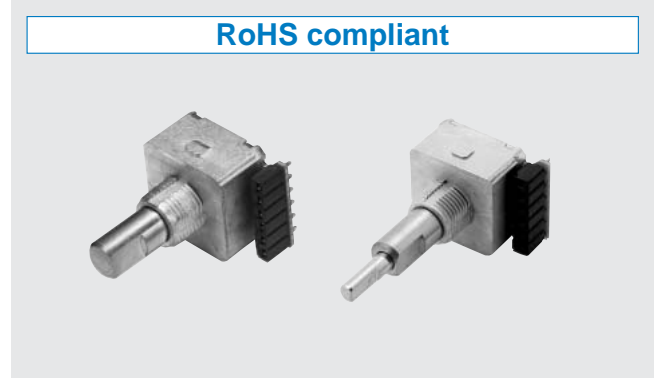


**MANUAL SETTING TYPE OPTICAL ENCODERS**

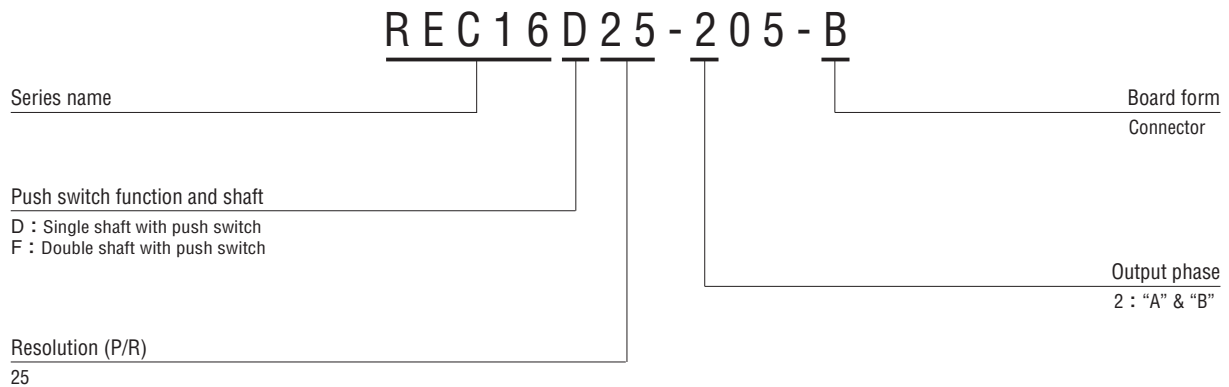
# REC16D/REC16F

## FEATURES

- Front mounting type for cost & space saving
- Double shaft that is divided into encoder function & switch function
- Metal shaft that is placed emphasis on shaft load
- RoHS compliant



## PART NUMBER DESIGNATION



## LIST OF PART NUMBERS

Resolution	Click	Push switch function	Shaft	Part number
25 (P/R)	With Click	Yes	single shaft	REC16D25-205-B
			double shaft	REC16F25-205-B

# REC16D/REC16F

## OPTICAL ENCODERS

### STANDARD SPECIFICATIONS

#### Electrical characteristics

Input voltage	DC5 ± 5 %	
Input current	30 mA maximum	
Output wave form	Square wave	
Output phases	A, B	
Resolution	25	
Phase difference of outputs A & B	90° ± 45°	
Maximum frequency response	100 Hz	
Output signal	"1 (High)"	+ 4.5 V minimum
	"0 (Low)"	+ 0.5 V maximum
Light source	LED	

#### Switch characteristics

Maximum contact rating	DC15 V, 20 mA
Contact resistance	200 mΩ maximum (Initial value)

Note) Manual setting only.

#### Mechanical characteristics

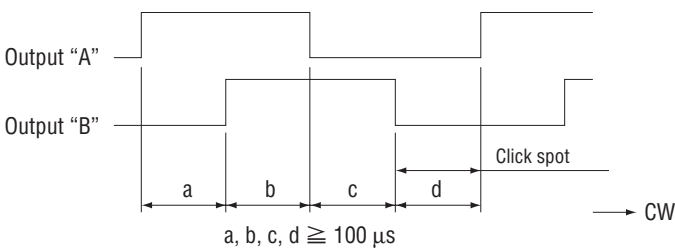
Click torque	6.87 mN·m ± 3.43 maximum (70 ± 35 gf·cm) <REC :With click>	
Click number	25	
Shaft loading (Pull-push)	49.0 N maximum (5 kgf)	
Switch operation force	single shaft	2.94 ± 1.47 N (300 ± 150 gf)
	double shaft	2.55 ± 1.27 N (260 ± 130 gf)
Travel	single shaft	0.3 <sup>+0.1</sup> / <sub>-0.2</sub> mm
	double shaft	0.3 <sup>+0.2</sup> / <sub>-0.2</sub> mm
Rotational life (Mechanical)	1 million cycles	
Switching life	1 million cycles	
Shaft loading (When mounting)	Radial	4.90 N maximum (500 gf)
	Axial	2.94 N maximum (300 gf)
Net weight	Approx. 10 g	
Strength of tighten screw	1 N·m {10.2 kgf·cm} maximum	

Note) Don't rotate shaft, making switch work.

#### Environmental characteristics

Operating temp. range	0 ~ 50 °C
Storage temp. range	- 20 ~ 80 °C
Protection grade	IP - 40

### OUTPUT



The click spot is located somewhere outputs A & B are at Lo level.

# REC16D/REC16F OPTICAL ENCODERS

## RELIABILITY TEST

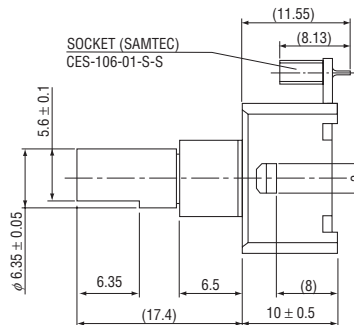
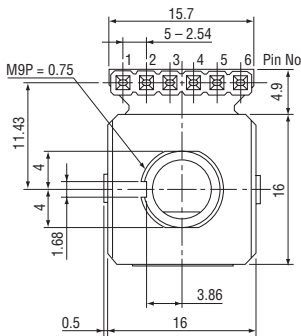
The output shall satisfy the criteria below after the following tests.

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
	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 0.5 h、-20 °C 0.5 h

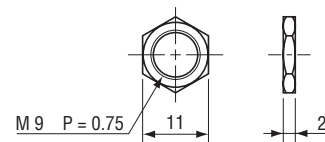
## OUTLINE DIMENSIONS

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

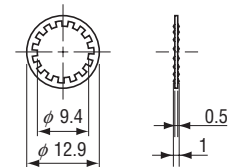
### single shaft



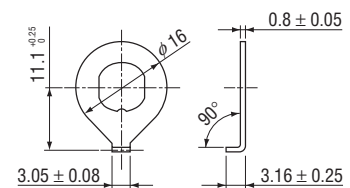
### <Accessories>



1. Nut

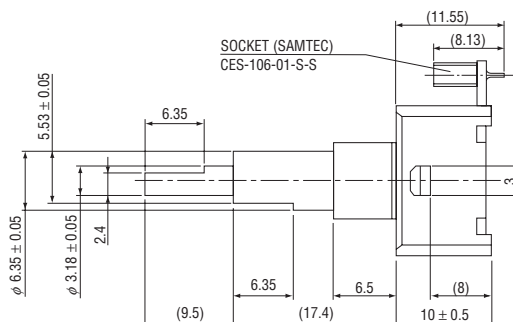
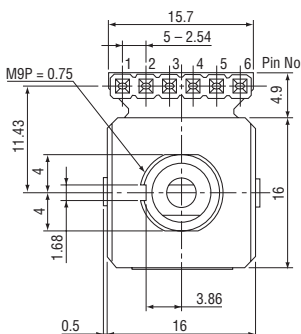


2. Washer



3. Locking Ring

### double shaft

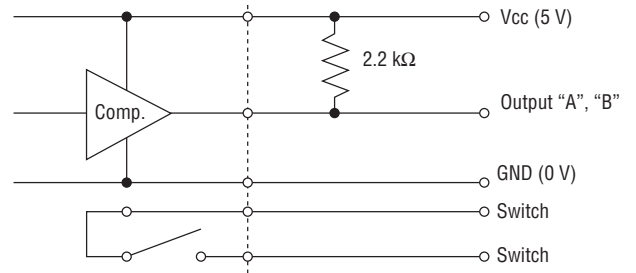


# REC16D/REC16F OPTICAL ENCODERS

## PIN ASSIGNMENT

Pin No.	Function
1	Power 0 (V)
2	For switch
3	For switch
4	Output "B"
5	Output "A"
6	Power +5 V

## OUTPUT CIRCUITRY AND RECEIVING CIRCUITRY



Encoder output circuit ← → Receiving circuit  
 \* Comparator IC : 393 equivalent

## REFERENCE

The following type is available upon receipt of your order.

