

Encoder 11mm Size Metal Shaft Long Life Type

EC11J/EC11K Series



Compact and highly reliable type available in many varieties.



Typical Specifications

Items	Specifications
Rating	10mA 5V DC
Operating life	100,000cycles 500,000cycles 1,000,000cycles

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

Incremental
Type

Absolute
Type

Product Line

Structure	Actuator configuration	Actuator length (mm)	Torque (mN·m)	Number of detent	Number of pulse	Push-on switch	Travel of push-on switch(mm)	Operating life (cycles)	Minimum order unit (pcs.)	Product No.	Drawing No.
Vertical	Flat	20	12 ± 5	18	9	Without	——	100,000	1,000	EC11K0920401	1
				30	15					EC11K1520401	
				18	9	With	0.5			EC11K0924401	2
				30	15		EC11K1524402				
				18	9		EC11K0925401				
				30	15		EC11K1525401				
				18	9	Without	——	500,000		EC11K0920601	1
				30	15					EC11K1520601	
				18	9	With	0.5			EC11K0924601	2
				30	15		EC11K1524601				
				18	9		EC11K0925601				
				30	15		EC11K1525601				
				18	9	Without	——	1,000,000		EC11K0920801	1
				30	15					EC11K1520801	
				18	9	With	0.5			EC11K0924801	2
				30	15		EC11K1524801				
				18	9		EC11K0925801				
				30	15		EC11K1525801				
Reflow	Flat	20	12 ± 5	18	9	Without	——	100,000	300	EC11J0920402	3
				30	15					EC11J1520402	
				18	9	With	0.5			EC11J0924411	4
				30	15		EC11J1524413				
				18	9		EC11J0925403				
				30	15		EC11J1525402				
				18	9	Without	——	500,000		EC11J0920602	3
				30	15					EC11J1520602	
				18	9	With	0.5			EC11J0924602	4
				30	15		EC11J1524604				
				18	9		EC11J0925602				
				30	15		EC11J1525602				
				18	9	Without	——	1,000,000		EC11J0920802	3
				30	15					EC11J1520803	
				18	9	With	0.5			EC11J0924802	4
				30	15		EC11J1524802				
				18	9		EC11J0925802				
				30	15		EC11J1525802				

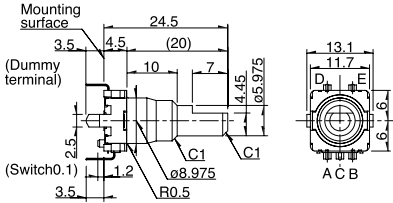
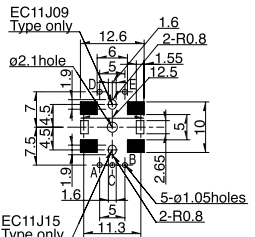
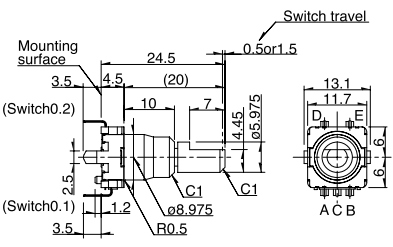
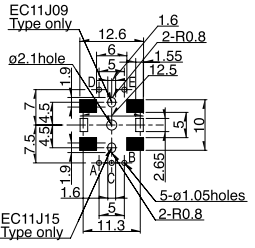
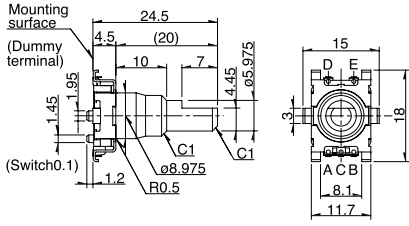
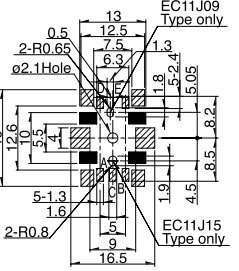
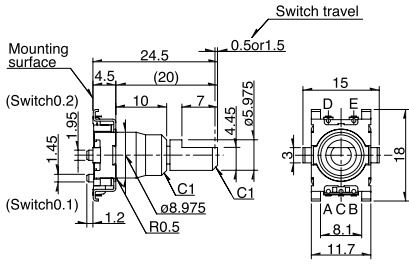
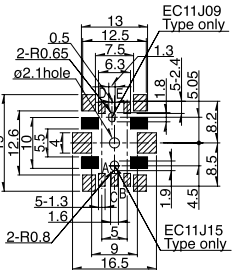
Note

The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

Encoder 11mm Size Metal Shaft Long Life Type EC11J/EC11K Series

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1	Vertical 		 EC11J09 Type only EC11J15 Type only PC board mounting detail A slant line part shows the solder land black part: Do not solder and wiring for electrical contact
2	Vertical with push-on switch (travel 0.5mm/1.5mm) 		 EC11J09 Type only EC11J15 Type only PC board mounting detail A slant line part shows the solder land black part: Do not solder and wiring for electrical contact
3	Reflow applicable parts 		 EC11J09 Type only EC11J15 Type only PC board mounting detail A slant line part shows the solder land black part: Do not solder and wiring for electrical contact
4	Reflow applicable parts with push-on switch (travel 0.5mm/1.5mm) 		 EC11J09 Type only EC11J15 Type only PC board mounting detail A slant line part shows the solder land black part: Do not solder and wiring for electrical contact

Product Varieties

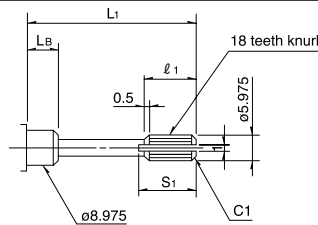
Shaft Dimensions

1. Single-shaft Type

1) Knurled Type

Unit:mm

Configuration (Shaft diameter : ϕ 5.975)



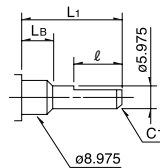
- **Detailed dimensions**

L ₁	L _B	ℓ_1	S ₁
15	5	6	7
20	7	6	7

2) Flat Type

Unit:mm

Configuration (Shaft diameter : ϕ 5.975)



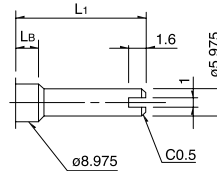
- **Detailed dimensions**

L_1	L_B	ℓ
15	7	5
20	10	7

3) Slotted Type

Unit:mm

Configuration (Shaft diameter : ϕ 5.975)



- **Detailed dimensions**

L₁	L_B
15	7
20	10

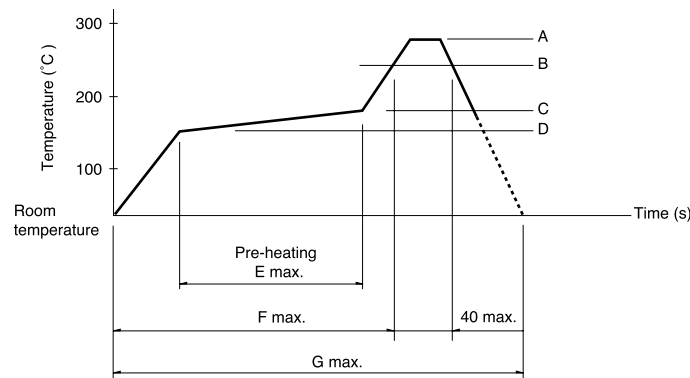
Notes

1. The highlighted figures in shaft types refer to Product Specifications in P.187.
2. Products other than those listed in the above chart are also available. Please contact us for details

Soldering Conditions

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

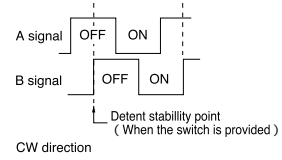
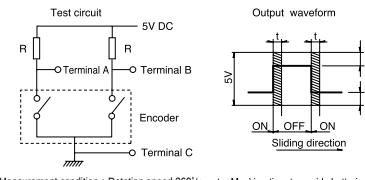


Series(Reflow type)	A() 3s max.	B()	C()	D()	E(s)	F(s)	G(s)
EC11J	260	230	180	150	120	—	240

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. The above-stated conditions shall also apply to switch surface temperatures.
2. Soldering conditions differ depending on reflow soldering machines. You are requested to verify the soldering conditions thoroughly beforehand.

List of Varieties

Type		Metal shaft				Insulated shaft			
		11mm size			20mm size	12mm size			
Series		EC11G	EC11J	EC11K	EC20A/RK203	EC12E Standard detent Without detent	EC12D 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	$7 \pm \frac{3}{4} \text{ mN} \cdot \text{m}$				$10 \text{ mN} \cdot \text{m}$ max. $25 \pm 15 \text{ mN} \cdot \text{m}$ $40 \pm 15 \text{ mN} \cdot \text{m}$			
	Detent torque	$10 \pm 7 \text{ mN} \cdot \text{m}$		$12 \pm 5 \text{ mN} \cdot \text{m}$		$40 \pm 20 \text{ mN} \cdot \text{m}$	$3 \pm 2 \text{ mN} \cdot \text{m}$ 3 to 20mN·m	$5 \pm 3 \text{ mN} \cdot \text{m}$ $10 \pm 5 \text{ mN} \cdot \text{m}$	
	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		
	Operating force(N)	$6 \pm \frac{2.5}{2}$	4 ± 2	5 ± 2	4 ± 2	5 ± 2	4 ± 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.	
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Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
ProductsIncremental
TypeAbsolute
Type