

# 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

Incremental  
Type  
Absolute  
Type



## 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.

## 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	
8.5 (Hollow shaft)								EC12E1220301	3
20								EC12E1240405	1
25								EC12E1240406	
8.5 (Hollow shaft)								EC12E1240301	3
15								EC12E24204A2	2
17.5	Standard 3 to 20	24	24	Vertical	—	—	1,200	EC12E24204A7	
20								EC12E24204A8	1
25								EC12E24204A9	
8.5 (Hollow shaft)								EC12E2420301	3
20								EC12E24404A8	1
25								EC12E24404A6	
8.5 (Hollow shaft)								EC12E2440301	3
20	Lightest (jog) 10 max.	Without	24	Vertical	—	—	1,200	EC12E24104A6	
20	Standard 25±15							EC12E2430404	1
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		Without	24					EC12E2430804					
25	Standard 25±15							EC12E2430803					
30	Heavy 40±15							EC12E2460802					

### With Switch Type

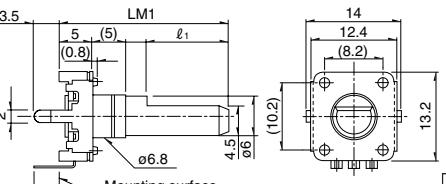
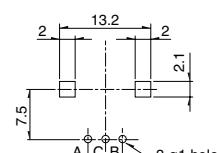
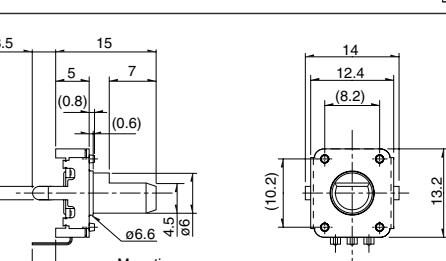
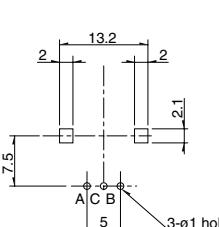
Length of operating section (mm)	Detent torque (mN·m)	Number of detent	Resolution	Operating direction	Operating force of switch (N)	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.	Drawing No.
17.5	5±3	30	15	Vertical	3	0.5	1,200	EC12D1524401	5
	10±5							EC12D1564401	

**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" data-bbox="976 1226 1091 1313"> <tr><td>LM1</td><td><math>l_1</math></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	$l_1$	17.5	5	20	7	25	12	
LM1	$l_1$										
17.5	5										
20	7										
25	12										
2											

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

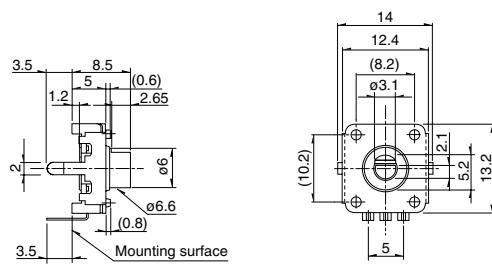
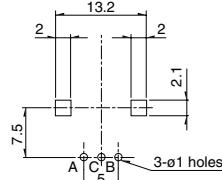
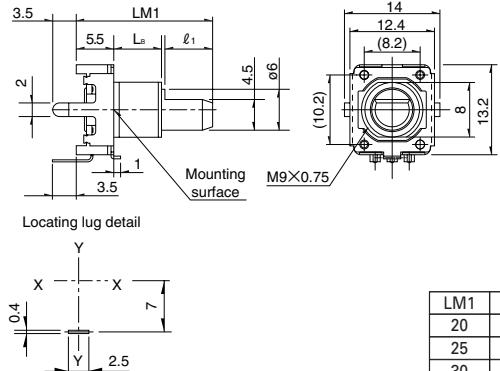
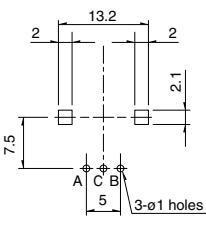
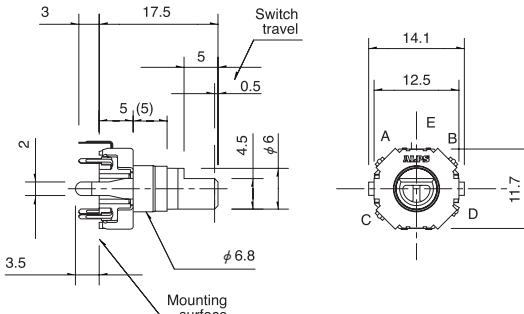
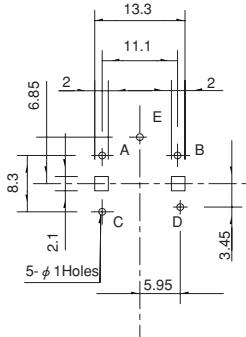
## Dimensions

Unit:mm

Detector  
Push  
Slide  
Rotary  
Encoders

Power  
Dual-in-line  
Package Type  
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Devices  
TACT Switch™  
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No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)												
3	<b>Hollow shaft</b> 														
4	<b>With bushing</b> 	 <table border="1"> <tr> <th>LM1</th> <th>L<sub>B</sub></th> <th>ℓ<sub>1</sub></th> </tr> <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> </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	<b>With switch type</b> 														

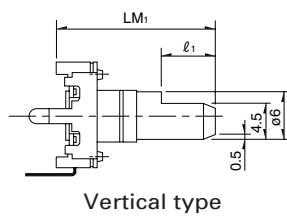
## Variety

### Shaft Dimensions

Flat Type

Unit:mm

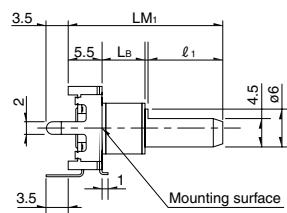
With high collar type



#### 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



#### 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.

Detector

Push

Slide

Rotary

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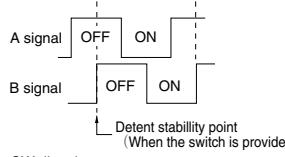
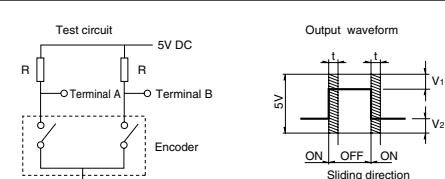
TACT Switch™

Custom-  
Products

Incremental  
Type

Absolute  
Type

## Products Specifications

Detector	Items	EC12E		EC12D
		Standard detent	Without detent	With switch
Push	Operating temperature range	-40°C to +70°C		
Slide	Maximum operating current (Resistive load)	5mA		
Rotary	Rating	0.5mA 5V DC		
Encoders	Output signal	Output of A and B signals, proportionate to phase difference		
Power	Output wave			
Dual-in-line Package Type	Electrical performance	V <sub>1</sub> =V <sub>2</sub> =1.5V max.		
Multi Control Devices		 <p>Measurement condition : Rotation speed 360°/s    t: Masking time to avoid chattering</p>		
TACT Switch™	Sliding noise	At R = 10kΩ Chattering : 3ms max. Bounce : 2ms max.		
Custom-Products		Insulation resistance		10MΩ min. 250V DC
Incremental Type	Voltage proof	300V AC 1min, or 360V AC 1sec.		
Absolute Type				
Mechanical performance	Rotational torque	—		25±15mN·m, 10mN·m max., 40±15mN·m
	Detent torque	3±2mN·m, 3 to 20mN·m		5±3mN·m, 10 to 5mN·m
	Push-pull strength	80N		100N
	Resistance to soldering heat	350°C or less, or within 3s		
		260°C±5°C, 3±1s		
		—		
Durability	Rotational life	30,000 cycles		15,000 cycles
Environmental performance	Cold	—		—
	Dry heat	—		—
	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 <sup>+1.5</sup> <sub>-1.0</sub> N
Rating	1mA 5V DC
Contact resistance	100mΩ max.
Operating life	30,000 times min.