

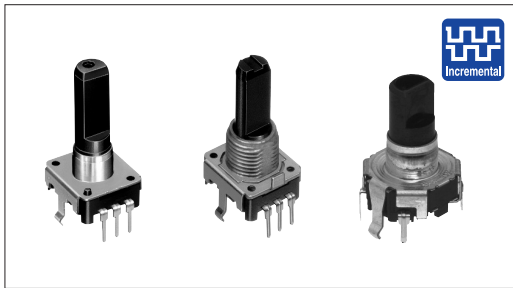
Encoder 12mm Size Insulated Shaft Type

EC12 Series

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THE ONLINE DISTRIBUTOR OF ELECTRONIC COMPONENTS



Insulated shaft type with a wide variety of applications.



Typical Specifications

Items		Specifications
Rating		0.5mA 5V DC
Operating life	Without detent	15,000cycles 30,000cycles (Lightest (jog))
	With detent	30,000cycles
Operating temperature range		EC12E: -10°C to +70°C EC12D: -40°C to +85°C

Product Line

Actuator length (mm)	Detent torque (mN·m)	Number of detent	Number of pulse	Operating direction	Minimum order unit (pcs.)	Product No.	Drawing No.		
15	Standard 3 to 20	12	12	Vertical	2,400	EC12E1220407	2		
20						EC12E1220406	1		
25						EC12E1220405	1		
8.5 (Hollow shaft)	Lightest (jog) 3±2				3,000	EC12E1220301	3		
20						2,400	EC12E1240405	1	
25							EC12E1240406	1	
8.5 (Hollow shaft)	Standard 3 to 20	3,000	EC12E1240301		3				
15			2,400		EC12E24204A2	2			
17.5					EC12E24204A7	1			
20	EC12E24204A8								
25	EC12E24204A9								
8.5 (Hollow shaft)	Lightest (jog) 3±2	3,000	EC12E2420301		3				
20			2,400	EC12E24404A8	1				
25				EC12E24404A6					
8.5 (Hollow shaft)	Standard 3 to 20	3,000	EC12E2440301	3					
20			2,400	EC12E24104A6	1				
25				EC12E2430404					
25	EC12E2430401								
20	Lightest (jog) 10 max.	Without	24	Vertical	2,400	EC12E24104A6	1		
25	Standard 25±15					EC12E2430404			
25	Standard 3 to 20	12	12		1,900	EC12E1220813	4		
20						24		24	EC12E2420802
25									EC12E2420801
30	EC12E2420803								
20	Standard 25±15	Without	24		EC12E2430804				
25					EC12E2430803				
30					EC12E2460802				
30	Heavy 40±15	Without	24		Vertical	2,400	EC12E24104A6	1	
25	Standard 25±15						EC12E2430404		
25	Standard 3 to 20	12	12			1,900	EC12E1220813	4	
20				24			24		EC12E2420802
25									EC12E2420801
30	EC12E2420803								
20	Standard 25±15	Without	24	EC12E2430804					
25				EC12E2430803					
30				EC12E2460802					

With Bushing Type

Actuator length (mm)	Detent torque (mN·m)	Number of detent	Number of pulse	Operating direction	Minimum order unit (pcs.)	Product No.	Drawing No.			
25	Standard 3 to 20	24	24	Vertical	1,900	EC12E1220813	4			
20						EC12E2420802				
25						EC12E2420801				
30	EC12E2420803									
20	Standard 25±15	Without	24		EC12E2430804					
25					EC12E2430803					
30					EC12E2460802					
30	Heavy 40±15	Without	24		Vertical	2,400	EC12E24104A6	1		
25	Standard 25±15						EC12E2430404			
25	Standard 3 to 20	12	12			1,900	EC12E1220813	4		
20							24		24	EC12E2420802
25										EC12E2420801
30	EC12E2420803									
20	Standard 25±15	Without	24	EC12E2430804						
25				EC12E2430803						
30				EC12E2460802						

Refer to P.220 for product varieties.

Product Line

With Switch Type

Detector	Actuator length (mm)	Detent torque (mN·m)	Number of detent	Number of pulse	Operating direction	Operating force of switch (N)	Travel of push-on switch (mm)	Minimum order unit (pcs.)	Product No.	Drawing No.
Push	17.5	5±3	30	15	Vertical	3	0.5	2,560	EC12D1524403	5
		10±5							EC12D1564402	
		5±3				EC12D1524406				
		10±5				EC12D1564404				

Rotary

Packing Specifications

Tray

Product No.	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case /export packing	
EC12E□□□03	3,000	3,000	369 × 525 × 204
EC12E□□□04	2,400	2,400	
EC12E□□□08	1,900	1,900	
EC12D	1,280	2,560	360 × 540 × 290

Encoders

Power

Dual-in-line
Package Type

TACT Switch™


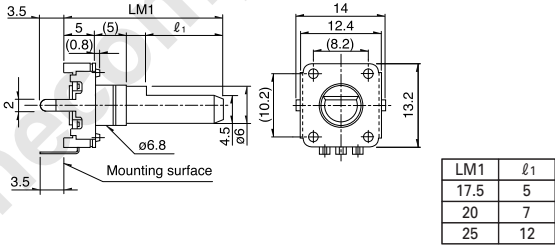
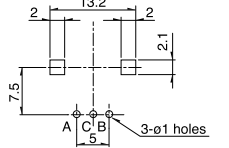

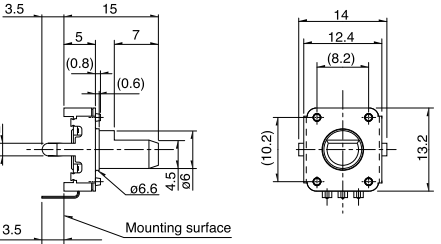
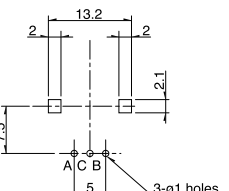

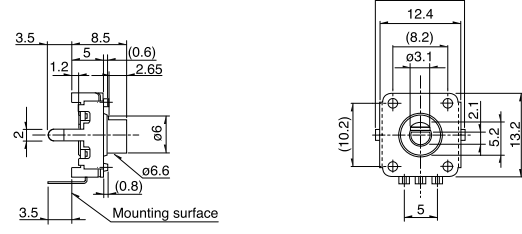
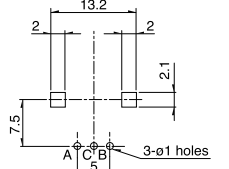
Custom-
Products

Note

1. Nuts and washers are not included. If required, please contact us.
2. Please place purchase orders per minimum order unit N (integer).

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting face)								
1		 <table border="1" data-bbox="982 1260 1096 1344"> <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											
3											

Metal Shaft

Insulated Shaft


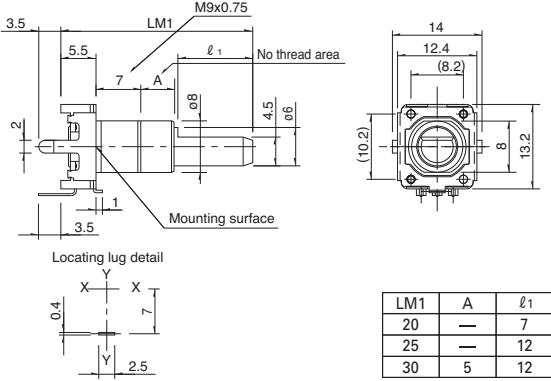
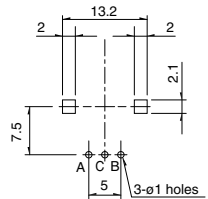


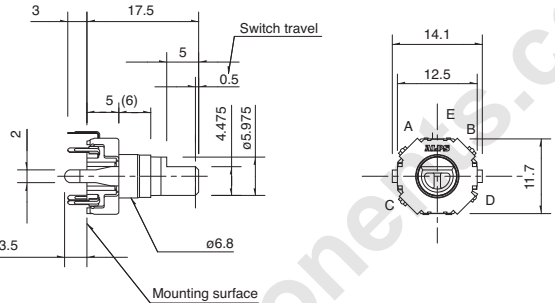
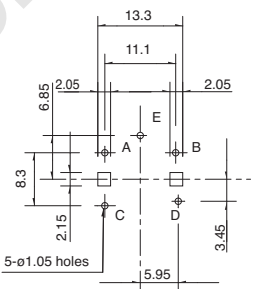
Hollow Shaft

Ring Type

Refer to P.220 for product varieties.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)												
4		 <table border="1"> <tr> <th>LM1</th> <th>A</th> <th>l₁</th> </tr> <tr> <td>20</td> <td>—</td> <td>7</td> </tr> <tr> <td>25</td> <td>—</td> <td>12</td> </tr> <tr> <td>30</td> <td>5</td> <td>12</td> </tr> </table>	LM1	A	l ₁	20	—	7	25	—	12	30	5	12	
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20	—	7													
25	—	12													
30	5	12													
5	 														

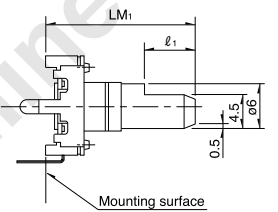
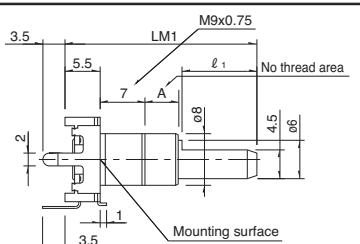
- Detector
- Push
- Slide
- Rotary
- Encoders**
- Power
- Dual-in-line Package Type
- TACT Switch™
- Custom-Products

Product Varieties

Shaft Dimensions

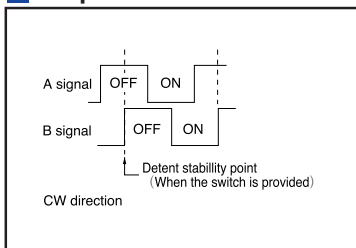
Flat Type

Unit:mm

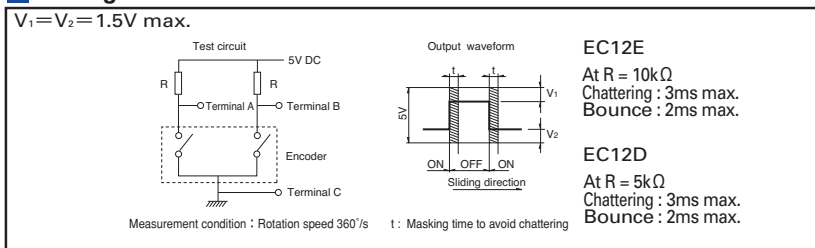
<p>With high collar type</p> 	<p>Detailed dimensions</p> <table border="1"> <thead> <tr> <th>LM₁</th> <th>l₁</th> </tr> </thead> <tbody> <tr> <td>17.5</td> <td>5</td> </tr> <tr> <td>20</td> <td>7</td> </tr> <tr> <td>22.5</td> <td>7</td> </tr> <tr> <td>25</td> <td>12</td> </tr> <tr> <td>30</td> <td>12</td> </tr> </tbody> </table>	LM ₁	l ₁	17.5	5	20	7	22.5	7	25	12	30	12			
LM ₁	l ₁															
17.5	5															
20	7															
22.5	7															
25	12															
30	12															
<p>With bushing type</p> 	<p>Detailed dimensions</p> <table border="1"> <thead> <tr> <th>LM₁</th> <th>A</th> <th>l₁</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>—</td> <td>7</td> </tr> <tr> <td>25</td> <td>—</td> <td>12</td> </tr> <tr> <td>30</td> <td>5</td> <td>12</td> </tr> <tr> <td>35</td> <td>5</td> <td>12</td> </tr> </tbody> </table> <p>Excluding the 12 detent type</p>	LM ₁	A	l ₁	20	—	7	25	—	12	30	5	12	35	5	12
LM ₁	A	l ₁														
20	—	7														
25	—	12														
30	5	12														
35	5	12														

- Metal Shaft
- Insulated Shaft**
- Hollow Shaft
- Ring Type

Output wave






Sliding noise



List of Varieties

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

- Metal Shaft
- Insulated Shaft
- Hollow Shaft
- Ring Type

Type	Insulated shaft			
	12mm size		Insulated shaft	
	EC12E	EC12D	EC18A	
Series	Standard detent	With out detent	With push-on switch	
Photo				
Output	Incremental		Absolute type	
Outline specifications	Shaft types	Single-shaft		
	Operating direction	Vertical		
	Number of pulse/ Number of detent	12/12 24/24 24/Without	15/30	—
	Push switch (Travel mm)	Without	With (0.5)	Without
	Changeover angle	—		30/22.5
Dimensions (mm)	W	12.4	12.5	20
	D	13.2	11.7	18
	H	5		8.75
Soldering	Manual soldering	350°C max. 3s max.		350°C max.
	Dip soldering	260±5°C, 3±1s		260±5°C, 5±1s
Operating temperature range	-10°C to +70°C		-40°C to +85°C	-20°C to +60°C
Automotive use	—		○	—
Electrical performance	Maximum operating current (Resistive load)	10mA		—
	Initial contact resistance	—		10 Ω max.
	Output signal	Output of A and B signals, proportionate to phase difference		—
	Output phase	Please see P.220		—
	Sliding noise	Please see P.220		—
	Insulation resistance	10MΩ min. 50V DC	100MΩ min. 250V DC	10MΩ min. 250V DC
	Voltage proof	50V AC for 1minute	300V AC for 1minute or 360V AC for 1s	50V AC for 1minute
Mechanical performance	Rotational torque	10mN·m max. 25±15m N·m 40±15mN·m	—	60±20mN·m
	Terminal strength	—		3N for 10s
	Detent torque	3±2mN·m 3 to 20mN·m	—	5±3mN·m 10±5mN·m
	Push-pull strength	80N	100N	Push 100N / Pull 50N
	Vibration	—		10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively
Environmental performance	Cold	-40±3°C for 10h		-40±3°C for 240h
	Dry heat	85±3°C for 10h		70±3°C for 240h
	Damp heat	60±2°C, 90 to 95% RH for 10h		60±2°C, 90 to 95% for 240h
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Push-on Switch Specifications

Items	EC12D	
Contact arrangement	Single pole and single throw (Push-on)	
Travel (mm)	0.5±0.3	
Operating force (N)	3 ^{+1.5} ₋₁	6 ^{+2.5} ₋₂
Rating	1mA 5V DC	
Contact resistance	100mΩ for initial period; 200mΩ after operating life	
Operating life	30,000 times min.	

- Encoders Attached Parts217, 229
- Encoders Cautions244, 245

Notes

1. ※ The operating temperature range for automotive applications can be raised upon request. Please contact us for details.
2. ○marks in "Available for automotive use" indicate that some of the series products can work at the operating temperature range from -40°C to +85°C.