

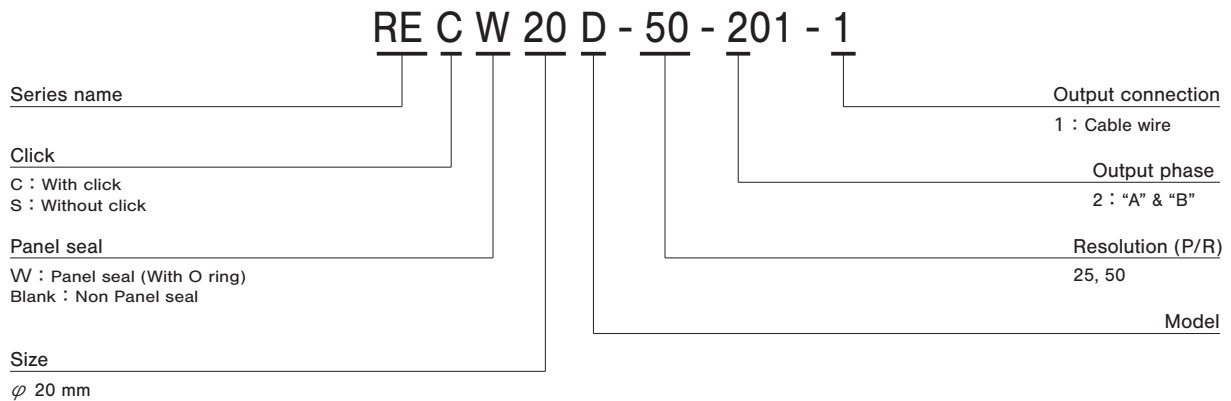
## FEATURES

- Contactless, manual adjustment only
- Compact, light weight
- With click (REC20, REC20C, REC20D, RECW20D)
- Panel seal type (RESW20D, RECW20D)
- RoHS compliant

RoHS compliant



## PART NUMBER DESIGNATION



## LIST OF PART NUMBERS

Resolution	Item	Output wave form	Output terminal	Click	Panel seal	Part number	
50 (P/R) 100 (P/R) 50 (P/R) 100 (P/R)	Saturated wave	Pseudosquare wave	Pin terminal	Without click	Non Panel seal	RES20-50-200	
						RES20-100-200	
	Without click					RES20-50-200-Z	
						RES20-100-200-Z	
25 (P/R)	Square wave	Cable wire	Without click	Without click		RES20B-25-201-1	
						RES20D-25-201-1	
With click						REC20-25-201-1	
						REC20D-25-201-1	
50 (P/R)	Square wave		Cable wire	Without click	Without click	RES20D-50-201-1	
						With click	REC20C-50-201-1
Without click							REC20D-50-201-1
						25 (P/R)	Square wave
With click	RECW20D-25-201-1						
	Without click	RESW20D-50-201-1					
With click		RECW20D-50-201-1					

※ Verify the above part numbers when placing orders.  
The knob is available.

## STANDARD SPECIFICATIONS

### Electrical characteristics

Item	Part number	RES20	RES20-Z	REC20	RES20B	REC20C	RES20D	REC20D	RESW20D	RECW20D
Input voltage		DC5 V ± 5 %								
Input current	mA maximum	40	50	70			50			
Output wave form		Saturated wave	Pseudosquare wave	Square wave						
Output phases		A, B								
Resolution		50	100	50	100	25	50	25, 50		
Phase difference of outputs A & B		90° ± 45°								
Maximum frequency response	Hz	500		100		500		200		
Output signal	"1 (High)"	2 V <sub>p-p</sub> minimum	1 V <sub>p-p</sub> minimum	+ 4.0 V minimum		+ 4.5 V minimum				
	"0 (Low)"			+ 1.0 V maximum		+ 0.5 V maximum				
Light source		LED								

### Mechanical characteristics

Item	Part number	RES20	RES20-Z	REC20	RES20B	REC20C	RES20D	REC20D	RESW20D	RECW20D	
Starting torque	mN·m {gf·cm}	2.94 {30} maximum	4.90 {50} maximum	—	2.94 {30} maximum	—	1.18 ± 0.78 {12 ± 8}	—	2.94 ± 1.96 {30 ± 20}	—	
Click torque	mN·m {gf·cm}	—	—	19.6 {200} maximum	—	19.6 {200} maximum	—	9.81 ± 4.9 {100 ± 50}	—	11.8 ± 4.9 {120 ± 50}	
Click number		—	—	25	—	50	—	25, 50	—	25, 50	
Shaft loading (When mounting)	Radial	9.81 N {1 kgf} maximum					4.90 N {500 gf} maximum				
	Axial	4.9 N {500 gf} maximum					2.94 N {300 gf} maximum				
Net weight		Approx. 20 g	Approx. 20 g	Approx. 25 g			Approx. 10 g				
Strength of tighten screw		0.98 N·m {10 kgf·cm} maximum					0.49 N·m {5 kgf·cm} maximum				

### Environmental characteristics

Item	Part number	RES20	RES20-Z	REC20	RES20B	REC20C	RES20D	REC20D	RESW20D	RECW20D
Operating temp. range		0 ~ 50 °C								
Storage temp. range		- 20 ~ 80 °C								
Protection grade		IP40								

(Note) Manual setting only.

# REC/RES

## OPTICAL ENCODERS

### RELIABILITY TEST

The output shall satisfy the criteria below after the following tests.

Test item		Test conditions	
Vibration	Power OFF	Amplitude : 1.52 mm or 98.1 m/s <sup>2</sup> (10 G) whichever is smaller. 10 ~ 500 Hz excursion 15 min/cycle, 8 cycles each for X, Z, directions.	
Shock	Power OFF	3 times each in directions (X, Z) at 490 m/s <sup>2</sup> (50 G), 11 ms.	
High temperature exposure	Power OFF	80 °C 96 h	(To be measured after leaving samples for 1 h at normal temperature and humidity after the test.)
	Power ON	50 °C 96 h	
Low temperature exposure	Power OFF	- 20 °C 96 h	
	Power ON	0 °C 96 h	
Humidity	Power OFF	(To be measured after wiping out moisture and leaving samples for 1 h at normal temperature and humidity after the test.)	
Thermal shock	Power OFF	To be done 10 cycles with the following condition (To be measured after leaving samples for 1 h at normal temperature and humidity after the test.) 80 °C ± 2 °C 0.5 h, - 20 °C ± 2 °C 0.5 h	

### OUTLINE DIMENSIONS

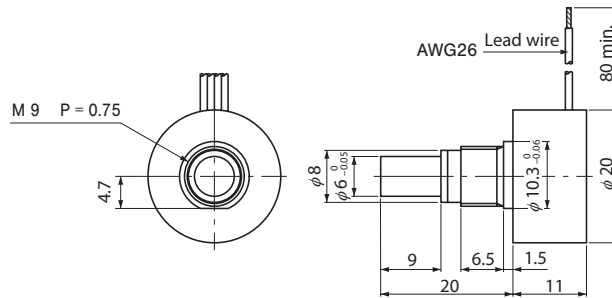
Unless otherwise specified, tolerance: ± 0.4 (Unit: mm)

#### RES20D/RESW20D

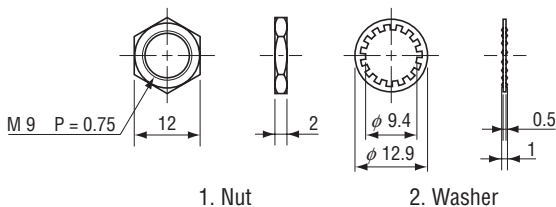
(Without click / Without click, With panel seal)

#### REC20D/RECW20D

(With click / With click, With panel seal)



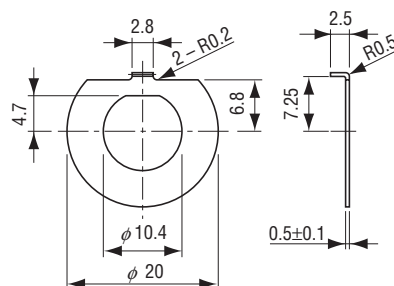
#### < Attachment >



※ Water resistant washer will be provided for panel seal type.  
Position stopper (metal piece) is available.

#### < Option (Stopper) >

#### RES20D / REC20D / RESW20D / RECW20D



The stopper can be provided upon request.

# REC/RES

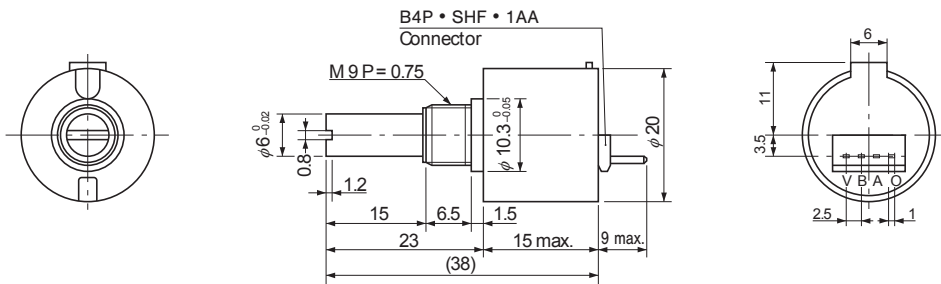
## OPTICAL ENCODERS

### OUTLINE DIMENSIONS

Unless otherwise specified, tolerance:  $\pm 0.4$  (Unit: mm)

#### RES20/RES20-Z

(Without click)

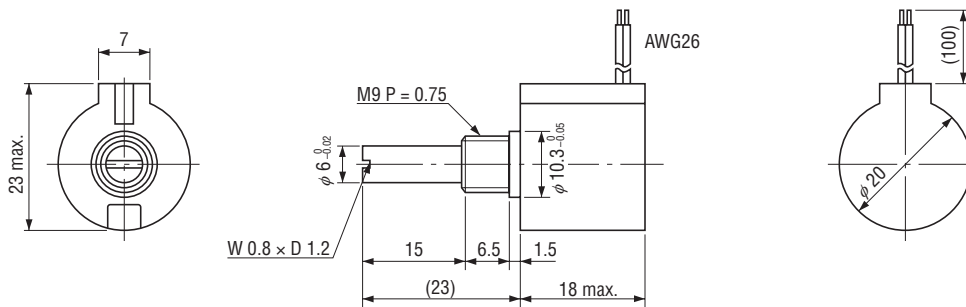


#### REC20

(With click)

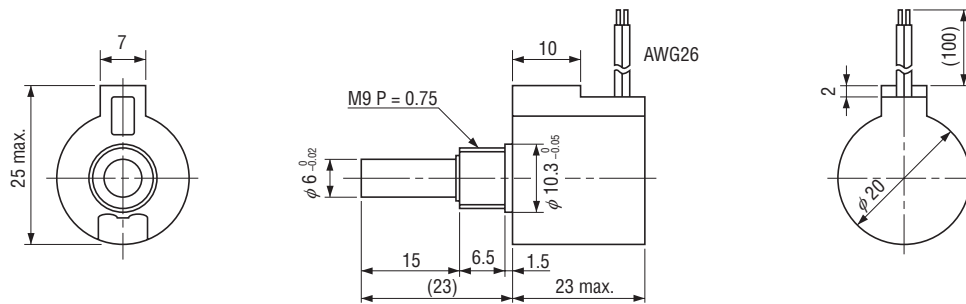
#### RES20B

(Without click)

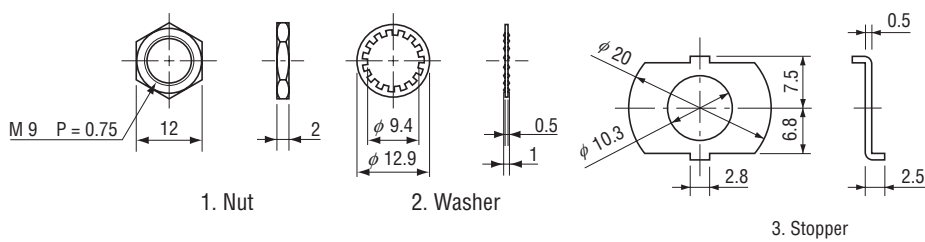


#### REC20C

(With click)



### < Accessories >



# REC/RES

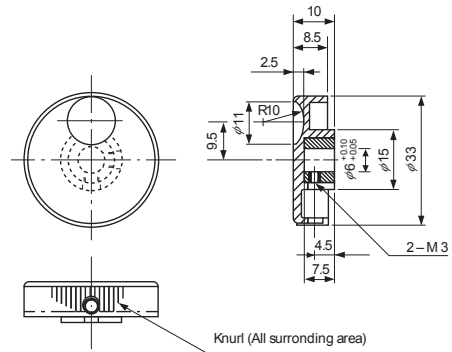
## OPTICAL ENCODERS

### ● KNOB FOR SETTING ENCODERS

The knobs are sold separately as an optional item.



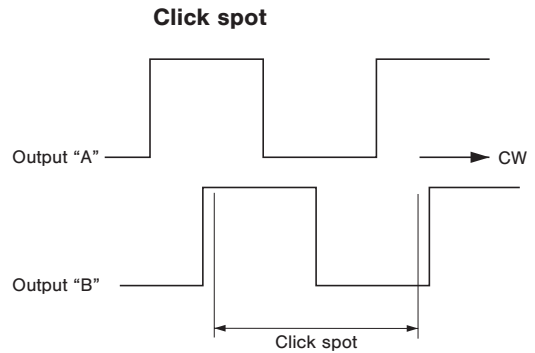
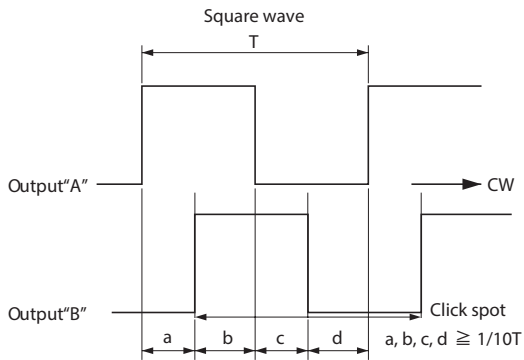
Unless otherwise specified, tolerance:  $\pm 0.4$  (Unit: mm)



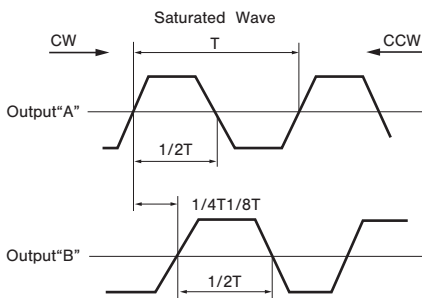
※ Use a hexagon wrench for 1.5 fastening.

### ■ OUTPUT

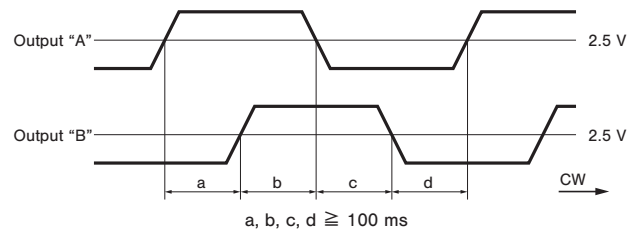
#### ● RES20D/REC20D/RESW20D/RECW20D



#### ● RES20



#### ● RES20 \*\*\* Z



#### ● REC20/RES20B/REC20C

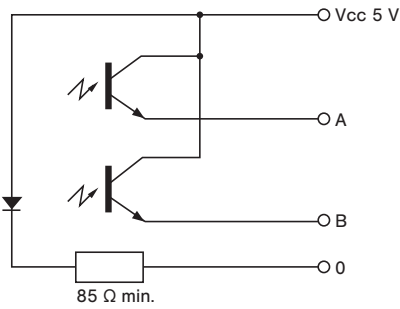


# REC/RES

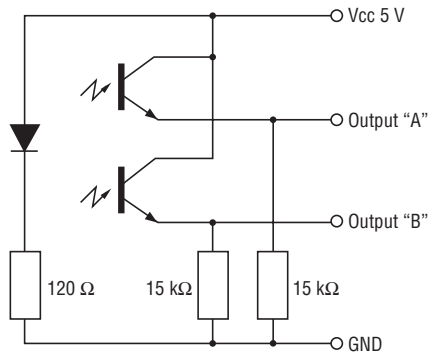
## OPTICAL ENCODERS

### OUTPUT CIRCUIT

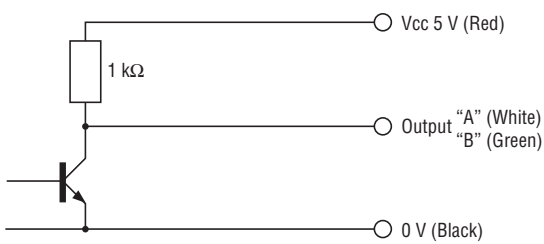
#### RES20



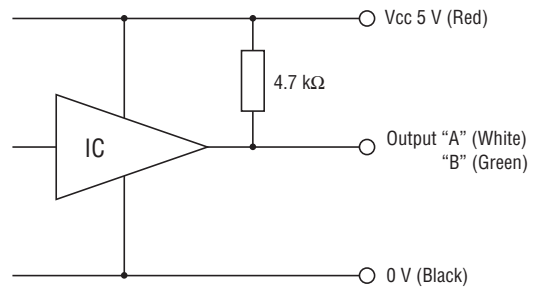
#### RES20-Z



#### REC20/RES20B/REC20C



#### RES20D/REC20D/RESW20D/RECW20D



### EXTERNAL SCHEMATICS

#### RES20

