

# MINIATURE LED INDICATOR



## Models ML1600 & ML1610

Designed for use as function indicators on aircraft, test equipment, machine tools and wherever severe environmental conditions need to be met.

### FEATURES

- Performs in severe environments
- Low power use
- Long life
- High efficiency
- High visibility
- Rugged construction
- Readily mounted on panel

### MECHANICAL SPECIFICATIONS

**Case:** Black anodized aluminum  
**Mounting:** Front panel by 5/16"-32 nut and lockwasher  
**Weight:** 1.5 grams with hardware  
**Seal:** Environmentally sealed. Added front panel O-ring seal for model ML1610.



### ENVIRONMENTAL SPECIFICATIONS

**Vibration:** .06" D.A. or 20 Gs Peak, whichever is less, 10Hz to 2kHz, MIL STD 202, Method 204, Test Condition D  
**Shock:** 100 Gs MIL STD 202, Method 213, Test Condition I  
**Moisture Resistance (Humidity):** MIL STD 202, Method 106  
**Barometric Pressure (Reduced):** 100,000 ft., MIL STD 202, Method 105, Test Condition D  
**Reliability:** 3 x 10<sup>6</sup> hours min. MTBF @ 25°C  
**Salt Atmosphere (Corrosion):** MIL STD 202, Method 101, Test Condition B

### ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS\*

Absolute Maximum Ratings @Temp = 25°C			
Color	Red	Yellow	Green
Forward Voltage (VDC) typical @ 20 mA	1.9	2.0	2.1
Peak Forward Current (mA) ①	90	60	90
Max DC Forward Current (mA) ②	30	20	30
Reverse Voltage (VDC) @ I <sub>R</sub> = 100 µA	5	5	5
Power Dissipation (mW)	135	85	135
Luminous Intensity (mcd) typical @ I <sub>F</sub> = 10 mA	Non-diffused	50	70
	Diffused	7.0	8.0
Luminous Intensity (mcd) typical @ I <sub>F</sub> = 10 mA	Non-diffused	22	14.7
	Diffused	5.4	5.7
Dominant Wave Length (nm) typical	626	585	569
Viewing Angle (2 Ø <sup>1/2</sup> ) typical	Non-diffused	35°	24°
	Diffused	60°	60°
Operating Temperature (°C)	-55 to +100	-55 to +100	-20 to +100
Storage Temperature (°C)	-55 to +100	-55 to +100	-55 to +100
Lead Soldering Temperature	260°C for 5 seconds		

**Notes:** ① Typical pulsing values: t<sub>p</sub> ≤ 10 µsec, Duty cycle = 10%  
 ② For red and green, derate linearly from 50°C @ 0.5 mA/°C. For yellow, derate linearly from 50°C @ 0.2 mA/°C

\*These characteristics reflect the baseline model. Variations may imply a difference in luminous characteristics and/or operability features. Please contact the EDI Sales Department for more information.

This page consists of basic marketing information that is not defined as technical data under EAR Part 772.

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## ORDERING INFORMATION

When ordering, show basic part number first, followed by the color of the LED, lens type, and terminal style. If this is a special part, a factory assigned modification number will be added at the end of the ordering number. Consult the factory for special configurations.

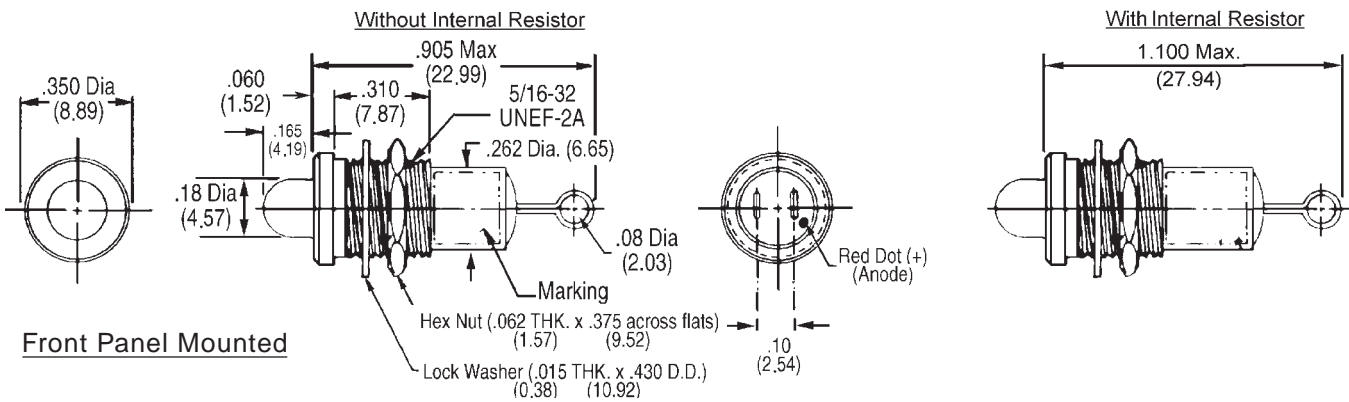
Example:

A basic model with an O-ring panel seal, a yellow LED, a diffused lens, and loop terminals would be ML1610-Y-D-LT.

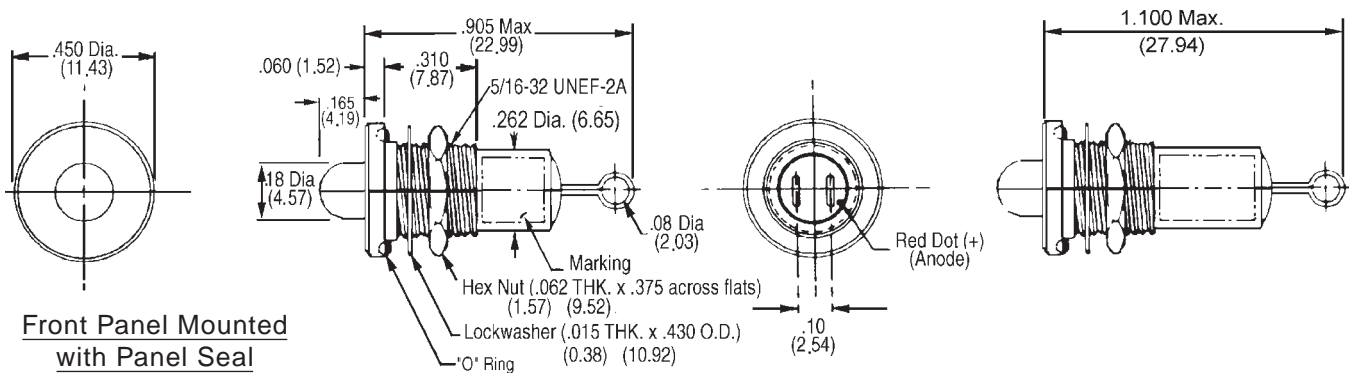
ML1610 - Y - D - LT - ( ) - ( )

Standard factory options are designated by "-Sxxx"

Basic Model Number	LED Color	Lens Type	Terminal Style	Internal Resistor
ML1600 (w/o O-ring)	R Red	ND Non-diffused	ST Straight Terminals	( ) No Resistor
ML1610 (with O-ring)	Y Yellow	D Diffused	LT Loop Terminals	5 5V
	G Green			24 24V



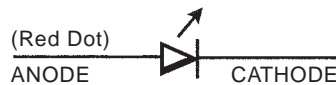
**ML1600**  
Environmentally sealed – no O-ring



**Front Panel Mounted with Panel Seal**



**Recommended Mounting Hole**



**Schematic**



**Schematic with Internal Resistor**

**ML1610**  
Environmentally sealed – with front panel O-ring

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals: ± .010 (0.25)  
Fractions: ± 1/64 Mounting Torque: 5-7 in. lbs.

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