

# Fiber-Optic Systems - Light Monitor

## Model FO-LS

- Photo-conductive cell with a wide dynamic range provides the means to monitor state of light/lamps
- EMI Hardened and validated for EMC up to 200 V/m (46 dBV/m) from 500 kHz to 2 GHz
- External light sensitivity threshold adjustment w/LED state indicator
- Uses just 2 alkaline 'AAA' batteries providing >250-hours battery-life
- LED channel status indicators and TTL output



## Description

The MSC model FO-LS is an EMI hardened Fiber-Optic Light Monitor that provides a means to observe the presence or absence of light (digital operation) in a high field environment or anechoic chamber. The light monitor is usable with almost any visible or near infrared light source such as LEDs, neon, fluorescent, incandescent bulbs, lasers and flame sources. Signals sent over optic fiber are immune to interference or signal impairment typically seen with wire cable. Benefits provided are small size in a self-powered transmitter having electromagnetic immunity and extended battery life.

The active sensor is a photo-conductive cell with a wide dynamic range capable of response to both very low light levels (moonlight) and to very high light levels (direct sunlight). The resistance changes several orders of magnitude between "light" and "no light." An external sensitivity adjustment w/status LED is provided to set the detector threshold.

The receiver accepts 4 transmitter inputs and demodulates each incoming signal back to the light state as originally detected. A green LED displays the light state on the front panel and a BNC connector provides the TTL output on the back panel.

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

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## SPECIFICATIONS

PARAMETER	SPECIFICATION
<b>PHOTOCONDUCTIVE-CELL CHARACTERISTICS</b>	
<b>GENERAL</b>	
Relative Spectral Response	400 nm - 700 nm wavelength
Response at 1fc of illumination	35 ms Rise-Time (1-1/e)
	5 ms Fall-Time (1/e)
<b>SENSITIVITY</b>	0.85 $\gamma$ typ.( LOG (R10/R100) / LOG (100/10))
<b>ENVIRONMENTAL</b>	
Operating Temperature	-4° to 185°F (-25° 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.
<b>SYSTEM CHARACTERISTICS AND PERFORMANCE</b>	
<b>GENERAL</b>	
Signal/Noise	>60 dB
Crosstalk	>60 dB
Transmitter Power Source	3-AAA Alkaline Batteries
Battery Life	continuous >200 hrs.
<b>PHYSICAL</b>	
Transmitter	
Channels	1
Dimensions (L x W x H)	2.75 x 1.875 x 1.10 in (70x48x28 mm)
Volume	5.7 in <sup>3</sup> (94 cm <sup>3</sup> )
Weight	4 oz. (124 g)
Receiver	
Channels	4
Weight	20 oz. (622 g)
Dimensions (L x W x H)	4.17 x 5.31 x 2.60 in (106x135x66 mm)
Output Cables	BNC
Optical Cables	820 nm wavelength multimode graded-index 62.5/125 $\mu$ m, 100/140 $\mu$ m or step-index 200 $\mu$ m HCS (Hard Clad Silica)
Optical Connectors	SMA type 905
Optical Cable Length	4921ft (1500M) 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 & 5 $\mu$ s rise-time)
<b>CONFIGURATION</b>	
Receiver Module	4-channel bench-top
Receiver Power	110 VAC Power
Note: Receivers are capable of driving a 1k $\Omega$ load	

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