

INCREMENTAL ENCODER EV28

ARTICLE PROPERTIES

TYPE	Incremental encoder
SIZE	Ø 28

TECHNICAL DATA

SHAFT DIAMETER	Ø 4 / Ø 5g6 mm	STARTING TORQUE	< 0.01 N·m
SPEED	6000 rpm, continuous	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Aluminum
MOMENT OF INERTIA	0.7 x 10 ⁻⁶	WEIGHT	100 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP50	OPERATING TEMPERATURE	-20 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	5 N axial, 10 N radial	STORAGE TEMPERATURE	-30 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	30 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	6 g, 10 ... 2000 Hz		

STANDARDS AND DIRECTIVES

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



INCREMENTAL ENCODER EV28

ELECTRICAL PARAMETERS

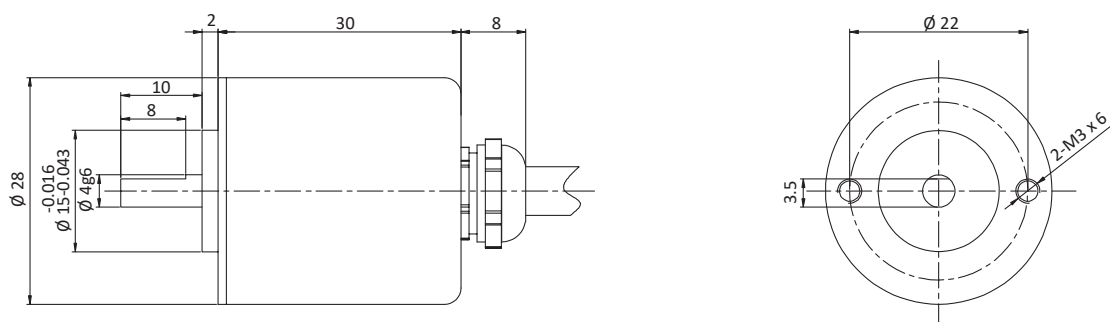
Output circuit	Push-pull	RS422	RS422
Resolution	Max. 600 ppr	Max. 600 ppr	Max. 600 ppr
Supply voltage	10 ... 30 V DC	5 V DC	10 ... 30 V DC
Power consumption (no load)	≤ 100 mA	≤ 80 mA	≤ 80 mA
Permissible load (channel)	±30 mA	±50 mA	±50 mA
Pulse frequency	Max. 300 kHz	Max. 300 kHz	Max. 300 kHz
Signal 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 T_r	Max. 1 μ s	Max. 200 ns	Max. 200 ns
Fall time T_f	Max. 1 μ s	Max. 200 ns	Max. 200 ns

TERMINAL ASSIGNMENT

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

DIMENSIONS (mm)

EV28



INCREMENTAL ENCODER EV28

ORDER CODE

EV	28	A	4	-	L5	P	A	-	500	.XXXX
					XXXX=Special code Customized cable length CN00XX = cable length e.g. CN0010 = 1 m CN0015 = 1.5 m CN0020 = 2 m					
					Resolution Pulse/r ≤ 600 Attention: for available pulse options please contact the company for further information					
					Outlets direction A = axial					
					Standard cable length P = 0.5 m					
					Encoder Output & Power Supply¹⁾					
					5 V DC					
					10 ... 30 V DC					
					10 ... 30 V DC					
					10 ... 30 V DC					
					Please refer to output circuit structure and wiring for output configuration					

Series		Shaft diameter		Flange type		Housing diameter	
EV = Topydic incremental		4 = Ø 4 mm 5 = Ø 5 mm		A = Ø 15 mm clamping flange		28 = housing diameter	

¹⁾ When $U_b = 5\text{ V}$, 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.

EV40A

ARTICLE PROPERTIES

TYPE	Topydic small shaft incremental encoder
SIZE	Ø 40

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 mm	STARTING TORQUE	< 0.08 N·m
SPEED	6000 rpm	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Zinc alloy
MOMENT OF INERTIA	1.9 x 10 ⁻⁶ kgm ²	WEIGHT	110 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP66 standard IP67 optional	OPERATING TEMPERATURE	-20 ... +85 °C
MAX LOAD CAPACITY OF THE SHAFT	60 N axial, 100 N radial	STORAGE TEMPERATURE	-25 ... +100 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

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	NPN OC
RESOLUTION	Max. 5000 ppr	Max. 5000 ppr	Max. 2500 ppr
SUPPLY VOLTAGE	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC	10 ... 30 V DC
POWER CONSUMPTION (NO LOAD)	≤80 mA	≤100 mA	≤ 80 mA
PERMISSIBLE LOAD (CHANNEL)	±50 mA	±30 mA	±50 mA
PULSE FREQUENCY	Max. 800 kHz	Max. 800 kHz	Max. 300 kHz
SIGNAL LEVEL HIGH	Min. 3.4 V	Min. Ub-1.8 V	Min. Ub*70% ^{*)}
SIGNAL LEVEL LOW	Max. 0.4 V	Max. 2.0 V	Max. 0.4 V ^{*)}
RISE TIME TR	Max. 200 ns	Max. 1 µs	Max. 1 µs ^{**)}
FALL TIME TF	Max. 200 ns	Max. 1 µs	Max. 1 µs ^{**)}

^{*)}: NPN OC depends on pull-up resistor, 4.7kΩ for recommended resistance

^{**)}: NPN OC depends on pull-up resistor and cable length

EV40A

STANDARDS AND DIRECTIVES

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

APPROVALS

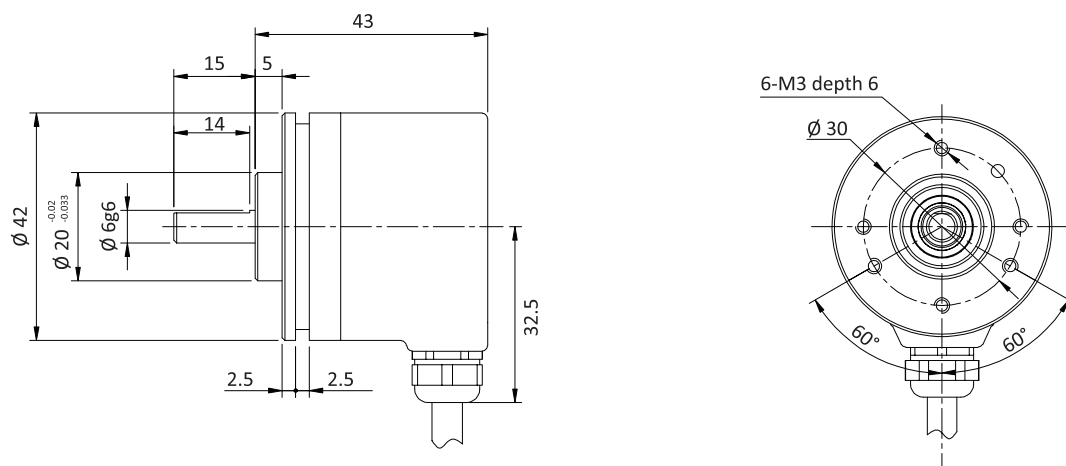


TERMINAL ASSIGNMENT

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

DIMENSIONS (mm)

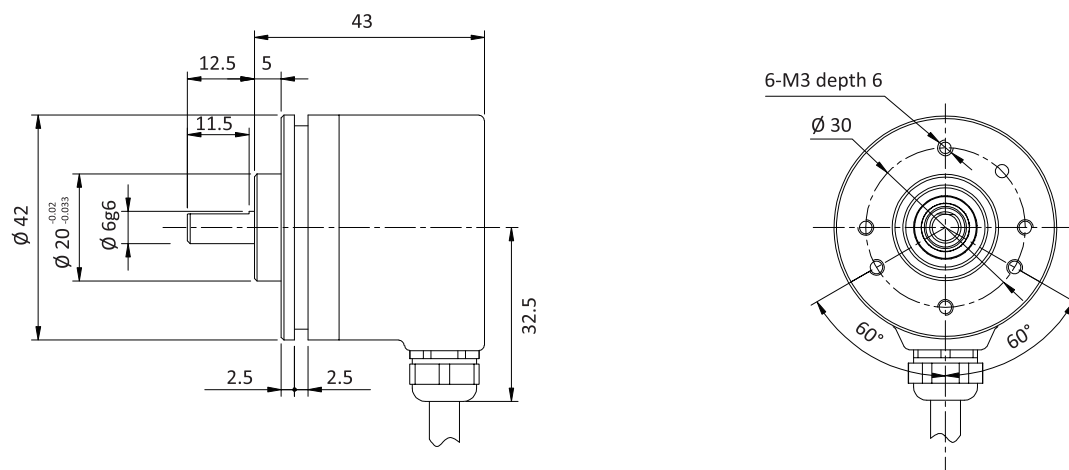
EV40A



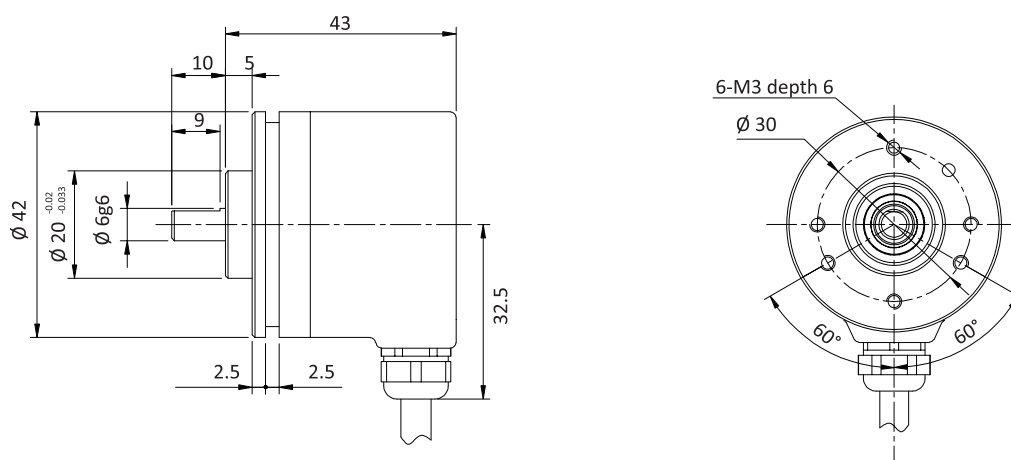
EV40A

DIMENSIONS (mm)

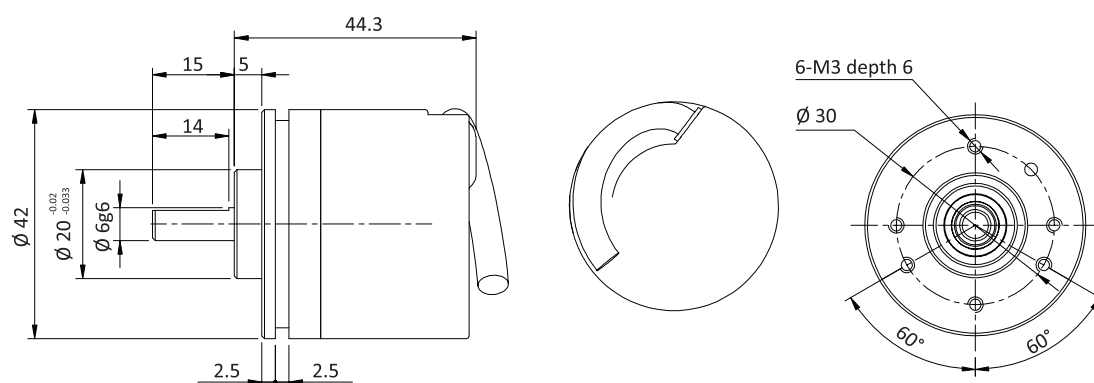
EV40B



EV40C



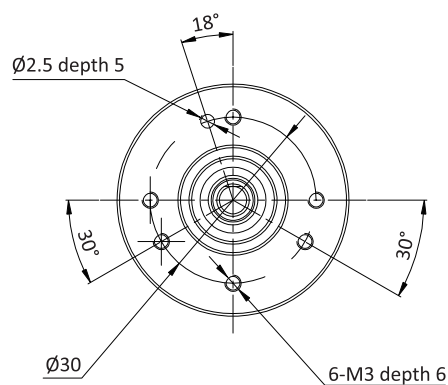
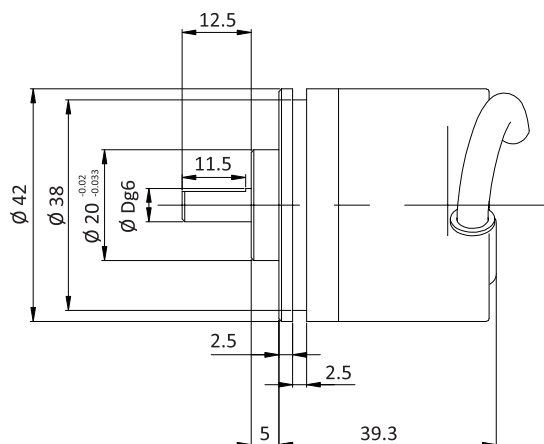
EV40A side pre-wired cable



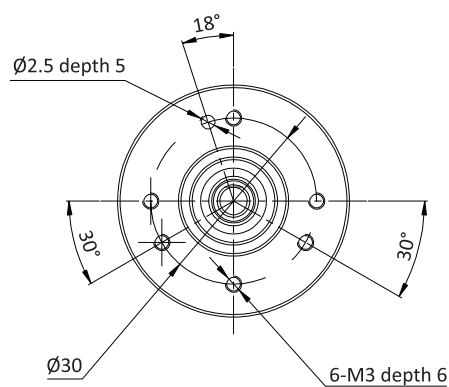
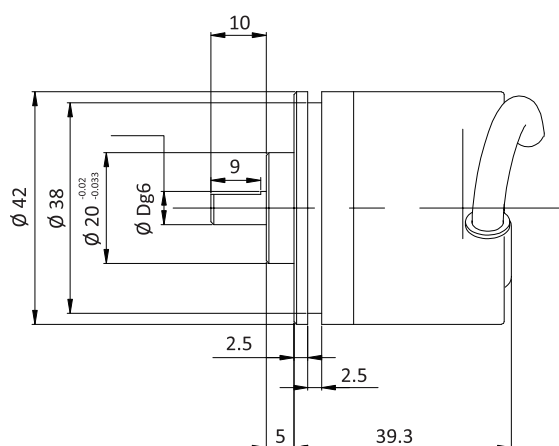
EV40A

DIMENSIONS (mm)

EV40B side pre-wired cable



EV40C side pre-wired cable



EV40A

ORDER CODE

EV	40	B	6	-	L5	P	R	-	1024	TP	.	XXXX
Shaft diameter 6 = Ø 6g6 mm					Outlets direction R = Radial					XXXX = Special code Customized cable length CN00XX = cable length e.g. CN0010 = 1 m CN0015 = 1.5 m CN0020 = 2 m		
Flange type A = Ø 20 clamping flange with synchro flange ditch, shaft length 15 mm B = Ø 20 clamping flange with synchro flange ditch, shaft length 12.5 mm C = Ø 20 clamping flange with synchro flange ditch, shaft length 10 mm					Standard cable length P = 0.5 m					Side output cable length TP = 0.5 m Attention: If blank here, it means P = 0.5 m		
Housing diameter 40 = Housing diameter					Resolution Pulse/r: ≤5000 Attention: for other available pulse options please contact us for further information							
Series EV = Topydic incremental					Output & Supply voltage							
					L5 = RS422 (with inverted signal)				5 V DC			
					L6 = RS422 (with inverted signal)				10 ... 30 V DC			
					H6 = Push-pull HTL (with inverted signal)				10 ... 30 V DC			
					P6 = Push-pull HTL (without inverted signal)				10 ... 30 V DC			
					C6 = NPN OC				10 ... 30 V DC			

EV40P

ARTICLE PROPERTIES

TYPE	Topydic small hollow shaft incremental encoder
SIZE	Ø 40

TECHNICAL DATA

SHAFT DIAMETER	Ø 6H7 mm / Ø 8H7 mm	STARTING TORQUE	< 0.08 N·m
SPEED	6000 rpm	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Zinc alloy
MOMENT OF INERTIA	1.9 x 10 ⁻⁶ kgm ²	WEIGHT	110 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP66 standard IP67 optional	OPERATING TEMPERATURE	-20 ... +85 °C
MAX LOAD CAPACITY OF THE SHAFT	60 N axial, 100 N radial	STORAGE TEMPERATURE	-25 ... +100 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

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	NPN OC
RESOLUTION	Max. 5000 ppr	Max. 5000 ppr	Max. 2500 ppr
SUPPLY VOLTAGE	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC	10 ... 30 V DC
POWER CONSUMPTION (NO LOAD)	≤80 mA	≤100 mA	≤ 80 mA
PERMISSIBLE LOAD (CHANNEL)	±50 mA	±30 mA	±50 mA
PULSE FREQUENCY	Max. 800 kHz	Max. 800 kHz	Max. 300 kHz
SIGNAL LEVEL HIGH	Min. 3.4 V	Min. Ub-1.8 V	Min. Ub*70% ^{*)}
SIGNAL LEVEL LOW	Max. 0.4 V	Max. 2.0 V	Max. 0.4 V ^{*)}
RISE TIME TR	Max. 200 ns	Max. 1 µs	Max. 1 µs ^{**)}
FALL TIME TF	Max. 200 ns	Max. 1 µs	Max. 1 µs ^{**)}

^{*)}: NPN OC depends on pull-up resistor, 4.7kΩ for recommended resistance

^{**)}: NPN OC depends on pull-up resistor and cable length

EV40P

STANDARDS AND DIRECTIVES

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

APPROVALS

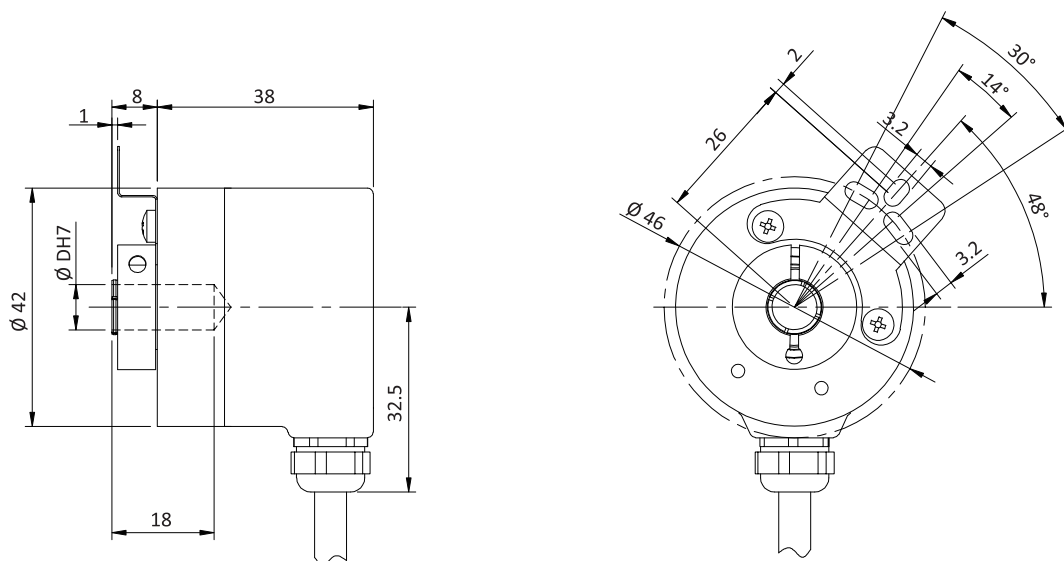


TERMINAL ASSIGNMENT

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

DIMENSIONS (mm)

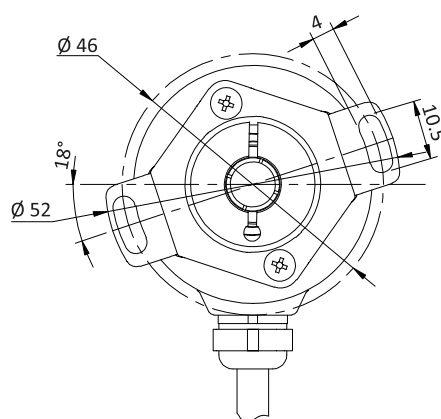
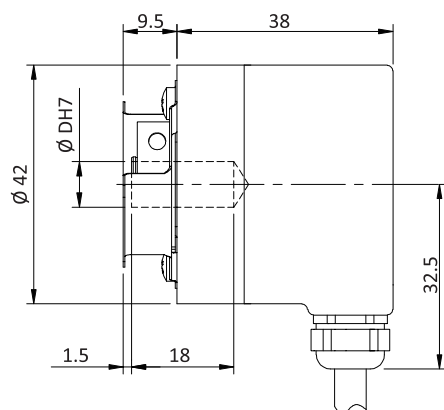
EV40P



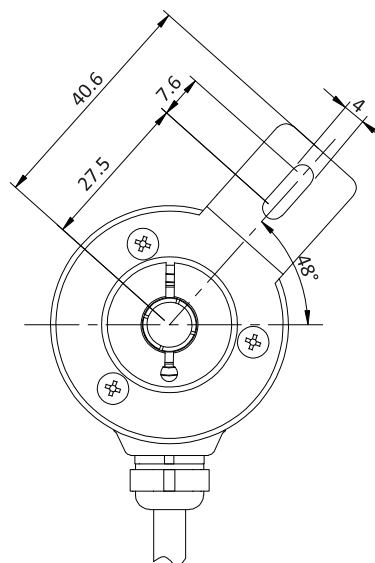
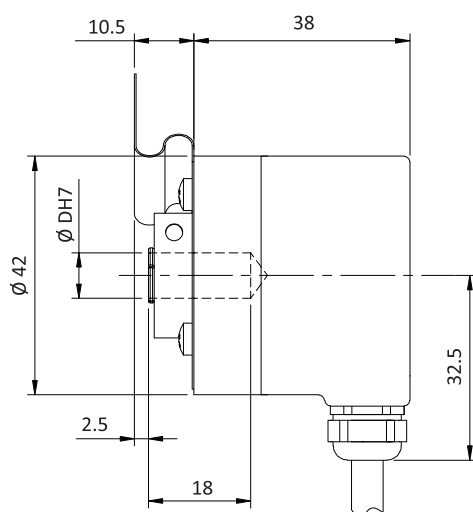
EV40P

DIMENSIONS (mm)

EV40W



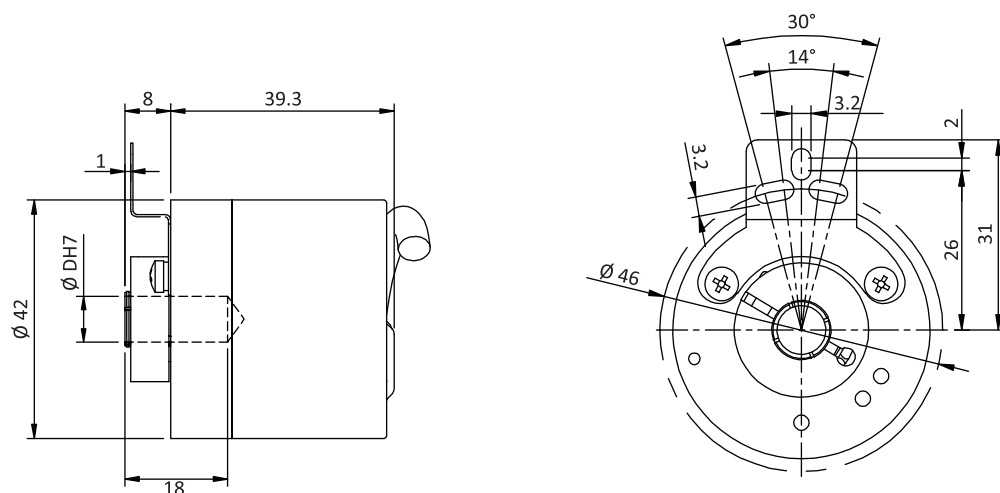
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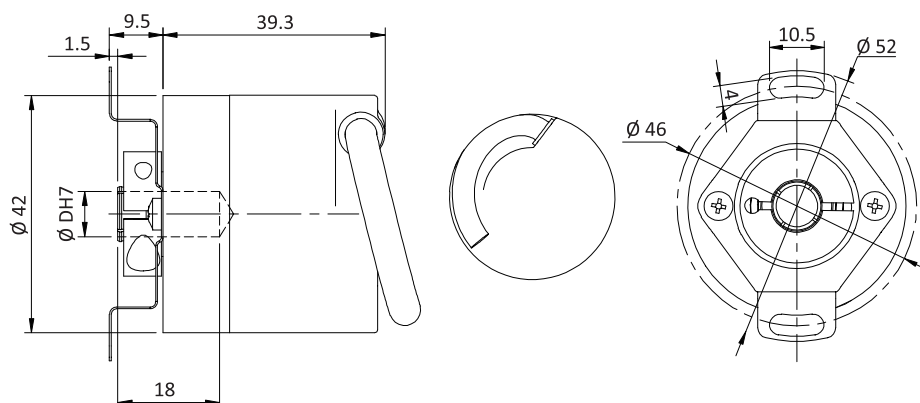
EV40P

DIMENSIONS (mm)

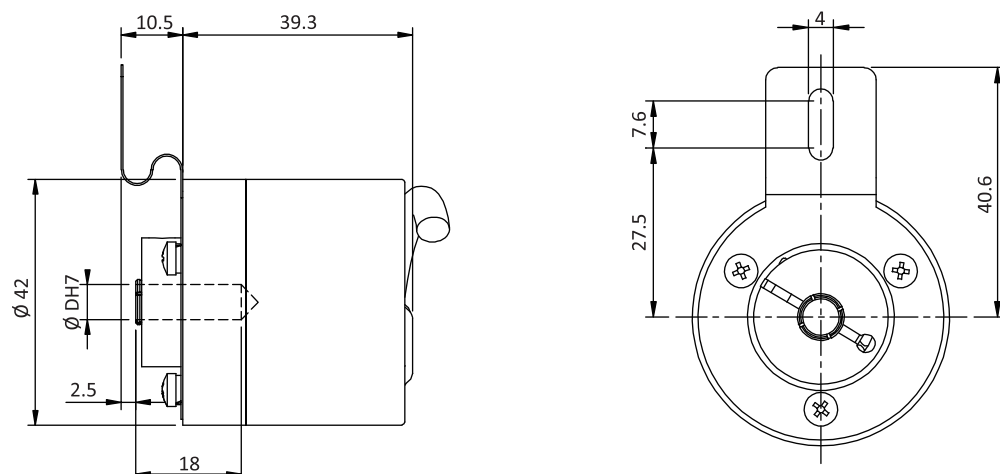
EV40P side pre-wired cable



EV40W side pre-wired cable



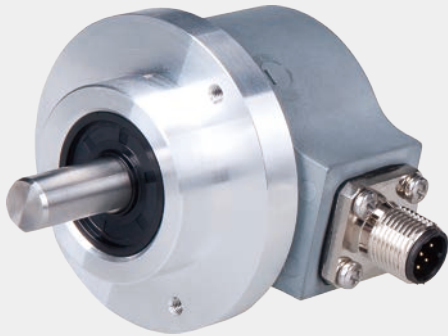
EV40H side pre-wired cable



EV40P

ORDER CODE

EV	40	P	6	-	L5	P	R	-	1024	TP	.	XXXX
Shaft diameter 6= Ø 6H7 mm 8= Ø 8H7 mm					Outlets direction R = Radial					XXXX = Special code Customized cable length CN00XX = cable length e.g. CN0010 = 1 m CN0015 = 1.5 m CN0020 = 2 m		
Flange type P = With single-wing fixing plate W = With double-wing fixing plate H = Long fastening arm					Standard cable length P = 0.5 m					Side output cable length TP = 0.5 m Attention: If blank here, it means P = 0.5 m		
Housing diameter 40 = Housing diameter					Resolution Pulse/r: ≤5000 Attention: for other available pulse options please contact us for further information							
Series EV = Topydic incremental					Output & Supply voltage L5 = RS422 (with inverted signal) 5 V DC L6 = RS422 (with inverted signal) 10 ... 30 V DC H6 = Push-pull HTL (with inverted signal) 10 ... 30 V DC P6 = Push-pull HTL (without inverted signal) 10 ... 30 V DC C6 = NPN OC 10 ... 30 V DC							



Description

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

Features

- Resolution up to 5000 ppr; pulse frequency up to 300 kHz
- Hollow shaft diameter, $\varnothing 6 - \varnothing 12$ mm
- Compatible with standard flange types-50 mm and 58 mm
- $\varnothing 50$ mm metal casting housing for limited installation space
- Operating temperature, $-40 \dots +85$ °C; IP67 protection class for outdoors application
- Multi signal output interfaces to meet different types of data acquisition 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	$\varnothing 6, \varnothing 8, \varnothing 10, \varnothing 12, \varnothing 1/4", \varnothing 3/8"$
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	50 G/ 11 ms
Vibration resistance	10 G 10 ... 2000 HZ
Bearing life	10^9 revolution
Moment of inertia	1.9×10^{-6} kgm ²
Starting torque	< 0.01 Nm (IP65), < 0.05 Nm (IP67)
Body material	Al-alloy
Housing material	Al-alloy
Operating temperature	$-40 \dots +85$ °C
Storage temperature	$-45 \dots +90$ °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.

Topydic Series Shaft Incremental EV50A

Electrical Parameters

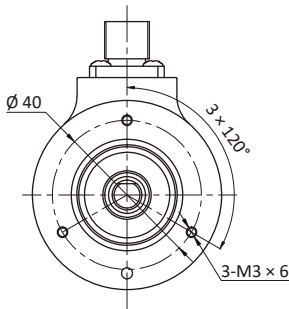
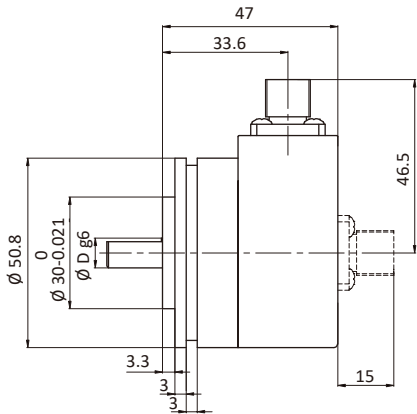
Output circuit	RS422	Push-pull
Supply voltage	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC
Power consumption (no load)	typ. 40 mA	typ. 50 mA
	max. 90 mA	max. 100 mA
Permissible load (channel)	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level high	min. 2.5 V	min. $U_b - 1$ V
Signal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

Terminal Configuration

Signal	0 V	+U _B	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
Color Code	WH	BN	GN	YE	GY	PK	BU	RD	$\perp$
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)

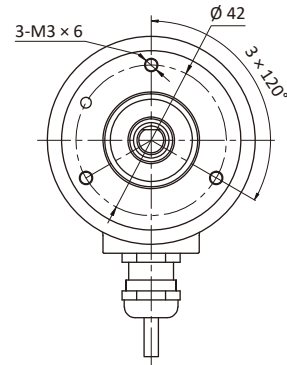
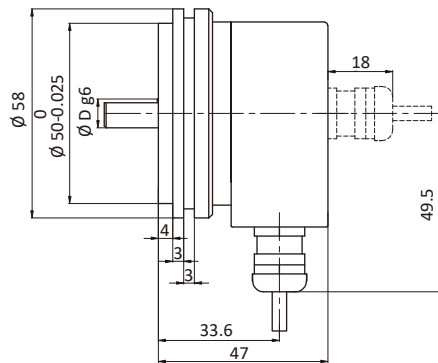
EV50A



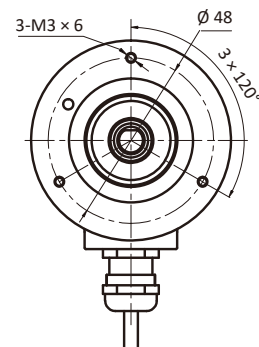
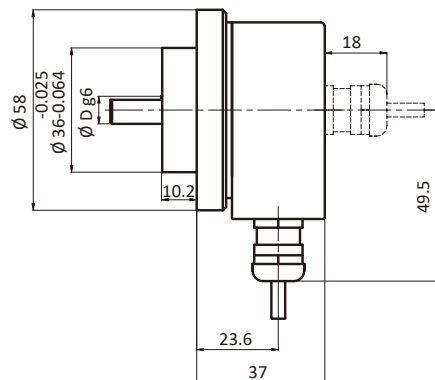
Topydic Series Shaft Incremental EV50A

Dimensions (mm)

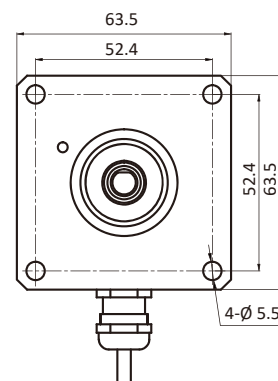
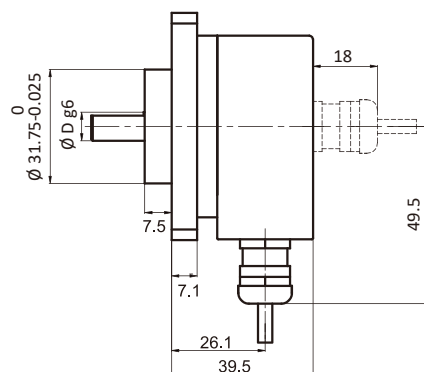
EV50B



EV50C



EV50D



Topydic Series Shaft Incremental EV50A

Order Code

EV	50	B	6	-	L5	P	R	-	1024	XX	.XXXX
											Special code Customized cable length CN00XX = cable length e.g. CN0010 = 1 m CN0020 = 2 m
											Optional functions M5 = M12, 5-pin plug without connector M8 = M12, 8-pin plug without connector T = M23, 12-pin plug without connector (for other cable length, it's on request)
											Resolution Pulse/r: ≤ 5000
											Outlets direction R = radial A = axial
											Standard cable length P = 1.5 m
											Encoder output & power supply ¹⁾ L5 = RS422 (with inverted signal) 5 V DC L6 = RS422 (with inverted signal) 10 ... 30 V DC H6 = Push-pull HTL (with inverted signal) 10 ... 30 V DC P6 = Push-pull HTL (without inverted signal) 10 ... 30 V DC
											Series EV = Topydic incremental
											Shaft diameter 6 = Ø 6 mm × 10 mm 7 = Ø 1/4" × 5/8" 8 = Ø 8 mm × 15 mm 9 = Ø 3/8" × 5/8" 10 = Ø 10 mm × 20 mm 12 = Ø 12 mm × 20 mm (8R, 9R, 10R, 12R = IP67)
											Flange type A = Ø 50.8 synchro flange B = Ø 58 synchro flange C = Ø 58 clamping flange D = Ø 63.5 synchro flange
											Housing diameter 50 = housing diameter

¹⁾

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

if $U_b = 5\text{ V}$, it's permitted to connect to signal channels, 0 V or U_b ;

if $U_b > 5\text{ V}$, it's permitted to connect to signal channels or 0 V.

Top View of Pin Plug

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

EV50P

ARTICLE PROPERTIES

TYPE	Topydic series incremental encoder
SIZE	Ø 50

TECHNICAL DATA

SHAFT DIAMETER	Ø 6 mm / Ø 8 mm / Ø 10 mm / Ø 12 mm / Ø 14 mm / Ø 15 mm / Ø 1/4" / Ø 3/8" / Ø 1/2" / Ø 5/8"	STARTING TORQUE	IP65: < 0.03 N·m IP67: < 0.08 N·m
SPEED	12000 rpm (without oil seal) 6000 rpm (with oil seal)	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Aluminum
MOMENT OF INERTIA	6 x 10 ⁻⁶ kgm ²	WEIGHT	400 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65 (without oil seal) IP67 (with oil seal)	OPERATING TEMPERATURE	-40 ... +85 °C
MAX LOAD CAPACITY OF THE SHAFT	40 N axial, 80 N radial	STORAGE TEMPERATURE	-45 ... +90 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

Regular resolution: 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1250, 2000, 2048, 2500, 3600, 4096, 5000
 Attention: the products with above resolutions are available from stock, others on request.

ELECTRICAL PARAMETERS

OUTPUT CIRCUIT	RS422	PUSH-PULL
SUPPLY VOLTAGE	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC
POWER CONSUMPTION (NO LOAD)	Typ. 40 mA, Max. 90 mA	Typ. 50 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. U _b -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

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

EV50P

STANDARDS AND DIRECTIVES

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

APPROVALS

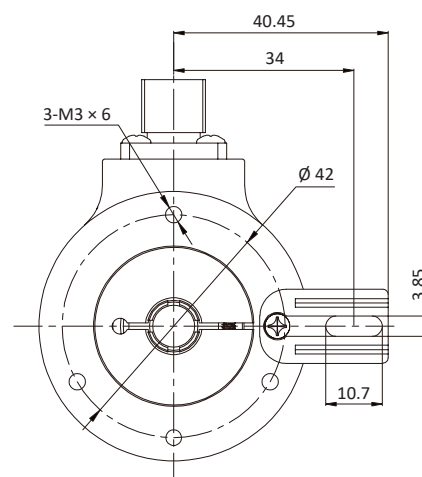
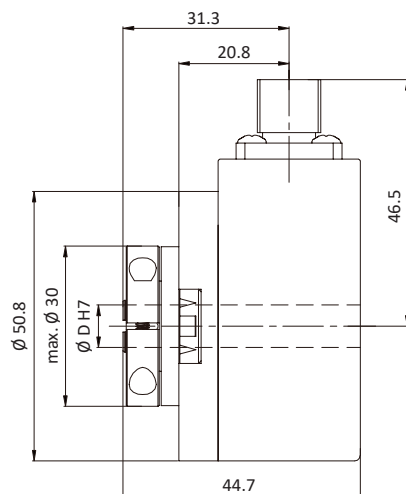


TERMINAL ASSIGNMENT

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

DIMENSIONS (mm)

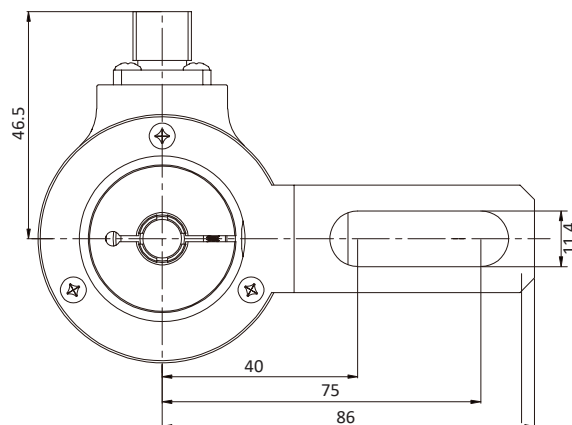
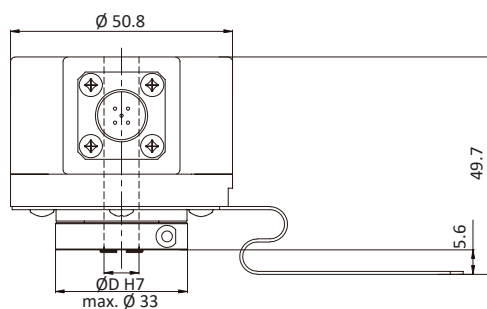
EV50K



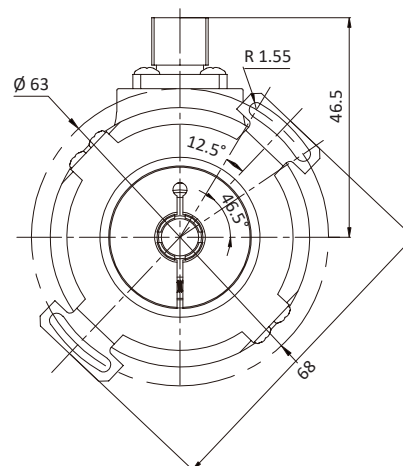
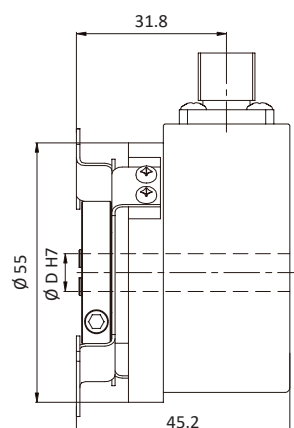
EV50P

DIMENSIONS (mm)

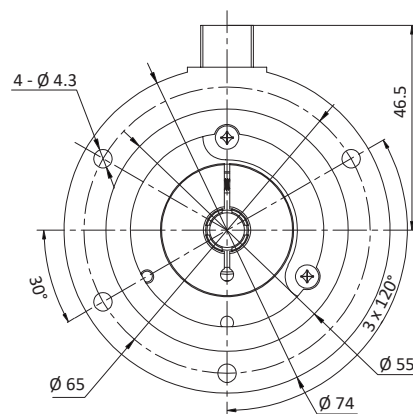
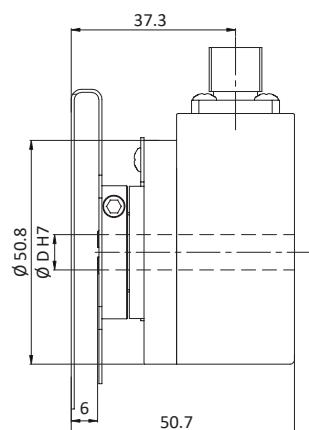
EV50H



EV50W



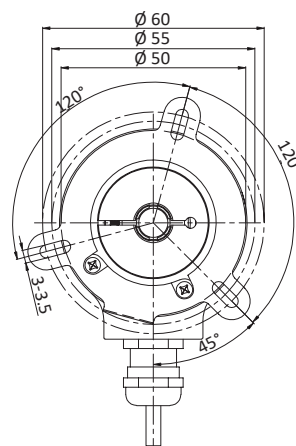
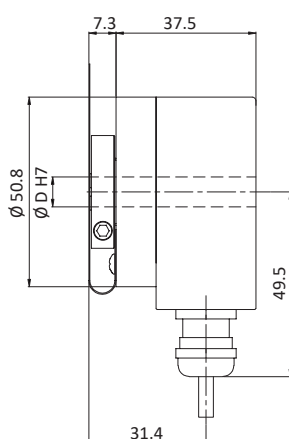
EV50V



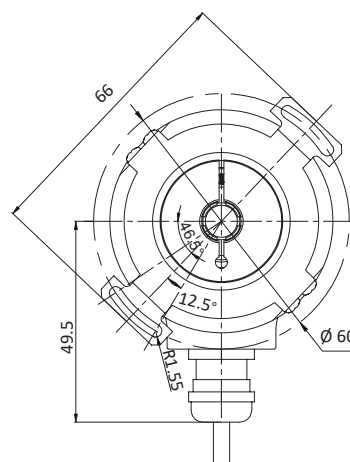
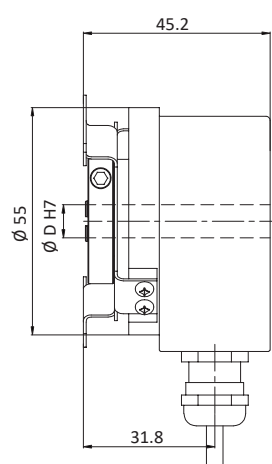
EV50P

DIMENSIONS (mm)

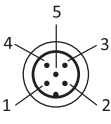
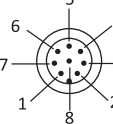
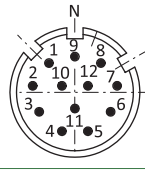
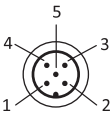
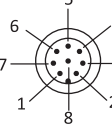
EV50S



EV50N



TOP VIEW OF PIN PLUG

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

EV50P

ORDER CODE

EV	50	W	10	-	L5	P	R	-	1024	XX	.	XXXX
				Shaft diameter 6 = Ø 6 mm 7 = Ø 1/4" 8 = Ø 8 mm 9 = Ø 3/8" 10 = Ø 10 mm 12 = Ø 12 mm 13 = Ø 1/2" 14 = Ø 14 mm 15 = Ø 15 mm 16 = Ø 5/8" shaft adding "R" means protection class is IP67							XXXX = Special code Customized cable length CN00XX = cable length e.g. CN0010 = 1 m CN0020 = 2 m	
				Flange type K = Long torque support slot H = Tether arm large W = Double-winged coupling V = Flexible fastening connector S = Three-claw spring N = Flexible fastening connector							Optional functions TP = Tangential output cable length 1.5m (only applicable to L5, L6) M5 = M12, 5-pin plug without connector M8 = M12, 8-pin plug without connector T = M23, 12-pin plug without connector (for other cable length, it's on requested)	
											Resolution Pulse/r: 1-5000	
											Outlets direction R=radial	
				Housing diameter 50 = Housing diameter							Type of connection P = Cable length 1.5 m	
				Series EV = Topydic incremental							Output and supply voltage L5 = RS422 (with inverted signal) 5 V DC L6 = RS422 (with inverted signal) 10 ... 30 V DC H6 = RS422 (with inverted signal) 10 ... 30 V DC P6 = RS422 (without inverted signal) 10 ... 30 V DC	

EV58A

ARTICLE PROPERTIES

TYPE	Topydic series shaft incremental encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 6g6 mm / Ø 8g6 mm / Ø 10g6 mm	STARTING TORQUE	≤ 0.01 N·m
SPEED	6000 rpm	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Aluminum
MOMENT OF INERTIA	1.9 x 10 ⁻⁶ kgm ²	WEIGHT	300 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	OPERATING TEMPERATURE	-20 ... +90 °C
MAX LOAD CAPACITY OF THE SHAFT	60 N axial, 120 N radial	STORAGE TEMPERATURE	-40 ... +100 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

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. 5000 ppr
SUPPLY VOLTAGE	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC
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. U _b -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

STANDARDS AND DIRECTIVES

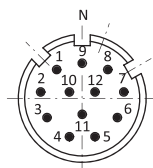
LOW-VOLTAGE SWITCHGEAR	EN IEC 61000-6-2
AND CONTROLGEAR	EN IEC 61000-6-4

EV58A

APPROVALS



TERMINAL ASSIGNMENT

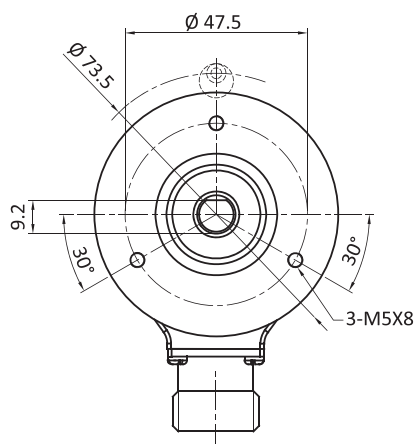
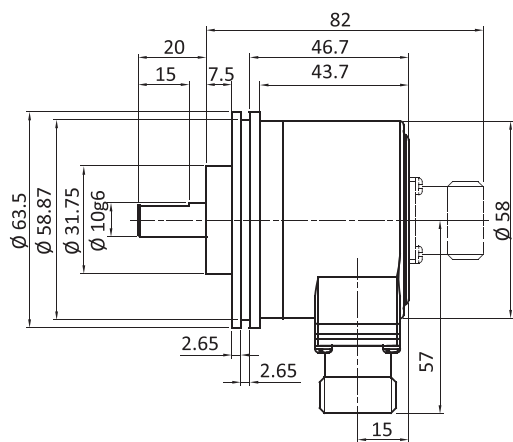


M23 12pin layout (Male)

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

DIMENSIONS (mm)

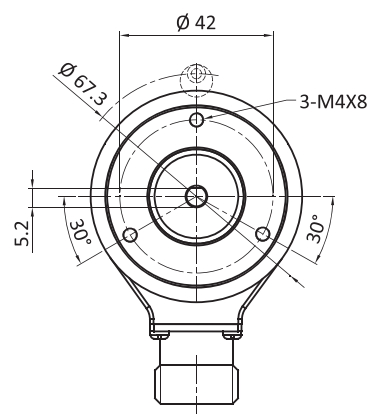
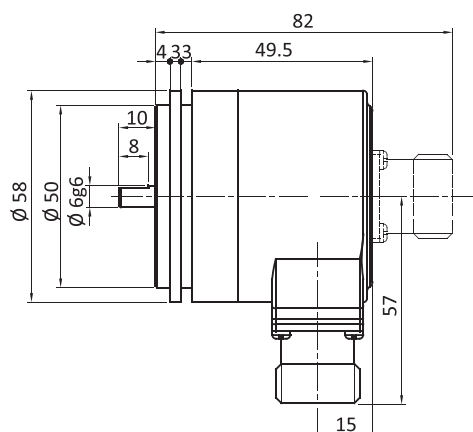
EV58A M23



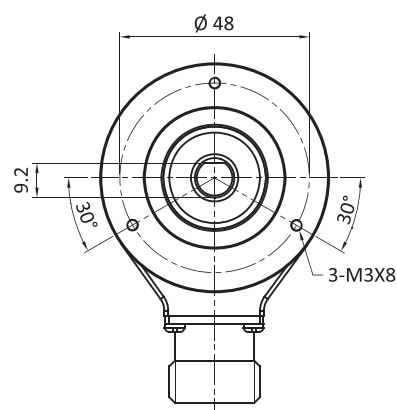
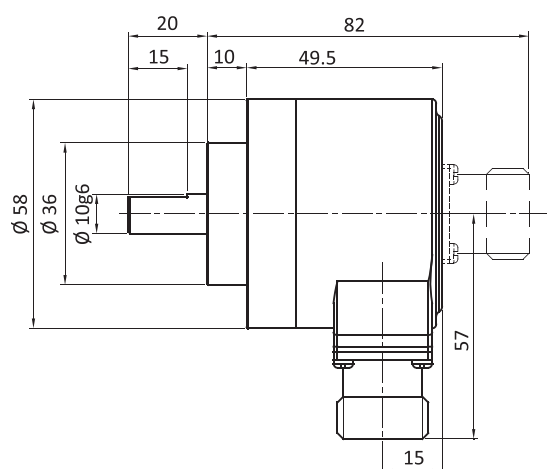
EV58A

DIMENSIONS (mm)

EV58B M23



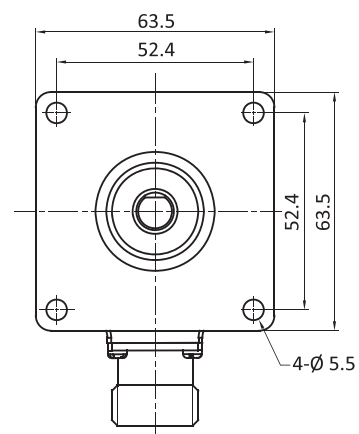
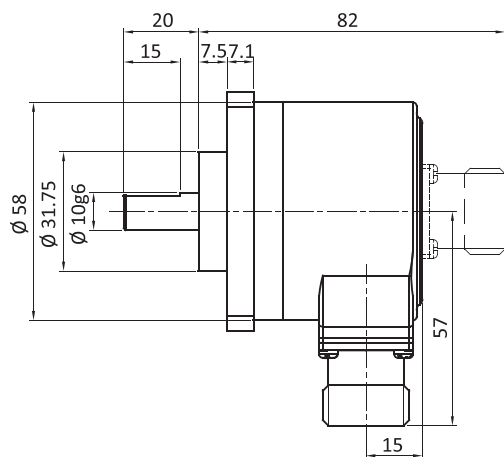
EV58C M23



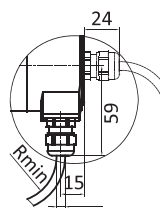
EV58A

DIMENSIONS (mm)

EV58D M23



Cable output



Rmin

Fixed installation: 55 mm

Max. $\varnothing 5.5$ Drag installation: 70 mm

EV58A

ORDER CODE

EV	58	B	6	-	L5	T	R	-	1024	.	XXXX
			Shaft diameter 6 = Ø 6g6 mm (only for EV58B) 8 = Ø 8g6 mm 9 = Ø 9.52 mm (3/8"×7/8") 10 = Ø 10g6 mm				Outlets direction R = Radial A = Axial				XXXX = Special code Customized cable length CN00XX = cable length e.g. CN0010 = 1 m CN0020 = 2 m
			Flange type A = Ø 31.75 clamping flange, shaft length 20 mm B = Synchro flange, only for shaft Ø 6, shaft length 10 mm C = Ø 36 clamping flange, shaft length 20 mm D = □ 63.5 square flange, shaft Ø 31.75, shaft length 20 mm				Type of connection P = 0.5 m T = M23, 12-pin plug without connector				Resolution Pulse/r: ≤5000 Attention: for other available pulse options please contact us for further information
			Housing diameter 58 = Housing diameter							Output & Supply voltage L5 = RS422 (with inverted signal) 5 V DC L6 = RS422 (with inverted signal) 10 ... 30 V DC H6 = Push-pull HTL (with inverted signal) 10 ... 30 V DC P6 = Push-pull HTL (without inverted signal) 10 ... 30 V DC	
			Series EV = Topydic incremental								

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

If $U_b = 5\text{ V}$, it's permitted to connect to signal channels, 0V or U_b ;

If $U_b > 5\text{ V}$, it's permitted to connect to signal channels or 0V.

Matched connector: For connection type "T": TMSP1612F

EV58P

ARTICLE PROPERTIES

TYPE	Topydic series hollow shaft incremental encoder
SIZE	Ø 58

TECHNICAL DATA

SHAFT DIAMETER	Ø 8H7 mm / Ø 10H7 mm / Ø 12H7 mm / Ø 14H7 mm / Ø 15H7 mm	STARTING TORQUE	≤ 0.03 N·m
SPEED	6000 rpm	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Aluminum
MOMENT OF INERTIA	6 x 10 ⁻⁶ kgm ²	WEIGHT	400 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	OPERATING TEMPERATURE	-20 ... +80 °C
MAX LOAD CAPACITY OF THE SHAFT	40 N axial, 80 N radial	STORAGE TEMPERATURE	-40 ... +95 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

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

ELECTRICAL PARAMETERS

OUTPUT CIRCUIT	RS422	PUSH-PULL
SUPPLY VOLTAGE	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC
POWER CONSUMPTION (NO LOAD)	Typ. 40 mA, max. 90 mA	Typ. 50 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. U _b -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

STANDARDS AND DIRECTIVES

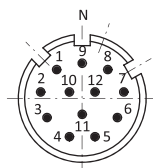
LOW-VOLTAGE SWITCHGEAR	EN IEC 61000-6-2
AND CONTROLGEAR	EN IEC 61000-6-4

EV58P

APPROVALS



TERMINAL ASSIGNMENT

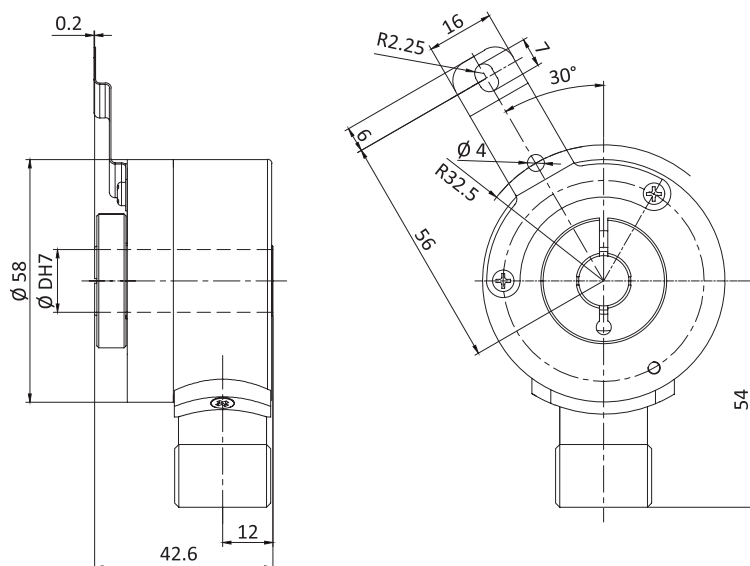


M23 12pin layout (Male)

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

DIMENSIONS (mm)

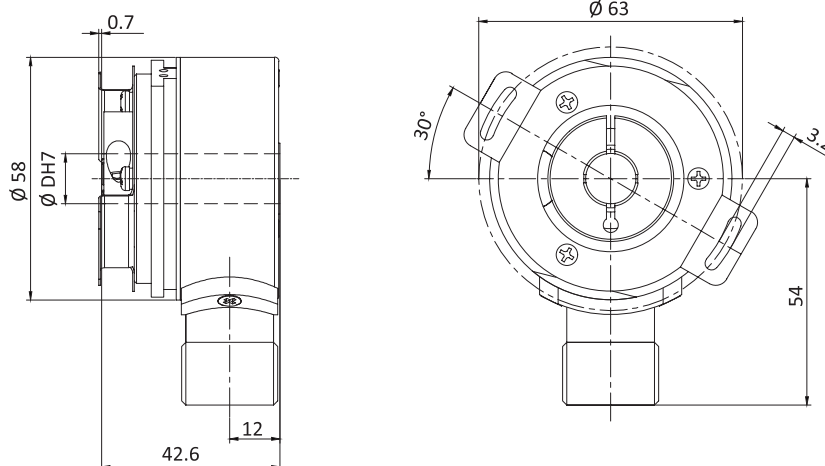
EV58P M23



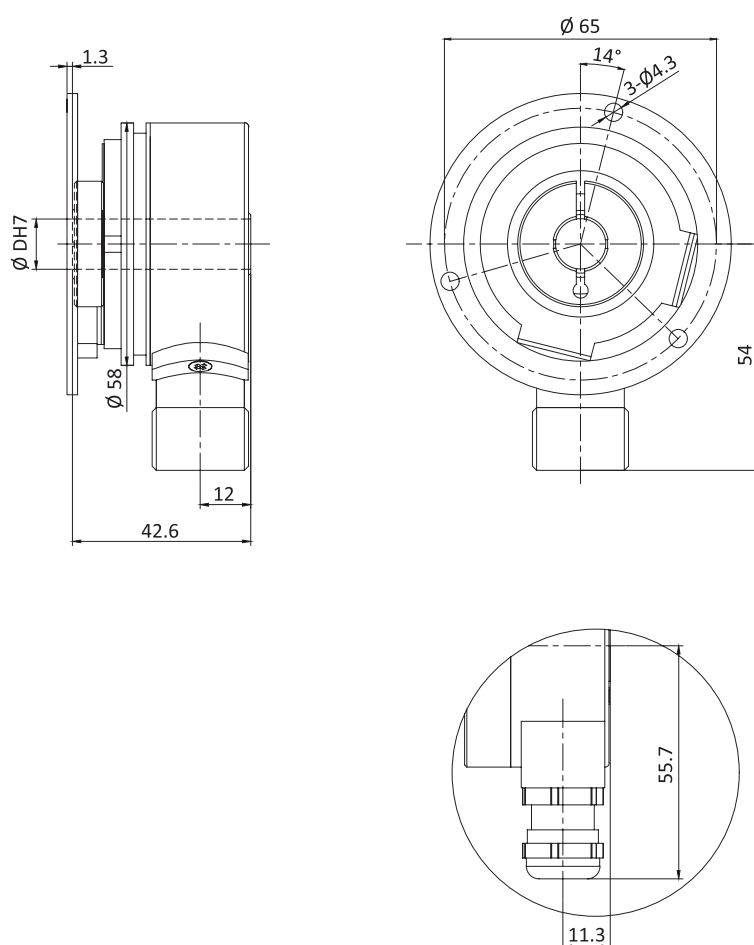
EV58P

DIMENSIONS (mm)

EV58W M23



EV58V M23



EV58P

ORDER CODE

EV	58	P	10	-	L5	T	R	-	1024	.	XXXX
				Shaft diameter					Outlets direction	XXXX = Special code	
				8 = Ø 8H7 mm 10 = Ø 10H7 mm 12 = Ø 12H7 mm 14 = Ø 14H7 mm 15 = Ø 15H7 mm					R = Radial	Customized cable length CN00XX = cable length e.g. CN0010 = 1 m CN0020 = 2 m	
				Flange type					Type of connection	Resolution	
				P = With single-wing fixing plate W = With double-wing fixing plate V = With elastic fixed connector					P = 1.5 m T = M23, 12-pin plug without connector	Pulse/r: ≤5000 Attention: for other available pulse options please contact us for further information	
				Housing diameter	Output & Supply voltage						
				58 = Housing diameter	L5 = RS422 (with inverted signal) 5 V DC L6 = RS422 (with inverted signal) 10 ... 30 V DC H6 = Push-pull HTL (with inverted signal) 10 ... 30 V DC P6 = Push-pull HTL (without inverted signal) 10 ... 30 V DC						
				Series							
				EV = Topydic incremental							

EV90P

ARTICLE PROPERTIES

TYPE	Heavydic large hollow shaft incremental encoder
SIZE	Ø 90

TECHNICAL DATA

SHAFT DIAMETER	Ø 20H7 mm / Ø 24H7 mm / Ø 25H7 mm / Ø 28H7 mm / Ø 30H7 mm / Ø 38H7 mm / Ø 40H7 mm / Ø 45H7 mm	STARTING TORQUE	< 0.1 N·m with oil seal
SPEED	3500 rpm	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Aluminum
MOMENT OF INERTIA	15 x 10 ⁻⁶ kgm ²	WEIGHT	900 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP65	OPERATING TEMPERATURE	-20 ... +80 °C (-40 ... +80 °C optional)
MAX LOAD CAPACITY OF THE SHAFT	80 N axial, 140 N radial	STORAGE TEMPERATURE	-45 ... +85 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

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. 4096 ppr	Max. 4096 ppr
SUPPLY VOLTAGE	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC
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. U _b -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

EV90P

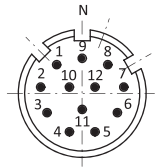
STANDARDS AND DIRECTIVES

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

APPROVALS



TERMINAL ASSIGNMENT

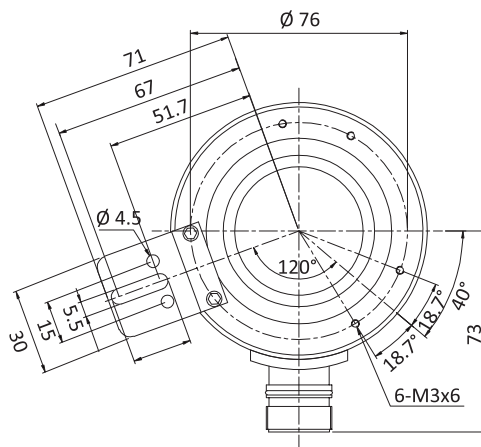
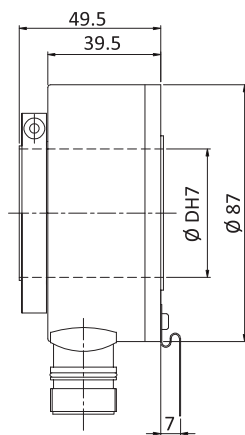


M23 12pin layout (Male)

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

DIMENSIONS (mm)

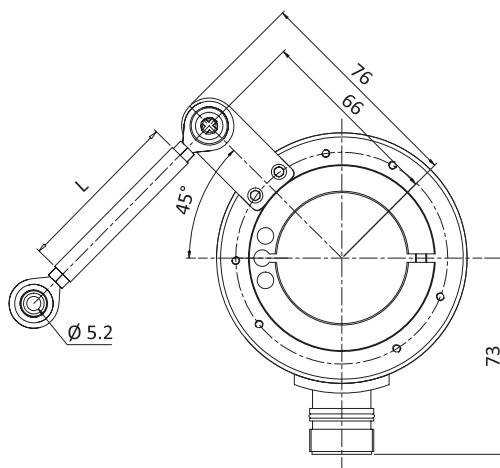
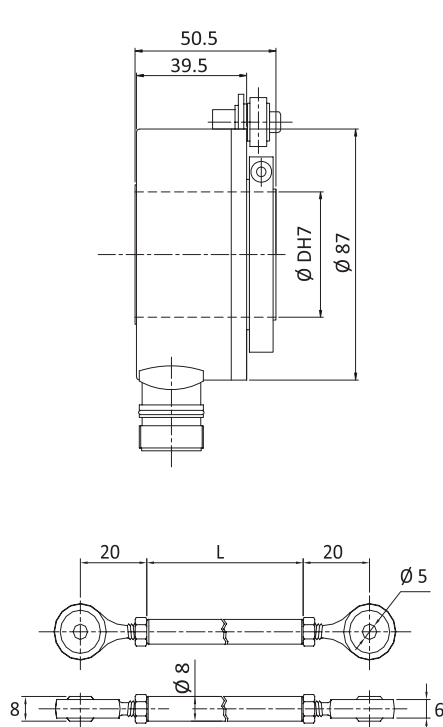
EV90P M23



EV90P

DIMENSIONS (mm)

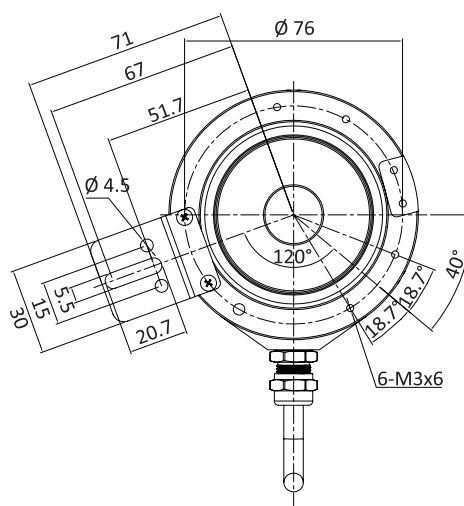
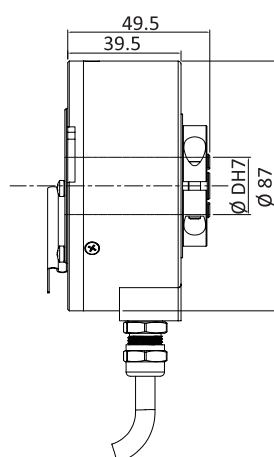
EV90R M23



Fit with crutch arm:

Order code: SN5A XX (30/60/90 is the length of crutch arm)

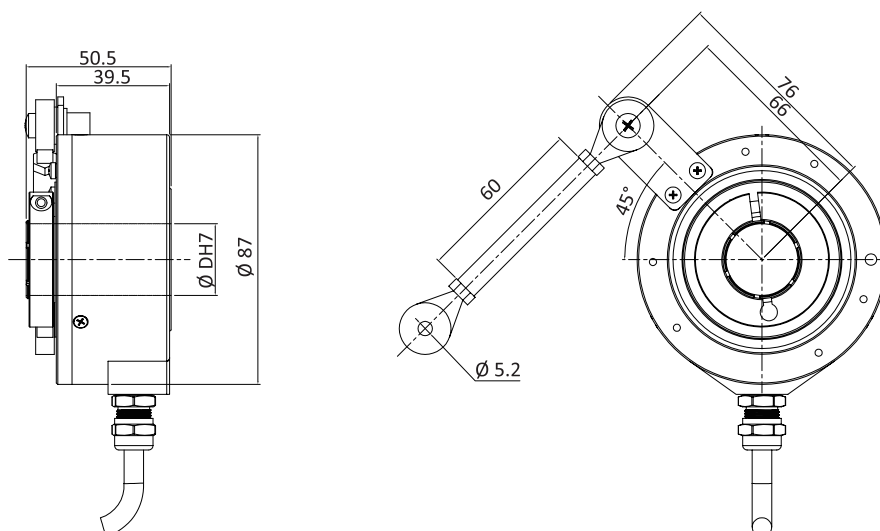
EV90P Cable



EV90P

DIMENSIONS (mm)

EV90R Cable



EV90P

ORDER CODE

EV	90	P	30	-	L5	T	R	-	1024	.	XXXX
				Hollow shaft diameter					Outlets direction	XXXX = Special code	
				20 = Ø 20H7					R = Radial	Customized cable length	
				24 = Ø 24H7						CN00XX = cable length	
				25 = Ø 25H7						e.g. CN0010 = 1 m	
				28 = Ø 28H7						CN0020 = 2 m	
				30 = Ø 30H7							
				38 = Ø 38H7							
				40 = Ø 40H7							
				45 = Ø 45H7							
				Flange type					Type of connection	Resolution	
				P = Fixing sheet					P = 1.5 m	Pulse/r: ≤ 4096	
				R = Crutch arm					T = M23, 12-pin plug without connector		
				Housing diameter					Output & Supply voltage		
				90 = Housing diameter					L5 = RS422 (with inverted signal)	5 V DC	
									L6 = RS422 (with inverted signal)	10 ... 30 V DC	
									H6 = Push-pull HTL (with inverted signal)	10 ... 30 V DC	
									P6 = Push-pull HTL (without inverted signal)	10 ... 30 V DC	

EV150P

ARTICLE PROPERTIES

TYPE	Topydic series large hollow shaft incremental encoder
SIZE	Ø 150

TECHNICAL DATA

HOLLOW SHAFT DIAMETER	Ø 60H7 mm / Ø 65H7 mm / Ø 70H7 mm / Ø 75H7 mm / Ø 80H7 mm	STARTING TORQUE	< 0.25 N·m
SPEED	3000 rpm	BODY MATERIAL	Aluminum
BEARING LIFE	10 ⁹ revolution	HOUSING MATERIAL	Aluminum + green paint
MOMENT OF INERTIA	< 15 x 10 ⁻⁶ kgm ²	WEIGHT	1800 g

ENVIRONMENTAL CONDITIONS

PROTECTION CLASS	IP64	OPERATING TEMPERATURE	-20 ... +90 °C
MAX LOAD CAPACITY OF THE SHAFT	100 N axial, 200 N radial	STORAGE TEMPERATURE	-40 ... +100 °C
SHOCK RESISTANCE (EN 60068-2-27)	50 g, 11 ms	RELATIVE HUMIDITY / CONDENSATION	90%, condensation not permitted
VIBRATION RESISTANCE (EN 60068-2-6)	10 g, 10 ... 2000 Hz		

ELECTRICAL PARAMETERS

OUTPUT CIRCUIT	RS422	PUSH-PULL
RESOLUTION	Max. 2048 ppr	Max. 2048 ppr
SUPPLY VOLTAGE	5±0.25 or 10 ... 30 V DC	10 ... 30 V DC
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. U _b -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

STANDARDS AND DIRECTIVES

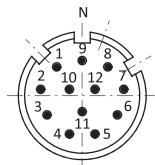
LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR	EN IEC 61000-6-2 EN IEC 61000-6-4
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EV150P

APPROVALS



TERMINAL ASSIGNMENT

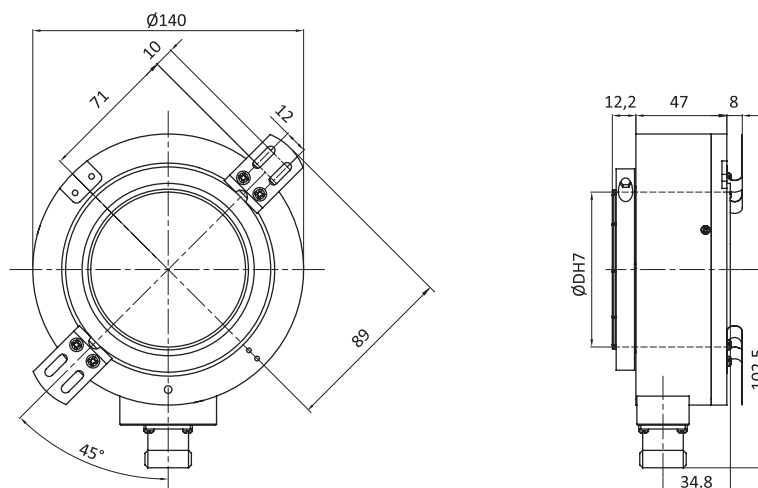


M23 12pin layout (Male)

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

DIMENSIONS (mm)

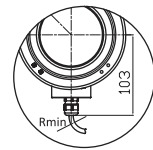
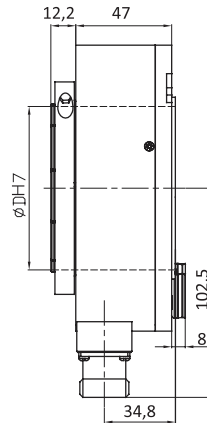
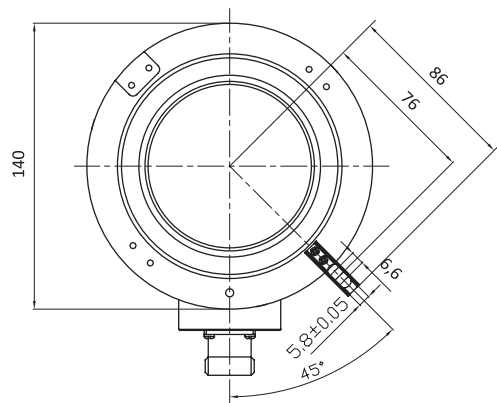
EV150P



EV150P

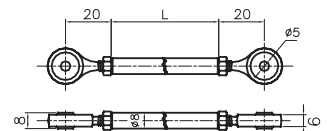
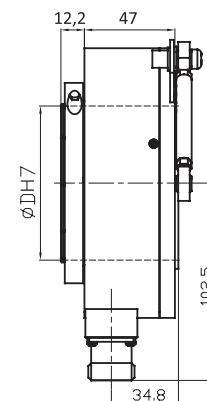
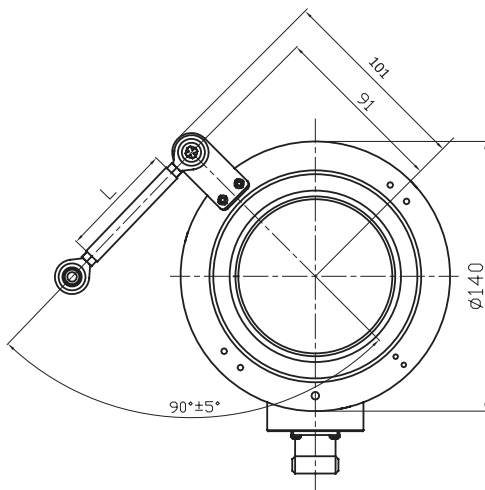
DIMENSIONS (mm)

EV150K



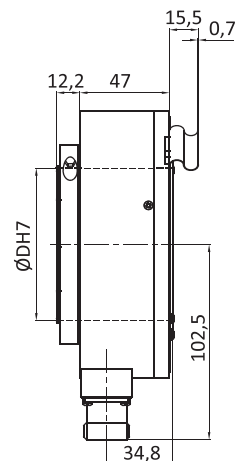
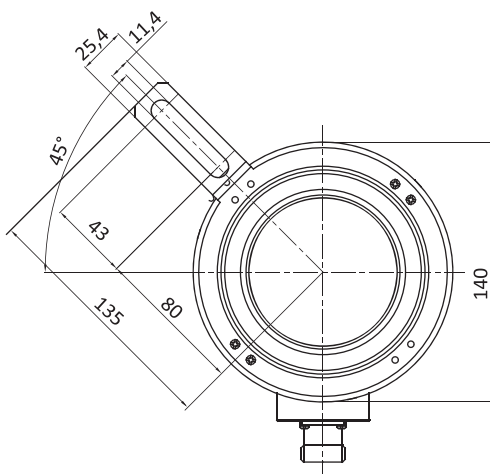
Rmin
Fix installation: 55 mm
Draw installation: 70 mm

EV150R



Torque arm order
SN5A60 (60 means length)

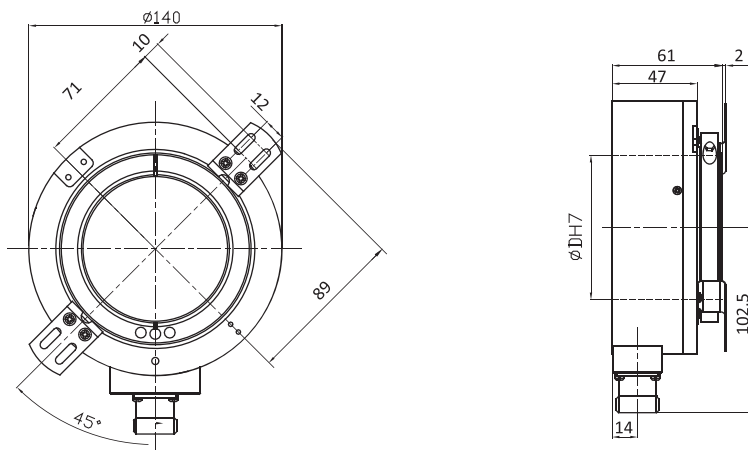
EV150H



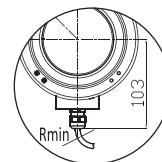
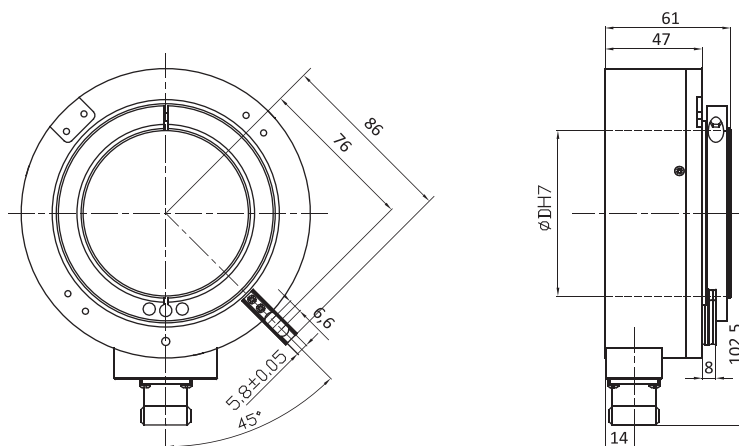
EV150P

DIMENSIONS (mm)

EV150RP

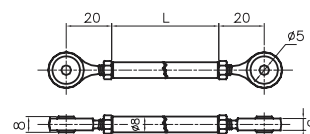
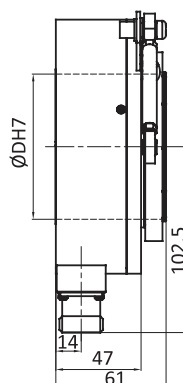
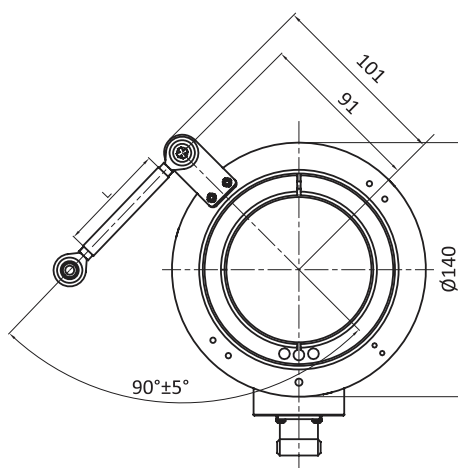


EV150RK



Rmin
Fix installation: 55 mm
Draw installation: 70 mm

EV150RR

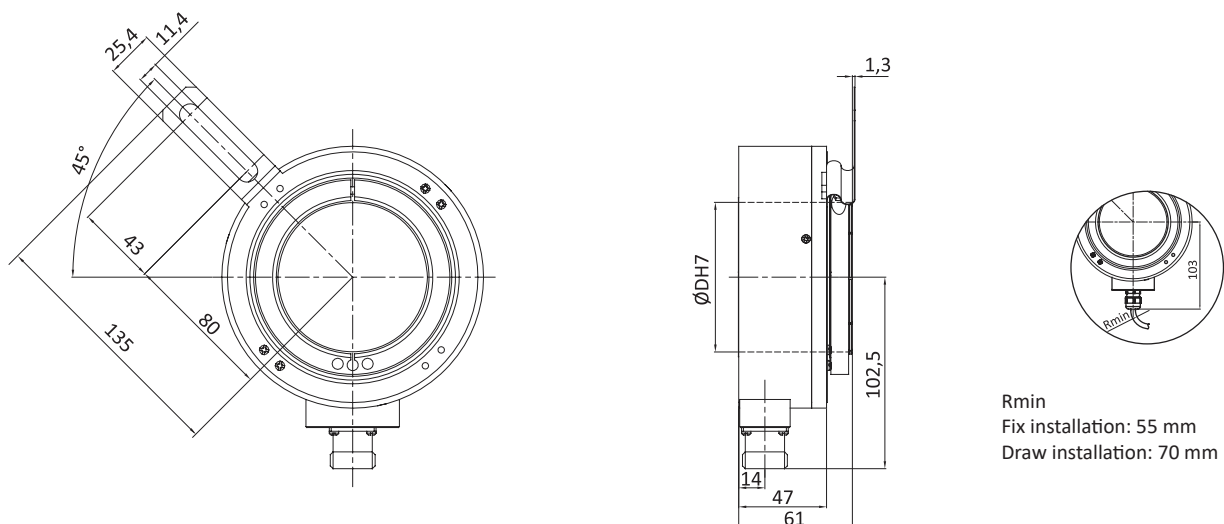


Torque arm order
SN5A60 (60 means length)

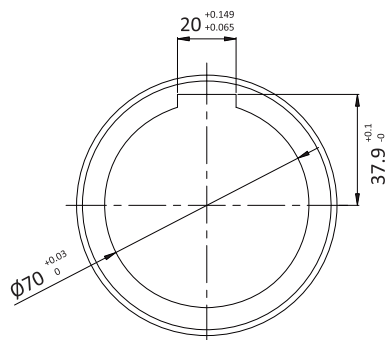
EV150P

DIMENSIONS (mm)

EV150RH



EV150P Keyway shaft



EV150P

ORDER CODE

EV 150 P 70 - L5 T R - 1024 . XXXX

Shaft diameter

60 = Ø 60H7 mm
65 = Ø 65H7 mm
70 = Ø 70H7 mm
75 = Ø 75H7 mm
80 = Ø 80H7 mm

Adding "K" to a shaft diameter means it is a hollow shaft with keyway, eg.
60K = Ø 60F7 keyway (≤70) without fixed lock ring for keyway mounting

Flange type

P = Hollow shaft with spring
K = Long torque support slot
R = Universal torque arm (SN5A60)
H = Tether arm large
RP = Hollow shaft with spring
RK = Long torque support slot
RR = Universal torque arm (SN5A60)
RH = Tether arm large

Housing diameter

150 = Housing diameter

Series

EV = Topydic incremental

Outlets direction

R = Radial

Type of connection

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

Resolution

Pulse/r: ≤ 2048
Attention: for other available pulse options please contact us for further information

Output & Supply voltage

L5 = RS422 (with inverted signal) 5 V DC
L6 = RS422 (with inverted signal) 10 ... 30 V DC
H6 = Push-pull HTL (with inverted signal) 10 ... 30 V DC
P6 = Push-pull HTL (without inverted signal) 10 ... 30 V DC

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.

Connector order:
matching "T" connector: TMSP1612F

Diameter	Lock ring	Screw
Ø 60	E41230053	M4×16
Ø 65	E41230059	M4×16
Ø 70	E41230058	M4×16
Ø 75	E41230057	M4×16
Ø 80	E41230056	M4×16

XXXX = Special code

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

EV150P

SALES AND SERVICE

Tianjin Elco Automation Co., Ltd

No. 12, 4th XEDA Branch Road
Xiqing Economic-Technological Development Area
Tianjin 300385, P.R. China
Office Phone: 022 23788282
E-Mail: info@elco.cn
www.elcoautomation.com.cn

Elco Industrie Automation GmbH

Häldenfeld 8
71723 Großbottwar
Germany
Office Phone: +49 7062 / 6599-260
E-Mail: info@elco-automation.de
www.elco-automation.de

Elco Automation LLC

1097 Highway 101 South, Suite D-3 Greer
South Carolina 29651, USA
Office Phone: +1 864-581-7431
E-Mail: infousa@elcoautomation.com
www.elcoautomation.com

Elco Industrial Automation Pvt Ltd.

No 80, 1st Main, 2nd Cross, Royal Enclave,
Sidedahalli, Nagasandra Bangalore 560073, India
Office Phone: +91-7259931777
E-Mail: info@elcoautomation.in
www.elcoautomation.com

Elco Automation Korea Ltd.

706, 17 Daehak 4-ro, Yeongtong-gu, Suwon-si,
Gyeonggi-do, Republic of Korea, 16226
Office Phone: +82-31-216-7890
E-Mail: sales@elcoautomation.co.kr
www.elcoautomation.com