

Miniature LED Indicator

ML1600/ML1610

FEATURES

- Performs in Severe Environments
- Low Power Use
- Long Life
- High Efficiency
- High Luminosity
- Rugged Construction
- Readily Mounted on Panel

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

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 ML 1610.

ENVIRONMENTAL SPECIFICATIONS

Vibration: .06" D.A. or 20 G Peak, whichever is less, 10 Hz to 2 kHz, MIL STD 202, Method 204, Test Condition D.

Shock: 100 G's 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 10⁶ 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
DC Forward Current (mA) ^②		30	20	30
Reverse Voltage (VDC) (I _R =100μA)		5	5	5
Power Dissipation (mW)		135	85	135
Luminous Intensity (mcd) typical	Non Diffused	60	50	70
@ I _F = 10 mA	Diffused	7.0	8.0	5.2
Dominant Wave Length (nm) typical		626	585	569
Viewing Angle (2 Ø ^{1/2}) typical	Non Diffused	35°	35°	24°
	Diffused	60°	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		

① Typical pulsing values: t_p ≤ 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

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, factory's modification number will be added at the end of the ordering number. Consult 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 - () - S ()

Basic Model Number	LED Color	Lens Type	Terminal Style	Internal Resistor
ML1600 (w/o O-Ring)	(R) = Red (Y) = Yellow (G) = Green	(ND) = Non-diffused (D) = Diffused	ST = Straight Leads LT = Loop terminals	() No Resistor 5 5V 14 14V 24 24V 28 28V
ML1610 (with O-Ring)				

Standard Factory Options are designated by "-Sxxx"



communications
Electrodynamics, Inc.

Miniature LED Indicator

ML1600/ML1610



ML1610 Front View



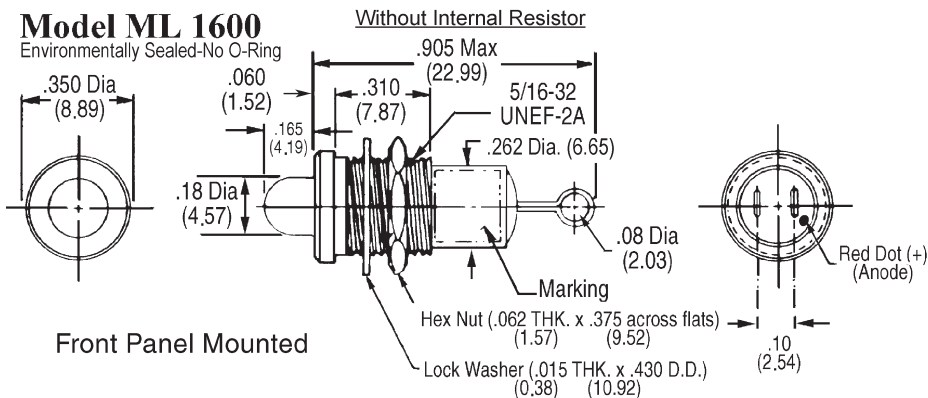
ML1600



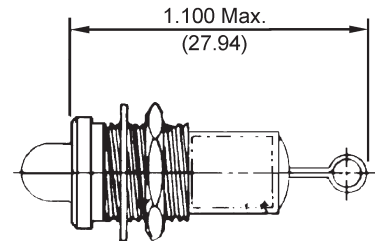
ML1610 Back View
showing Panel O-Ring Seal

Model ML 1600

Environmentally Sealed-No O-Ring

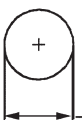
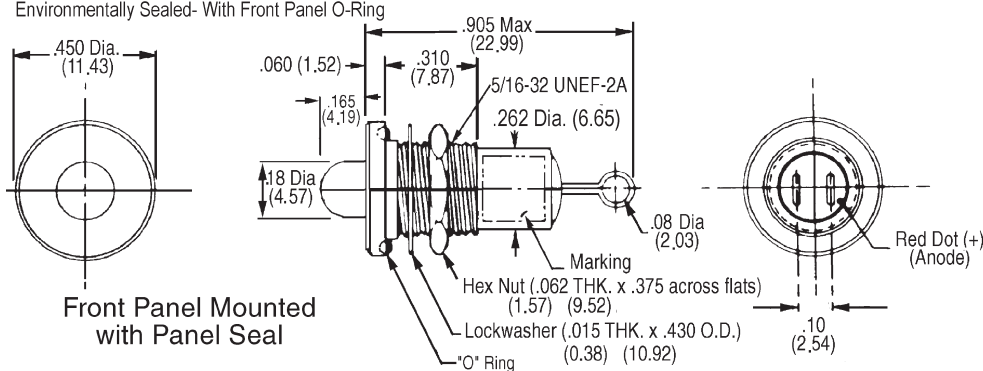


With Internal Resistor

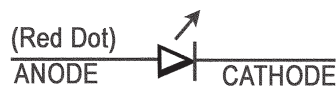


Model ML 1610

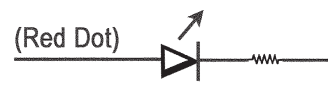
Environmentally Sealed- With Front Panel O-Ring



Recommended Mounting Hole



Schematic



Schematic
With Internal Resistor

NOTE:

Dimensions in () are mm. Tolerances: Decimals: $\pm .010$ (0,25)

Fractions: $\pm 1/64$

Mounting Torque: 5-7 in. lbs.