

Encoder 45mm Size Hollow Shaft Encoder/Potentiometer

EC45A/RK45A/RK45B Series



Large ring, heavy torque device perfect for large ring knob design.



Features

- Large hollow-center structure for various applications.
- Round shape and low-profile, ideal for illuminated designs.
- Excellent operation feel with heavy torque applicable to car components.
- Fully compatible with an encoder or a potentiometer. (EC45A/RK45A)
- Compatible to LED illuminated switch. (RK45B)

Applications

- For adjusting temperature, fan speed and switching modes in car air conditioners
- Car navigation systems and car audio equipment

Typical Specifications

Items	Specifications	
	Encoder	Potentiometer
Rating (max.)	0.5mA 5V DC	0.05W
Operating life	30,000cycles	

Product Line

Encoder (Incremental type)

Number of detent	Number of pulse	Detent torque (mN·m)	Minimum packing unit (pcs.)	Product No.	Drawing No.
30	15	30±14	200	EC45A1520404	1

Encoder (Absolute type)

Output code	Positions	Rotational angle	Detent torque (mN·m)	Minimum packing unit (pcs.)	Product No.	Drawing No.
5bit Gray code	31	240°	36±16	200	EC45AG520402	2

Potentiometer

Total resistance	Resistance taper	Positions	Rotational angle	LED	Detent torque (mN·m)	Minimum packing unit (pcs.)	Product No.	Drawing No.
10kΩ	B	5	240°	None	50±20	200	RK45A1100004	3
5kΩ		8	180°	Red	55±20		RK45B1A00001	4
		17			40±16		RK45B1A00002	

Note

Products other than those listed in the above chart are also available. Please contact us for details.

Refer to P.214 for product specifications.

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line Package Type

Multi Control Devices

TACT Switch™


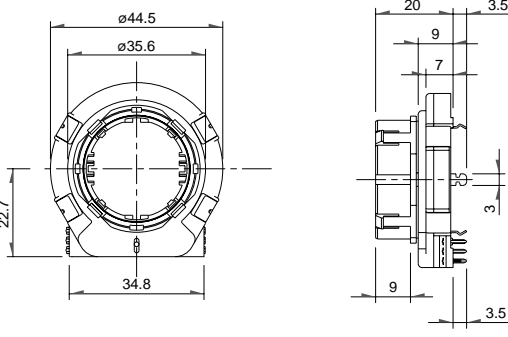
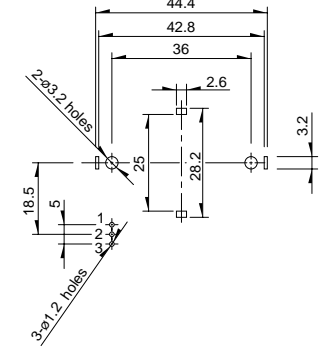
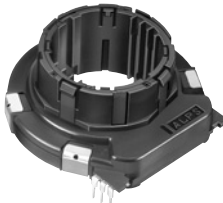
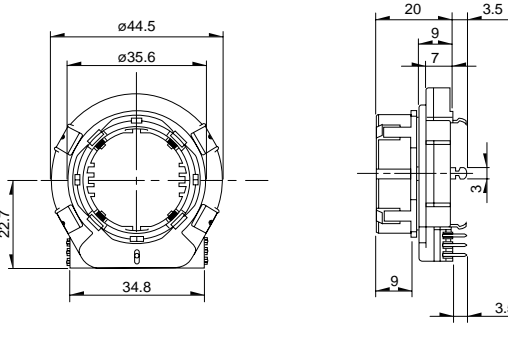
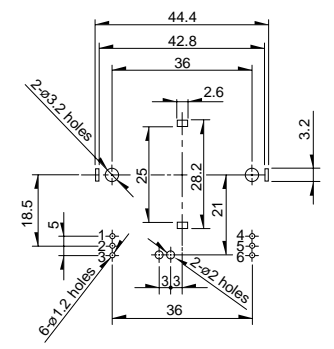
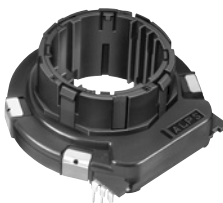
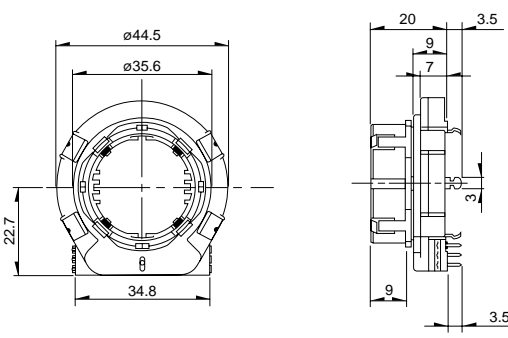
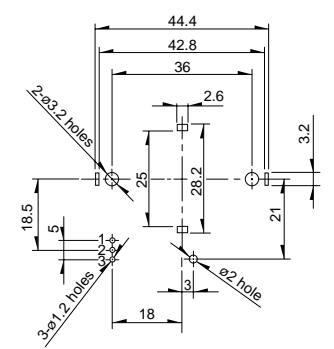

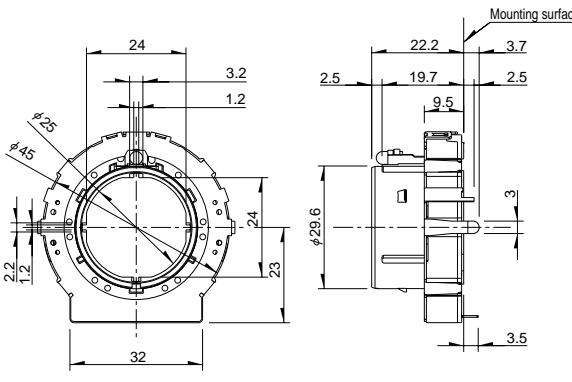
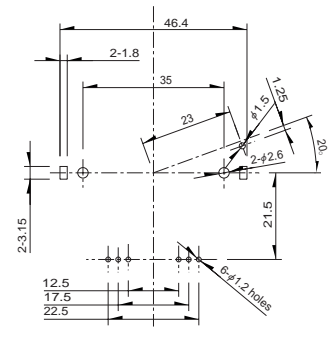
Custom-Products

Incremental Type

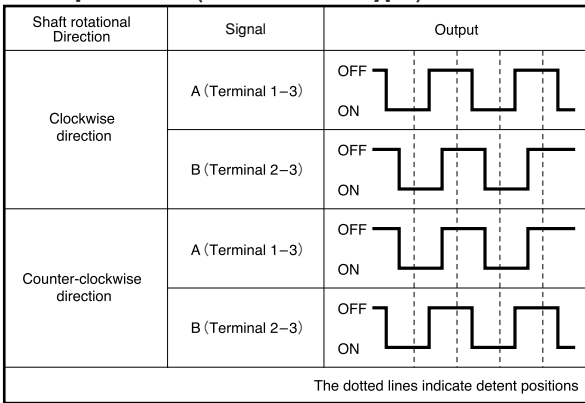
Absolute Type

Dimensions

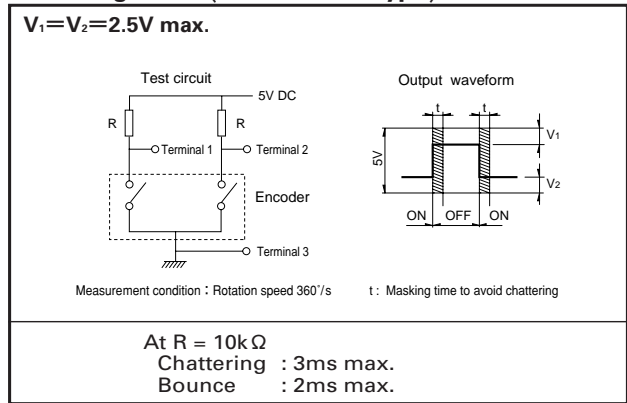
Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from switch mounting face)
1	<p>EC45A Incremental Type</p> 		
2	<p>EC45A Absolute Type</p> 		
3	<p>RK45A Potentiometer Type</p> 		
4	<p>RK45B Potentiometer Type (with LED)</p> 		

Output Wave (Incremental Type)



Sliding Noise (Incremental Type)

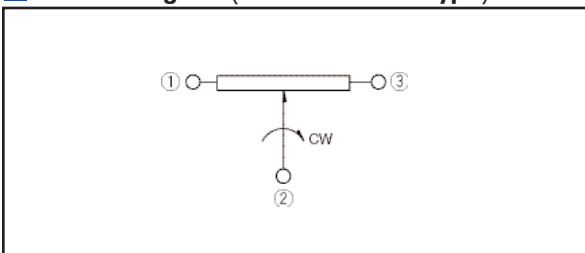


Standard Codes (Absolute Type)

Code		Number of positions		31																															
		Terminal	Position																																
Gray	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
	2																																		
	3																																		
	5																																		
	6																																		

- The ● marks shows the ON position.
- The ● marks : Connections between terminals and the common terminal (terminal No. =1) are ON.

Circuit Diagram (Potentiometer Type)



Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

Multi Control
Devices

TACT Switch™

Custom-
Products

Incremental
Type

Absolute
Type

Product Specifications

Type		EC40A	EC45A	RK45A RK45B	EC60A	EC35B	EC35AH	
Items								
Operating temperature range		-40°C to +85°C						
Detector	Rating	0.5mA 5V DC		0.05W	0.5mA5V DC	10mA5V DC		
Push	Electrical performance	Output voltage		2.5V max. at 5V DC, 0.5mA (resistive load)	—	2.5V max. at 5V DC, 0.5mA (resistive load)	2.5V max. at 5V DC, 1mA (resistive load)	
Slide		Insulation resistance		10MΩ min. 50V DC		10MΩ min. 500V DC	100MΩ min. 250V DC	
Rotary		Voltage proof		50V AC for 1minute		500V AC for 1minute	300V AC for 1minute	
Encoders	Mechanical performance	Detent torque		20±11mN·m	Shall be in accordance with individual specifications.	40±20mN·m	20±10mN·m	
Power		Terminal strength		3N for 10s			5N for 1minute	
Dual-in-line Package Type		Actuator strength	Pushing direction		100N			
Multi Control Devices			Pulling direction		50N		100N	
TACT Switch™		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				
Custom-Products		Resistance to soldering heat	Manual soldering		350°C max. 3s max.			
Incremental Type	Dip soldering		260°C max. 5s max.		260±5°C, 5±1s			
	Reflow soldering		—					
Absolute Type	Durability	Operating life without load		30,000cycles			50,000cycles	
		Operating life with load		30,000cycles			50,000cycles	
Environmental performance	Cold		-40±3°C for 240h					
	Dry heat		85±3°C for 240h					
	Damp heat		40±2°C, 90 to 95% RH for 240h			60±2°C, 90 to 95% RH for 240h		

Self-return Switch Specifications

Items	EC35B
circuit · number of contacts	Single pole and single throw (Push-on)
Travel(mm)	2.8±0.5
Push operating force(N)	3.8±1.5
Switch ON position	15±5°
Ratational torque	40±25mN·m
Rating	10mA 5V DC
Contact resistance	200mΩ max.
Operating life	15,000cycles