

Fiber-Optic Systems - Displacement TX

Model FO-DM

- Track linear, angular, and rotary position
- 32" flexible cable extracts from and retracts to a spring-loaded drum
- EMI Hardened and validated for EMC up to 200 V/m (46 dBV/m) from 500 kHz to 2 GHz
- 3-alkaline 'AA' batteries provide >200-hour battery-life
- Low-Battery indicator



Description

The MSC model FO-DM is an EMI hardened Fiber-Optic Displacement Transmitter that provides a means to transmit position measurements via fiber-optic cables from sources in high electromagnetic fields or anechoic chambers to monitoring equipment in a low field area. Signals sent over optical fiber are immune to interference or signal impairment that may be seen with wire cable. Major benefits provided are small size in a self-powered transmitter having electromagnetic immunity and extended battery life.

The displacement sensing transducer uses a potentiometric voltage divider circuit that measures linear position via a flexible displacement cable that extracts from and retracts to a spring-loaded drum. Total length of the cable is 32" providing ± 16 inches of travel that is equal to ± 16 Volts output or a scaling factor of 1 V/in. Receivers are available in 2, 4 or 12-channel bench-top and 12-channel rack-mount configurations.

The FO-DM transmitter is EMI hardened and validated for EMC operation in harsh RF environments at power levels up to 200 V/m (46 dBV/m) from 500 kHz to 2 GHz. The displacement transmitter uses 820 nm wavelength multimode 62.5/125 μ m, 100/140 μ m or step-index 200 μ m HCS fiber cables. SMA type 905 connectors are standard.

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SPECIFICATIONS

PARAMETER	SPECIFICATION
RATIOMETRIC LINEAR POSITION SENSOR	
GENERAL	
Linearity	±0.25% Full Scale
Repeatability	±0.03% Full Scale
Cable	Ø.018 (0.46 mm) Jacketed Stainless Steel
Cable Length	32 in. (813 mm)
Cable Tension	11 oz (3.1 N)
Life	125,000 full stroke cycles
ENVIRONMENTAL	
Operating Temperature	-4°F to 185°F (-25°C to 85°C)
Operating Humidity	95% R.H. max. non-condensing
Vibration	15 G's 0.1 ms max
Shock	50 G's 0.1 ms Max
SYSTEM CHARACTERISTICS AND PERFORMANCE	
GENERAL	
Linear Scaling	±16 in. - 32 in. total travel (406.4 mm - 812.4 mm total travel)
Electrical Scaling	±16 V or ±1 V/in. (±1 V/25.4 mm)
Position Offset	within ±.016in. (±0.4064 mm) (after ½ hr warm-up)
Accuracy	±0.5% over the operating temperature range (after alignment)
Linearity	±0.25% over the operating temperature range (after alignment)
Signal/Noise	>60 dB
Crosstalk	>60 dB
Power Source	3-AA Alkaline Batteries
Battery Life	continuous >4 days
PHYSICAL	
Channels	1
Dimensions (L x W x H)	4.12x2.11x1.9 2in (105x54x49mm)
Volume	<16.7 in ³ (<274 cm ³)
Weight	15 oz. (425 g)
Optical Cables	820 nm wavelength multimode graded-index 62.5/125 μm, 100/140 μm or step-index 200 μm HCS (Hard Clad Silica)
Optical Connectors	SMA Type 905
Optical Cable Length	4921 ft (1500 m) max.
EMC	300 V/m at 500 kHz to 1 GHz, 200 V/m at 1 GHz to 11 GHz, and 600 V/m 1 GHz to 2 GHz (pulsed 5% duty-cycle & 5μs rise-time)
CONFIGURATIONS	
Receivers available in 2, 4 or 12-channel bench-top and 12-channel 19" Euro-rack configurations. Custom Linear Position Sensors available in other ranges from 2 to 50 inches (50 to 1250 mm).	

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