

# TOKYO SOKUTEIKIZAI CO., LTD.

## Manual Pulse Generator Catalogue

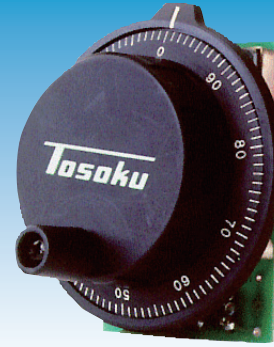
RE 4 5 T	_____	P . 0 3
thin (8.5mm), hermetically sealed		
RE 4 5 B	_____	P . 0 5
long life, various options		
RE 4 6	_____	P . 0 7
large wheel, yet thin		
RE 4 7	_____	P . 0 9
most compact and thin		



# Manual Pulse Generator



# RE45T series



## Outline

RE45T/V series are compact optical manual pulse generators that allow accurate and smooth manual motion for NC machine tools, industrial machines etc.

## Features

- Eco friendly: RoHS compliant
- Various Options
  - terminal block mounted type/direct moulding type
  - output circuit: CMOS, open collector, line driver
- Enclosed structure design
- Protection from flux
- 100PPR, 25PPR available
- Long life use

## Specifications

Model	RE645T***5	RE45T***1	RE45T***D	RE45***T2
	RE45V***5			
Application	5V input	12V input	Differential line	Photo coupler
Power Voltage	DC5V±10%	DC12V±10%	DC5V±10%	DC10.8Vto 26.4V
Current Power	≤ 80mA	≤ 60mA	≤ 150mA (90mA typ)	≤ 60mA
Current Power (Open collector)	≤ 30mA	≤ 40mA		
Out put	CMOS (45T) 330Ωpull-up or open collector	2.2KΩpull-up or open collector	RS-422A (Line driver) Receiver's terminator : 100Ω for each signal	Open collector (Current out put type)
Out put voltage	level 1: (Power voltage -0.5V) ≤			level 1: TR is ON
Out put voltage (Pull up)	level 0: ≤ 0.4V (No-load)			level 0: TR is OFF
Collector voltage (Open collector)	not more than DC30V or 50mA			not more than DC30V or 50mA
Pulse per revolution	100pulse/100Click or 25Pulse/100Click			
Click torque	S: (Soft torque) 8 ~ 16mN.m C: (Standard) 32 ~ 64mN.m			
Rotational Durability	Over a million times			
Protection against water	2m water resistant (2h) (Do not push or rotate under the water)			
Operating Temperature	-10℃		~	60℃
	14F			140F

## Part number designation

RE45T 1 C M 1 B 1

① ② ③ ④ ⑤ ⑥

① Number of pulses  
1: 100PPR  
2: 25PPR

② Click  
C: Standard  
S: Soft  
Blank: without click

③ Output  
M: CMOS  
O: Open Collector  
D: Line Driver  
R: Pull up

④ Supply Voltage  
1: 12V  
2: 24V  
5: 5V

⑤ Dial Knob  
B: 15mm, with Tosoku logo  
C: 15mm, without logo  
D: 15mm, with customer logo  
H: 25mm with Tosoku logo  
J: 25mm without logo  
K: 25mm, with customer logo

⑥ Dial base / Shaft length  
Blank: W/O dial base, 16mm  
0: W/O dial base, 18mm  
1: With dial base, 18mm

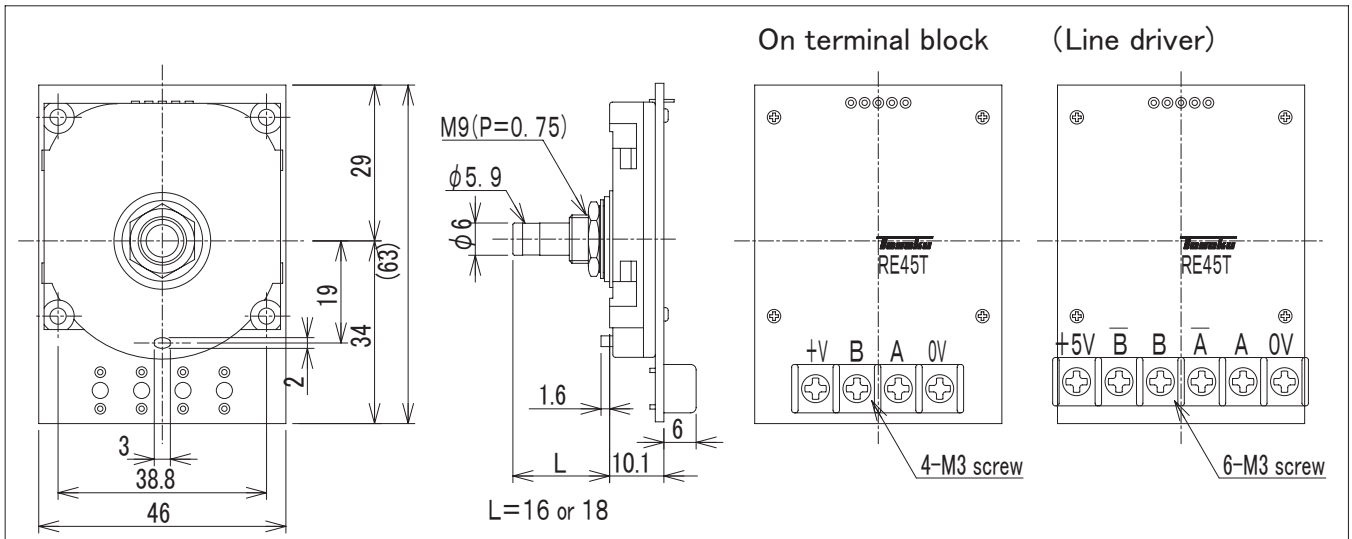
Models	Supply	Out-put	Pulse Per Revolution	
RE45T1_M5	5V	5V	100PPR	Standard Model for 5V
RE45T1_R1	12V	12V	100PPR	Standard Model for 12V
RE45T1_O5	5V	OC	100PPR	
RE45T1_O1	12V	OC	100PPR	
RE45T1_O2	24V	OC*	100PPR	12V ~ 24V input, photo coupler only
RE45T1_D5	5V	Differential Line*	100PPR	Special model for noise resistance
RE45T2_M5	5V	5V	25PPR	
RE45T2_M1	12V	5V*	25PPR	12V input, 5Voutput
RE45T2_O1	12V	OC	25PPR	
RE45T2_O2	24V	OC*	25PPR	12V ~ 24V input, photo coupler only
RE45T2_D5	5V	Differential Line*	25PPR	Special model for noise resistance

\*Differential Line: Connect with terminating resistance 100Ω (Based on RS-422 line receiver).

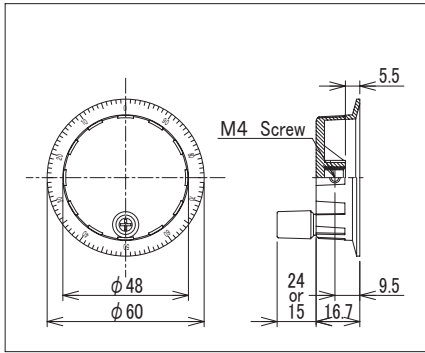
\*5V: power voltage = 12V. Output voltage = 5V

\*OC (For photo coupler): Out put voltage/0level=transistor /OFF=Current/0

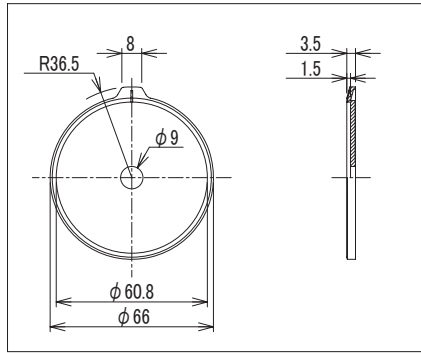
# Dimensions (mm)



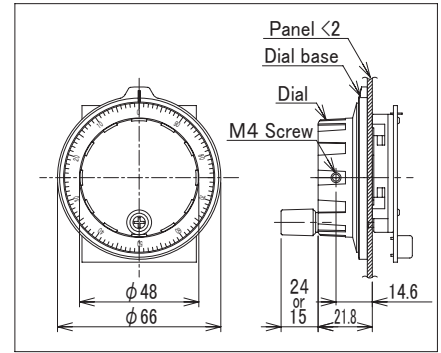
## ■ Dial



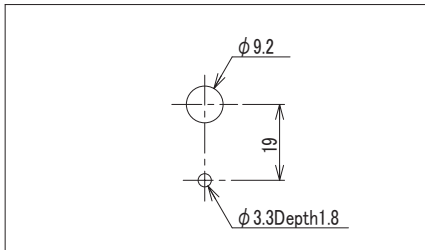
## ■ Dial base



## ■ Dial attached on the dial base



## ■ Mounting hole dimensions (mm)



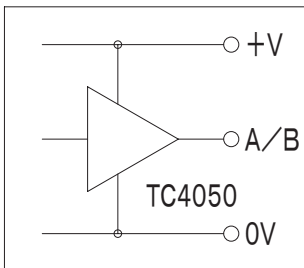
## Precautions

Soldering	Temperature	Time
Manual Soldering	Up to 350°	Within 3 seconds for each terminal
Flow soldering	Up to 260°	Within 5 seconds for each terminal

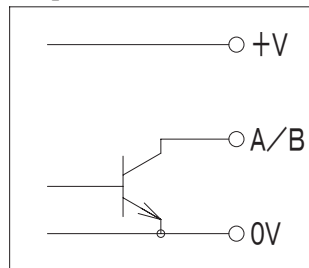
NOTE: Do not put pressure on terminal during heating or soon after.

## ■ Circuitry

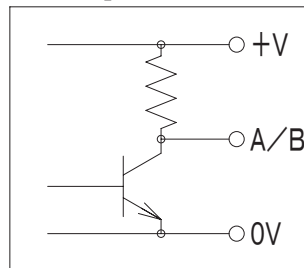
### ● CMOS (M)



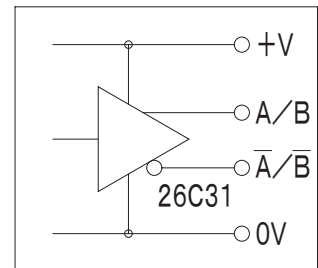
### ● Open Collector (O)



### ● Pull up (R)

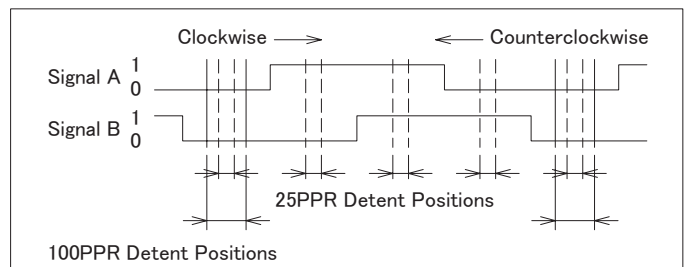


### ● Line driver (D)



## ■ Output Waveform

- Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage (1);



# Manual Pulse Generator



# RE45B series



## Outline

RE45B series are optical manual pulse generator developed for NC machine tools

## Features

- Eco friendly: RoHS compliant
- Comfortable wide knob
- Various Options
- Printing Logo type on the wheel cover upon request
- Long life use

## Specifications

Application	5V input	2V input	Differential line	Photo coupler
Power Voltage	DC5V±10%	DC12V±10%	DC5V±10%	DC10.8V to 26.4V
Current power (pull up)	≤ 80mA	≤ 60mA	≤ 150mA (90mA typ)	≤ 60mA
Current power (Open collector)	≤ 30mA	≤ 40mA		
Output	330Ω Pull-up or Open collector	2.2KΩ Pull-up or Open collector	RS-422A (Line driver) Terminating register at receiver :100Ω/phrase	Open collector (Current output type)
Output voltage	1 level: (Power voltage -0.5V) ≤			1 level: Transistor/ON
Output voltage (pull up)	0 level: ≤ 0.4V (No-load)			0 level: Transistor/OFF
Collector voltage	≤ DC30V			≤ 30V
Collector voltage (Open collector)	≤ 40mA			≤ 50mA
Pulse per revolution	100pulse/100Click or 25pulse/100Click			
Click torque	A,B,C : 8 ~ 16mN.m D: 32 ~ 64mN.m			
Rotational Durability	Over a million rotations			
Water resistance	D type only: 2m water resistant (2h) (Do not push or rotate under the water)			
Operating Temperature	-10°C		~	60°C
	14F			140F

## Part number designation

RE45B      A      1      R      5      B  
                  ①      ②      ③      ④      ⑤

### ① Type

A: With φ 80 dial / mounted by 3 nuts  
C: With φ 66 dial / mounted by 1 nut  
D: Without Dial

### ② Number of pulses

1: 100PPR  
2: 25PPR

### ③ Output

R: Voltage Output  
O: Open Collector  
D: Line Driver

### ④ Supply Voltage

5: 5V  
1: 12V  
2: 24V

### ⑤ Dial Knob (color:black)

B: 15mm, with Tosoku logo  
C: 15mm, without logo  
D: 15mm, with customer logo  
H: 24mm with Tosoku logo  
J: 24mm without logo  
K: 24mm, with customer logo

Models	Supply		Pulse Per Revolution
RE45B_1R5	5V	5V	100PPR
RE45B_1R1	12V	12V	100PPR
RE45B_1O5	5V	OC	100PPR
RE45B_1O1	12V	OC	100PPR
RE45B_1O2	24V	OC*	100PPR
RE45B_1D5	5V	Differential Line*	100PPR
RE45B_2R5	5V	5V	25PPR
RE45B_2R1	12V	5V*	25PPR
RE45B_2O5	12V	OC	25PPR
RE45B_2O1	12V	OC	25PPR
RE45B_2O2	24V	OC*	25PPR
RE45B_2D5	5V	Differential Line*	100PPR

\*Differential Line: Connect with terminating resistance 100Ω (Based on RS-422 line receiver).

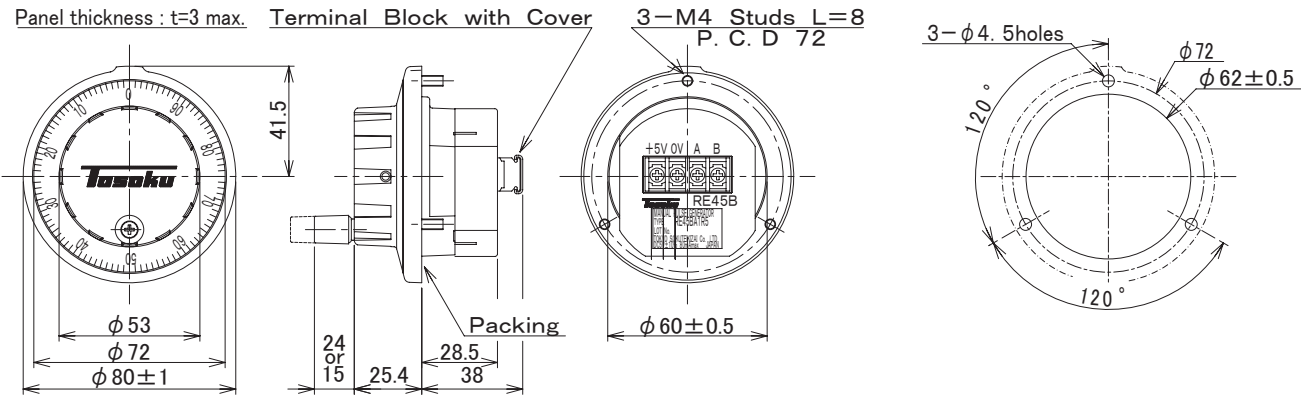
\*5V: Supply voltage=12V, Output voltage=5V

\*OC: For photo coupler only, Supply voltage 12 ~ 24V

# Dimensions (mm)

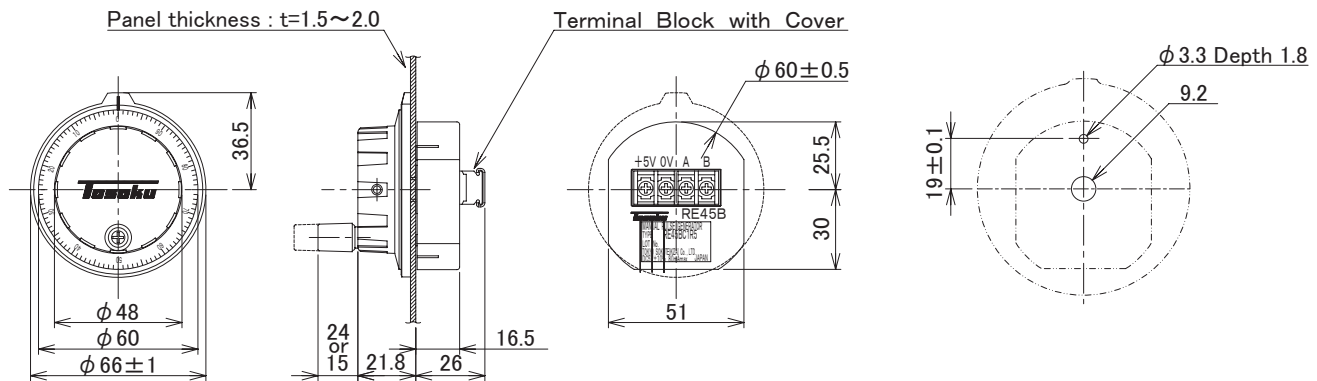
## ● Type A (with 80 $\phi$ dial / mounted by 3 nuts)

## ■ Type A, Mounting hole dimensions (mm)

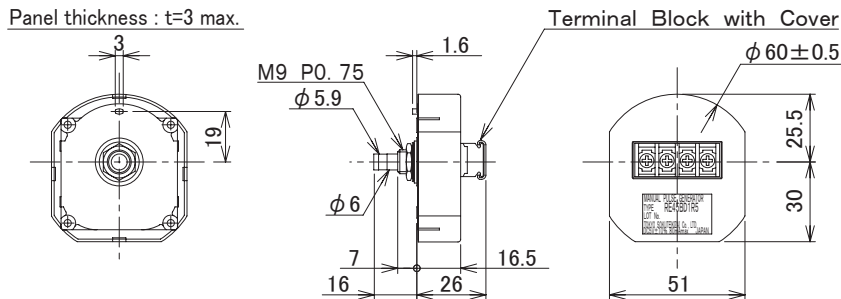


## ● Type C (with 66 $\phi$ dial / mounted by 1 nut)

## ■ Type C,D, Mounting Hole Dimension (mm)

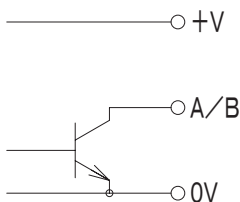


## ● Type D (without dial)

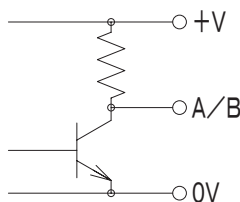


## ■ Circuitry

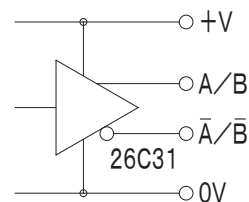
### ● Open collector (code:O)



### ● Voltage Output (code:R)

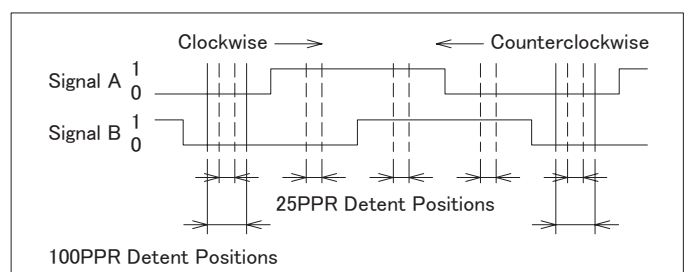


### ● Line Driver (code:D)



## ■ Output Waveform

- Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage (1);



# Manual Pulse Generator



# RE46 series



## Outline

RE46 series are incremental optical manual pulse generators developed for NC machine tools. The depth of the surface-bottom is mere 8mm which allows you to save space behind the panel.

## Features

- Eco friendly: RoHS compliant
- Fine operability with a large wheel and a weight inside
- Various Options of the input/output circuit: CMOS, open collector, line driver
- Chattering-free and long-life use with optical unit
- Original logos available on the wheel cover

## Specifications

Application	5V input	12V input	Differential line	Photo coupler(12 ~ 24V)
Power Voltage	DC5V±10%	DC12V±10%	DC5V±10%	DC10.8V to 26.4V
Current power (pull up)	≤ 80mA	≤ 60mA	≤ 150mA (90mAtyp)	≤ 60mA
Current power(Open collector)	≤ 30mA	≤ 40mA		
Output	330ΩPull-up or Open collector	2.2KΩPull-up or Open collector	RS-422A (Line driver) Terminating register at receiver :100Ω/phrase	Open collector (Current output type) 1level:Transistor/ON 0level:Transistor/OFF
Output voltage (pull up)	1 level:(Power voltage -0.5V) ≤ 0 level: ≤ 0.4V (No-load)			≤ 30V ≤ 50mA
Collector voltage (Open corrector)	≤ DC30V ≤ 50mA			
Pulse per revolution	100pulse/100Click or 25pulse/100Click			
Click torque	32 ~ 64mN.m (320 ~ 640gf.cm)			
Rotational Durability	Over a million rotations			
Operating Temperature	-10℃ ~ 60℃ (14F ~ 140F)			
Weight	220g			

## Part number designation

<b>RE46</b>	<b>A</b>	<b>1</b>	<b>C</b>	<b>R</b>	<b>5</b>	<b>B</b>
	①	②	③	④	⑤	⑥
① Type				⑤ Supply Voltage		
② Number of Pulses				5: 5V		
1: 100PPR				1: 12V		
2: 25PPR				2: 12 ~ 24V		
③ Click				⑥ Dial Knob (color black)		
C: Standard				B: 15mm with Tosoku logo		
				C: 15mm without logo		
				D: 15mm customer logo		
④ Output				H: 24mm with Tosoku logo		
R: Voltage Output				J: 24mm without logo		
O: Open Collector				K: with customer logo		
D: Line Driver						

Models	Supply		Pulse Per Revolution
RE46A1CR5_	5V	5V	100PPR
RE46A1CR1_	12V	12V	100PPR
RE46A1CO5_	5V	OC	100PPR
RE46A1CO1_	12V	OC	100PPR
RE46A1CO2_	24V	OC*	100PPR
RE46A1CD5_	5V	Differential Line*	100PPR
RE46A2CR5_	5V	5V	25PPR
RE46A2CR1_	12V	5V*	25PPR
RE46A2CO5_	5V	OC	25PPR
RE46A2CO1_	12V	OC	25PPR
RE46A2CO2_	24V	OC*	25PPR
RE46A2CD5_	5V	Differential Line*	25PPR

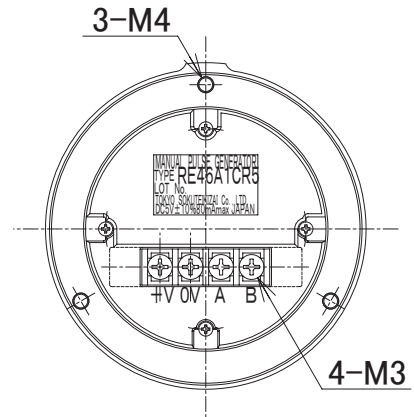
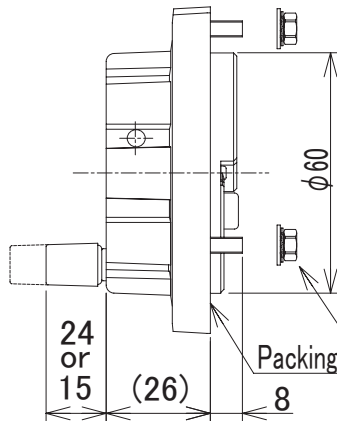
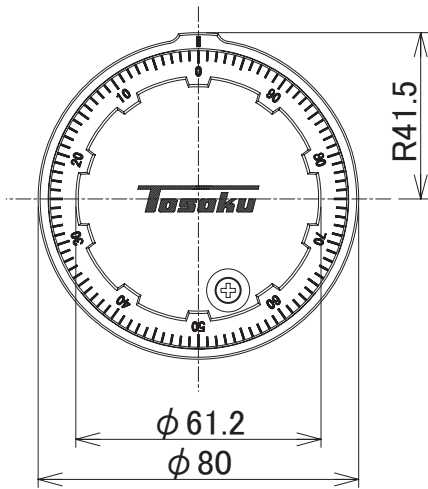
\*Differential Line: Connect with terminating resistance 100Ω(Based on RS-422 line receiver).

\*5V:Supply voltage=12V, Output voltage=5V

\*OC:For photo coupler only, Supply voltage 12 ~ 24V

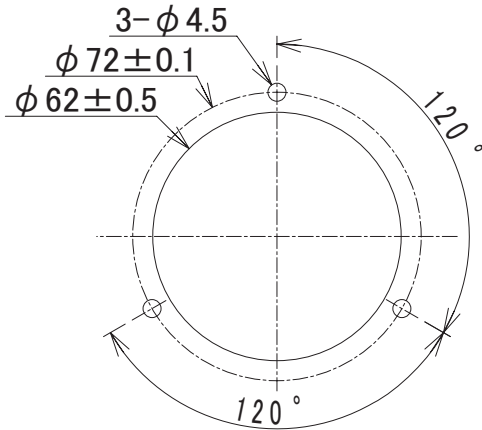
# Dimensions (mm)

\* Line Driver is in the drawing below

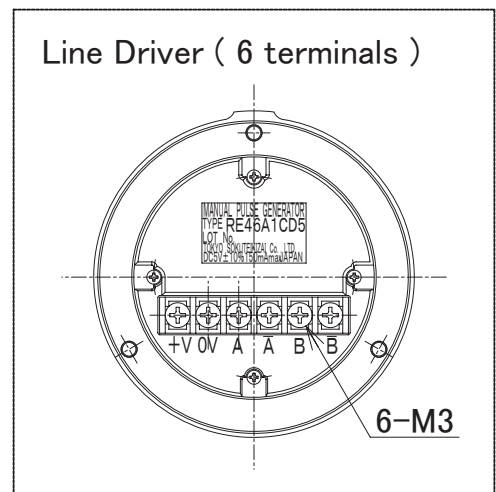


Accessories  
 M4 Nut : t=3.2mm  
 M4 Teeth Washer : t=0.9mm  
 M4 Washer : t=0.8mm

## Panel Mounting Hole

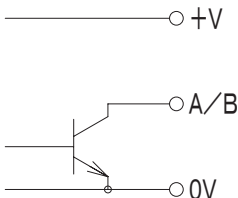


Thickness of the Panel :  $\leq 3$  mm  
 Recommended Torque for fastening the nut : 0.4 ~ 0.5 N·m (4~5 Kgf·cm)

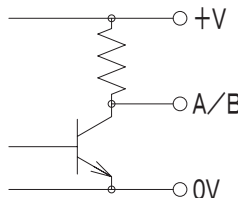


## ■ Circuitry

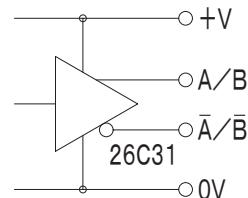
● Open collector (code:O)



● Voltage Output (code:R)

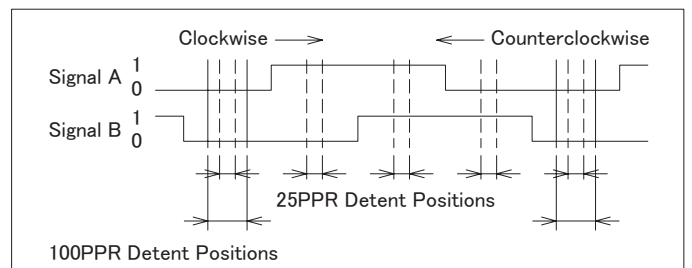


● Line Driver (code:D)



## ■ Output Waveform

- Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- Rotating the shaft counterclockwise would generate the signal A when the signal B outputs a high voltage (1);





# Manual Pulse Generator



# RE47 series



## Outline

RE47 is an incremental optical manual pulse generator developed mainly for NC machine tools. The series are most compact of all MPGs on our line-up and universally compatible with various sorts of compact MPGs.

## Features

- Eco friendly: RoHS compliant
- $\phi$ 60mm diameter
- Less than 10mm in depth (from surface-to-bottom) allows you to save space behind the panel
- Fine operability with a weight inside of the dial.
- Various Options of the input/output circuit: CMOS, open collector, line driver
- Chattering-free and long-life use with optical unit
- Original logos available on the dial

## Specifications

Application	5V input	12V input	Differential line	Photo coupler(12 ~ 24V)
Power Voltage	DC5V $\pm$ 10%	DC12V $\pm$ 10%	DC5V $\pm$ 10%	DC10.8V to 26.4V
Current power (pull up)	$\leq$ 80mA	$\leq$ 60mA	$\leq$ 150mA (90mAtyp)	$\leq$ 60mA
Current power(Open collector)	$\leq$ 30mA	$\leq$ 40mA		
Output	330 $\Omega$ Pull-up or Open collector	2.2K $\Omega$ Pull-up or Open collector	RS-422A (Line driver) Terminating register at receiver :100 $\Omega$ /phrase	Open collector (Current output type) 1level:Transistor/ON 0level:Transistor/OFF
Output voltage (pull up)	1 level:(Power voltage -0.5V) $\leq$ 0 level: $\leq$ 0.4V (No-load)			$\leq$ 30V $\leq$ 50mA
Collector voltage (Open corrector)	$\leq$ DC30V $\leq$ 50mA			
Pulse per revolution	100pulse/100Click or 25pulse/100Click			
Panel water resistance	IP54			
Click torque	8 ~ 16mN.m (80 ~ 160gf.cm)			
Rotational Durability	Over a million rotations			
Operating Temperature	-10 $^{\circ}$ C ~ 60 $^{\circ}$ C (14F ~ 140F)			
Weight	85g			

## Part number designation

<u>RE47</u>	<u>A</u>	<u>1</u>	<u>S</u>	<u>R</u>	<u>5</u>	<u>B</u>
	①	②	③	④	⑤	⑥
① Type				⑤ Supply Voltage		
				5: 5V		
② Number of Pulses				1: 12V		
1: 100PPR				2: 12 ~ 24V		
2: 25PPR						
③ Click				⑥ Dial Knob (color black)		
S: Soft				B: 15mm with Tosoku logo		
				C: 15mm without logo		
				D: 15mm customer logo		
④ Output						
R: Voltage Output						
O: Open Collector						
D: Line Driver						

Models	Supply		Pulse Per Revolution
RE47A1SR5_	5V	5V	100PPR
RE47A1SR1_	12V	12V	100PPR
RE47A1SO5_	5V	OC	100PPR
RE47A1SO1_	12V	OC	100PPR
RE47A1SO2_	24V	OC*	100PPR
RE47A1SD5_	5V	Differential Line*	100PPR
RE47A1SR5_	5V	5V	25PPR
RE47A1SR1_	12V	5V*	25PPR
RE47A1SO5_	5V	OC	25PPR
RE47A1SO1_	12V	OC	25PPR
RE47A1SO2_	24V	OC*	25PPR
RE47A1SD5_	5V	Differential Line*	25PPR

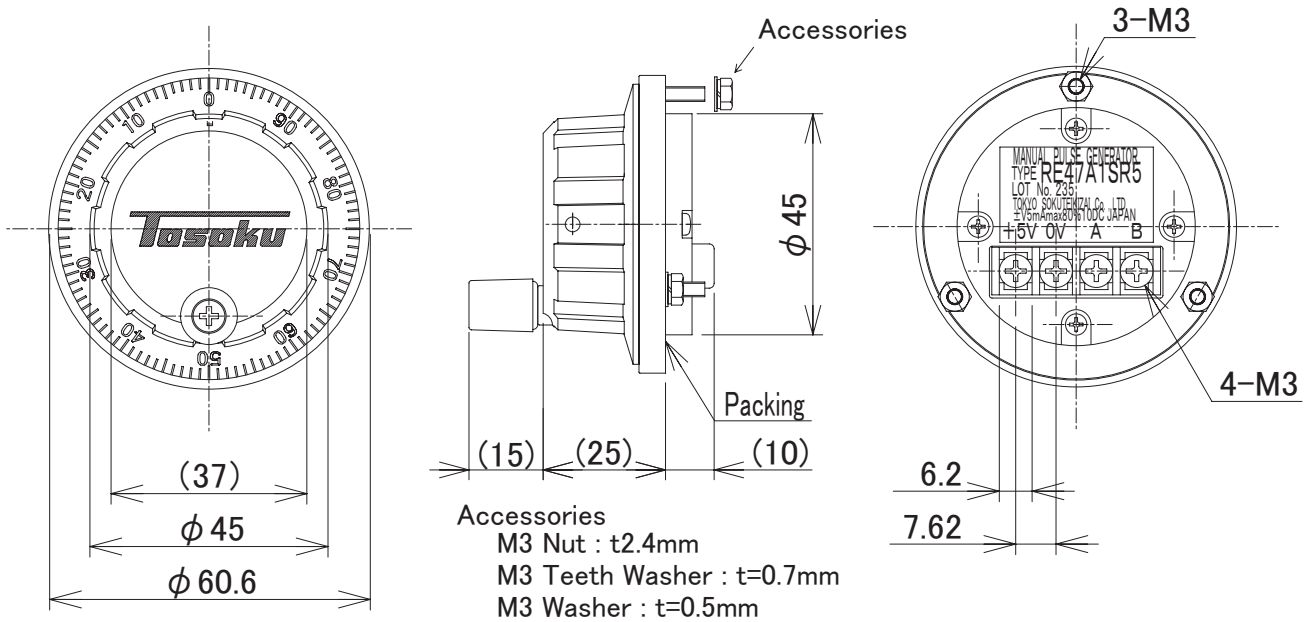
\*Differential Line: Connect with terminating resistance 100 $\Omega$ (Based on RS-422 line receiver).

\*5V:Supply voltage=12V, Output voltage=5V

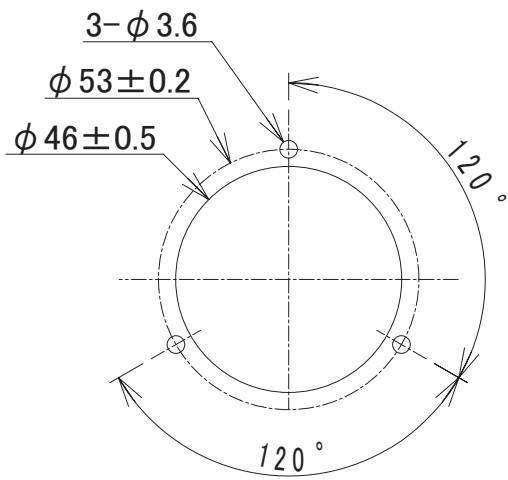
\*OC:For photo coupler only, Supply voltage 12 ~ 24V

# Dimensions (mm)

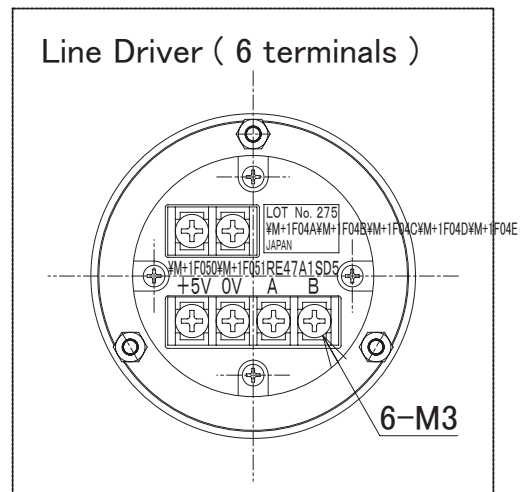
\* Line Driver is in the drawing below



## Panel Mounting Hole

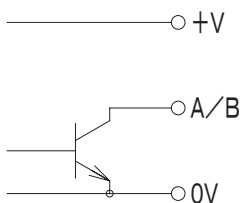


Thickness of the Panel :  $\leq 3$  mm  
 Recommended Torque for fastening the nut :  $0.4 \sim 0.5$  N·m (4~5 Kgf·cm)

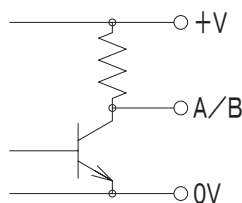


## ■ Circuitry

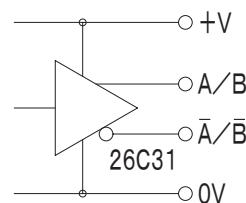
● Open collector (code:O)



● Voltage Output (code:R)



● Line Driver (code:D)



## ■ Output Waveform

- Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage (1);

