Miniature Panel Mount LED Indicator

ML 1620/ML 1630

communications
Electrodynamics, Inc.

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
- Optional Internal Resistor

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.
Altitude: 100,000 ft., MIL STD 202, Method 202, Method 105, Test Condition D.
Reliability: Operational 6 x 10^6 hours min. MTBF @ 25 C°
Salt Spray: 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.

ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS Absolute Maximum Ratings

Color		Red	Yellow	Green
Forward Voltage (VDC)		1.9	2.0	2.1
Peak Forward Current (mA DC)		90	60	90
DC Forward Current (mA DC)*		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 = 20 mA DC	Non-diffused	20	20	10.6
	Diffused	8	8	8
Dominant Wave Length (nm) typical		626	585	569
Viewing Angle (2 Ø $^{1/2}$) typical		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		

* 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.

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 ML 1630-R-D-LT

ML 1630 E- R - D -LT - ( ) - S ( )

Basic Model Number	EMI Screen	LED. Color	Lens Type	Terminal Style	Voltage Level	Factory Modification Number if Special
ML 1620 (w/o O-Ring)	( ) None	R Red	ND Non-Diffused	ST Straight Lead	( ) no resistor	S.+ ID No.
	E Screen	Y Yellow	D Diffused	LT Loop Terminals	5 5V	
		G Green			14 14V	
ML 1630 (w/ O-Ring)					24 24V	
					28 28V	

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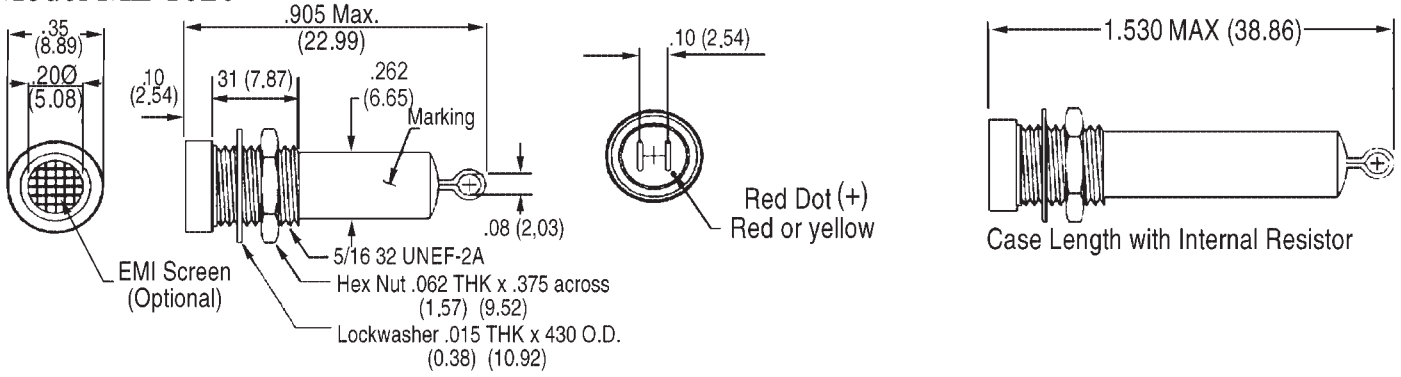
Miniature Panel Mount LED Indicator

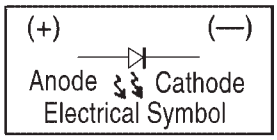
ML 1620/ML 1630

ML 1630

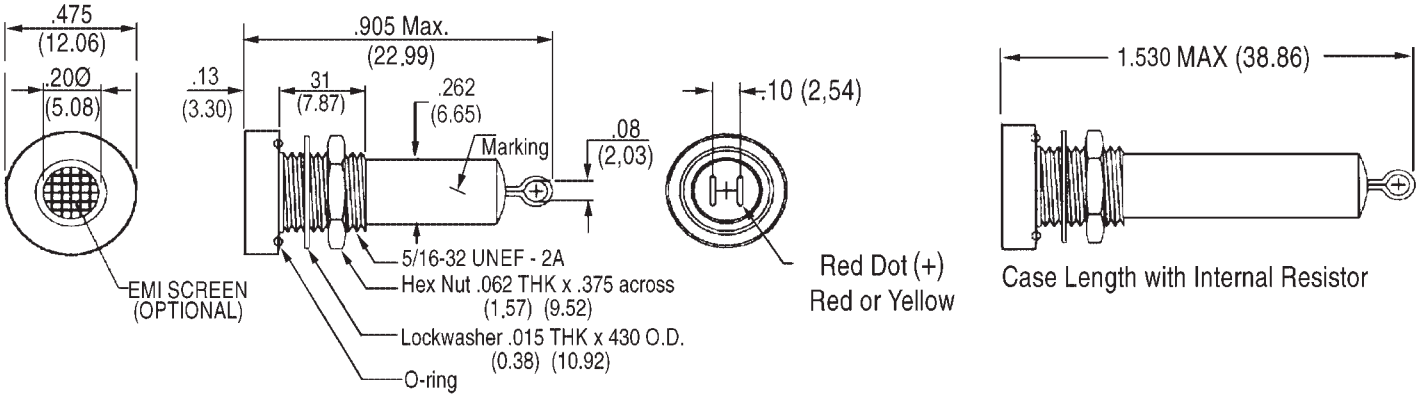
ML 1620

Model ML 1620





Model ML 1630



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

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Bicolor Panel Mount LED Indicator

ML 1622/ML 1632

communications
Electrodynamics, Inc.

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

- Multiple Status Indication within a Single Package
- Performs in Severe Environments
- Low Power Use
- Rugged Construction
- Panel Mounted
- Optional EMI Screen
- Internal Resistor Available

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 10^6 hours min. MTBF @ 25°C.
Salt Spray: MIL STD 202, Method 101, Test Condition B.

MECHANICAL SPECIFICATIONS

Case: Aluminum, black anodized front with 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 1632

ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS Absolute Maximum Ratings

ML 1622/1632

Colors	Red/Green		Yellow/Green	
Forward Voltage (VDC)		2.0		2.0
Peak Forward Current (mA)	90	90	90	90
DC Forward Current (mA)	20	20	30[1]	30[1]
Reverse Voltage (VDC) @ I_R = 100 µA	5	5	5	5
Power Dissipation (mW)	80[2]	100[2]	100[2]	100[2]
Luminous Intensity (mcd) typ @ I_F = 20 mA	17	15	12	12
Dominant Wave Length (nm) typical	695	565	585	565
Viewing Angle (2 Ø $^{1/2}$)	80°	80°	80°	80°
Operating Temperature (°C)	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Storage Temperature (°C)	-40 to +100	-40 to +100	-40 to +100	-40 to +100
Lead Soldering Temperature	260 °C for 5 seconds			

[1]Derate linearly from 50°C at 0.5 mA/°C

[2]Derate at 1.6 mW/°C above +25°C Ambient

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 O-ring panel seal, an EMI screen, with a yellow/green LED, a non-diffused lens, loop terminals and 24 volt internal resistor would be an ML 1632 E-R/G-ND-LT-24

ML 1632 E- R/G - ND -LT - 24 - S ( )

Basic Model Number	EMI Screen	LED. Color	Lens Type	Terminal Style	Voltage Level	Factory Modification Number if Special
ML 1622 (w/o O-ring) ML 1632 (w/ o-ring)	( ) None E Screen	R/G Red/Green Y/G Yellow/Green	ND Non-Diffused D Diffused	ST Straight Lead LT Solder Loop	( ) no resistor 5 5V 14 14V 24 24V 28 28V	S.+ ID No.

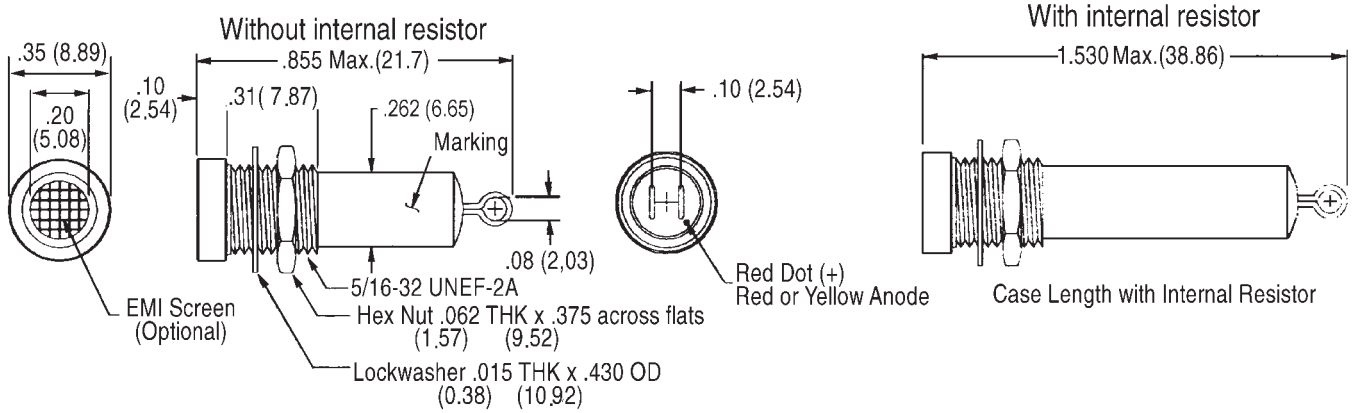
Bicolor Panel Mount LED Indicator

ML 1622/ML 1632

ML1632 with Front Panel O-Ring

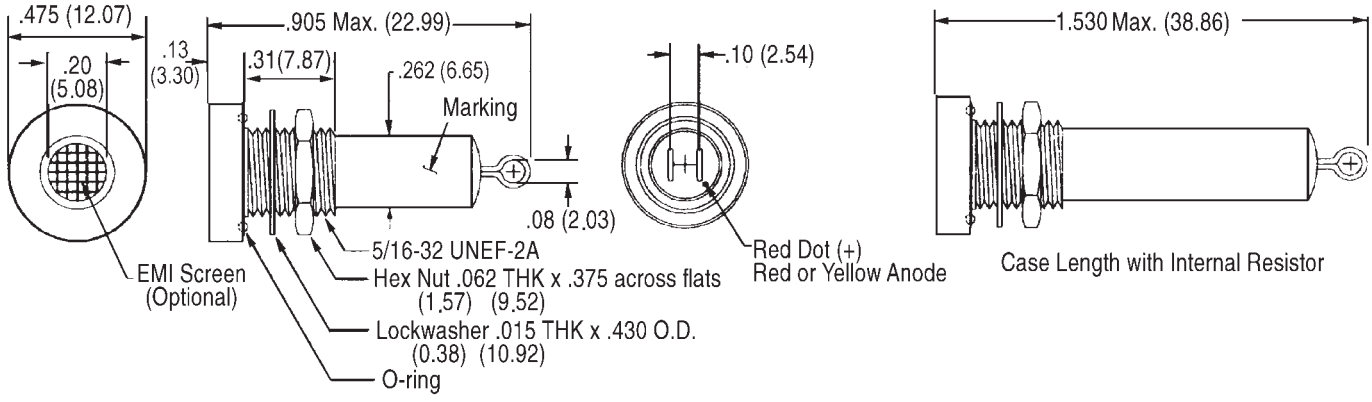
ML1622

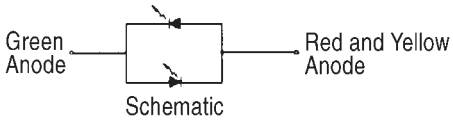
Model ML 1622



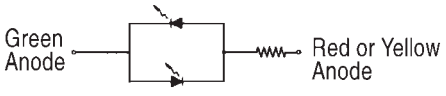
Model ML 1632

With Front Panel O-Ring





Schematic



Schematic with Internal Resistor

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

Three Lead Bicolor Panel Mount LED Indicator

ML 1623/ML 1633

L3 communications Electrodynamics, Inc.

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

- Multiple Status Indication within a Single Package
- Performs in Severe Environments
- Low Power Use
- Rugged Construction
- Panel Mounted
- Optional EMI Screen
- Internal Resistor Available

MECHANICAL SPECIFICATIONS

Case: Aluminum, black anodized front with clear chromate back.
Mounting: Front panel by 5/16-32" nut and lockwasher.
Seal: Environmentally sealed. Added front panel O-ring seal for model ML1633.

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.
Humidity: MIL STD 202, Method 106.
Altitude: 100,000 ft., MIL STD 202, Method 105, Test Condition D.
Reliability: Operational $6x10^6$ hrs. min. MTBF @ 25°C
Salt Spray: MIL STD 202, Method 101, Test Condition B.

ELECTRO-OPTICAL CHARACTERISTIC SPECIFICATIONS Absolute Maximum Ratings

ML 1623/1633

Colors	Red/Green		Yellow/Green	
Forward Voltage (VDC)	2.2	2.8	2.8	2.8
Peak Forward Current (mA)	90	90	90	90
DC Forward Current (mA)	30	30	30	30
Reverse Voltage (VDC)@ I_R = 100 µA	5	5	5	5
Power Dissipation (mW)	100	105	105	105
Luminous Intensity (mcd) typ @ If=20 mA	17	15	12	12
Dominant Wave Length (nm) typical	560	565	585	565
Viewing Angle	55°		55°	
Operating Temperature (°C)	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Storage Temperature (°C)	-40 to +100	-40 to +100	-40 to +100	-40 to +100
Lead Soldering Temperature	260°C for 5 sec.			

[1]Derate linearly from 50°C at 0.5 mA/°C [2]Derate at 1.6 mW/°C above +25°C Ambient

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 assigned modification number will be added at the end of the ordering number.

Example: Basic model without an O-ring panel seal, with an EMI screen, a yellow/green LED, a diffused lens and loop terminals would be an ML1633E-Y/G-D-LT.

ML 1623 E- Y/G - D -LT - S ( )

Basic Model Number	EMI Screen	LED. Color	Lens Type	Terminal Style	Factory Modification Number if Special
ML 1623 (w/o O-ring)	( ) None	R/G Red/Green	ND Non-Diffused	ST Straight Lead	S.+ ID No.
ML 1633 (w/ o-ring)	E Screen	Y/G Yellow/Green	D Diffused	LT Solder Loop	

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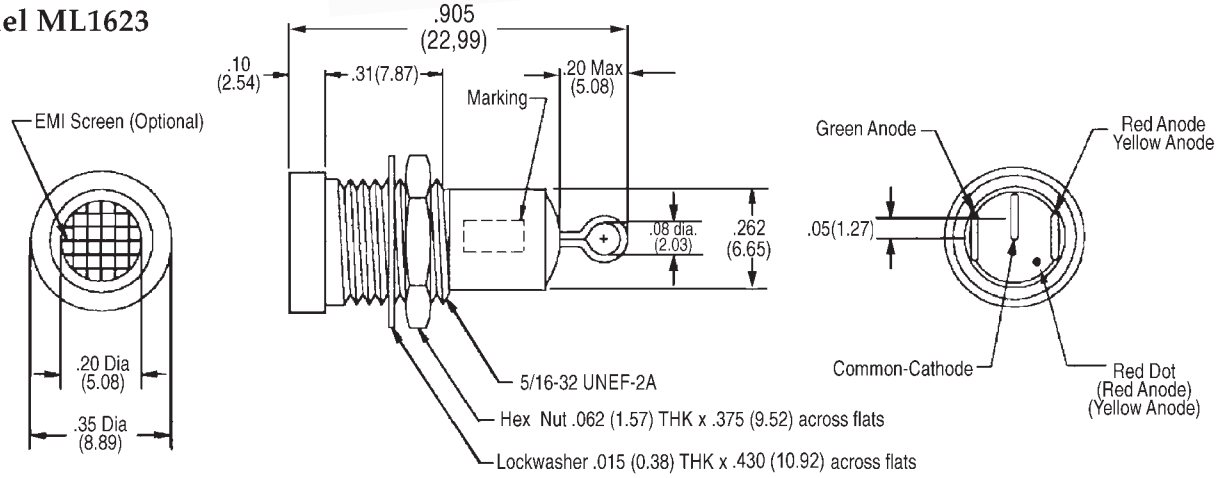
Three Lead Bicolor Panel Mount LED Indicator

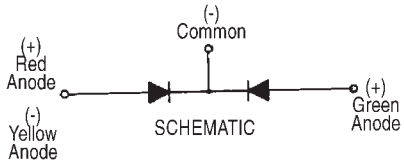
ML 1623/ML 1633

ML 1623

ML 1633 With Front Panel O-Ring

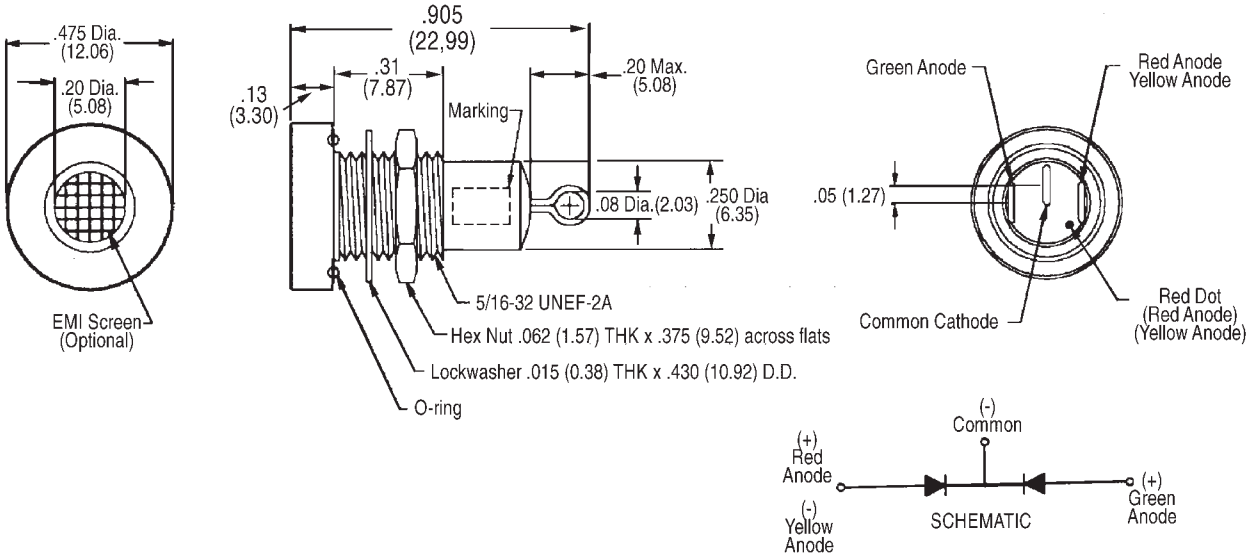
Model ML1623





Model ML1633

With Front Panel O-Ring



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