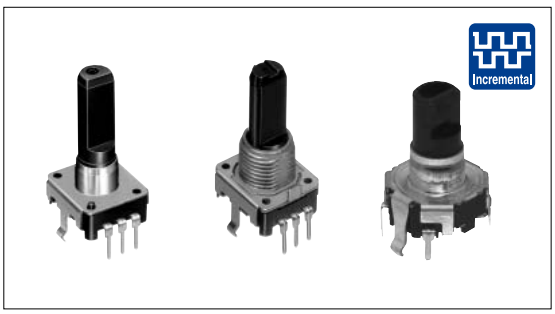
12mm Size Insulated Shaft Type

EC12 Series

RoHS compliant

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

Product Line

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

Product Line

With Bushing Type

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.
25	Standard 3 to 20	12	12	Vertical	—	—	950	EC12E1220813	4
20		24	24					EC12E2420802	
25								EC12E2420801	
30								EC12E2420803	
20	Standard 25±15	Without						EC12E2430804	
25								EC12E2430803	
30	Heavy 40±15							EC12E2460802	

With Switch Type

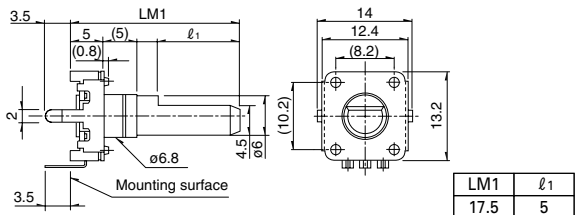
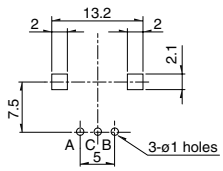
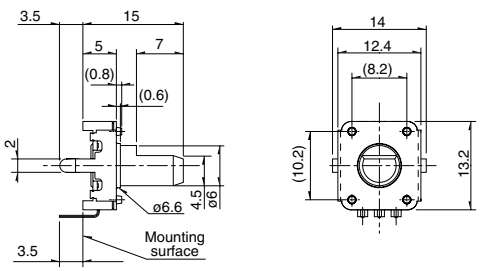
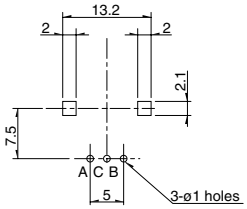
Actuator length (mm)	Detent torque (mN•m)	Number of detent	Number of pulse	Operating direction	Operating force of switch (N)	Travel of push-on switch (mm)	Minimum order unit (pcs.)	Product No.	Drawing No.
17.5	5±3	30	15	Vertical	3	0.5	1,280	EC12D1524403	5
	10±5							EC12D1564402	
	5±3				6			EC12D1524406	
	10±5							EC12D1564404	

Note

Nuts and washers are not included. If required, please contact us.

Dimensions

Unit:mm

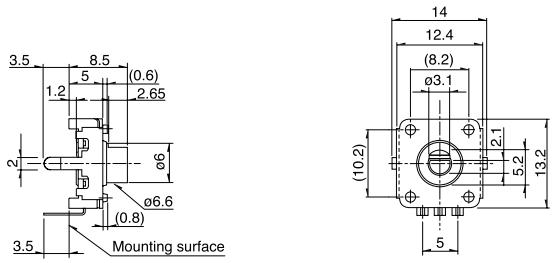
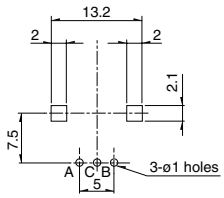
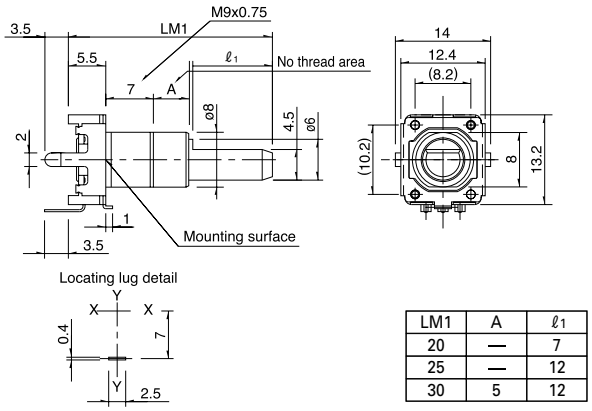
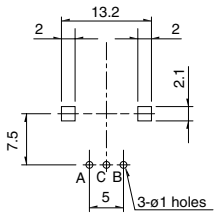
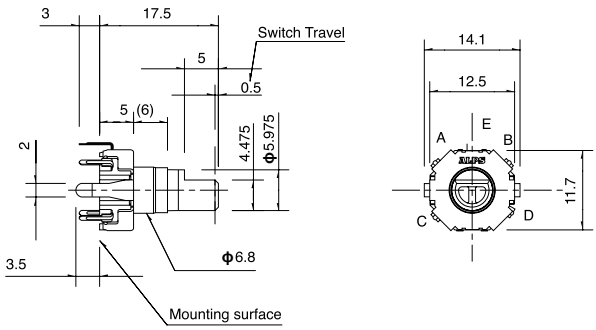
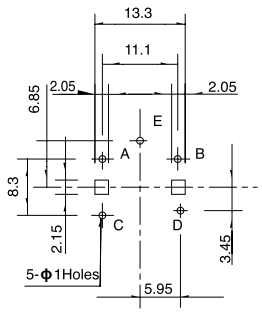
No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting face)
1	High collar type 		
2	Short shaft 		

LM1	ℓ1
17.5	5
20	7
25	12

Refer to **P.194** for product varieties.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
3	Hollow shaft 		
4	With bushing 	 <table><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>	
5	With push-on switch type 		

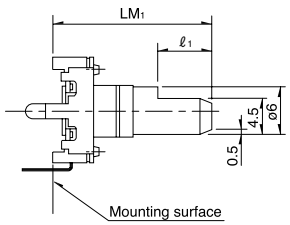
Product Varieties

Shaft Dimensions

Flat Type

Unit:mm

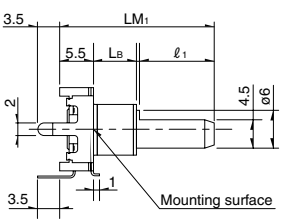
With high collar type



Detailed dimensions

LM1	ℓ1
17.5	5
20	7
22.5	7
25	12
30	12

With bushing type

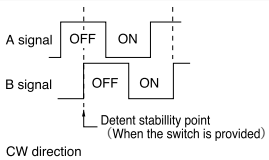
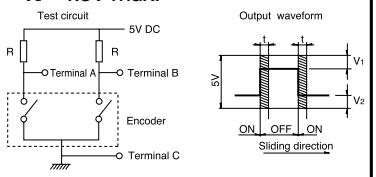


Detailed dimensions

LM1	LB	ℓ1
20	7	7
25	7	12
30	12	12
35	12	12

Excluding the 12 detent type

List of Varieties

Type		Metal shaft				Insulated shaft	
		11mm size			20mm size	12mm size	
Series		EC11G	EC11J	EC11K	EC20A/RK203	EC12E	EC12D
						Standard detent / Without detent	With push-on switch
Photo							
Output		Incremental					
Outline specifications	Shaft types	Single-shaft					
	Operating direction	Vertical					
	Number of pulse/ Number of detent	15/30	9/18 15/30		18/18	12/12 24/24	15/30
	Push switch (Travel mm)	Without With (1.5)	Without With (0.5, 1.5)		Without With (1.5)	Without	With (0.5)
	Optional functions	———					
	Changeover angle	———					
Dimensions (mm)	W	11.7			2.0	12.4	12.5
	D	12	14.2		19.2	13.2	11.7
	H	4.5			10	5	
Soldering	Manual soldering	350℃ max. 3s max.					
	Dip soldering	260±5℃, 5±1s	———	260±5℃, 5±1s		260℃±5℃, 3±1s	
	Reflow soldering	———	Please see P.189	———			
Operating temperature range		–30℃ to +85℃	–40℃ to +85℃		–30℃ to +80℃	–10℃ to +70℃	–40℃ to +85℃
Maximum operating current (Resistive load)		10mA			1mA	5mA	10mA
Electrical performance	Output signal	Output of A and B signals, proportionate to phase difference					
	Output wave	Please see P.191					
	Sliding noise	Please see P.191				$V_1=V_2=1.5V$ max.  Measurement condition : Rotation speed 360°/s t : Masking time to avoid chattering	
						At R = 10kΩ Chattering : 3ms max. Bounce : 2ms max.	At R = 5kΩ Chattering : 3ms max. Bounce : 2ms max.
	Insulation resistance	100MΩ min. 250V DC			10MΩ min. 50V DC		100MΩ min. 250V DC
	Voltage proof	300V AC for 1minute			50V AC for 1minute		300V AC for 1minute or 360V AC for 1s.
Mechanical performance	Rotational torque	7 +3/4 mN•m	———			10mN•m max. 25±15mN•m 40±15mN•m	———
	Detent torque	10±7mN•m	12±5mN•m		40±20mN•m	3±2mN•m 3 to 20mN•m	5±3mN•m 10±5mN•m
	Push-pull strength	100N				80N	100N
Environmental performance	Cold	–40±3℃ for 240h				–40±3℃ for 240h±10h	
	Dry heat	85±3℃ for 240h				85±3℃ for 240h±10h	
	Damp heat	60±2℃, 90 to 95% RH for 240h				60±2℃, 90 to 95%RH for 240h±10h	
Push-on Switch Specifications	Circuit • number of contacts	Single pole and single throw (Push-on)				———	Single pole and single throw (Push-on)
	Travel (mm)	0.5±0.3	1.5±0.5	0.5±0.3 / 1.5±0.5 / 0.5±0.3	1.5±0.5		0.5±0.3
	Operating force (N)	6 +2.5 −2	4±2	5±2 / 4±2 / 5±2	4±2		3 +1.5 −1.0 / 6 +2.5 −2
	Rating	0.5A 16V DC (1mA 16V DC min. ratings)		0.1A 5V DC	0.5A 16V DC (1mA 16V DC min. ratings)		1mA 5V DC
	Contact esistance	100mΩ for initial period; 200mΩ after operating life					100mΩ for initial period; 200mΩ after operating life
	Operating life	20,000times min.	1,000,000 times min.	500,000 times min. / 1,000,000 times min. / 100,000 times min.	20,000times min.		30,000times min.
Page		181	187		190	192	