

Bicolor Rear Mount LED Indicator

ML 1634

FEATURES

- Multiple Status Indication within a Single Package
- Performs in Severe Environments
- Colors: Red/Green, Yellow/Green
- Rugged Construction
- Panel Mounted
- Optional EMI Screen
- Diffused LED lens
- Decorative bezel



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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 20G 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.

Humidity: MIL STD 202, Method 106.

Altitude: 100,000 ft., MIL STD 202, Method 105, Test Condition D.

Reliability: Operational 6 X 10⁶ hours min. MTBF @ 25°C.

Salt Spray: MIL STD 202, Method 101, Test Condition B.

MECHANICAL SPECIFICATIONS

Case: Aluminum, with clear chromate finish.

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

Seal: Environmentally sealed. Added front panel Fluorosilicone O-ring

Window: Glass

Panel Thickness: 0.118" max.

ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS

Absolute Maximum Ratings @ T_{ambient} = 25° C.

ML 1634

Colors	Red/Green	Yellow/Green
Forward Voltage (VDC)	2.8	2.8
DC Forward Current (mA)	30/25	30/25
Reverse Voltage (VDC) @ I _R = 100 μA	5	5
Power Dissipation (mW)	105	105
Luminous Intensity (mcd) typ @ I _F = 20 mA	8	8
Peak Wave Length (nm) typical	635/565	635/565
Viewing Angle (2 Ø ^{1/2})	60°	60°
Operating Temperature (°C)	-40 to +85	-40 to +85
Storage Temperature (°C)	-55 to +100	-55 to +100
Lead Soldering Temperature	260 °C for 3 seconds	

Red: Derate linearly from 50°C at 0.5 mA/°C

Green: Derate linearly from 50°C at 0.5 mA/°C

ORDERING INFORMATION

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

Example: Basic model with an EMI screen, with a red/green LED, a diffused lens, straight terminals and 24 volt internal resistor would be an ML 1634 E-R/G-D-ST

ML 1634 E- R/G - D -ST - S ()

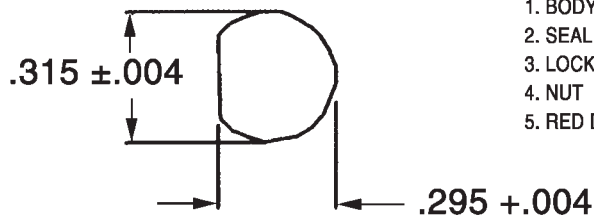
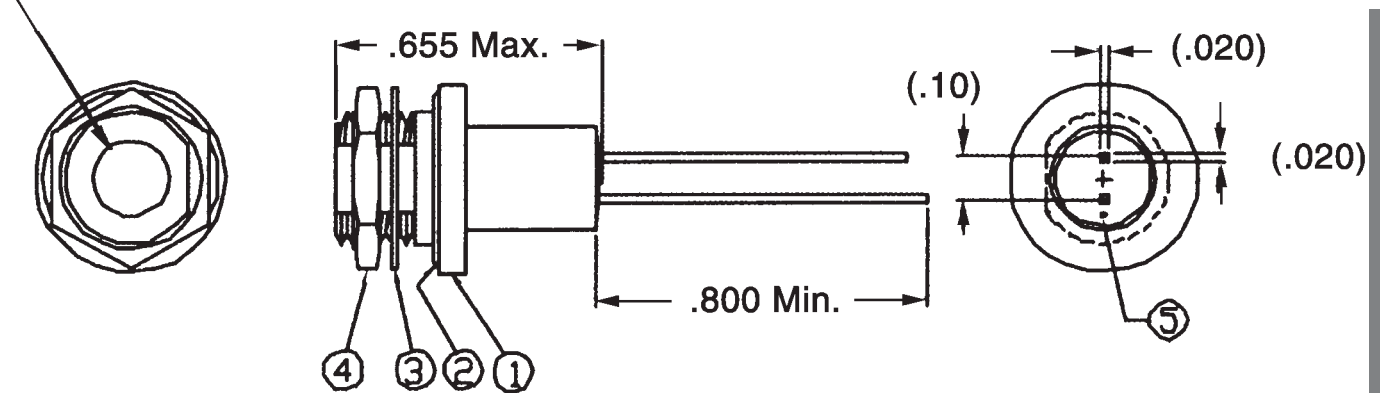
Basic Model Number	EMI Screen	LED. Color	Lens Type	Terminal Style	Factory Modification Number if Special
ML 1634	() None E Screen	R/G Red/Green Y/G Yellow/Green	ND Non-Diffused D Diffused	ST Straight Lead LT Loop terminals	S+ ID No.

Bicolor Rear Mount LED Indicator

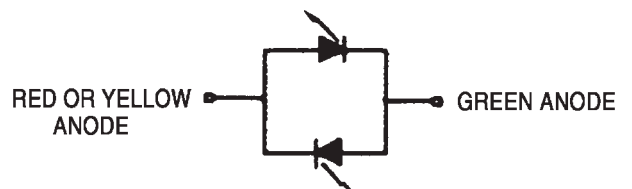
ML 1634



.182 DIA Display Area



1. BODY
2. SEAL
3. LOCK WASHER
4. NUT
5. RED DOT (ANODE)



SCHEMATIC

MOUNTING HOLE DETAIL

NOTE:

Dimensions in () are mm. Tolerances: Decimals: ± .010 (0,25) Fractions: ± 1/64 Mounting Torque: 5-7 in. lbs.
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LED INDICATORS

Rear-Mount LED Indicator

ML 1636

FEATURES

- Ideal for Rugged Environments
- Environmentally Sealed
- Panel Mount Seal
- Colors: Yellow, Green & Red
- Compact Case Design
- EMI Screen option
- Decorative Bezel Available

Developed for use as a status indicator, the ML 1636 was designed to survive in the most severe environments. The small size and rugged package make it ideal for applications where status indication is critical to the operation of your equipment. The environmentally sealed



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case includes an o-ring panel seal that insures the integrity of your system. Comes complete with Fluorosilicone O-ring and mounting hardware.

ENVIRONMENTAL SPECIFICATIONS

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

Shock: 100 G's MIL STD 202, Method 213, Test Condition D.

Moisture Resistance (Humidity): MIL STD 202, Method 106.

Altitude: 100,000 ft., MIL STD 202, Method 105, Test Condition D.

Reliability: Operational 6x10⁶ hours minimum. MTBF @ 25°C

Salt Spray: MIL STD 202, Method 101, Test Condition B.

MECHANICAL SPECIFICATIONS

Case: Aluminum, black anodized, standard.

Clear chromate case with EMI screen optional.

Mounting: Rear-mount by 5/16-32" nut and lockwasher

O-Ring: Fluorosilicone rubber

ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS Absolute Maximum Ratings

ML1636

Color	Red	Yellow	Green
Forward Voltage (VDC)	2.1	2.1	2.1
Peak Forward Current (mA)	90	60	90
DC Forward Current (mA)	30	20	30
Reverse Voltage (VDC) @ I _r = 100 μA	5	5	5
Power Dissipation (mW)	105	105	105
Luminous Intensity (mcd)	20	20	10.6
typ @ I _f =20 mA	Non Diffused Diffused	8	8
Dominant Wave Length (nm) typical	625	590	565
Viewing Angle	Non Diffused Diffused	30° 60°	30° 60°
Operating Temperature (°C)	-50 to +100	-50 to +100	-50 to +100
Storage Temperature (°C)	-50 to +100	-50 to +100	-50 to +100
Lead Soldering Temperature	260°C for 5 seconds		

* DC forward current derating: red and green derate linearly from 50° @ 0.5 mA/°C
yellow derate linearly from 50°C @ 0.2 mA/°C

ORDERING INFORMATION

When ordering, show model number first, followed by EMI screen, then LED color, lens style and terminal style. If this is a special part, the factory assigned modification number will be added at the end of the ordering number.

Example: Basic model without an EMI screen, with a yellow LED a diffused lens and straight leads would be ML1636-Y-D-ST.

ML 1636E - Y - D - ST - S ()

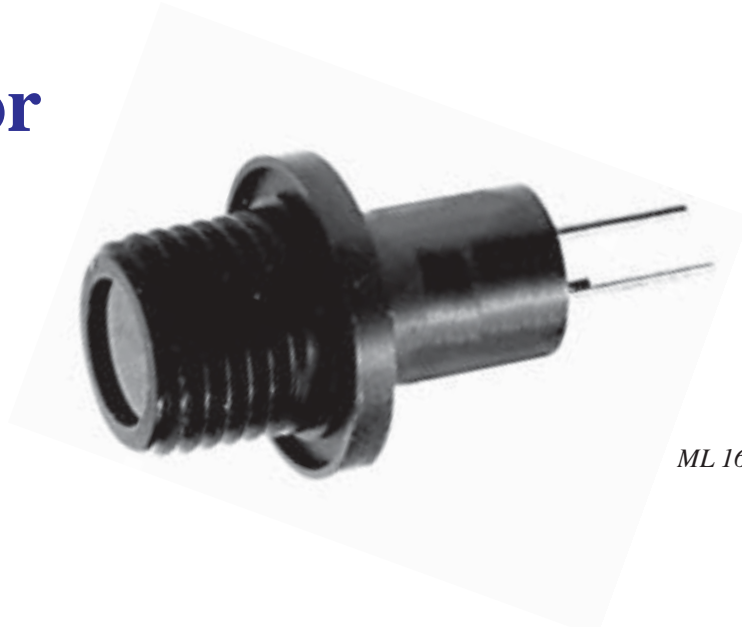
Basic Model Number	EMI Screen	Color LED.	Lens Type	Terminal Style	Factory Modification Number if Special
ML 1636	() None E Screen	R Red Y Yellow G Green	ND Non-Diffused D Diffused	ST Straight Lead LT Solder Loop	S.+ ID No.

Rear-Mount LED Indicator

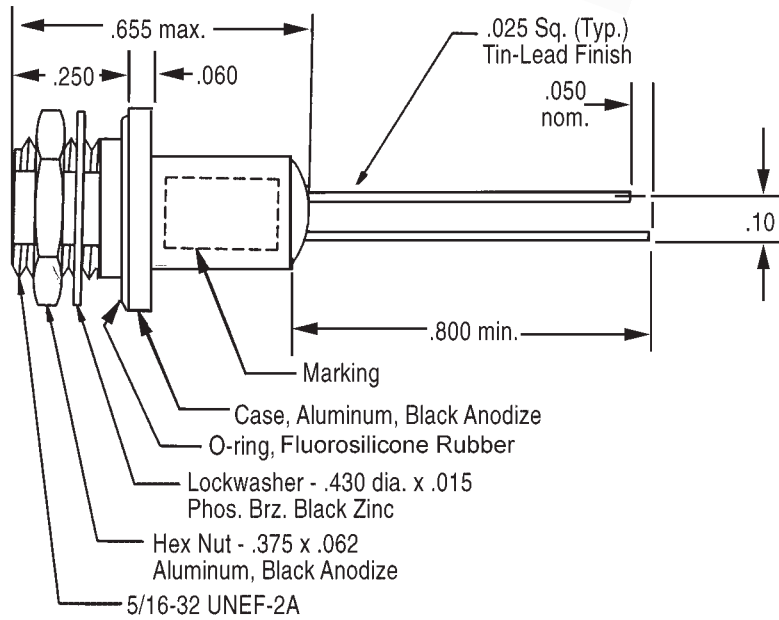
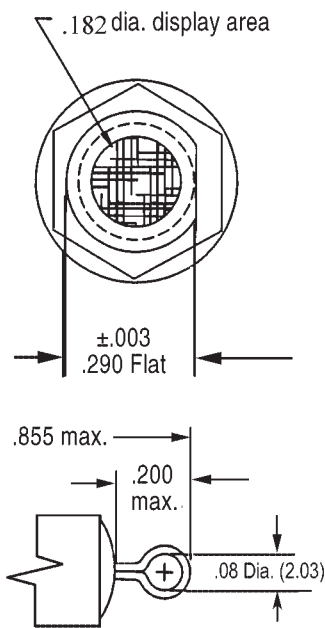
ML1636



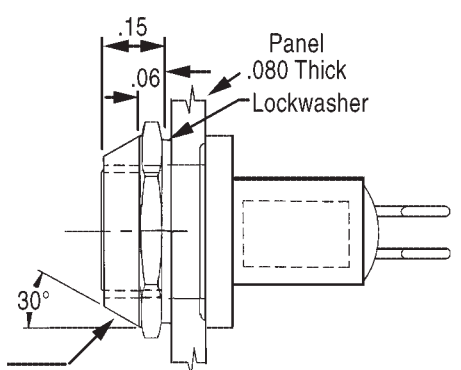
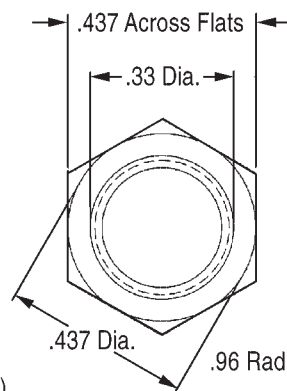
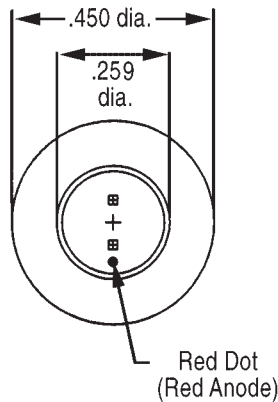
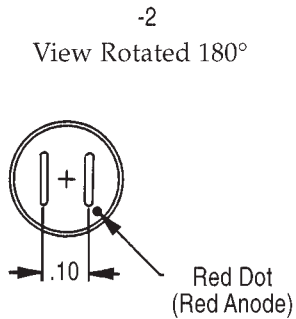
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ML 1636



Decorative Bezel



NOTE:

Dimensions in () are mm.

Tolerances: Decimals: $\pm .010$ (0,25)

Fractions: $\pm 1/64$

Mounting Torque: 5-7 in. lbs.

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Cleared by DoD/OFOISR for public release under reference number 06-S-1326 on April 18, 2006.

NVIS Compatible Rear-Mount LED Indicator

ML 1638

FEATURES

- Designed to meet MIL-L-85762A and MIL-STD-3009 Lighting, Aircraft, Interior Night Vision, Imaging System (NVIS) compatible
- Environmentally Sealed
- Panel Mount Seal
- Colors: Yellow & Green
- Compact Case Design
- Decorative Bezel
- Optional EMI Screen

The ML1638 status indicator was designed to meet the requirements of MIL-L-85762A and MIL-STD-3009. This solid state LED indicator has an infrared blocking lens that is compatible with NVIS environments. It is a rear-mount indicator and comes complete with O-ring and mounting hardware.

ENVIRONMENTAL SPECIFICATIONS

Vibration: .06 D.A. or 20G PK, 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.

Altitude: 100,000 ft., MIL STD 202, Method 105, Test Condition D.

Reliability: Operational 6×10^6 hours min. MTBF 25°C

Salt Spray: MIL STD 202, Method 101, Test Condition B.

MECHANICAL SPECIFICATIONS

Case: Aluminum, black anodized, standard.

Clear chromate case with EMI screen optional.

Mounting: Rear-mount by 5/16"-32 nut and lockwasher

O-Ring: Fluorosilicone rubber

Storage Temperature: -55°C to +100°C.

Operating Temperature: -55°C to +100°C - Yellow
-20°C to +100°C - Green

ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS Absolute Maximum Ratings

ML1638

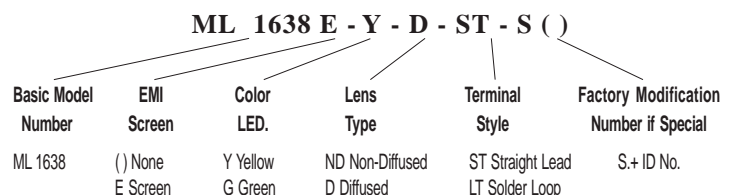
Color	NVIS Yellow	NVIS Green
Forward Voltage (VDC)	2.4	2.7
Peak Forward Current (mA)	60 mA	90 mA
DC Forward Current (mA) (see Note)	20 mA	30mA
Reverse Voltage @ $I_R = 100 \mu A$	5	5
Power Dissipation (mW) typical	85	135
Luminous Intensity (mcd)	Non Diffused	3.0
@ $I_F = 20$ mA typical	Diffused	0.6
Chromaticity Per MIL-L-85762A & MIL-STD-3009	NVIS Yellow	NVIS Green
NVIS Radiance Per MIL-L-85762A & MIL-STD-3009	$NR_A 1.5 \times 10^{-7}$ @15 fL $NR_B 1.4 \times 10^{-7}$ @15 fL	$NR_A 1.7 \times 10^{-10}$ @ 0.1 fL $NR_B 1.7 \times 10^{-10}$ @ 0.1 fL
Viewing Angle ($2 \varnothing^{1/2}$)	Non Diffused	32°
	Diffused	50°
Operating Temperature (°C)	-55 to +100	-20 to +100
Storage Temperature (°C)	-55 to +100	-55 to +100

NOTE: . DC Forward Current Derating. Yellow indicators, derate linearly from 50°C at 0.2 mA per °C. Green indicators, derate linearly from 50°C at 0.2 mA per °C.

ORDERING INFORMATION

When ordering, show model number first, followed by EMI screen, then LED color, lens type and terminal style. If this is a special part, the factory's modification number will be added at the end of the ordering number.

Example: Basic model, with an EMI screen, NVIS yellow LED, diffused lens, and straight leads would be ML1638 E-Y-D-ST.



NVIS Compatible Rear-Mount LED Indicator

ML 1638

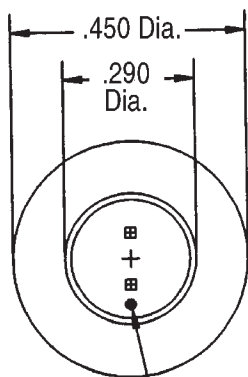
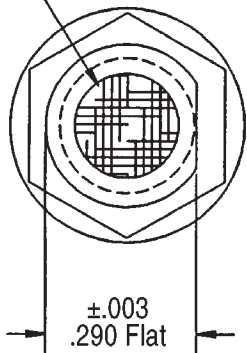


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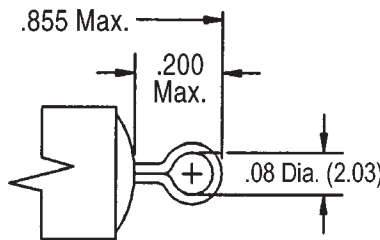
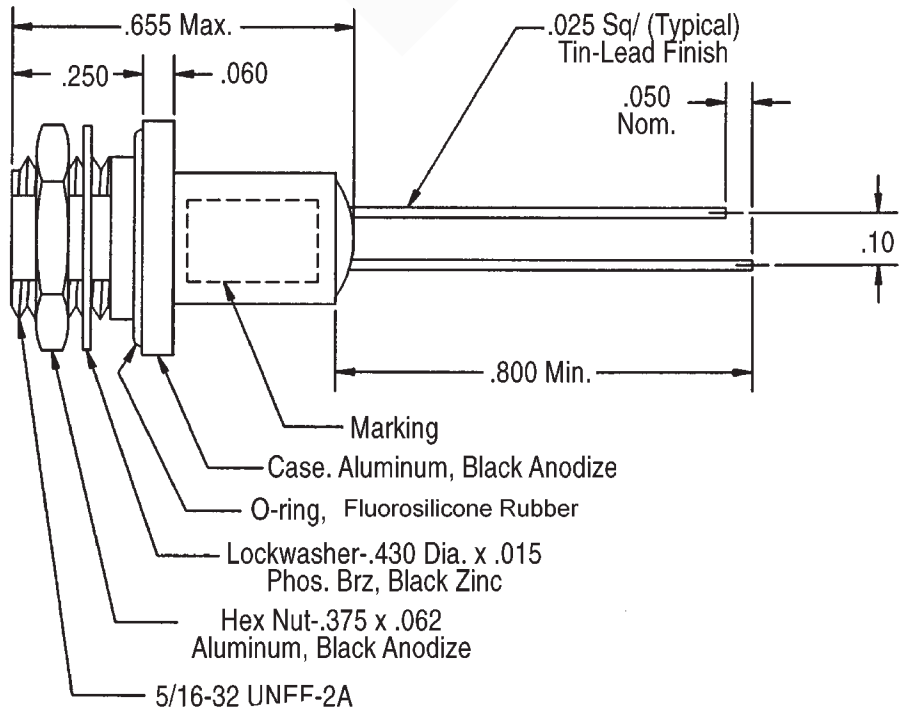


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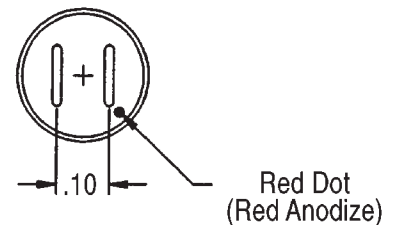
.182 Dia. Display Area



Red Dot
(Red Anode)



-2
View Rotated 180°



LED INDICATORS

NOTE:

Dimensions in () are mm.

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Fractions: ± 1/64

Mounting Torque: 5-7 in. lbs.

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