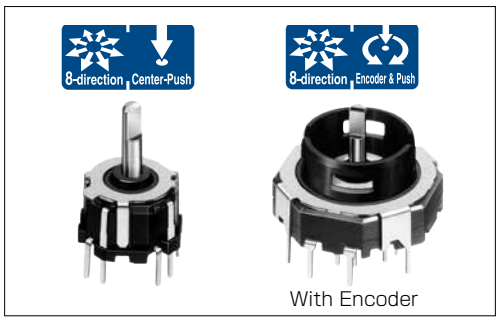
RKJXM 8-directional Stick Switch (with Center-push Function)

Single and dual shaft structured device contributes to simple operation and space saving



Typical Specifications (Inner-shaft Stick Switch)

Items		Specifications
Rating (max.) (Resistive load)		10mA 5V DC
Contact resistance	8-direction	1Ω max.
	Center-push	
Operating angle (8-direction)		A·B·C·D direction : 10° max. AB·BC·CD·DA direction : 12° max.
Travel (Center-push)		0.3±0.2mm
Operating life	total with 8-direction	100,000 cycles
	Center-push	100,000 cycles

Typical Specifications (Outer-shaft Encoder)

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

Product Line

Product No.	Shaft	Stick Switch (Inner-shaft)		Encoders (Outer-shaft)			Minimum order unit (pcs.)		Drawing No.
		Maximum resolution	Operating force	Detent torque	Number of detent	Number of pulse	Japan	Export	
RKJXM1015004	1	8	A·B·C·D direction : 30±20mN·m AB·BC·CD·DA direction : 25±20mN·m Center-push: 3±1.5N	—			1,000	2,000	1
RKJXM2E13004	2			12±8mN·m	15	15	800	1,600	2

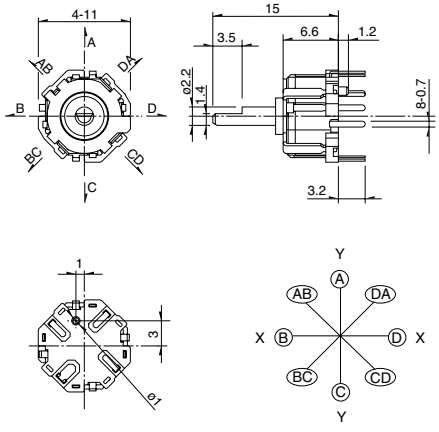
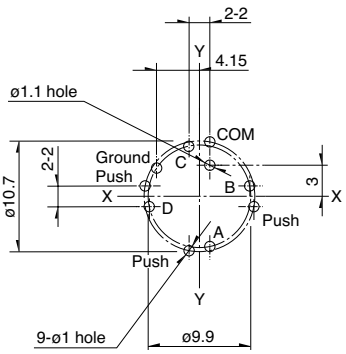
Packing Specifications

Tray

Product No.	Number of packages (pcs.)		Export package measurements (mm)
	1 case / Japan	1 case / export packing	
RKJXM10	1,000	2,000	405×290×200
RKJXM2E	800	1,600	545×380×205

Dimensions

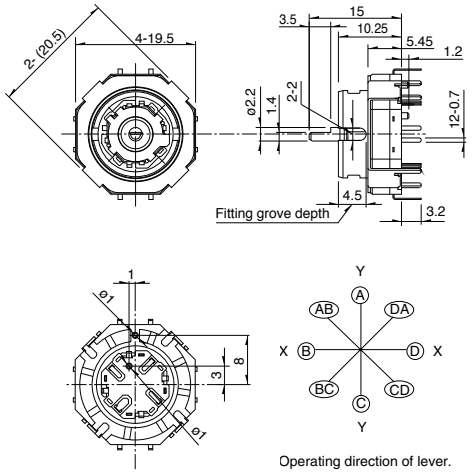
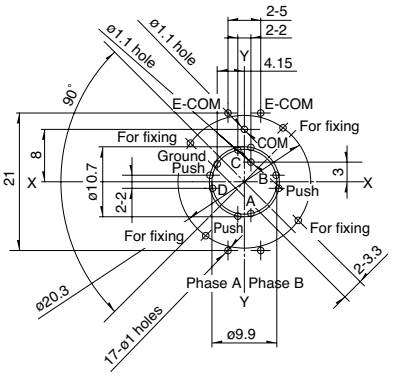
Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1	**RKJXM10** 	 Operating direction of lever.	

Refer to P.451 for soldering conditions.

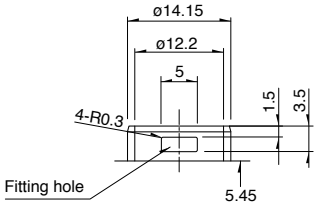
Dimensions

Unit:mm

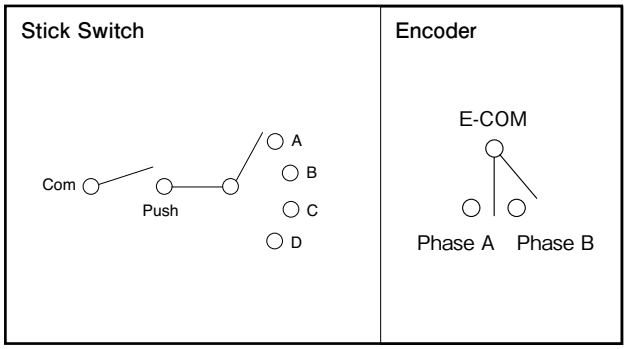
No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
2	**RKJXM2E** 		

Detailed Dimensions of Knob Fitting

Unit:mm

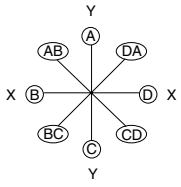


Circuit Diagram



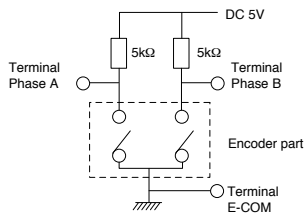
Output Relation Chart Between Lever Position and ON Position.

Terminal \ Operation procedure	A	AB	B	BC	C	CD	D	DA	Center Push
Com-A	ON	ON						ON	
Com-B		ON	ON	ON					
Com-C				ON	ON	ON			
Com-D						ON	ON	ON	
Com-Push	ON	ON	ON	ON	ON	ON	ON	ON	ON

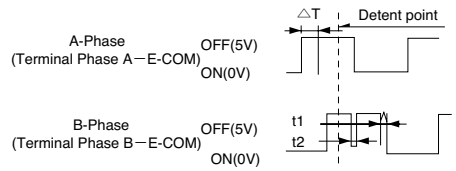


Operating direction of lever.

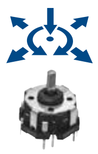
Encoder Test Circuit



Encoder Output Signal



Chattering, bounce and phase difference indicate the time measured at constant 60rpm. Phase difference △T: above 5ms. Chattering t1: below 4ms. Bounce t2: below 2ms.

Type		Switch type				
Series		RKJXT1F	RKJXM		RKJXW	
			RKJXM1	**RKJXM2**	**RKJXW1**	**RKJXW2**
Photo						
Dimensions (typical value) (mm)	W	17	11	19.5	36	61
	D				48.5	75.5
	H	10.5	6.6	5.45	26.5	17
Number of operating shafts		Single-shaft		Dual-shaft	Single-shaft	Dual-shaft
Shaft material		Metal		The inner shaft : Metal The outer shaft : Resin	Metal	Resin
Directional resolution		4-direction	8-direction			
Directional operating feeling (tactile feeling)		With				
Lever return mechanism		With				
Center-push switch		With				
Encoder		With	Without	With		
Operating temperature range		−40℃ to +85℃				
Operating life	Directional operation	total with 4-direction 50,000 cycles	total with 8-direction 100,000 cycles		30,000 cycles for each direction	
	Center-push				30,000 cycles	100,000 cycles
	Encoder	15,000 cycles	—	15,000 cycles	30,000 cycles	
Automotive use		●	●	●	●	●
Life cycle (availability)		★2	★2	★2	★2	★2
Rating (max.) (Resistive load)		10mA 5V DC				
Electrical performance	Output voltage	—	—	—	—	—
	Encoder resolution	15pulses/360°	—	15pulses/360°		
	Insulation resistance	100MΩ min. 250V DC				10MΩ min. 50V DC
	Voltage proof	250V AC for 1min.			360V AC for 2s	60V AC for 2s
Mechanical performance	Directional operating force	40±25mN·m	Direction A, B, C, D 30±20mN·m Direction AB, BC, CD, DA 25±20mN·m		2.5±1.5N	3.5±2N
	Push operating force	5±2N	3±1.5N			
	Encoder detent torque	15±8mN·m	—	12±8mN·m	30±20mN·m	40±16mN·m
	Terminal strength	5N for 1min.			—	—
	Actuator strength: Push / pull directions	100N (Push/Pull)	100N (Push), 50N (Pull)		100N (Push)	
	Actuator strength: Operating direction	0.4N·m	0.3N·m		50N	100N
Environmental performance	Cold	−40℃ 500h				
	Dry heat	85℃ 500h				
	Damp heat	60℃, 90 to 95%RH 500h				40℃, 90 to 95%RH 500h
Page		434	436		438	

Note

● Indicates applicability to all products in the series.

Reference for Manual Soldering

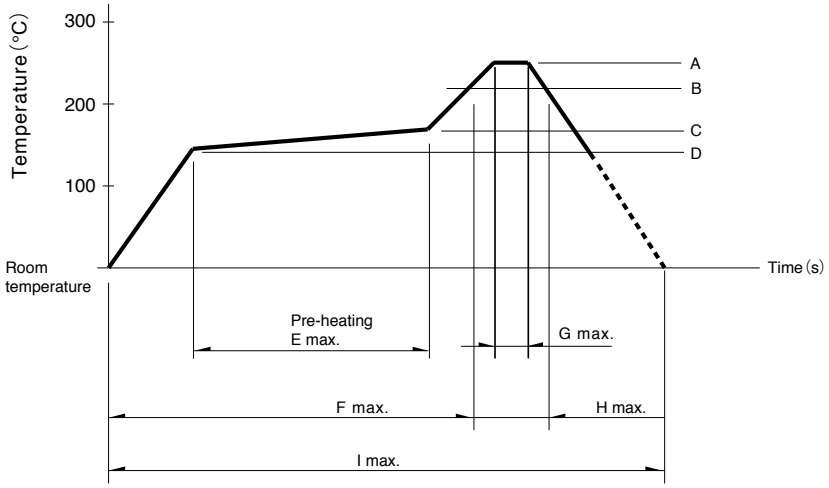
Series	Tip temperature	Soldering time	No. of solders
RKJXT1F, RKJXM, RKJXL, SLLB, SLLB5, SRBE, SKRH	350±5℃	3s max.	1 time
RKJXS	350±10℃	3^{+1}_{-0} s	2 time max.

Reference for Dip Soldering

Series	Preheating		Dip soldering		No. of solders
	Soldering surface temperature	Heating time	Soldering temperature	Soldering time	
RKJXT1F, RKJXM	100℃ max.	2 min. max.	260±5℃	5±1s	2 time max.
RKJXL	120℃ max.	70s max.	260℃ max.	6s max.	2 time max.

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple φ0.1 to 0.2 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	A	B	C	D	E	F	G	H	I	No. of reflows
RKJXS	260℃	230℃	150℃	150℃	2 min.	—	10s	40s	4 min.	1 time
SLLB5	250℃	230℃	150℃	150℃	—	2 min.	—	30s	—	1 time
SKRH, SLLB, SRBE	260℃	230℃	180℃	150℃	2 min.	—	—	40s	—	1 time

Notes

1. The above temperature shall be measured 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 material, size thickness of PC boards and others. The above-stated conditions shall also apply to switch surface temperatures.
2. Soldering conditions differ depending on reflow soldering machines. Prior verification of soldering condition is highly recommended.