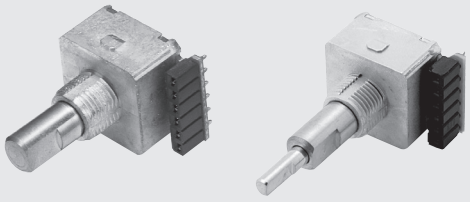
MANUAL SETTING TYPE OPTICAL ENCODERS

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

RoHS compliant



PART NUMBER DESIGNATION

R E C 1 6 D 2 5 - 2 0 5 - B

Series name

Push switch function and shaft
D : Single shaft with push switch
F : Double shaft with push switch

Resolution (P/R)
25

Output phase
2 : "A" & "B"

Board form
Connector

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 V ± 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
Output Sink Current		3 mA maximum

Switch characteristics

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

Note) Manual setting only.

Mechanical characteristics

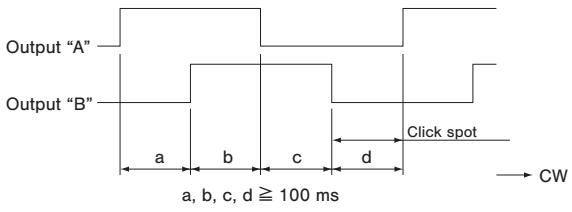
Click torque		6.87 mN·m ± 3.43 maximum (70 ± 35 gf·cm) 〈REC : With click〉
Click number		25
Shaft loading (Pull-push)		49.0 N maximum (5 kgf)
Switch operation force	single shaft	2.94 ± 1.47 N (300 ± 150 gf)
	double shaft	2.55 ± 1.27 N (260 ± 130 gf)
Travel	single shaft	$0.3\ ^{+0.1}_{-0.2}$ mm
	double shaft	$0.3\ ^{+0.3}_{-0.2}$ 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	IP40

OUTPUT



a, b, c, d ≧ 100 ms

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

REC16D/REC16F
OPTICAL ENCODERS

RELIABILITY TEST

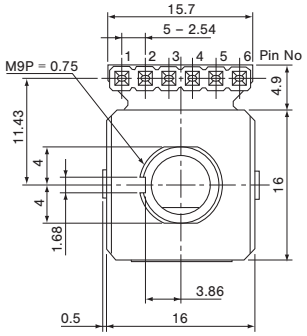
The output shall satisfy the criteria below after the following tests.

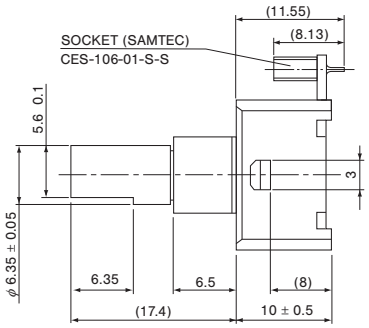
Test item		Test conditions	
Vibration	Power OFF	Amplitude : 1.52 mm or 98.1 m/s^2 (10 G) whichever is smaller. 10 ~ 500 Hz excursion 15 min/cycle, 8 cycles each for X, Z, directions.	
Shock	Power OFF	3 times each in directions (X, Z) at 490 m/s^2 (50 G), 11 ms.	
High temperature exposure	Power OFF	80 °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 ℃ 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 0.5 h、− 20 °C 0.5 h	

OUTLINE DIMENSIONS

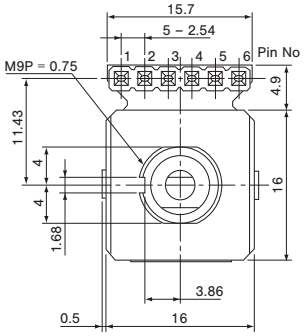
Unless otherwise specified, tolerance: ± 0.4 (Unit: mm)

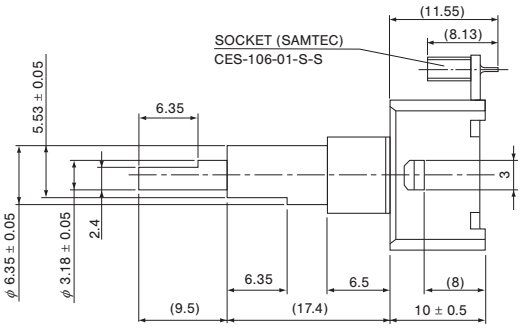
single shaft



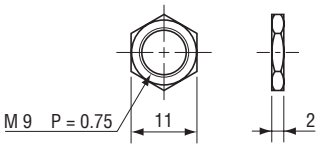


double shaft

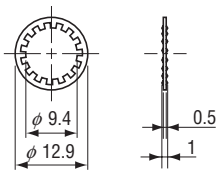




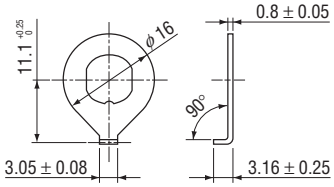
〈Accessories〉



1. Nut



2. Washer



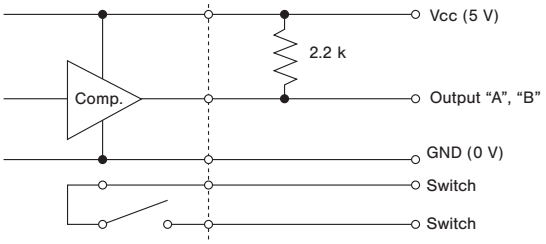
3. Locking Ring

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

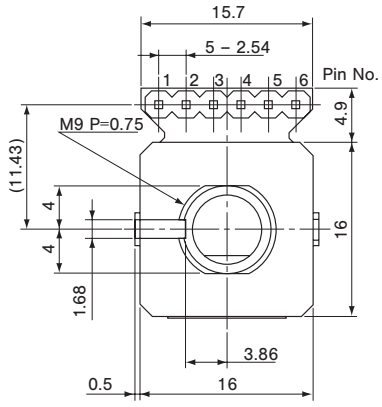


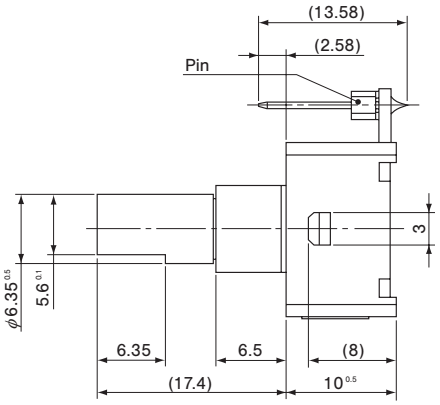
* Comparator IC: 393 equivalent

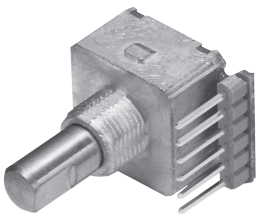
REFERENCE

The following type is available upon receipt of your order.

REC16D25-205-E







REC16F25-205-E

