

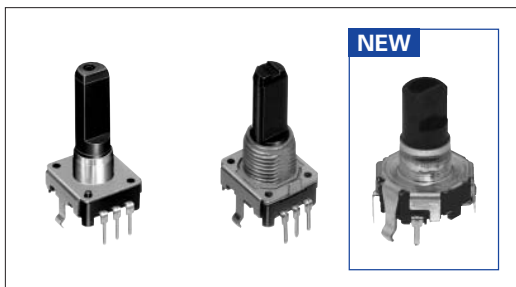
Encoder 12mm Size Insulated Shaft Type

EC12 Series



Insulated shaft type has a wide variety of applications.

- Detector
- Push
- Slide
- Rotary
- Encoders**
- Power
- Dual-in-line Package Type
- Multi Control Devices
- TACT Switch™
- Custom-Products



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.
- Incremental type.
- New circular shape with a push switch for added variety. (15 pulse/30 detent) EC12D type.

Applications

- Controls for image / sound devices, including DVD players, mini component stereos, CD players, portable audio players and monitors
- Controls for audio mixers and electronic instruments
- New type (EC12D) with push switch for volume control of car audio and navigation systems.

- Incremental Type**
- Absolute Type

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 (mN·m)	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	12	12	Vertical	—	—	1,200	EC12E1220407	2
20								EC12E1220406	1
25								EC12E1220405	1
8.5 (Hollow shaft)	Lightest (jog) 3±2							EC12E1220301	3
20								EC12E1240405	1
25								EC12E1240406	1
8.5 (Hollow shaft)	EC12E1240301	3							
15		EC12E24204A2	2						
17.5		EC12E24204A7	1						
20	Standard 3 to 20	24	24					EC12E24204A8	1
25								EC12E24204A9	1
8.5 (Hollow shaft)								EC12E2420301	3
20	Lightest (jog) 3±2			EC12E24404A8	1				
25				EC12E24404A6	1				
8.5 (Hollow shaft)				EC12E2440301	3				
20	Lightest (jog) 10 max.	Without		EC12E24104A6	1				
20	Standard 25±15			EC12E2430404					
25				EC12E2430401					

Products Line

With Bushing Type

Length of operating section (mm)	Detent torque (mN·m)	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	12	12	Vertical	—	—	950	EC12E1220813	4
20		24	24					EC12E2420802	
25								EC12E2420801	
30								EC12E2420803	
20	Standard 25±15	Without	24	EC12E2430804					
25				EC12E2430803					
30				EC12E2460802					

With Switch Type


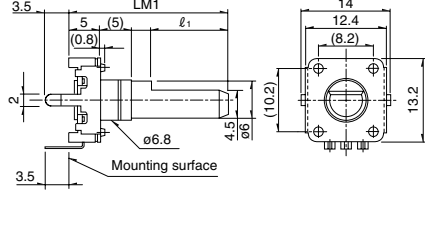
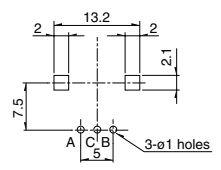

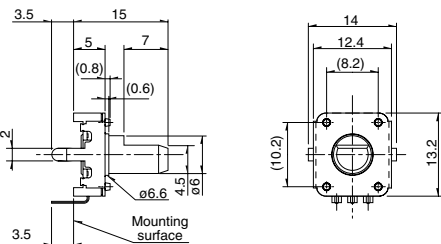
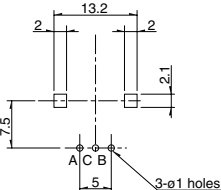
Length of operating section (mm)	Detent torque (mN·m)	Number of detent	Resolution	Operating direction	Operating force of switch (N)	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.	Drawing No.
17.5	5±3	30	15	Vertical	3	0.5	1,200	EC12D1524401	5
	10±5							EC12D1564401	

Note

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

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting face)								
1		 <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>LM1</th> <th>l1</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> </tbody> </table>	LM1	l1	17.5	5	20	7	25	12	
LM1	l1										
17.5	5										
20	7										
25	12										
2	Short shaft 										

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

Multi Control
Devices

TACT Switch™

Custom-
Products

Incremental
Type

Absolute
Type

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




Encoder

12mm Size Insulated Shaft Type | EC12 Series

Dimensions

Unit:mm

- Detector
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- Slide
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No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)												
3															
4		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>LM1</th> <th>L_b</th> <th>l₁</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 _b	l ₁	20	7	7	25	7	12	30	12	12	
LM1	L _b	l ₁													
20	7	7													
25	7	12													
30	12	12													
5															

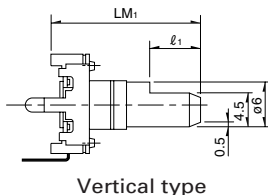
Variety

Shaft Dimensions

Flat Type

Unit:mm

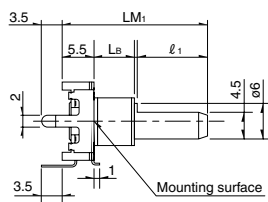
With high collar type



Detail dimensions

LM ₁	l ₁
17.5	5
20	7
22.5	7
25	12
30	12

With bushing type



Detail dimensions

LM ₁	L _B	l ₁
20	7	7
25	7	12
30	12	12
35	12	12

Except 12 detent.

Detector

Push

Slide

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Dual-in-line
Package Type

Multi Control
Devices

TACT Switch™

**Custom-
Products**

**Incremental
Type**

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Products Specifications

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Items	EC12E		EC12D	
	Standard detent	Without detent	With switch	
Operating temperature range	-40°C to +70°C			
Maximum operating current (Resistive load)	5mA			
Electrical performance	Rating	0.5mA 5V DC		
	Output signal	Output of A and B signals, proportionate to phase difference		
	Output wave			
	Sliding noise	$V_1 = V_2 = 1.5V$ max. Measurement condition : Rotation speed 360°/s t : Masking time to avoid chattering		
	Insulation resistance	10MΩ min. 250V DC		
	Voltage proof	300V AC 1min, or 360V AC 1sec.		
	At R = 10kΩ	Chattering : 3ms max. Bounce : 2ms max.		
Mechanical performance	Rotational torque	—	25±15mN·m, 10mN·m max., 40±15mN·m	
	Detent torque	3±2mN·m, 3 to 20mN·m	—	
	Push-pull strength	80N	100N	
	Resistance to soldering heat	Manual soldering	350°C or less, or within 3s	
		Dip soldering	260°C±5°C, 3±1s	
Reflow soldering		—		
Durability	Rotational life	30,000 cycles	15,000 cycles 30,000 cycles	
Environmental performance	Cold	-40±3°C for 240h±10h		
	Dry heat	85±3°C for 240h±10h		
	Damp heat	60±2°C, 90 to 95%RH for 240h±10h		

Push-on Switch Specifications

Items	EC12D
Switch circuit · the number of contact	Single pole and single throw (Push-on)
Travel of switch	0.5±0.3mm
Operating force of switch	3 ^{+1.5} _{-1.0} N
Rating	1mA 5V DC
Contact resistance	100mΩ max.
Operating life	30,000 times min.