



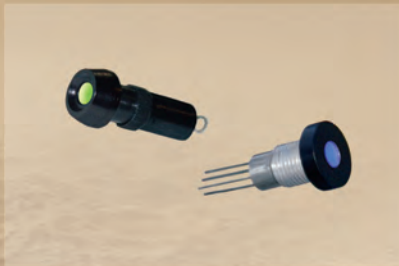
# RUGGEDIZED STATUS INDICATORS

COMMERCIAL | MILITARY

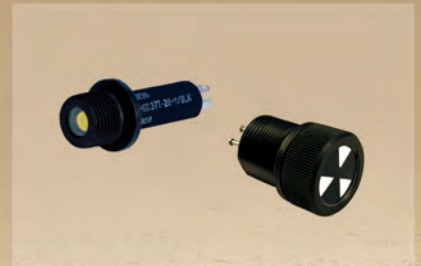
Event Counter / Hour Meter  
ETIs



Filtered / NVIS  
LEDs

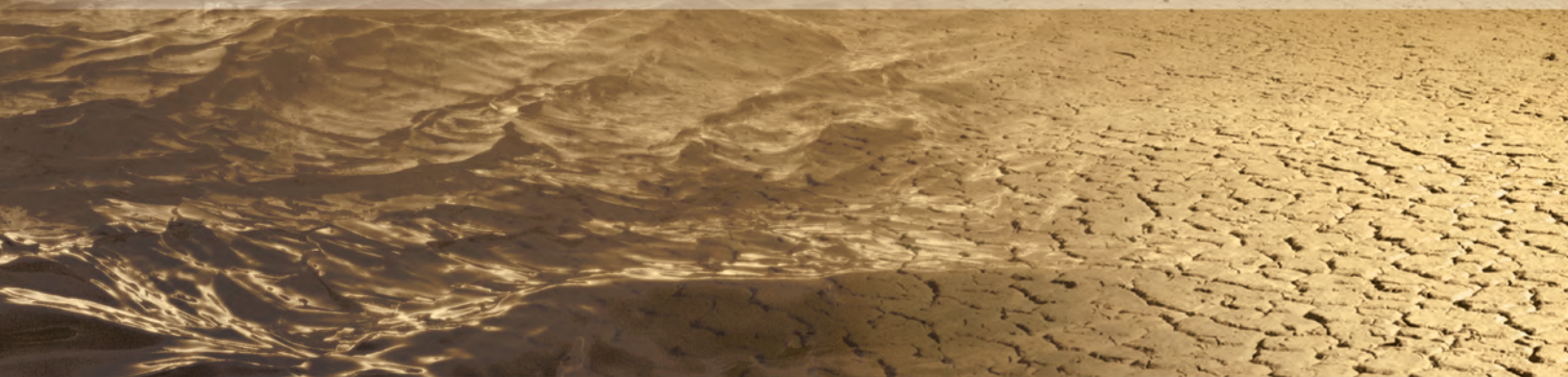


Flag / Ball / Drum Display  
Indicators



L-3 ELECTRODYNAMICS, INC.

STATUS INDICATORS



# NON-VOLATILE BALL, DRUM & FLAG STATUS INDICATORS



Latching indicators display fault conditions for system maintenance

## FEATURES

- Electromagnetic latching display
- Electrical or manual reset
- Pulse operated
- High visibility
- Low power
- Environmentally sealed
- Rugged packaging
- Custom design
- Commercial & MIL-PRF-83287

Status changes are indicated by high contrast color change.



Fig. 1  
Miniature BITE, Latching  
Model BHG/BHGD, BIS



Fig. 2  
Low Power BITE  
Model MI51LP



Fig. 3  
Rear Mount  
Model MI57DA



Fig. 4  
Dual color BITE  
Model MI61SA



Fig. 5  
Dual color with Switch  
Model MI61SW



Fig. 6  
Latching or Self-restoring  
Model MI61L, LD & M



Fig. 7  
Large display  
Model CI/CID75

Fig. No.	Models	Environ Sealed	Magnetic Latching	Manual Reset	Electrical Reset	Rear Mount	Panel Mount	Latched Switch	Comment	Page No.
1	BHG, BHGD	•	•		•	•	•		High Visibility	4
1	BIS	•				•	•		Self Restoring	6
2	MI51LP	•	•	•			•		Low power; 50mW sensitivity	8
3	MI57DA	•	•		•	•			Rear Mount	10
4	MI61SA, RA	•	•	•			•		Dual color BITE	12
5	MI61SW	•	•	•	•		•	•	Dual color with Switch	14
6	MI61, LD & M	•	•		•(LD)		•		Optional legend display	16
7	CI75, CID75		•		•		•		Single coil; Dual coil models	18

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



# MINIATURE BITE INDICATORS

## LATCHING TYPE INDICATOR



### Models BHG (Single Coil) and BHGD (Dual Coil)

For indicators qualified to MIL-PRF-83287/3, see page 29.

Our latching feature assures fast positive response to a fault signal. The display ball changes color only when the indicator coil is pulsed by a BITE (Built-In Test Equipment) system. Our magnetic indicators have no bearings, springs or filaments to wear out and offer excellent visibility in high ambient light.

#### FEATURES

- Magnetic latching
- High visibility
- Small, lightweight
- Ruggedized

#### OPERATION

When the indicator coil is energized with a 40 millisecond (or longer) pulse, the highly visible, two color display ball spins 180° and latches to the magnetic core. The displayed ball will remain magnetically latched to the core in the position last pulsed. Even if the fault signal is removed, the indicator will “remember” that a fault has occurred. Return to “No-fault” color is accomplished electrically. Model BHG (single coil) is reset by reversing polarity of input signal to the coil. Model BHGD (dual coil) is reset by pulsing a separate internal coil. Optional features include insulated lead wire termination, special lenses (radius dome, cylindrical, non-glare), O-ring panel seal, internally mounted diodes and RFI panel shield. Consult the factory for details. Care should be taken in the application of the device as it is subject to magnetic interference from other devices that may emit magnetic fields.

#### ELECTRICAL SPECIFICATIONS

Standard coil voltages and resistances			
Nominal Voltage DC	Operating Voltage Minimum	Operating Voltage Maximum	DC Coil Resistance in Ohms, ± 10% @ 25°C
1.5	1.25	1.75	3.45
3.0	2.5	3.5	13.8
5.0	4.5	5.5	38.0
6.0	5.5	6.5	55.0
12.0	9.0	15.0	220.0
24.0	17.0	27.0	880.0
28.0	20.0	30.0	1200.0

**Nominal pulse power:** 650 milliwatts

**Operating pulse length:** will operate at 40 milliseconds or greater

**Dielectric withstanding voltage:** 500 VAC RMS case to terminals; 500 VAC RMS coil to coil (BHGD style)

**Insulation resistance:** 100 megohms minimum at 500 VDC



#### MECHANICAL SPECIFICATIONS

**Case:** Aluminum, black anodized with sealed glass window

**Mounting:** Front panel threaded, rear panel threaded, and press fit sleeve

**Weight:**

Models BHG21, BHG21T, BHG27T 2.5 grams

Models BHGD21, BHGD21T, BHGD27T, BHG37T 3.0 grams

Model BHGD37T 4.0 grams

**Display Colors:** Any combination of: Red (R), White (W), Black (BLK), Green (G), Yellow (Y), or Orange (O)

**Mounting Hardware:** Lockwasher, internal tooth phosphor bronze, nylon mounting sleeve. Hex nuts are black anodized aluminum. Body diameter on all MIL qualified units is .275 in. (7.00 mm). See page 5 for indicator dimensions.

**Display Area:** All units measure .200 in. (5.08 mm) diameter

#### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -65°C to +125°C

**Vibration\*:**

**Sinusoidal:** .06 in. D.A. or 20 Gs Peak, whichever is less, 10Hz to 2kHz, MIL STD 202, Method 204, Test Condition D

**Random:** 11.6 Gs per MIL STD 202, Method 214, Test Condition D, Curve I

**Shock:** 100 Gs MIL STD 202, Method 213, Test Condition I

**Moisture Resistance:** (Humidity): MIL STD 202, Method 106  
**Barometric Pressure:** 100,000 ft., MIL STD 202, Method 105, Test Condition D, 350 VAC RMS

**Thermal Shock:** MIL STD 202, Method 107, Test Condition B

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

**Life:** 1,000,000 cycles

\* (During vibration testing caution should be taken to shield the indicator from the strong magnetic field.)

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

# MINIATURE BITE INDICATORS

## LATCHING TYPE INDICATOR



BALL INDICATORS

### ORDERING INFORMATION

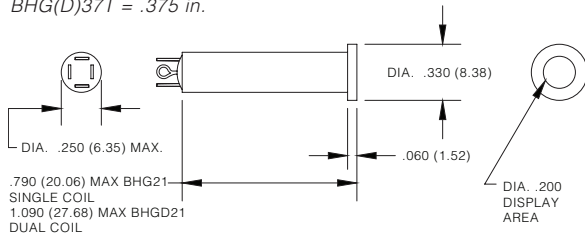
When ordering, show model number first, coil voltage and the color combination desired. If this is a special part, a factory assigned modification number will be added at the end of the ordering number. Consult the factory for special configurations.

#### Example:

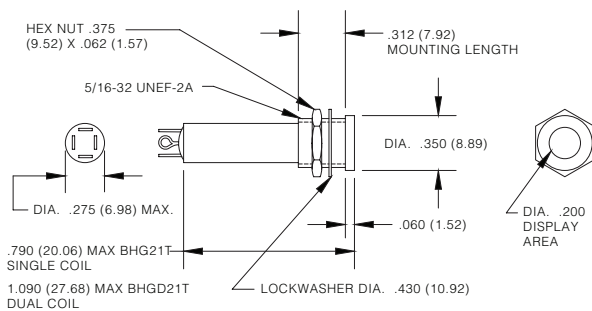
Single coil model with front panel threaded case for 12 volts with white as set color and black as reset color would be Model BHG21T-12-W/BLK.

#### Recommended cut-outs:

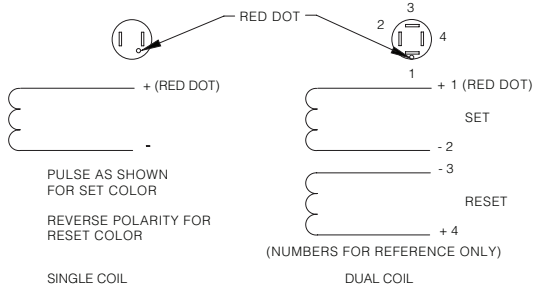
BHG(D)21 = .265 in., BHG(D)21T & BHG(D)27T = .315 in.,  
 BHG(D)37T = .375 in.



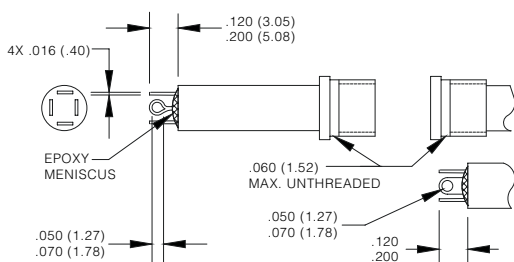
**BHG21 and BHGD21**



**BHG21T and BHGD21T**



### ELECTRICAL DATA



### MECHANICAL DATA

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals: ± .010 (0.25)  
 Fractions: ± 1/64—All mounting hardware is black anodized aluminum. Mounting Torque: 5-7 in. lbs.

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

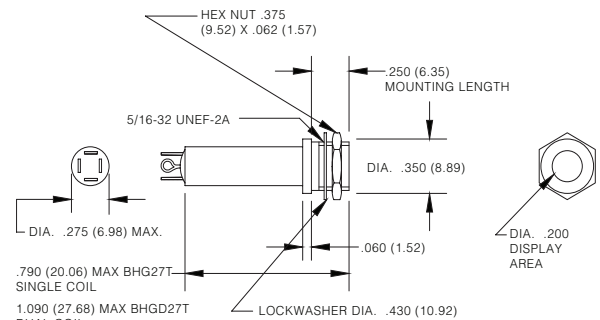
### BHG21T - 12 - W / BLK - ( )

Standard factory options are designated by "-Sxxx"

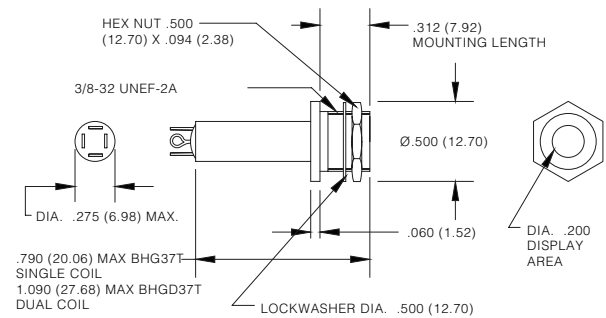
Basic Model Number	Coil Voltage	Fault or Set Color	No-fault or Reset Color
BHG21	1.5	R Red	R Red
BHG21T	3	W White	W White
BHG27T	5	BLK Black	BLK Black
BHG37T	6	G Green	G Green
BHGD21	12	Y Yellow	Y Yellow
BHGD21T	24	O Orange	O Orange
BHGD27T	28		

BHG.....TL = Domed lens

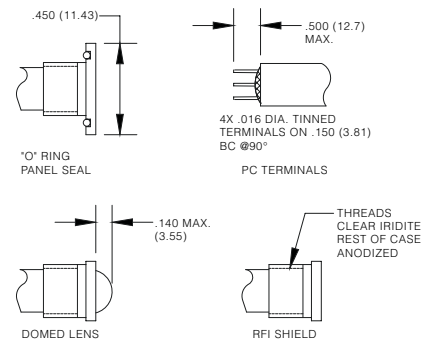
\* MIL qualified indicators Set/Reset colors are White/Black



**BHG27T and BHGD27T**



**BHG37T and BHGD37T**



### OPTIONS AVAILABLE (consult factory)

# MINIATURE BITE INDICATORS

## SELF-RESTORING TYPE INDICATOR



### Model BIS

Our BIS series indicators provide visual indication of the status of any circuit parameter being monitored. This series is a self-restoring design that automatically returns to a neutral state when power is removed.

#### FEATURES

- Self-restoring
- Sunlight readable
- Small, lightweight
- Ruggedized

#### OPERATION

When the indicator coil is energized, the highly visible two color display ball changes color by spinning 180°. It does not latch to the core magnet, but remains suspended in that position until power is removed. The BIS indicator offers excellent visibility in high ambient light and does not contain any bearings, springs, or filaments that can wear out. Optional features include insulated lead wire termination, special lenses (radius dome, cylindrical, non-glare), O-ring panel seal, and RFI panel shield. Consult the factory for details. Care should be taken in the application of this device. As a magnetic component, it is subject to magnetic interference from other devices which may emit magnetic fields. Consult the factory if any possibility of interaction exists.

#### ELECTRICAL SPECIFICATIONS

Standard coil voltages and resistances			
Nominal Voltage DC	Operating Voltage Minimum	Operating Voltage Maximum	DC Coil Resistance in Ohms, ± 10% @ 25°C
1.5	1.25	1.75	3.45
3.0	2.5	3.5	13.8
5.0	4.5	5.5	38.0
6.0	5.5	6.5	55.0
12.0	9.0	15.0	220.0
24.0	17.0	27.0	880.0
28.0	20.0	30.0	1200.0

**Nominal pulse power:** 650 milliwatts

**Operating pulse length:** will operate at 40 milliseconds or greater

**Dielectric withstanding voltage:** 500 VAC RMS case to terminals

**Insulation resistance:** 100 megohms minimum at 500 VDC

BIS 21T



BIS 27T



BIS 37T



#### MECHANICAL SPECIFICATIONS

**Case:** Aluminum, black anodized with sealed glass window

**Mounting:** Front panel threaded, rear panel threaded, and press fit sleeve

**Weight:**

Models BIS21, BIS21T, BIS27T 2.5 grams

Model BIS37T 3.0 grams

**Display Colors:** Any combination of: Red (R), White (W), Black (BLK), Green (G), Yellow (Y), or Orange (O)

**Mounting Hardware:** Lockwasher, internal tooth phosphor bronze, nylon mounting sleeve, hex nuts are black anodized aluminum.

**Display Area:** All units measure .200 in. (5.08 mm) diameter

#### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -65°C to +125°C

**Vibration,\* Sinusoidal:** .06 in. 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:** 100,000 ft., MIL STD 202, Method 105, Test Condition D, 350 VAC RMS

**Thermal Shock:** MIL STD 202, Method 107, Test Condition B

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

**Life:** 1,000,000 cycles

\* (During vibration testing caution should be taken to shield the indicator from the strong magnetic field.)

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# MINIATURE BITE INDICATORS

## SELF-RESTORING TYPE INDICATOR



BALL INDICATORS

### ORDERING INFORMATION

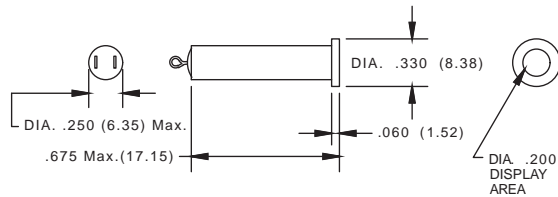
When ordering, show model number first, coil voltage, and the color combination desired. If this is a special part, a factory assigned modification number will be added at the end of the ordering number. Consult the factory for special configurations.

Example:

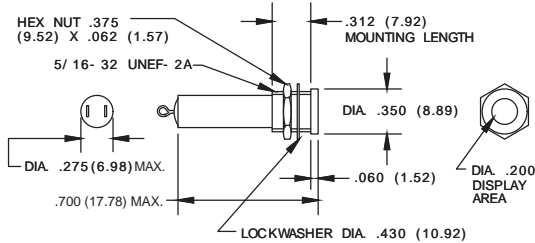
A basic model with a front panel threaded case for 12 volts with white as a Set color and black as a Reset color would be Model BIS21T-12-W/BLK.

Recommended cut-outs:

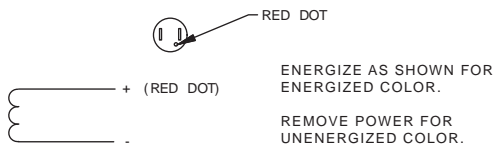
BIS21 = .265 in., BIS21T & BIS27T = .315 in., BIS37T = .375 in.



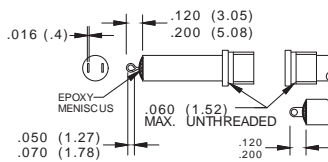
BIS21



BIS21T



### ELECTRICAL DATA



### MECHANICAL DATA

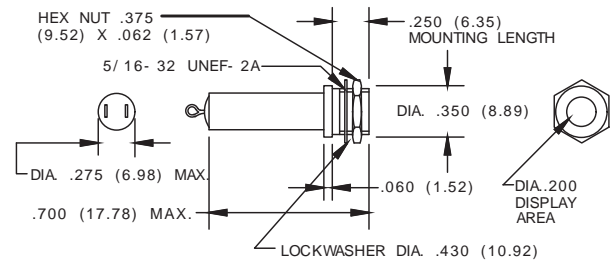
NOTE: Dimensions in ( ) are mm. Tolerances: Decimals: ± .010 (0.25)  
Fractions: ± 1/64—All mounting hardware is black anodized aluminum. Mounting Torque: 5-7 in. lbs.

### BIS21T - 12 - W / BLK - ( )

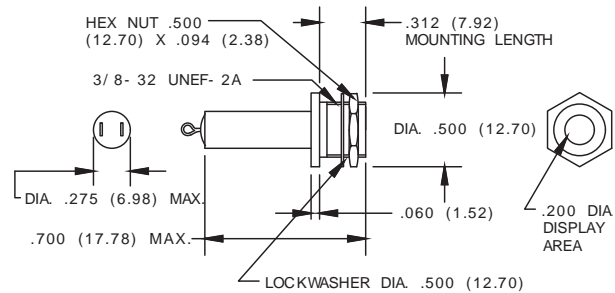
Standard factory options are designated by "-Sxxx"

Basic Model Number	Coil Voltage	Fault or Set Color	No Fault or Reset Color
BIS21	1.5	R Red	R Red
BIS21T	3	W White	W White
BIS27T	5	BLK Black	BLK Black
BIS37T	6	G Green	G Green
	12	Y Yellow	Y Yellow
	24	O Orange	O Orange
	28		

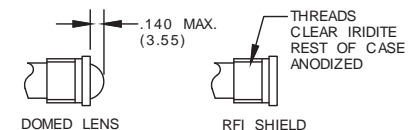
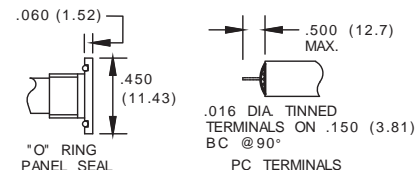
BIS.....TL = Domed lens



BIS27T



BIS37T



### OPTIONS AVAILABLE (consult factory)

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## Model MI51LP

The MI51LP is a miniature, dual-drum, magnetic latching indicator featuring a nonvolatile two-drum display, excellent positive indication of a fault condition with superior visibility in high ambient light. It is designed to monitor electronic systems where space is limited.

### FEATURES

- 50 milliwatt
- Manual reset
- Magnetic latching
- Environmentally sealed

### OPERATION

When the indicator coil is energized with a 25 millisecond (or longer) pulse, the highly visible drums spin 180° and latch to the magnetic core. The drums will remain magnetically latched to the core in the position last pulsed. Even if the fault signal is removed, the indicator will “remember” that a fault had occurred. Reset is accomplished manually by rotating the knurled ring clockwise 60°. The knob returns to its normal position automatically.

### ELECTRICAL SPECIFICATIONS

Standard coil voltages and resistances			
Nominal Voltage DC	Operating Voltage Minimum	Operating Voltage Maximum	DC Coil Resistance in Ohms, ± 10% @ 25°C
1.5	1.2	1.8	45
3.0	2.4	3.6	180
5.0	4.0	6.0	500
6.0	4.8	7.2	720
12.0	9.6	14.4	2,880
24.0	19.2	28.8	11,500
28.0	22.4	30.0	15,700

**Pulse Power:** 50 mw.

**Nominal Pulse Length:** 25 milliseconds, minimum.

**Dielectric Withstanding Voltage:** 500 VAC RMS

**Insulation Resistance:** 100 megohms minimum at 500 VDC.

**Electromagnetic Interference and Magnetic Susceptibility:** MI51LP will not malfunction or false transfer when subjected to a 20 ampere turn field at 400Hz.



### MECHANICAL SPECIFICATIONS

**Case:** Black, anodized aluminum

**Mounting:** Front-panel mount (D-hole or keyed washer)

**Weight:** 6.5 grams for loop or turret terminals; 10 grams for wire leads.

**Display Colors:** “No-fault” (reset) is black, “Fault” (set) is white, as shown.

**Terminations:** Solder terminals (turret type), solder loops, and wire leads are also available.

**Glass:** Standard (S), Non-glare (N)

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -65°C to +125°C.

**Vibration\*:** .06" D.A. or 15 Gs Peak, whichever is less, 10Hz to 2kHz per MIL STD 202, Method 204, Test Condition B

**Shock:** 100 Gs MIL STD 202, Method 213, Test Condition I

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

**Barometric Pressure:** 100,000 ft., MIL STD 202, Method 105, Test Condition D

**Thermal Shock:** MIL STD 202, Method 107, Test Condition B 350 volts AC RMS

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

**Life:** 10,000 cycles

\* (During vibration testing caution should be taken to shield the indicator from the strong magnetic field.)

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# LOW POWER BITE INDICATORS



## ORDERING INFORMATION

When ordering, show model number first, coil voltage, the color combination desired, terminal type, and glass type. 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.

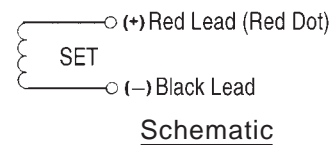
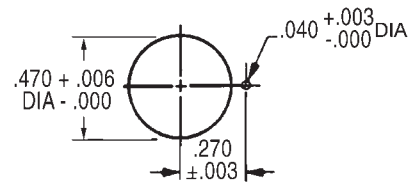
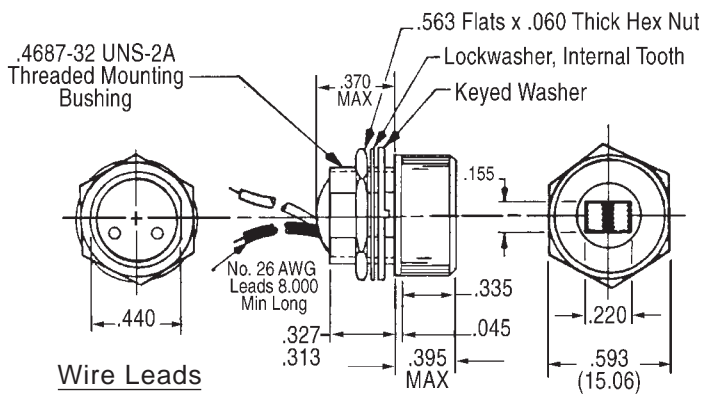
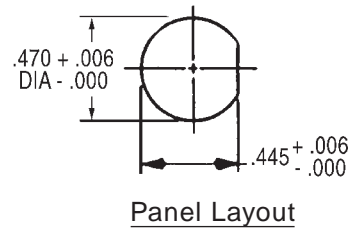
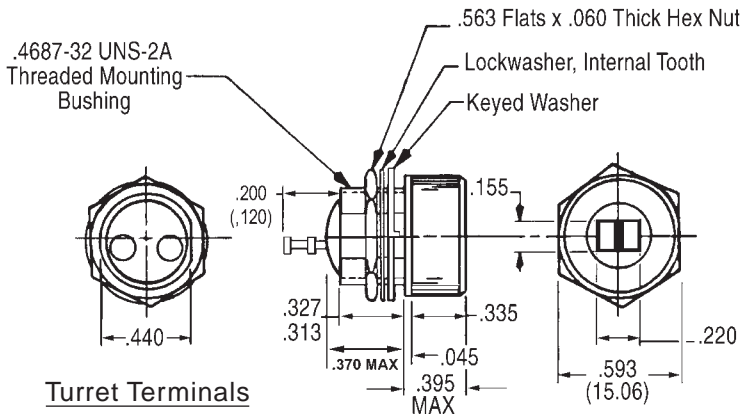
Example:

Basic model for 12 volts with white as set color and black as reset color, turret terminals, and non-glare glass would be MI51LP-12-W/BLK-TT-N.

MI51LP - 12 - W / BLK - TT - S - ( )

Standard factory options are designated by "Sxxx"

Basic Model Number	Coil Voltage	Fault Color	No-fault or Reset Color	Terminal Type	Glass Type
MI51LP	1.5	W White	BLK Black	LT Loop Terminals	S Standard Glass
	3			TT Turret Terminals	N Non-glare Glass
	5			WL Wire Leads	
	6				
	12				
	24				
	28				



MI 51LP

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals:  $\pm .010$  (0.25)  
Fractions:  $\pm 1/64$ —All mounting hardware is black anodized aluminum. Mounting Torque: 5-7 in. lbs.

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





## Model MI57DA

For Indicators qualified to MIL-PRF-83287/2, see page 28.

The MI57DA magnetic latching fault indicator displays a highly visible dual color internal flag when the indicator coil is pulsed by a BITE (Built-in Test Equipment) system. The “cloverleaf” pattern provides a high-contrast, visual identification and an effective warning of system results.

### FEATURES

- Electrical reset
- Environmentally sealed
- Magnetic latching
- Rear mount
- Positive identification

### OPERATION

When the indicator coil is energized with a 40 millisecond (or longer) pulse, the highly visible display disc rotates and latches to the magnetic core. The display disc will remain magnetically latched to the core in the position last pulsed. Even if the fault signal is removed, the indicator will “remember” that a fault had occurred. Return to the “No-fault” position is accomplished electromechanically by pulsing a separate coil.

### ELECTRICAL SPECIFICATIONS

Standard coil voltages and resistances			
Nominal Voltage DC	Operating Voltage Minimum	Operating Voltage Maximum	DC Coil Resistance in Ohms, @25°C
5.0	4.0	6.0	19-35
12.0	9.6	14.4	130-230
28.0	22.4	30.0	675-880

**Pulse Power:** One Watt. Nominal

**Nominal Pulse Length:** 40 milliseconds, minimum with a maximum rise time of 5 milliseconds

**Dielectric Withstanding Voltage:** 500 VAC RMS

**Insulation Resistance:** 100 megohms minimum at 500 VDC



### MECHANICAL SPECIFICATIONS

**Case:** Black, anodized aluminum.

**Mounting:** Rear mount (D-hole or keyed washer).

**Display Colors:** “No-fault” is black, “Fault” is black/white

**Leads:** WL-Eight inches of #26 AWG Teflon insulated wire leads, turret terminals (TT), and loop terminals (LT).

**Glass:** Standard (S), Non-glare (N)

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -65°C to +125°C

**Vibration\*:**

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

**Random:** 11.6 Gs per MIL STD 202, Method 214, Test Condition D, Curve 1

**Shock:** 100 Gs MIL STD 202, Method 213, Test Condition I

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

**Thermal Shock:** MIL STD 202, Method 107, Test Condition B

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

**Barometric Pressure:** 100,000 ft. MIL STD 202, Method 105, Test Condition D, 350 VAC RMS

**Life:** 100,000 cycles

\* (During vibration testing caution should be taken to shield the indicator from the strong magnetic field.)

**Optional:** RFI panel shielding available

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## ORDERING INFORMATION

When ordering, show model number first, coil voltage, the color combination desired, terminal type, and glass type. 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:

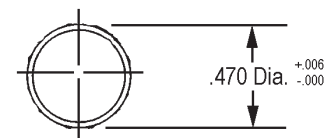
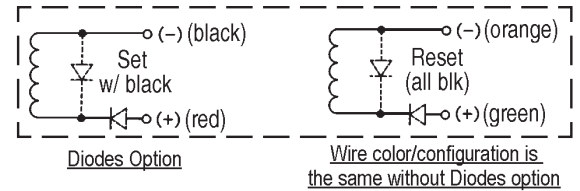
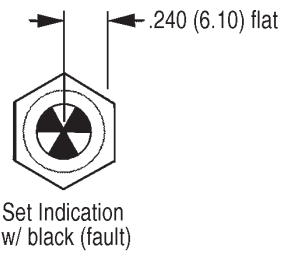
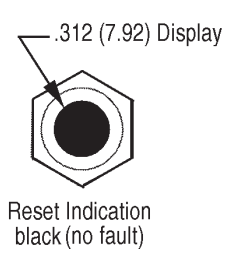
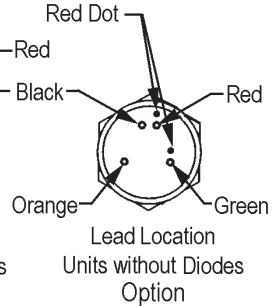
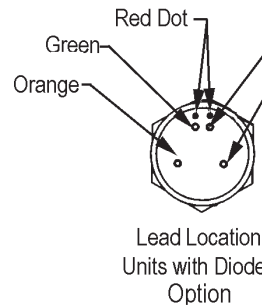
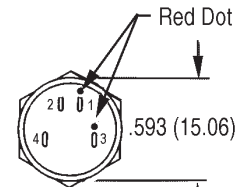
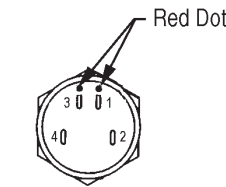
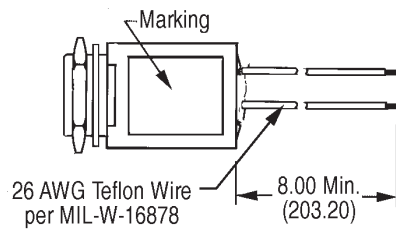
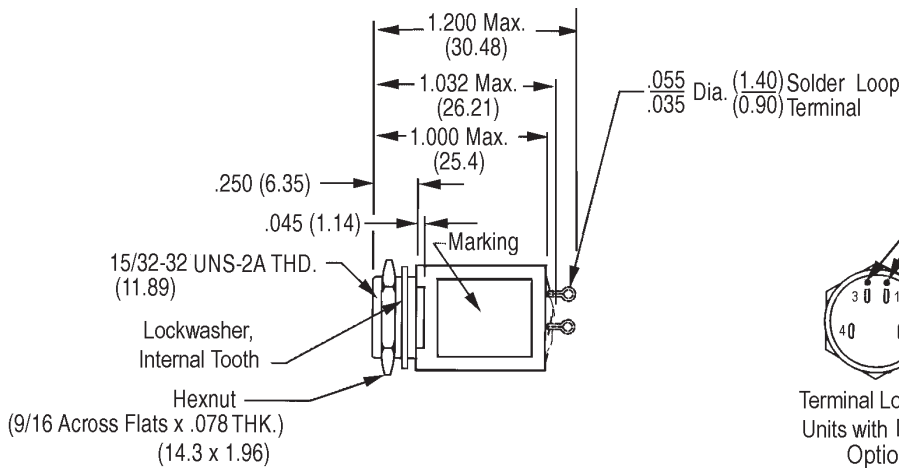
Basic model with front panel threaded case for 12 volts with black/white as set color and all black as reset color, wire leads, non-glare glass would be Model MI57DA-12-W/BLK-WL-N.

MI57DA - 12 - W / BLK - WL - S - ( )

Standard factory options are designated by "-Sxxx"

Basic Model Number	Coil Voltage	Fault or Set Color	No-fault or Reset Color	Terminal Type	Glass Type
MI57DA	5	Black/White	Black	LT Loop Terminals	S Standard Glass
	12			TT Turret Terminals	N Non-glare Glass
	28			WL Wire Leads	

## Loop Terminal Option



## Panel Layout

MI57DA

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals: ± .010 (0.25)  
Fractions: ± 1/64—All mounting hardware is black anodized aluminum. Mounting Torque: 5-7 in. lbs.

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



## Models MI61SA and RA<sup>①</sup>

For Indicators qualified to MIL-PRF-83287/1, see page 28.

The MI61SA and RA<sup>①</sup> (MIL-PRF-83287/1) series magnetic latching fault indicators display highly visible dual color internal flag when the indicator coil is pulsed by a BITE (Built-In Test Equipment) system. The “cloverleaf” pattern provides a high contrast visual indication and an effective warning of system results.

### FEATURES

- Manual reset return
- Environmentally sealed
- Magnetic latching
- Random vibration capability

### OPERATION

When the indicator coil is energized with a 40 millisecond (or longer) pulse, the highly visible display disc rotates and latches to the magnetic core. The display disc will remain magnetically latched to the core in the position last pulsed. Even if the fault signal is removed, the indicator will “remember” that a fault had occurred. Return to the “No-fault” position is accomplished mechanically by rotating the knurled knob clockwise to 60°. The knob automatically returns to its normal position. Optional features include insulated lead wire or turret termination, non-glare lens, and RFI panel shield. Consult your representative or the factory for details.

### ELECTRICAL SPECIFICATIONS

Standard coil voltages and resistances			
Nominal Voltage DC	Operating Voltage Minimum	Operating Voltage Maximum	DC Coil Resistance in Ohms, @25°C
3.0	2.4	3.6	8.5-18
5.0 <sup>①</sup>	4.0	6.0	22-52.8
6.0	4.8	7.2	33-77
12.0	9.6	14.4	130-303
20.0	16.0	30.0	360-1225
24.0 <sup>①</sup>	19.2	28.8	530-880
28.0	22.4	30.0	720-1331

<sup>①</sup>MI61RA offered in 5VDC and 24VDC versions only.

**Pulse Power:** One Watt Nominal

**Nominal Pulse Length:** 40 milliseconds minimum with a maximum rise time of 5 milliseconds

**Dielectric Withstanding Voltage:** 500 VAC RMS

**Insulation Resistance:** 100 megohms minimum at 500 VDC

**Electromagnetic Interference and Magnetic Susceptibility:** Per MIL-PRF-83287. MI61SA and MI61RA will not malfunction or false transfer when subjected to a 20 ampere turn field at 400Hz.



MI61SA

### MECHANICAL SPECIFICATIONS

**Case:** Black anodized aluminum

**Mounting:** Front-panel mount (D-hole or keyed washer)

**Weight:** 13 grams

**Display Colors:** “No-fault” is black  
“Fault” is black/white, as shown

**Leads:** WL-Eight inches of #26 teflon insulated standard wire leads or turret terminals (TT)

**Glass:** Standard (S), Non-glare (N)

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -65°C to +125°C

**Vibration\*:**

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

**Random:** 11.6 Gs rms per MIL STD 202, Method 214, Test Condition D, Curve 1

**Shock:** 100 Gs MIL STD 202, Method 213, Test Condition I

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

**Thermal Shock:** MIL STD 202, Method 107, Test Condition B

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

**Barometric Pressure:** 100,000 ft. MIL STD 202, Method 105, Test Condition D, with 350 VAC, RMS

**Life:** 10,000 cycles

\* (During vibration testing caution should be taken to shield the indicator from the strong magnetic field.)

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



## ORDERING INFORMATION

When ordering, show model number first, coil voltage, the color combination desired, terminal type, and glass type. 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.

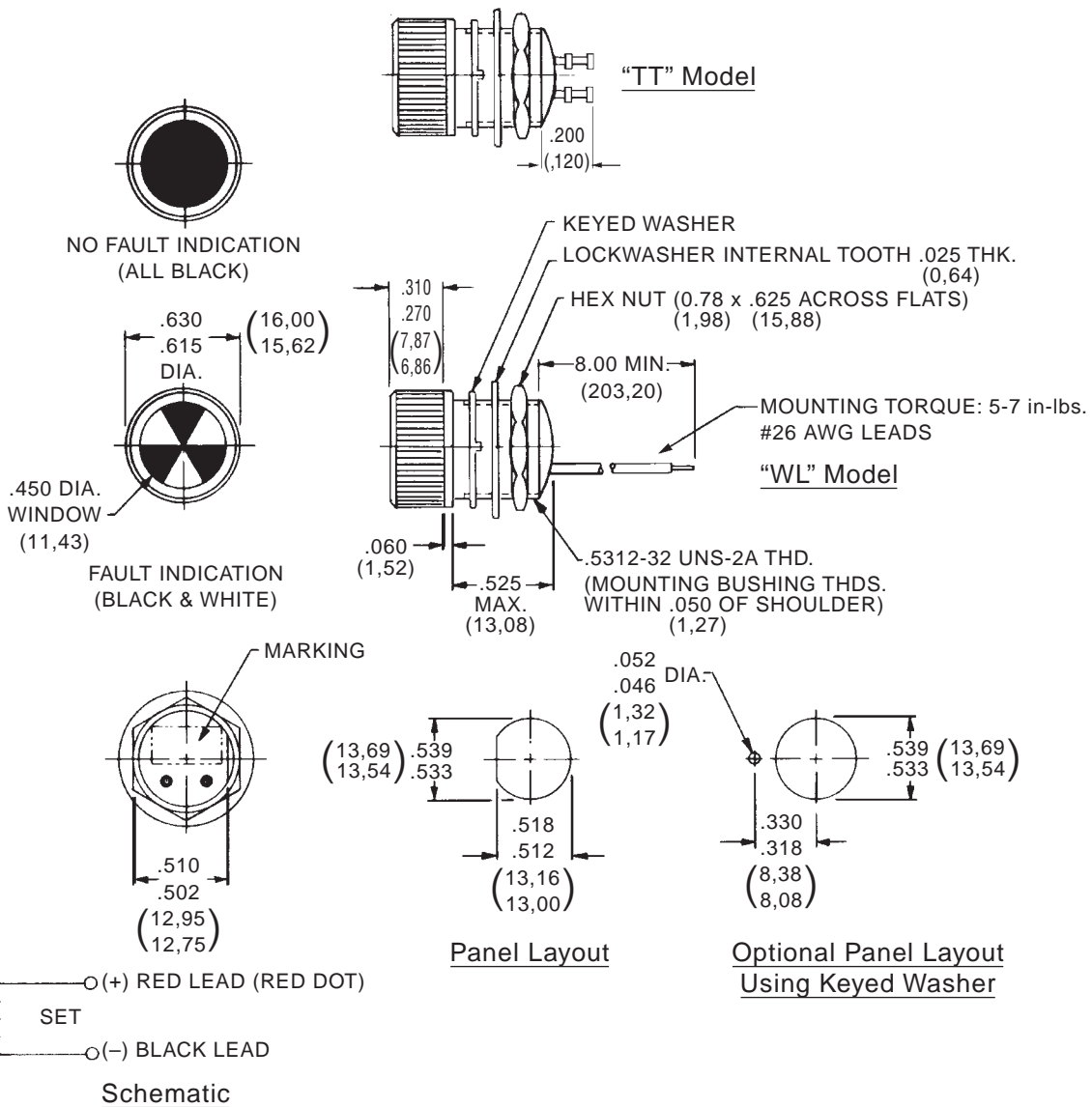
### Example:

Basic model for 12 volts with all black for reset (No-fault) color and black/white for set (Fault) color, turret terminals, non-glare glass would be Model MI61SA-12-W/BLK-TT-N.

MI61SA - 12 - W / BLK - TT - S - ( )

Standard factory options are designated by "-Sxxx"

Basic Model Number	Coil Voltage	Fault or Set Color	No-fault or Reset Color	Terminal Type	Glass Type
MI61SA	3	Black/White	Black	TT Turret Terminals	S Standard Glass
MI61RA <sup>®</sup>	5			WL Wire Leads	N Non-glare Glass
	6				
	12				
	20				
	24				
	28				



FLAG INDICATORS

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals: ± .010 (0,25)  
 Fractions: ± 1/64—All mounting hardware is black anodized aluminum. Mounting Torque: 5-7 in. lbs.

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# MANUAL RESET BITE INDICATORS WITH NORMALLY OPEN SWITCH



## Model MI61SW

Meets MIL-PRF-83287

The MI61SW series magnetic latching fault indicator displays highly visible dual color internal flag when the indicator coil is pulsed by a BITE (Built-In Test Equipment) system. The “cloverleaf” pattern provides a high contrast visual indication and an effective warning of system results.

### FEATURES

- Manual reset return
- Magnetic latching
- Environmentally sealed
- Random vibration capability
- Internal switch

### OPERATION

The indicator is set by energizing the coil with a 40 millisecond (or longer) pulse. The indicator will change from a normally all-black display to a distinctive black/white pattern visible through a window on the front of the indicator. The internal switch will also close. The display disc and the switch will remain magnetically latched to the core in the position last pulsed. Even if the fault signal is removed, the indicator and the switch will “remember” that a fault had occurred.

Return to the “No-fault” position is accomplished mechanically by rotating the knurled knob clockwise 60°. The knob automatically returns to its normal position.

### ELECTRICAL SPECIFICATIONS

Standard coil voltages and resistances						
Model Number	Anti-Reflection Coated Lens		Operating Voltage (DC)			DC Coil Resistance in Ohms @25°C
	No	Yes	Rated	Min.	Max.	
MI61SW-6-M06	X		6.0	4.8	7.2	30-36
MI61SW-6-M08		X				
MI61SW-12-M14	X		12.0	9.6	14.4	248-303
MI61SW-12-M16		X				
MI61SW-24-M18	X		24.0	19.2	28.8	513-627
MI61SW-24-M20		X				
MI61SW-28-M22	X		28.0	22.4	30.0	1090-1331
MI61SW-28-M24		X				

**Nominal Pulse Length:** 40 milliseconds minimum with a maximum risetime of 5 milliseconds

**Dielectric Withstanding Voltage:** 500 VAC RMS

**Resistance:** 100 megohms minimum at 500 VDC

**Electromagnetic Interference and Magnetic Susceptibility:** Per MIL-PRF-83287. MI61SW will not malfunction or false transfer when subjected to a 20 ampere turn field at 400Hz.

**Switch Rating:** 250mA at 28 VDC, non-inductive load



### MECHANICAL SPECIFICATIONS

**Case:** Black anodized aluminum

**Mounting:** Front-panel mount (D-hole or keyed washer)

**Weight:** 20 grams

**Display Colors:** “No-fault” is black (Switch Open) “Fault” is black/white, as shown (Switch Closed)

Leads: Turret terminals (TT), only

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -65°C to +125°C

**Vibration\*:**

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

**Random:** 11.6 Gs rms per MIL STD 202, Method 214, Test Condition D, Curve 1

**Shock:** 100 Gs MIL STD 202, Method 213, Test Condition I

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

**Thermal Shock:** MIL STD 202, Method 107, Test Condition B

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

**Barometric Pressure:** 100,000 ft., MIL STD 202, Method 105, Test Condition D, with 350 VAC, RMS

**Life:** 10,000 cycles

\* (During vibration testing caution should be taken to shield the indicator from the strong magnetic field.)

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# MANUAL RESET BITE INDICATORS WITH NORMALLY OPEN SWITCH



## ORDERING INFORMATION

When ordering, show model number first, coil voltage, and the lens coating desired. 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.

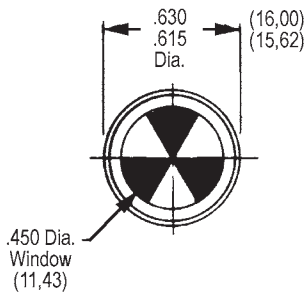
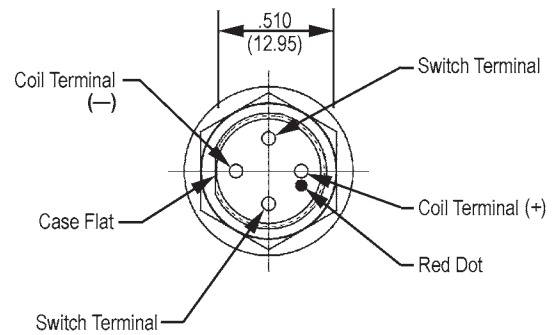
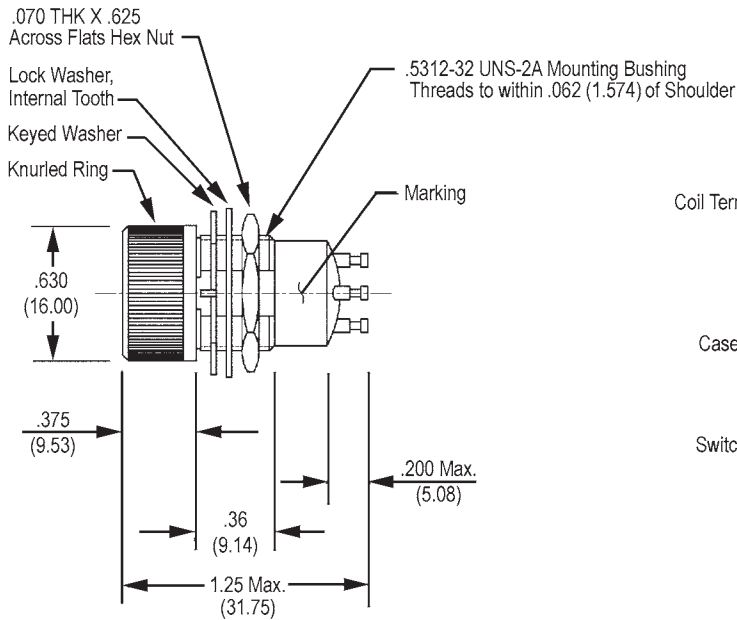
Example:

Basic model for 12 volts with anti-reflection coated lens would be Model MI61SW-12-M16.

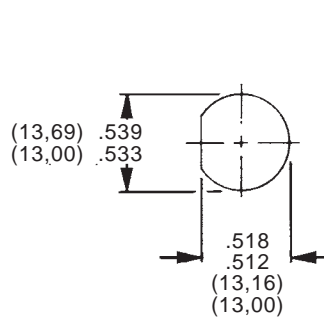
MI61SW - 12 - M16 - ( )

Standard factory options are designated by "-Sxxx"

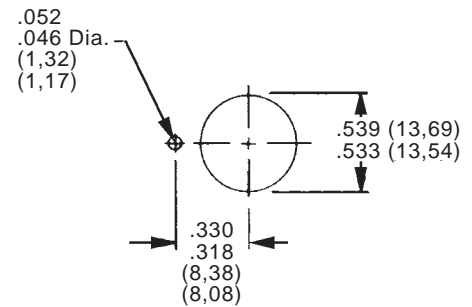
Basic Model Number	Coil Voltage	Coated Lens
MI61SW	6	(Refer to chart on previous page)
	12	
	24	
	28	



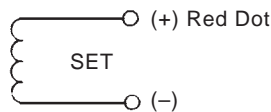
**Fault Indication**  
(Black & White)



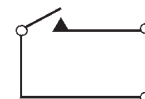
**Panel Layout**



**Optional Panel Layout**  
Using Keyed Washer



**Coil Diagram**



**Switch Diagram**  
(Switch shown in Reset Position)

MI61SW

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals: ± .010 (0.25)  
Fractions: ± 1/64—All mounting hardware is black anodized aluminum. Mounting Torque: 5-7 in. lbs.

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# BITE INDICATORS LATCHING OR SELF-RESTORING



## Models MI61, LD & M

The MI61 series magnetic latching fault indicator displays a highly visible, dual-color drum when the indicator coil is pulsed by a BITE (Built-In Test Equipment) system. The drum provides a high contrast visual indication and an effective warning of system faults. The drum can accommodate a legend such as “GO” or “FAIL” when specific information needs to be displayed.

### FEATURES

- Environmentally sealed
- Choice of self-restoring or magnetic latching types
- Optional legend display

### OPERATION

When the indicator coil is energized with a 50 millisecond or longer pulse, the drum rotates to display the message or system status.

**Model MI61M** is a self-restoring, steady-state indicator that automatically returns to a neutral state when power is removed. It does not latch to the core magnet, but remains suspended in the position until power is removed.

**Model MI61LD** is a latching indicator that remains magnetically latched to the core in the position last pulsed.

For the MI61LD, a dual coil device, reset to the “No-fault” position is accomplished electronically by pulsing the reset coil.

### ELECTRICAL SPECIFICATIONS

#### Standard coil voltages and resistances

##### Standard Coil Voltages and Resistance:

Resistance  $\pm$  10% shown at 25°C.

DC Voltage	3.0	5.0	6.0	12.0	24.0	28.0
Resistance (Ohms)	6.0	20.0	24.0	103.0	385.0	520.0

**Power:** Steady state for model MI61M – 1.5 Watts

**Pulse Power for Latching Models:** 1.5 Watts, minimal

**Pulse Length for Latching Models:** 50 ms min.

**Dielectric Withstanding Voltage:** 500 VDC case to terminals.  
100 VDC coil to coil on dual coil units

**Insulation Resistance:** 100 megohms minimum at 500 VDC

MI61M



### MECHANICAL SPECIFICATIONS

**Case:** Black anodized aluminum with sealed glass window

**Mounting:** Front panel mount

**Weight:** 20 grams maximum

**Display Colors:** Any combination of: Black (Blk), White (W), Red (R), Orange (O), Yellow (Y), and Green (G)

**Legend:** Available maximum letter height 1/8"

**Hardware:** Units supplied with hex nut

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -65°C to +125°C

**Vibration\*:** 10 Gs, 10 to 2kHz, MIL STD 202

**Shock:** 50 Gs - MIL STD 202, Method 213, Condition G

**Humidity:** 95% relative humidity MIL STD 202, Method 103, Test Condition B

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

**Thermal Shock:** MIL STD 202, Method 107, Test Condition B

**Barometric Pressure:** 100,000 ft. MIL STD 202, Method 105, Test Condition D

**Operational Life:** 10,000 cycles minimum

\* (During vibration testing caution should be taken to shield the indicator from the strong magnetic field.)

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

# BITE INDICATORS LATCHING OR SELF-RESTORING



## ORDERING INFORMATION

When ordering, show model number first, coil voltage, and the color combination desired. 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.

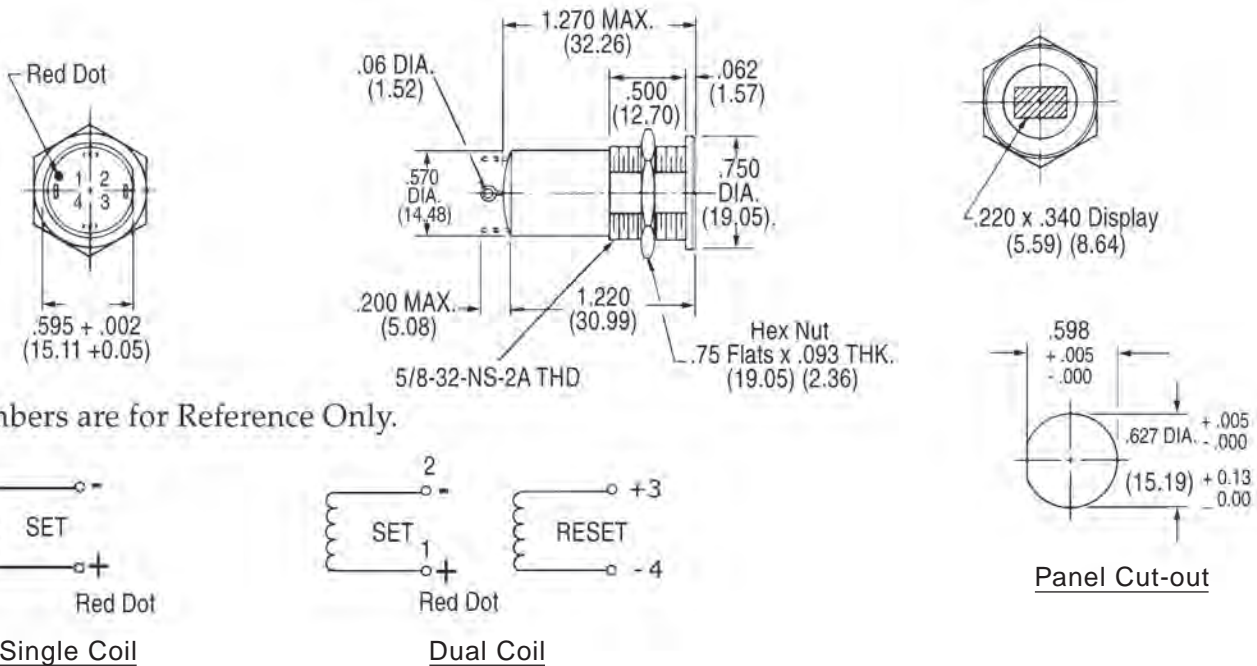
Example:

Dual coil magnetically latching unit for 24 volts with black for the fault color and red for reset color would be: Model MI61LD-24-BLK/R.

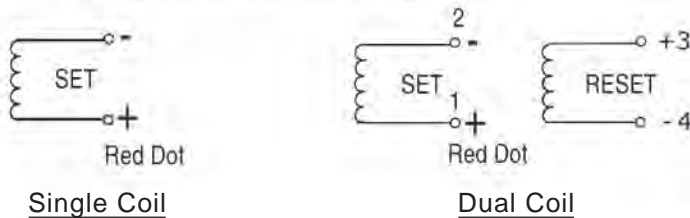
MI61LD - 24 - BLK / R - ( )

Standard factory options are designated by "-Sxxx"

Basic Model Number	Coil Voltage	Fault or Set Color	Reset Color
MI61M	3	R Red	R Red
	5	W White	W White
MI61LD	6	BLK Black	BLK Black
	12	G Green	G Green
	24	Y Yellow	Y Yellow
	28	O Orange	O Orange



Numbers are for Reference Only.



MI61, LD and M

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals:  $\pm .010$  (0.25)  
Fractions:  $\pm 1/64$ —All mounting hardware is black anodized aluminum. Mounting Torque: 5-7 in. lbs.

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# LARGE DISPLAY STATUS INDICATOR FOR INDUSTRIAL APPLICATIONS



## Model CI75 (Single Coil) Model CID75 (Dual Coil)

The CI series large-display, status indicator features a highly visible dual color internal flag. Available in single and dual coil models. For industrial applications demanding large displays while subjected to outdoor elements, high ambient light areas and remote areas requiring low-power drain.

### FEATURES

- Large 3/4" display
- Visible in bright light or in dimly lit area
- No bulbs to replace
- Low power usage
- No power needed when latched in either position
- Low cost
- Strong magnetic memory

### OPERATION

When the indication coil is energized by a 50 millisecond or longer pulse, color display flips 180° and latches to coil core. Display will remain magnetically latched to the core in the position last pulsed. Even if the signal is removed, the indicator will "remember" the signal instruction.

Reset to black is accomplished electrically by pulsing a separate reset coil or by reversing polarity in the single coil unit. The display then remains magnetically latched to the core and remains black.

### ELECTRICAL SPECIFICATIONS

Standard coil voltages and resistances			
Nominal Voltage DC	Operating Voltage Minimum	Operating Voltage Maximum	CI75 Coil Resistance in Ohms, ± 10% @ 25°C
5.0	4.5	5.5	30*
6.0	5.5	6.5	41*
12.0	11.0	13.0	150*
20.0	18.0	22.0	460*
24.0	21.0	27.0	660*
28.0	25.0	31.0	875*

\* Resistance for dual coil (CID75) units is approximately one-half the value listed for single coil, all models.

CID75



**Nominal Operating Pulse Power (at 25°C):** 900 mW (CI75); 1.8 W (CID75). Designed for pulse operation.

**Operating Pulse Length:** 50 ms min.

**Reset Pulse Length:** 50 ms min. (Max. "On" time 50%)

**Dielectric Withstanding Voltage:** 100 VDC coil to coil, for dual coil units. 500 VDC, terminals to mounting panel.

### MECHANICAL SPECIFICATIONS

**Case:** Molded plastic, clear viewing lens

**Mounting:** Spring retainer, supplied with unit

**Weight:** 30 grams

**Display Colors:** Red (set) and Black (reset). Other colors or legends available.

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -20°C to + 85°C

**Operational Life:** 10,000 cycles minimum

# LARGE DISPLAY STATUS INDICATOR FOR INDUSTRIAL APPLICATIONS



## ORDERING INFORMATION

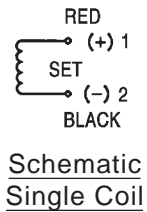
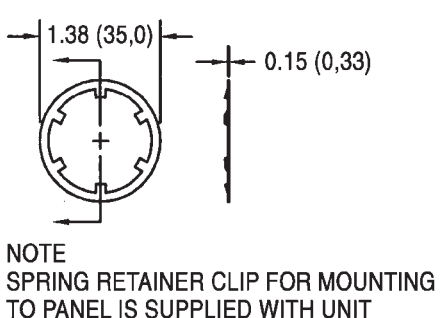
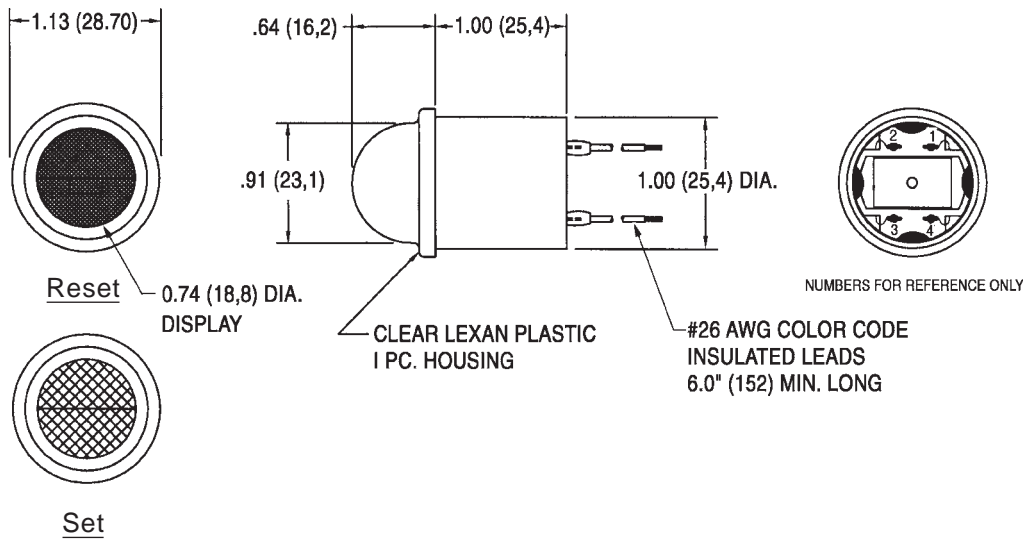
When ordering, show model number first, coil voltage, and the color combination desired. If this is a special part, a factory assigned modification number will be added at the end of the ordering number. Consult the factory for special configurations.

Example:  
Single coil unit for 24 volt with red for set and black for reset would specify CI75-24-R/BLK.

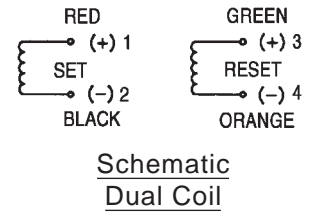
CI75 - 24 - R / BLK - ( )

Standard factory options are designated by "-Sxxx"

Basic Model Number	Coil Voltage	Fault or Set Color	Reset Color
CI75	5	O Orange	BLK Black
CID75	6	R Red	
	12	Y Yellow	
	20	W White	
	24		
	28		



(To reset, reverse polarity of applied voltage)



CI75 and CID75

NOTE: Dimensions in ( ) are mm. Tolerances: Decimals: ± .020 (0.50)

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FLAG INDICATORS

# MANUAL RESET POP-UP INDICATORS WITH NORMALLY OPEN SWITCH



## Model PL 25 AC

The PL 25 AC magnetic latching fault indicator displays highly visible white flag (button), when the indicator coil is pulsed by a BITE (Built-In Test Equipment) system.

### FEATURES

- Push button, manual reset indicator
- Magnetic Latching
- Environmentally Sealed
- Random Vibration Capability
- Internal Switch

### OPERATION

The Pop-Up Indicator is an electromechanical indicator encased in a brass housing measuring 1.38" x .315" x .325". Electrical connection to the unit is made via 4 wire leads that have a standard 4" in length. When an electrical pulse (half wave rectified) is sent to the unit it causes a .25" diameter button to pop up approximately .05" to provide indication to a user that a fault has occurred. The internal magnet will then latch in place. The Pop-Up Indicator is manually reset by pressing down on the indicator and returning the indicator to its originally state. The magnet will keep the indicator in the "Reset" state until an electrical pulse of appropriate power is applied to the unit. The internal switch operates in conjunction with the operation of the fault indicator. When the indicator is in button down "Reset" position, the switch is closed. When indicator is in button up "Set" position, the switch is open.

### ELECTRICAL SPECIFICATIONS

**Pulse Length:** 17 to 50 ms

**Voltage Rating:** 43 to 56 VDC, half wave rectified.

**Insulation Resistance:** 100 MOhms minimum at 500 VDC.

**Dielectric Withstand Voltage:** 1250 VRMS between closed switch and housing and between closed switch and coil; 1000 VRMS between coil winding and housing.

**Switch Voltage Rating:** 28 VDC.

**Make/ Carry / Brake Rating:** 500 mA (400mA @ 32VDC)

PL 25 AC



### MECHANICAL SPECIFICATIONS

**Case:** Brass, Alloy 260

**Mounting:** via .07" hole in the mounting flange

**Weight:** 8.5 g max.

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -25°C to +105°C

**Random Vibration:** 4.9 g RMS, 3 axis, 5 hours per axis.

**Shock:** 15 g peak, half-sine pulse.

**Moisture Resistance (Humidity):** RTCA/DO 160, Section 6, Cat A.

**Waterproofness:** RTCA/DO 160, Section 10, Cat W.

**Thermal Shock:** MIL-STD-202, Method 107, Test Condition B, but temperatures are -40°C to +120°C.

**Barometric Pressure:** -2000 ft to 45000 ft, 2 hours each.

**Operational Life:** 10,000 cycles minimum

### PATENTS

US Patent No. 0220896A1

### ORDERING INFORMATION

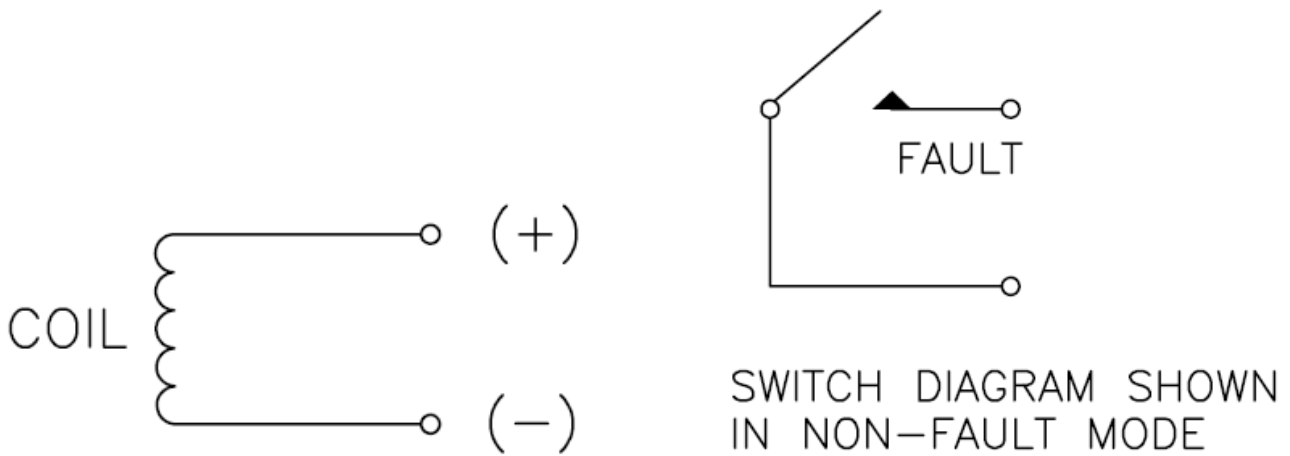
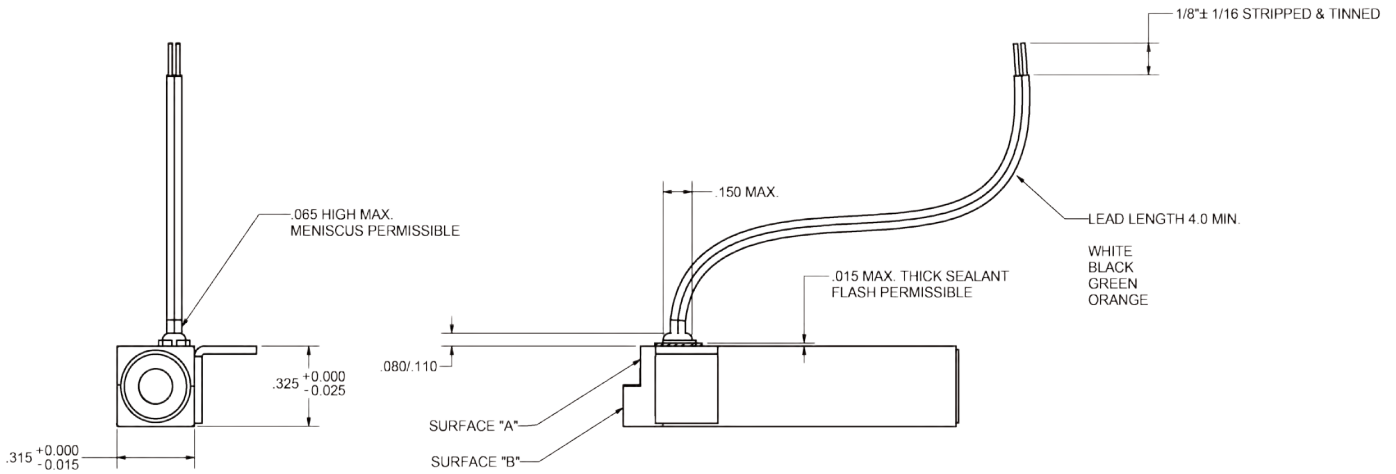
**Description:** PL 25 AC. Standard Factory Options (Mounting Flange) are designated by "-Sxxx" at the end. Contact Sales for alternative mounting options.

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

# MANUAL RESET POP-UP INDICATORS WITH NORMALLY OPEN SWITCH



## Model PL 25 AC (continued)



## SCHEMATIC

FLAG INDICATORS

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# MANUAL RESET POP-UP INDICATORS WITH NORMALLY OPEN SWITCH



## Model PL 25 DC

The PL 25 DC magnetic latching fault indicator displays highly visible white flag (button), when the indicator coil is pulsed by a BITE (Built-In Test Equipment) system.

### FEATURES

- Push button, manual reset indicator
- Magnetic Latching
- Environmentally Sealed
- Random Vibration Capability
- Internal Switch

### OPERATION

The Pop-Up Indicator is an electromechanical indicator encased in an aluminum housing measuring 1.38" x .315" x .325". Electrical connection to the unit is made via 4 wire leads that have a standard 4" in length. When an electrical pulse is sent to the unit it causes a .25" diameter button to pop up approximately .05" to provide indication to a user that a fault has occurred. The internal magnet will then latch in place.

The Pop-Up Indicator is manually reset by pressing down on the indicator and returning the indicator to its originally state. The magnet will keep the indicator in the "Reset" state until an electrical pulse of appropriate power is applied to the unit. The internal switch operates in conjunction with the operation of the fault indicator. When the indicator is in button down "Reset" position, the switch is closed. When indicator is in button up "Set" position, the switch is open.

### ELECTRICAL SPECIFICATIONS

**Pulse Length:** 17 to 50 ms

**Voltage Rating:** 18-32 VDC.

**Insulation Resistance:** 100 MOhms minimum at 500 VDC.

**Dielectric Withstand Voltage:** 1250 VRMS between closed switch and housing and between closed switch and coil; 1000 VRMS between coil winding and housing.

**Switch Voltage Rating:** 28 VDC.

**Make/ Carry / Brake Rating:** 500 mA (400mA @ 32VDC)

PL 25 DC



### MECHANICAL SPECIFICATIONS

**Case:** Brass, Alloy 260

**Mounting:** via .07" hole in the mounting flange

**Weight:** 8.5 g max.

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature Range:** -25°C to +105°C

**Random Vibration:** 4.9 g RMS, 3 axis, 5 hours per axis.

**Shock:** 15 g peak, half-sine pulse.

**Moisture Resistance (Humidity):** RTCA/DO 160, Section 6, Cat A.

**Waterproofness:** RTCA/DO 160, Section 10, Cat W.

**Thermal Shock:** MIL-STD-202, Method 107, Test Condition B, non-operating temperatures are -40°C to +120°C.

**Barometric Pressure:** -2000 ft to 45000 ft, 2 hours each.

**Operational Life:** 5000 cycles.

### PATENTS

US Patent No. 0220896A1

### ORDERING INFORMATION

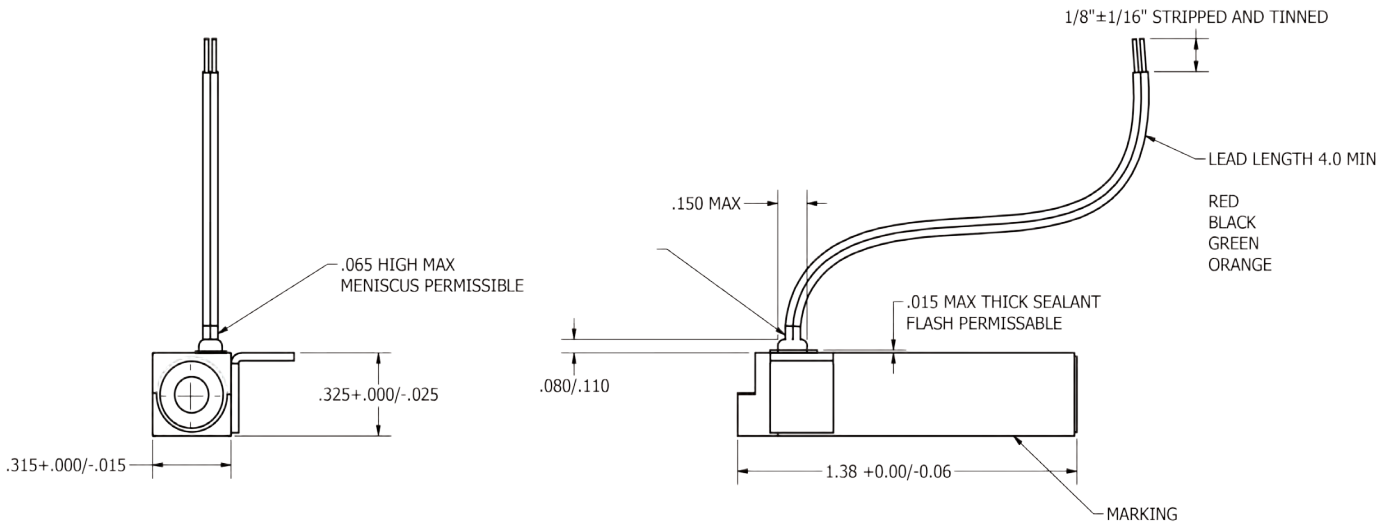
**Description:** PL 25 DC. Standard Factory Options (Mounting Flange) are designated by "-Sxxx" at the end. Contact Sales for alternative mounting options.

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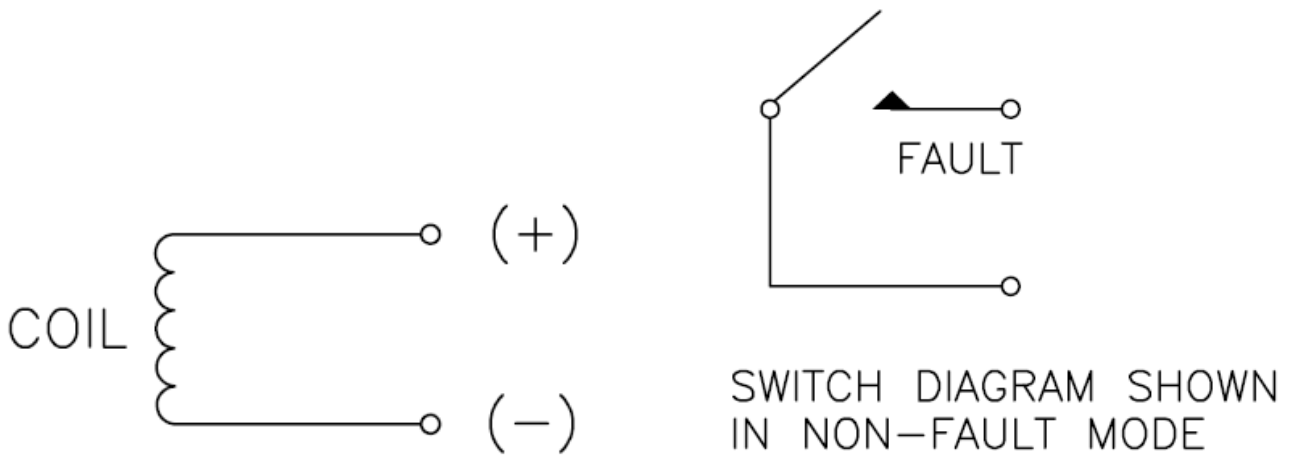
# MANUAL RESET POP-UP INDICATORS WITH NORMALLY OPEN SWITCH



## Model PL 25 DC (continued)



FLAG INDICATORS



## SCHEMATIC

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# APPLICATION NOTES

## BALL AND FLAG INDICATORS



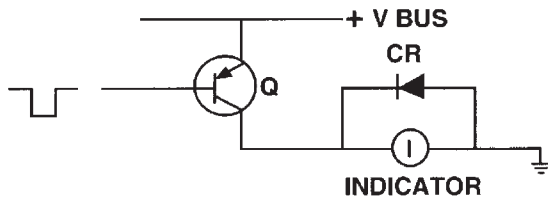
These generalized circuits illustrate various methods of driving our electromagnetic indicators. Presently available semiconductor amplifiers and logic switches are used. The specific application will determine the complexity of the interfacing circuitry. General guidelines for the use of our indicators are also included.

Our indicators are electromagnetic devices which are typically low impedance. They are designed for specific voltages and require 50 mW to 1 watt and activating pulse widths of 20 to 100 milliseconds, depending on the device selected.

Because of the power and impedance levels a transistor switch is generally used as a driver from higher impedance sources. The transistor need not be high speed and is selected on the basis of its low "on" resistance and its current carrying ability at the highest ambient temperature encountered.

The indicator presents a highly inductive load which will cause a high voltage back-spike at the cessation of the "on" pulse. This may be removed by connecting a diode across the indicator as shown in Figure 1 (Some indicators already include this diode). Fast turn-on diodes are preferred.

The most common circuit employed by indicator users is the "open collector" transistor drive. It is used for both "set" and "reset" functions.



The circuit on the left will be found in the succeeding circuits as the switch controlling the indicators.

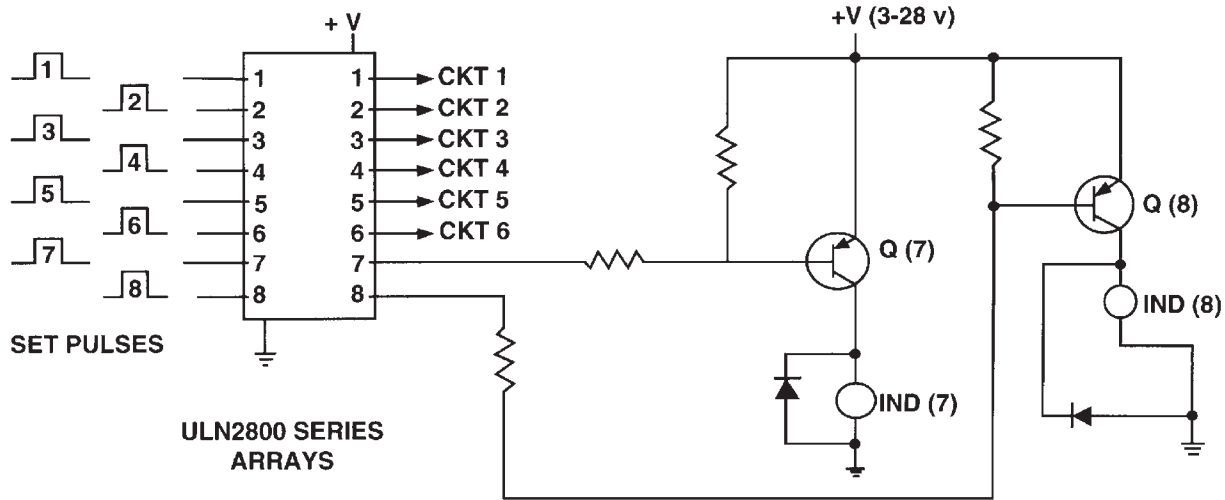


FIGURE 1

Eight channels of fault indication at higher currents may be controlled in the above manner by duplicating the output transistor circuit. If total power, voltage, and current requirements are met using sensitive indicators, the control circuit may consist of two ULN-2068 Darlington (quad) switches without using the transistor output stage.

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# APPLICATION NOTES

## BALL AND FLAG INDICATORS

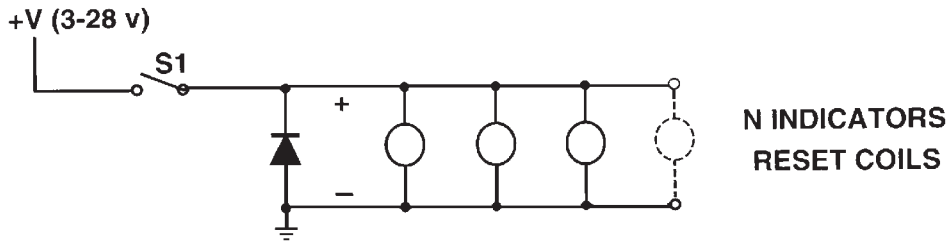


FIGURE 2

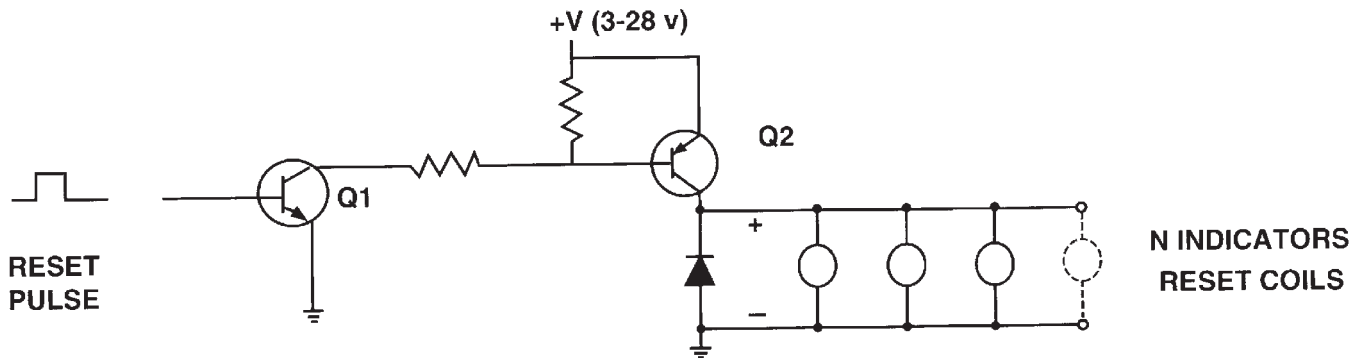


FIGURE 3

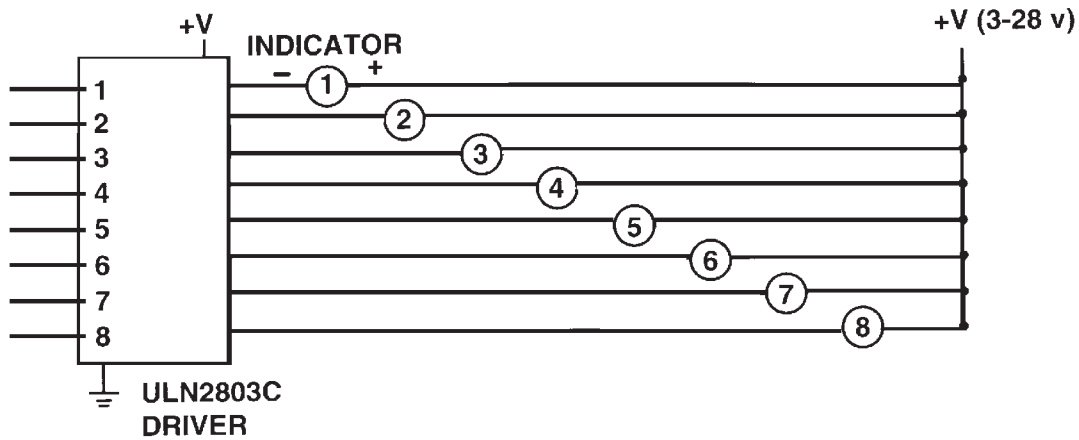


FIGURE 4

**Figure 2** circuit will reset all indicators from operation of one manually operated switch.

**Figure 3** circuit will reset all indicators with one positive input pulse.

**Figure 4** will selectively reset eight indicators depending upon which input of the sink driver is positively pulsed. Protective diodes are built into the driver.

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# APPLICATION NOTES

## BALL AND FLAG INDICATORS

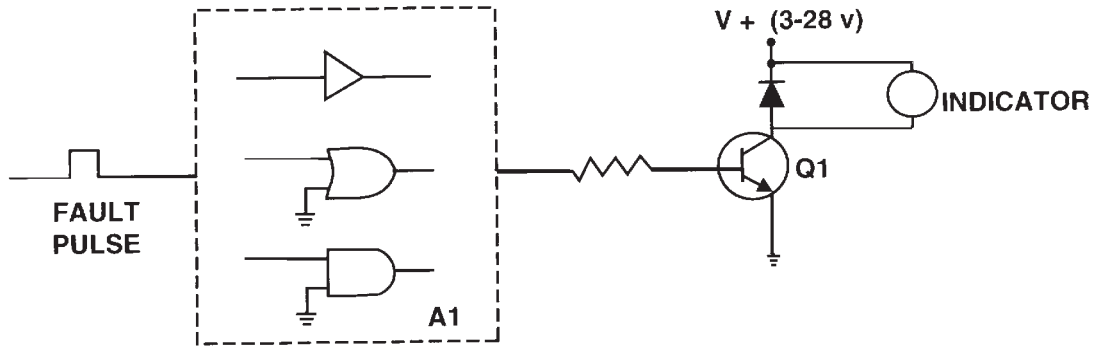


FIGURE 5

A1 of Figure 5 may consist of any logic gate as an interference with the transistor driver. The logic gate and transistor driver may be replaced by a power relay driver to UHP-400, or UHP-402.

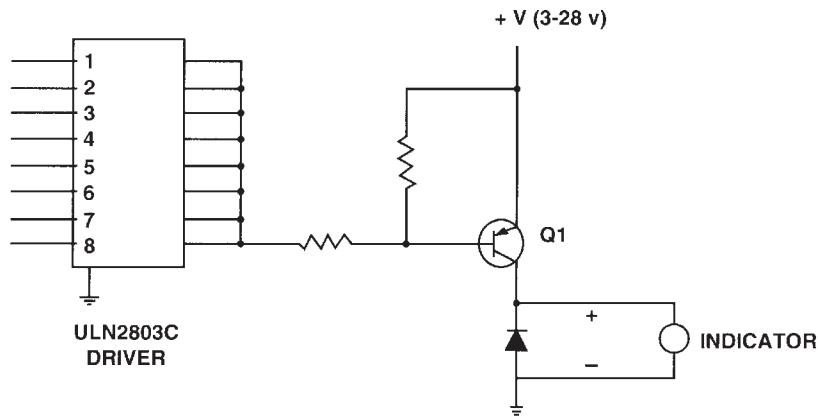


FIGURE 6  
"OR" FAULT INDICATOR

A fault consisting of a positive voltage on any one (or all) of the inputs to the driver will cause the indicator to "set".

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### GENERAL NOTES ON INDICATOR APPLICATION

**1. Series (steering) diodes and shunt diodes are often built into our indicators.**

Typical diode configurations are:

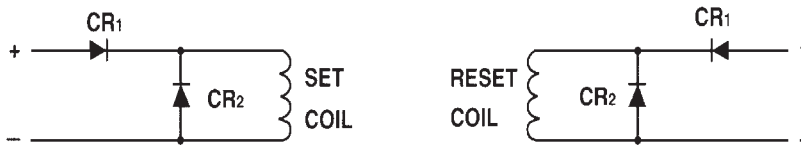


FIGURE 7

CR1 insures that only the correct polarity current will flow in the set or reset coils. CR2 clamps the back-spike voltage which is present from either coil when power is suddenly removed.

**2. The sensitivity of the indicator is specified as the voltage required at a minimum pulse duration to produce an indicator transfer.**

In general, longer pulse applications will not reduce the peak pulse voltage required.

The pulse shape must be such that the required voltage is present over the minimum pulse length time to effect transfer.

Rise time of the applied pulse does not affect operation of the ball or drum indicators. Response is obtained to fast and slow pulses, DC, and rectified AC as long as the pulse has the prescribed amplitude and duration. The flag indicators will operate upon the application of a 40-millisecond minimum, DC voltage square wave pulse with a rise time of 5-millisecond maximum. The fault indicator does not operate satisfactorily from a slowly increasing ramp voltage due to the anti-vibration feature designed into the fault indicator.

**3. The minimum operating voltage may be confused with minimum non-operating requirements. The minimum voltage is designed to operate well below the minimum operating voltage in order to insure that the unit will always operate at the minimum voltage at the maximum operating temperature specified. This is necessary because the coil resistance increases with an increase in ambient temperature.**

**4. Since the typical status indicator is a magnetic latching non-volatile device, the resistance to vibration may often be increased over specified values by reducing clearances and magnet spacing within the device.**

In practically all instances, the amplitude of vibration a given type of indicator can withstand is proportional to the magnetic latching properties and therefore to the amount of voltage required for transfer. Therefore, higher vibration level resistance requires a higher voltage for transfer and an increase in the minimum operate voltage level.

#### MAGNETIC INTERACTION

The fundamental driving indicator elements are magnetic. To insure that the magnetic environment is free from an interfering field, the following should be considered;

- 1) Locate the indicators at least 0.5" apart, center to center, except where otherwise noted (some units can be mounted side by side).
- 2) Do not locate the device adjacent to magnetic sources such as power relays, transformers, etc.
- 3) Mount indicators on nonmagnetic material.
- 4) If it is impossible to follow the 3 rules above, then magnetic shielding may be necessary.

For further information please contact the sales department at L-3 Electroynamics, Inc.

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# FAULT INDICATORS

## MILITARY CROSS REFERENCE GUIDE



FAULT INDICATOR MILITARY CROSS REFERENCE

### M83287/1

#### MANUAL RESET FLAG INDICATORS

See pages 12 & 13 for product specifications

### M83287/2

#### ELECTRICAL RESET FLAG INDICATORS

See pages 10 & 11 for product specifications

MIL SPEC & EDI NUMBER	COMMERCIAL NUMBER	GLASS TYPE	TERMINAL STYLE
M83287/01-01	MI61SA-3-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-02	MI61SA-3-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-03*		NON-GLARE	26 G LEADS
M83287/01-04*		NON-GLARE	SOLDER TERM
M83287/01-05	MI61SA-5-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-06	MI61SA-5-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-07*		NON-GLARE	26 G LEADS
M83287/01-08*		NON-GLARE	SOLDER TERM
M83287/01-09	MI61SA-6-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-10	MI61SA-6-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-11*		NON-GLARE	26 G LEADS
M83287/01-12*		NON-GLARE	SOLDER TERM
M83287/01-13	MI61SA-12-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-14	MI61SA-12-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-15*		NON-GLARE	26 G LEADS
M83287/01-16*		NON-GLARE	SOLDER TERM
M83287/01-17	MI61SA-24-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-18	MI61SA-24-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-19*		NON-GLARE	26 G LEADS
M83287/01-20*		NON-GLARE	SOLDER TERM
M83287/01-21	MI61SA-28-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-22	MI61SA-28-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-23*		NON-GLARE	26 G LEADS
M83287/01-24*		NON-GLARE	SOLDER TERM
M83287/01-25	MI61SA-28-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-26	MI61SA-28-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-27*		NON-GLARE	26 G LEADS
M83287/01-28*		NON-GLARE	SOLDER TERM
M83287/01-29	MI61RA-5-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-30	MI61RA-5-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-31*		NON-GLARE	26 G LEADS
M83287/01-32*		NON-GLARE	SOLDER TERM
M83287/01-33	MI61RA-24-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/01-34	MI61RA-24-W/BLK-TT-S	STANDARD	SOLDER TERM
M83287/01-35*		NON-GLARE	26 G LEADS
M83287/01-36*		NON-GLARE	SOLDER TERM

\* Consult the factory for a commercial part number.

MIL SPEC & EDI NUMBER	COMMERCIAL NUMBER	GLASS TYPE	TERMINAL STYLE	DIODES? (Yes/No)
M83287/02-01	MI57DA-28-W/BLK-WL-S	STANDARD	26 G LEADS	No
M83287/02-02*		STANDARD	26 G LEADS	Yes
M83287/02-03*		STANDARD	SOLDER TERM.	No
M83287/02-04*		STANDARD	SOLDER TERM.	Yes
M83287/02-05*	MI57DA-28-W/BLK-WL-N	NON-GLARE	26 G LEADS	No
M83287/02-06*		NON-GLARE	26 G LEADS	Yes
M83287/02-07*		NON-GLARE	SOLDER TERM.	No
M83287/02-08*		NON-GLARE	SOLDER TERM.	Yes
M83287/02-09*		STANDARD	26 G LEADS	No
M83287/02-10*		STANDARD	26 G LEADS	Yes
M83287/02-11*		STANDARD	SOLDER TERM.	No
M83287/02-12*		STANDARD	SOLDER TERM.	Yes
M83287/02-13*		NON-GLARE	26 G LEADS	No
M83287/02-14*		NON-GLARE	26 G LEADS	Yes
M83287/02-15*		NON-GLARE	SOLDER TERM.	No
M83287/02-16*		NON-GLARE	SOLDER TERM.	Yes
M83287/02-17*		STANDARD	26 G LEADS	No
M83287/02-18*		STANDARD	26 G LEADS	Yes
M83287/02-19*		STANDARD	SOLDER TERM.	No
M83287/02-20*		STANDARD	SOLDER TERM.	Yes
M83287/02-21*		STANDARD	26 G LEADS	No
M83287/02-22*		STANDARD	SOLDER TERM.	No
M83287/02-23*		NON-GLARE	26 G LEADS	No
M83287/02-24*		NON-GLARE	SOLDER TERM.	No
M83287/02-25*		STANDARD	26 G LEADS	No
M83287/02-26*		STANDARD	SOLDER TERM.	No
M83287/02-27*		NON-GLARE	26 G LEADS	No
M83287/02-28*		NON-GLARE	SOLDER TERM.	No
M83287/02-29	MI57DA-12-W/BLK-WL-S	STANDARD	26 G LEADS	No
M83287/02-30*		STANDARD	26 G LEADS	Yes
M83287/02-31*		STANDARD	SOLDER TERM.	No
M83287/02-32*		STANDARD	SOLDER TERM.	Yes
M83287/02-33*		NON-GLARE	26 G LEADS	No
M83287/02-34*		NON-GLARE	26 G LEADS	Yes
M83287/02-35*		NON-GLARE	SOLDER TERM.	No
M83287/02-36*		NON-GLARE	SOLDER TERM.	Yes
M83287/02-37*		STANDARD	26 G LEADS	No
M83287/02-38*		STANDARD	SOLDER TERM.	No
M83287/02-39*		NON-GLARE	26 G LEADS	No
M83287/02-40*		NON-GLARE	SOLDER TERM.	No
M83287/02-41	MI57DA-5-W/BLK-WL-S	STANDARD	26 G LEADS	No
M83287/02-42*		STANDARD	26 G LEADS	Yes
M83287/02-43*		STANDARD	SOLDER TERM.	No
M83287/02-44*		STANDARD	SOLDER TERM.	Yes
M83287/02-45*	MI57DA-5-W/BLK-WL-N	NON-GLARE	26 G LEADS	No
M83287/02-46*		NON-GLARE	26 G LEADS	Yes
M83287/02-47*		NON-GLARE	SOLDER TERM.	No
M83287/02-48*		NON-GLARE	SOLDER TERM.	Yes
M83287/02-49*		NON-GLARE	26 G LEADS	No
M83287/02-50*		NON-GLARE	SOLDER TERM.	No
M83287/02-51*		STANDARD	26 G LEADS	No
M83287/02-52*		STANDARD	SOLDER TERM.	No

Qualified products purchased to the Military Part Number comply with the latest revision of the applicable Military Specification. Commercial, Non-Qualified, and EDI versions of Military Specification products are designed in accordance with the applicable Military Specification, but may not be tested and/or qualified per said Military Specification.

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# FAULT INDICATORS

## MILITARY CROSS REFERENCE GUIDE



### M83287/3 BALL INDICATORS

See pages 4 & 5 for product specifications

### MI51LP MECHANICAL RESET LOW POWER FLAG INDICATORS

See pages 8 & 9 for product specifications

MIL SPEC & EDI NUMBER	COMMERCIAL NUMBER
M83287/03-01	BHGD21T-3-W/BLK
M83287/03-02	BHGD21T-6-W/BLK
M83287/03-03	BHGD21T-12-W/BLK
M83287/03-04	BHGD21T-24-W/BLK
M83287/03-05	BHGD21T-28-W/BLK
M83287/03-06	BHG21T-3-W/BLK
M83287/03-07	BHG21T-6-W/BLK
M83287/03-08	BHG21T-12-W/BLK
M83287/03-09	BHG21T-24-W/BLK
M83287/03-10	BHG21T-28-W/BLK
M83287/03-11	BHGD27T-3-W/BLK
M83287/03-12	BHGD27T-6-W/BLK
M83287/03-13	BHGD27T-12-W/BLK
M83287/03-14	BHGD27T-24-W/BLK
M83287/03-15	BHGD27T-28-W/BLK
M83287/03-16	BHG27T-3-W/BLK
M83287/03-17	BHG27T-6-W/BLK
M83287/03-18	BHG27T-12-W/BLK
M83287/03-19	BHG27T-24-W/BLK
M83287/03-20	BHG27T-28-W/BLK
M83287/03-21	BHG21T-5-W/BLK
M83287/03-22	BHGD21T-5-W/BLK
M83287/03-23	BHG27T-5-W/BLK
M83287/03-24	BHGD27T-5-W/BLK

MIL SPEC & EDI NUMBER	COMMERCIAL NUMBER	GLASS TYPE	THERMAL STYLE
M83287/04-01*	MI51LP-1.5-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/04-02*	MI51LP-1.5-W/BLK-WL-N	NON-GLARE	26 G LEADS
M83287/04-03*	MI51LP-1.5-W/BLK-TT-S	STANDARD	TURRETT
M83287/04-04*	MI51LP-1.5-W/BLK-TT-N	NON-GLARE	TURRETT
M83287/04-05*	MI51LP-3-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/04-06*	MI51LP-3-W/BLK-WL-N	NON-GLARE	26 G LEADS
M83287/04-07*	MI51LP-3-W/BLK-TT-S	STANDARD	TURRETT
M83287/04-08*	MI51LP-3-W/BLK-TT-N	NON-GLARE	TURRETT
M83287/04-09*	MI51LP-6-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/04-10*	MI51LP-6-W/BLK-WL-N	NON-GLARE	26 G LEADS
M83287/04-11*	MI51LP-6-W/BLK-TT-S	STANDARD	TURRETT
M83287/04-12*	MI51LP-6-W/BLK-TT-N	NON-GLARE	TURRETT
M83287/04-13*	MI51LP-12-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/04-14*	MI51LP-12-W/BLK-WL-N	NON-GLARE	26 G LEADS
M83287/04-15*	MI51LP-12-W/BLK-TT-S	STANDARD	TURRETT
M83287/04-16*	MI51LP-12-W/BLK-TT-N	NON-GLARE	TURRETT
M83287/04-17*	MI51LP-24-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/04-18*	MI51LP-24-W/BLK-WL-N	NON-GLARE	26 G LEADS
M83287/04-19*	MI51LP-24-W/BLK-TT-S	STANDARD	TURRETT
M83287/04-20*	MI51LP-24-W/BLK-TT-N	NON-GLARE	TURRETT
M83287/04-21*	MI51LP-28-W/BLK-WL-S	STANDARD	26 G LEADS
M83287/04-22*	MI51LP-28-W/BLK-WL-N	NON-GLARE	26 G LEADS
M83287/04-23*	MI51LP-28-W/BLK-TT-S	STANDARD	TURRETT
M83287/04-24*	MI51LP-28-W/BLK-TT-N	NON-GLARE	TURRETT

\*MIL Spec numbers are no longer available

FAULT INDICATORS

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