

Tokyo Sokuteikizai Co.,Ltd.

Manual Pulse Generator Catalogue

RE45T/V ————— P. 03

thin (8.5mm), hermetically sealed

RE45B ————— P. 05

long life, various options

RE46 ————— P. 07

large wheel, yet thin

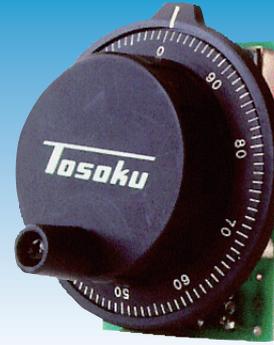
RE47 ————— P. 09

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 RE45V***5	RE45T***1	RE45T***D	RE45***T2
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℃ 14F		~	60℃ 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

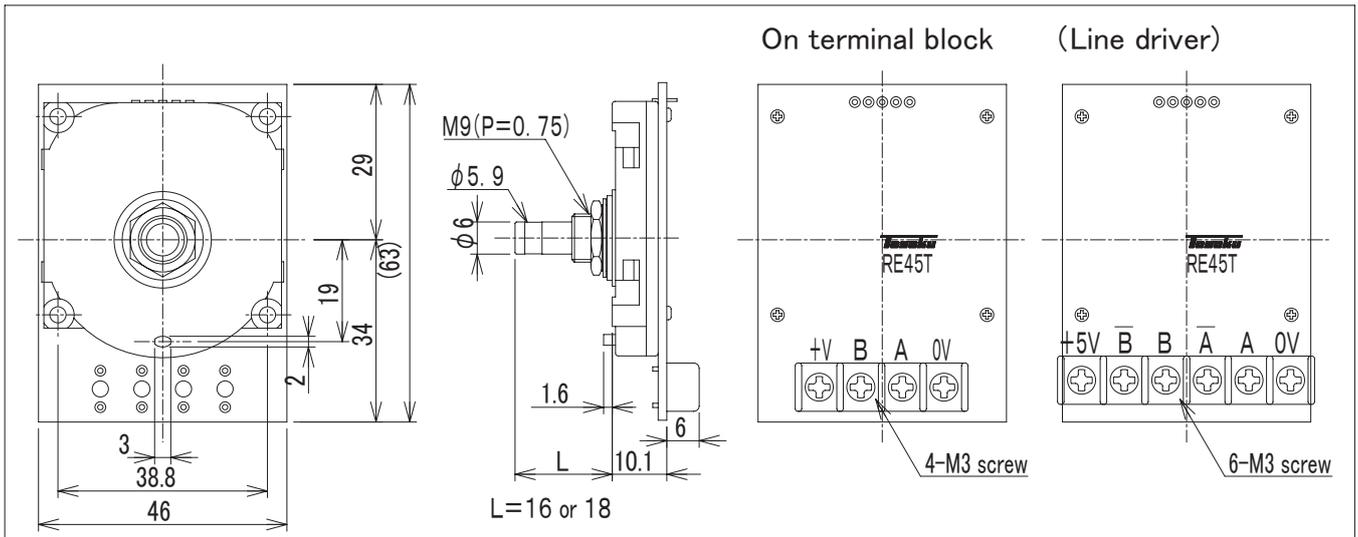
Models	Supply	Out-put	Pulse Per Revolution	
RE45T1_M5	5V	5V	100PPR	Standard Model for 5V
RE45T1_R1	12V	12V	100PPR	Standard Model for 12V
RE45T1_O5	5V	OC	100PPR	
RE45T1_O1	12V	OC	100PPR	
RE45T1_O2	24V	OC*	100PPR	12V ~ 24V input, photo coupler only
RE45T1_D5	5V	Differential Line*	100PPR	Special model for 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).

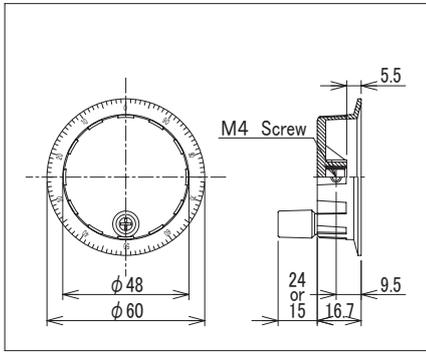
*5V: power voltage = 12V. Output voltage = 5V

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

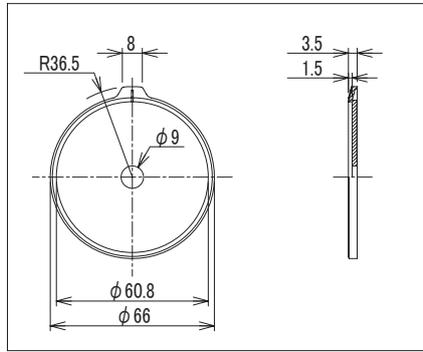
Dimensions (mm)



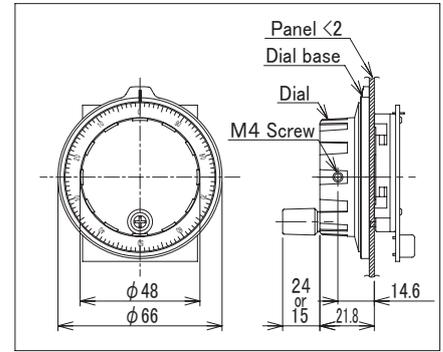
■ Dial



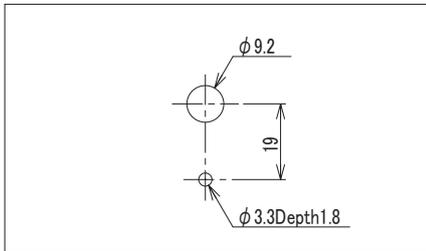
■ Dial base



■ Dial attached on the dial base



■ Mounting hole dimensions (mm)



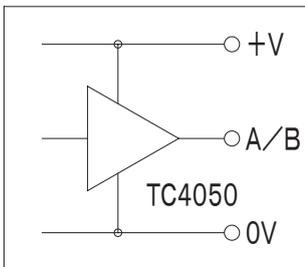
Precautions

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

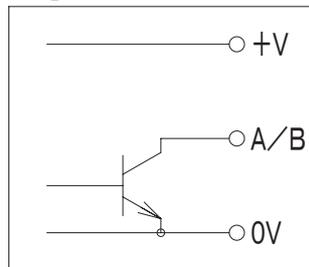
NOTE: Do not put pressure on terminal during heating or soon after.

■ Circuitry

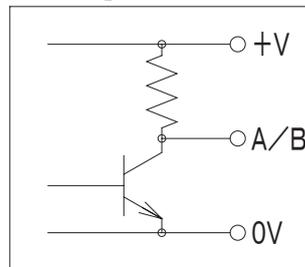
● CMOS (M)



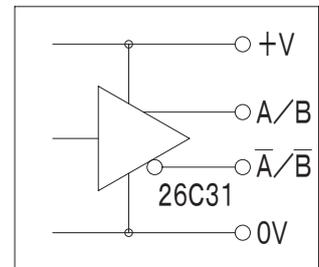
● Open Collector (O)



● Pull up (R)

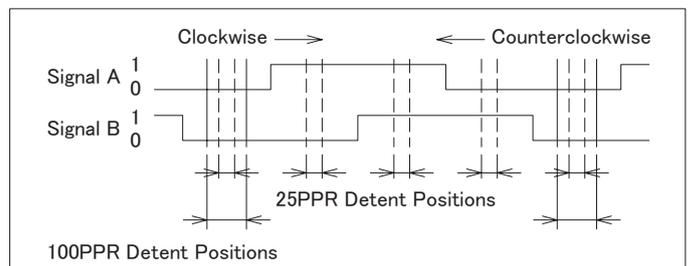


● Line driver (D)



■ 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 resistor 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).

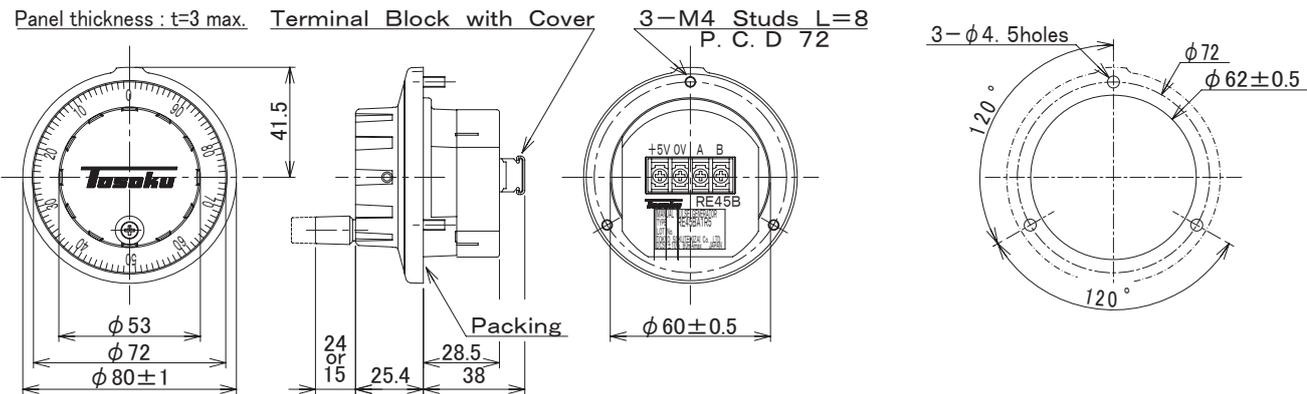
*5V: Supply voltage=12V, Output voltage=5V

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

Dimensions (mm)

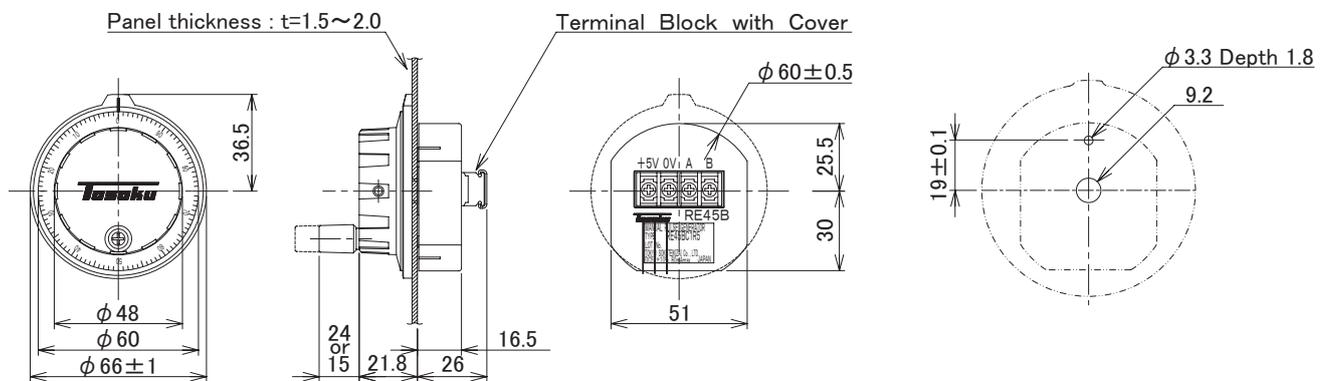
● Type A (with 80 ϕ dial / mounted by 3 nuts)

■ Type A, Mounting hole dimensions (mm)

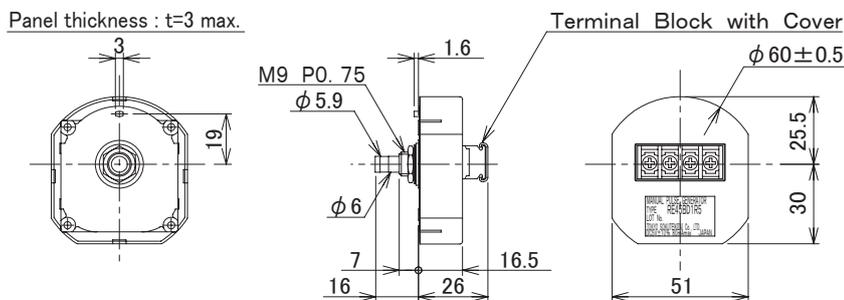


● Type C (with 66 ϕ dial / mounted by 1 nut)

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

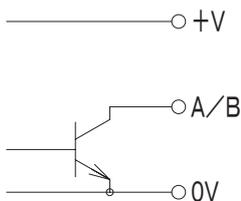


● Type D (without dial)

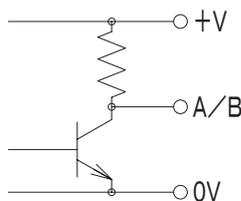


■ Circuitry

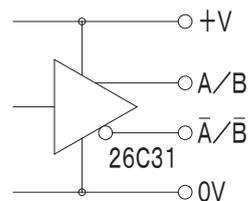
● Open collector (code:O)



● Voltage Output (code:R)

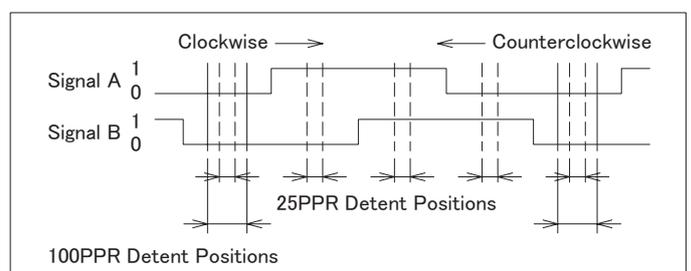


● Line Driver (code:D)



■ Output Waveform

- 1) Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- 2) 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

RE46	A	1	C	R	5	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

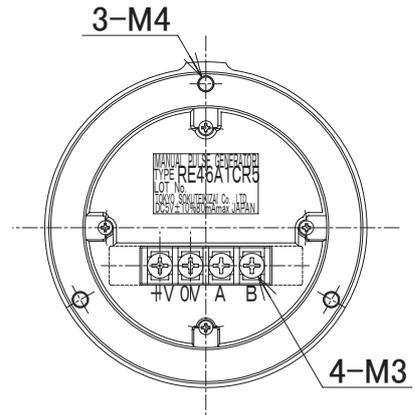
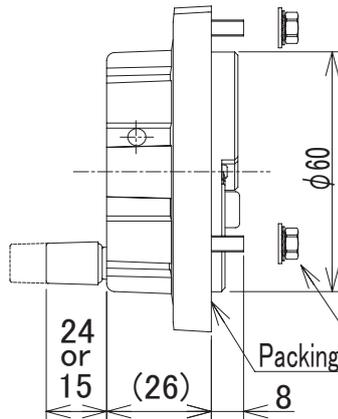
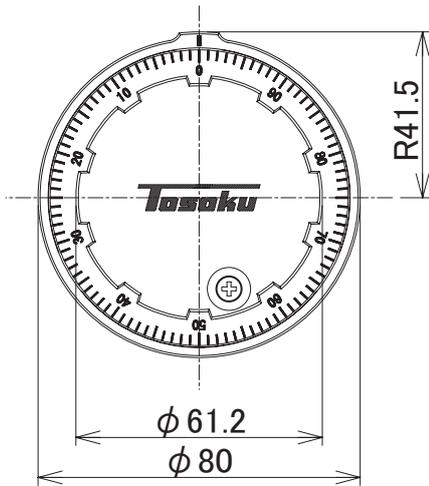
*Differential Line: Connect with terminating resistance 100Ω(Based on RS-422 line receiver).

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

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

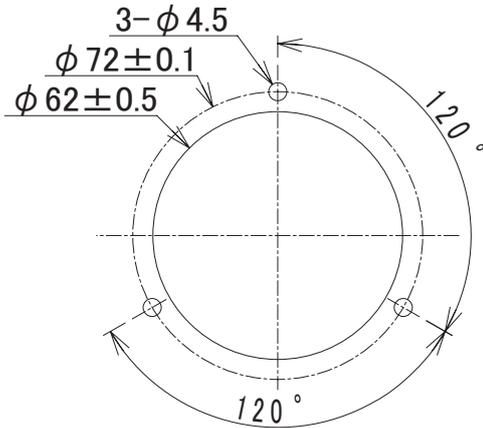
Dimensions (mm)

* Line Driver is in the drawing below

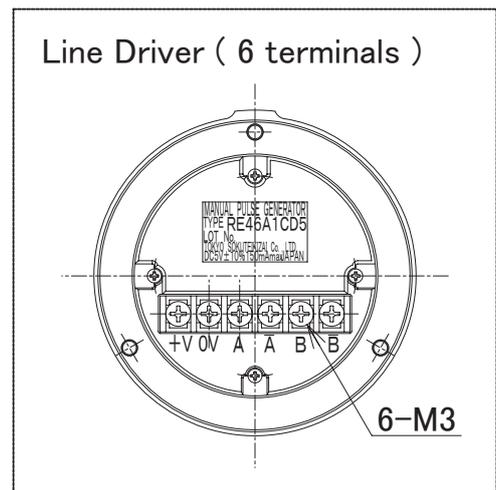


Accessories
 M4 Nut : t=3.2mm
 M4 Teeth Washer : t=0.9mm
 M4 Washer : t=0.8mm

Panel Mounting Hole

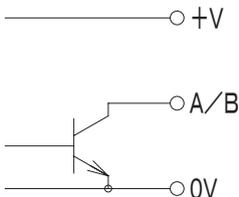


Thickness of the Panel : ≤ 3 mm
 Recommended Torque for fastening the nut : 0.4 ~ 0.5 N·m (4~5 Kgf·cm)

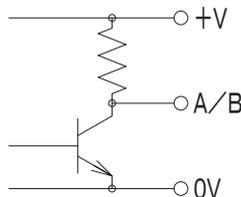


■ Circuitry

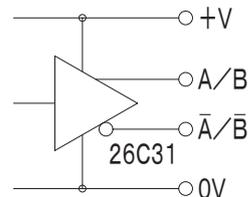
● Open collector (code:O)



● Voltage Output (code:R)

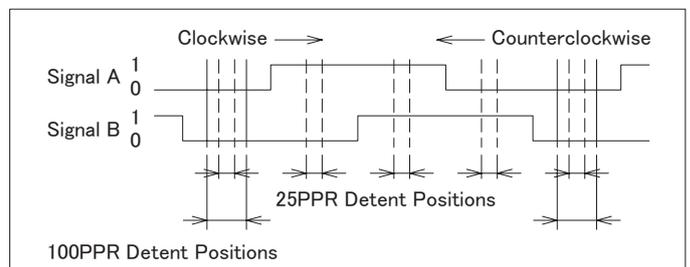


● Line Driver (code:D)



■ 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
- ϕ 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 Ω Pull-up or Open collector	2.2K Ω Pull-up or Open collector	RS-422A (Line driver) Terminating register at receiver :100 Ω /phrase	Open collector (Current output type)
Output voltage (pull up)	1 level:(Power voltage -0.5V) \leq 0 level: \leq 0.4V (No-load)			1level:Transistor/ON 0level:Transistor/OFF
Collector voltage (Open corrector)	\leq DC30V \leq 50mA			\leq 30V \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

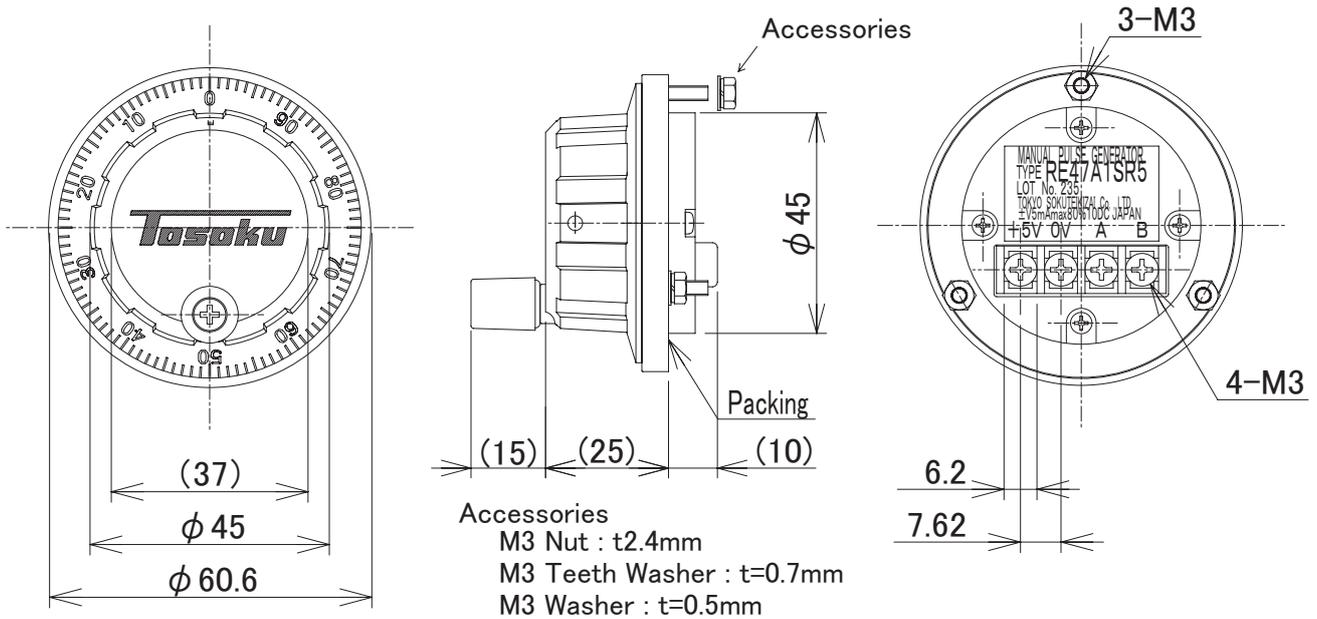
*Differential Line: Connect with terminating resistance 100 Ω (Based on RS-422 line receiver).

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

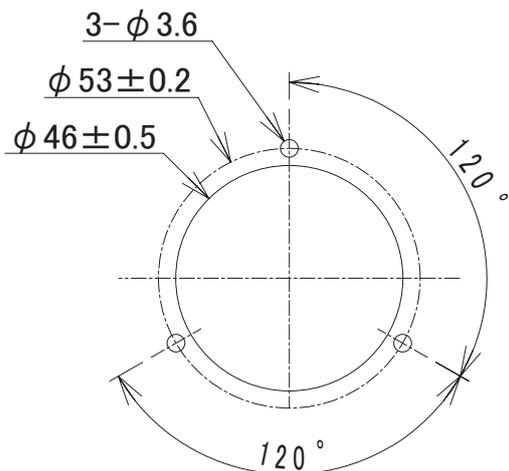
*OC:For photo coupler only, Supply voltage 12 ~ 24V

Dimensions (mm)

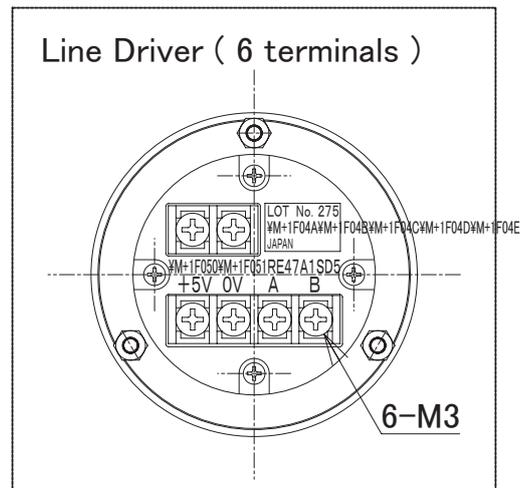
* Line Driver is in the drawing below



Panel Mounting Hole

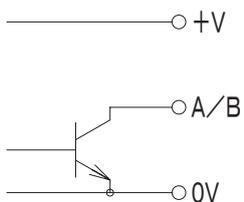


Thickness of the Panel : ≤ 3 mm
 Recommended Torque for fastening the nut : $0.4 \sim 0.5$ N·m (4~5 Kgf·cm)

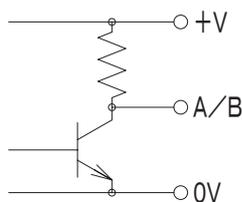


■ Circuitry

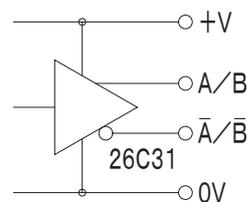
● Open collector (code:O)



● 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);

