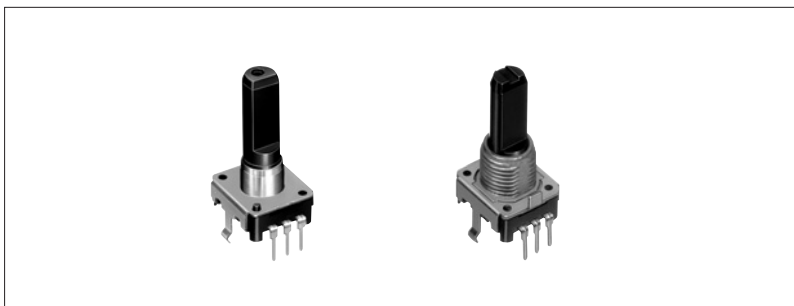


# 12mm Size Insulated Shaft Type Encoder Variety

EC12E Series

Insulated shaft type with a push-on switch and other features has a wide variety of applications.

- Power
- Push
- Slide
- Rotary
- Encoders**
- Jog Shuttle
- Telephone-hook
- Detector
- Vibration Sensors
- Dual-in-line Package Type
- Multi Control Devices
- TACT



## Features

- A 12mm sized unit achieved high resolution, 12 pulse / 12 detent and 24 pulse / 24 detent.
- Used a new structure for the shaft and bushing, and achieved a high precision, responsive system.
- Also available with a 0.5 mm push switch.
- Incremental type.

## Applications

- Controls for image and sound devices, including DVD players, mini component stereos, CD players, portable audio players and monitors
- Controls for audio mixers and electronic instruments

## Typical Specifications

Items	Specifications	
Rating	0.5mA 5V DC	
Operating life	Without detent	15,000 cycles
	Other	30,000 cycles

## Products Line

With High Collar Type

Length of operating section (mm)	Detent torque	Number of detent	Resolution	Operating direction	Operating force of switch (N)	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.	Drawing No.
15	Standard 3 to 20 mN·m	12	12	Vertical	—	—	1,200	EC12E1220407	2
20								EC12E1220406	1
25								EC12E1220405	
8.5 (Hollow shaft)								EC12E1220301	3
20	Lightest (jog) 3±2 mN·m	24	24					EC12E1240405	1
25								EC12E1240406	
8.5 (Hollow shaft)								EC12E1240301	3
15	Standard 3 to 20 mN·m	24	24					EC12E24204A2	2
17.5								EC12E24204A7	1
20								EC12E24204A8	
25								EC12E24204A9	
8.5 (Hollow shaft)								EC12E2420301	3
20	Lightest (jog) 3±2 mN·m	Without	24	EC12E24404A8	1				
25				EC12E24404A6					
8.5 (Hollow shaft)				EC12E2440301	3				
20	Light 10mN·m max.	Without	24	EC12E24104A6	1				
20	Standard 25±15 mN·m			EC12E2430404					
25				EC12E2430401					

**Products Line**

**With Bushing Type**

Length of operating section (mm)	Detent torque	Number of detent	Resolution	Operating direction	Operating force of switch (N)	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.	Drawing No.
25	Standard 3 to 20 mN·m	12	12	Vertical	—	—	950	EC12E1220813	4
20		24	24					EC12E2420802	
25								EC12E2420801	
30		EC12E2420803							
20	Standard 25±15 mN·m	Without	24	Vertical	—	—	950	EC12E2430804	4
25								EC12E2430803	
30								EC12E2460802	
30	Heavy 40±15 mN·m								

**With Switch Type**

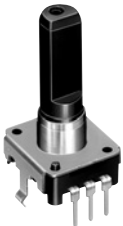
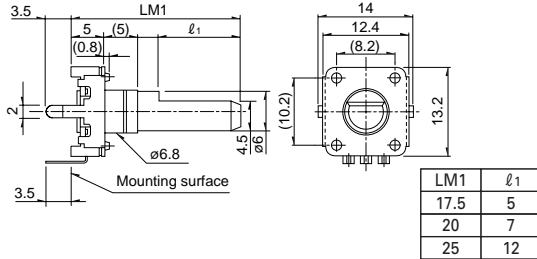
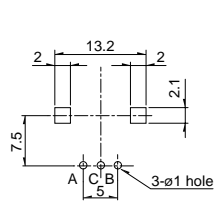

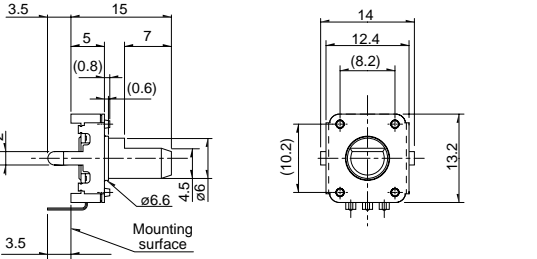
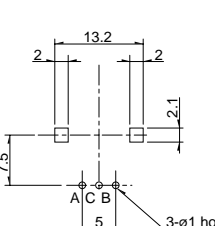
Length of operating section (mm)	Detent torque	Number of detent	Resolution	Operating direction	Operating force of switch (N)	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.	Drawing No.
20	Standard 3 to 20 mN·m	24	24	Vertical	6	0.5	1,200	EC12E24244A3	5
20					3			EC12E2424407	
25								EC12E2424404	
30					EC12E24244A4				
17.5	Lightest (jog) 3±2 mN·m			Vertical	3	0.5	1,200	EC12E2444A2	5
20								EC12E2444A0	
25								EC12E2444A3	

**Note**

No nuts or washers attached. If necessary, contact us.

**Dimensions**

Unit : mm

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting face)								
1		 <table border="1" data-bbox="973 1400 1093 1489"> <tr> <td>LM1</td> <td>l1</td> </tr> <tr> <td>17.5</td> <td>5</td> </tr> <tr> <td>20</td> <td>7</td> </tr> <tr> <td>25</td> <td>12</td> </tr> </table>	LM1	l1	17.5	5	20	7	25	12	
LM1	l1										
17.5	5										
20	7										
25	12										
2	<b>Short shaft</b> 										

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration Sensors

Dual-in-line Package Type

Multi Control Devices

TACT


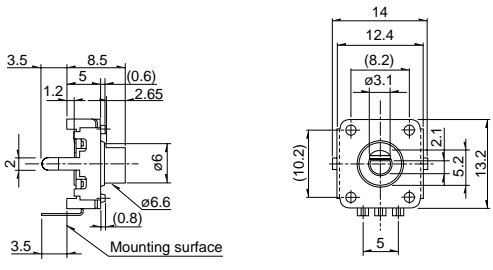
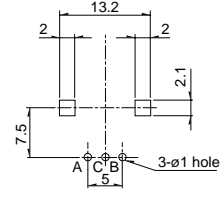

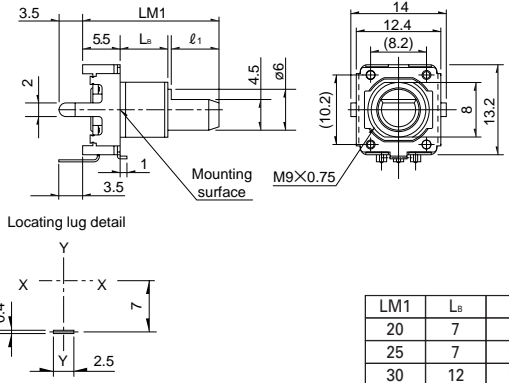
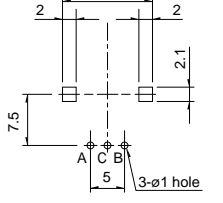

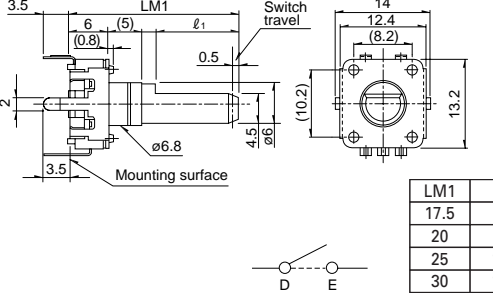
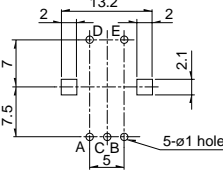
Incremental Type

Absolute Type

For other products, check varieties on P.197  
For other detailed specifications, see P.198

Dimensions

Unit : mm

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting face)												
3	Hollow shaft 														
4	With bushing 	 <table border="1" data-bbox="917 1041 1093 1131"> <thead> <tr> <th>LM1</th> <th>L<sub>b</sub></th> <th>l<sub>1</sub></th> </tr> </thead> <tbody> <tr> <td>20</td> <td>7</td> <td>7</td> </tr> <tr> <td>25</td> <td>7</td> <td>12</td> </tr> <tr> <td>30</td> <td>12</td> <td>12</td> </tr> </tbody> </table>	LM1	L <sub>b</sub>	l <sub>1</sub>	20	7	7	25	7	12	30	12	12	
LM1	L <sub>b</sub>	l <sub>1</sub>													
20	7	7													
25	7	12													
30	12	12													
5	With push-on switch 	 <table border="1" data-bbox="981 1422 1093 1534"> <thead> <tr> <th>LM1</th> <th>l<sub>1</sub></th> </tr> </thead> <tbody> <tr> <td>17.5</td> <td>5</td> </tr> <tr> <td>20</td> <td>7</td> </tr> <tr> <td>25</td> <td>12</td> </tr> <tr> <td>30</td> <td>12</td> </tr> </tbody> </table>	LM1	l <sub>1</sub>	17.5	5	20	7	25	12	30	12			
LM1	l <sub>1</sub>														
17.5	5														
20	7														
25	12														
30	12														

- Power
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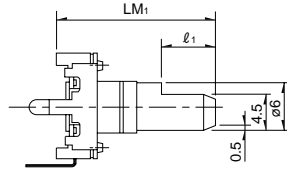
# Variety

## Shaft Dimensions

Flat Type

Unit : mm

With high collar type

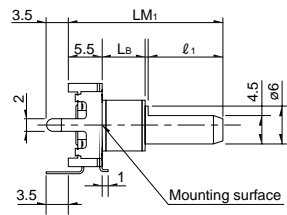


Vertical type

Detail dimensions

LM <sub>1</sub>	l <sub>1</sub>
17.5	5
20	7
22.5	7
25	12
30	12

With bushing type



Mounting surface

Detail dimensions

LM <sub>1</sub>	L <sub>B</sub>	l <sub>1</sub>
20	7	7
25	7	12
30	12	12
35	12	12

Except 12 detent.

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Incremental Type

Absolute Type

## Products Specifications

Items	12mm size insulated shaft encoders		
	Standard detent	Without detent	With switch
Operating temperature range	-10°C to +60°C		
Maximum operating current (Resistive load)	5mA		
Rating	0.5mA 5V DC		
Output signal	Output of A and B signals, proportionate to phase difference		
Output wave			
Sliding noise	<p>V1=V2=1.5V max.</p> <p>Measurement condition : Rotation speed 360°/s t : Masking time to avoid chattering</p> <p>At R = 10kΩ Chattering :3ms max. Bounce :2ms max.</p>		
Insulation resistance	50V DC 10MΩ min.		
Voltage proof	50V AC		
Rotational torque	—	25±15mN·m	—
Detent torque	3±2mN·m, 10mN·m max. 3 to 20mN·m, 40±15mN·m	—	3 to 20mN·m
Push-pull strength	80N		50N
Resistance to soldering heat	Manual soldering	300°C or less, or within 3s	
	Dip soldering	260°C±5°C, 5±1s	
	Reflow soldering	—	
Rotational life	30,000cycles	15,000cycles	30,000cycles
Cold	-40±3°C for 240h		
	85±3°C for 240h		
	40±2°C, 90 to 95%RH for 240h		

### Push-on Switch Specifications

Items	12mm size insulated shaft encoders
Switch circuit · the number of contact	Single pole and single throw (Push-on)
Travel of switch	0.5 <sup>+0.4</sup> <sub>-0.3</sub> mm
Operating force of switch	3 <sup>+1.5</sup> <sub>-1.0</sub> N or 6±3N
Rating	1mA 5V DC
Contact resistance	100m Ω for initial period; 200m Ω after rotational life
Operating life	20,000 times min.