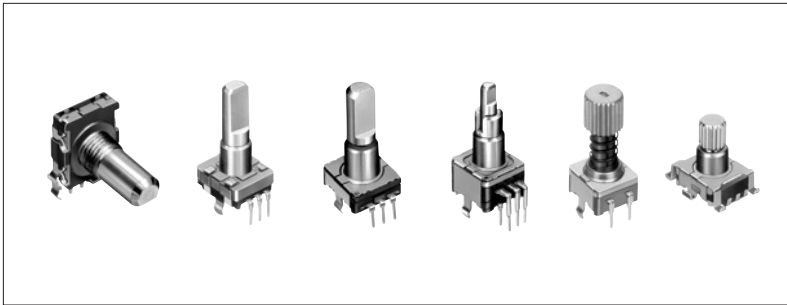


11mm Size Metal Shaft Type Encoder Variety

EC11 Series

Compact and highly reliable type available in many varieties.



ELV, RoHS Applicable※



Car Use

Features

- High-precision sliding type encoder.
- Compact and highly reliable.
- 4.5mm-high body with a 1.5mm-travel push switch is available.
- A wide variety lineup is provided to meet all user needs.
- Incremental type.

Applications

- Level controls for car audio and car navigation system. Various controls for devices in automotive.
- Controls for image/sound devices, including DVD players, mini component stereos, CD players and portable audio players.

Typical Specifications

Items	Specifications
Rating (max.) (Resistive load)	10mA 5V DC
Operating life	15,000 cycles

Products Line

Style	Operating section	Length of operating section (mm)	torque	Number of detent	Resolution	Operating direction	Push-on switch	Travel of push-on switch (mm)	Minimum packing uni (pcs.)	Products No.	Drawing No.				
Standard		20	12±7 mN · m	30	15	Vertical	Without	—	1,000	EC11B15203AD	1				
				20	20					EC11B20203A3					
				30	15					EC11B15243BB					
				20	20					EC11B15243BC					
				30	15					EC11B2024304					
				20	20					EC11B15243BD					
			16±7 mN · m	20	30	15	20	Horizontal	With	0.5	700	EC11B15243BE	3		
												30		15	EC11B2024305
												20		20	EC11B15202AA
												30		15	EC11B15242AE
												20		20	EC11B15242AF
												30		15	EC11B15242AF
Low-profile	Flat	20	10±7 mN · m	18	9	Vertical	Without	—	1,200	EC11E09204A4	7				
				30	15					EC11E15204A3					
				Without	18					EC11E1530401					
				36	18					EC11E1820402					
				Without	18					EC11E1830401					
				18	9					EC11E09244AW					
				30	15					EC11E15244C0					
				Without	15					EC11E153440D					
				36	18					EC11E18244AE					
				Without	18					EC11E1834404					
				18	9					EC11E09244AQ					
				30	15					EC11E15244B2					
			Without	15	EC11E1534408										
			36	18	EC11E18244A5										
			Without	18	EC11E1834403										
			10±7 mN · m	20	30	15	20	Vertical	With	0.5	1,200	EC11E15244B2	8		
												30		15	EC11E15244B2
												Without		15	EC11E1534408
												36		18	EC11E18244A5
												Without		18	EC11E1834403
												18		9	EC11E09244AQ
												30		15	EC11E15244B2
												Without		15	EC11E1534408
												36		18	EC11E18244A5
Without	18	EC11E1834403													
18	9	EC11E09244AQ													
30	15	EC11E15244B2													

Note

※ This series meet Pb-free restrictions ELV and RoHS directives.

ELV : End-of-Life Vehicle RoHS : Restriction of the use of certain Hazardous Substances in electrical and electronic equipment

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Incremental Type

Absolute Type


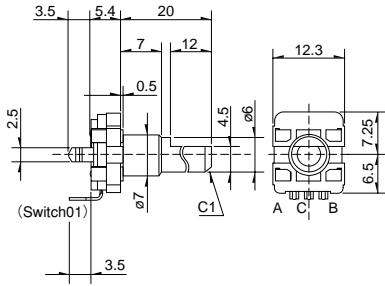
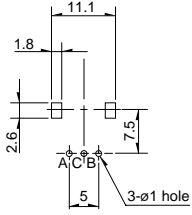

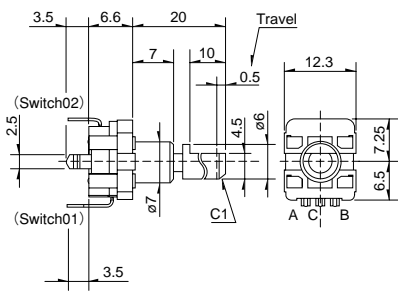
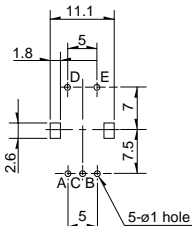
Products Line

Style	Operating section	Length of operating section (mm)	torque	Number of detent	Resolution	Operating direction	Push-on switch	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.	Drawing No.
Power	18-tooth serration	9.5	$6 \pm 4 \text{ mN} \cdot \text{m}$	30	15	Vertical	Without	—	1,600	EC11E1540501	9
							With	0.5		EC11E1544505	10
Push	20-tooth serration	25	$10 \pm 7 \text{ mN} \cdot \text{m}$	—	Self-return switch		Without	—	1,000	EC11E152T409	11
		26.4					With	8	800	EC11E152U402	12
Slide	Flat	20	3 to 30 $\text{mN} \cdot \text{m}$	—	Self-return switch		Without	—	1,200	EC1110120001	13
Rotary							With	0.5		EC1110120103	14
							With	1.5		EC1110120201	
Encoders	Flat	Inner-shaft=25	$10 \pm 7 \text{ mN} \cdot \text{m}$	30	15		—	—	700	EC11EBB24C03	15
	Slotted	Outer-shaft=15					—	—			
	Flat	Inner-shaft=25					With	1.5		EC11E0B2LB01	16
	Slotted	Outer-shaft=15					3 to 30 $\text{mN} \cdot \text{m}$	—		Self-return switch	—

Note


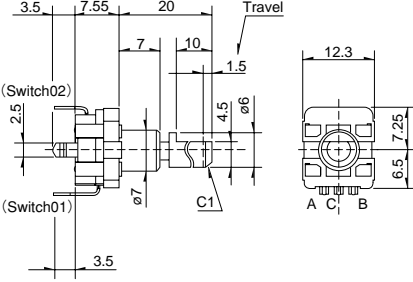
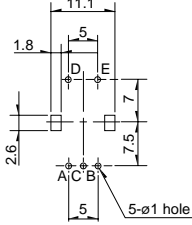
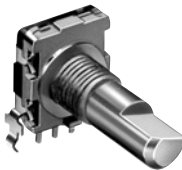
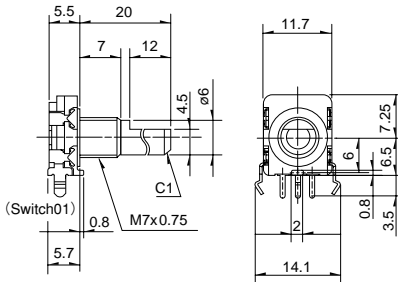
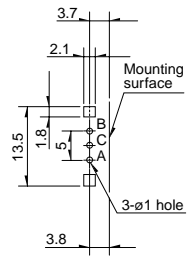

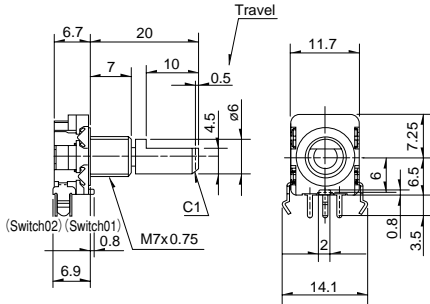
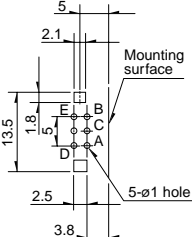

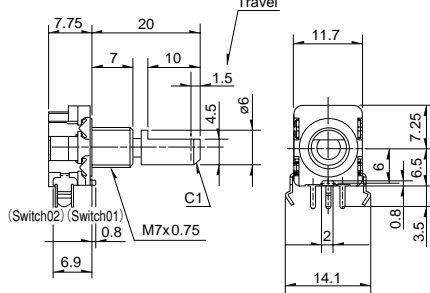
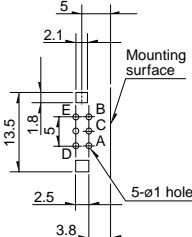
We have many other products in stock. Please contact our sales department if you are interested.

Dimensions

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting face)
1	Standard	 	
2	Standard with push-on switch (travel 0.5mm)	 	

For other products, check varieties on P.181
 For other detailed specifications, see P.184, 185
 For attached parts, see P.220

Dimensions

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting side)
3	<p>Standard with push-on switch (travel 1.5mm)</p> 		
4	<p>Standard</p> 		
5	<p>Standard with push-on switch (travel 0.5mm)</p> 		
6	<p>Standard with push-on switch (travel 1.5mm)</p> 		

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/Tilt Sensors

Dual-in-line Package Type

Multi Control Devices


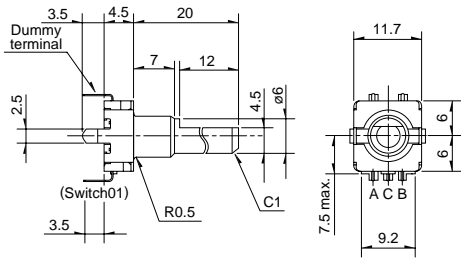
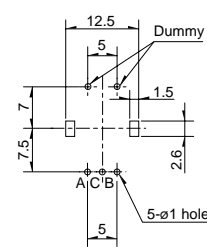

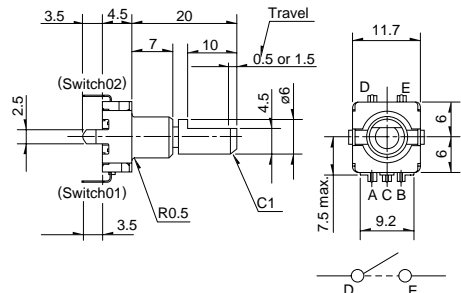
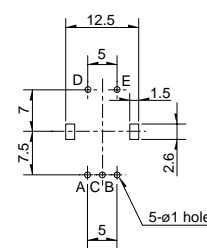
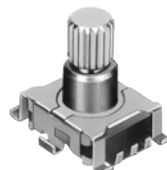
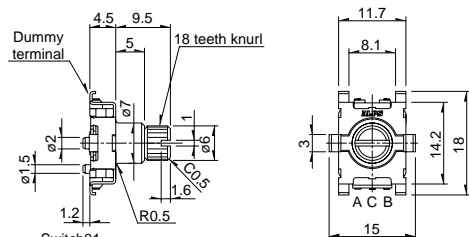
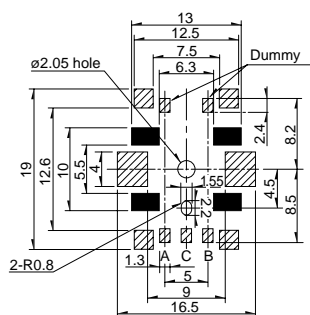
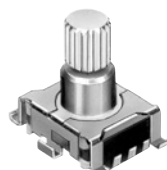
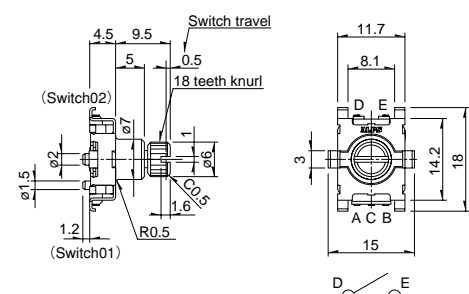
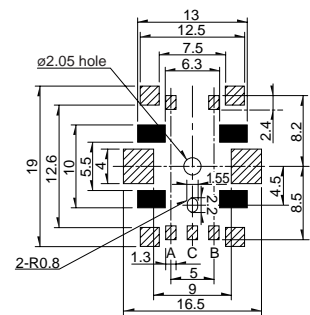
TACT

Incremental Type

Absolute Type


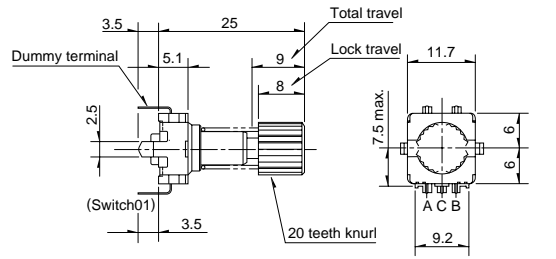
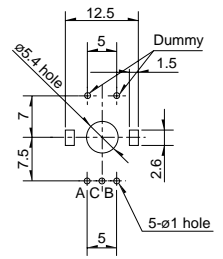

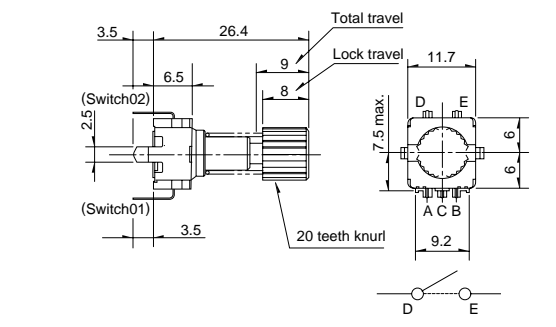
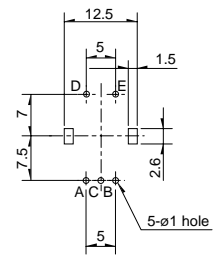

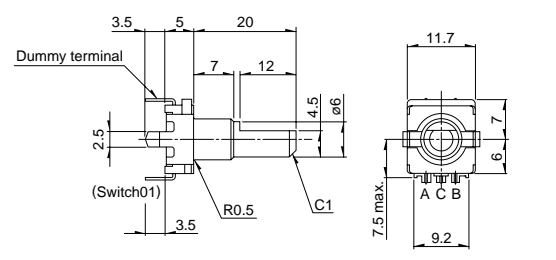
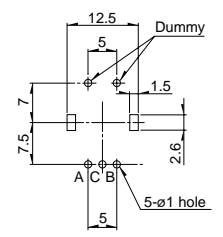

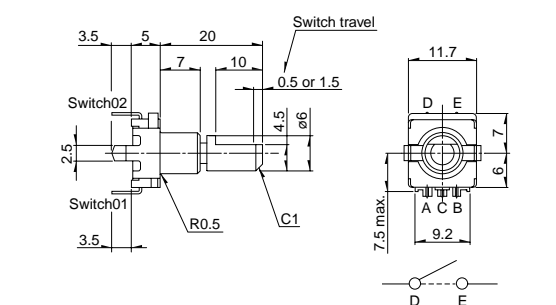
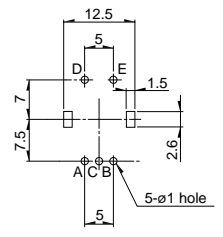
Dimensions

Unit : mm

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting side)
7	<p>Low-profile type</p> 		
8	<p>Low-profile type with push-on switch (travel 0.5/1.5mm)</p> 		
9	<p>Low-profile type and reflow applicable parts</p> 		 <p>PC board Mounting detail A slant line part shows the solder land Black part: Do not solder and no wiring for electrical contact</p>
10	<p>Low-profile type and reflow applicable parts with push-on switch (travel 0.5mm)</p> 		 <p>PC board Mounting detail A slant line part shows the solder land Black part: Do not solder and no wiring for electrical contact</p>

Dimensions


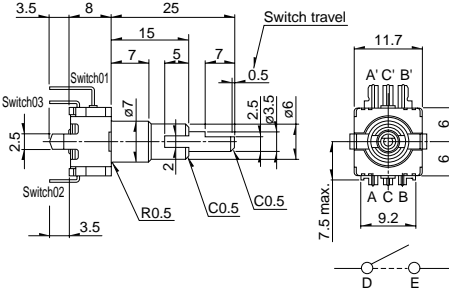
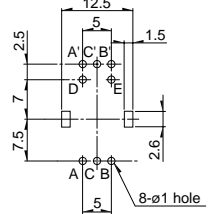
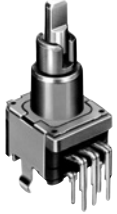
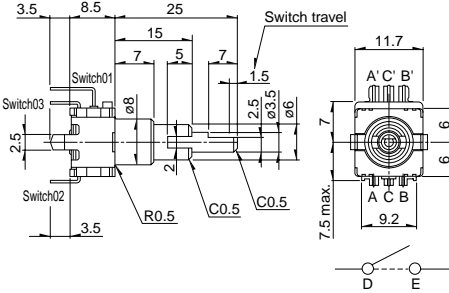
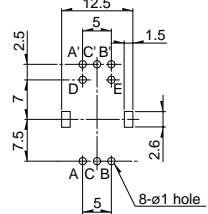
Unit : mm

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting side)
11	<p>Low-profile type with push-lock mechanism</p> 		
12	<p>Low-profile type with push-lock switch</p> 		
13	<p>Low-profile type with self-return switch</p> 		
14	<p>Low-profile type with self-return switch (travel 0.5mm / 1.5mm)</p> 		

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

Dimensions

Unit : mm

No.	Model	Style	PC board mounting hole dimensions (Viewed from mounting side)
15	<p>Low-profile dual-shafts type Inside shaft: encoder Outside shaft: encoder</p> 		
16	<p>Low-profile dual-shafts type Inside shaft: encoder Outside shaft : self-return switch</p> 		

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

- Incremental Type
- Absolute Type

Variety

Standard Dimensions of Shaft

1. Single-shaft Type

1) Serration Type

Unit : mm

Style (Shaft diameter : $\phi 6$)

● Detail dimensions

L ₁	L _B	l ₁	l ₂	S ₁
15	5	6	1	7
15	7	4	1	5
20	7	6	1	7
25	7	10	2	11

※ Except EC111

Style (Shaft diameter : $\phi 9$)
Applicable to models with a push lock mechanism only.

2) Flat Type

Unit : mm

Style (Shaft diameter : $\phi 6$)

● Detail dimensions

L ₁	L _B	l
15	5	7
15	7	5 (6)
20	7	10 (12)
25	7	12

※ Except EC111

Dimensions in parentheses () are given for the type without a push-on switch.

3) Slotted Type

Unit : mm

Style (Shaft diameter : $\phi 6$)

● Detail dimensions

L ₁	L _B
15	7
20	7
25	7

2. Standard Dimensions of Dual-shaft Type

1) Flat Type

Unit : mm

Style (Inner-shaft : $\phi 3.5$ Outer-shaft : $\phi 6$)

● Detail dimensions

L ₁	L ₂	L _B	l ₁	l ₂
20	10	5	7	4
25	15	7	7	5
30	20	7	7	5

Notes

- The parts in the shaft type are applied to the specifications for the product line described in p. 175 and 176.
- Additional switches not included in the above list are also available. Contact us for details.

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

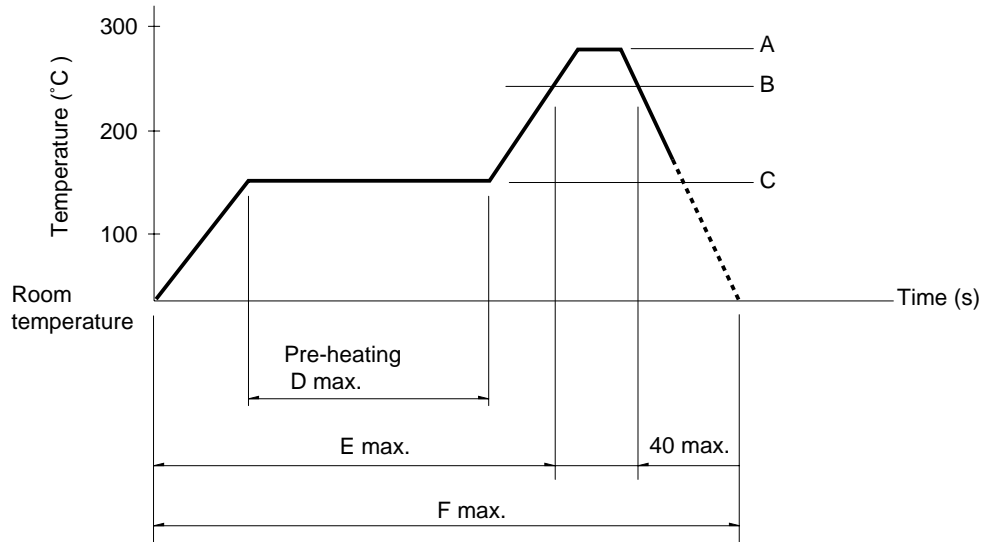
Incremental Type

Absolute Type

Soldering Condition

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple 0.1 to 0.2 φ CA (K) or CC (T) at soldering portion (copper foil surface). A heat resisting tape should be used for fixed measurement.
3. Temperature profile



Series(Reflow type)	A (°C) 10s max.	B (°C)	C (°C)	D (s)	E (s)	F (s)
EC11E154□5	240±10	200	150	120	—	240

Notes

1. The condition mentioned above is the temperature on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, depending on the PC board's material, size, thickness, etc. Care should be taken to prevent the switch's surface temperature from exceeding 260°C.
2. Soldering conditions differ depending on reflow soldering machines. You are requested to verify the soldering conditions thoroughly beforehand.

- Power
- Push
- Slide
- Rotary
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- TACT

- Incremental Type
- Absolute Type