the shaft	40 N axial
	80 N radial
Shock resistance	50G/11 ms
Vibration resistance	10G 102000 HZ
Bearing life	10 ⁹ revolution
Moment of inertia	approx. 6x10 ⁻⁶ kgm ²
Starting torque	<0.03 Nm
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-20 +80 °C
Storage temperature	-40 +95 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	approx.400g

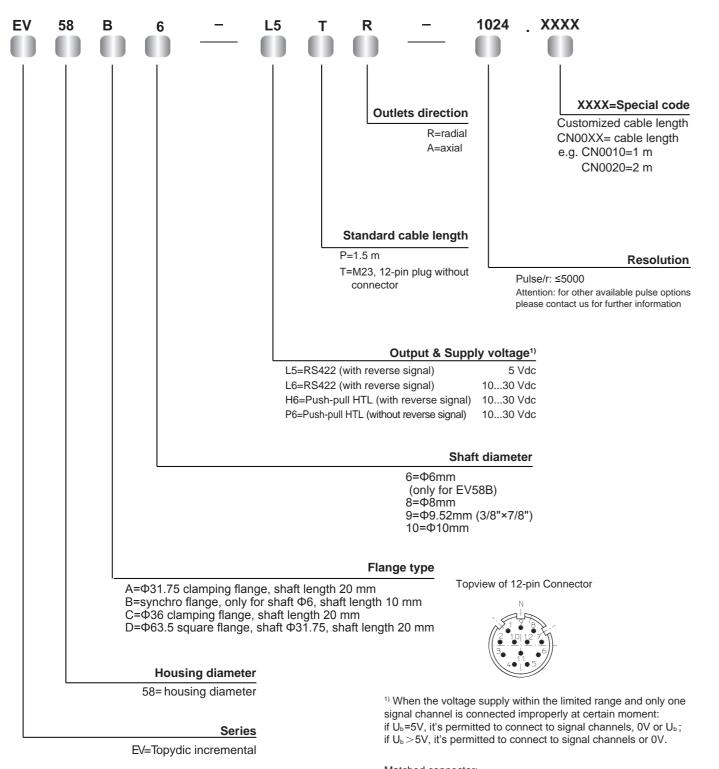
Regular resolution: 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1250, 2000, 2048, 2500, 3600, 4096, 5000 Attention: the products with above resolutions are available from stock, others on request.

Electrical parameters

Output circuit	RS422	Push-pull
Supply voltage	5±0.25 or 1030 VDC	1030 VDC
Power consumption (no load)	typ. 40 mA	typ. 50 mA
	max. 90 mA	max. 100 mA
Permissible load	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level high	min. 2.5 VDC	min. Ub-1 VDC
Signal level low	max. 0.5 VDC	max. 0.5 VDC
Rise time Tr	max. 200 ns	max. 1 µs
Fall time Tf	max. 200 ns	max. 1 µs

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





Matched connector: For connection type "T": TMSP1612F



Description

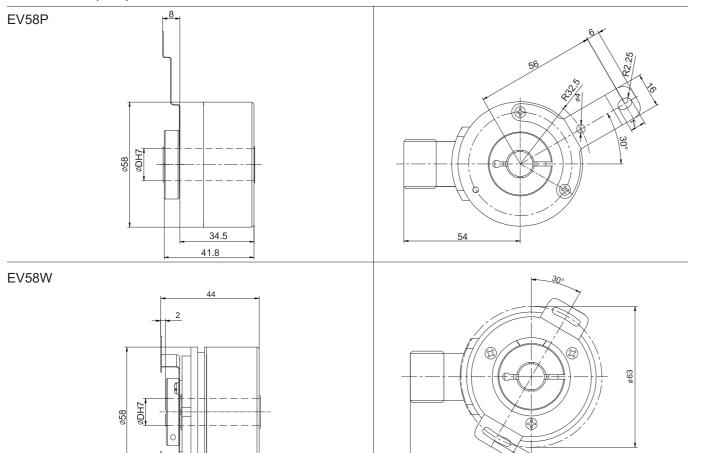
- Wide range of shaft diameter, Φ8...Φ15 mm
- Thickness of 34.5mm, applicable for installation with limited space
- Reverse connection and short circuit protection to ensure the safety¹⁾

Topydic Series Hollow Shaft Incremental Encoder EV58P

Terminal Assignment

Signal	0V	+U _b	А	Ā	В	Ē	Z	Ī	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	<u>+</u>
12-pin	10	12	5	6	8	1	3	4	PH

Dimensions (mm)



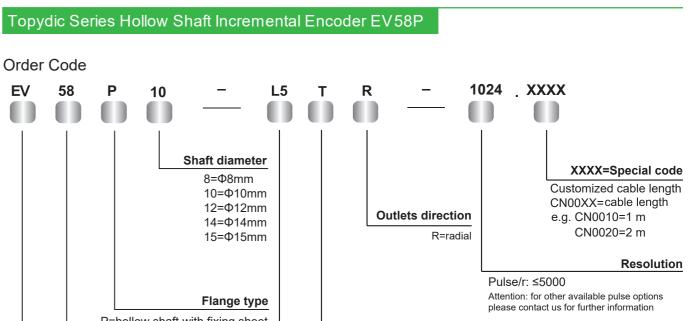
Order Code EV 58 Ρ L5 10 Т Shaft diameter 8=Φ8mm 10=Ф10mm 12=Ф12mm 14=Φ14mm 15=Ф15mm Flange type P=hollow shaft with fixing sheet W=double-winged fixing sheet Housing diameter 58=Housing diameter L5=RS42 L6=RS42 H6=Push P6=Push Series EV=Topydic incremental T type connection: ¹⁾When provided power voltage is correct: 12-pin M23 Connector Short-circuit to channel, 0V, or $+U_b$ is permitted when $U_b = 5$ VDC; Short-circuit to channel or 0V is permitted when $U_b = 10...30$ VDC



TMSP1612F Field attachable connector

26





Standard cable length

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

Output & Supply voltage¹⁾

22 (with reverse signal)	5 VDC
22 (with reverse signal)	1030 VDC
n-pull HTL (with reverse signal)	1030 VDC
n-pull HTL (without reverse signal)	1030 VDC

Heavydic Large Hollow Shaft Incremental Encoder EV90P



Description

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

Features

- · Robust metal housing against greater shock; compact structure for limited installation space
- Resolution up to 2500 ppr; protection class of IP65
- Compact hollow shaft design to save both space and cost
- · Crutch arm and fixing sheet provide greater flexibility
- Stainless steel hollow shaft with diameter of Φ25/Φ30/Φ38/Φ45; installed by "C" lock ring
- · Flexible connecting with cable or connector for easy maintenance; water-proof design to ensure safety
- Reverse connection / short circuit protection1)

Mechanical parameters

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

Regular resolution: 1024, 2048

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

Electrical parameters

Output circuit	RS422	Push-pull
Resolution	Max 2500 ppr	Max 2500 ppr
Supply voltage	5 ± 0.25 or 1030 VDC	1030 VDC
Power consumption (no load)	≤80 mA	≤100 mA
Permissible load	±20 mA	±30 mA
Pulse frequency	Max 300 kHz	Max 300 kHz
Signal level high	Min 3.4 V	Min Ub-1.8
Signal level low	Max 0.4 V	Max 2.0 V
Rise time Tr	Max 200 ns	Max 1 µs
Fall time Tf	Max 200 ns	Max 1 µs

Terminal Configuration

Signal	0V	+Ub	А	А	В	В	Ζ	Ζ	Shield
Color Code	WH	BN	GN	YE	GY	PK1	BU	RD	÷
Pin	10	12	5	6	8	1	3	4	PH

¹⁾ When the voltage supply within the limited range and only one

signal channel is roperly at cer

if U_b = 5 V, it's

if $U_b > 5$ V, it's

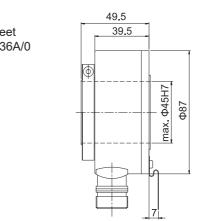
a is connected impropeny at certain moment.
permitted to connect to signal channels, 0 V or Ub,
s permitted to connect to signal channels or 0 V.

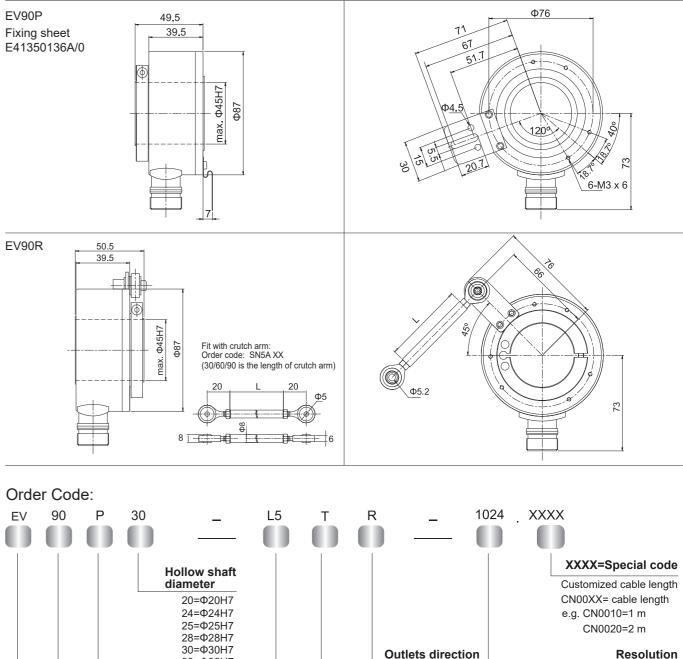
Topview of 12-pin plug

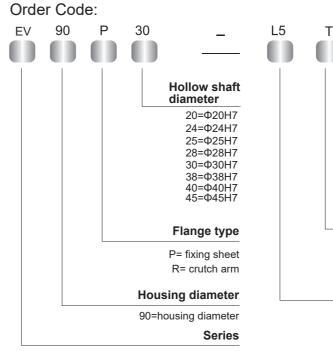


Heavydic Large Hollow Shaft Incremental Ercoder EV90P

Dimensions (mm)







EV=heavydic incremental



R=radial

Pulse/r: ≤2500

Standard cable length

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

Output & Supply voltage

L5=RS422 (with reverse signal)	5 VDC
L6=RS422 (with reverse signal)	1030 VDC
H6=Push-pull HTL (with reverse signal)	1030 VDC
P6=Push-pull HTL (without reverse signal)	1030 VDC

Topydic Series Large Hollow Shaft Incremental Encoder EV150P



Description

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

Features

- · Crutch arm or block-pin accessories provide the greatest flexibilty
- Resolution 2048 ppr, IP64 guarantees precision and safety
- Compact hollow shaft design is both a space and cost-saver
- Metal housing for greater shock resistance, compact structure is suited for confined mounting space
- Stainless steel hollow shaft Φ60H7 Φ80H7 ,"C"lock ring

· Reverse connection protection and short circuit protection

- · Cable output or connector is flexible and easy for maintenance
- The waterproof rubber ends ensures safety

Mechanical parameters

Hollow shaft diameter	Ф60H7 — Ф80H7 mm
Protection class	IP64
Speed	3000 rpm
Max load capacity of the shaft	100 N axial 200 N radial
Shock resistance	50G/11 ms
Vibration resistance	10 G 10~2000 Hz
Bearing life	10 ⁹ revolution
Moment of inertia	<15 x 10 ⁻⁶ kgm ²
Starting torque	<0.25 Nm max.
Body material	AL-alloy
Housing material	AL-alloy + green paint
Operating temperature	-20~+90 °C
Storage temperature	-40~+100 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	1800 g

Resolution: 1000, 1024, 2048

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

Electrical parameters

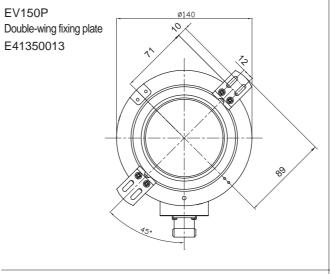
Output circuit	RS422	Push-pull
Resolution	Max.2048 ppr	Max.2048 ppr
Supply voltage	5±0.25 or 1030 VDC	1030 VDC
Power consumption (no load)	≤80 mA	≤100 mA
Permissible load (channel)	±50 mA	±30 mA
Pulse frequency	Max.800 kHz	Max.800 kHz
Signal level high	Min.3.4 V	Min.Ub-1.8
Signal level low	Max.0.4 V	Max.2.0 V
Rise timeTr	Max 200 ns	Max 1 µs
Fall timeTf	Max 200 ns	Max 1 µs

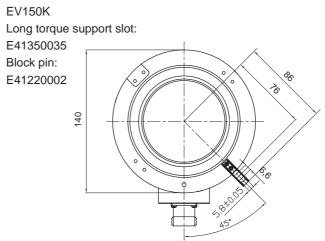
Terminal Assignment

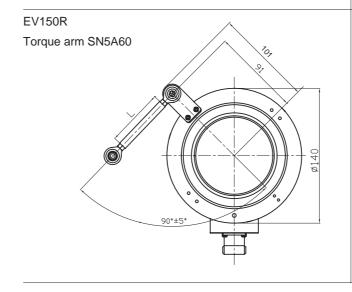
Signal	0V	+Ub	А	Ā	В	B	Z	Z	Shield
Color	WH	BN	GN	YE	GY	PK	BU	RD	÷
Pin	10	12	5	6	8	1	3	4	PH

Topydic Series Large Hollow Shaft Incremental Encoder EV150P

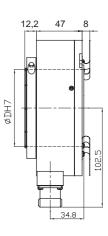
Dimensions (mm)

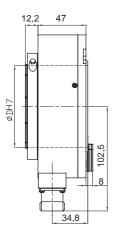








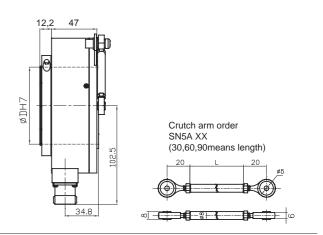




Cable output

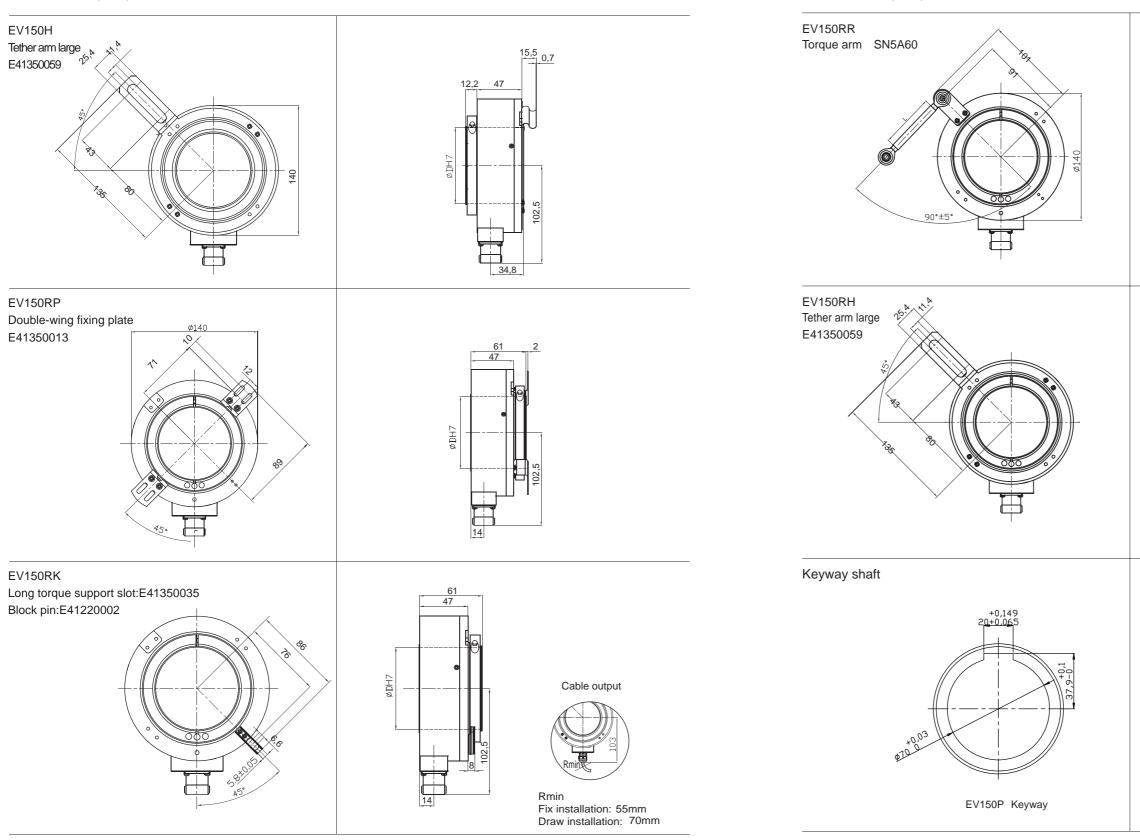


Rmin Fix installation: 55mm Draw installation: 70mm



Topydic Series Large Hollow Shaft Incremental Encoder EV150P

Dimensions (mm)

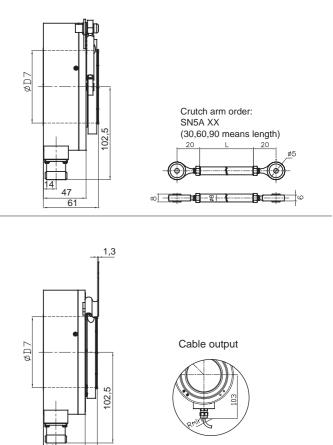




Topydic Series Large Hollow Shaft Incremental Encoder EV150P

47

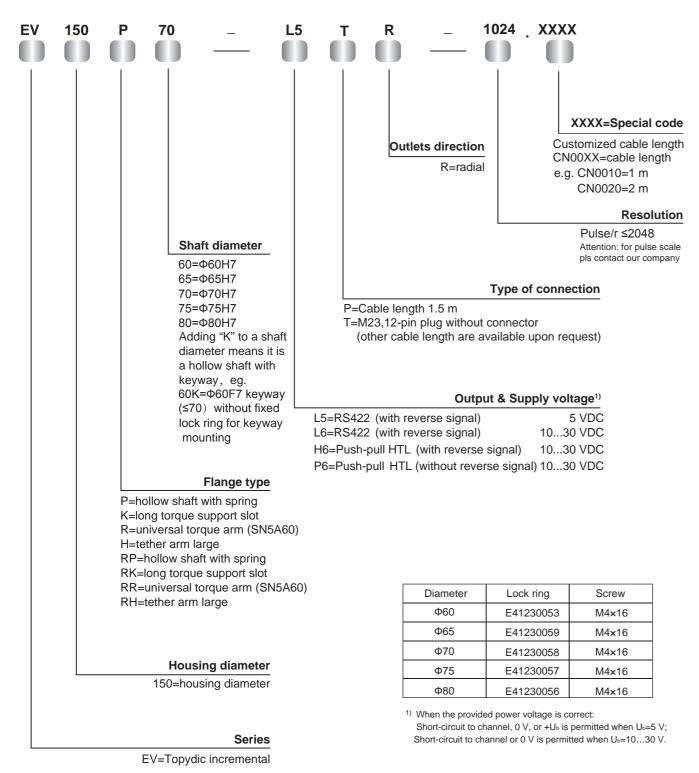
Dimensions (mm)



Rmin Fix installation: 55mm Draw installation: 70mm

Topydic Series Large Hollow Shaft Incremental Encoder EV150P

Order Code:



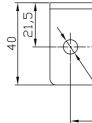
Connector order: matching "T" connector: TMSP1612F

EVL Support

EVL support:

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





80

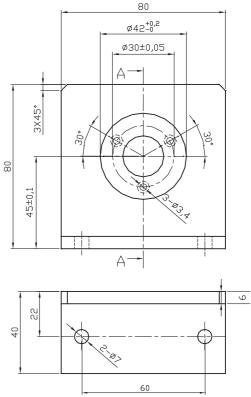
45±0.1

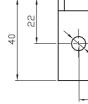
EVL support:

Applicable for shaft encoder 40 with clamping flange

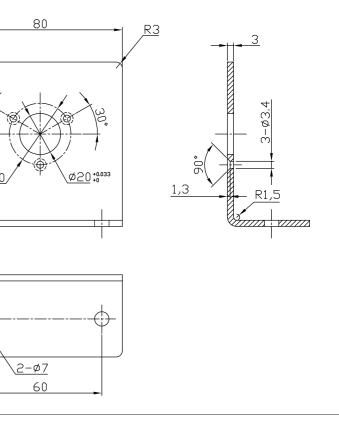
Material: Al

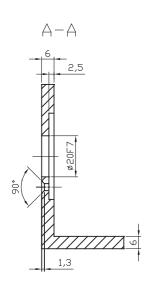
Type: EVL-L40A











EVL Support

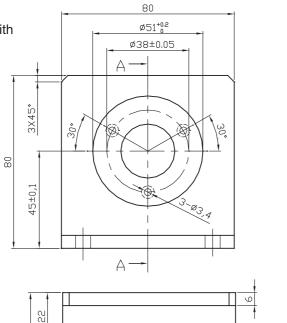
EVL support

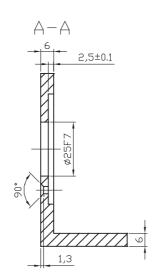
Applicable for shaft encoder 50A with clamping flange

Material: Al

Type: EVL -L50A







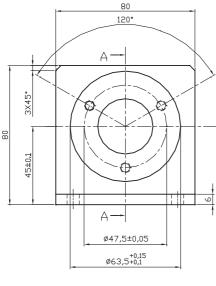
EVL support

Applicable for shaft encoder 58A with clamping flange

9

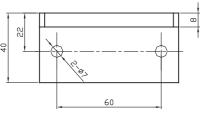
Material: Al

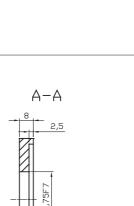
Type: EVL-L58A



. (?)

60





2,7

EVL Support

EVL support

Applicable for shaft encoder 58 with clamping flange

Material: AL

Type: EVL-L58C





<u>2×45</u>•

EVL support

Applicable for shaft encoder 90 with clamping flange Material: AL

Type: EVL-L90A

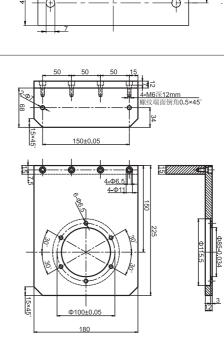
EVL support

Applicable for shaft encoder 115 with clamping flange

Material: AL

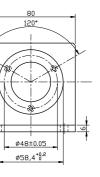
EVL-L115A

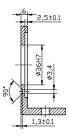
Type:

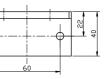


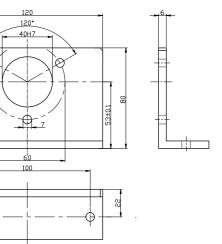












Coupling



Description:

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

Features:

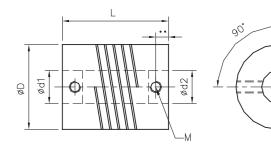
- Torsional rigidity
- Ability to support slight shaft misadjustments
- · Ability to absorb small axial shift of the shaft

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

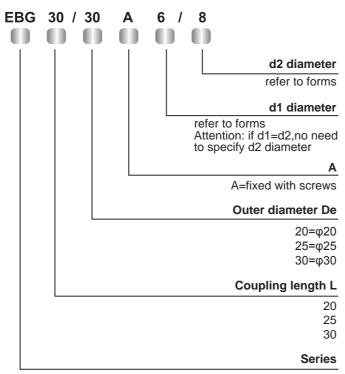
Screw flexible coupling

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

Coupling Dimensions



Order Code



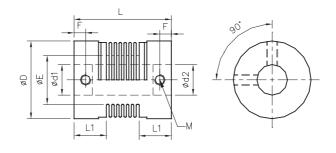
EBG=Screw-type flexible coupling

Coupling

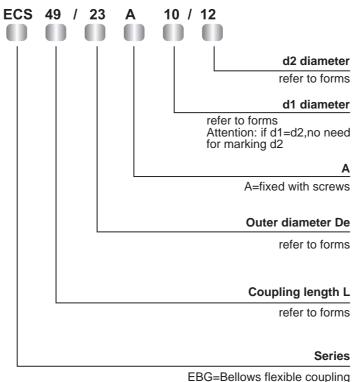
Bellow flexible coupling

Code	Φd1/Φd2 Shaft diameter	ΦD	L	L1	F	E	Twisting moment	Max. angular displacement	Max. speed	Screw(M)	Material
ECS27/16A	4 5 6 6.35(A1) 8	16	27	8.5	3	9.5	0.5 N.m	2°	6000 r/min	M3	AL-alloy
ECS29/20A	5 6 6.35(A1) 8 9.525(A2) 10 12	20	29	8.5	3	12.5	0.6 N.m	2°	6000 r/min	M3	AL-alloy
ECS34/25A 0000	6 6.35(A1) 8 9.525(A2) 10 12	25	34	10.5	4	15	1.7 N.m	2°	6000 r/min	M4	AL-alloy
ECS38/32 0000	6 8 9.525(A2) 10 12	32	38	11.5	4	21	1.7 N.m	2°	6000 r/min	M4	AL-alloy
ECS49/32	6 8 9.525(A2) 10 12	32	49	11.5	4	21	1.7 N.m	2°	6000 r/min	M4	AL-alloy
ECS51/40 0000	10 11 12 14 15 16	40	51	12.5	4.5	27	3.5 N.m	2°	6000 r/min	M5	AL-alloy
ECS57/55A	12 14 15 16	50	57	13.5	5	40	9.0 N.m	2°	6000 r/min	M6	AL-alloy

Coupling Dimensions



Order Code





Α

Compact Absolute Multiturn Encoder EMM36



Description:

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

Features:

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

Mechanical parameters

Shaft diameter(mm)	Φ6f7 Φ6F7/Φ8F7/Φ10F7
Protection class	IP65
Max. speed	6000 rpm
Max. load capacity of shaft	20 N (axial)
	40 N (radial)
Shock resistance	100 G/6ms
Vibration resistance	20G 1002000 Hz
Bearing life	10 ⁹ revolution
Moment of inertia	2.5×10 ⁻⁶ kgm ²
Starting torque	<0.01 Nm
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	-40+80 °C
Storage temperature	-45+85 °C
Relative humidity / condensation	90%, Condensation not permitted
Weight	About 400 g (except cable)

Electrical parameters

Output circuit	SSI
Output driver	RS422
Single turn resolution	12 bits
Revolution	12 bits
Supply voltage	1030 VDC
Power consumption (no load)	Max. 200 mA
Maximum load current	±20mA
Output frequency	Max. 15 KHz
Signal level high	Typ. 3.8 V
Signal level low	Max. 0.5 V
Rise time Tr	Max. 100 ns
Fall time Tf	Max. 100 ns

Interface	CANopen Profile DSP 406
	with additional function
Profile	CAN HIGH-Speed to ISO/DIS
	1898, Basic and Full-CAN
	CAN specification 2.0B
Code	Binary
Linearity	±1/2 LSB (12bits), ±1LSB(13bits)
Baud rate	20800 Kbits/s (Pre-factory setting)
Single turn resolution	Max. 16 bits
Revolution	Max. 16 bits
Supply voltage	1030 VDC
Maximum load current	Max.290 mA
Programming Functions	Resolution, preset, counting direction

Compact Absolute Multiturn Encoder EMM36

Terminal Assignment

SSI								
Signal	0V	+U _b	+C	-C	+D	-D	ST	V/R
Color	WH	BN	GN	YE	GY	PK	BU	RD
8-pin	1	2	3	4	5	6	7	8

Canopen

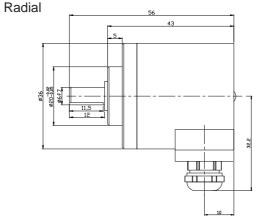
•				
Signal	0V	+Ub	RESET	CAN_H
Color	WH	BN	BU	GN
5-pin	3	2	1	4

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

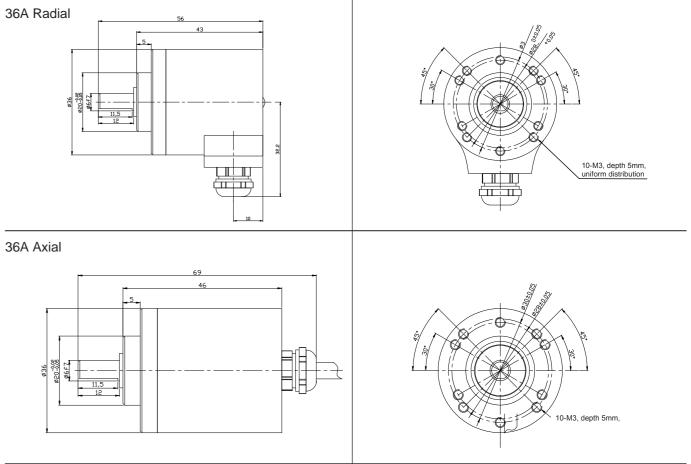
CANopen Matching Plug: M125PSF-00XX-W

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

Dimensions(mm)

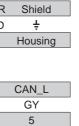


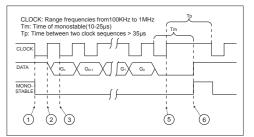
36A Axial









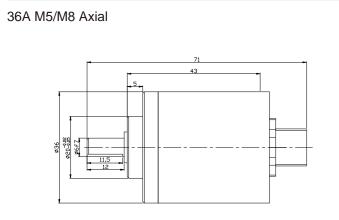


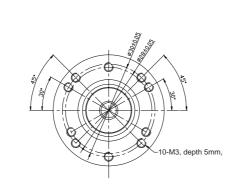
CAN_L	
BU	
5	

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

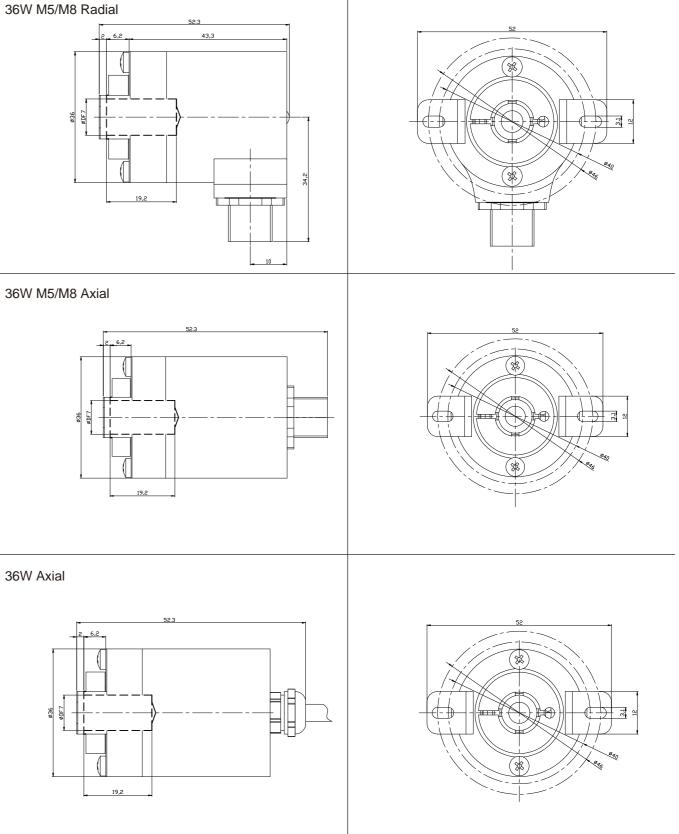
axis rotates clockwise, the output value decreases.

Compact Absolute Multiturn Encoder EMM36



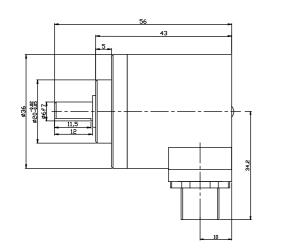


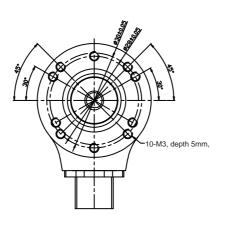
Compact Absolute Multiturn Encoder EMM36

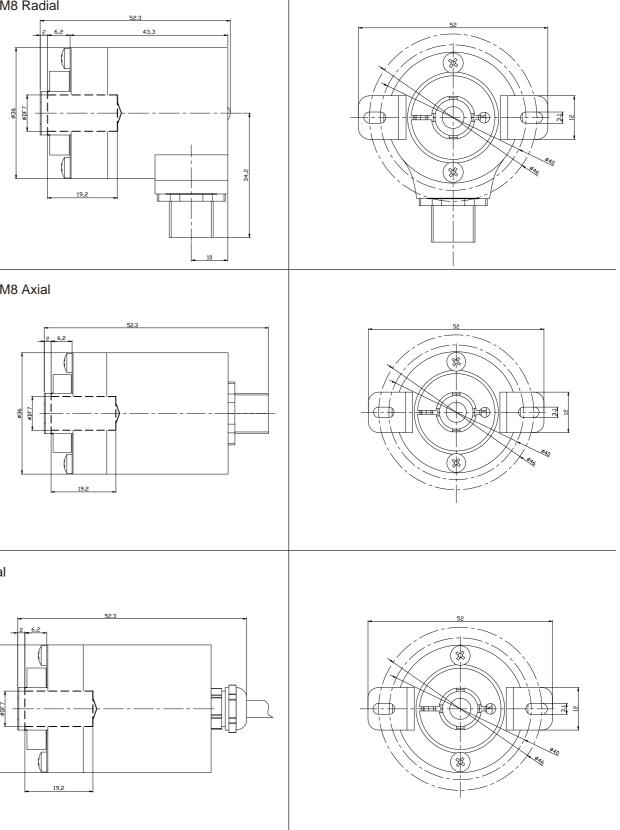


36W M5/M8 Axial

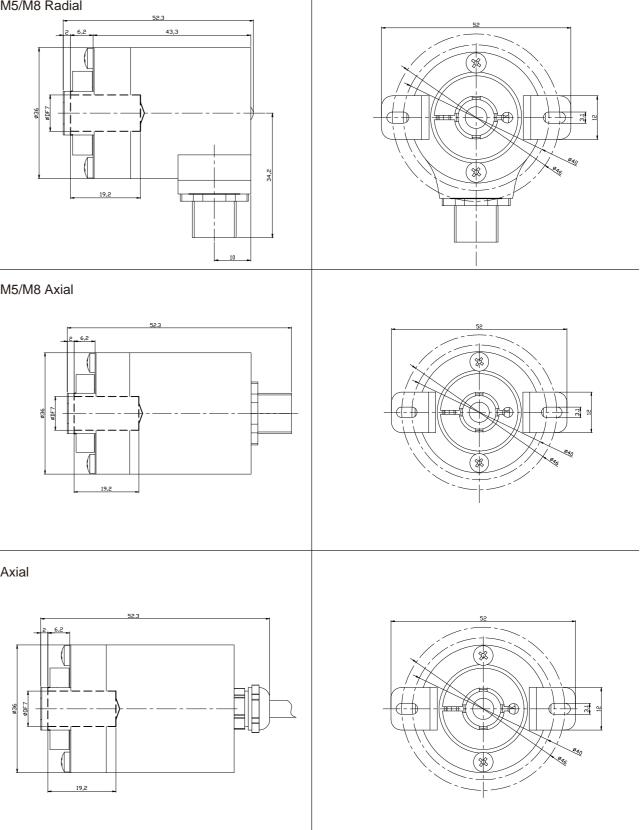
36A M5/M8 Radial



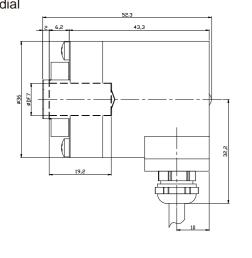




36W Axial



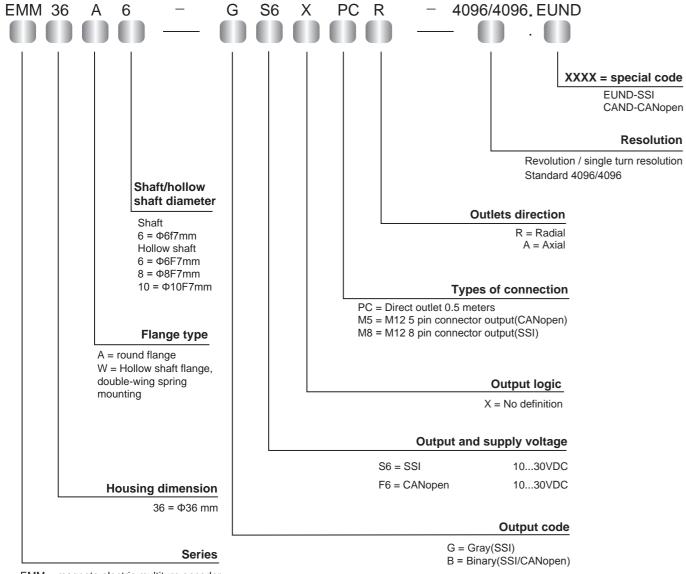






Compact Absolute Multiturn Encoder EMM36

Order Code



EMM = magneto electric multiturn encoder

Top view of pin plug:

Connector type	5-pin M12 connector CANopen	8-pin M12 connector SSI	5-pin M12 connector CANopen	8-pin M12 connector SSI
Pin plug		$7 \frac{6}{1} \frac{5}{8} \frac{4}{2} 3$		$\begin{array}{c} 6 \\ 7 \\ 1 \\ 8 \\ 2 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3$
Matched connector	M125PSF-0020-W 5-core pre-molded connector with 2 m PUR cable	M128PSF-0020-W 8-core pre-molded connector with 2 m PUR cable	TMSP125PF Field attachable connector	TMSP128PF Field attachable connector

Miniature Absolute Singleturn Encoder EAC50



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

Features

- Reverse connection protection

Mechanical parameters

Shaft diameter	Ф6g6/Ф8g6 mm
Protection class	IP64
Speed	6000 rpm
Max load capacity of the shaft	•
Axial load capacity	40 N
Radial load capacity	80 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10 ⁹ revolution
Rotor moment of inertia	1.8×10 ⁻⁶ kgm ²
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20 ℃~~+80 ℃
Storage temperature	-25 ℃~~+85 ℃
Relative humidity/condensation	90%, Condensation not permitted
Weight	330 g
Resolution	
2, 4, 8, 16, 32, 64, 90, 128, 180, 250, 256, 360,	500 512 720 1024

Electrical parameters

Output circuit	PNP	PNP open collector	NPN	NPN open collector
Resolution	10 Bits	10 Bits	10 Bits	10 Bits
Supply voltage	10-30 VDC/5 VDC	10-30 VDC/5 VDC	10-30 VDC/5 VDC	10-30 VDC/5 VDC
Power consumption (no load)	≤125 mA	≤125 mA	≤80 mA	≤80 mA
Permissible load (channel)	±80 mA	±80 mA	±50 mA	±50 mA
Pulse frequency	Max300 kHz	Max300 kHz	Max. 300 kHz	Max. 300 kHz
Signal level high	Min. U₀-1.5 V	Min. U _b -1.5 V	Min. U _b -2.5 V	MinU _b *70%
Signal level low	Max. 0.4V	depends on pull-down resistor	Max. 0.4 V	Max. 0.4 V
Rise timeTr	Max. 1 µs	Max.1 µs	Max.1µs	Max.1µs
Fall timeTf	Max. 1 µs	Max.1 µs	Max.1µs	Max.1µs

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



Description

- · 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

Miniature Absolute Singleturn Encoder EAC50

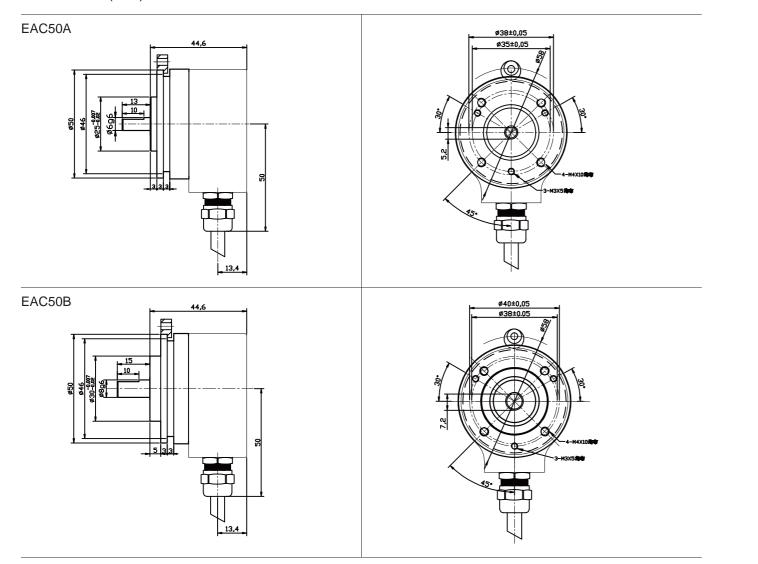
Terminal Configuration

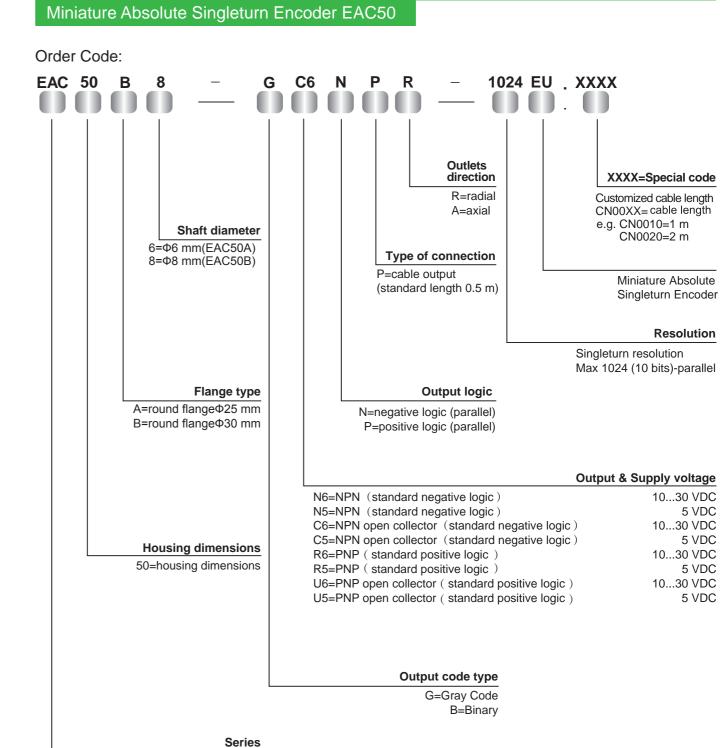
Signal	0V	+Ub	bit0	bit1	bit2	bit3	bit4	bit5	bit6	bit7	bit8	bit9	V/R*
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	BK	PL	GY/PK	RD/BU	YE/BN
Gray code	/	/	0	1	2	3	4	5	6	7	8	9	-

Attention

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

Dimensions (mm)





EAC=absolute singleturn

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



Output &	Supply	voltage
----------	--------	---------

standard negative logic)	1030 VDC
standard negative logic)	5 VDC
pen collector (standard negative logic)	1030 VDC
pen collector (standard negative logic)	5 VDC
standard positive logic)	1030 VDC
standard positive logic)	5 VDC
pen collector (standard positive logic)	1030 VDC
pen collector (standard positive logic)	5 VDC

Profibus-DP Interface Absolute Singleturn Encoder EAC58



Description

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

Features

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

· Conforming to Profibus-DP protocol

Mechanical parameters

Shaft diameter	Ф6g6 mm -58В	
	Ф8g6 mm -58А/В	
	Ф9.52(3/8")g6 mm -58А	
	Ф10g6 mm -58С	
Hollow shaft diameter	Φ8H7/Φ9.52H7/Φ10H7 mm -58/W	
	Φ12H7/Φ14H7/ Φ15H7 mm -58/W	
Protection class	IP65	
Speed	6000 rpm, continuous	
Axial load capacity	80 N	
Radial load capacity	160 N	
Shock resistance	50G/11 ms	
Vibration resistance	10G 10~2000 Hz	
Bearing life	10 ⁹ revolution	
Rotor moment of inertia	approx.1.8×10 ⁻⁶ kgm ²	
Starting torque	<0.05 Nm	
Body material	ALUNI 9002/5 -(D11S)	
Housing material	AL6060	
Flange material	ALUNI 9002/5 -(D11S)	
Operating temperature	-40+80 °C	
Storage temperature	-45+85 °C	
Relative humidity/condensation	90%, Condensation not permitted	
Weight	~800 g	

Resolution 8192 4096

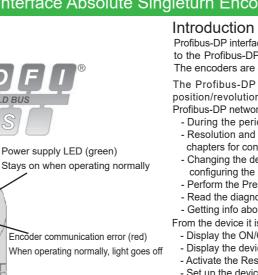
Electrical parameters

8192 (13 bits)	
10~30 Vdc	
300 mA	
12 Mbaud	
+/- 1/2 LSB	
Max 100 KHz	
	10~30 Vdc 300 mA 12 Mbaud +/- 1/2 LSB

Connection

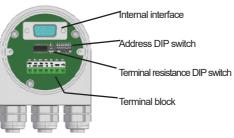
+V	Supply voltage(24 VDC)
0V	Ground
А	Profibus-DPline output (GN)
В	Profibus-DPline output (RD)
А	Profibus-DPline input (GN)
В	Profibus-DPline input (RD)

Profibus-DP Interface Absolute Singleturn Encoder EAC58

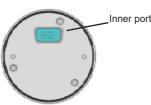


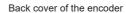


 \bigcirc



Inside of the encoder wiring box





'Bus line input

Bus line output

ower supply 24VDC

Address DIP switch Bit 8 is used for changing counter direction. Bit 1 to Bit 7 is used to set up the encoder address A Profibus network can accept up to 126 addresses.

The Bus line is closed when the two switches are switched ON

> kbaud Range/S

Parameter

Character

Rated cap Loop resis

Core diam

Core cros

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





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

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

- During the periodic data exchange, obtaining the angular position from the encoder. - Resolution and the revolution are configurable now (please refer to the corresponding chapters for configuring the parameters).

- Changing the default increment count direction (change between CW/CCW when configuring the parameters).

- Perform the Preset operation (Set the encoder to read a specific position).

- Read the diagnosis status.

- Getting info about the code supplied by the device.

From the device it is possible to:

- Display the ON/OFF status.

- Display the device activity on the bus.

- Activate the Reset function

- Set up the device address.

- If required, insert the terminal resistance into the bus.

- Change the counting direction

Installation

Installing the Profibus-DP encoder in a network requires the execution of the standard procedures necessary for configuring any Profibus-DP slave. The procedures are as follows: 1- Add the slave onto the master (please see corresponding chapter).

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

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

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

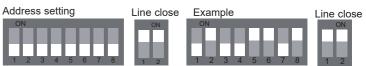
On the back cover of the encoder there are two LED indicators. The device's operating status can be observed by the two LEDs. The green LED shows the power status and must be on constantly. The red LED only switches off during the periodic data exchange between the Profibus master and the encoder.

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

DIP-switch setup (configuring slave address)

Besides the address and the standard position of a terminal DIP switch, a configuration example of Profibus and the devices is illustrated below.

In this example, device's address is set up as 1011001, with the corresponding decimal address as 77. Bit 7 is the top digit, and bit 1 is the lowest digit. Bit 8 is used for changing the counter direction. Bit 1 to bit 7 are used to configuring encoder's address.



Network parameters

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

r	A type cable
ristic resistance (Ω)	135165 at a certain frequency (320Mhz)
pacity (PF/m)	<30
stance (Ω/Km)	<=110
neter (mm)	>0.64*)
s-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:

		•					
	9.6	19.2	93.75	187.5	500	1500	12000
Segment	1200 m	1200 m	1200 m	1000 m	400 m	200 m	100 m

Profibus-DP Interface Absolute Singleturn Encoder EAC58



Max. number of station participating	DP: 126 (Address 0-125)
in the exchange of user data	FMS: 127 (Address 0-126)
Max. number of stations per segment	32
Available data transfer rates (kbit/s)	9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000,
Max. segments	6000.12000

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

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

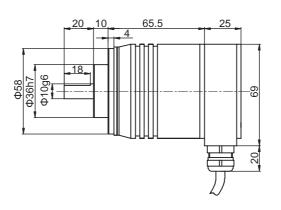
Dimensions (mm)

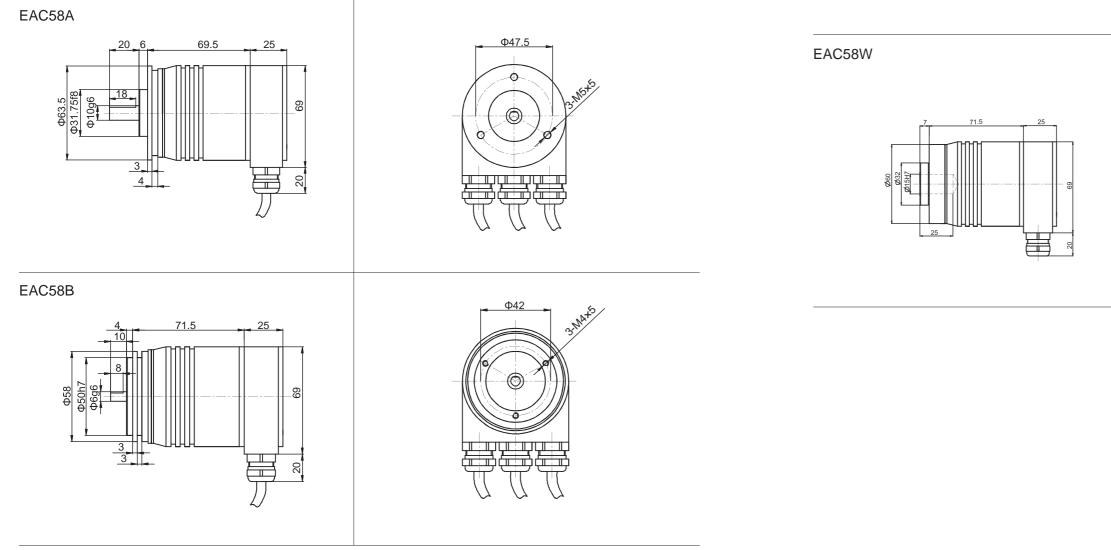
Wiring box

Profibus-DP Interface Absolute Singleturn Encoder EAC58

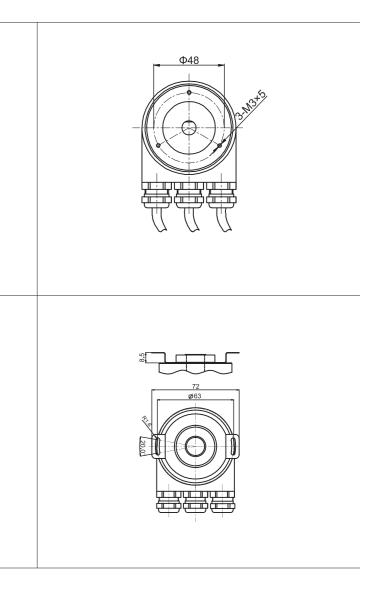
Dimensions (mm)

EAC58C









Profibus-DP Interface Absolute Singleturn Encoder EAC58

Order Code EAC 58 C 8192 DP 10 В F6 Х Х R _ _ Profibus-DP Interface Absolute Encoder Resolution resolution (see previous **Outlets direction** Shaft/ Hollow pages for reference) R=radial shaft diameter standard 8192 (13 bits) 6=Φ6g6 mm (58B) Type of connection 8=Φ8g6 mm X=integrated coupler terminal box with 3 PG7 threaded connectors 58A/B T=integrated coupler terminal box with 3 M12 plugs 9=Φ9.52g6 mm 58A 10=Φ10g6 mm **Output logic** Only for flange type 58W X= No definition 8 =Φ8H7 mm 9 =Φ9.52H7 mm 10=Φ10H7 mm Output & Supply voltage 12=Φ12H7 mm 14=Φ14H7 mm F6=Profibus-DP interface 10...30 Vdc 15=Φ15H7 mm Code type B=Binary Flange type A=round flange B=synchro flange, shaft length 10 mm C=Φ36clamping flange,shaft length 20 mm W=blind hollow shaft flange, double-winged spring leaf installation Housing diameter 58=Φ58flange Series

EAC=Profibus-DP interface absolute singleturn

4...20mA Analog Output Absolute Singleturn Encoder EAC58



- · Durable stainless steel shaft
- · Metal housing for better shock resistance

Mechanical parameters

	Shaft diameter	Φ6/Φ1
	Protection class	IP65
	Speed	6000 r
	Max load capacity of the shaft	
	Axial load capacity	60 N
	Radial load capacity	120 N
	Shock resistance	50G/1
	Vibration resistance	10G 1
	Bearing life	10 ⁹ re
	Rotor moment of inertia	1.8×10
	Starting torque	<0.01
	Body material	AL-allo
	Housing material	AL-allo
	Operating temperature	-20+
	Storage temperature	-25+
	Relative humidity/condensation	90%, (
	Weight	360 g
-		

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

Electrical parameters

Type of Interface	420 mA
Supply voltage (U _b)	1030 VDC/5 VDC
Current consumption	70 mA
Max.loading current	84 mA
Word-updating frequency	Max. 15.000/s
Current loop	1030 VDC
Analog signal	420 mA
Max.input resistance	200 Ω
Measuring range	0360°
Max.sensitivity (25°C)	0.2°
Resolution	13 Bit
Setup time	Max. 2 ms
Temperature effect	0.1°/10 K
No-load current	≤3.5 mA
Sensor should be electrically isolated form current	t loop

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



Description

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

Features

- Waterproof seal provides greater IP level
- · Pre-screwed holes for convenience purpose
- Protection class IP65
- · Staring and finishing points calibration function equipped

0g6 mm
:/m
1 ms
10~2000 Hz
volution
D ⁻⁶ kgm ²
Nm
by
by
-80 °C
- 85 °C
Condensation not permitted

4...20 mA Analog Output Absolute Singleturn Encoder EAC58

Terminal Configuration

Voltage signal	0V	+Ub	VOUT+	VOUT-	VIN+	VIN-	STZ	VR	STT				÷
Current Signal	0V	+Ub			+	-	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 1	12	PH

+I: Input of current loop $0V\!/\!+U_{\text{b}}$ and VIN+/VIN-: can be powered together or seperately

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

STZ: SET input (signal level remains high for 2 sec), the output current is set to 4 mA

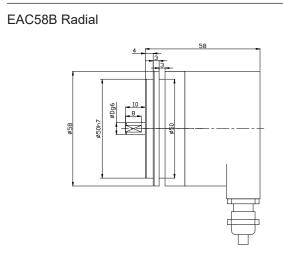
VR: Up/down input, as the input is activated, decreasing current values are transmitted when shaft turning clockwise STT input: SET input (signal level remains high for 2 sec), the output current is set to 20 mA

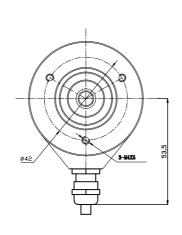
PH: Plug housing

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

2, Shaft remains static, and at the same time set STZ & STT signal at high level; singleturn resumes to 4-20mA, and the present position output is at 4 mA.

Dimensions (mm)





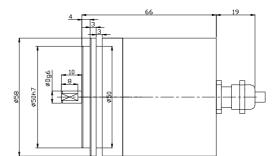
Top view of the connecting end

on needle connector block 12-pin plug

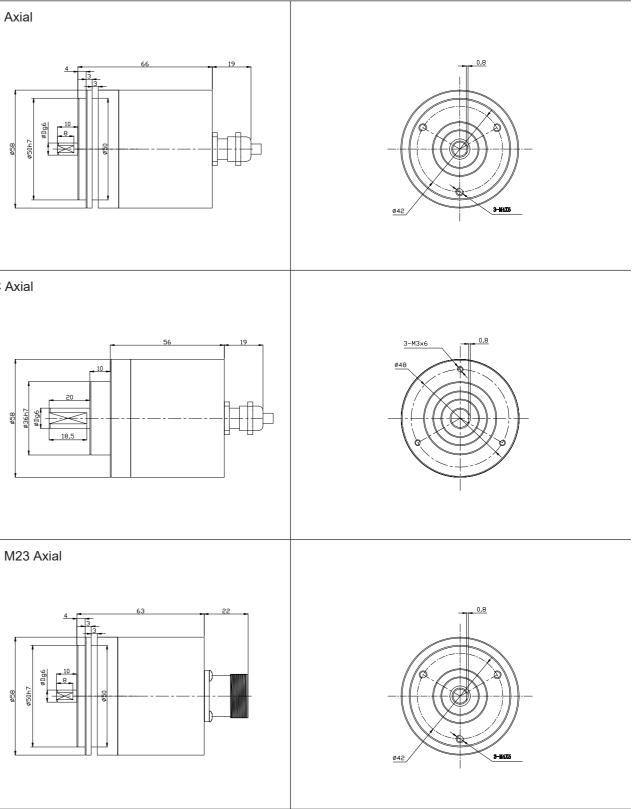
4...20 mA Analog Output Absolute Singleturn Encoder EAC58

Dimensions (mm)

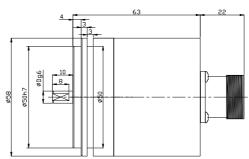
EAC58B Axial



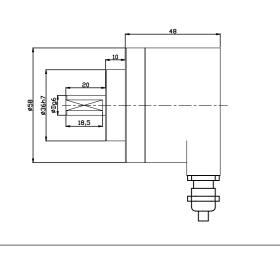
EAC58C Axial

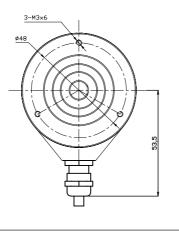


EAC58B M23 Axial



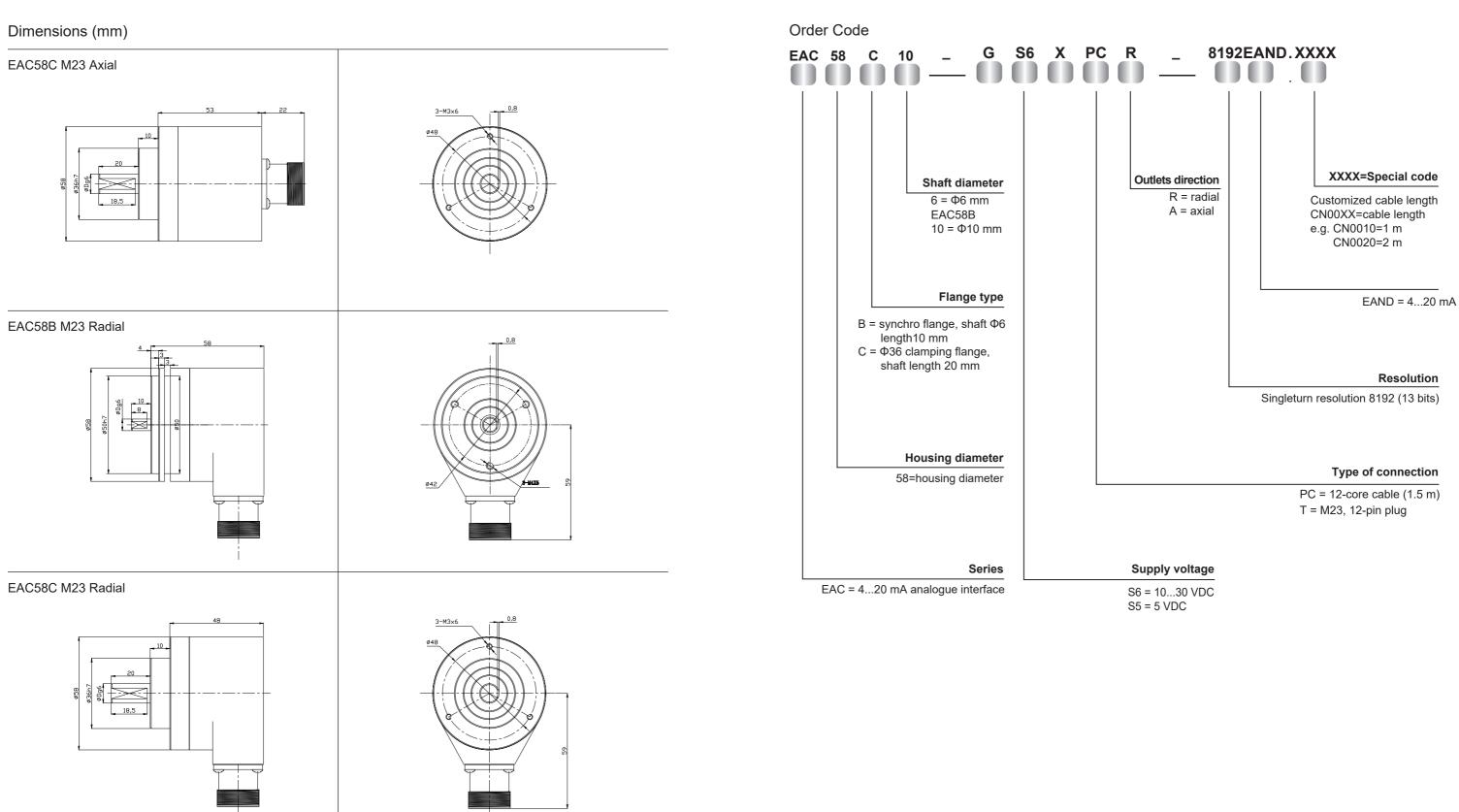








4...20 mA Analog Output Absolute Singleturn Encoder EAC58





4...20 mA Analog Output Absolute Singleturn Encoder EAC58

Standard Absolute Singleturn Encoder EAC58



Description

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

Features

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

Mechanical parameters

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

Resolution

SSI: 1024, 2048, 4096, 8192

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

Electrical parameters

Output circuit	SSI	SSI	Parallel	Parallel
Output driver	R\$422	RS422	Push-pull/NPN open collector	
Resolution	13 Bits	13 Bits	13 Bits	13 Bits
Supply voltage	1030 VDC	5 VDC	1030 VDC	5 VDC
Power consumption (no load)	≤200 mA	≤200 mA	≤200 mA	≤200 mA
Permissible load (channel)	±20 mA	±20 mA	±20 mA	±20 mA
Pulse frequency	Max. 1 MHZ	Max. 1 MHZ	Max. 40 kHz	Max. 40 kHz
Signal level high	Typ.3.8 V	Typ.3.8 V	MinUb-2.8 V	Min. 3.4.V
Signal level low	Max. 0.5 V	Max. 0.5 V	Max. 2.0 V	Max. 0.5 V
Rise time Tr	Max. 100 ns	Max. 100 ns	Max. 0.2 µs	Max. 0.2 µs
Fall time Tf	Max. 100 ns	Max. 100 ns	Max. 0.2 µs	Max. 0.2 µs

Standard Absolute Singleturn Encoder EAC58

Terminal Configuration

SSI Wiring Guide

Signal	0V	+Ub	+C	-C	+D	-D	ST [*]	V/R*
Color Code	WH	BN	GN	YE	GY	ΡK	BU	RD
12-pin	1	2	3	4	5	6	7	8

Parallel Wiring Guide

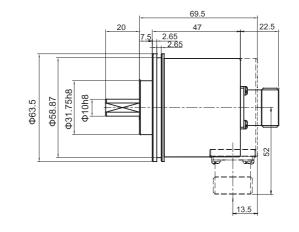
Signal	0V	+Ub	bit0	bit1	bit2	bit3	bit4	bit5
Color	WH	BN	GN	YE	GY	ΡK	BU	RD
17-pin	1	2	3	4	5	6	7	8
Gray	/	/	1	2	3	4	5	6
Binary								

Attention

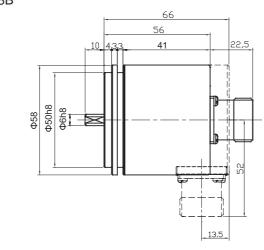
Bite definition of parallel interface for an absolute encoder is: bit0=MSB,bit1=MSB-1,bit2=MSB-2,.....

Dimensions (mm)

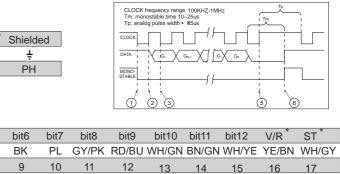
EAC58A



EAC58B







11

10

12

13

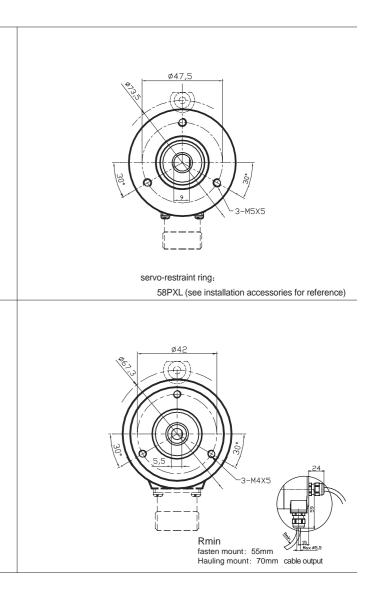
/

1

8

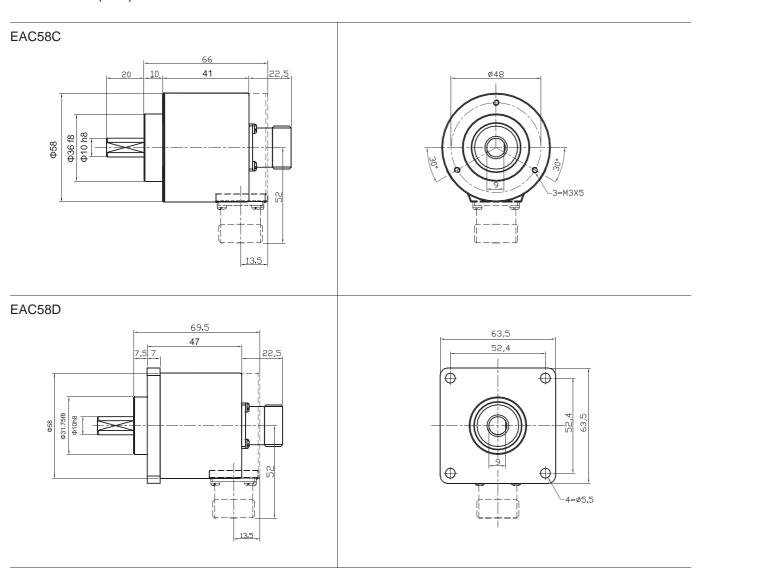
9

7



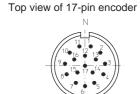
Standard Absolute Singleturn Encoder EAC58

Dimensions (mm)



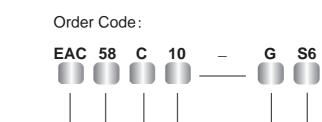
Attention:Do not use excessive force during hardwiring between dryshaft, flange and encoder to prevent shaft damage from overload.

Top view of 12-pin encoder









Flange type A=Φ31.75 damping flange, shaft length 20 mm B=synchronous flange, shaft length 10 mm C=Ф36 clamping flange, shaft length 20 mm D=63.5 square flange, Φ31.75,shaft length 20 mm

Shaft diameter

6=Φ6 mm (EAC58B)

8=Φ8 mm

(3/8") 10=Ф10 mm

9=Φ9.52 mm

Housing dimensions 58= housing dimensions Series

EAC=absolute singleturn series

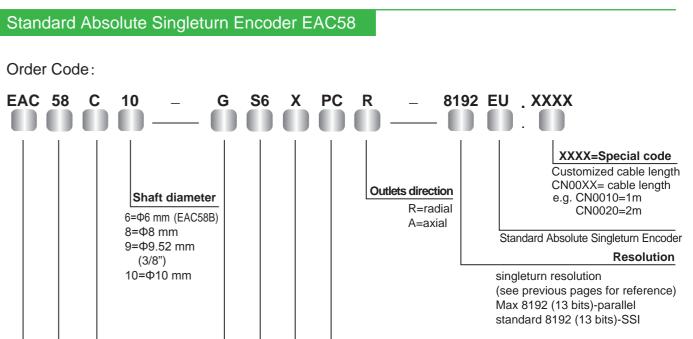
Hole arrangement for of 17-pin connector



Size







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)

Output logic

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

Interface & S	upply voltage
P6=Push-Pull (standard positive logic)	1030 VDC
P5=Push-Pull (standard positive logic)	5 VDC
S6=SSI (synchronous serial interface)	1030 VDC
S5=SSI (synchronous serial interface)	5 VDC
C6=NPN open collector (standard negative logic)	1030 VDC

Output Code

G=Gray Code B=Binary

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

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

Standard Hollow Shaft Absolute Singleturn Encoder EAC58P



Description

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

Features

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

Mechanical parameters

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

Resolution

SSI: 1024, 2048, 4096, 8192

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

Electrical parameters

Output circuit	SSI	SSI	Parallel	Parallel
Output driver	RS422	RS422	Push-pull/NPN OC	
Resolution	13 Bits	13 Bits	13 Bits	13 Bits
Supply voltage	1030 VDC	5 VDC	1030 VDC	5 VDC
Power consumption (no load)	≤200 mA	≤200 mA	≤200 mA	≤200 mA
Permissible load (channel)	±20 mA	±20 mA	±20 mA	±20 mA
Pulse frequency	Max. 1 MHZ	Max. 1 MHZ	Max. 40 kHz	Max. 40 kHz
Signal level high	Typ. 3.8 V	Typ. 3.8 V	Typ.Ub-2.8 V	Typ. 3.4 V
Signal level low	Max. 0.5 V	Max. 0.5 V	Max. 2.0 V	Max. 0.5 V
Rise timeTr	Max. 100 ns	Max. 100ns	Max. 0.2 µs	Max. 0.2 µs
Fall timeTf	Max. 100 ns	Max. 100ns	Max. 0.2 µs	Max. 0.2 µs

Standard Hollow Shaft Absolute Singleturn Encoder EAC58P

Terminal Configuration

SSI Wiring Guide

Signal	0V	+Ub	+C	-C	+D	-D	ST [*]	V/R*
Color	WH	BN	GN	YE	GY	ΡK	BU	RD
12-pin	1	2	3	4	5	6	7	8

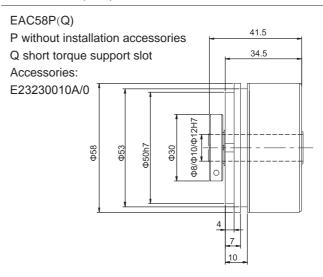
Parallel

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

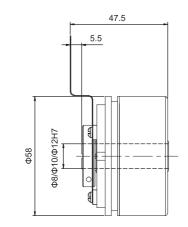
Attention

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

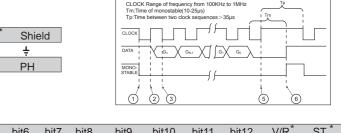
Dimensions (mm)

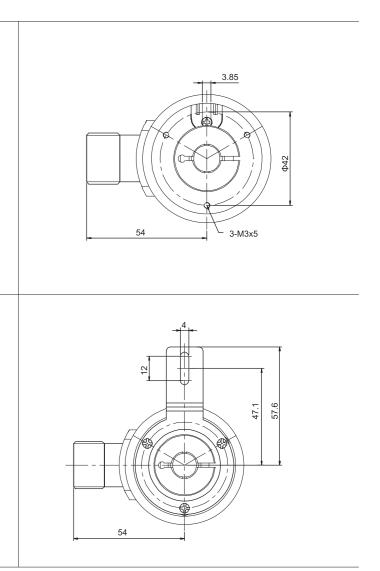




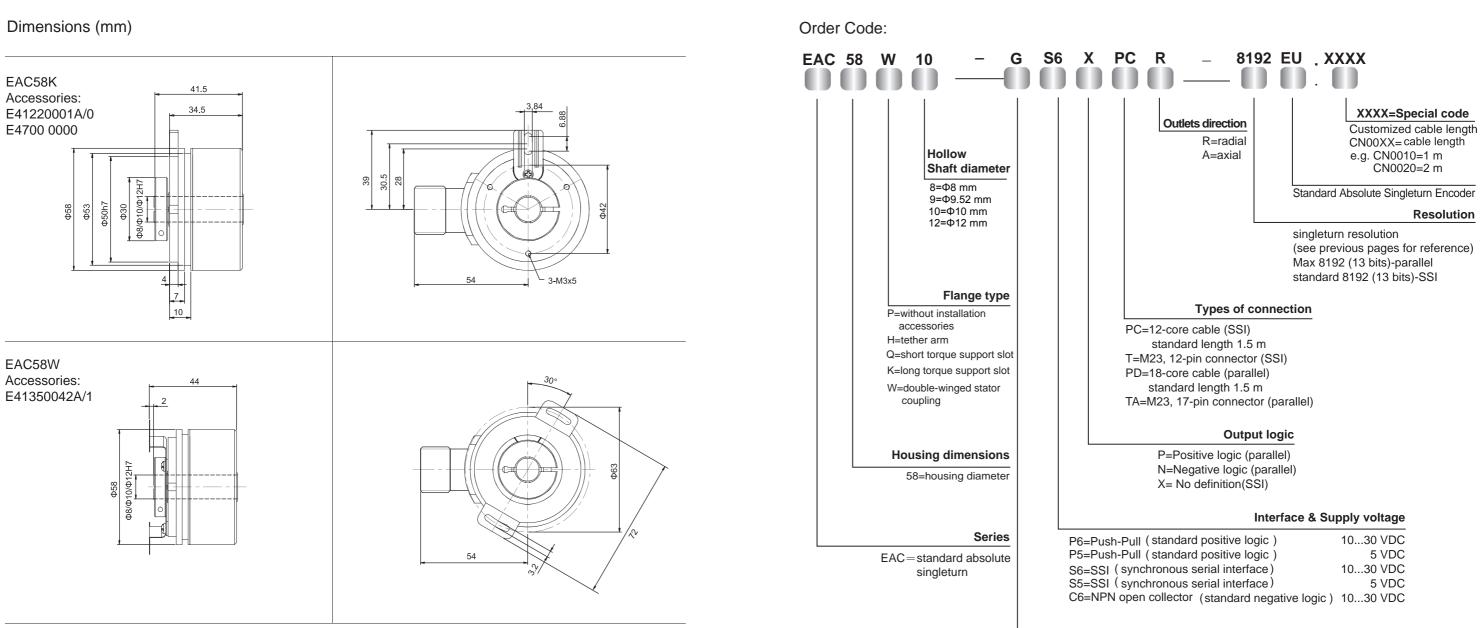








Standard Hollow Shaft Absolute Singleturn Encoder EAC58P



Output Code

Standard Hollow Shaft Absolute Singleturn Encoder EAC58P

G=Gray Code B=Binary



III(standard positive logic)	1030 VDC
II (standard positive logic)	5 VDC
nchronous serial interface)	1030 VDC
nchronous serial interface)	5 VDC
en collector (standard negative logic)	1030 VDC

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

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

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



Description

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

Features

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

Mechanical parameters

•	
Shaft diameter	Ф6g6/Ф8g6/Ф10g6 mm
Hollow shaft diameter	Ф8Н7/Ф10Н7/Ф12Н7/Ф15Н7 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
Axial load capacity	80 N
Radial load capacity	160 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10 ⁹ revolution
Rotor moment of inertia	1.8×1 ⁻⁶ kgm ²
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	Zn AL-alloy
Operating temperature	-40+80 °C
Storage temperature	-45+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360750 g
	· · · · · · · · · · · · · · · · · · ·

Electrical parameters

Output circuit	420 mA	010 V
Supply voltage(U _b)	1030 VDC/5 VDC	1030 VDC
Power consumption typ.	70 mA	70 mA
No load Max.	84 mA	84 mA
Word change frequency	Max 15.000/s	Max. 15.000/s
Current loop supply voltage	1030 VDC	1030 VDC
Analogue signal	4 20 mA	010 V
Max. input resistance	200 Ω	200 Ω
Measuring range	Based on actual resolution	Based on actual resolution
Max. sensitivity (25°C)	0.2°	0.2°
Resolution	16 Bit	16 Bit
Building up time	Max. 2 ms	Max. 2 ms
Temperature coefficient	0.1°/10 K	0.1° /10 K
Power consumption (no load)	≤3.5 mA	≤3.5 mA
Sensors must be electrically insulated from	n 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	$+U_{\rm b}$	VOUT+	VOUT-	VIN+	VIN-	STZ	VR	STT	—	—	—	÷
Current Signal	0V	$+U_{\rm b}$	_	—	+1	-1	STZ	VR	STT	—	—	_	÷
Color	WH	BN	GN	YE	GY	ΡK	BU	RD	BK	VT	GY/PK	RD/BU	
Gray	1	2	3	4	5	6	7	8	9	10	11	12	PH

+I: Input of current loop

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

I-: Output of current loop

VOUT+/VOUT-: voltage output

VIN-/VOUT-: connected in circuit

STZ: SET input (signal level remains high for 2 sec), the output current is set to 4 mA

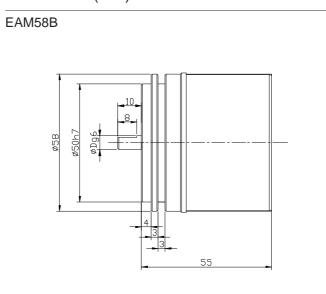
VR: Up/down input, as the input is activated, decreasing current values are transmitted when shaft turning clockwise STT input: SET input (signal level remains high for 2 sec), the output current is set to 20 mA PH: Plug housing

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

2. Shaft remains static, and at the same time set STZ & STT signal at high level; singleturn resumes

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

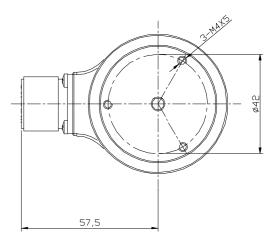
Dimensions (mm)

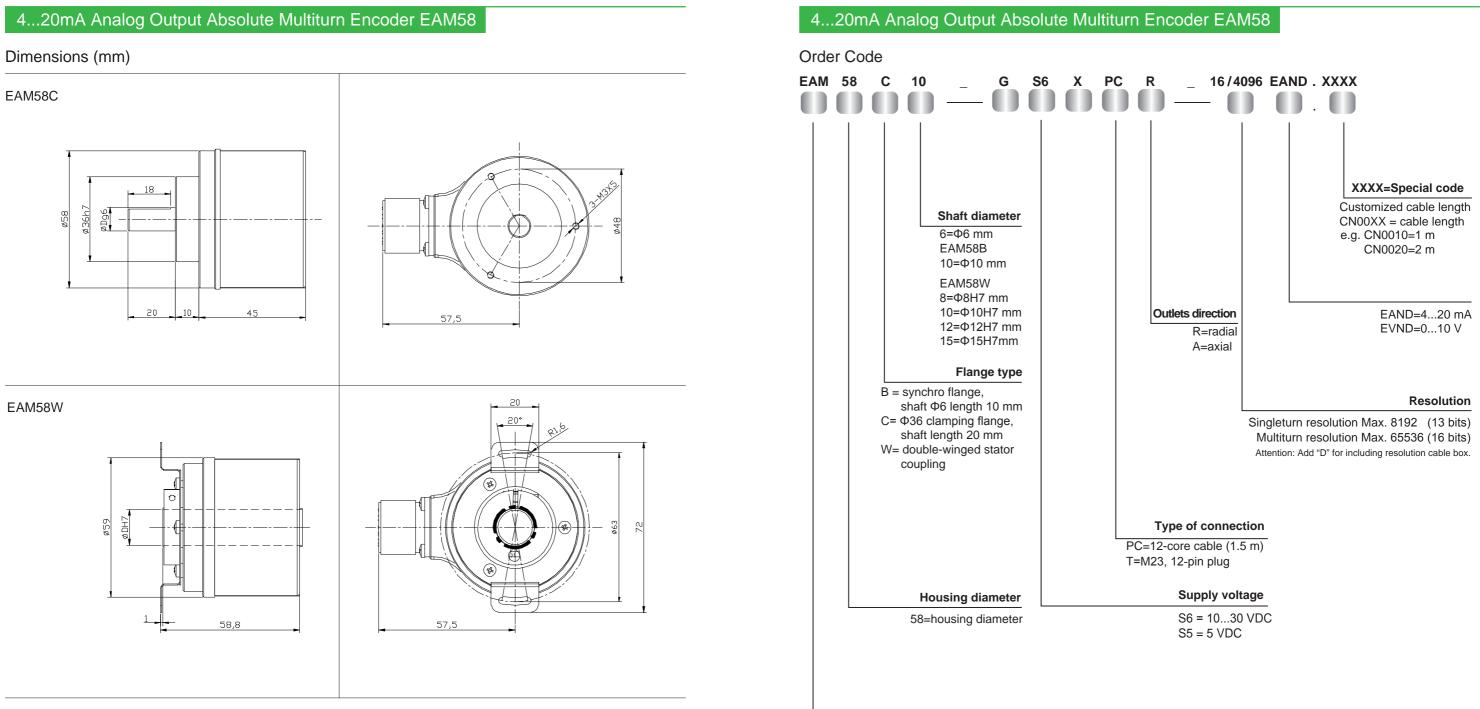




Top view of the connecting end on needle connector block 12-pin plug







Series

EAM=4...20 mA analogue interface



Standard Absolute Multiturn Encoder EAM58



Description

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

Features

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

Mechanical parameters

Shaft diameter	Ф6g6/Ф8g6/Ф10g6 mm
Hollow shaft diameter	Ф8Н7/Ф10Н7/Ф12Н7/Ф15Н7 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
Axial load capacity	80 N
Radial load capacity	160 N
Shock resistance	50G/11 ms
Vibration resistance	10G 102000 Hz
Bearing life	10 ⁹ revolution
Rotor moment of inertia	1.8×10 ⁻⁶ kgm ²
Starting torque	<0.01 Nm
Body material	AL-alloy
Housing material	Zn AL-alloy
Operating temperature	-40+80 °C
Storage temperature	-45+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360750 g

Electrical parameters

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

Standard Absolute Multiturn Encoder EAM58

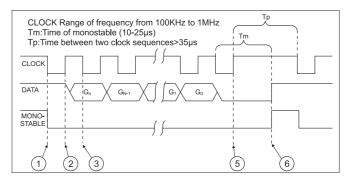
Terminal Assignment

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

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

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

Operating principle

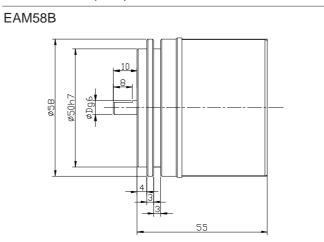


In rest conditions, the CLOCK and DATA lines are at a high logical level and the mono-stablecircuit is disabled (high level). 1. On the first CLOCK signal descent front, the mono-stable is activated and the parallel value present at the input to the P/S converter is memorized in the shift register.

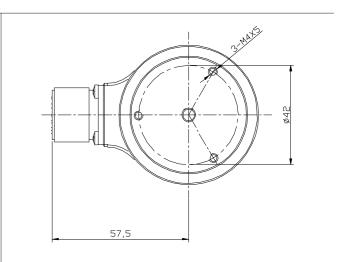
- 2. On the CLOCK signal ascent front, the most significant bit (MSB) is placed in the output on the DATA line.
- 3. On the CLOCK descent front when the signal is stable the controller acquires the level from the DATA line, which is the value of the most significant bit (MSB), the mono-stable is re-activated.
- 4. On each further ascent front of the CLOCK impulse sequence, the successive bits up to the least significant one are place in the output on the DATA line and acquired by the control on the descent front.
- 5. At the end of the CLOCK impulse sequence when the external control has also acquired the value of the least significant (LSB) the CLOCK impulse sequence is interrupted and therefore the mono-stable is no longer re-activated.

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

Dimensions (mm)



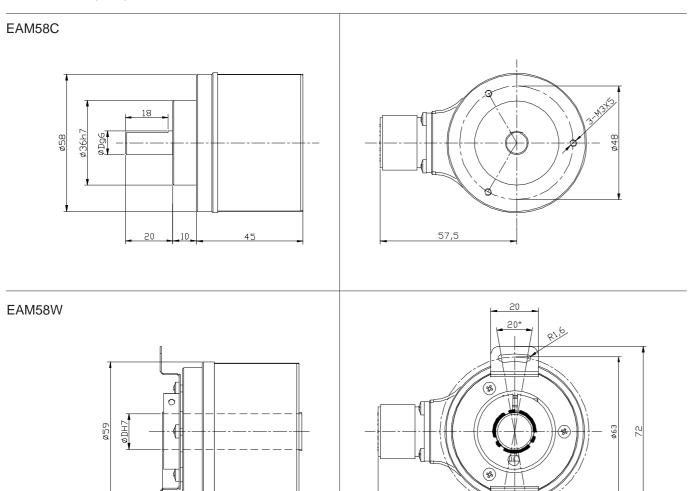




Standard Absolute Multiturn Encoder EAM58

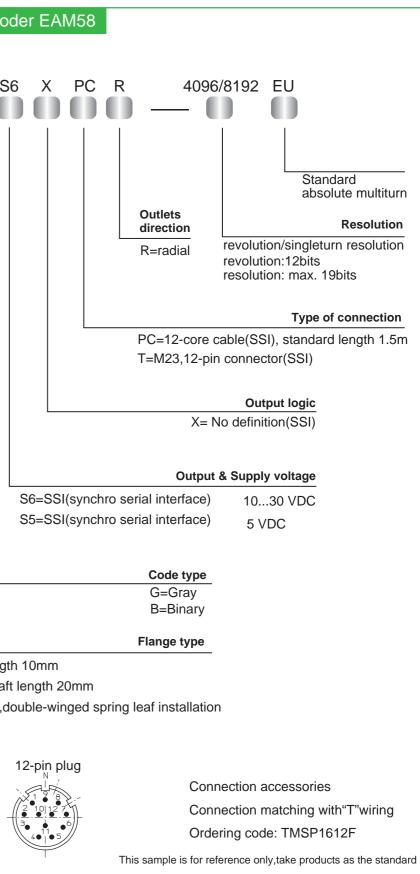
58,8

Dimensions (mm)



57,5

Standard Absolute Multiturn Encoder EAM58 Order Code EAM 58 C 10 G S6 Shaft/Hollow Shaft diamter Only for flange type 58B、58C 6=Φ6g6mm 8=Φ8g6mm 10=Ф10g6mm Only for flange type 58W 8=Φ8H7mm 10=Φ10H7mm 12=Ф12H7mm 15=Φ15H7mm B = synchro flange, shaft length 10mm $C = \Phi 36$ clamping flange, shaft length 20mm W = blind hollow shaft flange, double-winged spring leaf installation Housing diameter 58 = Φ58



EAM = standard absolute multiturn

72



Profibus-DP Interface Absolute Multiturn Encoder EAM58



Description

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

Features

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

Mechanical parameters

Shaft diameter (mm)	Ф6д6	-(58B)
	Ф8g6	-58A/B/D/EA
	Ф9.52(3/8")g6	-58A/D/E
	Ф10g6	-58C
Hollow shaft diameter (mm)	Ф8H7/Ф9.52H7/Ф10H7	-58W
	Ф12H7/Ф14H7/ Ф15H7	-58W
Protection acc. to EN 60529	IP65	
Speed	6000, continuous	
Axial load capacity	80 N	
Radial load capacity	160 N	
Shock resistance	50G/11ms	
Vibration resistance	10G 10~2000 Hz	
Bearing life	10 ⁹ revolution	
Rotor moment of inertia	approx.1.8×10 ⁻⁶ kgm ²	
Starting torque	<0.05 Nm	
Body material	ALUNI 9002/5 -(D11S)	
Housing material	AL6060	
Flange material	ALUNI 9002/5 -(D11S)	
Operating temperature	-40 °C~~+80 °C	
Storage temperature	-45 °C~~+85 °C	
Relative humidity/condensation	90%, Condensation not pe	rmitted
Weight	~800g -58B/C, 63A/D/E	
Resolution 4096 (revolution) ×8192 (resolution) 4096 (revolution) ×4096 (resolution)		

Revolution and resolution can be programmed in PLC (see operation manual for configurations)

Electrical parameters

Revolution	4096 (12 bits)
Resolution/revolution	8192 (13 bits)
Supply voltage	1030 Vdc
Power consumption (no load)	300 mA
Baud rate	12 Mbaud
Linearity	+/- 1/2 LSB
Output frequency	Max 100 KHz

Terminal Assignement

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

Profibus-DP Interface Absolute Multiturn Encoder EAM58

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:

- 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).
- Encoder Communication Error (red) When operating normally,

Power supply LED (green)

Stays on when

light goes off.

operating normally

- Activate the Reset function - Set up the device address
- If required, inserting the terminal resistor into the bus.

Installation

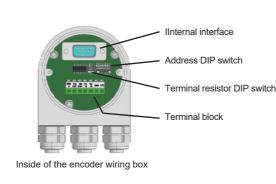
- follows
- 2- Wire the encoder into the Profibus network. Whether wiring it in the middle or at the terminal are depending on the physical position of the device in the bus.

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.

address.

Address setting





Back cover of the encoder

nner port

 \bigcirc

Back of the encoder wiring box



- 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).
- 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.
- Change the counting direction

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

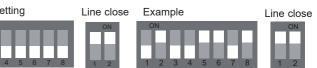
- 1- Add the slave onto the master (please see corresponding chapter).
- 3- Directly set up the address (which must be unique in the network and as same as the device) for the slave. 4- Prepare the applications at the master side and set up the Profibus network

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

DIP-switches setup (configuring slave address)

Besides the address and the standard position of a terminal DIP switch, a configuration example of Profibus and the devices is illustrated below.

In this example, device's address is set up as 1011001, with the corresponding decimal address as 77. Bit 7 is the top digit, and bit 1 is the lowest digit. Bit 8 is used for changing the counter direction. Bit 1 to bit 7 are used to configure encoder's



Profibus-DP Interface Absolute Multiturn Encoder EAM58

Address DIP switch Bit 8 is

used for changing counter direction. Bit 1 to Bit 7 is

used to set up the encoder address. A Profibus network

The Bus line is closed when setting the two switches are switched ON.

can accept up to 126 addresses.

"<u>1</u> ## 72211-4

Bus line input

Bus line output

Power supply 24VDC



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

A type cable
135165at a certain frequency (320Mhz)
<30
<=110
>0.64*)
>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.

Wiring Guide:
All all
Dust-proof rubber ring
Water-proof rubber ring
Metal locking ring

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

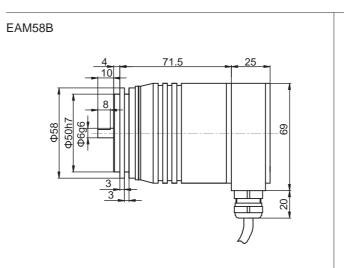
According to EN50170, a maximum of 4 repeaters are allowed between any two stations. Dependent on the repeater type and manufacturer, more than 4 repeaters may be allowed in some cases. Refer to the manufacturer's technical specification for details.

Wiring box

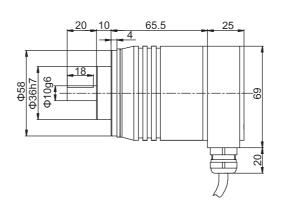
Unscrew the back cover and wire the cables (power cable, input and output bus) according to the instructions on the cover wiring. The cable will pass through the metal locking ring, water-proof rubber ring, and dust-proof rubber ring into the metal notch. Lock the metal ring to fasten the cables

Profibus-DP Interface Absolute Multiturn Encoder EAM58

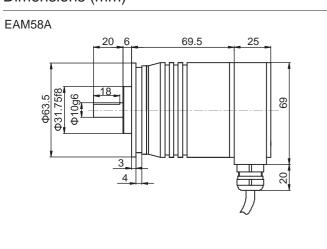
Dimensions (mm)

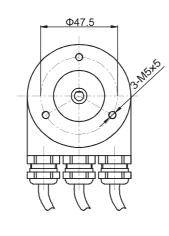




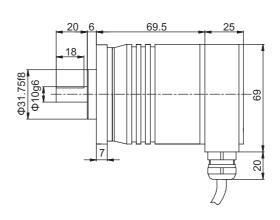


Dimensions (mm)

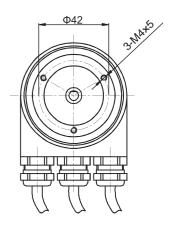


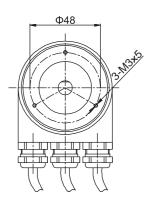


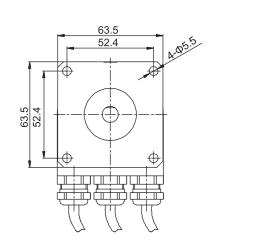
EAM58D





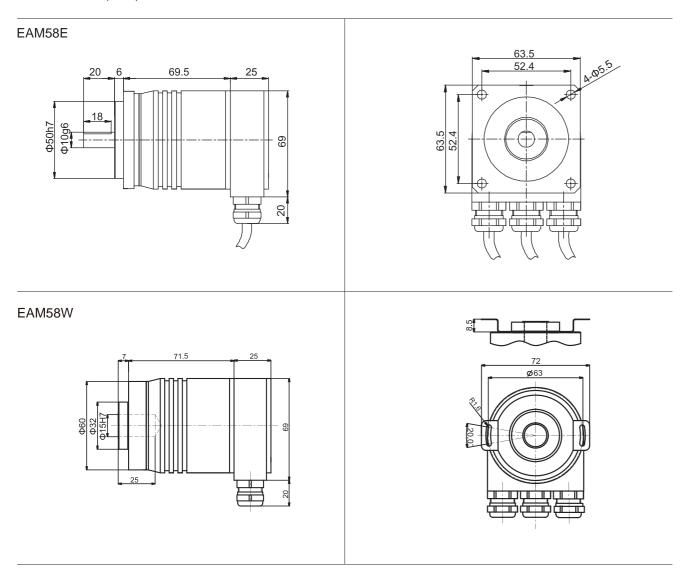




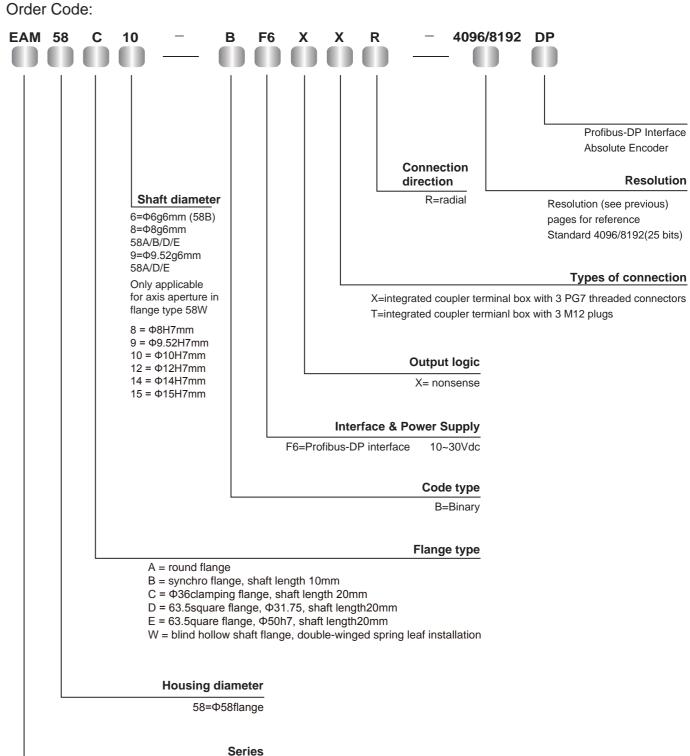


Profibus-DP Interface Absolute Multiturn Encoder EAM58

Dimensions (mm)



Profibus-DP Interface Absolute Multiturn Encoder EAM58



EAM = Profibus-DP interface absolute multiturn



Profinet Absolute Multiturn Encoder



Description

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

Features

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

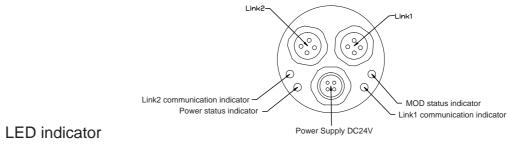
Mechanical parameters

Shaft diameter	Φ6g6 mm -58B Φ10g6 mm -58C
Hollow shaft diameter	Ф10H7 mm -58W
Protection class	IP65
Max. speed (r/m)	6000
Shaft load(axial)	40 N
Shaft load(radial)	80 N
Shock resistance	50G/11 ms
Vibration resistance	10G 102000 Hz
Bearing life	10 ⁹ revolution
Moment of inertia	Approx. 1.8x10 ⁻⁶ kgm ²
Starting torque	<0.05 Nm
Housing material	Al-alloy UNI 9002/5 -(D11S)
Cover material	Al-alloy 6060
Flange material	Al-alloy UNI 9002/5 -(D11S)
Operating temperature	-40+80 °C
Storage temperature	-45+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	~600 g

Electrical parameters

Max. revolution	4096 (12 bits)
Max. resolution	262144 (18 bits)
Supply voltage	1030 VDC
Current consumption (no load)	200 mA
Max. rate	100 Mbits/s
Linearity	12 bits+/- 1/2 LSB
Interface	PROFINET IO/RT Class C
Data transmission rate	10/100 Mbit/s
Encoder sub-protocol	V4.1 Class3

Profinet Absolute Multiturn Encoder



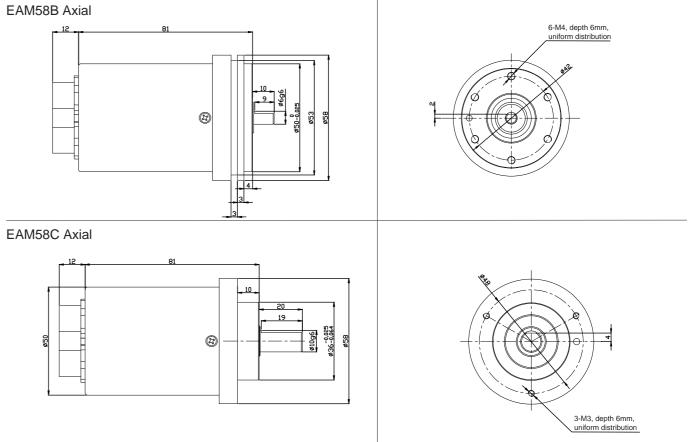
Power indicator	Green light on is normal, red ligh
Communication indicator	Green light on is normal connect
MOD status indicator	Green light on is working normal

Data port 1 Signal TxD+ R×D+ Pin No. 1 2 Power interface Signal +V _ Pin No. _ 1 Data port 2 Signal TxD+ R×D+ Pin No. 1 2

Dimensions (mm)

æ

EAM58C Axial





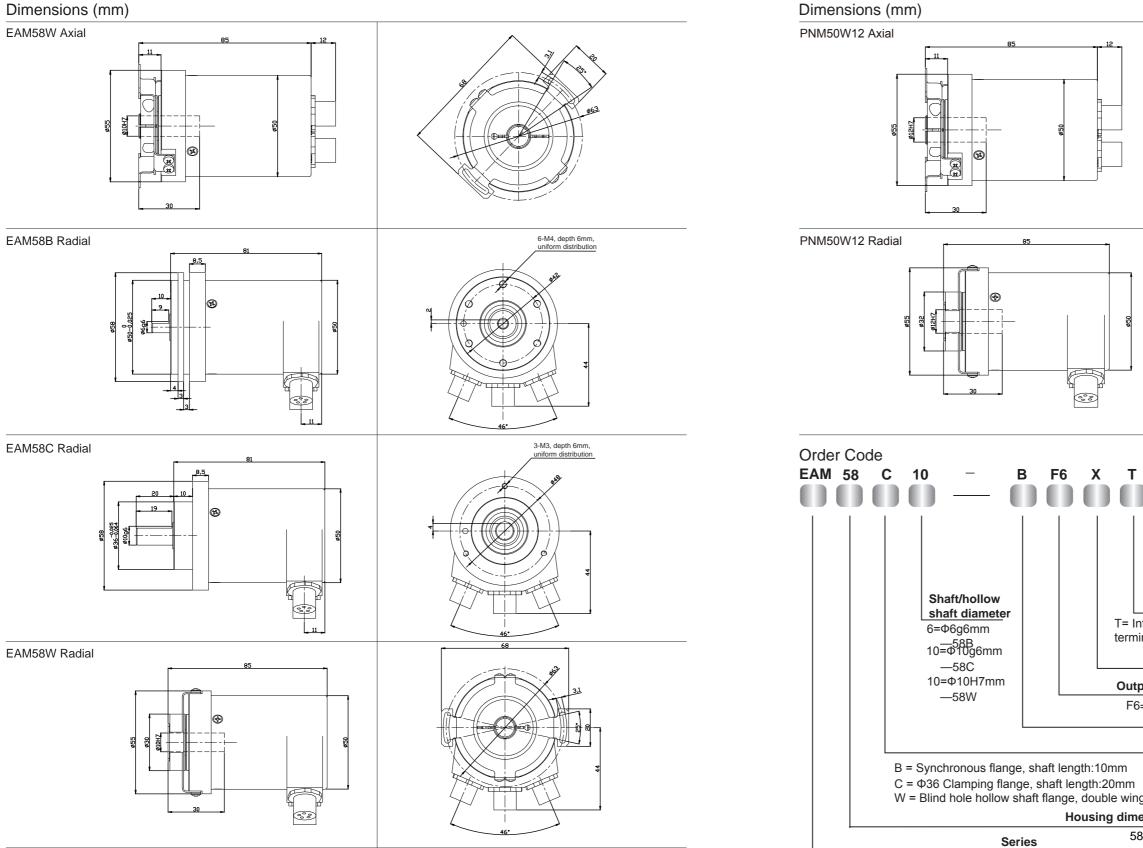
ht on is power failure, light off is no power

tion, blinking is data transmission in progress, light off is not connected lly and the light off is abnormal

T×D-	R×D-	1 2 D-coded
3	4	4 3
-V	—	4 3
3	_	1 2
	-	
TxD-	R×D-	1 2 D-coded
3	4	4 3

Profinet Absolute Multiturn Encoder

Dimensions (mm)



EAM = Profinet absolute multiturn encoder

Profinet Absolute Multiturn Encoder



TF	R - 4096/4	60 60 60 60 60 60 60 60 60 60
	Outlets direction	XXXX=Special code
	No definition	PNOM: Profinet RT
Ту	pes of connection	Resolution
T= Integra	ted bus coupler ith 3 of M12 socket	Standard 4096/8192(25Bits) Optional 4096/262144(30Bits)
		Output logic
Output ar	nd Supply voltage	R= Radial X= Axial
F6=Prof	inet IO 1030Vdc	Output code
	Flange type	B=Binary
mm Omm Ie wing sprin	ng plate installation	

Housing dimension

58=Φ58

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

Profinet Protocol Absolute Multi-turn Encoder EAM58



Description

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

Features

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

Mechanical parameters

•	
Shaft diameter	Ф6g6/Ф8g6/Ф10g6 mm
Hollow shaft diameter	Φ8H7/Φ10H7/Φ12H7/Φ15H7 mm
Protection class	IP65
Speed (r/m)	6000
Max.load capacity of shaft	
Axial	80 N
Radial	160 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Service life of bearing	10 ⁹ revolution
Rotor moment of inertia	1.8×10 ⁻⁶ kgm ²
Starting torque	<0.01Nm
Body material	AL-alloy
Housing material	Zn Al-alloy
Operating temperature	-40+80 °C
Storage temperature	-45+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	360750 g

Electrical parameters

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

Electrical connection

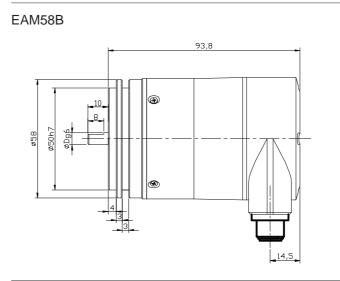
Connection direction	Radial	
Bus interface 1	M12, female, 4-pin, D-coded	
Power interface	M12, male, 5-pin, A-coded	
Bus interface 2	M12,female, 4-pin, D-coded	

Profinet Protocol Absolute Multi-turn Encoder EAM58

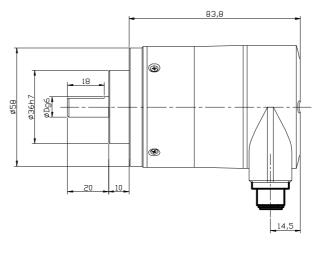
Terminal Configuration

Function	M12 connector			
	Signal	Data sending+	Data receiving+	Data sei
Bus	Abbreviation	TxD+	RxD+	TxD
interface1	Pin	1	2	3
Power interface	Signal	Voltage +	_	Voltag
	Abbreviation	+ V	_	0 V
	Pin	1	2	3
	Signal	Data sending+	Data receiving+	Data ser
Bus interface2	Abbreviation	TxD+	RxD+	TxD
	Pin	1	2	3

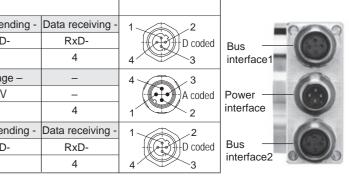
Dimensions (mm)

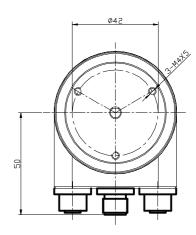


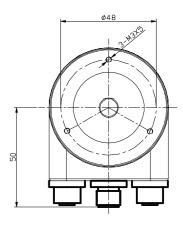
EAM58C





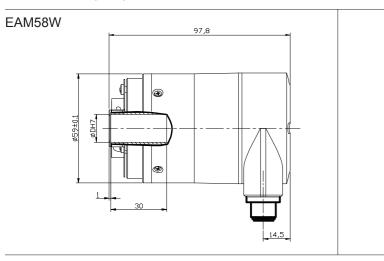


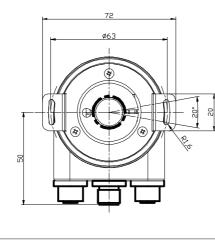




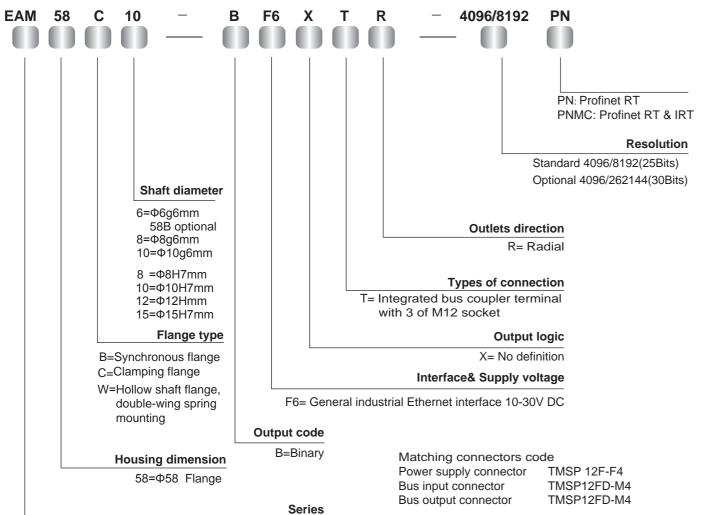
Profinet Protocol Absolute Multi-turn Encoder EAM58

Dimensions (mm)





Order Code



EtherNet/IP Interface Absolute Multiturn Encoder EAM58



Features

Mechanical parameters

Shaft diameter	Φ6/Φ8/Φ10g6 mm (Solid Shaft)
Hollow Shaft diameter	Ф8/Ф10/Ф12/Ф15Н7 mm
Protection class	IP65
Max. Permissible Mechanical Speed	6000 r/min
Max. Shaft load	Axial 40 N, Radial 110 N
Shock resistance	≤100 g (half sine 6ms, EN60068-2-27)
Vibration resistance	≤10g (10Hz - 1000Hz, EN60068-2-6)
Bearing life	10 ⁹ revolution
Rotor moment of inertia	≤30 gcm²
Starting torque	≤3 Ncm
Body material	Aluminum
Housing material	Steel with cathodic corrosion protection
Flange material	Aluminum
Operating temperature	-40+85 °C
Storage temperature	-45+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	~400 g
Electrical parameters	
Interface	EtherNet/IP
Programming Functions	Resolution, time base and filter for velocity, preset, counting direction, IP-Adress
Transmission Rate	10/100 Mbit
Interface Cycle Time	>1 ms
Revolution	4096 (12 bits)
Resolution/revolution	8192 (13 bits)
Supply voltage	1030 VDC
Current Consumption	≤230 mA-10 VDC, ≤100 mA-24 VDC
Power Consumption	≤2.5 W
Start-Up Time	<250 ms
Accuracy (INL)	+0.04399

Interface	EtherNet/IP
Programming Functions	Resolution, time base and filter for velocity, preset, counting direction, IP-Adress
Transmission Rate	10/100 Mbit
Interface Cycle Time	>1 ms
Revolution	4096 (12 bits)
Resolution/revolution	8192 (13 bits)
Supply voltage	1030 VDC
Current Consumption	≤230 mA-10 VDC, ≤100 mA-24 VDC
Power Consumption	≤2.5 W
Start-Up Time	<250 ms
Accuracy (INL)	±0.0439°

Electrical Connection

Connection Orientation	Radial
Bus Port 1	M12,Fema
Power Supply	M12,Male
Bus Port 2	M12,Fema

EAM=Profinet protocol absolute multi-turn encoder



Description

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

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

10g6 mm (Solid Shaft)
Φ12/Φ15H7 mm
in
N, Radial 110 N
nalf sine 6ms, EN60068-2-27)
Hz - 1000Hz, EN60068-2-6)
lution
2
n
h cathodic corrosion protection
n
C
Ċ
ndensation not permitted

ale-4 pin,D-coded e-4 pin,A-coded ale-4 pin,D-coded

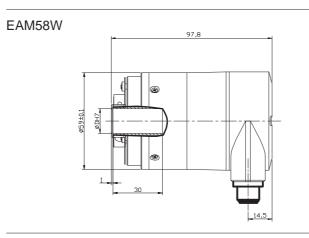
EtherNet/IP Interface Absolute Multiturn Encoder EAM58

Terminal Assignment

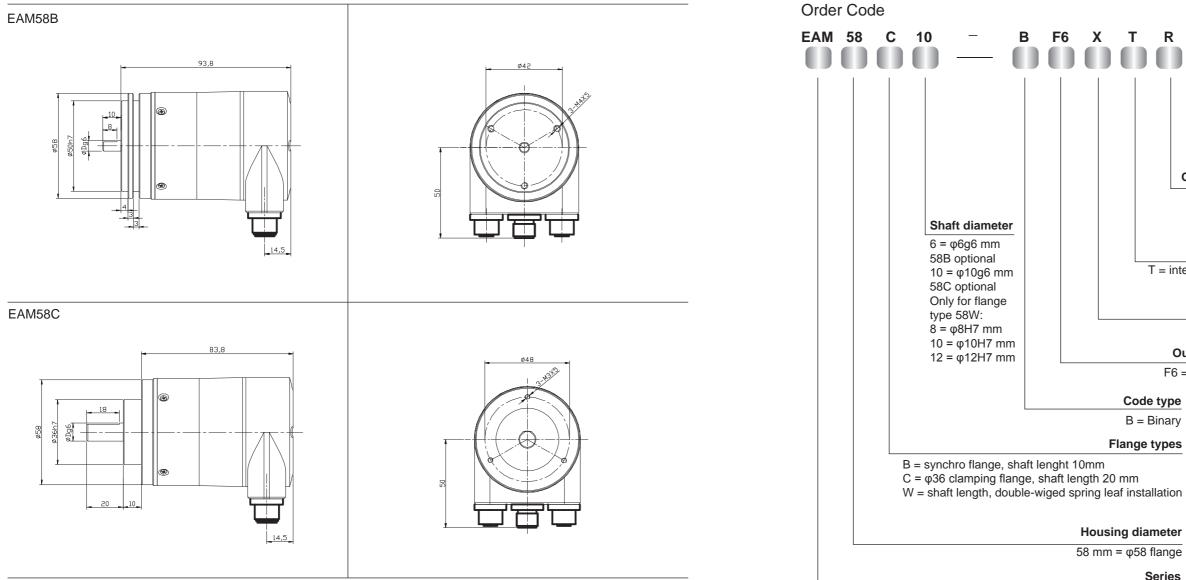
Function	M12 connector							
	Signal:	Transmit data+	Receive data+	Transmit data-	Receive data-	1 2		-000
Bus Port 1	Abbreviation:	TxD+	RxD+	TxD-	RxD-	D coded	Bus Port 1	
	Pin Number:	1	2	3	4	4 3	FUILI	
Power	Signal:	Voltage +	-	Voltage -	-	4 3	D	A
	Abbreviation	+ V	-	0 V	-	A coded	Power _ supply	
Supply	Pin Number:	1	2	3	4	1 2	Supply	
	Signal:	Transmit data+	Receive data+	Transmit data-	Receive data-	12	Bus	
Bus Port 2	Abbreviation	TxD+	RxD+	TxD-	RxD-	D coded	Port 2	
	Pin Number:	1	2	3	4	4 3		

EtherNet/IP Interface Absolute Multiturn Encoder EAM58

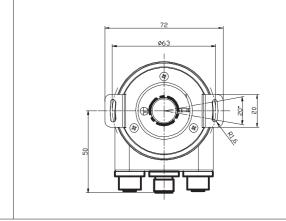
Dimensions (mm)

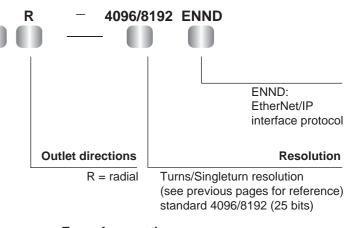


Dimensions (mm)









Type of connection

T = integrated coupler terminal box with 3xM12 plugs

Output logic

X = No definition

Output & supply voltage

F6 = interface 10...30 VDC

Code type	Mating connectors code:
B = Binary	Power supply connector: TMSP 12F-F4
	Bus input connector: TMSP12FD-M4
lange types	Bus output connector: TMSP12FD-M4

Series

EtherCAT Interface Absolute Multiturn Encoder EAM58



Description

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

Features

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

Mechanical parameters

φ6g6 mm	-58B
φ10g6 mm	-58C
φ8H7/ φ10H7/ φ12H7 MM	-58W
IP65	
6000 r/m	
40 N	
80 N	
50G/ 11 ms	
10G 102000 Hz	
10 ⁹ revolution	
approx. 1.8x10 ⁻⁶ kgm ²	
0<.05 Nm	
AL UNI 9002/5 -(D11S)	
AL 6060	
AL UNI 9002/5 -(D11S)	
-40+80 °C	
-45+85 °C	
90%, Condensation not permitted	
600 g	
	φ10g6 mm φ8H7/ φ10H7/ φ12H7 MM IP65 6000 r/m 40 N 80 N 50G/ 11 ms 10G 102000 Hz 10° revolution approx. 1.8x10° kgm² 0 < .05 Nm

Electrical parameters

Interface	EtherCAT
Profile	CoE (CANopen over EtherCAT, DS-301 + DS-406)
Programming Functions	Resolution, preset, counting direction
Supply voltage	1030 VDC
Current consumption (without load)	200 mA
Power Consumption	≤ 2.5 W
Max. bus rate	100 Mbits/s
Interface cycle time	≥ 62.5 µs
Code	Binary
Max. number of laps	4096 (12 bits)
Max. resolution	8192 (13 bits)

EtherCAT Interface Absolute Multiturn Encoder EAM58

Terminal configuration

Data port 1:

Signal	TxD+	R×D+	Tx	
Needle number	1	2	3	

Power port:

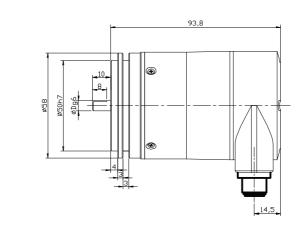
Signal	+V	—	-V	_	4 3
Needle number	1	_	3	—	1 2

Data port 2:

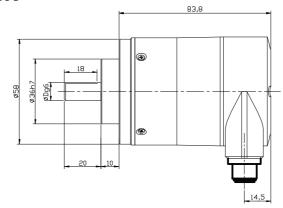
Signal	TxD+	R×D+	TxD-	R×D-	1 2 D-coded
Needle number	1	2	3	4	4 3

Dimensions (mm)

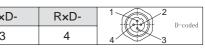
EAM58B

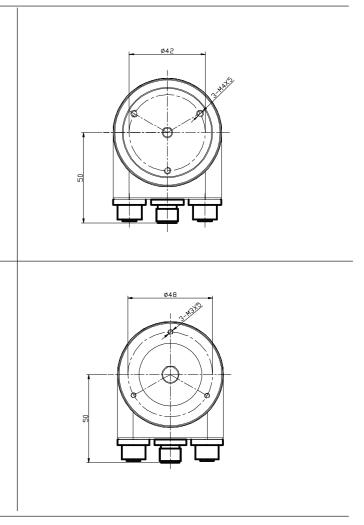


EAM58C



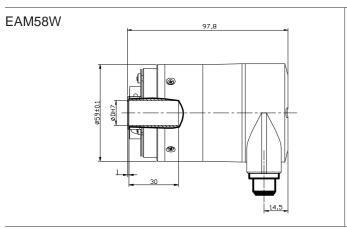


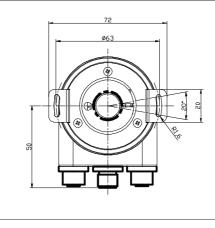




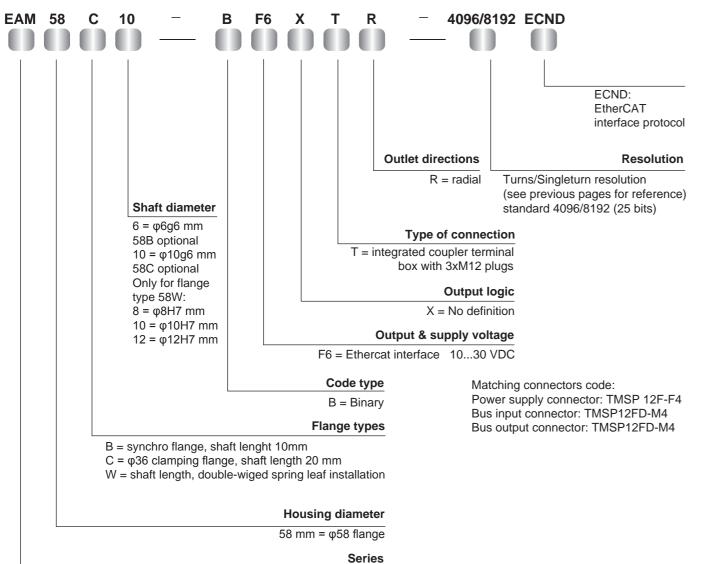
EtherCAT Interface Absolute Multiturn Encoder EAM58

Dimensions (mm)





Order Code:



EAM = Ethercat interface multiturn

CANopen Interface Absolute Multiturn Encoder EAM58



Mechanical parameters

	Shaft diameter (mm)	φ6g
		φ15
	Protection class	IP65
	Max.speed (r/m)	300
	Max.load capacity of shaft	80 N
		160
	Shock resistance	50G
	Vibration resistance	10G
	Bearing life	10 ⁹
	Moment of inertia	1.8x
	Starting torque	<0.
	Body material	Al-a
	Housing material	Al-a
	Flange material	Al-a
	Operating temperature	-40
	Storage temperature	-45
	Relative humidity/condensation	90%
	Weight	~80
_		

Electrical parameters

Supply voltage	103
Current	Max.
Linearity	±1/2 L
Code	Binary
Interface	CAN I
	Full-C
Protocol	CANo
Baud rate	250K
	CAN I
Add.	Add. s
Termination resistors	120Ω



Description

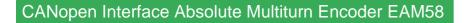
EAM58 series is used in industrial environments with special needs. It has good resistance to mechanical damage and its shaft can withstand high axial and radial loads. High-speed communication and good ability make the customer's equipment run more stable.anti-interference

Features

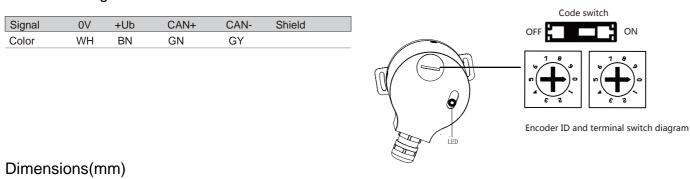
- · Various types of flanges are available
- Waterproof seal improves IP level
- Protection class IP65
- Metal housing for shock resistance
- Conforming to industrial CANopen protocol
- Pre-screw hole, convenient for usage
- · Durable stainless steel shaft

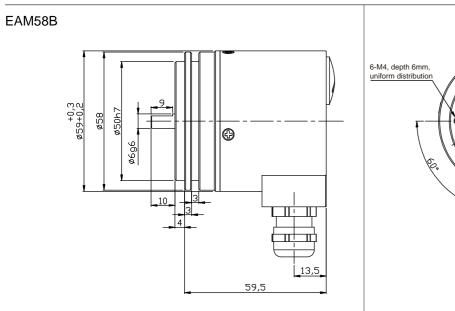
6φ8g6
H7 -58W
5
0
V(axial)
N(radial)
i/11 ms
5 102000Hz
revolution
10 ⁻⁶ kgm ²
05 Nm
lloy UNI 9002/5 - (D11S)
lloy 6060
lloy UNI 9002/5
°C+80 °C
°C+85 °C
6, Condensation not permitted
0 g

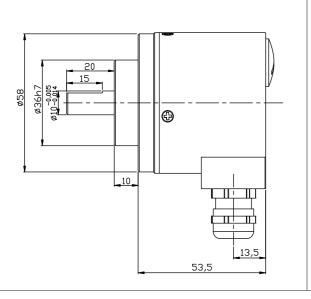
30 V DC
0.29 A
LSB(12 bit); ±1 LSB(13 bit)
ry
HIGH-Speed to ISO/DIS 11898, Basic and
CAN; CAN specification 2.0 B
open Profile DSP 406 with additional function
(Pre-factory setting)
DNET 125 / 250 / 500 kBit/s
set: 1~99 32(Pre-factory setting)
2

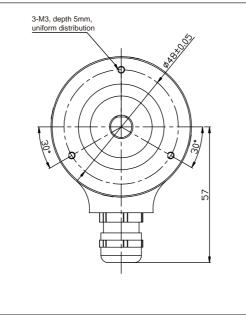


Terminal Assignment

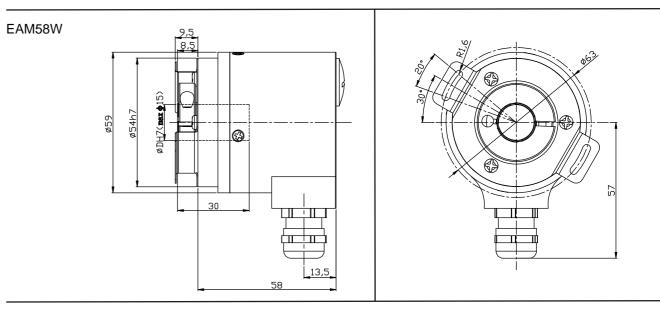




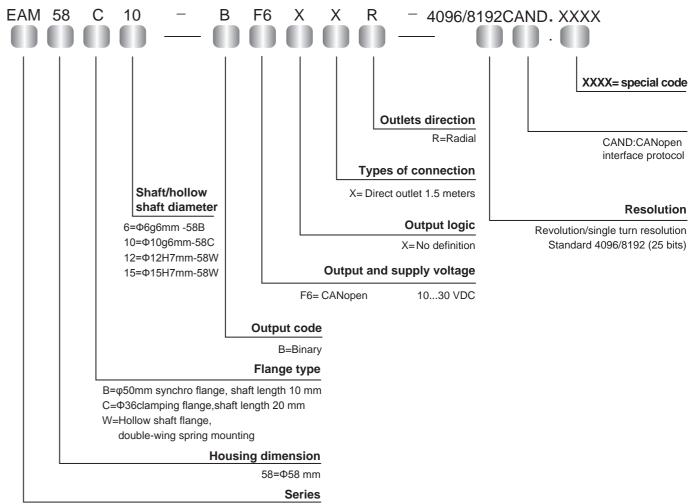




CANopen Interface Absolute Multiturn Encoder EAM58



Order Code



EAM= CANopen multiturn

EAM58C



Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder EAM90L





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

Encoder with integrated coupler:

LED Diagnostic Display

Achieving current isolation through Fieldus DC/DC converter

Including RS485 driver, max baud rate 12MB

Equipped with Class1 & Class 2 functions

Configure Fieldbus address through DIP switch

Features

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

Mechanical parameters

•	
Shaft diameter	Ф12H7/Ф15H7/Ф20H7//Ф24H7/Ф28H7/
	Ф(5/8)"H7/Ф1"H7/Ф12g6X30 mm
Protection class	IP65
Speed	Max.6000 r/m continuous Max.3000 r/m
Max load capacity of the shaft	
axial	40 N
radial	80 N
Shock resistance	2500 m/s ² 6 ms
Vibration resistance	100 m/s ² 102000 Hz
Bearing life	10 ⁹ revolution
Moment of inertia	~72 x 10 ⁻⁶ kgm ²
Starting torque	hollow shaft < 0.2 Nm
	shaft < 0.05 Nm
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20+80 °C
Storage temperature	-25+85 °C
Relative humidity/condensation	90%, Condensation not permitted
Weight	~ 900 g

Electrical parameters

Supply voltage(+Ub)	1030 VDC
Power consumption	Max.0.29 A
Linearity	± 1/2 LSB (± 1 LSB 13/14 bit)2
Interface	RS 485
Protocols	Profibus-DP, encoder profile class 2
Baud rate	Max. 12 Mbit/s
Address	programmable via DIP switches

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

Profibus Documentations for field bus Encoders:

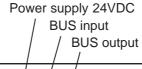
Please refer to PROFIBUS-DP • Proportional factor for detailed information, i.e. DIN 19245-3 and EN 50170, and OVERVIEW for other information.

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

Resolution 4096 (revolution) x8192 (resolution) 4096 (revolution) ×4096 (resolution) Revolution and resolution are programmable in PLC (see operation manual for programming steps)

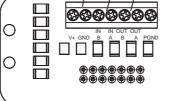
Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder EAM90L





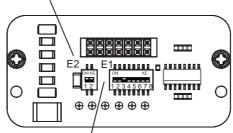
Ο

 \bigcirc



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



Parame Charac Rated of Loop re Core dia Core cr limitatio kbaud Range

Connection

V+	Supply voltage
GND	Ground
В	Profibus-DPline input (RD)
А	Profibus-DPline input (GN)
В	Profibus-DPline output (RD)
А	Profibus-DPline output (GN)

94



Introduction

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

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

Through the Profibus-DP network it is able to: - Obtain the angular position from the encoder during the periodic data exchange

- Program the resolution and revolution (refer to corresponding chapters for parameter setup).

- Change the default incremental direction (convert

between CW/CCW during parameter setup).

- Perform the Preset operation (program the

encoder to read a specific position). - Read the diagnostic status.

- Obtain info about the code came with the device.

With the device's class, it is able to: - TDisplay the ON/OFF status.

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

Installation

Installing the Profibus-DP encoder in a network requires the execution of a typical procedure necessary for configuring any Profibus-DP slave. The procedure is as follows 1- Commissioning the slave onto the master (see corresponding chapter). 2- Wiring the encoder into the Profibus network using the physical location of the

device in the bus.

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

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

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

DIP-switches setup (configuring slave address)

Besides the address and the standard position of a terminal DIP switch, a configuration example of Profibus and the devices is illustrated below: In this example, device's address is set up as 1011001, with the corresponding decimal address as 77. Bit 7 is the top digit, and bit 1 is the lowest digit Bit 8 is used for changing the counter direction. Bit 1to bit 7 are used to configure encoder's address Address setting Line close Example• • Line close



Network parameters

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

eter	A type cable
cteristic resistance (0)	135165at a certain frequency (320Mhz)
capacity (PF/m)	<30
esistance (Ω/Km)	<=110
liameter (mm)	>0.64*)
ross-section (mm ²)	>0.34*)

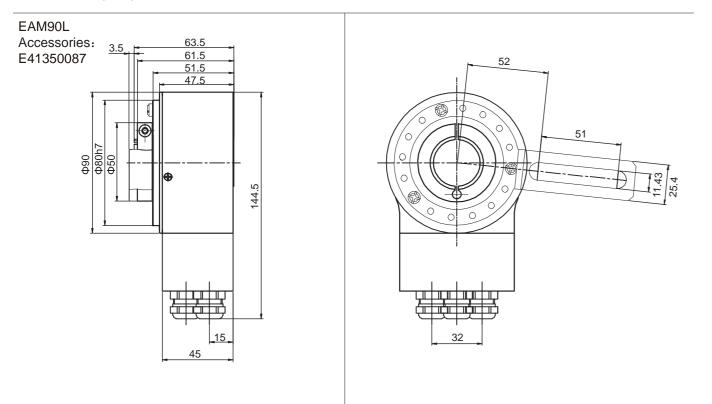
This cable allows the optimal network utilization. In fact, it is possible to reach the maximum communication speed allowed (12Mbaud). However, there are some

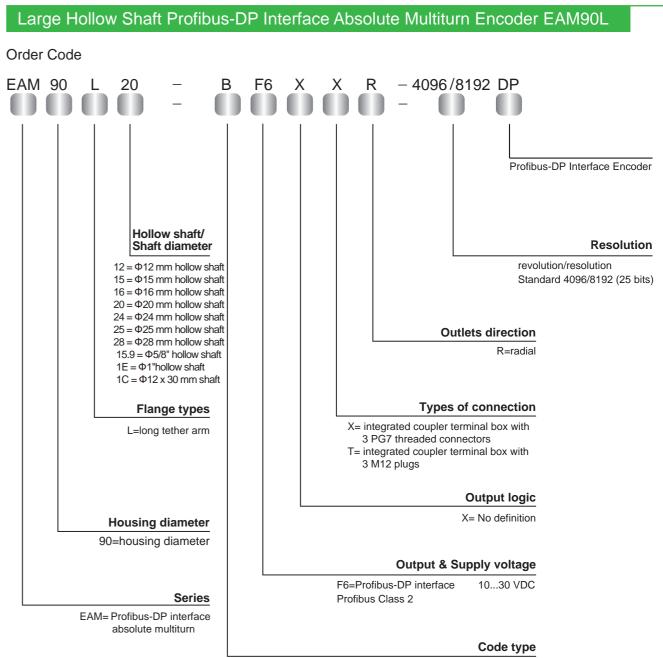
ons due to the maximum physical dimensions of a bus segment as follows								
d	9.6	19.2	93.75	187.5	500	1500	12000	
e/Segment	1200 m	1200 m	1200 m	1000 m	400 m	200 m	100 m	

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

Large Hollow Shaft Profibus-DP Interface Absolute Multiturn Encoder EAM90L

Dimensions (mm)





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



B=Binary

Large Hollow Shaft Absolute Multiturn Encoder EAM90L



Description

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

- Features
- Gray or Binary available
- Space-saver hollow shaft design, "C" ring lock
- Durable stainless steel shaft Φ12~Φ28 mm
- · Waterproof seal provides greater IP level
- Metal housing can withstand higher axial and radial loads.
- Resolution up to 8192
- Protection class IP65
- Equipped with short-circuit and reverse connection protection
- · Output cables or connectors are available for easy maintenance

Mechanical parameters

Shaft diameter	Ф12H7/Ф15H7/Ф20H7/Ф24H7/Ф28H7/
	Ф(5/8)"H7/Ф1"H7/Ф12g6X30 mm
Protection class	IP65
Speed	6000 r/m
Max load capacity of the shaft	
axial	40 N
radial	80 N
Shock resistance	50G/11 ms
Vibration resistance	10G 10~2000 Hz
Bearing life	10 ⁹ revolution
Moment of inertia	1.8×10 ⁻⁶ kgm ²
Starting torque	<0.1 Nm max
Body material	AL-alloy
Housing material	AL-alloy
Operating temperature	-20°C~~+80°C
Storage temperature	-25°C~~+85°C
Relative humidity/condensation	90%, Condensation not permitted
Weight	600 g

Electrical parameters

Output circuit	SSI
Output driver	R\$422
Resolution	13 Bits
Supply voltage	1030 VDC
Power consumption (no load)	≤200 mA
Permissible load (channel)	±20 mA
Pulse of frequency	Max. 1 MHz
Signal level high	Тур. 3.8 V
Signal level low	Max. 0.5 V
Rise timeTr	Max 100 ns
Fall time Tf	Max 100 ns

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

Large Hollow Shaft Absolute Multiturn Encoder EAM90L

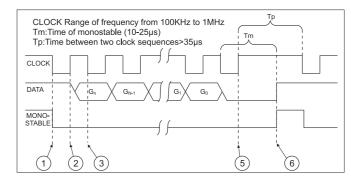
Terminal Assignment

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

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

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

Operating principle

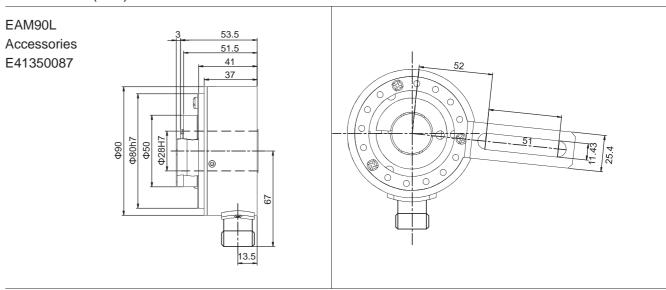


In rest conditions, the CLOCK and DATA lines are at a high logical level and the mono-stablecircuit is disabled (high level). 1. On the first CLOCK signal descent front, the mono-stable is activated and the parallel value present at the input to the P/S converter is memorized in the shift register.

- 2. On the CLOCK signal ascent front, the most significant bit (MSB) is placed in the output on the DATA line.
- 3. On the CLOCK descent front when the signal is stable the controller acquires the level from the DATA line, which is the value of the most significant bit (MSB), the mono-stable is re-activated.
- 4. On each further ascent front of the CLOCK impulse sequence, the successive bits up to the least significant one are place in the output on the DATA line and acquired by the control on the descent front.
- 5. At the end of the CLOCK impulse sequence when the external control has also acquired the value of the least significant (LSB) the CLOCK impulse sequence is interrupted and therefore the mono-stable is no longer re-activated.

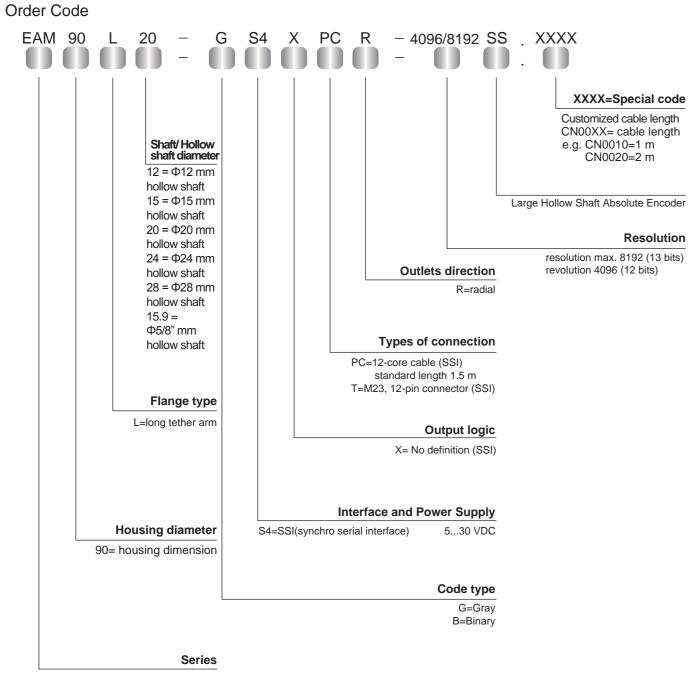
6.Once the mono-stable time (Tm) has elapsed, the DATA line returns to a high logical level and the mono-stable disables itself.

Dimensions (mm)





Large Hollow Shaft Absolute Multiturn Encoder EAM90L



EAM=standard absolute multiturn

Draw Wire Mechanics EVD Series

Description

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

Features

EVD series parameters

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

Mechanical parameters

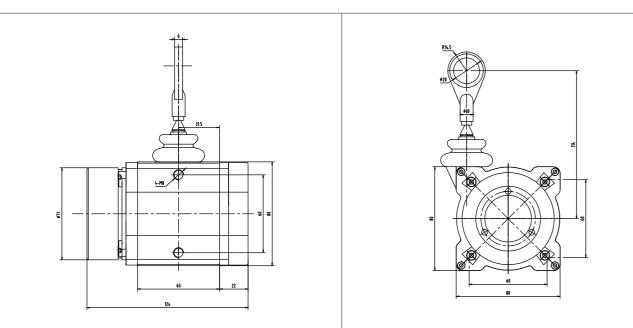
Measuring range	max. 3 m
Dimensions	80 x 80 mm
Length/round	200 mm
Wire diameter	1.3 mm
Device accuracy	±0.1%
Adjustable speed	4 m/s
Telescopic spring force	4-16 N
Body material	aluminium
Protection class	IP64
Wire material	stainless steel
Weight (without encoder)	1.3 kg
Working and storage temperature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



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

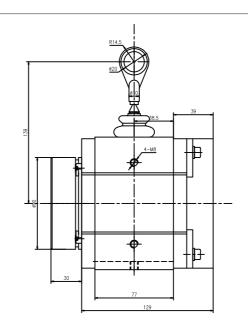
Draw Wire Mechanics EVD Series

Dimensions (mm)





Dimensions (mm)



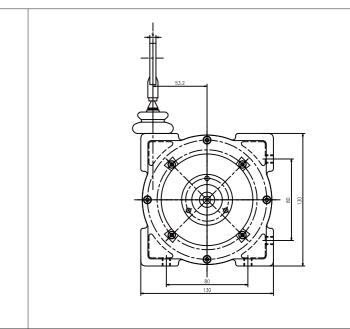
Mechanical parameters

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

Mechanical parameters

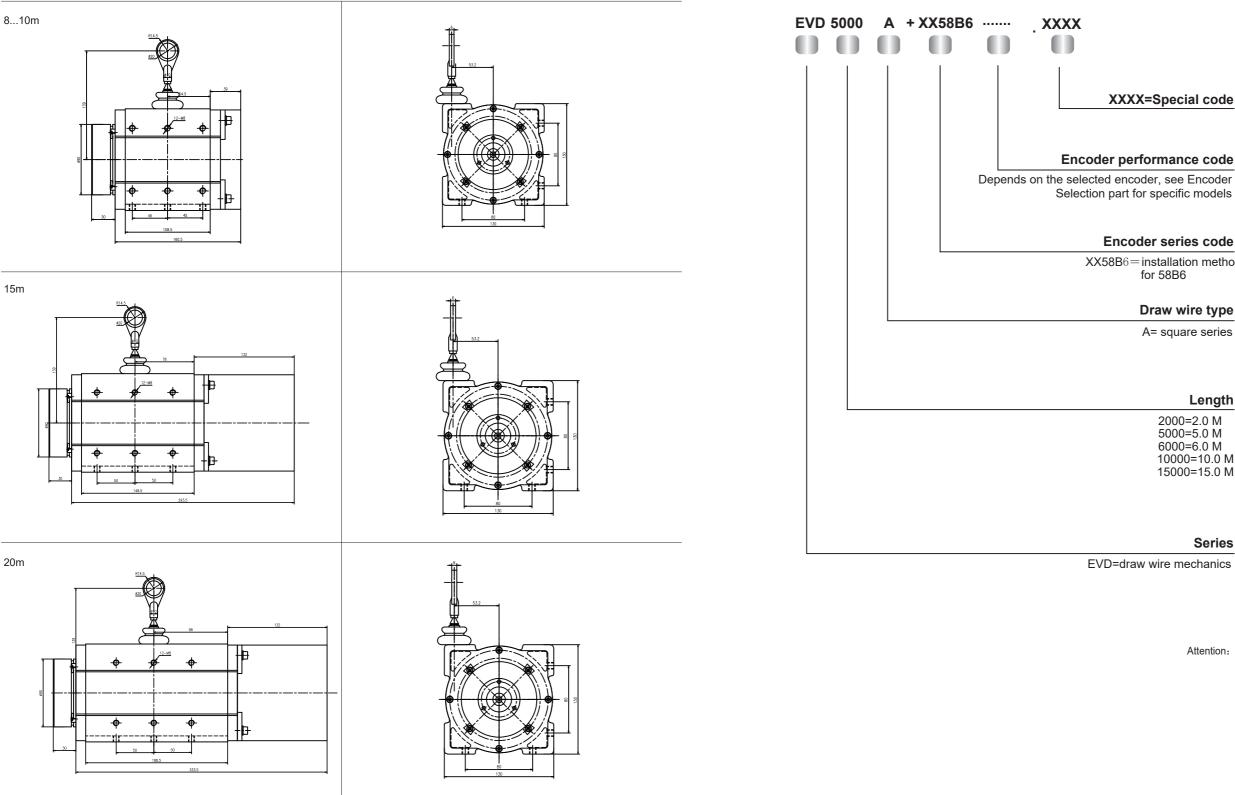
Measuring range	8-10 m	15 m	20 m
Dimensions	130x130 mm	130x130 mm	130x130 mm
Length/round	333.34 mm	333.34 mm	333.34 mm
Wire diameter	1.35 mm	1.35 mm	1.35 mm
Device accuracy	±0.1 %	±0.1 %	±0.1 %
Adjustable speed	4 m/s	4 m/s	4 m/s
Telescopic spring force	4 - 16 N	4 - 16 N	4 - 16 N
Body material	aluminium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





Draw Wire Mechanics EVD Series

Dimensions (mm)





XXXX=Special code

Draw Wire Mechanics EVD Series

Order Code:

Encoder performance code

Selection part for specific models

Encoder series code

XX58B6=installation method for 58B6

Draw wire type

A= square series

Length

2000=2.0 M 5000=5.0 M 6000=6.0 M 10000=10.0 M 15000=15.0 M

Series

EVD=draw wire mechanics

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