

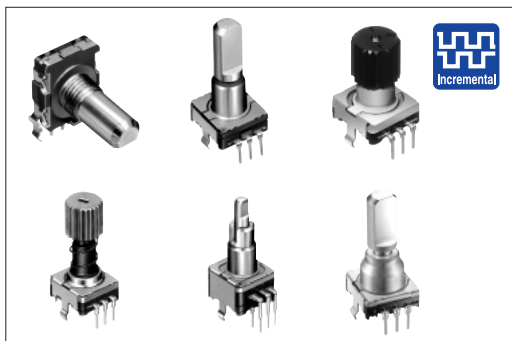
Encoder 11mm Size Metal Shaft Type

EC11 Series



Compact and highly reliable type available in many varieties.

- Detector
- Push
- Slide
- Rotary
- Encoders
- Power



Typical Specifications

Items	Specifications
Rating	10mA 5V DC
Operating life	15,000cycles EC11EH:30,000cycles EC11K:100,000cycles 500,000cycles 1,000,000cycles
Operating temperature range	-40°C to +85°C

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

Incremental
Type

Absolute
Type



Automotive
Use

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.					
Horizontal			12±7	30	15	Without	—	15,000	700	EC11B15202AA	1					
						With	0.5			EC11B15242AE	2					
							1.5			EC11B15242AF	3					
Vertical	Flat	20	10±7	18	9	Without	—	15,000	1,200	EC11E09204A4	4					
				30	15					EC11E15204A3						
				7 ⁺³ / ₋₄	Without					EC11E1530401						
				10±7	36					EC11E1820402						
				7 ⁺³ / ₋₄	Without					EC11E1830401						
				10±7	18					9		EC11E09244BS	5			
			30	15	EC11E15244G1											
			7 ⁺³ / ₋₄	Without	EC11E153440D											
			10±7	36	18	EC11E18244AU										
			7 ⁺³ / ₋₄	Without	EC11E183440C											
			10±7	18	9	EC11E09244AQ										
			Vertical	Flat	20	12±5	18			9	Without	—	100,000	1,000	EC11K0920401	6
							30			15					EC11K1520401	
							With			18	9	0.5			7	EC11K0924401
										30	15					EC11K1524402
										18	9					EC11K0925401
										30	15					EC11K1525401
							Without			18	9	—			6	EC11K0920601
30	15	EC11K1520601														
18	9	EC11K0924601						7								
30	15	EC11K1524601														
With	18	9					1.5		EC11K0925601							
	30	15							EC11K1525601							
	18	9	—	6	EC11K0920801											
	30	15			EC11K1520801											
Without	18	9			0.5	7	EC11K0924801									
	30	15					EC11K1524801									
	18	9	EC11K0925801													
	30	15	EC11K1525801													

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.
Push lock	20-tooth serration	25	10±7	30	15	Without	—	15,000	800	EC11E152T409	8
		26.4				With	8			EC11E152U402	9
Self-return switch	Flat	15	3 to 30	Without	Self-return switch	Without	—	15,000	1,200	EC1110120005	10
		20				10±7	ABC switch			With	0.5
1.5	EC1110120201										
ABC switch	Flat	20	10±7	18	ABC switch	With	0.5	30,000	1,200	EC11EH124403	12
										30	
Dual-shaft	Slotted	Outer-shaft=15	3 to 30	Without	Self-return switch	Without	—	15,000	700	EC11EBB24C03	13
										18	
Dual-shaft	Flat	Inner-shaft=25	3 to 30	Without	Self-return switch	Without	—	15,000	700	EC11E0B2LB01	14
										30	

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

Packing Specifications

Tray

Product No.	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case /export packing	
EC11B	700	1,400	370×520×201
EC11E09/15/18/EC11EH	1,200	2,400	363×507×230
EC11K	1,000	2,000	540×360×250
EC11E152T/U	800	1,600	363×507×230
EC111	1,200	2,400	363×507×216
EC11E0B/BB	700	1,400	

Incremental Type
Absolute Type

Notes


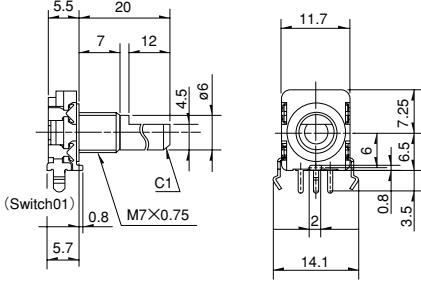
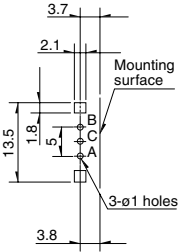
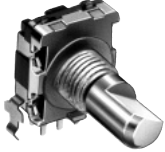
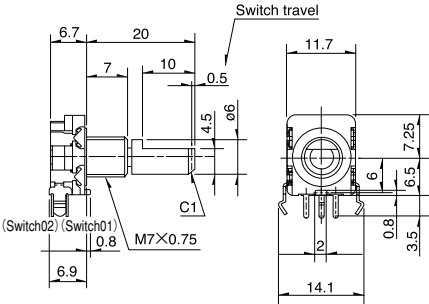
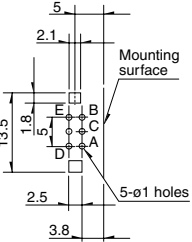

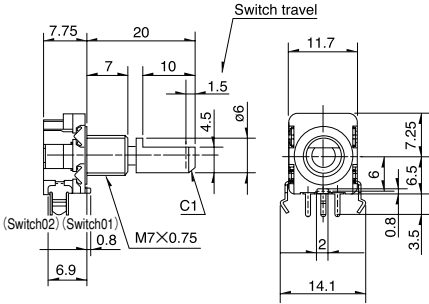
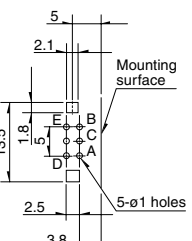

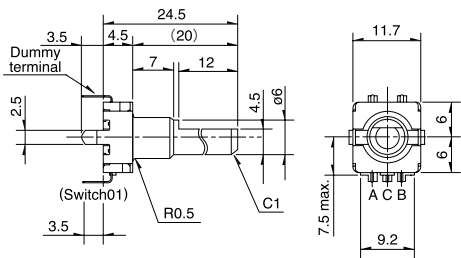
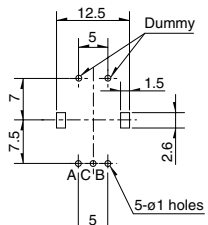

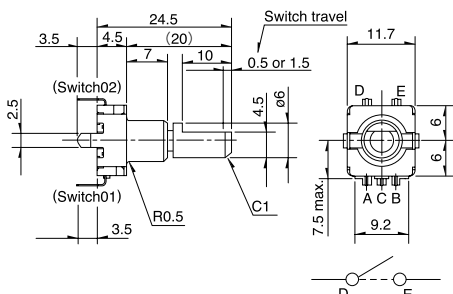
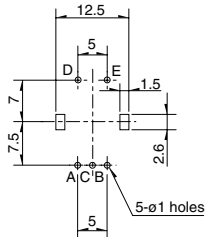
1. Products other than those listed in the above chart are also available. Please contact us for details.
2. Please place purchase orders per minimum order unit N (integer).



Refer to P.214 for product varieties.
Refer to P.220 for product specifications.
Refer to P.220 for attached parts.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1			
2			
3			
4			
5			

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

Incremental
Type


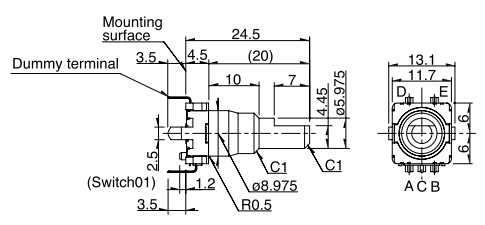
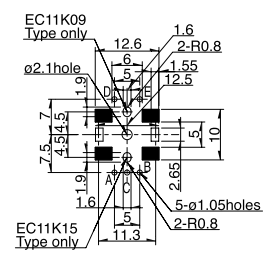

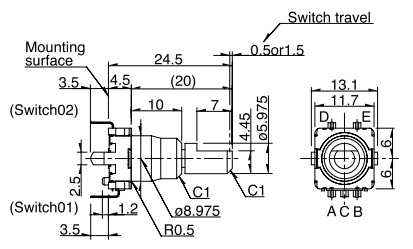
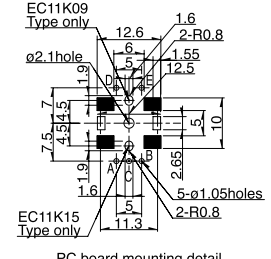

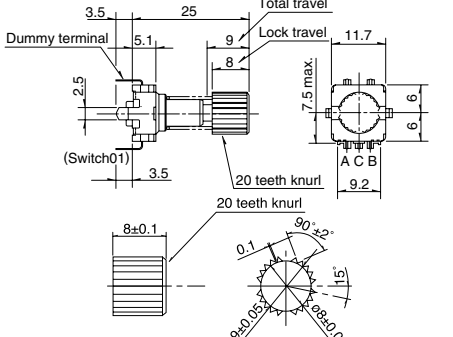
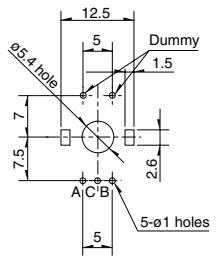

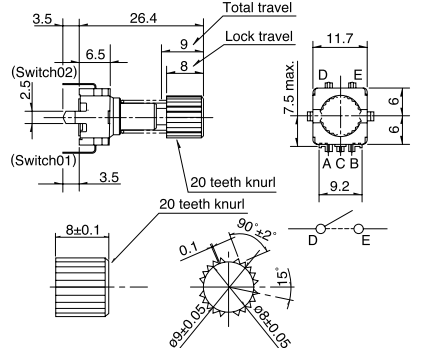
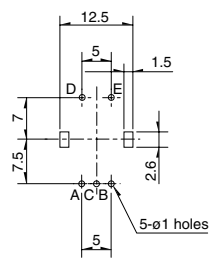

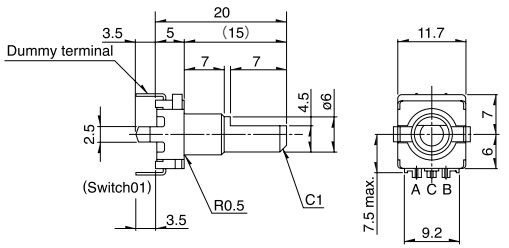
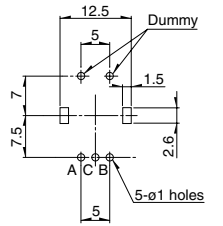
Absolute
Type



Automotive
Use

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
6			 <p>EC11K09 Type only EC11K15 Type only</p> <p>PC board mounting detail A slant line part shows the solder land black part: Do not solder and wiring for electrical contact</p>
7			 <p>EC11K09 Type only EC11K15 Type only</p> <p>PC board mounting detail A slant line part shows the solder land black part: Do not solder and wiring for electrical contact</p>
8			 <p>PC board mounting detail 5-ø1 holes</p>
9			 <p>PC board mounting detail 5-ø1 holes</p>
10			 <p>PC board mounting detail 5-ø1 holes</p>

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line

Package Type

TACT Switch™

Custom-Products

Incremental Type

Absolute Type


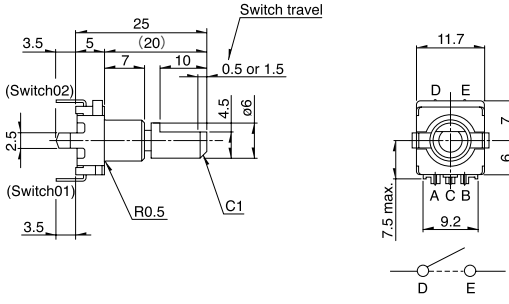
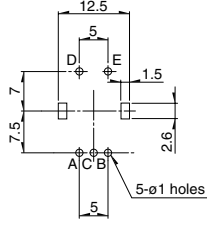
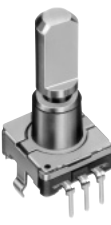
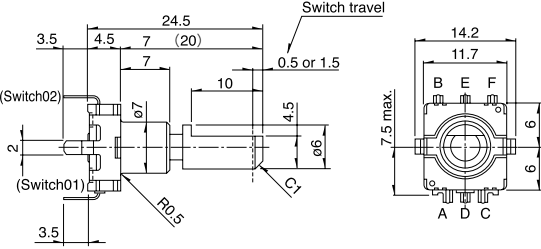
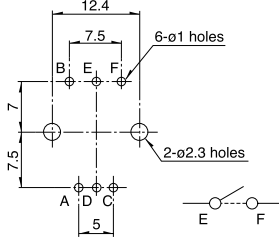
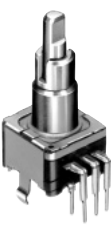
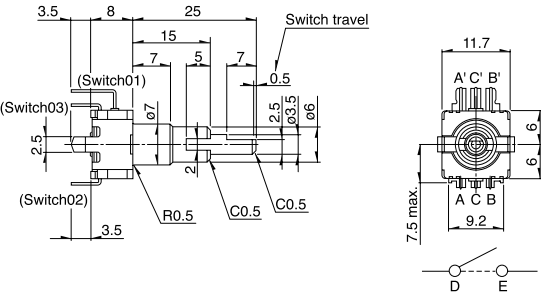
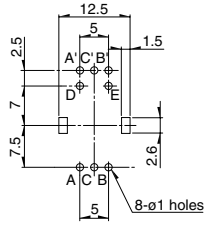

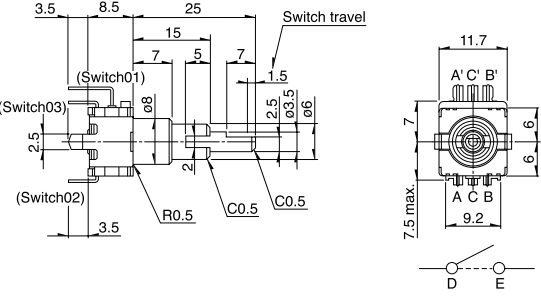
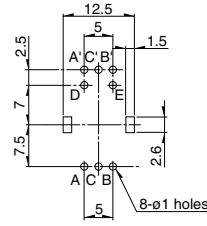
Automotive Use



Automotive Use

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
11	 <p>Self-return switch with push-on switch (travel 0.5mm/1.5mm)</p>	 <p>Switch travel 0.5 or 1.5 R0.5 C1 D E A C B</p>	 <p>5-ϕ1 holes</p>
12	 <p>ABC switch with push-on switch (travel 0.5mm/1.5mm)</p>	 <p>Switch travel 0.5 or 1.5 R0.5 C1 B E F A D C</p>	 <p>6-ϕ1 holes 2-ϕ2.3 holes</p>
13	 <p>Dual-shaft type with push-on switch (travel 0.5mm) Inner shaft: encoder Outer shaft: encoder</p>	 <p>Switch travel 0.5 R0.5 C0.5 C0.5 A' C' B' A C B</p>	 <p>8-ϕ1 holes</p>
14	 <p>Dual-shaft type with push-on switch (travel 1.5mm) Inner shaft: encoder Outer shaft: self-return switch</p>	 <p>Switch travel 1.5 R0.5 C0.5 C0.5 A' C' B' A C B</p>	 <p>8-ϕ1 holes</p>

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

Incremental
Type

Absolute
Type



Automotive
Use

Product Varieties

Shaft Dimensions

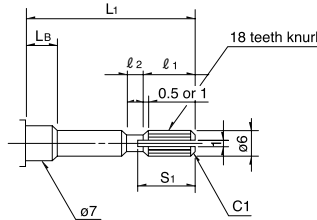
1. Single-shaft Type (EC11K is excluded. Refer to P.209 for EC11K)

1) Knurled Type

Unit:mm

Configuration (Shaft diameter : $\phi 6$)

Not applicable for EC11E with push-lock mechanism



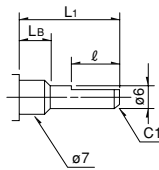
Detailed dimensions

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

2) Flat Type

Unit:mm

Configuration (Shaft diameter : $\phi 6$)



Detailed dimensions

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

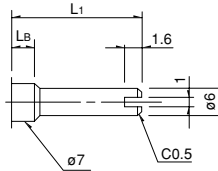
※ Does not comply with EC111

Dimensions marked with () apply to products without push-on switches.

3) Slotted Type

Unit:mm

Configuration (Shaft diameter : $\phi 6$)



Detailed dimensions

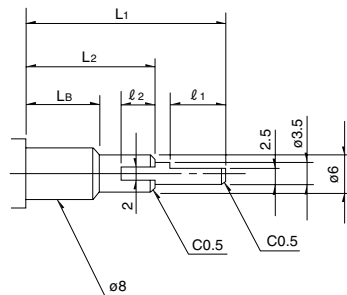
L ₁	L _B
15	7
20	7
25	7

2. Standard Dimensions and configuration of Dual-shaft Type

1) Flat Type

Unit:mm

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



Detailed 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 highlighted figures in shaft types refer to Product Specifications in P.209 and P.210.
- Products other than those listed in the above chart are also available. Please contact us for details

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line Package Type

TACT Switch™

Custom-Products



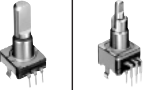

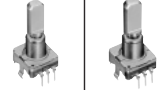
Incremental Type

Absolute Type



Automotive Use

List of Varieties

Type	Metal shaft											
	9mm size		11mm size									
Series	EC09E		EC11B		EC11E		EC111		EC11EH			
Photo												
Output	Incremental						Self-return switch		ABC			
Outline specifications	Shaft types	Single-shaft				Dual-shaft		Single-shaft				
	Operating direction	Vertical		Horizontal		Vertical						
	Number of pulse/ Number of detent	15/30				9/18 15/30 18/36		—		6×ABC/18 10×ABC/30		
	Push switch (Travel mm)	Without/With (0.5, 1.5)										
	Optional functions	—				Push-lock mechanism Without detent		—				
	Changeover angle	—						17 to 40°		—		
Dimensions (mm)	W	9.5		11.7								
	D	—		13.8		12		13		12		
	H	4.5		5.5		4.5 8.5		5		4.5		
Soldering	Manual soldering	350°C max. 3s max.										
	Dip soldering	260±5°C, 3±1s		260±5°C, 5±1s								
Operating temperature range	-40°C to +85°C											
Maximum operating current (Resistive load)	10mA											
Electrical performance	Output signal	Output of A and B signals, proportionate to phase difference					Self-return switch		Three phase A, B and C			
	Output wave	Please see P.220										
	Sliding noise	Please see P.220										
	Insulation resistance	100MΩ min. 250V DC										
	Voltage proof	300V AC for 1minute										
Mechanical performance	Rotational torque	—				7 ⁺³ / ₄ mN·m		—		3~30mN·m		—
	Detent torque	8±5mN·m		12±7mN·m		10±7mN·m		—		10±7mN·m		
	Push-pull strength	100N										
Environmental performance	Cold	-40±3°C for 240h										
	Dry heat	+85±3°C for 240h										
	Damp heat	60±2°C, 90 to 95%RH for 240h										
Page	208				209							

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
ProductsIncremental
TypeAbsolute
Type






Push-on Switch Specifications

Items	EC09E		EC11B		EC11E		EC111		EC11EH	
Contact arrangement	Single pole and single throw (Push-on)									
Travel (mm)	0.5±0.3	1.5±0.5	0.5 ^{+0.4} / _{-0.3}	1.5±0.5	0.5±0.3	1.5 ^{+0.5} / _{8±0.8} ※	0.5±0.3	1.5±0.5	0.5 ^{+0.4} / _{-0.3}	1.5±0.5
Operating force (N)	6 ^{+2.5} / ₋₂	4±2	6±3	5±2	6 ^{+2.5} / ₋₂	4 ⁺² / _{8 max.} ※	6 ^{+2.5} / ₋₂	4±2	6±2.5	4±2
Rating	10mA 5V DC		0.1A 5V DC (500μA 5V DC min. ratings)		0.1A 5V DC (500μA 5V DC min. ratings) 0.5A 12V DC ※		0.1A 5V DC (500μA 5V DC min. ratings)			
Contact resistance	100mΩ max. for initial period; 200mΩ max. after operating life.									
Operating life	10,000times min.		25,000 times min.	20,000 times min.	20,000times min. 10,000times min.※			20,000times min.		

Note

※marked specification is only applicable to EC11E152U402.

List of Varieties

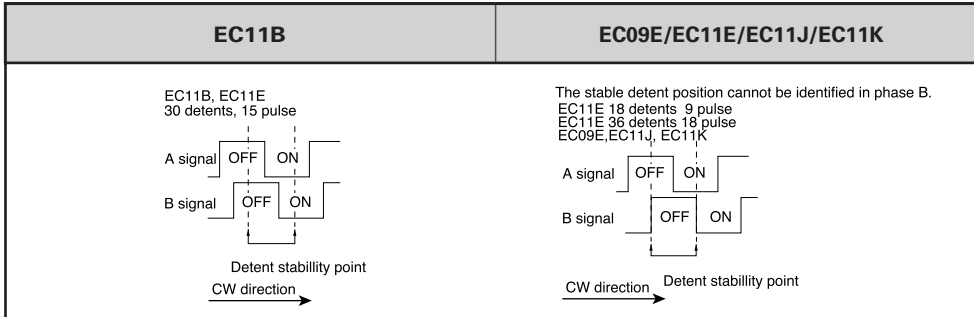
Type	Metal shaft			Insulated shaft			
	11mm size		20mm size	12mm size			
Series	EC11K	EC11J	EC20A/RK203	EC12E	EC12D		
				Standard detent	Without detent		
				With push-on switch			
Detector							
Push							
Slide							
Rotary							
Encoders	Photo						
	Output	Incremental					
	Outline specifications	Shaft types	Single-shaft				
		Operating direction	Vertical				
		Number of pulse/ Number of detent	9/18 15/30		18/18	12/12 24/24 24/Without	15/30
		Push switch (Travel mm)	Without With (0.5, 1.5)		Without With (1.5)	Without	With (0.5)
Optional functions		_____					
Changeover angle	_____						
Dimensions (mm)	W	11.7		20.2	12.4	12.5	
	D	12	14.2	19.2	13.2	11.7	
	H	4.5		10	5		
Soldering	Manual soldering	350°C max. 3s max.					
	Dip soldering	260±5°C, 3±1s	_____	260±5°C, 5±1s	260±5°C, 3±1s		
	Reflow soldering	_____	Please see P.217	_____			
Operating temperature range	-40°C to +85°C		EC20A: -40°C to +85°C RK203: -40°C to +85°C	-10°C to +70°C	-40°C to +85°C		
Maximum operating current (Resistive load)	10mA						
Electrical performance	Output signal	Output of A and B signals, proportionate to phase difference					
	Output wave	Please see P.220			Please see P.223		
	Sliding noise	Please see P.220			Please see P.223		
	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	_____			10mN·m max. 25±15mN·m 40±15mN·m	_____	
	Detent torque	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°C for 240h			-40±3°C for 10h		
	Dry heat	85±3°C for 240h			85±3°C for 10h		
	Damp heat	60±2°C, 90 to 95% RH for 240h			60±2°C, 90 to 95% RH for 10h		
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Push-on Switch Specifications

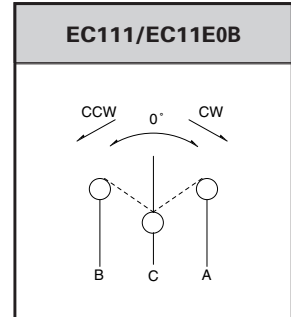
Items	EC11K/EC11J		EC20A	EC12D	
Contact arrangement	Single pole and single throw (Push-on)				
Travel (mm)	0.5±0.3	1.5±0.5		0.5±0.3	
Operating force (N)	5±2	4±2		3 ^{+1.5} ₋₁	6 ^{+2.5} ₋₂
Rating	0.1A 5V DC		0.5A 16V DC (1mA 16V DC min. ratings)	1mA 5V DC	
Contact resistance	100mΩ for initial period; 200mΩ after operating life				
Operating life	1,000,000 times min.	100,000 times min.	20,000times min.	30,000times min.	

Product Specifications

Output Wave



Circle Diagram



Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

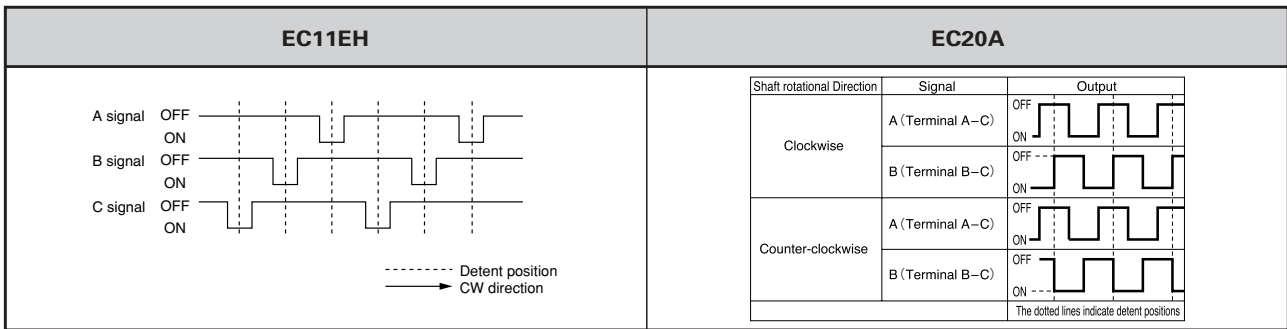
Custom-
Products

Incremental
Type

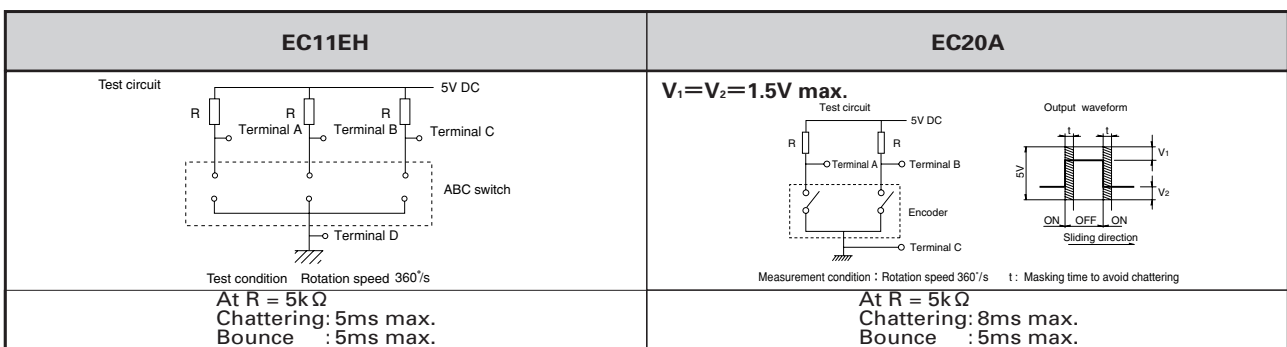
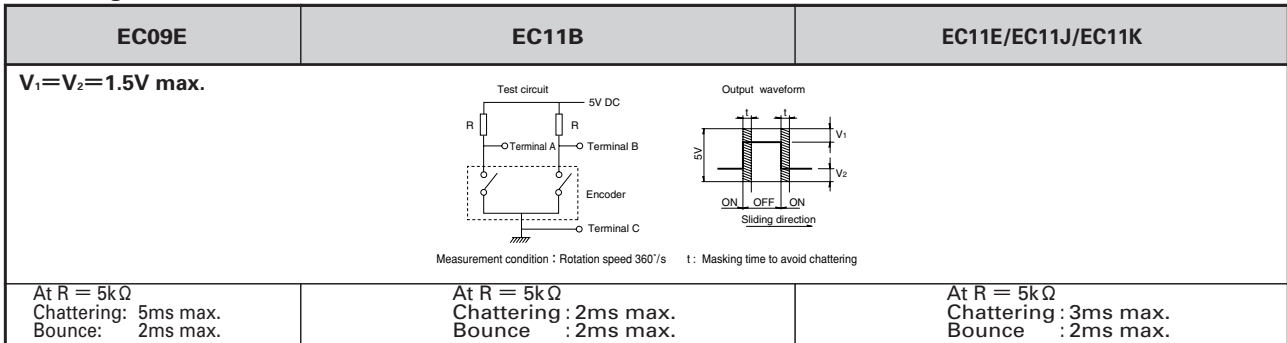
Absolute
Type



Automotive
Use



Sliding Noise



Attached Parts

EC11B Series

Unit:mm

