

MANUAL SETTING TYPE OPTICAL ENCODERS

# REC/RES

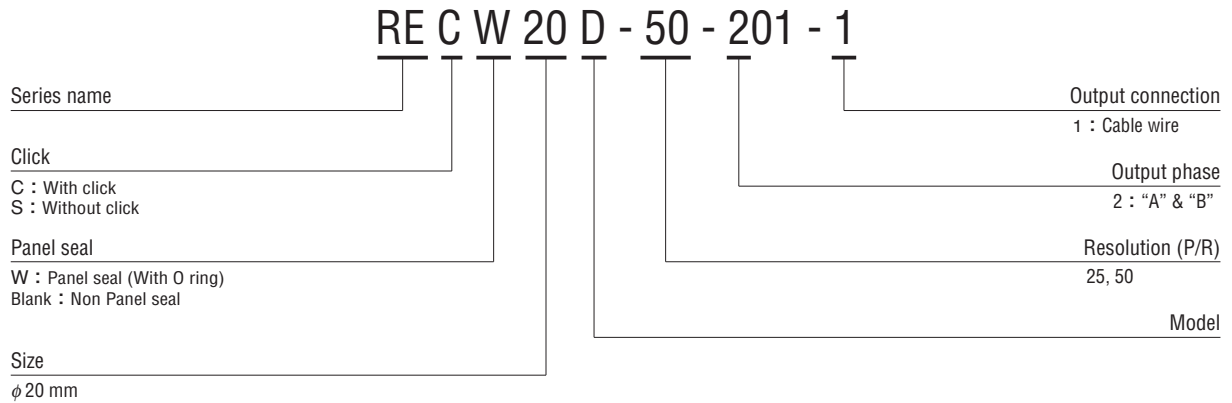
## FEATURES

- 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)		Saturated wave	Pin terminal	Without click	Non Panel seal	RES20-50-200		
100 (P/R)						RES20-100-200		
50 (P/R)		Pseudosquare wave				RES20-50-200-Z		
100 (P/R)						RES20-100-200-Z		
25 (P/R)		Square wave	Cable wire	Without click		RES20B-25-201-1 RES20D-25-201-1		
				With click		REC20-25-201-1 REC20D-25-201-1		
50 (P/R)				Without click		RES20D-50-201-1		
				With click		REC20C-50-201-1 REC20D-50-201-1		
25 (P/R)							Without click	RESW20D-25-201-1
							With click	RECW20D-25-201-1
50 (P/R)							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. 30 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		IP - 40								

Note) Manual setting only.

### 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, Y, 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	40 °C Relative humidity 90~95 % 96 h (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

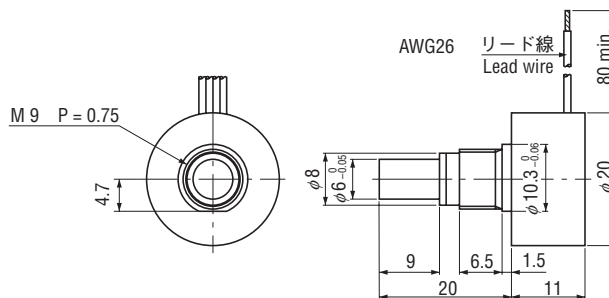
Unless otherwise specified, tolerance: ± 0.4 (Unit: mm)

#### RES20D/RESW20D

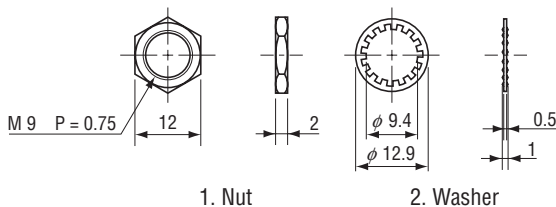
(Without click / Without click, With panel seal)

#### REC20D/RECW20D

(With click / With click, With panel seal)



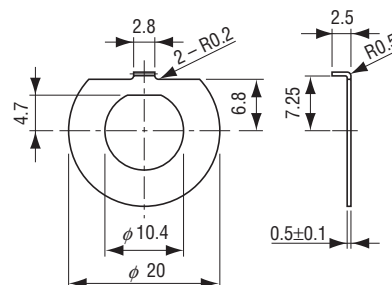
#### < Attachment >



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

#### < Option (Stopper) >

#### RES20D / REC20D / RESW20D / RECW20D



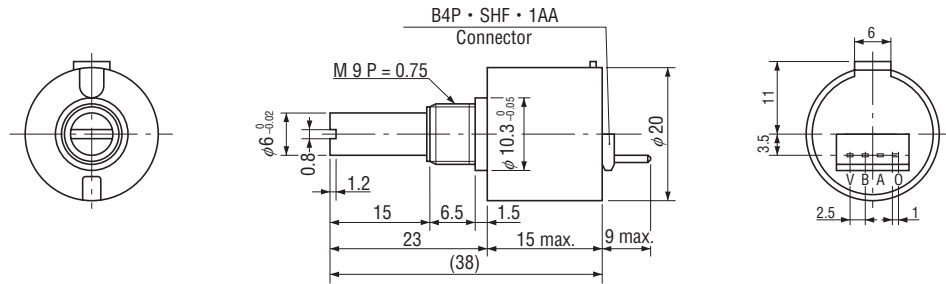
The stopper can be provided upon request.

**OUTLINE DIMENSIONS**

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

● **RES20/RES20-Z**

(Without click)

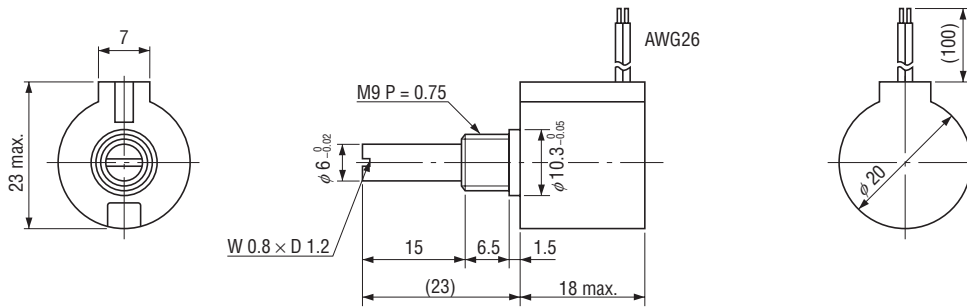


● **REC20**

(With click)

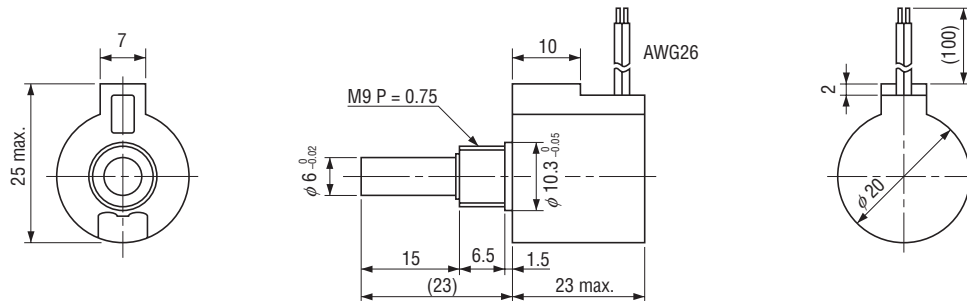
● **RES20B**

(Without click)

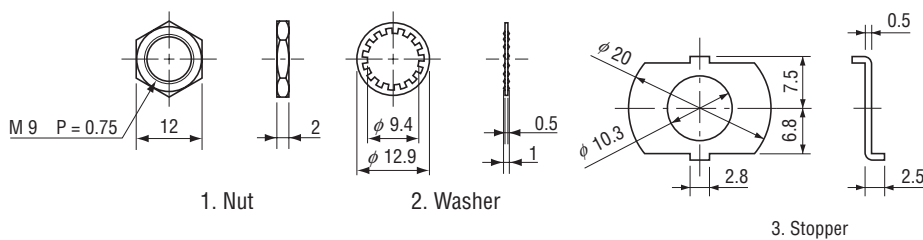


● **REC20C**

(With click)



< Accessories >



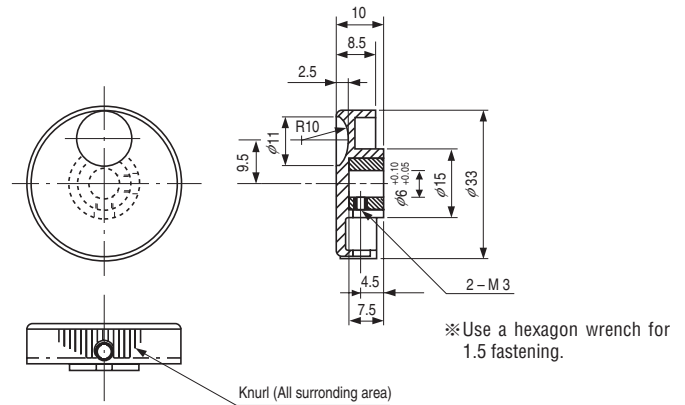
## REC/RES OPTICAL ENCODERS

### ● KNOB FOR SETTING ENCODERS

The knobs are sold separately as an optional item.

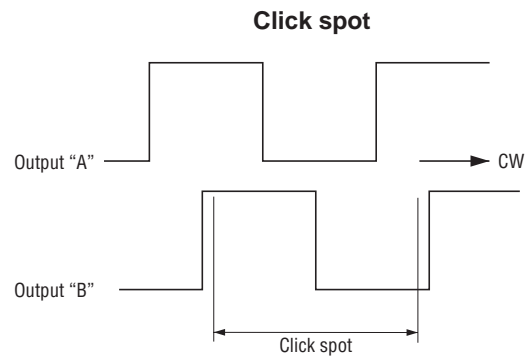
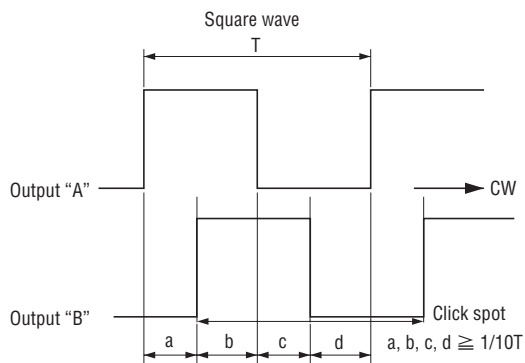


Unless otherwise specified, tolerance:  $\pm 0.4$  (Unit: mm)

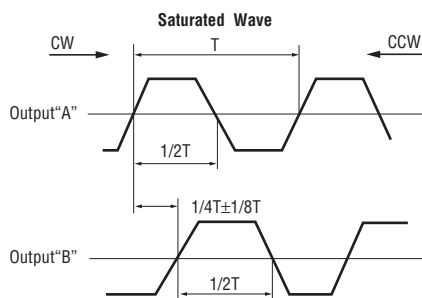


### ■ OUTPUT

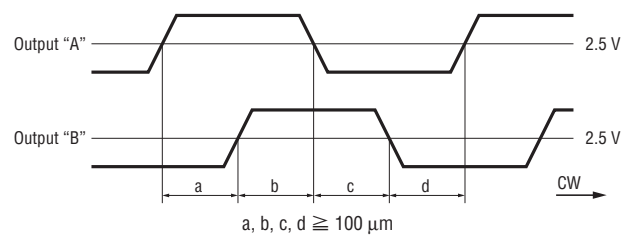
#### ● RES20D/REC20D/RESW20D/RECW20D



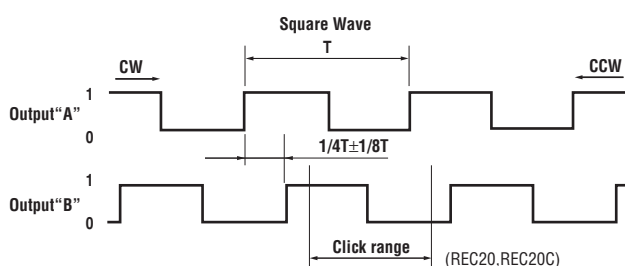
#### ● RES20



#### ● RES20\*\*\*Z

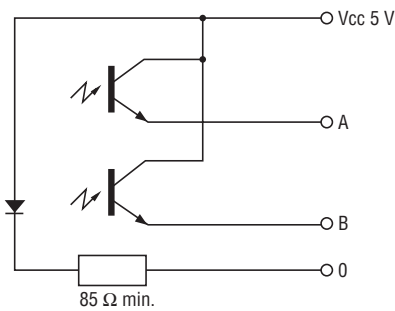


#### ● REC20/RES20B/REC20C

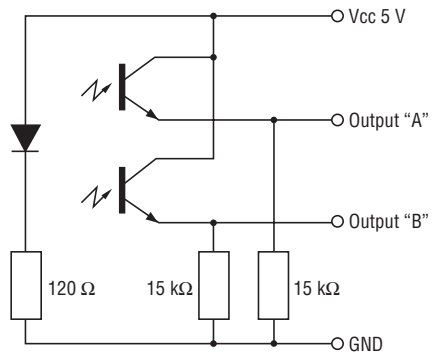


**OUTPUT CIRCUIT**

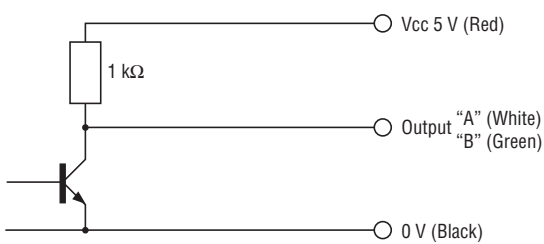
● RES20



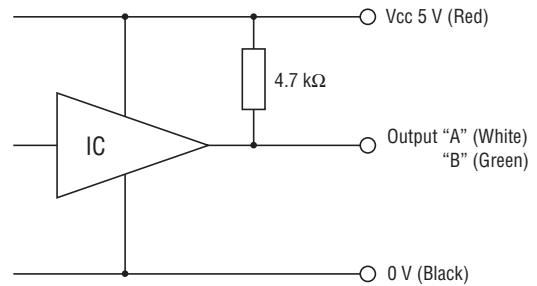
● RES20-Z



● REC20/RES20B/REC20C



● RES20D/REC20D/RESW20D/RECW20D



**EXTERNAL SCHEMATICS**

● RES20

