

Miniature Panel Mount LED Indicator

ML1620/ML1630

FEATURES

- Performs in Severe Environments
- Low Power Use
- Long Life
- High Efficiency
- High Luminosity
- Rugged Construction
- Readily Mounted on Panel
- Optional EMI Screen
- Optional Internal Resistor

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 DC) ①	90	60	90
DC Forward Current (mA DC) ②	30	20	30
Reverse Voltage (VDC) @ I _R = 100 µA	5	5	5
Power Dissipation (mW)	135	85	135
Luminous Intensity (mcd) typical @ I _F = 10 mA DC	Non-diffused 60 Diffused 12	40 12	50 12
Dominant Wave Length (nm) typical	626	585	569
Viewing Angle (2 Ø ^{1/2}) typical	Non-diffused 30° Diffused 60°	30° 60°	30° 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, then EMI screen, LED color, lens type and voltage desired. If this is a special part, the factory assigned modification number will be added at the end of the ordering number. Consult factory for special configurations.

Example: Basic model with an O-Ring panel seal, an EMI screen, a red LED, a diffused lens, straight leads and no internal resistor would be ML1630E-R-D-ST-()-S()

* Operating temperature for internal resistor option is -40°C to +85°C

Basic Model Number	EMI Screen	LED. Color	Lens Type	Terminal Style	Voltage Level
ML1620 (w/o O-Ring)	() None E Screen	R Red Y Yellow G Green	ND Non-Diffused D Diffused	ST Straight Lead LT Loop Terminals	() No resistor 5 5V* 14 14V* 24 24V* 28 28V*
ML1630 (w/ O-Ring)					

Standard Factory Options are designated by "Sxxx"



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

ENVIRONMENTAL SPECIFICATIONS

Vibration: .06" D.A. or 20 G's 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.

MECHANICAL SPECIFICATION

Case: Aluminum, black anodized front with conductive clear chromate back.

Mounting: Front panel by 5/16-32" nut and lockwasher.

Seal: Environmentally sealed. Added front panel o-ring seal for model ML 1630.

Miniature Panel Mount LED Indicator

ML1620/ML1630



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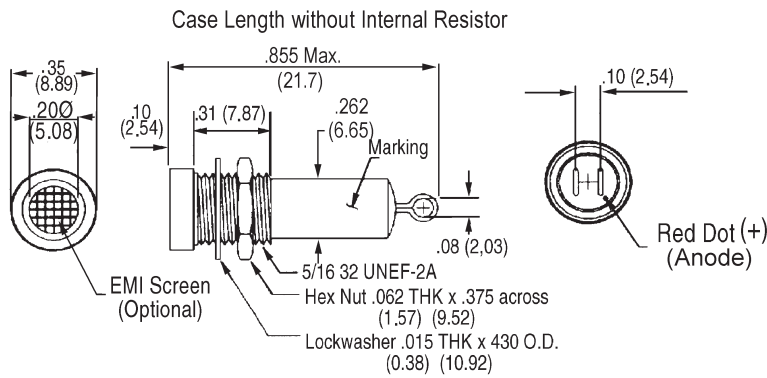


ML 1620

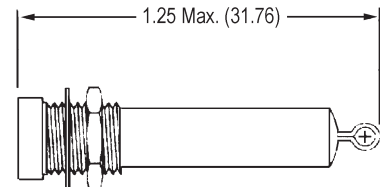


ML 1630

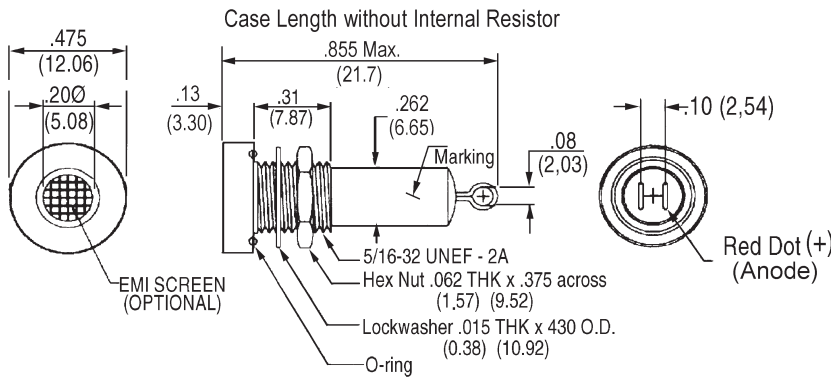
Model ML 1620



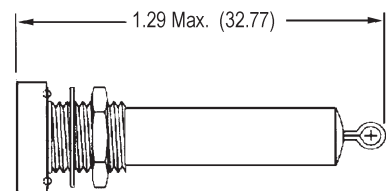
Case Length with Internal Resistor



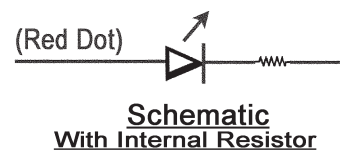
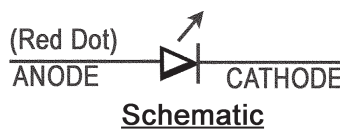
Model ML 1630



Case Length with Internal Resistor



Recommended Mounting Hole



LED INDICATORS

NOTE:

Dimensions in () are mm. Tolerances: Decimals: ± .010 (0,25)

Fractions: ± 1/64

Mounting Torque: 5-7 in. lbs.

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Miniature Panel Mount LED Indicator

ML1620-S/ML1630-S



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

FEATURES

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

ENVIRONMENTAL SPECIFICATIONS

Vibration: .06" D.A. or 20 G's 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.

MECHANICAL SPECIFICATION

Case: Aluminum, black anodized front with conductive clear chromate back.

Mounting: Front panel by 5/16-32" nut and lockwasher.

Seal: Environmentally sealed.

ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS

Absolute Maximum Ratings @Temp = 25°C

Color	Red	Yellow	Green
Forward Voltage (VDC) Typical @ 20 mA	1.9	2.1	2.2
DC Forward Current (mA DC)	30	30	25
Reverse Voltage (VDC) @ I _R = 100 µA	5	5	5
Power Dissipation (mW) ^①	100	105	105
Luminous Intensity (mcd) @ I _F = 20 mA DC typical Diffused	250	300	40
Dominant Wave Length (nm) typical	640	588	568
Viewing Angle (2 Ø ^{1/2}) typical	Diffused 60°	60°	60°
Operating Temperature (°C)	-40 to +85	-40 to +85	-40 to +85
Storage Temperature (°C)	-55 to +100	-55 to +100	-55 to +100

Lead Soldering Temperature

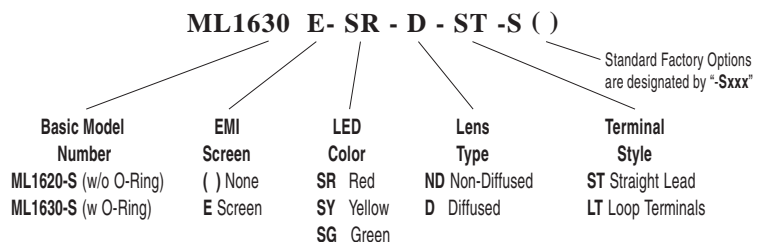
260 °C for 5 seconds

① Power derating: derate linearly from 25°. For Green and Yellow: -1.2mW/°C. For Red: -1.3mW/°C

ORDERING INFORMATION

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

Example: Basic model with an O-Ring panel seal, an EMI screen, a red LED, a diffused lens and straight leads would be ML1630E-SR-D-ST



Miniature Panel Mount LED Indicator

ML1620-S/ML1630-S



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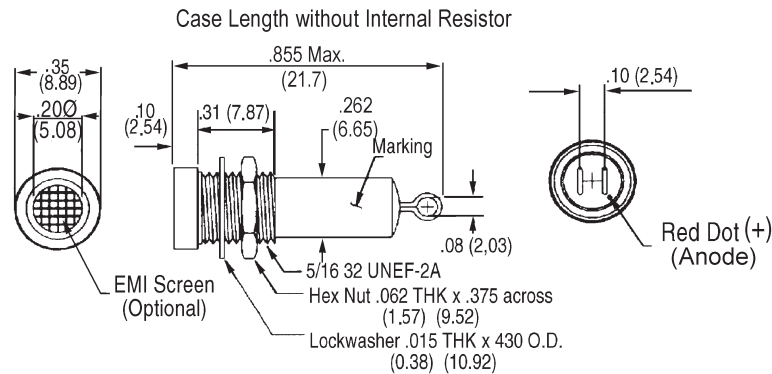


ML 1620-S

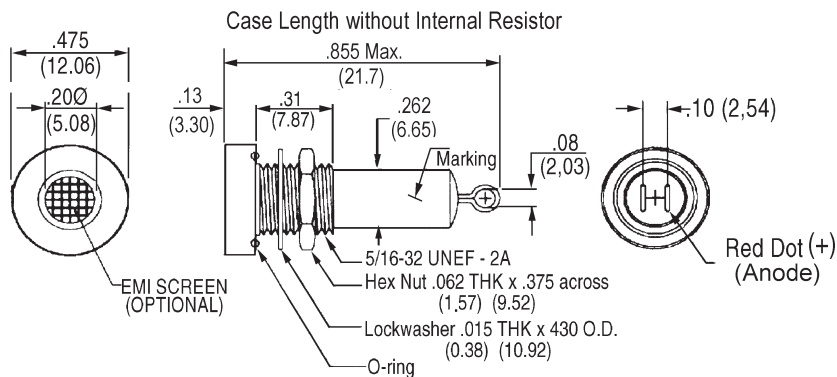


ML 1630-S

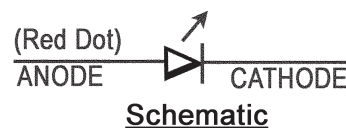
Model ML 1620-S



Model ML 1630-S



Recommended Mounting Hole



NOTE:

Dimensions in () are mm. Tolerances: Decimals: ± .010 (0,25)

Fractions: ± 1/64

Mounting Torque: 5-7 in. lbs.

LED INDICATORS