

GENERAL CATALOGUE 2004/2005

# Sensing & Safety



- Photoelectric Sensors
- Displacement Sensors
- Vision Systems
- Safety Sensors
- Safety Switches
- Safety Relays
- Proximity Sensors
- Rotary Encoders
- Pressure Sensors

Advanced Industrial Automation

Cat.No. F502-EN2-03A SEN

**OMRON**

# Rotary Encoders

Incremental	25 dia.	E6A2-C	F-2
	40 dia.	E6B2-C	F-3
	50 dia.	E6C2-C/E6C3-C	F-5
	60 dia.	E6F-C	F-7
	40 dia. (Hollow Shaft)	E6H-C	F-8
Absolute	50 dia.	E6C3-A	F-9
	60 dia.	E6F-A	F-11
Easy Scale	Linear Encoder	E6L	F-13

Incremental Rotary Encoder OD 25 dia.

# E6A2-C

*Compact with an External Diameter of 25 mm*

- Meets positioning requirements. It is a lineup type with a starting point output (phase Z).
- Ensures maximum measurement precision.
- An additional series of models with 25 dia. ensuring a resolution of 500 P/R.
- Shock resistance strengthened by metal disk. (600 P/R max.) (Patent)



## Ordering Information

### Sensors

Output phase	Power supply voltage	Output form	Resolution (pulse/rotation)	Model
A	5 to 12 VDC	NPN voltage output	10, 60, 100, 200, 300, 360	<b>E6A2-CS3E</b>
			500	
		12 to 24VDC	NPN open collector	10, 60, 100, 200, 300, 360
	500			
	10, 60, 100, 200, 300, 360		<b>E6A2-CS5C</b>	
	A, B	5 to 12 VDC	NPN voltage output	100, 200, 360
500				
12 to 24VDC			NPN open collector	100, 200, 360
		500		
		100, 200, 360	<b>E6A2-CW5C</b>	
A, B, Z		5 to 12 VDC	NPN voltage output	100, 200, 360
	500			
	12 to 24VDC		NPN open collector	100, 200, 360
		500		
		100, 200, 360	<b>E6A2-CWZ5C</b>	

Note: For order placement add the resolution (pulses per revolution) between the part number. For example, E6A2-CS3E 60 P/R.

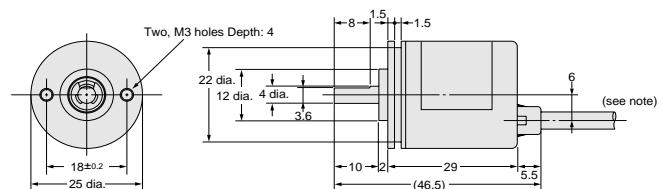
### Accessories (Order Separately)

Item	Model	Remarks
Coupling	<b>E69-C04B</b>	Supplied with the product.
Servo Mounting Bracket	<b>E69-1</b>	Provided with the E6A2-CWZ□

### Dimensions (Unit: mm)

#### E6A2

CAD file E6A2\_01



Note: Vinyl-insulated round cable of 4 dia. 5 cores conductor cross-sectional area: 0.15mm<sup>2</sup>; insulation diameter: 0.9mm Standard length: 500mm

Incremental Rotary Encoder OD 40 dia.

# E6B2-C

## General-Purpose Incremental Rotary Encoder With Large Shaft 40 dia.

- A wide operating voltage range from 5 to 24 VDC (open collector model).
- High resolution models (2000 pulses per revolution) substantially improve measuring accuracy
- Easy-to-adjust zero index (phase Z) with origin indicating function
- A large load of 30 N in the radial direction and 20 N in the thrust direction are permitted.
- The load short-circuit and reversed connection protecting circuit assure high operation reliability.
- Available with Line Driver output (100 m max. extension available)
- Shock resistance strengthened by metal disk. (600 P/R max.) (Patent)



### Ordering Information

#### Sensors

Power supply voltage	Output form	Resolution (pulse/rotation)	Model
5 to 24 VDC	NPN open collector output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6B2-CWZ6C
		720, 800, 1,000, 1,024	
		1,200, 1,500, 1,800, 2,000	
12 to 24VDC	PNP open collector output	100, 200, 360, 500, 600	E6B2-CWZ5B
		1,000	
		2,000	
5 to 12 VDC	NPN voltage output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6B2-CWZ3E
		1,000	
		1,200, 1,500, 1,800, 2,000	
5 VDC	Line driver output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	E6B2-CWZ1X
		1,000, 1,024	
		1,200, 1,500, 1,800, 2,000	

Note: When ordering, add the resolution (pulses per revolution) between the part number. For example, E6B2-CWZ6C 100 P/R.

Accessories (Order Separately)

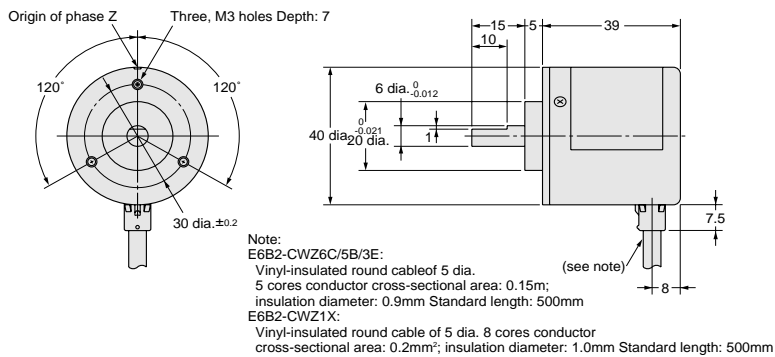
Item	Model	Remarks
Coupling	<b>E69-C06B</b>	Attachment
	<b>E69-C68B</b>	Different end diameter
	<b>E69-C610B</b>	Different end diameter
	<b>E69-C06M</b>	Metal construction
Flanges	<b>E69-FBA</b>	---
	<b>E69-FBA02</b>	E69-2 Mounting Bracket included
Mounting Bracket	<b>E69-2</b>	---

Dimensions (Unit: mm)

Sensors

E6B2

CAD file E6B2\_01



Incremental Rotary Encoder OD 50 dia. (thin)

# E6C2-C/E6C3-C

## Tough & Easy

- Drip-proof, oil-proof construction meets IP64F standards
- Shaft withstanding heavy loads, 80 N radially, 50 N thrust (axially)
- Protective Circuit Output Shorting
- Space-saving, A-slant cable protrusion for easy installation
- Shock resistance strengthened by metal disk.  
E6C2-C: 600P/R max.  
E6C3-C□H: 500P/R max.



## Ordering Information

### Sensors

	Power supply voltage	Output form	Resolution (pulse/rotation)	Model
Standard models	5 to 24 VDC	NPN open collector output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	<b>E6C2-CWZ6C</b>
			720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000	
	12 to 24VDC	PNP open collector output	100, 200, 360, 500, 600	<b>E6C2-CWZ5B</b>
			1,000, 2,000	
5 to 12 VDC	NPN voltage output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	<b>E6C2-CWZ3E</b>	
		720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000		
5 VDC	Line driver output	10, 20, 30, 40, 50, 60, 100, 200, 300, 360, 400, 500, 600	<b>E6C2-CWZ1X</b>	
		720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000		
8 dia. tough model	12 to 24VDC	Complimentary output	100, 200	<b>E6C3-CWZ5GH</b>
			300, 360, 500, 600, 720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000, 2,048, 2,500, 3,600	
	5 to 12 VDC	NPN voltage output	100, 200	<b>E6C3-CWZ3EH</b>
300, 360, 500, 600, 720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000, 2,048, 2,500, 3,600				
5 to 12 VDC	Line driver output	100, 200	<b>E6C3-CWZ3XH</b>	
		300, 360, 500, 600, 720, 800, 1,000, 1,024, 1,200, 1,500, 1,800, 2,000, 2,048, 2,500, 3,600		

Note: For order placement add the resolution (pulses per revolution) between the part number. For example, E6C2-CWZ6C 100P/R.

Accessories (Order Separately)

Item	Model	Applicable Rotary Encoders	Remarks
Coupling	<b>E69-C06B</b>	E6C2-CWZ□	---
	<b>E69-C68B</b>	E6C3-CWZ□/□H	Diameter of ends: 6 to 8 dia.
	<b>E69-C06M</b>	E6C2-CWZ□	Metal construction
	<b>E69-C08B</b>	E6C3-CWZ□H	
Flanges	<b>E69-FCA</b>	E6C2-CWZ□	---
	<b>E69-FCA02</b>	E6C2-CWZ□	
	<b>E69-FCA03</b>	E6C3-CWZ□H	
	<b>E69-FCA04</b>	E6C3-CWZ□H	
Mounting Bracket	<b>E69-2</b>	---	Provided with the E69-FCA02 and E69-FCA04 Flange.

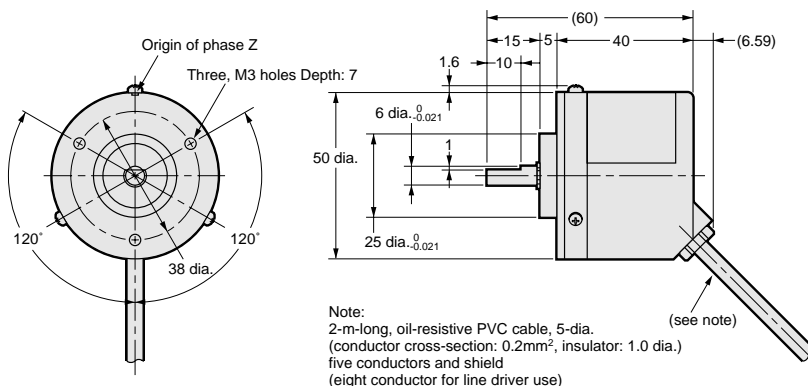
Dimensions (Unit: mm)

Sensors

Standard

E6C2-CWZ□□

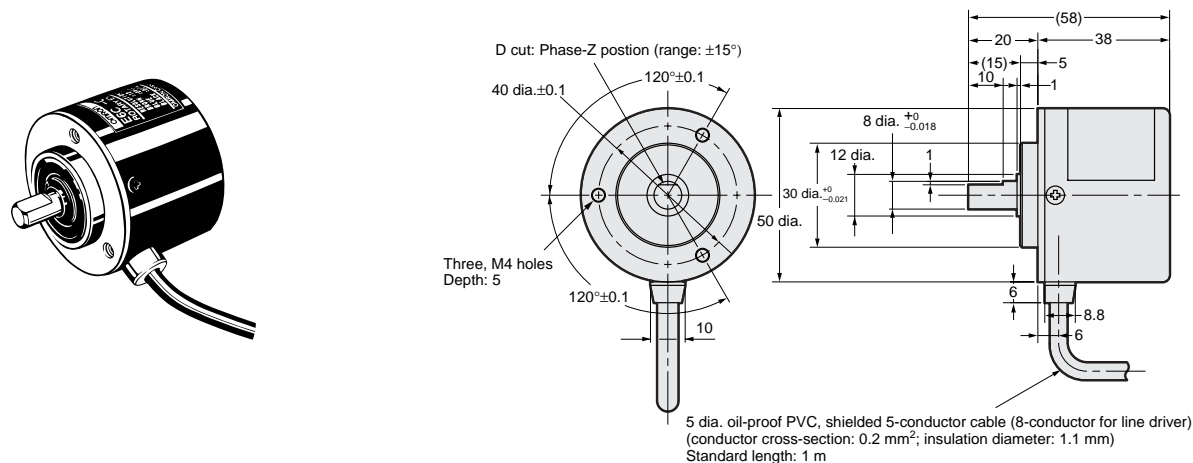
CAD file E6C2\_03



Solid 8 dia. Shaft Model

E6C3-CWZ□□H

CAD file ???



Incremental Rotary Encoder OD 60 dia.

# E6F-C

## The Strongest Shaft for Tough Jobs

- The strongest shaft of any OMRON Incremental Encoder (120 N in radial direction and 50 N in thrust direction).
- Drip-proof, construction meets IP64F standards
- Output short-circuit protection circuit to reduce risks from incorrect wiring.
- Complementary output model can be used with extension cable
- Shock resistance strengthened by metal disk. (600 P/R max.) (Patent)



### Ordering Information

#### Sensors

Supply voltage	Output form	Resolution (pulse/rotation)	Model
12 to 24VDC	Complimentary output	100, 200, 360, 500, 600 1000	<b>E6F-CWZ5G</b>

#### Accessories (Order Separately)

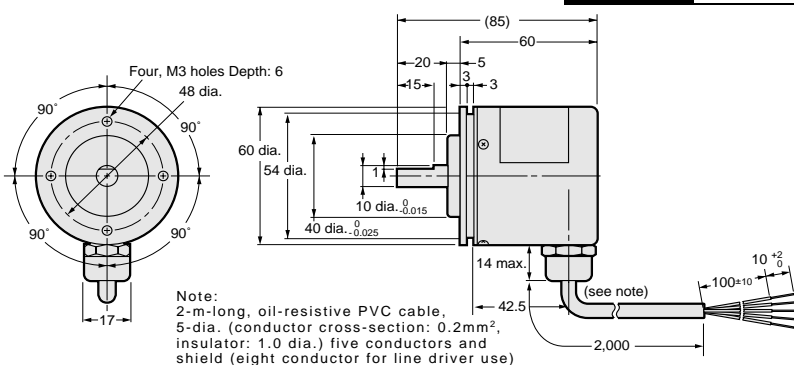
Item	Model	Remarks
Coupling	<b>E69-C10B</b>	---
	<b>E69-C610B</b>	Different end diameter
	<b>E69-C10M</b>	Metal construction
Mounting Bracket	<b>E69-2</b>	Three brackets in a set; included with the Encoder.

### Dimensions (Unit: mm)

#### Sensors

##### E6F-CWZ5G

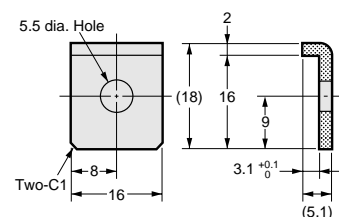
CAD file E6F\_02



#### Accessories (Order Separately)

##### Servo Mounting Bracket

##### E69-2





Incremental Rotary Encoder OD 40 dia. (hollow-shaft model)

# E6H-C

## Hollow Shaft Without Coupling Compact, High Resolution General Model

- A wide operating voltage range from 5 to 24 VDC (open collector model).
- Resolution as high as 3,600 pulses/revolution in a rugged 40 mm (1.57 inch) diameter housing
- High-speed response frequency of 100kHz
- Wide operating temperature range from -10 to +70°C
- Line drive output available (100 m max.)
- Shock resistance strengthened by metal disk. (200 P/R max.) (Patent)



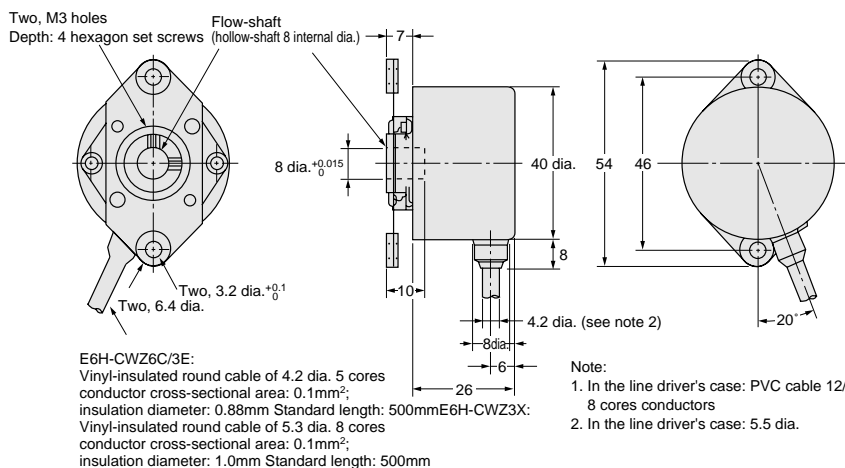
### Ordering Information

Supply voltage	Output form	Resolution (pulse/rotation)	Model
5 to 24 VDC	Open collector output	300, 360, 500, 600, 720, 800, 1,000, 1,024	<b>E6H-CWZ6C</b>
		1,200, 1,500, 1,800, 2,000, 2,048	
		2,500, 3,600	
5 to 12 VDC	Voltage output	300, 360, 500, 600, 720, 800, 1,000, 1,024	<b>E6H-CWZ3E</b>
		1,200, 1,500, 1,800, 2,000, 2,048	
		2,500, 3,600	
5 to 12 VDC	Line drive output	300, 360, 500, 600, 720, 800, 1,000, 1,024	<b>E6H-CWZ3X</b>
		1,200, 1,500, 1,800, 2,000, 2,048	
		2,500, 3,600	

Note: For order placement add the resolution (pulses per revolution) after the part number. For example, E6H-CWZ6C 1000P/R.

### Dimensions (Unit: mm)

#### E6H-C



CAD file E6H\_01

Absolute Rotary Encoder

# E6C3-A

## An Encoder That Offers Durability and Convenience

- IP65f drip-proof, oil-proof construction achieved with seal bearing.
- 8-mm-dia stainless steel shaft withstands a shaft loading of 80 N and 50 N respectively in the radial and thrust directions.
- Absolute Rotary Encoders have a metal slit plate to ensure high resistance to shock.
- Combining Absolute Rotary Encoders with a Programmable Controller or Cam Positioner allows ideal angle control.
- Bears CE markings (EMC Directives) and conforms to EN/IEC standards, making it suitable for the European market.



### Ordering Information

#### Sensors

Supply voltage	Output form	Output code	Resolution (pulse/rotation)	Connection method	Model
12 to 24VDC	NPN open collector output	Gray code	256	Pre-wired type	<b>E6C3-AG5C-C</b>
			256, 360, 720, 1,024		<b>E6C3-AG5C</b>
		Binary	32, 40		<b>E6C3-AN5C</b>
	BCD	6, 8, 12	<b>E6C3-AB5C</b>		
	PNP open collector output	Gray code	256, 360, 720, 1,024		<b>E6C3-AG5B</b>
		Binary	32, 40		<b>E6C3-AN5B</b>
BCD		6, 8, 12	<b>E6C3-AB5B</b>		
5 VDC	NPN voltage output	Binary	256	<b>E6C3-AN1E</b>	
12 VDC				<b>E6C3-AN2E</b>	

Note: 1. When ordering, specify the resolution in addition to the model numbers. (Example: E6C3-AG5C 360P/R 1M)  
 2. Models with 2-m cables are also available as standard products. Specify the cable length at the end of the model number. (Example: E6C3-AG5C 360P/R 2M)  
 3. When connecting to the H8PS, be sure to use the E6C3-AG5C-C 256P/R.

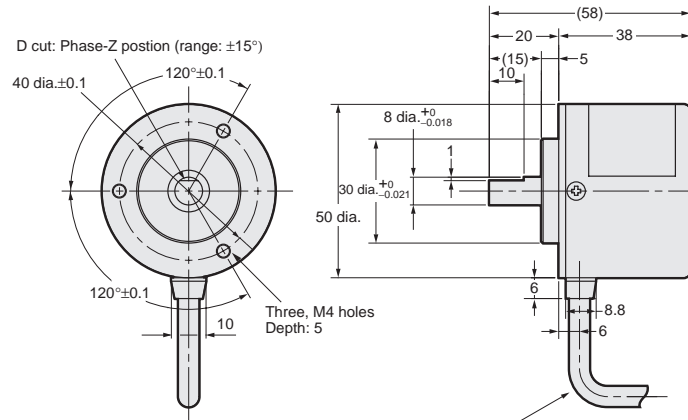
#### Accessories (Order Separately)

Item	Model	Remarks
Coupling	<b>E69-C08B</b>	---
	<b>E69-C68B</b>	Diameters of ends: 6 to 8 dia.
Flange	<b>E69-FCA03</b>	---
	<b>E69-FCA04</b>	E69-2 Servo Mounting Bracket provided.
Servo Mounting Bracket	<b>E69-2</b>	Provided with the E69-FCA04 Flange.
Extension Cable	<b>E69-DF5</b>	5 m
	<b>E69-DF10</b>	10 m
	<b>E69-DF20</b>	30 m
		Applicable for the E6C3-AG5C-C. 15- and 98-m-long Extension Cables are also available.

Dimensions (Unit: mm)

Sensors

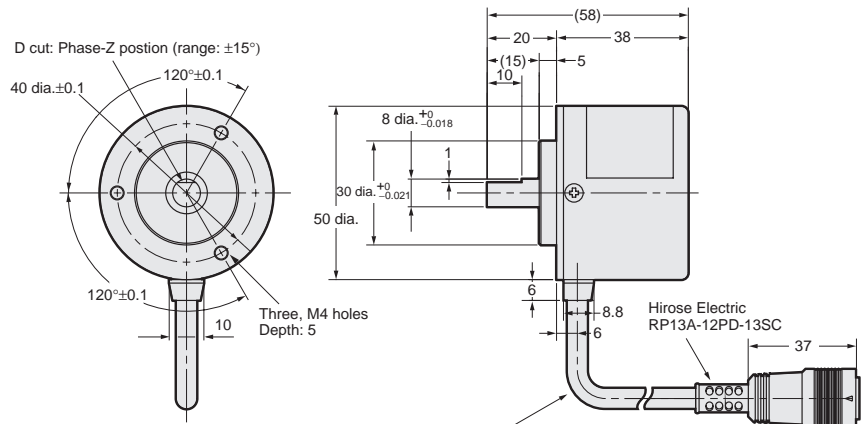
E6C3-A□5□  
E6C3-AN□E



6 dia. oil-proof PVC, shielded 12-conductor cable  
(conductor cross-section: 0.2 mm<sup>2</sup>; insulation diameter: 1.1 mm)  
Standard length: 1 m

Note: E69-C08B is sold separately.

E6C3-AG5C-C




6-dia. oil-proof PVC, shielded 12-conductor cable  
(conductor cross-section: 0.2 mm<sup>2</sup>; insulation diameter: 1.1 mm)  
Standard length: 1 m

Note: E69-C08B is sold separately.

Absolute Rotary Encoder

# E6F-A

*Rugged construction providing high-precision timing detection for automatic machines operation*

- Stronger shaft and higher durability (120 N in radial direction and 50 N in thrust direction) than previous E6F Encoders.
- Drip-proof construction meets IP64F standards
- High resolution models (1024 pulses max. per revolution)
- Faster response for high-speed control applications (grey code: 20 kHz).
- Shock resistance strengthened by metal disk. 



## Ordering Information

### Sensors

Supply voltage	Output form	Output code	Resolution (pulses/revolution)	Connection method	Model
5 to 12 VDC	NPN open collector	BCD	360	Pre-wired	<b>E6F-AB5C</b>
12 to 24VDC				Connector type	<b>E6F-AB5C-C</b>
	PNP open collector			Pre-wired	<b>E6F-AB5B</b>
		Gray code	256, 360, 720, 1,024	Pre-wired	<b>E6F-AG5B</b>

Note: 1. For order placement add the resolution (pulses per revolution) between the part number. For example, E6F-AG5B 256 P/R.  
 2. E6F-AB5C-C applied for rotary positioner connection.

Accessories (Order Separately)

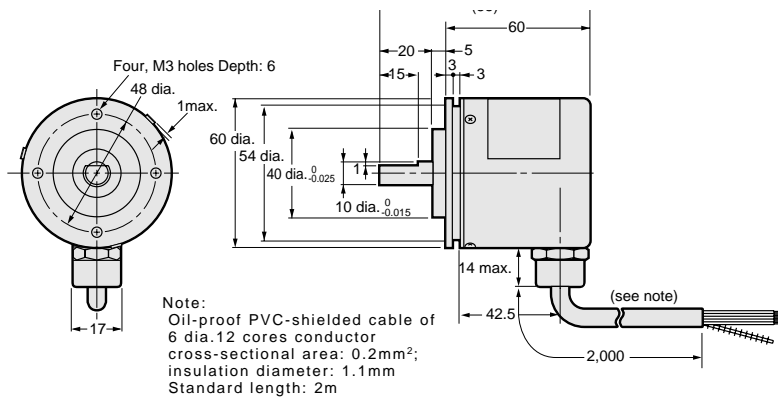
Item	Model	Remarks
Coupling	<b>E69-C10B</b>	Supplied with pre-wired models
	<b>E69-C610B</b>	Different end diameter
	<b>E69-C10M</b>	Metal construction
Mounting Bracket	<b>E69-2</b>	Supplied with the product (set of 3)
Extension Cable	<b>E69-DF5</b>	Standard stock models: 5 m, 10 m. In addition to this 15 m, 20 m and 98 m are available.

Dimensions (Unit: mm)

Sensors

**E6F-AB5C**  
**E6F-AG5B**  
**E6F-AB5B**

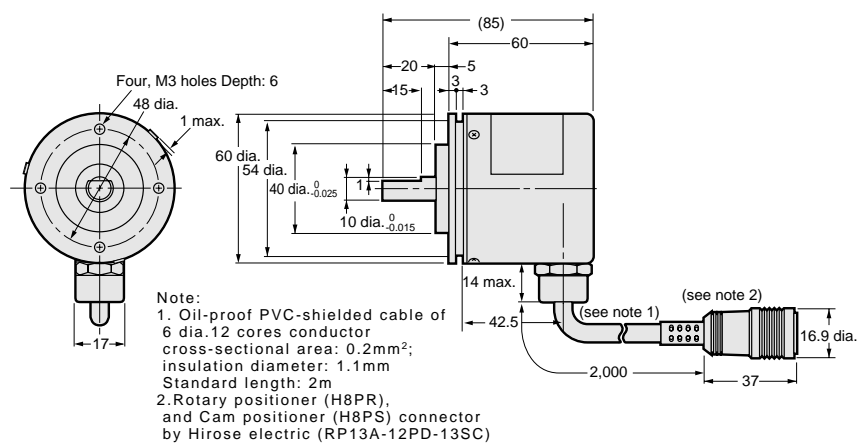
CAD file **E6F\_02**



E69-C10B is attached.

**E6F-AB5C-C**

CAD file **E6F\_01**



E69-C10B is sold separately.

Easy scale (linear encoder)

# E6L

## Best for conveyance use

- It is strong for scale fluttering because of an original optical system design (detection scale: 6 mm ±3 mm)
- Low cost original optical system design
- Suitable for positioning of conveyance use 1mm resolution
- Two types (280mm and 475mm) of detection scale length are available. Scale to be chosen as required.
- Extension of a detection stroke by two or more connection of a scale is possible.



## Ordering Information

Linear encoder

Supply voltage	Resolution	Model
24 VDC	1 mm	<b>E6L-HW4C</b>

Detection scale

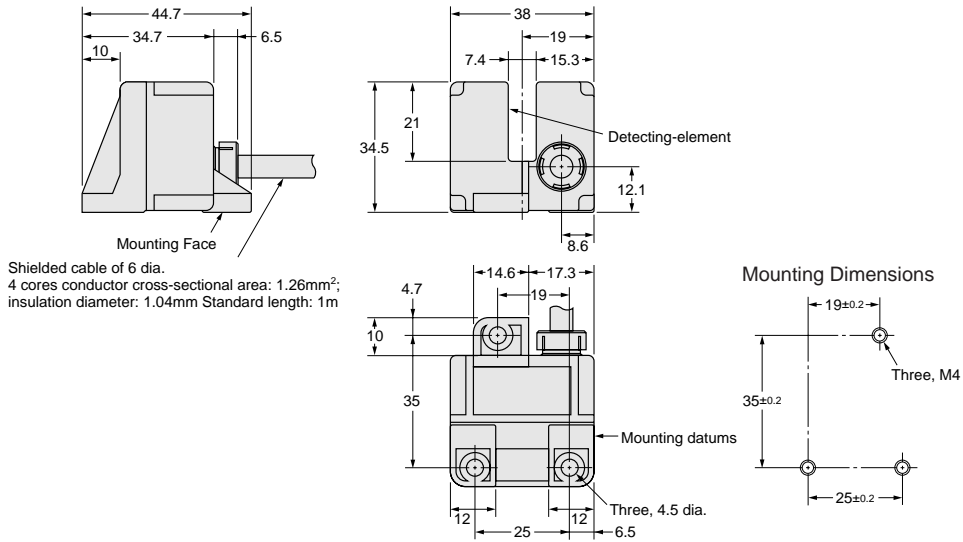
Overall length	Package	Model
280 mm	1	<b>E6L-S1M-1280</b>
	10	<b>E6L-S1M-10280</b>
475mm	1	<b>E6L-S1M-1475</b>
	10	<b>E6L-S1M-10475</b>

Dimensions (Unit: mm)

Linear encoder

E6L-HW4C

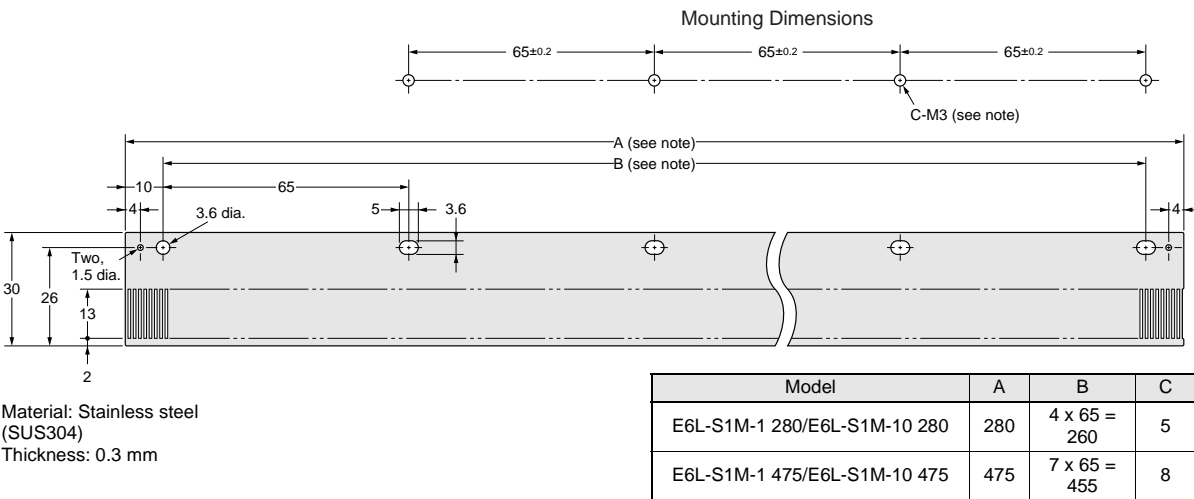
CAD file E6L\_01



Detection scale

- E6L-S1M-1280
- E6L-S1M-10280
- E6L-S1M-1475
- E6L-S1M-10475

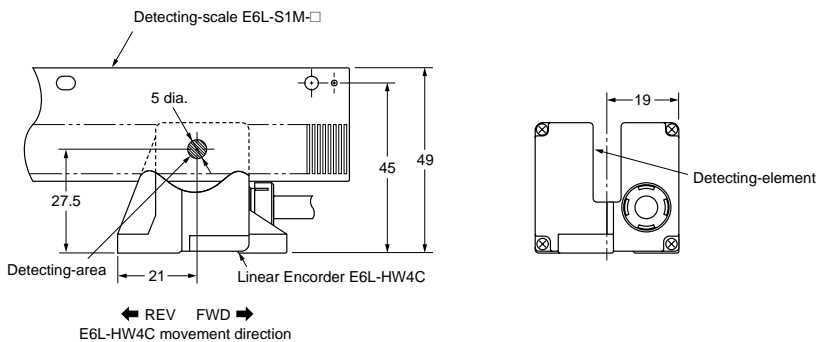
CAD file E6L\_02



Material: Stainless steel (SUS304)  
Thickness: 0.3 mm

Installation dimensions

E6L-HW4C+E6L-S1M-□



Note: If either an E6L-HW4C side nor the E6L-S1M side is used in the moving state, "FWD" and "REV" of E6L-HW4C show the direction to which E6L-HW4C performs a relative movement to E6L-S1M. (based on the scale)