

TOKYO SOKUTEIKIZAI CO., LTD.

Rotary Encoder Catalogue

- RE29 ————— P. 02
thin, lightweight, resin shaft/case
- RE25 ————— P. 04
waterproof model available, operated at 3.3V/5V
- RE24 ————— P. 06
dual (inner/outer) shaft: inner for push button, outer for rotation
- RE23 ————— P. 08
push button function added to the rotating shaft, low price

Ultra Slimline Rotary Encoder with Push Switch



RE29 Series



Outline

RE29 series pack compact rotary encoder with dual-functional resin shaft into the space-saving resin enclosure. RE29 is recommended for wide range of machines including measurement components, medical and telecommunication devices.

Features

- Extremely thin (6.6mm) and lightweight (7g)
- Multi-functional with 2 way acting – push switch function and rotating function – shaft
- Eco friendly:
 - 1) Low cost and lesser parts by VA design
 - 2) RoHS compliant
- Designed to be soldered to printed circuit board

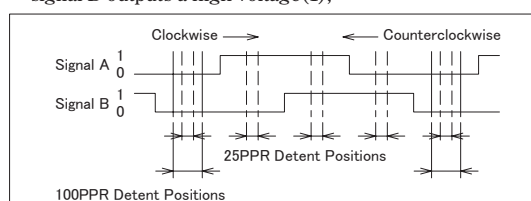
Specifications

1. Electrical and Mechanical specifications			
Items		Rated Value	
Rotary Encoder	Number of Pulses	6 PPR	
	Number of Clicks	24 Clicks	
	Supply Voltage	DC3.3V \pm 5% \leq 20mA 6mA TYP	
		DC5V \pm 5% \leq 10mA 4mA TYP	
	Output Signals	Channel A/B: Square Wave CMOS chip	
	Output Voltage	High	(Supply Voltage – 2.5V) \leq
		Low	\leq 0.5V
Response Frequency	100Hz		
Rotational Torque	4 \pm 2 mN · m		
Push switch	Rating of contact	\leq DC12V 0.1 ~ 10mA (Resistance load)	
	Travel of switch	0.2 \pm 0.1 mm	
	Operational Force	5 \pm 2 N	
Weight		7g	

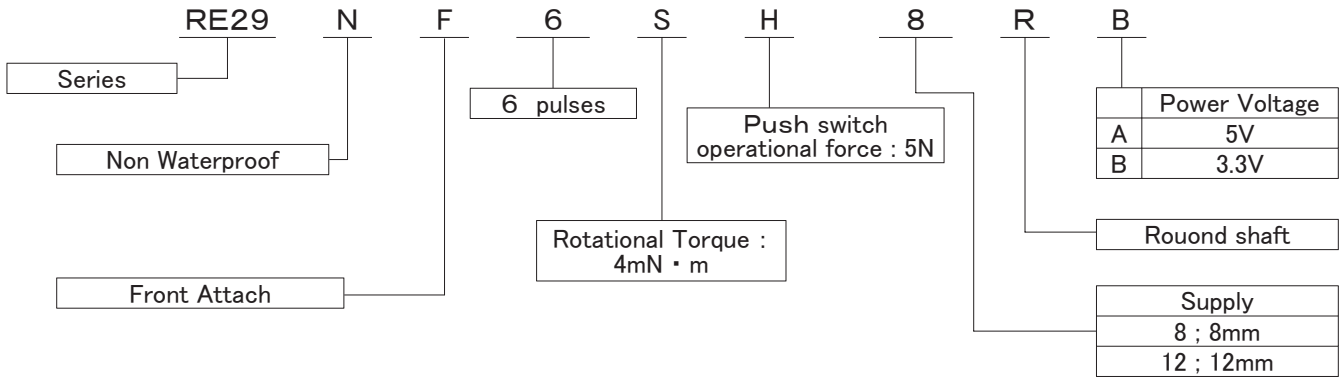
2. Reliability and Environmental Specifications		
Items		Rated Value
Durability of operating area	Thrust direction	100N
	Push Pull	50N
	Radial	1N · m
Rotational durability		1 million strokes (No load)
Screw Torque		Not more than 1N · m
Heat resistance of solder	Solder bit temp.: MAX 350°C	Within 3 seconds for each terminal
Operating temperature		-0°C ~ +55°C 32F ~ 131F
Storage temperature		- 40°C ~ +85°C - 40F ~ 185F

Output Waveform

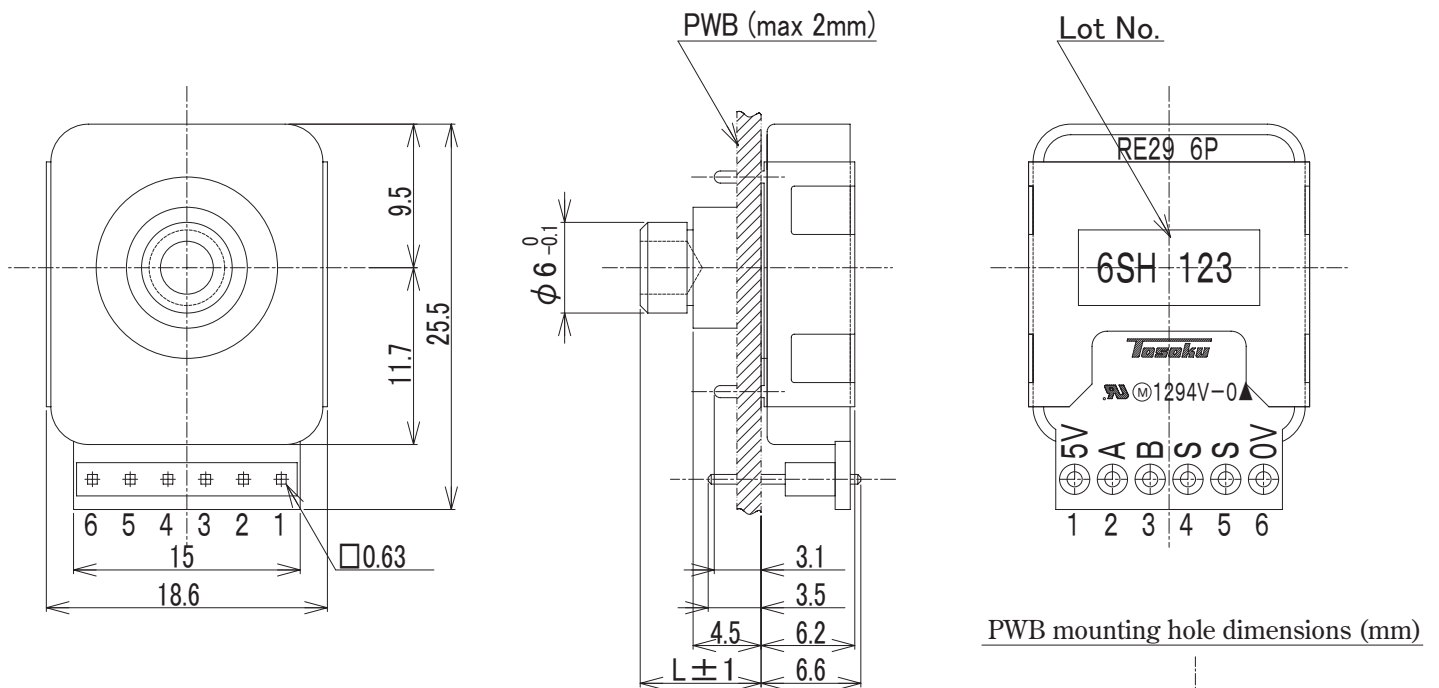
- 1) Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- 2) Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage(1);



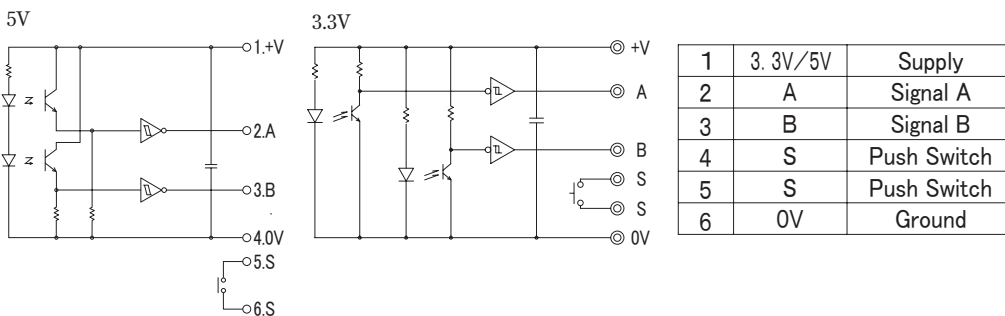
Part Number Designation



Dimensions (mm)



Circuitry



Precautions

Wiring	Use buffering amplifier when extending lead wire over 30cm.
Soldering	Do not put a load on the terminal area during and immediately after soldering.
Operation	Do not use flow/reflow soldering machines.
Power	Use under specified power voltage and connect properly.

Warranty

- 1 year from the date of shipment

Optical Rotary Encoder



RE25 Series



Outline

RE25 is a VA designed eco friendly – power-saving and low cost with lesser parts – rotary encoder. Its size, mounting procedures and inner-structures have been designed for a wide-array of uses; measurement devices, medical equipments, industrial machineries, telecommunication devices and machine tools.

Features

- Eco friendly:
 - 1) Power-saving
 - 2) Low cost and lesser parts by VA design
 - 3) RoHS compliant
- Thin-line (18.8x25.5x8.9mm) and lightweight (18g)
- Various types of models with options: lead wire with or without connector, clamp for horizontal/vertical mounting
- Long-lasting without “contact chatter” due to its optical switching function
- Waterproofed model available

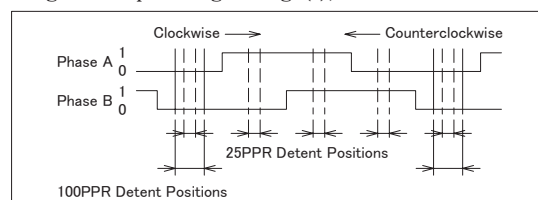
Specifications

1. Electrical and Mechanical specifications		
Items	Rated Value	
Number of pulses	16PPR, 25PPR	
Supply voltage	3.3V±10%	5V±10%
	20mA	10mA
Output signals	Channel A/B: Square Wave CMOS chip	
Output voltage	High	Supply Voltage(3.3V): $-0.3V \leq$, (5V): $-0.5V \leq$
	Low	$\leq 0.4V$
Response frequency	200Hz	
Rotational Torque	Light: S	$4 \pm 1 \text{mN} \cdot \text{m}$
	Standard: C	$6 \pm 2 \text{mN} \cdot \text{m}$
	Medium: M	$10.5 \pm 3.5 \text{mN} \cdot \text{m}$
	High: H	$16 \pm 5 \text{mN} \cdot \text{m}$
Weight	18g	

2. Reliability and Environmental specifications		
Items	Rated Value	
Durability of operating area	Thrust direction	Push
		Pull
	Radial	
Rotational durability	Light: S	1 million strokes (No load)
	Standard: C	
	Medium: M	100 thousand strokes (No load)
	High: H	
Screw Torque	Not more than $1 \text{N} \cdot \text{m}$	
Heat resistance of solder	Solder bit temp.: MAX 350°C	Within 3 seconds for each terminal
Operating temperature	0°C ~ +55°C 32F ~ 131F	
Storage temperature	- 40°C ~ +85°C - 40F ~ 185F	

Output Waveform

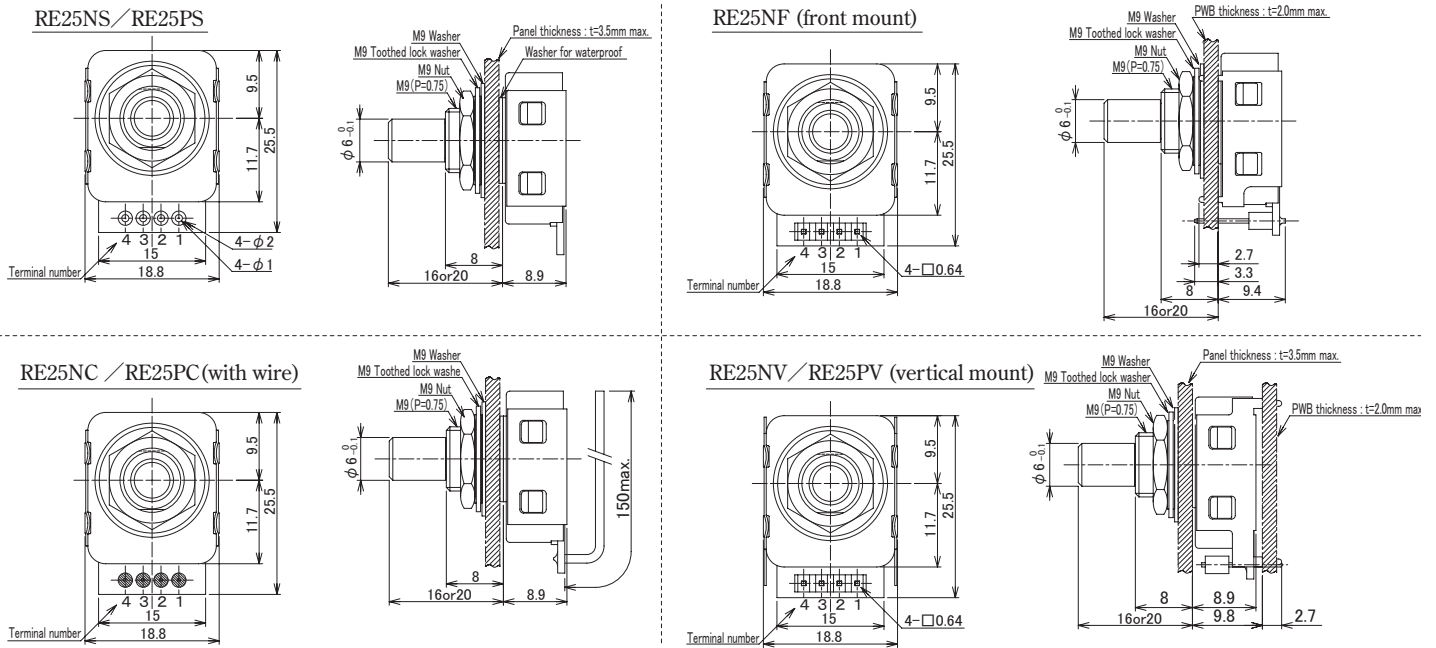
- 1) Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- 2) Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage (1);



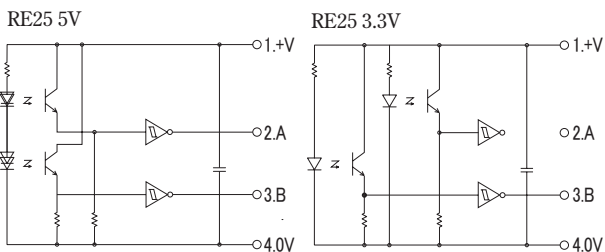
Part Number Designation

Series	RE25	N	S	25	C	20	R	A	
	Waterproof			Pulse				Power Voltage	
N	No			16	16PPR			A	5V
P	Yes			25	25PPR			B	3.3V
	Wiring				Ckick	Rotation Torque			Shaft Shape
S	Standard			S		4mN · m		R	Round
C	With wire			C	With	6mN · m			Shaft length
F	Front Mount			M		10.5mN · m		16	16mm
V	Vortical Mount			H		16mN · m		20	20mm
				Non	W/O	≤ 4mN · m			

Dimensions (mm)



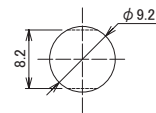
Circuitry



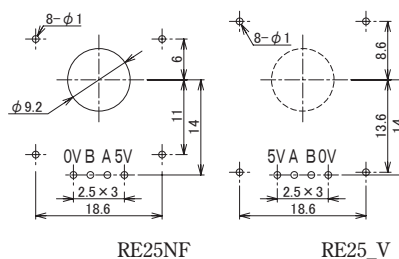
Terminal number

1	3.3V/5V	Supply
2	A	Signal A
3	B	Signal B
4	0V	Ground

Mounting hole dimensions (mm)



PWB mounting hole dimensions (mm)



Precautions

Wiring	Use buffering amplifier when extending lead wire over 30cm.
Soldering	Do not put a load on the terminal area during and immediately after soldering.
Operation	Do not use flow/reflow soldering machines.
Power	Use under specified power voltage and connect properly.

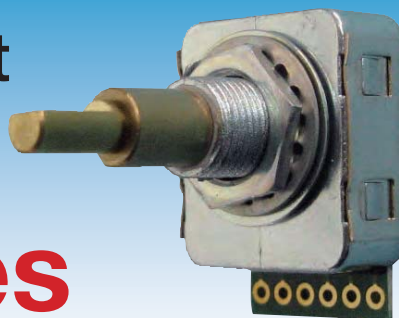
Warranty

- 1 year from the date of shipment.

Rotary Encoder with Dual Functional Shaft



RE24 Series



Outline

RE24 rotary encoder series contain unique mechanism for its shaft; its rotational outer axis for rotary encoder and the inner axis for push switch. RE24 is designed for use in various industrial areas: measurement component, medical equipment, industrial machinery, telecommunication device and machine tool.

Features

- Dual inner/outer axes mechanism to help prevent misoperation
- Eco friendly:
 - 1) Low cost and lesser parts by VA design
 - 2) RoHS compliant
- Thin-line (18.8x25.5x8.9mm) and lightweight (18g)
- Long-lasting without “contact chatter” due to its optical switching function
- Specially designed knob (GG60) available

Specifications

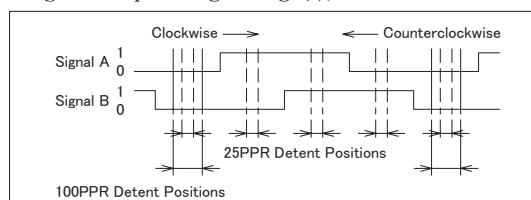
1. Electrical and Mechanical specifications				
Items		Rated Value		
Number of pulses		16PPR, 25PPR		
Supply voltage		3.3V±10%	5V±10%	
		20mA	10mA	
Output signals		two square wave output (A/B), CMOS chip		
Output voltage	High	(Supply Voltage - 0.5V) ≤		
	Low	≤ 0.5V		
Response frequency		200Hz		
Rotational torque	Light: S	4±1mN · m		
	Standard: C	6±2mN · m		
	Medium: M	10.5±3.5mN · m		
	High: H	16±5mN · m		
Push switch	Rating of contact	≤ DC12V	0.1 ~ 10mA	
	Travel of switch	0.2±0.1mm		
	Operational Force	S	3.2±1N	
		M	4.0±1N	
H		5.0±1N		
Weight		18g		

Note : In case Rotational Torque M or H, Operational Torque should be either M or H.

2. Reliability and Environmental specifications			
Items		Rated Value	
Durability of operating area	Thrust direction	Push	100N
		Pull	50N
	Radial	1N · m	
Rotational durability	Light: S	1 million strokes (No load)	
	Standard: C		
	Medium: M		
	High: H	100 thousand strokes (No load)	
Screw Torque		Not more than 1N · m	
Heat resistance of solder	Solder bit temp.: MAX 350°C	Within 3 seconds for each terminal	
Operating temperature		0°C ~ +55°C	32F ~ 131F
Storage temperature		- 40°C ~ +85°C	- 40F ~ 185F

Output Waveform

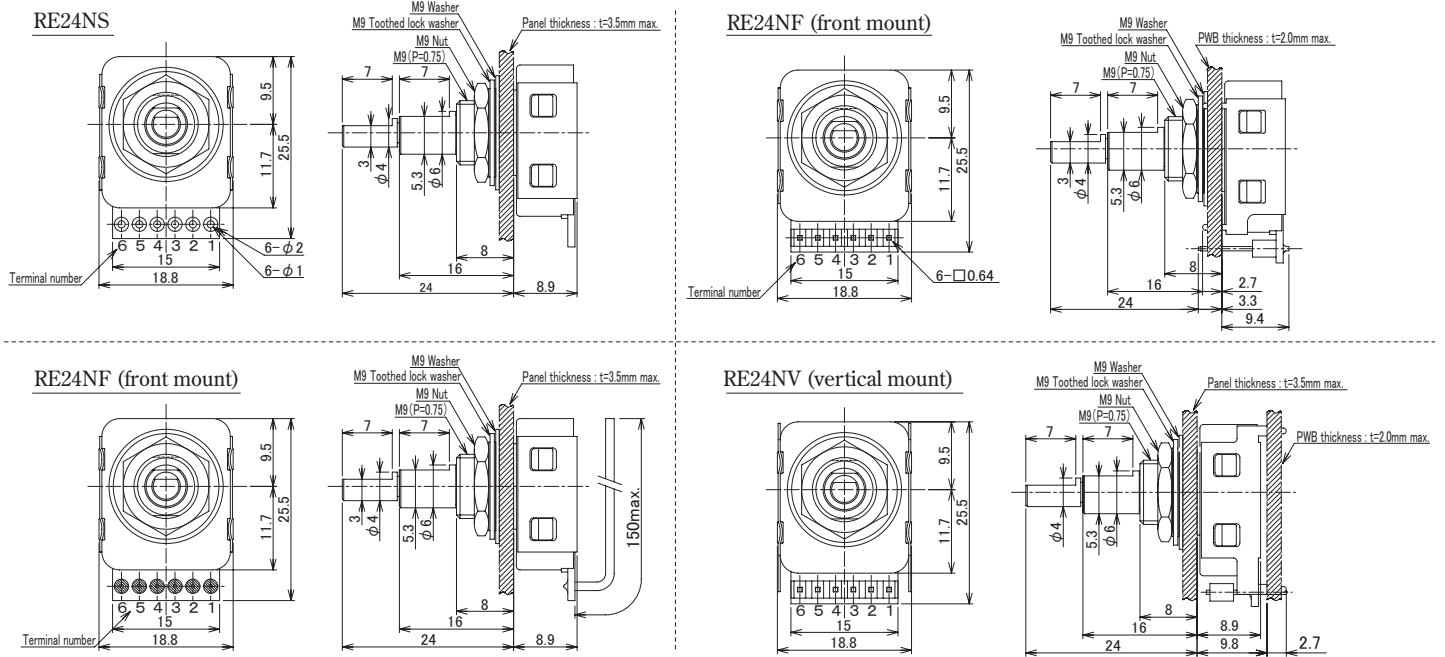
- 1) Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- 2) Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage (1);



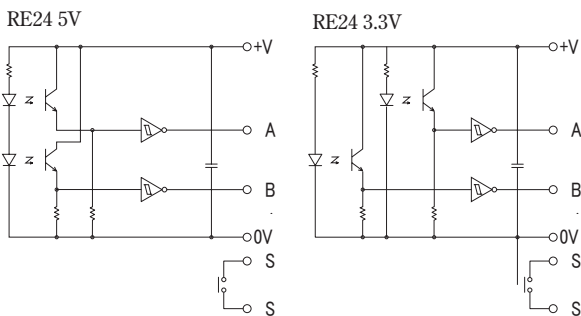
Part Number Designation

Series		RE24	N	S	25	C	S	16/24	R	A
Waterproof		N		Pulse		Push Switch Force		Power Voltage		
Wiring		S		16 16PPR		S 3.2N		A 5V		
		C		25 25PPR		H 5N		B 3.3V		
		S		Ckick		Rotation Torque		F Shaft Shape		
		C		With		4mN · m		Flat		
		M				6mN · m		Shaft length		
		H				10.5mN · m		16 16mm (inner)		
		Non		W/O		16mN · m		20 24mm (outer)		
						≧ 4mN · m				

Dimensions (mm)



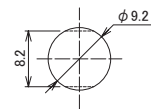
Circuitry



Terminal number

1	3.3V/5V	Supply
2	A	Signal A
3	B	Signal B
4	0V	Ground
5	S	Push Switch
6	S	Push Switch

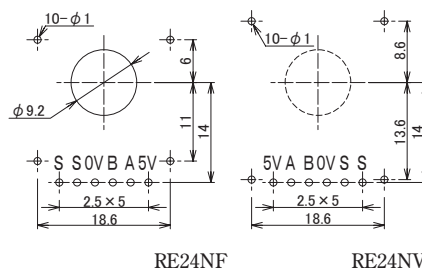
Mounting hole dimensions (mm)



Precautions

Wiring	Use buffering amplifier when extending lead wire over 30cm.
Soldering	Do not put a load on the terminal area during and immediately after soldering.
Operation	Do not use flow/reflow soldering machines.
Power	Use under specified power voltage and connect properly.
Waterproofing	Do not fasten tighter with the torque of more than 1.5N · m.

PWB mounting hole dimensions (mm)



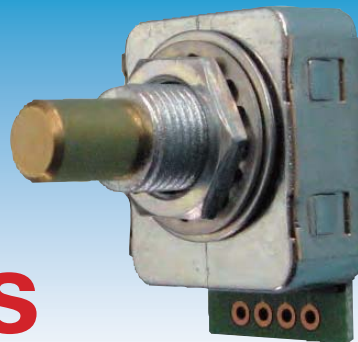
Warranty

- 1 year from the date of shipment.

Optical Rotary Encoder with Push Switch



RE23 Series



Outline

RE23 series are optical rotary encoders with dual functions of pushing and rotating on its shaft. Its size, mounting procedures and inner-structures have been designed for a wide-array of uses; measurement devices, medical equipments, industrial machineries, telecommunication devices and machine tools.

Features

- Multi-functional with 2 way acting – pushing and rotating – shaft
- Eco friendly:
 - 1) Low cost and lesser parts by VA design
 - 2) RoHS compliant
- Thin-line (18.8x25.5x8.9mm) and lightweight (18g)
- Various types of models with options: lead wire with or without connector, clamp for horizontal/vertical mounting
- Long-lasting without “contact chatter” due to its optical switching function

Specifications

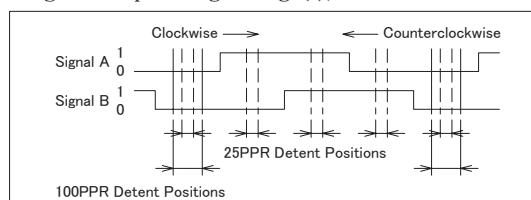
1. Electrical and Mechanical specifications				
Items		Rated Value		
Number of pulses		16PPR, 25PPR		
Supply voltage		3.3V±10%	5V±10%	
		20mA	10mA	
Output signals		Channel A/B: Square Wave CMOS chip		
Output voltage	High	(Supply Voltage - 0.5V) ≤		
	Low	≤ 0.5V		
Response frequency		200Hz		
Rotational torque	Light: S	4±1mN · m		
	Standard: C	6±2mN · m		
	Medium: M	10.5±3.5mN · m		
	High: H	16±5mN · m		
Push switch	Rating of contact	≤ DC12V	0.1 ~ 10mA	
	Travel of switch	0.2±0.1mm		
	Operational Force	S	3.2±1N	
		M	4.0±1N	
H		5.0±1N		
Weight		18g		

Note : In case Rotational Torque M or H, Operational Torque should be either M or H.

2. Reliability and Environmental specifications			
Items		Rated Value	
Durability of operating area	Thrust direction	Push	100N
		Pull	50N
	Radial		1N · m
Rotational durability	Light: S	1 million strokes (No load)	
	Standard: C		
	Medium: M		
	High: H		
Screw Torque		Not more than 1N · m	
Heat resistance of solder	Solder bit temp.: MAX 350°C	Within 3 seconds for each terminal	
Operating temperature		0°C ~ +55°C	32F ~ 131F
Storage temperature		- 40°C ~ +85°C	- 40F ~ 185F

Output Waveform

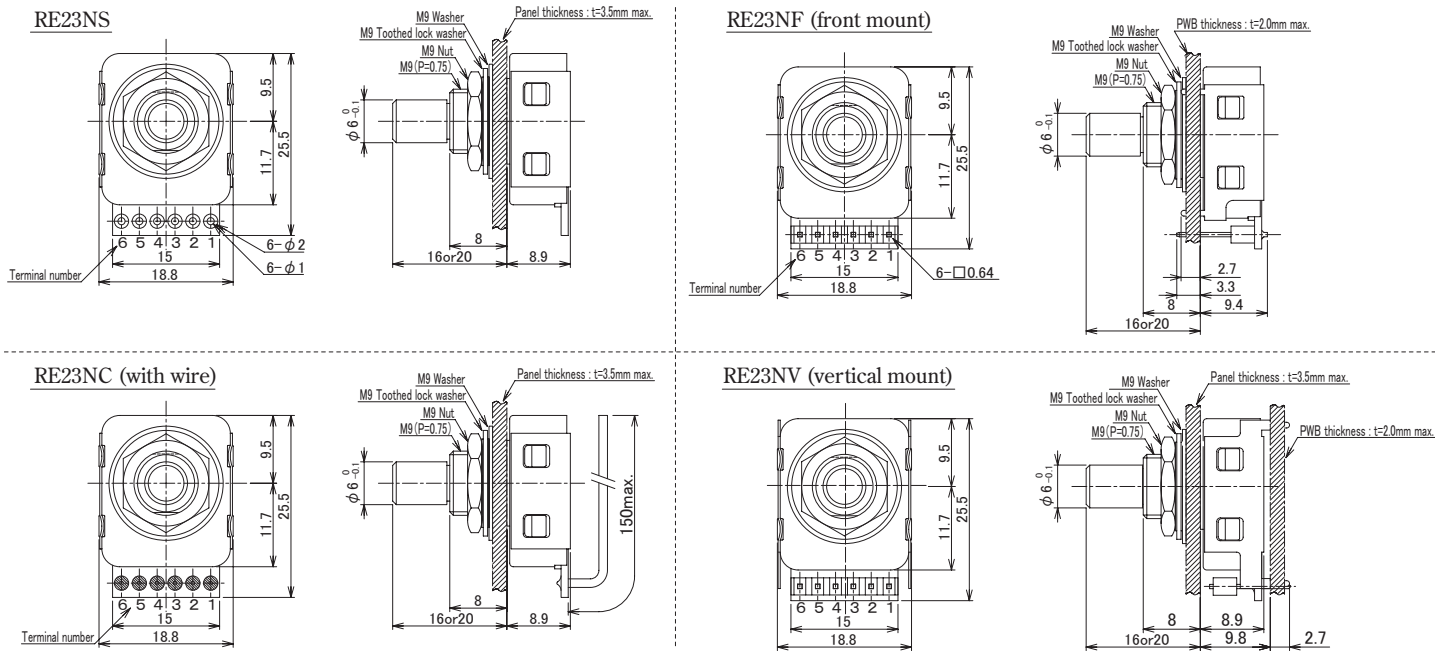
- 1) Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- 2) Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage (1);



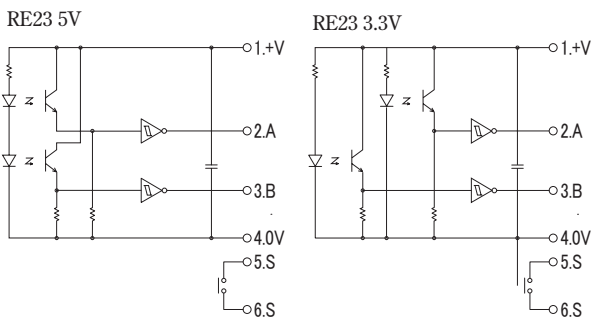
Part Number Designation

Series	RE23	N	S	25	C	S	20	R	A	
	Waterproof			Pulse		Push Switch Force			Power Voltage	
N	No		16	16PPR		S	3.2N		A	5V
			25	25PPR		H	5N		B	3.3V
	Wiring			Ckck	Rotation Torque				Shaft Shape	
S	Standard		S	With	4mN · m			R	Round	
C	With wire		C		6mN · m					
F	Front Mount		M		10.5mN · m					
V	Vortical Mount		H		16mN · m					
			Non	W/O	$\leq 4mN \cdot m$				Shaft length	
									16	16mm
									20	20mm

Dimensions (mm)



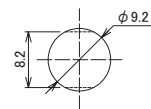
Circuitry



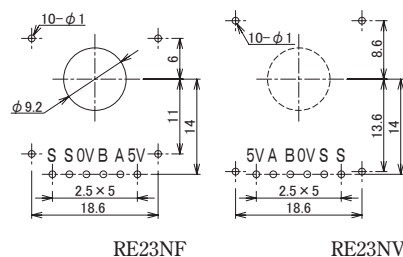
Terminal number

1	3.3V/5V	Supply
2	A	Signal A
3	B	Signal B
4	0V	Ground
5	S	Push Switch
6	S	Push Switch

Mounting hole dimensions (mm)



PWB mounting hole dimensions (mm)



Precautions

Wiring	Use buffering amplifier when extending lead wire over 30cm.
Soldering	Do not put a load on the terminal area during and immediately after soldering.
Operation	Do not use flow/reflow soldering machines.
Power	Use under specified power voltage and connect properly.
Waterproofing	Do not fasten tighter with the torque of more than 1.5N · m.

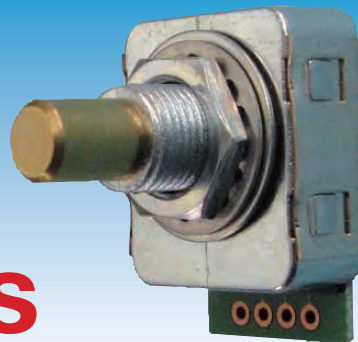
Warranty

- 1 year from the date of shipment.

Optical Rotary Encoder with Push Switch



RE23 Series



Outline

RE23 series are optical rotary encoders with dual functions of pushing and rotating on its shaft. Its size, mounting procedures and inner-structures have been designed for a wide-array of uses; measurement devices, medical equipments, industrial machineries, telecommunication devices and machine tools.

Features

- Multi-functional with 2 way acting – pushing and rotating – shaft
- Eco friendly:
 - 1) Low cost and lesser parts by VA design
 - 2) RoHS compliant
- Thin-line (18.8x25.5x8.9mm) and lightweight (18g)
- Various types of models with options: lead wire with or without connector, clamp for horizontal/vertical mounting
- Long-lasting without “contact chatter” due to its optical switching function

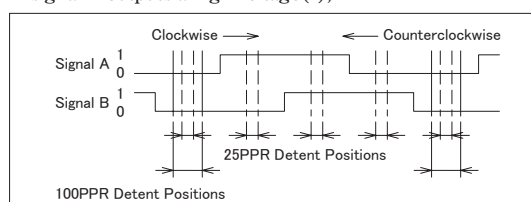
Specifications

1. Electrical and Mechanical specifications			
Items		Rated Value	
Number of pulses		16PPR, 25PPR	
Supply voltage		3.3V±10%	5V±10%
		20mA	10mA
Output signals		Channel A/B: Square Wave CMOS chip	
Output voltage	High	(Supply Voltage - 0.5V) ≤	
	Low	≤ 0.5V	
Response frequency		200Hz	
Rotational torque	Light: S	4±1mN · m	
	Standard: C	6±2mN · m	
	Medium: M	10.5±3.5mN · m	
	High: H	16±5mN · m	
Push switch	Rating of contact	≤ DC12V	0.1 ~ 10mA
	Travel of switch	0.2±0.1mm	
	Operational Force	S	3.2±1N
H		5.0±1N	
Weight		18g	

2. Reliability and Environmental specifications			
Items		Rated Value	
Durability of operating area	Thrust direction	Push	100N
		Pull	50N
	Radial		1N · m
Rotational durability	Light: S		1 million strokes (No load)
	Standard: C		
	Medium: M		
	High: H		100 thousand strokes (No load)
Screw Torque		Not more than 1N · m	
Heat resistance of solder	Solder bit temp.: MAX 350°C	Within 3 seconds for each terminal	
Operating temperature		0°C ~ +55°C	32F ~ 131F
Storage temperature		- 40°C ~ +85°C	- 40F ~ 185F

Output Waveform

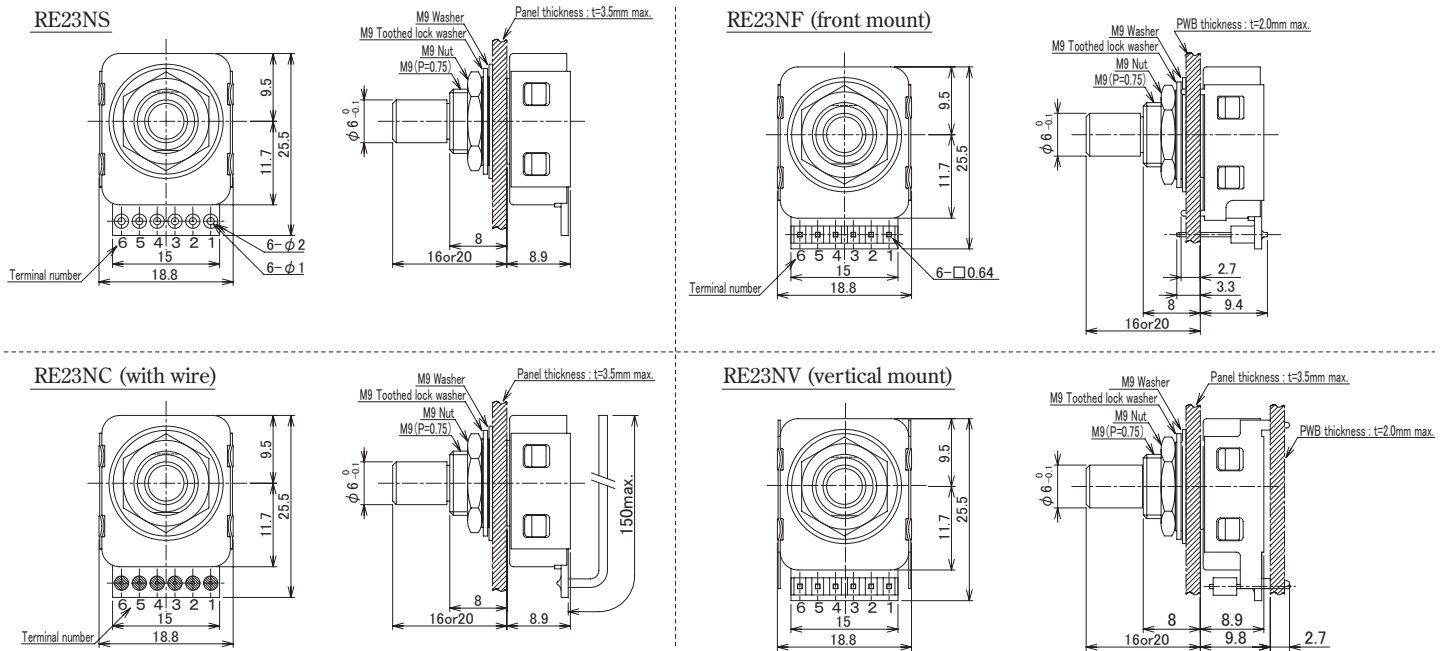
- 1) Turning the shaft clockwise would generate the signal A when the signal B outputs a low voltage (0);
- 2) Rotating the shaft counter-clockwise would generate the signal A when the signal B outputs a high voltage (1);



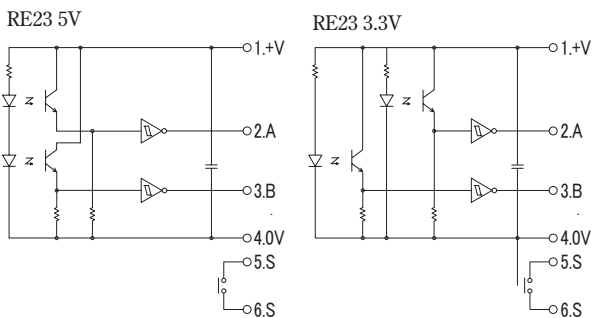
Part Number Designation

Series		RE23	N	S	25	C	S	20	R	A
Waterproof		N		Pulse		Push Switch Force		Power Voltage		
No		16	16PPR	S	3.2N	A	5V	Shaft Shape		
		25	25PPR	H	5N	B	3.3V	Round		
Wiring		Ckick		Rotation Torque		Shaft length				
S	Standard	S		4mN · m	16	16mm				
C	With wire	C	With	6mN · m	20	20mm				
F	Front Mount	M		10.5mN · m						
V	Vortical Mount	H		16mN · m						
		Non	W/O	$\leq 4mN \cdot m$						

Dimensions (mm)



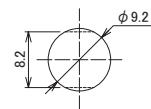
Circuitry



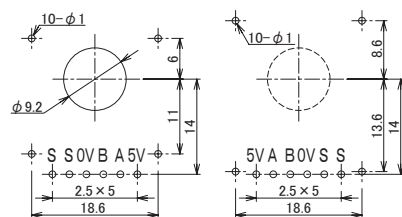
Terminal number

1	3.3V/5V	Supply
2	A	Signal A
3	B	Signal B
4	0V	Ground
5	S	Push Switch
6	S	Push Switch

Mounting hole dimensions (mm)



PWB mounting hole dimensions (mm)



RE23NF

RE23NV

Precautions

Wiring	Use buffering amplifier when extending lead wire over 30cm.
Soldering	Do not put a load on the terminal area during and immediately after soldering.
Operation	Do not use flow/reflow soldering machines.
Power	Use under specified power voltage and connect properly.

Warranty

- 1 year from the date of shipment.