



# Torque Feedback Device

## Cost Effective High Quality Tactile Interface



### Description

The new Torque Feedback Device (TFD) provides a variable torque output, in proportion to a DC input, for steering and other by-wire applications. This innovative design offers a cost effective, high quality user interface by applying state-of-the-art friction materials and a patent pending electromagnetic actuation system.

Incorporated into the TFD are two redundant sensors for fail-safe shaft feedback. Several standard product configurations are offered with torques ranging from 2.5 to 20Nm, and the TFD's modular design makes it easily adaptable to specific application requirements.

### Features

- Integrated design combines both tactile and position/velocity feedback with a steering wheel interface in one mechanical package.
- Compact design offers high torque densities and energy efficient operation.
- Continuously variable torque output for high quality operator interface or "feel".
- Redundant sensors for safety and field serviceability.

- Modular design allows the product to be easily scaled to specific application requirements.
- Repeatable operation over a wide range of operating conditions and product life.
- Assembly and all components meet EU Directive 2002/95/EC (RoHS).
- Designed for use in EN1175 and IEC61508 compliant systems.

### Typical Steer-By-Wire Applications

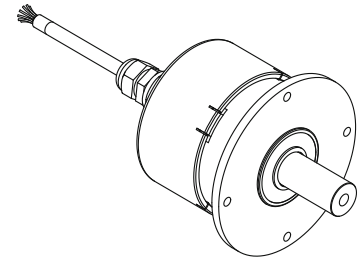
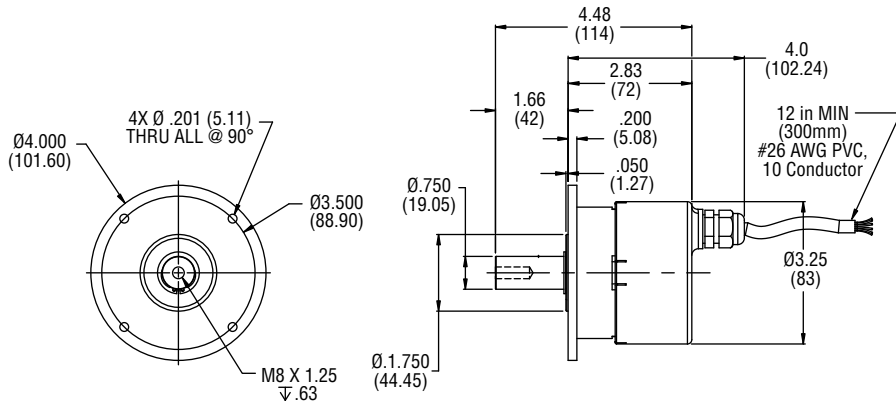
- Electric vehicles including:
  - Lift trucks
  - Golf carts
  - Pallet trucks
  - Floor sweepers
  - Cleaning equipment
- Turf & garden equipment (professional lawnmowers)
- Industrial & recreational marine/boats
- Military/aerospace
- Construction equipment

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# DELTRAN

# TFD-30

## Dimensions & Specifications



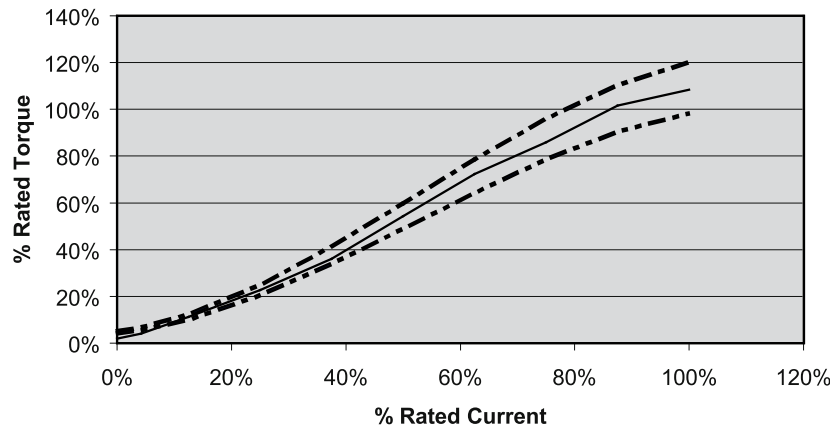
TFD30 Model Shown

Dimensions (mm)

| PERFORMANCE |                             |                      |                                  |                       |               |   |                   |
|-------------|-----------------------------|----------------------|----------------------------------|-----------------------|---------------|---|-------------------|
| Model       | Static Torque<br>lb-in (Nm) | Coil Voltage*<br>VDC | Resistance<br>Ohms @ 20°C<br>nom | Power<br>Watts<br>max | Speed*<br>RPM | Rotor Inertia<br>lb-in-sec <sup>2</sup> | Weight<br>lb (kg) |
| TFD-30 025  | 22 (2.5)                    | 12                   | 3.6                              | 40                    | 300/120       | 35 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |
|             |                             | 24                   | 12.5                             | 46                    | 300/120       | 35 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |
|             |                             | 36                   | 32.6                             | 40                    | 300/120       | 35 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |
|             |                             | 48                   | 55.0                             | 42                    | 300/120       | 35 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |
| TFD-30 050  | 44 (5.0)                    | 12                   | 3.6                              | 40                    | 300/120       | 62 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |
|             |                             | 24                   | 12.5                             | 46                    | 300/120       | 62 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |
|             |                             | 36                   | 32.6                             | 40                    | 300/120       | 62 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |
|             |                             | 48                   | 55.0                             | 42                    | 300/120       | 62 X 10 <sup>-3</sup>                   | 3.5 (1.59)        |

(-) denotes metric equivalents. Specifications subject to change without notice.  
\*Intermittent/Continuous

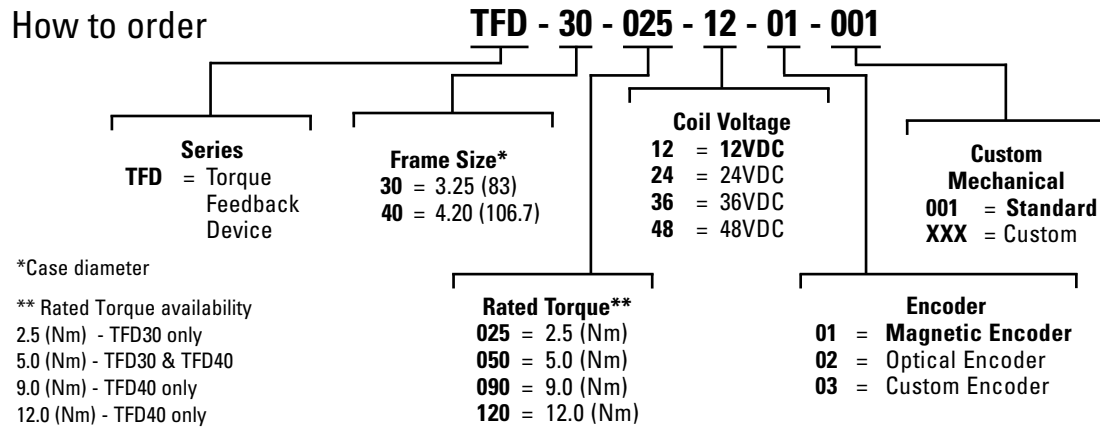
Typical Torque Performance



| % Rated Torque | % Rated Current |
|----------------|-----------------|
| 2%             | 0%              |
| 25%            | 28%             |
| 50%            | 47%             |
| 75%            | 65%             |
| 100%           | 88%             |



## How to order

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