

# Light Duty Incremental Encoders (SAE Dimension Encoders)

## TRDA-2E series Accessories

Accessories for TRDA-2E Series Encoders		
Part Number	Price	Description
<b><u>F-2D</u></b>	\$42.50	Mounting flange, 1.86 inch bolt hole circle (1.05 inch height), metal. For use with Koyo TRDA-2E series encoders. Flange and encoder mounting hardware included.
<b><u>F-3D</u></b>	\$75.00	Mounting flange, 2.95 inch bolt hole circle (1.34 inch height), metal. For use with Koyo TRDA-2E series encoders. Flange and encoder mounting hardware included.
<b><u>F-6D</u></b>	\$57.50	Mounting flange, 1.86 inch bolt hole circle (1.34 inch height), metal. For use with Koyo TRDA-2E series encoders. Flange and encoder mounting hardware included.
<b><u>F-7D</u></b>	\$42.50	Mounting flange, 1 inch bolt hole circle (0.20 inch height), metal. For use with Koyo TRDA-2E series encoders. Flange and encoder mounting hardware included.
<b><u>F-8D</u></b>	\$57.50	Mounting flange, 2.95 inch bolt hole circle (1.71 inch height), metal. For use with Koyo TRDA-2E series encoders. Flange and encoder mounting hardware included.
<b><u>2ET-035D</u></b>	\$60.00	Mounting bracket for TRDA-2E series encoders

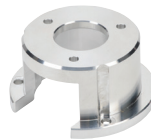
### Couplings

For encoders with a solid shaft, please select a coupling that fits your encoder. All couplings are in stock, ready to ship.

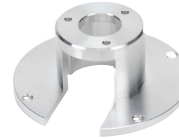
See the "Encoder Couplings" section for more information.



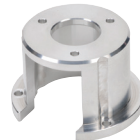
**2ET-035D**



**F-2D**



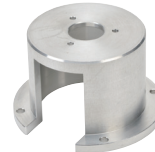
**F-3D**



**F-6D**



**F-7D**



**F-8D**

# Light Duty Incremental Encoders (SAE Dimension Encoders)

## Specifications – TRDA-2E series

Electrical Specifications (SAE Dimension Light Duty)				
Model		TRDA-2ExxxxBD (open collector)	TRDA-2ExxxxVD (line driver)	
Power Supply	Operating Voltage *	12–24 VDC (nominal) * Range: 10.8–26.4 VDC	5VDC (nominal) * Range: 4.75–5.25 VDC	
	Allowable Ripple	3% rms max.		
	Current Consumption	50mA max. no load		
Output Waveform	Signal Waveform	Quadrature + home position		
	Max. Response Frequency	200kHz		
	Operating Speed	(max response frequency / resolution) x 60		
	Duty Ratio (Symmetry)	50% ±25%		
	Index Signal Width (at Home Position)	100% ±50%		
Output	Rise/Fall Time **	1µs max. **	100 ns max. **	
	Output Type	Open collector (NPN sinking)	Line driver (26C31 or equivalent)	
	Output Logic	Negative logic (active low)	Positive logic (active high)	
	Output Current	Inflow	30mA max.	20mA max.
		Outflow	–	
	Output Voltage	H	–	2.5 V min.
		L	0.4 V max.	0.5 V max.
	Load Power Supply Voltage	30VDC max.		–
Short-circuit Protection	Between each output and 0V		–	
* To be supplied by Class II source.				
** With a cable of 2m or less; Max load.				
Mechanical Specifications				
Starting Torque	0.01 N·m [0.09 lb·in] max. @ 20 °C [68 °F]			
Max. Allowable Shaft Load	Axial: 20N [4.5 lb]; Radial: 30N [6.7 lb]			
Max. Allowable Speed	5000 rpm (highest speed that can support the mechanical integrity of encoder)			
Wire Size	26 AWG, shielded, oil-resistant PVC			
Mounting Orientation	can be mounted in any orientation			
Weight	approx. 170g [6.0 oz] (with 2m cable)			
Environmental Specifications				
Ambient Temperature	-10 to 70 °C [14 to 158 °F]			
Storage Temperature	-25 to 85 °C [-13 to 185 °F]			
Operating Humidity	35–85% RH (non-condensing)			
Voltage Withstand	630V grounded through capacitor (a 630V cap is connected between 0V & FG lines)			
Insulation Resistance	50 MΩ min. (excluding shield)			
Vibration Resistance	durable for one hour along three axes @ 10 to 55 Hz with 0.75 mm half-amplitude			
Shock Resistance	490 m/s <sup>2</sup> (11 ms applied three times along three axes)			
Protection	IP50			
Agency Approvals	cUL <sub>US</sub> (E189395)			

# Light Duty Incremental Encoders (SAE Dimension Encoders)

## Specifications – TRDA-2E series

### Wiring Diagrams

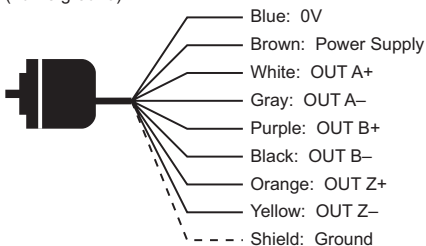
#### Open Collector Connections

Cable shield is connected to the encoder body (frame ground)



#### Line Driver Connections

Cable shield is connected to the encoder body (frame ground)



### How to read the timing charts

#### Open Collector Models

Out A and Out B are 90 degrees out of phase. Like any quadrature encoder, four unique logic states are created internally to the encoder. This is based on the rising edge to rising edge (one cycle) on channel A or B that indicates one set of bars on the internal encoder disk has passed by the optical sensor.

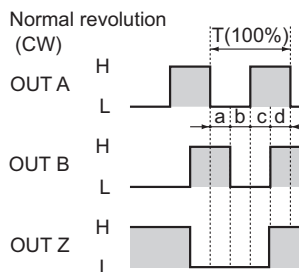
OUT Z is the absolute reference added to an incremental encoder and is also known as home position. It signifies a full rotation of the encoder shaft.

#### Line Driver Models

Channel A (OUT A and A-not) and Channel B (OUT B and B-not) are also 90 degrees out of phase on line driver encoders. OUT Z is the same as on open collector models, and is the absolute reference (home position). It signifies one full rotation of the encoder shaft.

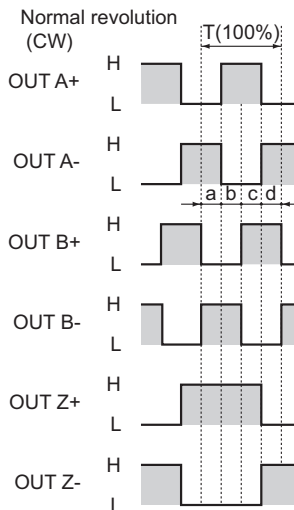
### Channel Timing Charts

#### Open Collector Models (TRDA-2ExxxBD)



a, b, c, d =  $1/4T \pm 1/8T$   
"Normal" means clockwise revolution viewed from the shaft

#### Line Driver Models (TRDA-2ExxxVD)



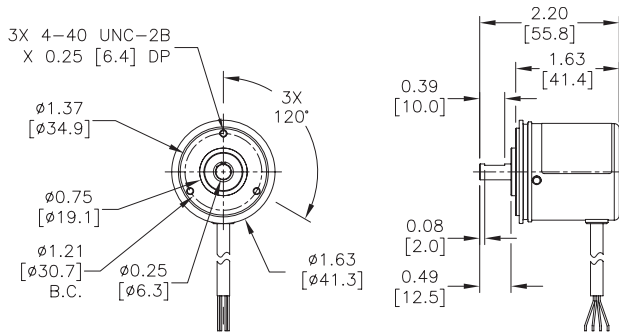
a, b, c, d =  $1/4T \pm 1/8T$   
"Normal" means clockwise revolution viewed from the shaft

# Light Duty Incremental Encoders (SAE Dimension Encoders)

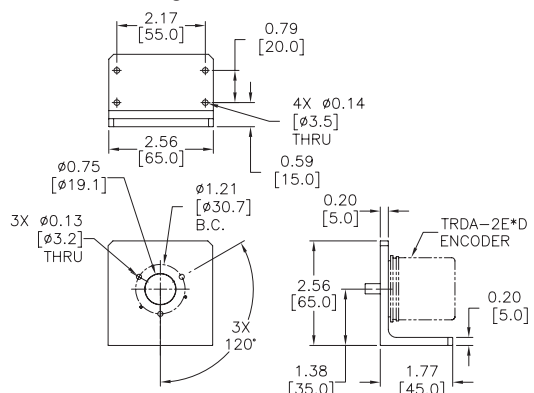
## Dimensions – TRDA-2E series

Dimensions = in [mm]

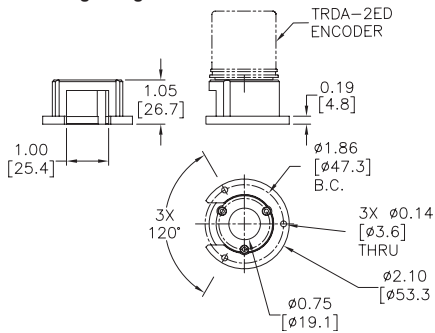
### TRDA-2ExxxxD



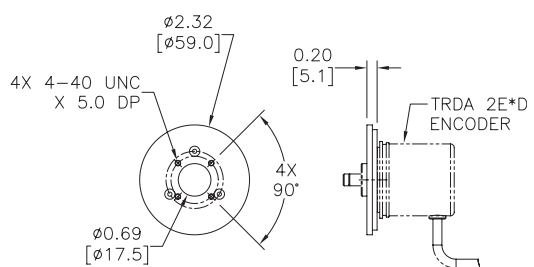
### 2ET-035D Mounting Bracket



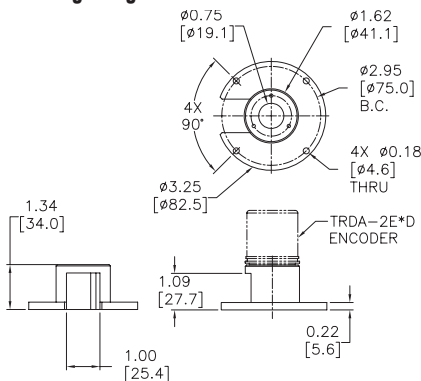
### F-2D Mounting Flange



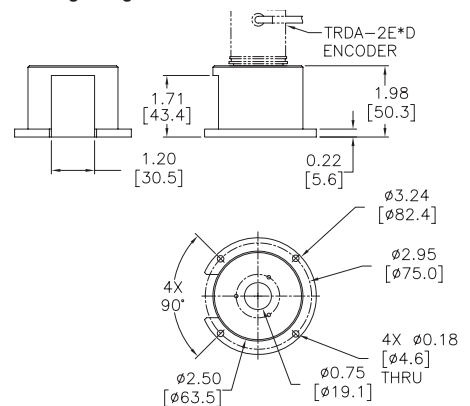
### F-7D Mounting Flange



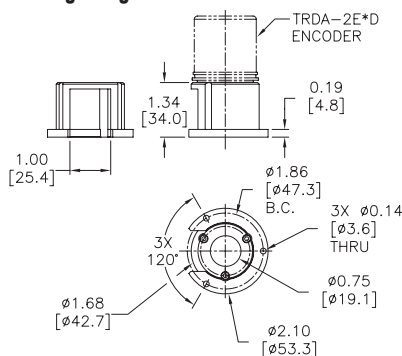
### F-3D Mounting Flange



### F-8D Mounting Flange



### F-6D Mounting Flange



# Light Duty Incremental Encoders (Metric Dimension Encoders)

## TRD-MX series Features

A light duty incremental rotary encoder that is cost-effective for small applications; has the following features:

- Small body with 25 mm diameter and 29 mm depth
- 4 mm diameter solid shaft
- Resolution available from 100 pulses per revolution to 1024 pulses per revolution
- Open collector output (4.5–13.2 or 10.8–26.4 VDC), or line driver output (4.75–5.25 VDC)
- Up to 100 kHz response frequency
- Two-meter cable with tinned ends
- IP50 environmental rating
- Mounting bracket and couplings are available



TRD-MXxxx-AD/BD models



TRD-MXxxx-VD models

Light Duty Solid-shaft Incremental Encoders (NPN Open-collector Output, TRD-MXxxxAD/ BD)					
Part Number	Price	Pulses per Revolution	Input Voltage	Output	Body Dia.
<a href="#">TRD-MX100AD</a>	\$96.00	100	4.5–13.2 VDC	NPN Open Collector	25 mm
<a href="#">TRD-MX360AD</a>	\$96.00	360			
<a href="#">TRD-MX500BD</a>	Retired	500	10.8–26.4 VDC		

Light Duty Solid-shaft Incremental Encoders (Line Driver Output, TRD-MXxxxVD)					
Part Number	Price	Pulses per Revolution	Input Voltage	Output	Body Dia.
<a href="#">TRD-MX100VD</a>	\$96.00	100	4.75–5.25 VDC	Line Driver	25 mm
<a href="#">TRD-MX360VD</a>	\$96.00	360			
<a href="#">TRD-MX500VD</a>	\$96.00	500			

## Accessories

Accessories for TRD-MX Series Encoders		
Part Number	Price	Description
<a href="#">MM-4D</a>	Retired	Servo mounting clamp for TRD-MX series encoders
<a href="#">MT-030D</a>	\$39.00	Right-angle mounting bracket for TRD-MX series encoders



MM-4D



MT-030D

### Couplings

For encoders with a solid shaft, please select a coupling that fits your encoder. All couplings are typically in stock, and ready to ship.

See the “Encoder Couplings” section for more information.



Couplings

# Light Duty Incremental Encoders (Metric Dimension Encoders)

## Specifications – TRD-MX series

Electrical Specifications (Metric Dimension Light Duty TRD-MX)					
Model		TRD-MXxxxAD (open collector)	TRD-MXxxxBD (open collector)	TRD-MXxxxVD (line driver)	
Power Supply	Operating Voltage *	5–12 VDC (nominal) * 4.5–13.2 VDC	12–24 VDC (nominal) * 10.8–26.4 VDC	5VDC (nominal) * 4.75–5.25 VDC	
	Allowable Ripple	3% rms max			
	Current Consumption	50 mA max (no load)			
	Circuit Protection Required	Limit current to 100 mA or less		–	
Output Waveform	Signal Waveform	Quadrature + home position			
	Max. Response Frequency	100 kHz			
	Operating Speed	(max response frequency / resolution) x 60 Hz			
	Duty Ratio (Symmetry)	50% ±25%			
	Index Signal Width (at Home Position)	100% ±50%			
Output	Rise/Fall Time **	2µs ** (sink current < 30 mA)		0.1 µs max ** (source current < 20 mA)	
	Output Type	Open collector (NPN sinking)		Line driver (26C31 or equivalent)	
	Output Logic	Negative logic (active low)		Positive logic (active high)	
	Output Current	Inflow	30 mA max		20 mA max
		Outflow	–		
	Output Voltage	H	–		2.5V min (source current < 20 mA)
		L	0.4V max (sink current < 30 mA)		0.5V max (source current < 20 mA)
	Load Power Voltage	30 VDC max		–	
Short-circuit Protection	–		–		
* To be supplied by Class II source. ** Cable length ≤2m or less. Maximum load.					
Mechanical Specifications (Metric Dimension Light Duty TRD-MX)					
Starting Torque	0.001 N·m [0.009 lb·in] max @ 20 °C [68 °F]				
Max. Allowable Shaft Load	Axial: 5N [1.1 lb]; Radial: 10N [2.2 lb]				
Max. Allowable Speed	6000 rpm (highest speed that can support the mechanical integrity of encoder)				
Wire Size	26 AWG, shielded, oil-resistant PVC				
Weight	approx 120g [0.3 lb]				
Environmental Specifications (Metric Dimension Light Duty TRD-MX)					
Ambient Temperature	-10 to 70 °C [14 to 158 °F]				
Storage Temperature	-25 to 85 °C [-13 to 185 °F]				
Operating Humidity	35–85% RH (non-condensing)				
Withstand Voltage *	630V grounded through capacitor (a 630V cap is connected between 0V & FG lines)				
Insulation Resistance	20 MΩ min				
Vibration Resistance	durable for one hour along three axes @ 10 to 55 Hz with 0.75 mm half-amplitude				
Shock Resistance	490 m/s <sup>2</sup> (11 ms applied 3-times, each X, Y, Z)				
Mounting Orientation	can be mounted in any orientation				
Protection	IP50				
Agency Approvals	CE, RoHS, cUL- <sub>US</sub> (E189395)				
* Withstand voltage is good for power supply, signal, and case; not good for shield wire.					

# Light Duty Incremental Encoders (Metric Dimension Encoders)

## Specifications – TRD-MX series

### Wiring Diagrams

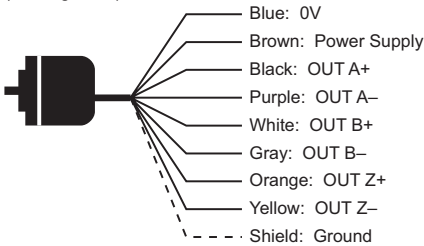
#### Open Collector Connections

Cable shield is connected to the encoder body (frame ground)



#### Line Driver Connections

Cable shield is connected to the encoder body (frame ground)



### How to read the timing charts

#### Open Collector Models

Out A and Out B are 90 degrees out of phase. Like any quadrature encoder, four unique logic states are created internally to the encoder. This is based on the rising edge to rising edge (one cycle) on channel A or B that indicates one set of bars on the internal encoder disk has passed by the optical sensor.

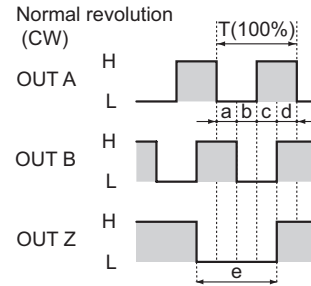
OUT Z is the absolute reference added to an incremental encoder and is also known as home position. It signifies a full rotation of the encoder shaft. It pulses once per revolution.

#### Line Driver Models

Channel A (OUT A and A-not) and Channel B (OUT B and B-not) are also 90 degrees out of phase on line driver encoders. OUT Z is the same as on open collector models, and is the absolute reference (home position). It signifies one full rotation of the encoder shaft. It pulses once per revolution.

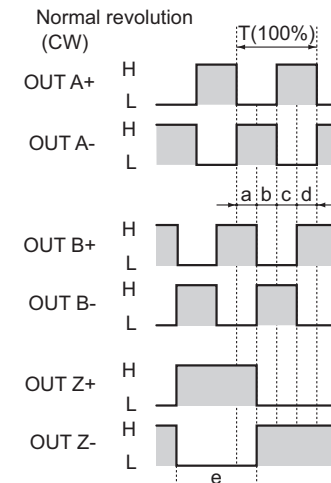
### Channel Timing Charts

#### Open Collector Models (TRD-MXxxxAD/BD)



a, b, c, d =  $0.25T \pm 0.125T$ ; e =  $1T \pm 0.125T$   
"Normal" means clockwise revolution viewed from the shaft

#### Line Driver Models (TRD-MXxxxVD)

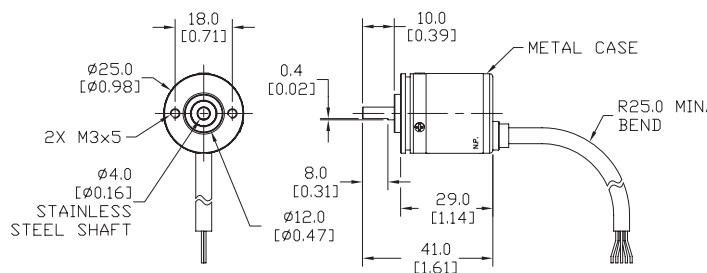


a, b, c, d =  $0.25T \pm 0.125T$ ; e =  $1T \pm 0.125T$   
"Normal" means clockwise revolution viewed from the shaft

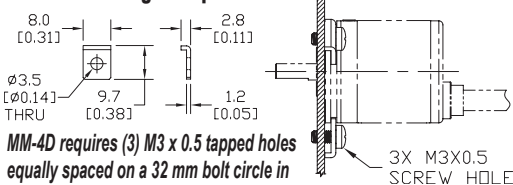
### Dimensions – TRD-MX series

Dimensions = mm [in]

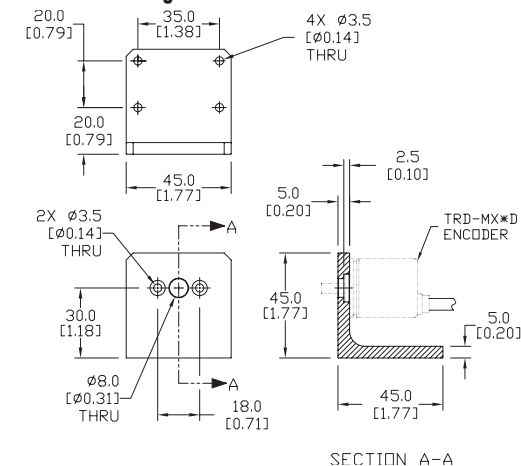
#### TRD-MXxxxD



#### MM-4D Mounting Clamp



#### MT-030D Mounting Bracket





# Light Duty Incremental Encoders (Metric Dimension Encoders)

## TRD-S(H) series

### Features

A light duty encoder that is cost-effective for small applications and has the following features:

- Small body with 38 mm diameter and 30 mm depth
- Dust proof (IP40 rating)
- 6 mm solid shaft or 8 mm hollow shaft
- Resolution available from 100 pulses per revolution to 2500 pulses per revolution
- Open collector or line driver output
- Up to 200 kHz response frequency
- Two-meter cable, tinned ends



Solid-shaft (TRD-S) model



Hollow-shaft (TRD-SH) model

Light Duty Solid Shaft Incremental Encoders (NPN Open Collector and Line Driver models)					
Part Number	Price	Pulses per Revolution	Input Voltage	Output	Body Diameter
<a href="#">TRD-S100AD</a>	\$111.00	100	5-12 VDC	NPN open collector	38mm
<a href="#">TRD-S360AD</a>	Retired	360			
<a href="#">TRD-S500AD</a>	\$111.00	500			
<a href="#">TRD-S1000AD</a>	\$111.00	1000			
<a href="#">TRD-S1024AD</a>	\$111.00	1024			
<a href="#">TRD-S2500AD</a>	Retired	2500			
<a href="#">TRD-S250BD</a>	Retired	250	12-24 VDC	NPN open collector	
<a href="#">TRD-S300BD</a>	Retired	300			
<a href="#">TRD-S600BD</a>	Retired	600			
<a href="#">TRD-S1000-BD</a>	Retired	1000			
<a href="#">TRD-S1024-BD</a>	Retired	1024			
<a href="#">TRD-S1200BD</a>	Retired	1200			
<a href="#">TRD-S100-VD</a>	\$111.00	100	5VDC	Line driver (differential)	
<a href="#">TRD-S250VD</a>	Retired	250			
<a href="#">TRD-S300VD</a>	\$111.00	300			
<a href="#">TRD-S400VD</a>	Retired	400			
<a href="#">TRD-S800VD</a>	\$111.00	800			
<a href="#">TRD-S1000-VD</a>	Retired	1000			
<a href="#">TRD-S1200VD</a>	\$111.00	1200			
<a href="#">TRD-S2500-VD</a>	Retired	2500			

Light Duty Hollow Shaft Incremental Encoders (NPN Open Collector and Line Driver models)					
Part Number	Price	Pulses per Revolution	Input Voltage	Output	Body Diameter
<a href="#">TRD-SH100AD</a>	\$113.00	100	5-12 VDC	NPN open collector	38mm
<a href="#">TRD-SH360AD</a>	\$113.00	360			
<a href="#">TRD-SH500AD</a>	\$113.00	500			
<a href="#">TRD-SH1000AD</a>	\$113.00	1000			
<a href="#">TRD-SH1024AD</a>	Retired	1024			
<a href="#">TRD-SH2500AD</a>	\$119.00	2500			
<a href="#">TRD-SH400BD</a>	Retired	400	12-24 VDC	NPN open collector	
<a href="#">TRD-SH500-BD</a>	Retired	500			
<a href="#">TRD-SH600BD</a>	Retired	600			
<a href="#">TRD-SH1000-BD</a>	\$113.00	1000			
<a href="#">TRD-SH1200BD</a>	Retired	1200			
<a href="#">TRD-SH2000BD</a>	Retired	2000			
<a href="#">TRD-SH2500-BD</a>	Retired	2500	5VDC	Line driver (differential)	
<a href="#">TRD-SH100-VD</a>	\$113.00	100			
<a href="#">TRD-SH200VD</a>	\$113.00	200			
<a href="#">TRD-SH250VD</a>	\$113.00	250			
<a href="#">TRD-SH300VD</a>	\$113.00	300			
<a href="#">TRD-SH360-VD</a>	\$113.00	360			
<a href="#">TRD-SH400VD</a>	\$113.00	400			
<a href="#">TRD-SH500-VD</a>	\$113.00	500			
<a href="#">TRD-SH600VD</a>	Retired	600			
<a href="#">TRD-SH800VD</a>	\$113.00	800			
<a href="#">TRD-SH1000-VD</a>	Retired	1000			
<a href="#">TRD-SH1200VD</a>	\$119.00	1200			
<a href="#">TRD-SH2000VD</a>	Retired	2000			
<a href="#">TRD-SH2500-VD</a>	Retired	2500			



# Light Duty Incremental Encoders (Metric Dimension Encoders)

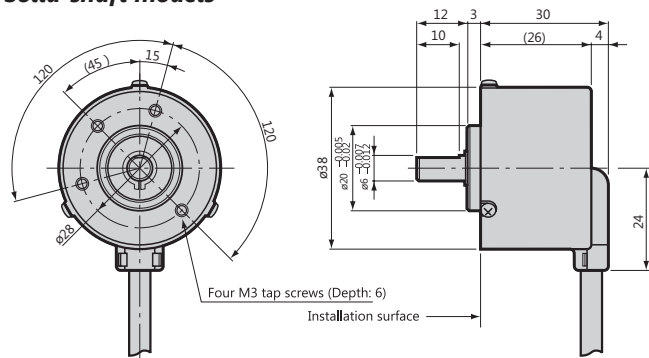
## Specifications – TRD-S(H) series

Electrical Specifications					
Model		TRD-SxxxxAD TRD-SHxxxxAD (open collector)	TRD-Sxxxx-BD TRD-SHxxxxBD (open collector)	TRD-Sxxxx-VD TRD-SHxxxxVD (line driver)	
Power Supply	Operating Voltage *	5–12 VDC (nominal) * Range: 4.75–13.2 VDC	12–24 VDC (nominal) * Range: 10.8–26.4 VDC	5VDC (nominal) * Range: 4.75–5.25 VDC	
	Allowable Ripple	3% max.			
	Current Consumption	50 mA max.			
Signal Waveform		Quadrature + home position			
Max. Response Frequency		200kHz			
Operating Speed		(max response frequency / resolution) x 60			
Duty Ratio		50% ±25%			
Phase Difference Width		25% ±12.5%			
Signal Width at Home Position		100 ±50%			
Output	Rise/Fall Time	1µs max. (when cable length is 1m)		–	
	Output Type	NPN open collector output, sinking		Line driver output (26C31 or equivalent)	
	Output Logic	Negative logic (active low)		Negative logic (active high)	
	Output Voltage	H	–		2.5 V min.
		L	0.4 V max.		0.5 V max.
	Current	30mA max.		20 mA max.	
	Load Power Voltage	35 VDC max.		–	
Short-Circuit Protection	Between output and power supply		–		
* To be supplied by Class II source					
Mechanical Specifications					
Starting Torque	0.001 Nm (0.00074 ft/lb) max				
Max. Allowable Shaft Load	Radial: 20N (4.5 lb); Axial: 10N (2.25 lb)				
Max. Allowable Speed	6000 rpm (highest speed that can support the mechanical integrity of encoder)				
Wire Size	AWG26				
Mounting Orientation	can be mounted in any orientation				
Weight	approx. 150g (5.3 oz) with 2m cable				
Environmental Specifications					
Ambient Temperature	-10 to 70°C; 14 to 158°F				
Storage Temperature	-25 to 85°C; -13 to 185°F				
Operating Humidity	35–85% RH				
Withstand Voltage	500VAC (50/60Hz) for one minute				
Insulation Resistance	50MΩ min.				
Vibration Resistance	durable for one hour along three axes at 10 to 55 Hz with 0.75 amplitude				
Shock Resistance	11 ms with 490 m/s <sup>2</sup> applied three times along three axes				
Protection	IP40				

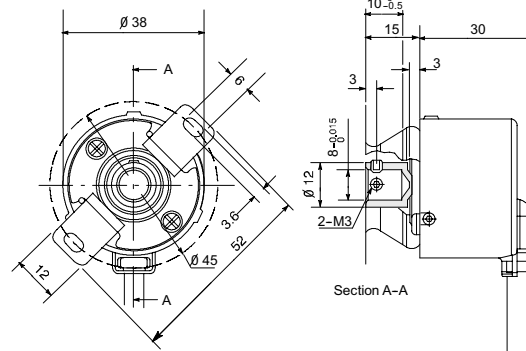
# Light Duty Incremental Encoders (Metric Dimension Encoders)

## Dimensions – TRD-S(H) series

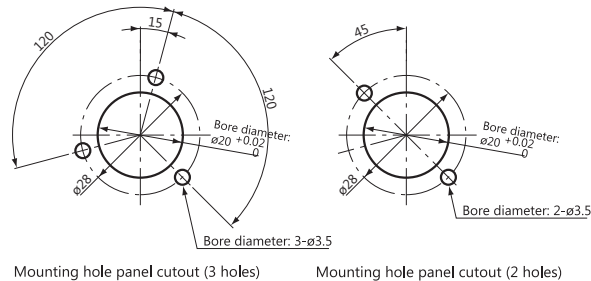
### Solid-shaft models



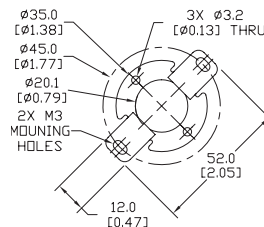
### Hollow-shaft models



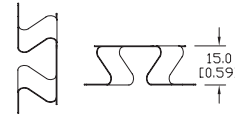
All dimensions in mm  
1mm = 0.03937in



### TRD-SH-BKT (bracket)



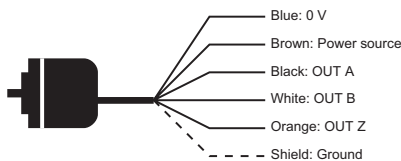
Mounting Accessories		
Part #	Price	Description
<b>TRD-SH-BKT</b>	\$7.00	Flexible mounting bracket, replacement. For use with Koyo TRD-SH series hollow shaft encoders



## Wiring diagrams

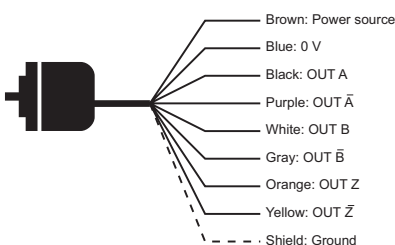
### Open collector connections

Cable shield is not connected to the encoder body; enclosure is grounded through the 0V wire



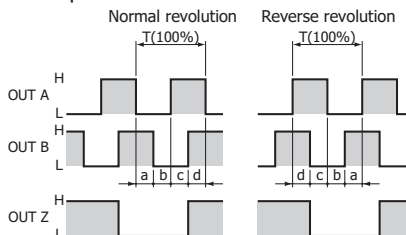
### Line driver connections

Cable shield is not connected to the encoder body; enclosure is grounded through the 0V wire

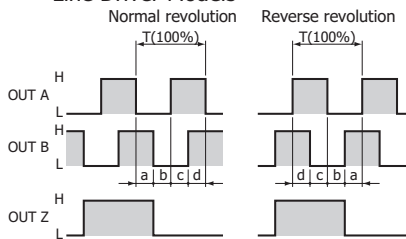


## Channel timing charts

### Open Collector Models



### Line Driver Models



$a, b, c, = 1/4T \pm 1/8T$   
"Normal" means clockwise revolution viewed from the shaft.

## How to read the timing charts

### Open Collector Models

Out A and Out B are 90 degrees out of phase. Like any quadrature encoder, four unique logic states are created internally to the encoder. This is based on the rising edge to rising edge (one cycle) on channel A or B that indicates one set of bars on the internal encoder disk has passed by the optical sensor.

OUT Z is the absolute reference added to an incremental encoder and is also known as home position. It signifies a full rotation of the encoder shaft.

### Line Driver Models

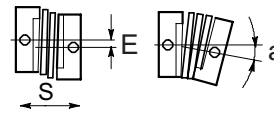
Channel A (OUT A and A-not) and Channel B (OUT B and B-not) are also 90 degrees out of phase on line driver encoders. OUT Z is the same as on open collector models, and is the absolute reference (home position). It signifies one full rotation of the encoder shaft.

# Encoder Accessories – Couplings

## Encoder Couplings

Couplings provide a connection between solid-shaft encoders and solid shafts. We offer aluminum, fiberglass, and polymer couplings for metric, S.A.E. and metric-to-S.A.E. applications.

Misalignment compensation



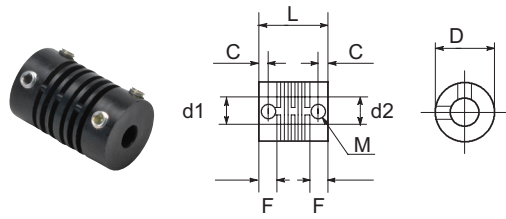
Couplings Selection Guide and Dimensions																
Type	Part Number	Price	Applicable Encoders (shaft size)	Shaft Diameter		D	L	F	C	M	a	E	S	Working Torque (N·m)	Torsional Rigidity	Material
				d1	d2	( mm [in] )					max					
				( mm [in] )												
Fiberglass (metric)	<a href="#">GJ-4D</a>	\$12.00	TRD-MX (4mm)	4mm	4mm	13 [0.51]	21 [0.83]	5.3 [0.21]	3 [0.12]	M3 set screw	5°	0.4 [0.02]	0.4 [0.02]	0.6 N·m	6 N·m/rad	Glass-fiber reinforced resin
	<a href="#">GJ-6D</a>	\$9.25	TRD-S/SR (6mm)	6mm	6mm	15 [0.59]	22 [0.87]	5.2 [0.20]	3 [0.12]	M3 set screw	6°	0.5 [0.02]	0.12 [0.005]	0.8 N·m	10 N·m/rad	
	<a href="#">GJ-8D</a>	\$11.00	TRD-N/NA (8mm)	8mm	8mm	19 [0.75]	24 [0.94]	6.8 [0.27]	3.5 [0.14]	M4 set screw	5°	0.5 [0.02]	0.4 [0.016]	1.5 N·m	20 N·m/rad	
	<a href="#">GJ-10D</a>	\$12.00	TRD-GK (10 mm)	10 mm	10 mm	22 [0.87]	26 [1.02]	7.1 [0.28]	4 [0.16]	M4 set screw	5°	0.5 [0.02]	0.12 [0.005]	2.0 N·m	32 N·m/rad	
Fiberglass (SAE)	<a href="#">GJ-635D</a>	\$22.00	TRDA-2E (0.25 in)	0.25 in	0.25 in	15 [0.59]	22 [0.87]	5.2 [0.20]	3 [0.12]	M3 set screw	5°	0.5 [0.02]	0.12 [0.005]	0.8 N·m	10 N·m/rad	Glass-fiber reinforced resin
	<a href="#">GJK-953D</a>	\$27.00	TRDA-20/25 (0.375 in)	0.375 in	0.375 in	25 [0.98]	32 [1.26]	7.3 [0.29]	3.5 [0.14]	M4 set screw	5°	0.5 [0.02]	0.12 [0.005]	2.0 N·m	32 N·m/rad	
Polymer (SAE)	<a href="#">STP-MTRA-SC-1412</a>	\$30.00	TRDA-2E (0.25 in)	0.25 in	0.50 in	25 [0.98]	38 [1.50]	9.9 [0.39]	5.4 [0.21]	M3 cap screw	5°	0.3 [0.01]	0.12 [0.005]	3.7 N·m	0.36 °/lb·in	Engineered polymer
	<a href="#">STP-MTRA-SC-3812</a>	\$30.00	TRDA-20/25 (0.375 in)	0.375 in	0.50 in	25 [0.98]	38 [1.50]	9.9 [0.39]	5.4 [0.21]	M3 cap screw	5°	0.3 [0.01]	0.12 [0.005]	3.7 N·m	0.36 °/lb·in	
Aluminum (metric)	<a href="#">ARM-075-5-4D</a>	\$51.50	TRD-MX (4mm)	4mm	5mm	19.1 [0.75]	19.1 [0.75]	4.6 [0.18]	2.4 [0.09]	M3 set screw	5°	0.25 [0.01]	0.25 [0.01]	2.3 N·m	8.2 N·m/rad	Aluminum alloy
	<a href="#">RU-075D</a>	\$58.00	TRD-S/SR (6mm)	6mm	6mm	19.1 [0.75]	19.1 [0.75]	4.6 [0.18]	2.4 [0.09]	M3 set screw	5°	0.25 [0.01]	0.12 [0.005]	1.0 N·m	8.2 N·m/rad	
	<a href="#">JU-100D</a>	\$51.50	TRD-N/NA (8mm)	8mm	8mm	25.4 [1.00]	25.4 [1.00]	6.6 [0.26]	3.8 [0.15]	M5 set screw	5°	0.25 [0.01]	0.25 [0.01]	1.6 N·m	14.3 N·m/rad	
	<a href="#">RU-100D</a>	\$60.00	TRD-GK (10 mm)	10 mm	10 mm	25.4 [1.00]	25.4 [1.00]	6.6 [0.26]	3.8 [0.15]	M5 set screw	5°	0.25 [0.01]	0.12 [0.005]	1.6 N·m	14.3 N·m/rad	
Aluminum (metric-to-SAE)	<a href="#">ML13P-4-476D</a>	\$51.50	TRD-MX (4mm)	4mm	0.1875 in	13 [0.51]	19 [0.75]	5.5 [0.22]	2.5 [0.10]	M2 set screw	5°	0.4 [0.02]	0.2 [0.01]	0.25 N·m	44 N·m/rad	Aluminum alloy (Bent plate: Polyimide)
	<a href="#">ML16P-4-635D</a>	\$51.50	TRD-MX (4mm) TRDA-2E (0.25 in)	4mm	0.25 in	16 [0.63]	23 [0.91]	7 [0.28]	3 [0.12]	M3 set screw	5°	0.6 [0.02]	0.3 [0.01]	0.4 N·m	70 N·m/rad	
	<a href="#">MCGL16-6-635</a>	\$33.00	TRD-S/SR (6mm) TRDA-2E (0.25 in)	6mm	0.25 in	16 [0.63]	23.2 [0.91]	7 [0.28]	3 [0.12]	M3 set screw	3.5°	0.3 [0.01]	0.3 [0.01]	0.4 N·m	70 N·m/rad	
	<a href="#">MCGL20-8-635</a>	\$43.00	TRD-N/NA (8mm) TRDA-2E (0.25 in)	8mm	0.25 in	20 [0.79]	26 [1.02]	7.5 [0.30]	3.7 [0.15]	M3 set screw	3.5°	0.3 [0.01]	0.4 [0.02]	0.6 N·m	130 N·m/rad	
	<a href="#">MCGL20-8-952</a>	\$44.00	TRD-N/NA (8mm) TRDA-20/25 (0.375 in)	8mm	0.375 in	20 [0.79]	26 [1.02]	7.5 [0.30]	3.7 [0.15]	M3 set screw	3.5°	0.3 [0.01]	0.4 [0.02]	0.6 N·m	130 N·m/rad	
	<a href="#">MCGL25-10-635</a>	\$54.00	TRD-GK (10 mm) TRDA-2E (0.25 in)	10 mm	0.25 in	25 [0.98]	30.2 [1.19]	9 [0.35]	4 [0.16]	M4 set screw	3.5°	0.3 [0.01]	0.5 [0.02]	1.4 N·m	240 N·m/rad	
	<a href="#">MCGL25-10-952</a>	\$55.00	TRD-GK (10 mm) TRDA-20/25 (0.375 in)	10 mm	0.375 in	25 [0.98]	30.2 [1.19]	9 [0.35]	4 [0.16]	M4 set screw	3.5°	0.3 [0.01]	0.5 [0.02]	1.4 N·m	240 N·m/rad	
Aluminum (SAE)	<a href="#">ARM-075-635-635D</a>	\$52.00	TRDA-2E (0.25 in)	0.25 in	0.25 in	19.1 [0.75]	19.1 [0.75]	4.6 [0.18]	2.4 [0.09]	M3 set screw	5°	0.25 [0.01]	0.25 [0.01]	1.0 N·m	8.2 N·m/rad	Aluminum alloy
	<a href="#">ARM-100-9525-9525D</a>	\$50.00	TRDA-20/25 (0.375 in)	0.375 in	0.375 in	25.4 [1.00]	25.4 [1.00]	6.6 [0.26]	3.8 [0.15]	M5 set screw	5°	0.25 [0.01]	0.25 [0.01]	1.6 N·m	14.3 N·m/rad	

\* mm ÷ 25.4 = inches

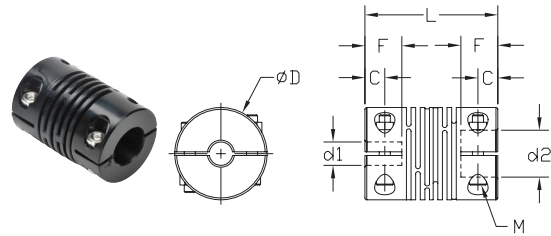
# Encoder Accessories – Couplings

## Encoder Couplings – Dimensions

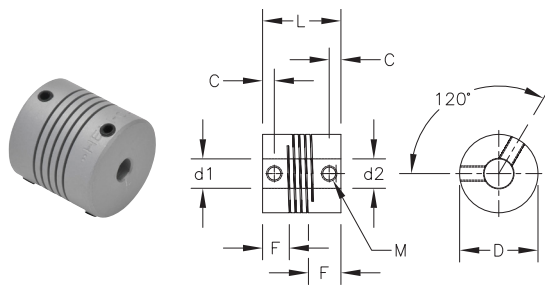
**GJ-xxD Fiberglass Couplings (metric) & GJx-xxxD Fiberglass Couplings (SAE)**



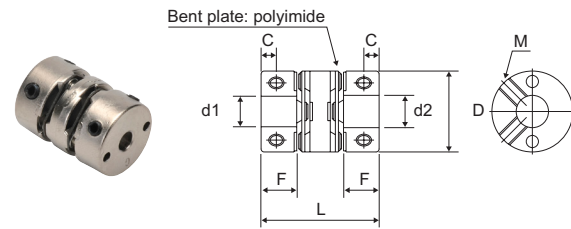
**STP-MTRA-SC-xxxx Polymer Couplings**



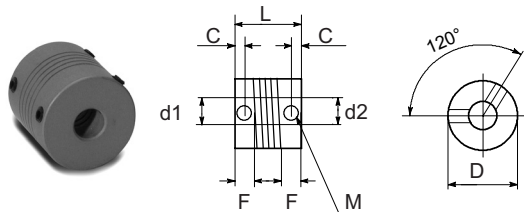
**ARM-xxxxxxD Aluminum Couplings (metric & SAE)**



**MCGLxx Aluminum Couplings & ML1xP-4-xxxD Aluminum Couplings**



**RU-075D, RU-100D, and JU-100D Aluminum Couplings**



# Great Encoder Selection at Great Prices

**JTEK**



Kit Encoder AMT



Light-duty TRD-SR



Medium Duty TRDA-25 (w/MS connector)



Medium Duty TRD-N



Medium Duty TRD-NH



Heavy-duty TRD-GK

		Duty	Family	Size	Encoder Diameter	Shaft Diameter	Solid or Hollow Shaft	Operating Voltage (VDC) and Electrical Output*	IP Rating	Max Radial Load (N)	Max Axial Load (N)	Available Resolutions (PPR)
Incremental	Modular/Kit		<b>AMT (CUI Devices)</b>	11, 15	28mm, 42mm	2/3/4/5/6/8/9/10/11/12/13/14mm, 3/16", 1/4", 3/8", 1/2", 5/8"	hollow	5V Line Driver or 5V P/P	IP20	NA**	NA**	Programmable Up to 4096
			<b>STP-MTRA-ENC</b>	12	31mm	5mm, 1/4", 3/8"	hollow	5V Line Driver or 5V P/P	IP20	NA**	NA**	400, 1000
	Light Duty		<b>TRD-SR</b>	15	38 or 40mm	6mm	solid	5V Line Driver or 5-26V OC	IP50 or IP65	20	10	100, 200, 360, 500, 600, 1000, 1024, 2000, 2500
			<b>TRD-SHR</b>	15	38 or 40mm	8mm	hollow	5V Line Driver or 5-26V OC	IP50 or IP65	20	10	100, 200, 360, 500, 600, 1000, 1024, 2000, 2500
	Medium Duty		<b>TRDA-20</b>	20	2"	3/8"	solid	5V Line Driver or 5-30V P/P	IP50	50	30	100, 360, 500, 1000, 1024, 2500
			<b>TRDA-25</b>	25 (w/size 20 body)	2.5" flange (w/ 2.0" body)	3/8"	solid	5V Line Driver or 5-30V P/P	IP65	50	30	100, 360, 500, 1000, 1024, 2500
			<b>TRD-N</b>	20	50mm	8mm	solid	5V Line Driver or 5-30V P/P	IP65	50	30	3, 4, 5, 10, 30, 40, 50, 60, 100, 120, 200, 240, 250, 300, 360, 400, 480, 500, 600, 750, 1000, 1024, 1200, 2000, 2500
			<b>TRD-NH</b>	20	50mm	8mm	hollow	5V Line Driver or 5-30V P/P	IP65	50	30	3, 4, 5, 10, 30, 40, 50, 60, 100, 120, 200, 240, 250, 300, 360, 400, 480, 500, 600, 750, 1000, 1024, 1200, 2000, 2500
	Heavy Duty		<b>TRD-GK</b>	30	78mm	10mm	solid	10-30V P/P	IP65	100	50	30, 100, 120, 200, 240, 250, 300, 360, 400, 500, 600, 1000, 1200, 2000, 2500, 3600, 5000
Medium Duty Absolute		<b>TRD-NA</b>	20	50mm	8mm	solid	10-30V OC	IP65	50	30	32, 64, 128, 180, 256, 360, 512, 720, 1024 (grey code)	

Modular/Kit and TRDA-25 encoders have connectors and require separate cables. All other encoders feature an integral 2m cable.

- \*Operating Voltage and Electrical Output:
- LD = Line Driver (all Line Drivers require 5VDC supply)
  - OC = NPN Open Collector (at Operating Voltage)
  - P/P = Push Pull or Totem Pole (at Operating Voltage)

\*\*Modular/Kit encoders are direct mount, there are no load ratings.

## Accessories

### Couplings

A variety of couplings - metric-to-metric, inch-to-inch (SAE - SAE), and metric-to-inch are in stock, ready to ship.



### Flanges

A collection of flanges that ease encoder mounting. Several models are available with round flanges, square flanges and miscellaneous mounting options.



### Mounting brackets

Simplify your installation with a ready-to-use right-angle mounting bracket for light, medium and heavy-duty encoders



### Cables

For encoders that require a connector cable, we have cables in stock, priced right and ready to ship.

