



Compact Incremental Encoder

# TRD-MX Series

25mm diameter



**Standard**

Resolution **1,024P/R**

Output Type **Open collector  
and Line driver output**

- Compact design 25mm outer diameter/29mm depth/4mm shaft diameter
- Line driver output is standardized, corresponding to long distance transmission
- Operating temperature from -10 to 70 °C

## Model numbering system

**TRD - MX - 1000 A\*1**

Model

Series

Pulse

- A:** Open collector output  
Source voltage DC4.5 to 13.2V
- B:** Open collector output  
Source voltage DC10.8 to 26.4V
- V:** Line driver output  
Source voltage DC4.75 to 5.25V

## Main Specification

<b>Pulse</b>	100, 200, 360, 500, 512, 600, 1000, 1024P/R
<b>Source voltage</b>	DC5 to 12V/12 to 24V/5V
<b>Output type</b>	NPN open collector output Line driver output
<b>Max allowable revolution</b>	6000rpm
<b>Max response frequency</b>	100kHz (6000rpm)
<b>Signal output type</b>	2 phase output and Home position
<b>Protection</b>	IP50(Dust proofed)

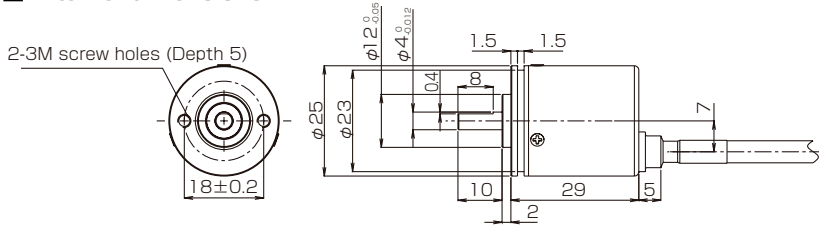
# TRD-MXseries

## Electrical specification

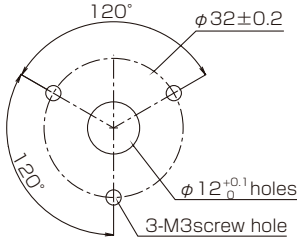
Model		TRD-MX□A/B	TRD-MX□V	
Source Power	Power source voltage *1	A:DC4.75 to 13.2V B:DC10.8 to 26.4V	DC4.75 to 5.25V	
	Allowable ripple	3% rms max	3% rms max	
	Current consumption (at no load)	50mA max	50mA max	
Output wave form	Signal form	2 phase + home position	2 phase + home position	
	Max response frequency	100kHz	100kHz	
	Max response revolution	(Max response frequency/revolution) x 60	(Max response frequency/revolution) x 60	
	Duty ratio	50%±25%	50%±25%	
	Signal width at home position	100%±50%	100%±50%	
	Rise/Fall time	2μsec max.(when cable length is 1m at max. load)	2μsec max.(when cable length is 1m at max. load)	
Output	Output type	NPN open collector output	Line driver output (26C31 or equivalent)	
	Output level	Negative logic (Active low)	Positive logic (Active high)	
	Output current	Inflow	30mA max.	20mA max.
		Outflow	—	
	Output voltage	"H"	—	2.5V min
		"L"	0.4V max	0.5V max
Load power voltage		DC30V max	—	

\*1 Make sure supply from class2 power

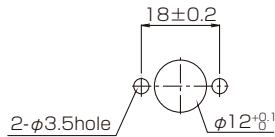
## External dimensions



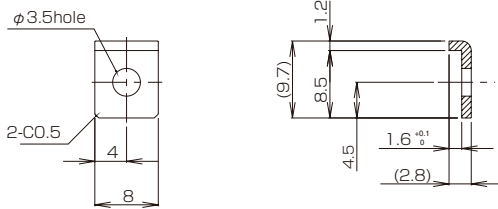
## Mounting hole panel dimension (for servo mounting metal fixture)



## Mounting hole panel dimension (for 2-holes)



## Servo mount metal fixture MM-4 (Option)



## Mechanical Specification

Initial torque	0.001Nm (+20°C) max	
Moment of inertia	1×10 <sup>-7</sup> kg·m <sup>2</sup>	
Allowable load	Radial	10N
	Thrust	5N
Maximum Allowable speed	6000rpm	
Cable	material	Oil resistant PVC cable
	Nominal section area of core	0.14mm <sup>2</sup>
	Diameter	5.0mm
Weight	Approx. 80g	

\*2 MX A/B 5-wire sealed cable (AWG26)  
MX V 8-wire sealed cable(AWG26)

## Environment requirement

Ambient Temperature	Operating	-10 to 70 °C
	Storage	-25 to 85 °C
Ambient humidity	35 to 85% RH (No condensation)	
Voltage withstand (Between Power source, signal and chassis)	Removed for capacitor earth <sup>*3</sup>	
Insulation resistance (Between Power source, signal and chassis)	20MΩ min	
Vibration resistance	10 to 55 Hz with 0.75mm amplitudes <sup>*4</sup>	
Shock resistance	11 ms with 490m/s <sup>2</sup> *5	
Protection	IP50 (Dust and splash proofed)	

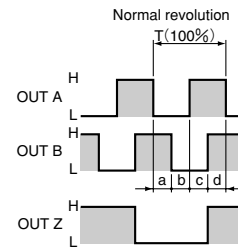
\*3 Capacitor (630V, 0.01μF) is connected between circuit 0V and FG (frame ground)

\*4 one channel along 3 axes direction  
\*5 3times along 3 axes

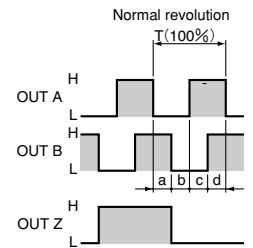
These are one of test condition therefore we don't guarantee for continuous operation

## Channel timing chart

### TRD-MX□A/B



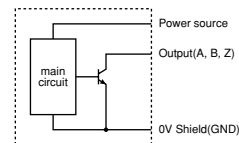
### TRD-MX□V



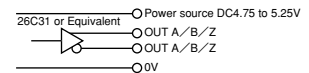
a, b, c, d = 1/4T ± 1/10T

注: Note: We define clockwise as normal revolution when we see the motor from shaft side.

## Open collector output circuit



## Line driver output circuit



## KOYO ELECTRONICS INDUSTRIES CO., LTD. OVERSEAS SALES DEPARTMENT

1-171 TENJIN-CHO, KODAIRA, TOKYO 187-0004 JAPAN  
PHONE: 81-42-341-7711 / FAX: 81-42-342-6871  
URL: <http://www.koyoele.co.jp/english/>  
e-mail: [osd@koyoele.co.jp](mailto:osd@koyoele.co.jp)

