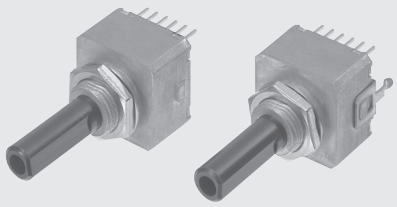
MANUAL SETTING TYPE OPTICAL ENCODERS

REC16/RES16

FEATURES

- High resistant to electrostatic noise by using a plastic shaft
- Compact size of 16 mm square
- With mechanical ON/OFF push switch
- Long life
- RoHS compliant

RoHS compliant



PART NUMBER DESIGNATION

R E C 1 6 A 2 5 - 2 0 1 - C

Series name
REC : With click
RES : Without click

Push switch function
A : With push switch
B : Without push switch

Resolution (P/R)
25, 50

Output phase
2 : "A" & "B"

Snap-in holder
C : Yes
Blank : No

LIST OF PART NUMBERS

Test item / Resolution	Click	Push switch function	Snap-in holder	Part number
25 (P/R)	With Click		No	REC16A25-201
			Yes	REC16A25-201-C
		No	No	REC16B25-201
			Yes	REC16B25-201-C
	Without Click		No	RES16B25-201
			Yes	RES16B25-201-C
50 (P/R)	With Click	Yes	No	REC16A50-201
			Yes	REC16A50-201-C
		No	No	REC16B50-201
			Yes	REC16B50-201-C
	Without Click		No	RES16B50-201
			Yes	RES16B50-201-C

REC16/RES16
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, 50
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 m Ω maximum (Initial value)

Note) Manual setting only.

Mechanical characteristics

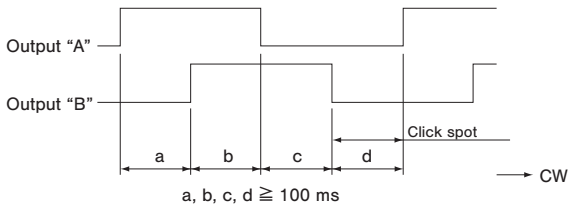
Starting torque		1.18 mN·m ± 0.78 maximum (12 ± 8 gf·cm) 〈RES : Without click〉
Click torque		6.87 mN·m ± 3.43 maximum (70 ± 35 gf·cm) 〈REC : With click〉
Click number		25, 50
Shaft loading (Pull-push)		19.6 N maximum (2 kgf)
Switch operation force		7.85 N ± 2.94 N (800 ± 300 gf)
Switch stroke		0.5 mm
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

Environmental characteristics

Operating temp. range	0 ~ 50 °C
Storage temp. range	– 20 ~ 80 °C
Protection grade	IP40

OUTPUT

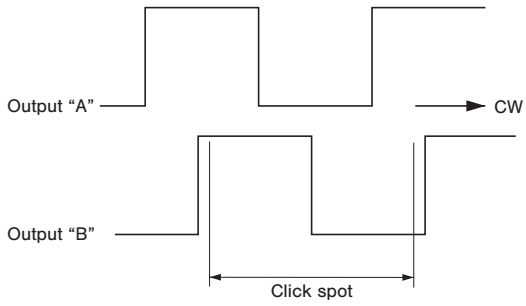
Click spot for 25P/R



a, b, c, d ≧ 100 ms

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

Click spot for 50P/R



RELIABILITY TEST

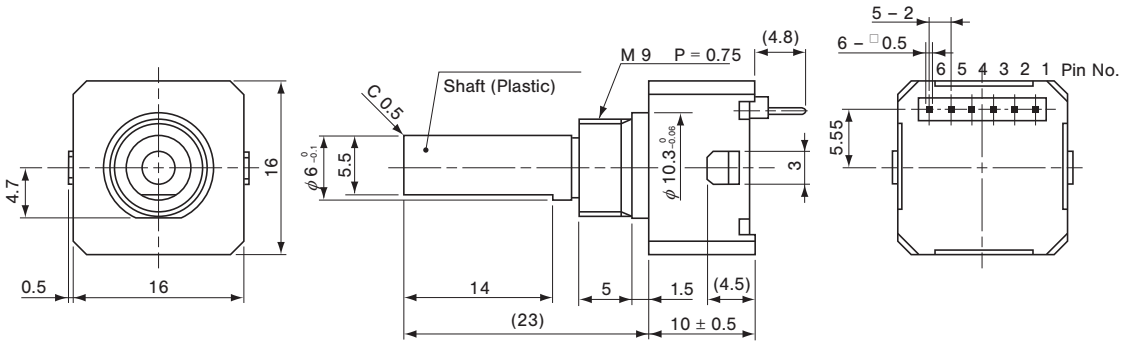
The output shall satisfy the criteria below after the following tests.

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)

Without snap-in holder



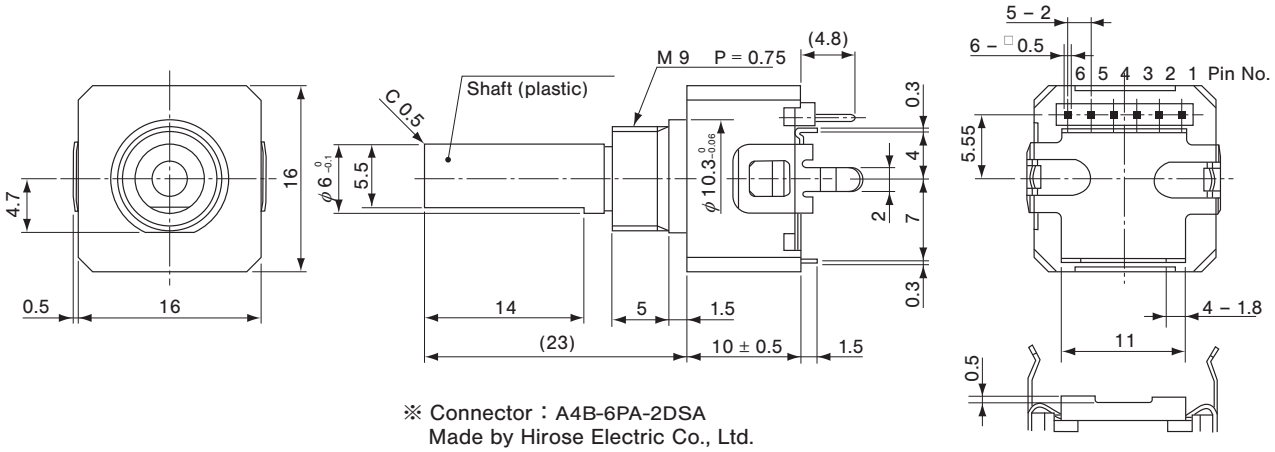
※ Connector : A4B-6PA-2DSA
Made by Hirose Electric Co., Ltd.

REC16/RES16
OPTICAL ENCODERS

OUTLINE DIMENSIONS

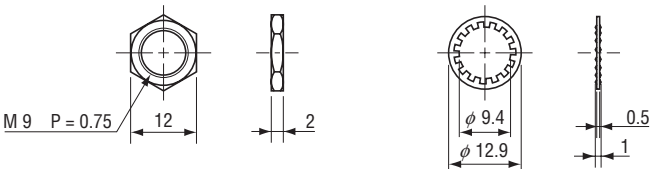
Unless otherwise specified, tolerance: ± 0.4 (Unit: mm)

With snap-in holder

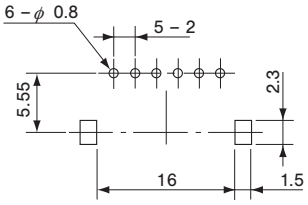


※ Connector : A4B-6PA-2DSA
Made by Hirose Electric Co., Ltd.

〈Accessories〉



1. Nut　　2. Washer

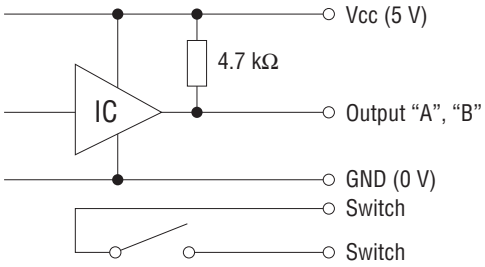


Mounting hole dimention (Tolerance : 0.1)
(Board thickness t = 1.6)

PIN ASSIGNMENT

Pin No.	With switch	Without switch
1	Power 0 (V)	Power 0 (V)
2	Output “B”	Output “B”
3	For switch	N C
4	For switch	N C
5	Power ⊕	Power ⊕
6	Output “A”	Output “A”

OUTPUT CIRCUIT



KNOB FOR SETTING ENCODERS

The knobs are sold separately as an optional item. (Ref. P. 314)