

2009 INDICATOR CATALOG

New Products Located on Pages 21-25





ORDER TERMS & CONDITIONS

Minimum OEM Order Value: \$500.00 Minimum Distributor Order Value: \$250.00

25 Piece Line Item Minimum for Standard Products, Contact Factory For Special Products

Payment Terms: Net 30 Days (with approved credit)

Scheduled Orders:

Full order quantity must be scheduled when order is placed.

Minimum order quantity for scheduled releases is 1,000 pieces per line item.

Minimum release quantity is 500 pieces.

Changes to scheduled quantities or release dates may incur additional charges or delays in production. Orders in production may not be rescheduled.

We reserve the right to over - or under-ship by 5% of order or scheduled release quantities.

Returns for defective materials are accepted after receipt of samples, and issuance of a Return Material Authorization (RMA) Number. **RMAs are valid for 30 days**, and all returns must be accomplished within that time frame. All parts must be in the original packaging.

Order Acknowledgments with our Sales Order number are issued to confirm order quantity, pricing, scheduled ship dates. Please review them. If you need to call to check the status of an order, please have our Sales Order number available.

SoLiCo's sales and engineering personnel will help you determine the best indicator for your application, or help you with a custom design. As our products may be used in a wide variety of applications, the final responsibility in determining the suitability of our products for a specific application rests with you.

It may be possible to build a part number from this catalog that cannot be manufactured. We have included information for each series noting construction limitations. Certain constructions may require components in the lead wires.

Incandescent Lamps / Potting: We strongly recommend potting for all incandescent lamp applications, especially where vibration is a factor. See page 24 for additional information.

We reserve the right to make changes to our products, without prior notice, to improve performance or take advantage of new technologies. The limit of our responsibility under these circumstances is to maintain product fit, function and performance.

Wire length tolerance is: $\pm \frac{1}{4}$ " on leads less than 12"

± 1/2" on leads 12" to 36"

± 1" on leads greater than 36"

Strip length tolerance is: $\pm \frac{1}{3}$

LEDS: Due to rapidly changing LED technology, not all devices listed in our catalog may be available as described. We reserve the right to supply the closest equivalent device in appearance and performance.

Visit www.solico.com for the latest product information

PRODUCT SERIES	PAGE				
Round Indicator Lights					
18, 21 & 24	2				
19	4				
22 & 23	3				
28 & 29					
30	7				
31					
35					
65					
43, 44 & 45					
46 & 47					
(NEW) 68					
(NEW) KF					
(NEW) KE	23				
Rectangular Indicator Lights					
12	11				
13	10				
15	15				
16 & 17					
25, 26 & 27	17				
32					
33 & 34					
36 & 37, 39 & 40	12				
Speciality Products					
RF (Unsealed) Flex-Lite	24				
RF (Unsealed) Flex-Lite	25				
Rear Mount Indicators					
10, 11 & 60	10				
10, 11 α 00	10				
Additional Items					
LED Mounting Clips					
& Custom Assemblies	27				
Technical Information	26-28				
All SoLiCo products are RoHS					

Agency Approvals: The majority of our indicators carry Agency approvals. Please contact us for the latest Agency information for the specific series and voltages you require.











SoLiCo Facilities:

Hartford, Connecticut Brownsville, Texas Matehuala, Mexico

Catalog 12.10 January 2009

UL Information File # E36730(M)

TUV Information

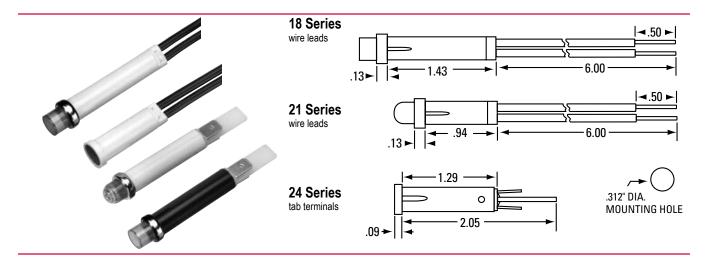
EN:60598-1 EN:60598-2-1

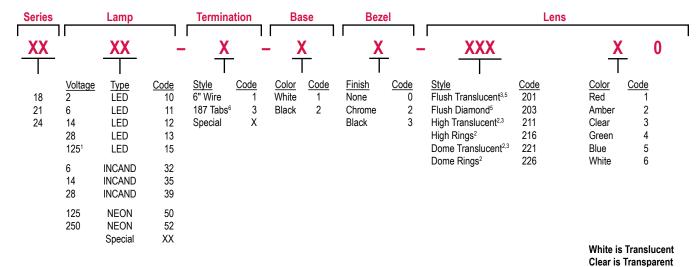
18, 21 & 24

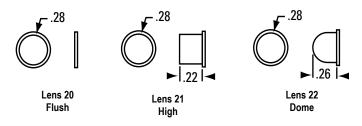
- · Press fits into 0.312" panel hole
- · LED, incandescent, and neon illumination
- · Three lens styles available

SPECIFICATIONS

Body Material: Lens Material: Bezel Material: Wire Gauge: Nylon Polycarbonate Brass (Plated) 18 ga. Wire Strip: Terminals: Panel Thickness: Certifications: 1/2" .187 QC 0.030" min See Page 1







ADDITIONAL OPTIONS AVAILABLE:

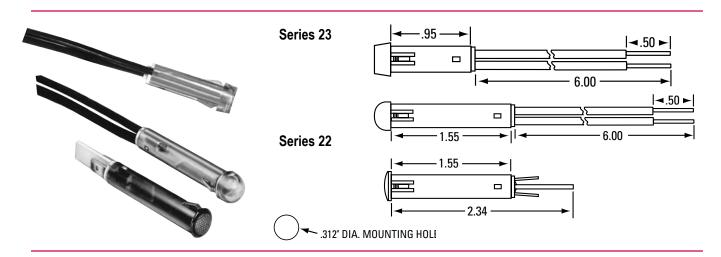
- 1. Series 18 Only
- 2. Bezel Required
- 3. Translucent Lens is not recommended for use with LED
- 4. Specify LED Color if applicable
- Components provided in leads when lens 20 is specified with lamp codes 11 through 15
- 6. Series 24 only

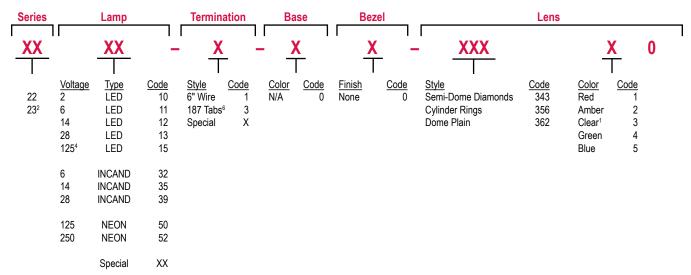
22, 23

- Snap fits into 0.312" panel hole
- · Body and lens are one piece design
- · LED, incandescent and neon illumination

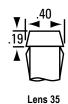
SPECIFICATIONS

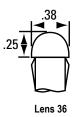
Body Material: Lens Material: Wire Gauge: Polycarbonate Polycarbonate 18 ga. Wire Strip: Panel Thickness: Certifications: 1/2" 0.025" to 0.060" min See Page 1











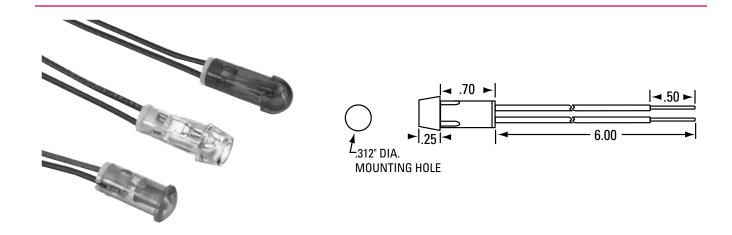
ADDITIONAL OPTIONS AVAILABLE:

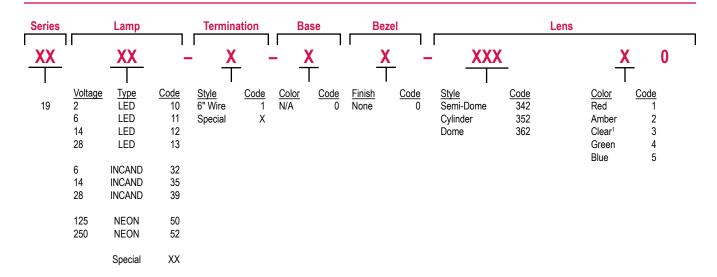
- 1. Specify LED color if applicable
- Components provided in leads when Series 23 is specified with lamp codes 11 through 13
- Available with LED (2V) and incandescent lamps only, contact factory for additional information.
- 4. Available with Wire Leads only.

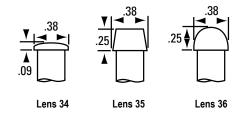
- Press fits into 0.312" panel hole
- · Body and lens are one piece design
- · LED, incandescent and neon illumination

SPECIFICATIONS

Body Material: Lens Material: Wire Gauge: Polycarbonate Polycarbonate 22 ga. Wire Strip: Panel Thickness: Certifications: 1/2" 0.030" min See Page 1







ADDITIONAL OPTIONS AVAILABLE:

Contact Factory

1. Specify LED color if applicable

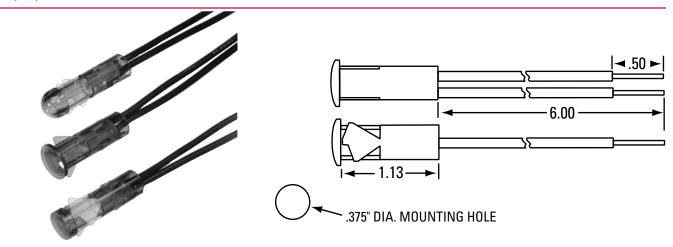
- Snap fits into 0.375" panel hole
- Body and lens are one piece design
- LED, incandescent, and neon illumination
- · Three lens styles available
- · Splashproof

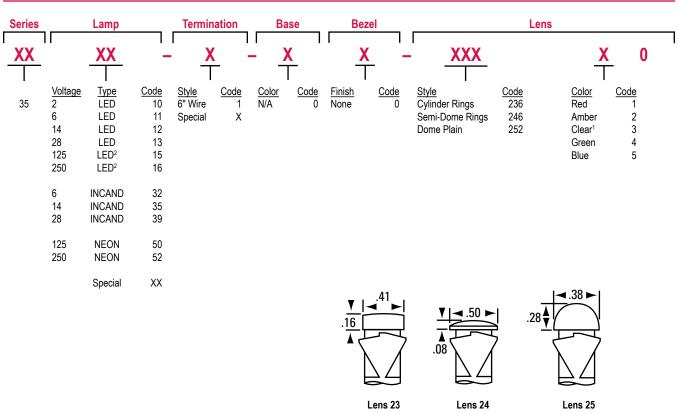
SPECIFICATIONS

Body Material: Polycarbonate Lens Material: Polycarbonate Wire Gauge: 20 ga.

carbonate Wire Strip:
carbonate Panel Thickness:
a. Certifications:

p: 1/2" ickness: 0.032" to 0.094" ions: See Page 1





ADDITIONAL OPTIONS AVAILABLE:

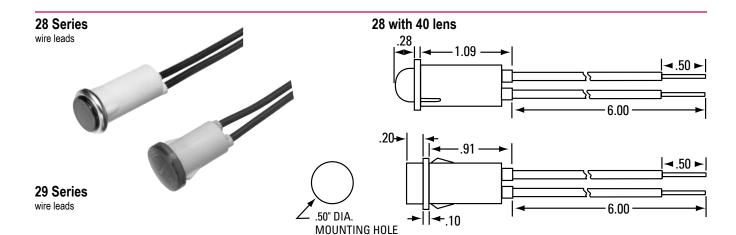
- 1. Specify LED Color if applicable
- 2. Requires components in wire leads

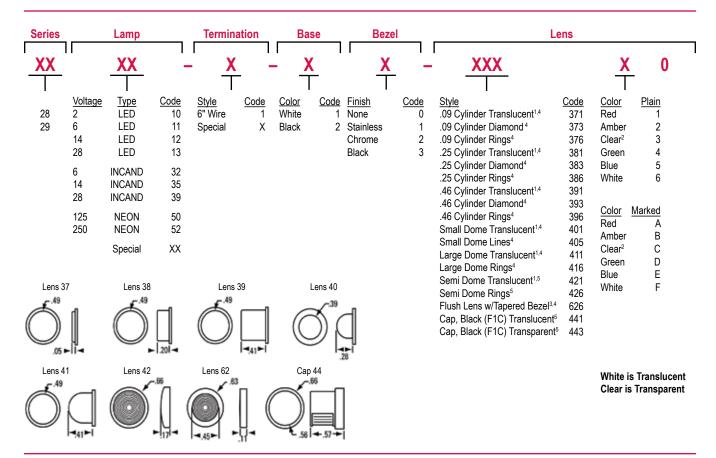
28 & 29

- Fits into 0.500" panel hole
- · LED, incandescent, and neon illumination
- · Many lens styles available

SPECIFICATIONS

Body Material: Lens Material: Bezel Material Nylon Polycarbonate Stainless Steel or Plated Brass Wire Gauge Wire Strip: Panel Thickness: Certifications: 18 ga. 1/2" 0.030" to 0.0903 See Page 1





ADDITIONAL OPTIONS AVAILABLE:

- 1. Translucent Lens is not recommended for use with LED
- 2. Specify LED Color if applicable
- 3. Polished Bezel only use code 2
- 4. Bezel required
- 5. Bezel not available

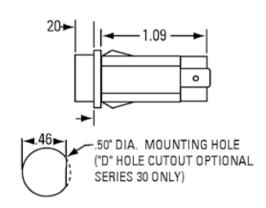
- · Fits into 0.500" panel hole
- · LED, incandescent, and neon illumination
- · Many lens styles available

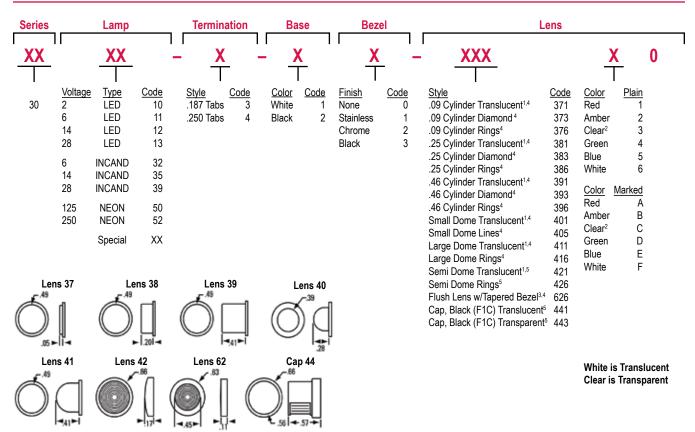
SPECIFICATIONS

Body Material: Lens Material: Bezel Material Nylon Polycarbonate Stainless Steel or Plated Brass Panel Thickness: Certifications: 0.030" to 0.0903 See Page 1

30 with 43 lens







ADDITIONAL OPTIONS AVAILABLE:

- 1. Translucent Lens is not recommended for use with LED
- 2. Specify LED Color if applicable
- 3. Polished Bezel only use code 2
- 4. Bezel required
- 5. Bezel not available

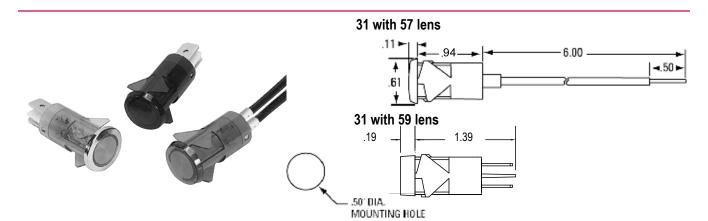
- Snap fits into 0.50" panel hole
- Body and lens are one piece design
- LED, incandescent, and neon illumination
- Splashproof

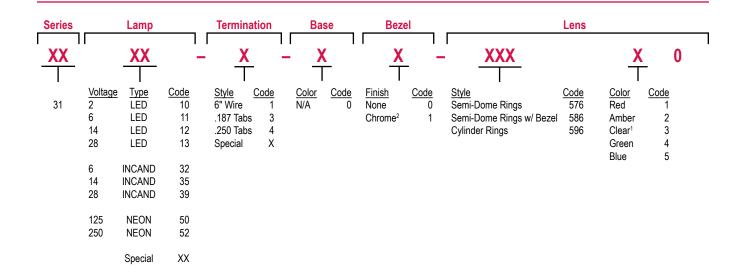
SPECIFICATIONS

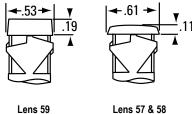
Polycarbonate Body Material: Lens Material: Polycarbonate Wire Gauge: 20 ga.

Wire Strip: Panel Thickness: Certifications:

1/2" 0.040" to 0.110" See Page 1







ADDITIONAL OPTIONS AVAILABLE:

- 1. Specify LED Color if applicable
- 2. Available with lens 58 only

- Threaded mount
- LED cluster lighting
- Daylight visible
- Splashproof design
- Supplied w/ hex nut, lockwasher, and gasket

SPECIFICATIONS

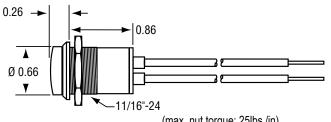
Body Material: Nylon Lens Material: Wire Gauge:

Polycarbonate 20 ga.

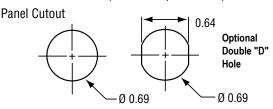
Wire Strip: Panel Thickness: Certifications:

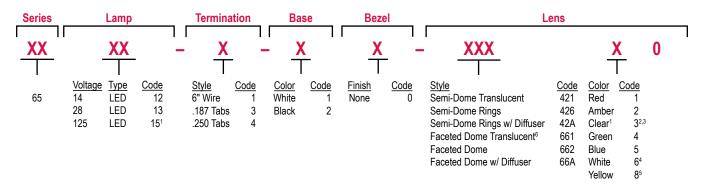
1/2" 0.050" to 0.25" See Page 1





(max. nut torque: 25lbs./in)

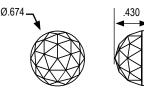


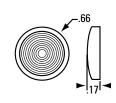


White is Translucent Clear is Transparent

LED Light Output (mcd)

Red 10k typ. Green 15k typ. Blue 7k typ. White 12k typ. Yellow 8k typ.





Lens 662

Lens 42

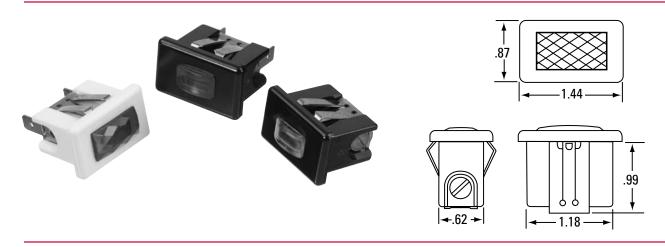
ADDITIONAL OPTIONS AVAILABLE:

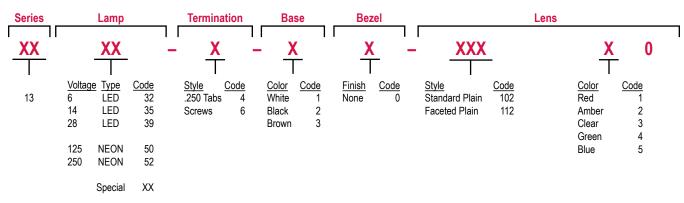
- 1. Reduced Intensity
- 2. Transparent
- 3. Specify LED color for clear lens
- 4. Translucent only
- 5. Lens 42 only
- 6. White Only

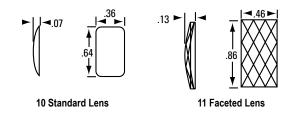
- Snap fits into 1.200" x .640" panel cutout
- · Neon & incandescent illumination
- · Two lens styles available
- Suggested for High Temperature applications
- Two termination styles available

SPECIFICATIONS

Body Material: Lens Material: Panel Thickness: Certifications: Phenolic Polycarbonate 0.045" to 0.065" See Page 1





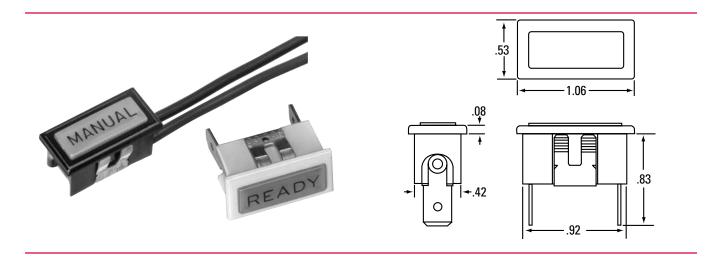


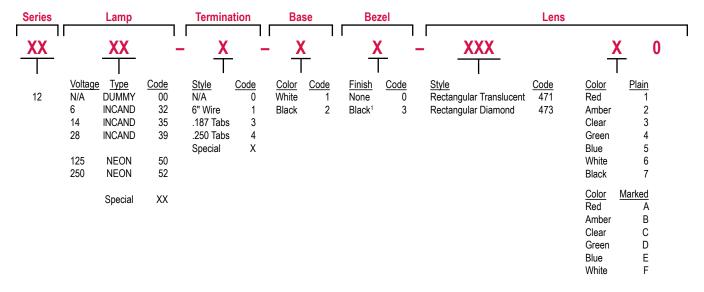
ADDITIONAL OPTIONS AVAILABLE:

- Snap fits into 0.940" x 0.440" panel cutout
- Incandescent and neon illumination
- · Dummy (hole plugs) available

SPECIFICATIONS

Body Material: Lens Material: Wire Gauge: Polycarbonate Polycarbonate 18 ga. Panel Thickness: Certifications: 0.031" to 0.093" See Page 1





White is Translucent Clear is Transparent

ADDITIONAL OPTIONS AVAILABLE:

Contact Factory

1. Metal Bezel

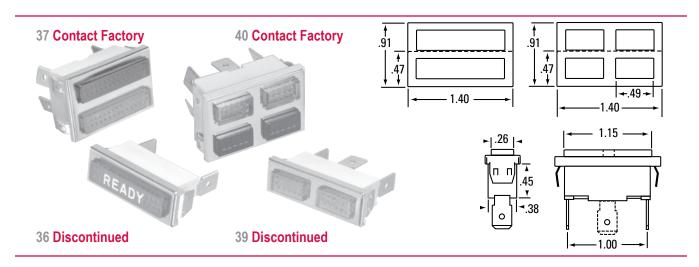
36, 37, 39, 40

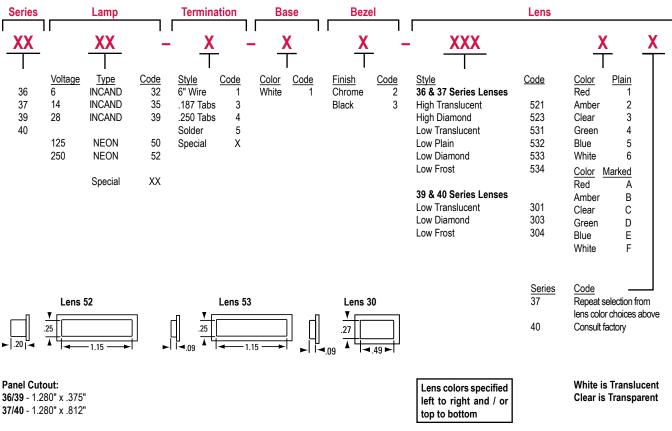
Contact Factory:

To be discontinued; limited availability

SPECIFICATIONS

Body Material: Lens Material: Bezel Material Nylon Polycarbonate Plated Steel Wire Gauge: Panel Thickness: Certifications: 18 ga. 0.030" to 0.090" See Page 1





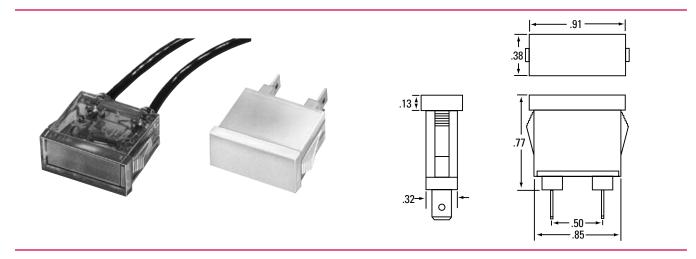
ADDITIONAL OPTIONS AVAILABLE:

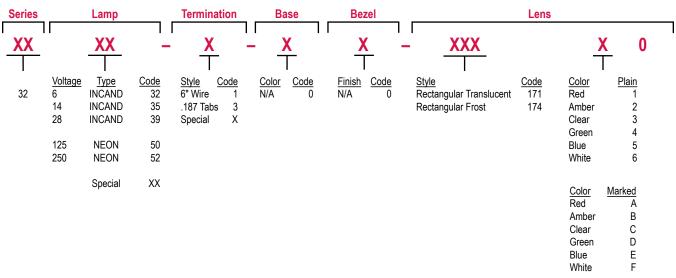
- Snap fits into .330" x .865" panel cutout
- · Body and lens are one piece design
- · Incandescent and neon illumination

SPECIFICATIONS

Body Material: Lens Material: Wire Gauge: Polycarbonate Polycarbonate 18 ga. Wire Strip
Panel Thickness:
Certifications:

1/2" 0.025" to 0.125" See Page 1





White is Translucent Clear is Transparent

ADDITIONAL OPTIONS AVAILABLE:

33, 34

- Snap fits into .375" x 1.28" panel cutout
- · Incandescent and neon illumination
- · Many lens styles available
- · Dummy (hole plugs) available

SPECIFICATIONS

Body Material: Lens Material: Wire Gauge: Nylon Polycarbonate 18 ga.

Rectangular Diamond

Rectangular Frost

Rectangular Lines

193

194

195

Series 33 34 Amber

Clear

Green

Blue

White

<u>Code</u>

В

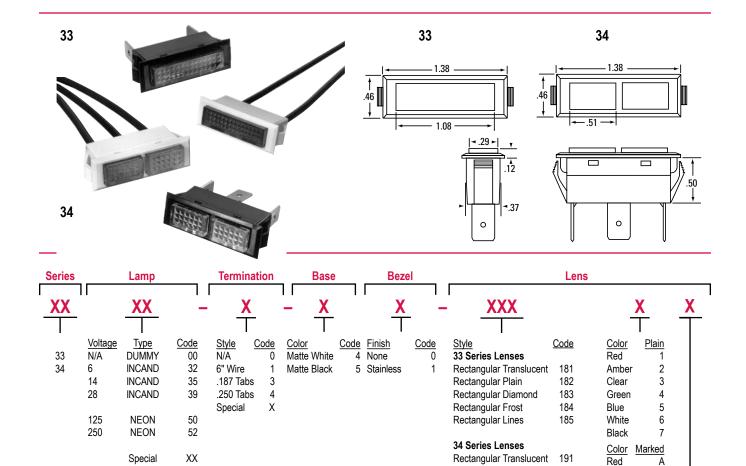
С

D

Ε

Wire Strip
Panel Thickness:
Certifications:

1/2" 0.030" to 0.100" See Page 1



White is Translucent Clear is Transparent

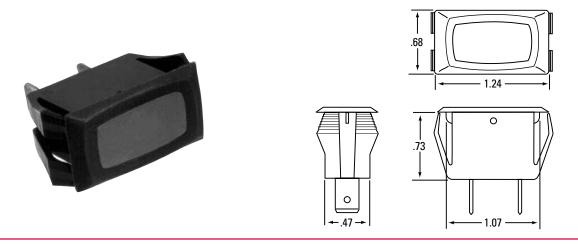
Repeat selection from lens color choices above

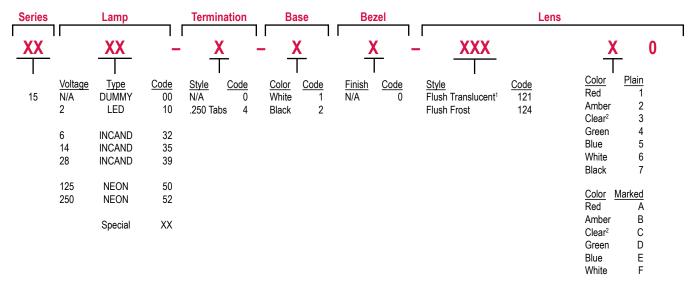
ADDITIONAL OPTIONS AVAILABLE:

- · Snap fits into .550" x 1.125" panel cutout
- · LED, Incandescent, and neon illumination
- Matte Finish
- · Dummy (hole plugs) available

SPECIFICATIONS

Body Material: Lens Material: Panel Thickness: Certifications: Nylon Polycarbonate 0.025" to 0.187" See Page 1





White is Translucent Clear is Transparent

ADDITIONAL OPTIONS AVAILABLE:

- 1. Translucent Lens is not recommended for use with LED
- 2. Specify LED Color if applicable

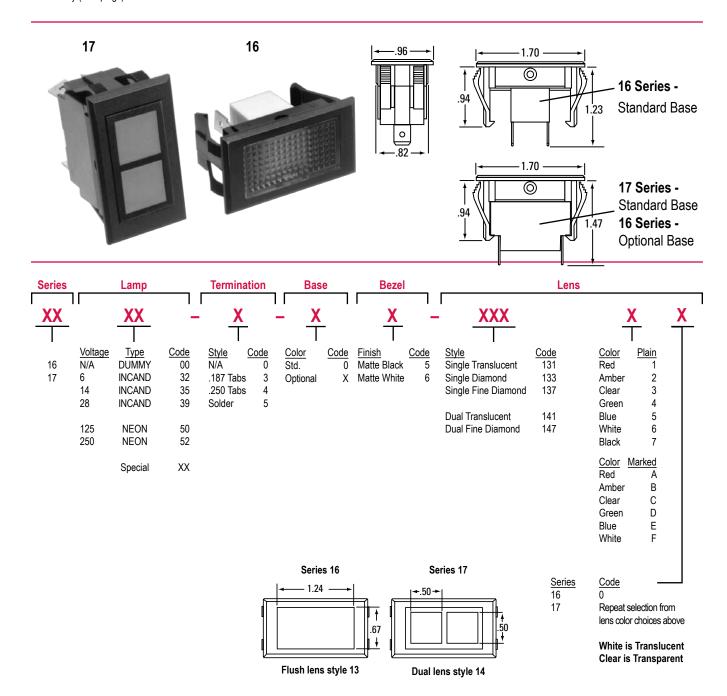
16, 17

- Snap fits into .830 x 1.450" panel cutout
- · Incandescent and neon illumination
- Single or dual lenses
- · Dummy (hole plugs) available

SPECIFICATIONS

Body Material: Lens Material: Wire Gauge

Nylon Polycarbonate 18 ga. Panel Thickness: Certifications: 0.030" to 0.240" See Page 1



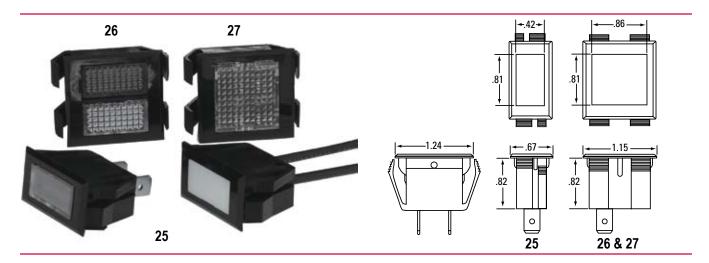
ADDITIONAL OPTIONS AVAILABLE:

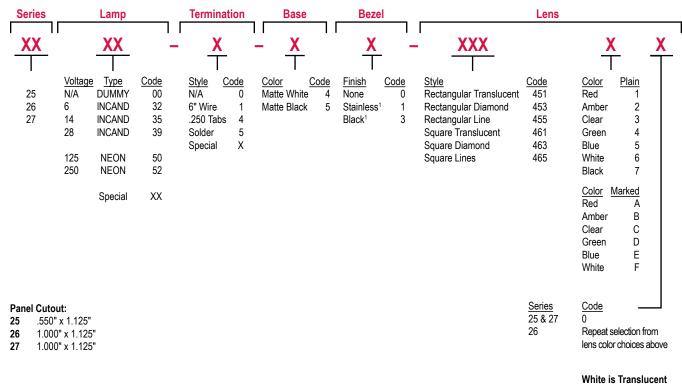
25, 26, 27

- · Snap fits into panel cutout
- · Incandescent and neon illumination
- · Single or dual lenses, many combinations available
- · Dummy (hole plugs) available

SPECIFICATIONS

Body Material: Lens Material: Wire Gauge Nylon Polycarbonate 18 ga. Panel Thickness: Certifications: 0.020" to 0.250" See Page 1





ADDITIONAL OPTIONS AVAILABLE:

1. Series 25 and 26 only

Contact Factory

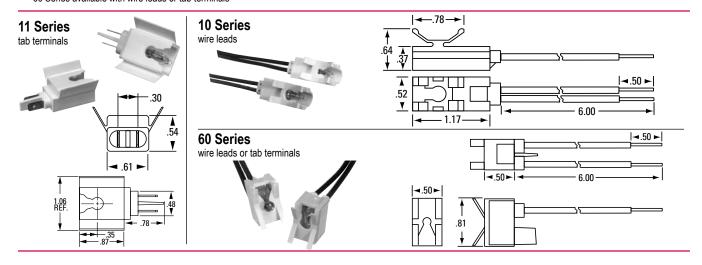
Clear is Transparent

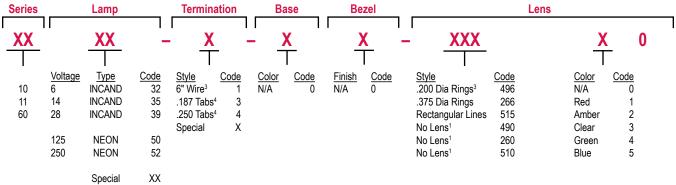
10, 11, & 60

- Lens mounts from front, indicator from behind panel
- Incandescent and neon illumination
- · 10 Series has wire leads only
- 11 Series has tab terminals only
- 60 Series available with wire leads or tab terminals

SPECIFICATIONS

Body Material: Lens Material: Wire Gauge Nylon Polycarbonate Series 10 - 20 ga. Series 60 - 18 ga. Wire Strip: Panel Thickness: Certifications: 1/2" 0.031" to 0.78" ² See Page 1





Lens 49 mounting hole .180" dia mounting hole .312 " dia. Lens 51 mounting hole .300" x .690"

0.20 DIA. £ .38 DIA

7.6 1.10 3.36

Lens 49³

Lens 26

Lens 51

ADDITIONAL OPTIONS AVAILABLE:

- If Ordered without lens, lens style must still be specified, Pattern and color are "0".
- 2. Nominal range. Alternate lenses (style 26) are available to fit thicker panels. Please consult factory.
- 3. Not Available on Series 11
- 4. Not Available on Series 10

43, 44, 45

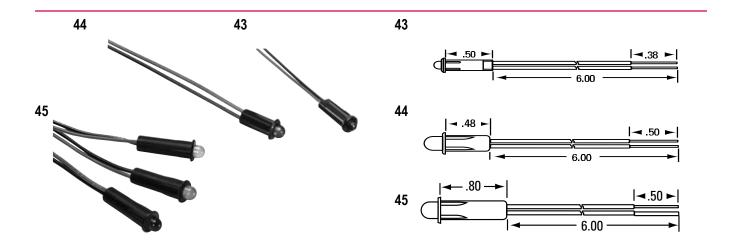
- Series 43 3mm size LED
- Series 44 & 45 5mm size LED
- Press fit

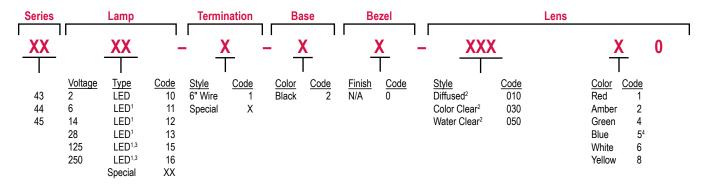
SPECIFICATIONS

Body Material: Nylon

Wire Gauge: Series 43 - 26 ga., ¾" strip Series 44/45 - 24 ga., ½" strip

Certifications: See Page 1





43 Series Mounting hole 0.173" dia **44 & 45 Series** Mounting hole 0.250" dia

ADDITIONAL OPTIONS AVAILABLE:

- For voltages greater than 2V the appropriate external resistor will be provided in the lead.
- 2. Subject to availability.
- 3. Not available on Series 43.
- 4. Water clear blue only

46, 47

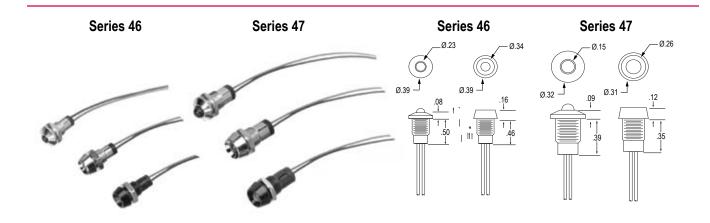
- 46 3mm or 47 5mm LED
- Threaded body secured with lockwasher & nut
- Black or chrome finish

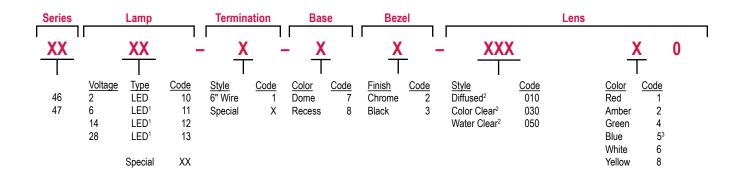
SPECIFICATIONS

Body Material: Wire Gauge

Brass (Plated) Series 46 - 26 ga. Series 47 - 24 ga.

Wire Strip:





Series 46 - 3mm size mounting hole .24" Series 47 - 5mm size mounting hole .31"

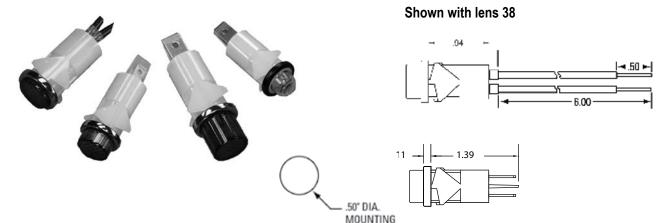
ADDITIONAL OPTIONS AVAILABLE:

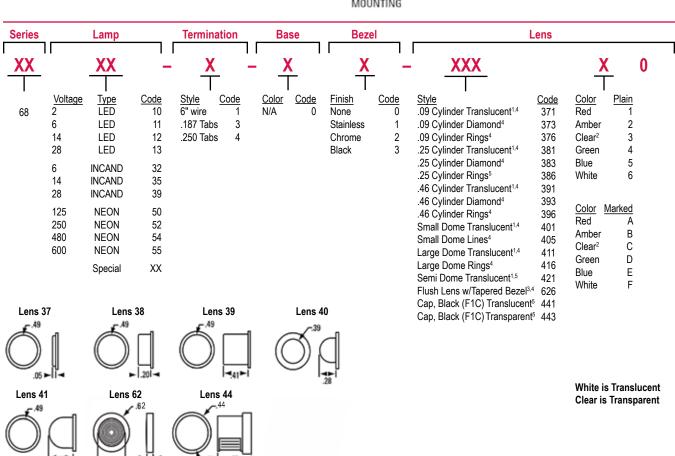
- 1. Voltages greater than 2V require components in lead wire(s)
- 2. Subject to availability
- 3. Water clear blue only

- Snap fits into 0.500" panel hole
- · LED, incandescent, and neon illumination
- · Many lens styles available

SPECIFICATIONS

Body Material: Lens Material: Bezel Material: Polycarbonate Polycarbonate Stainless Steel or Plated Brass Panel Thickness: Certifications: 0.030" to 0.093" See Page 1





ADDITIONAL OPTIONS AVAILABLE:

- 1. Translucent lens is not recommended for use with LED
- 2. Specify LED color if applicable
- 3. Polished bezel only use code 2
- 4. Bezel required
- 5. Bezel not available

KF

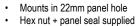
SPECIFICATIONS

PBT w/ 20% glass Housing: Polycarbonate Lens: Diffuser:

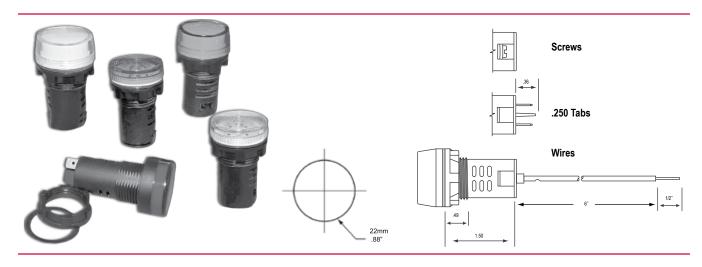
POM (polyacetal)

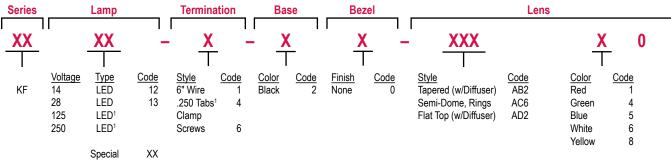
Hex Nut: Certifications:

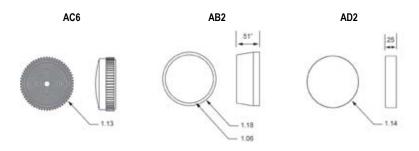
Polycarbonate See Page 1



Three lens styles available







ADDITIONAL OPTIONS AVAILABLE:

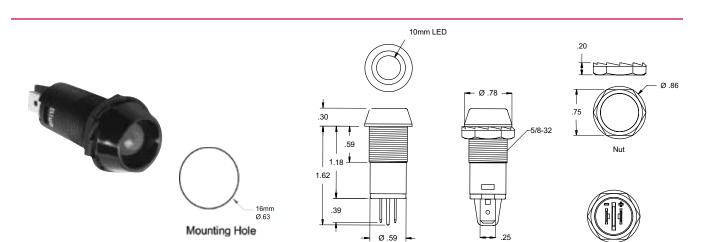
Contact Factory

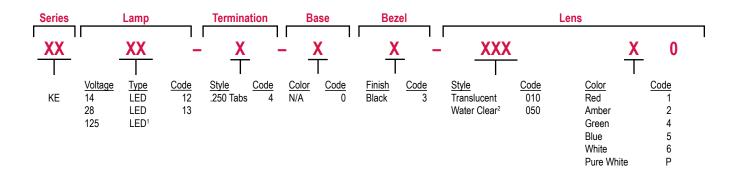
KE

- · 16mm mounting hole
- · 10mm ultra-bright LED
- · Supplied with nylon hex nut

SPECIFICATIONS

Body Material: Nylon 66 (UL 94V-2) Operating Temp: -20°C to +85°C Nut Material: Nylon 66 (UL 94V-2) Certifications: See Page 1
Terminal Material: Nickel over Brass





LED Viewing Angle 120° LED Light Output (mcd)

 Red
 250

 Amber
 200

 Green
 700

 Blue
 300

 White
 500

 P White
 4000

ADDITIONAL OPTIONS AVAILABLE:

- 1. Contact Factory
- 2. Pure White Only

Flex-Lite

Mounting:

Unsealed - 3M double back tape

Sealed - Mounting/Termination accessories available

- All measurements in inches
- Cut length every 1.94"

SPECIFICATIONS

Operating Temp: Unsealed:

Sealed:

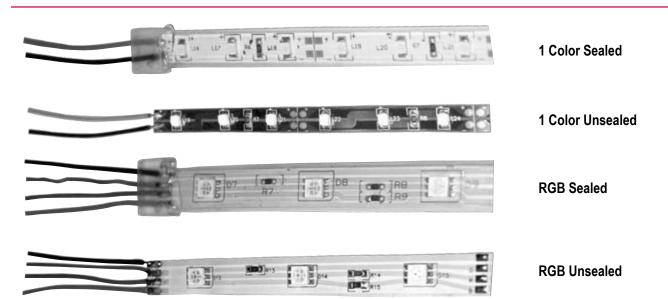
-40°C to +85°C Flexible PC Board

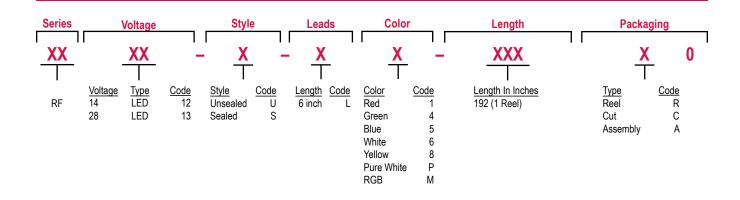
Flex

Surface Mount Components

Housing - Silicone Rubber

Over Flex Circuit





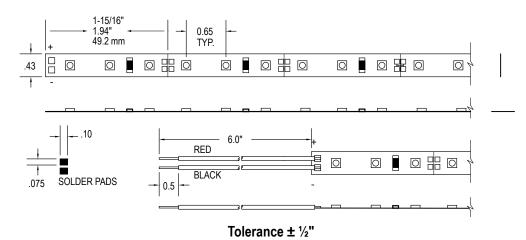
Contact Factory for cutting and assembly instructions

See Next Page

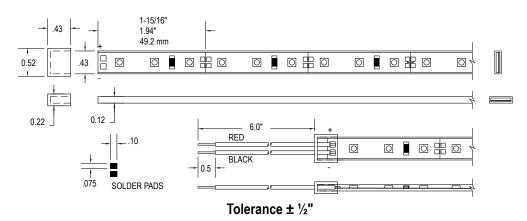
ADDITIONAL OPTIONS AVAILABLE:

Flex-Lite

Flex-Lite Unsealed



Flex-Lite Sealed



Single Color Accessories





RG-ENDCAP

RG-MTGUNO



LED Viewing Angle 120° LED Light Output (mcd)

RG-WIRCAP

 Red
 250
 Blue
 300

 Amber
 200
 White
 500

 Green
 700
 Pure White
 4000

See Previous Page

ADDITIONAL OPTIONS AVAILABLE:

Lamps & LEDs

Neon Lamps (AC)

Neon lamps are constructed of a glass envelope, containing two electrodes and a mixture of inert gases. When a voltage is applied, above the "breakdown" voltage, the gas between the electrodes ionizes, creating the familiar orange-red "glow". They are rugged, reliable, cost effective and generate little heat. While light output is lower than incandescent lamps, neons are the most widely used light sources for indicators used at line voltages. Normally lighting with a red-orange glow, neons are also available in both green and blue by using special gasses and phosphorescent coatings inside the glass envelope.

All neon lamps require a current limiting resistor in series with the lamp. The value of this resistor is determined by three criteria: the manufacturer's specified operating characteristics, the desired bright-

Catalog Number	Color	Volts	Life Hours
50	Amber	125V	25,000
52	Amber	250V	25,000
50	Green	125V	15,000
52	Green	250V	15,000
 50	Blue	125V	10,000
52	Blue	250V	10,000

Please Note: All neon-illuminated indicator lights ordered with a green lens will be provided with a green neon lamp; blue lenses will be provided with a blue neon lamp.

ness, and the required lamp life. While neon lamps have a typical life of 25,000 hours, this is directly proportional to the operating current. Higher current gives greater brightness, but shorter life. Although suited to both AC and DC operation, life when operated on DC is approximately 60% that of AC operation.

Incandescent Lamps (AC/DC)

Incandescent lamps are best known for their bright white light output. When an electrical current is passed through the filament, it glows "white hot" creating light. The trade-off in incandescent lamps is their susceptibility to physical shock and vibration, as the filament becomes very fragile at its elevated operating temperatures. We recommend mounting the indicator away from any vibration source, and / or cushioning the lamp within the indicator assembly with a resilient potting compound.

Catalog Number	Volts	Size	Amps	Life Hours
32	6.3V	T - 1¾	.04	50,000
33	10V	T - 1¾	.04	5,000
35	14V	T - 1¾	.08	50,000
39	28V	T - 1¾	.04	25,000

Incandescent lamps can also generate significant heat, which should be considered in your application. Similar to neon lamps, operating an incandescent lamp at less than rated current will significantly increase its useful life. Using a 14 volt incandescent lamp in a 12 volt circuit will reduce the light output by about 30%, but will increase its life by a factor of four.

LEDs (DC)

Light Emitting Diodes, or LEDs as they are more commonly known, are cousins to the semiconductor devices like transistors and integrated circuits, and are fabricated with similar processes. The color of the LED is determined by the combination of materials used during the fabrication process. LED's are now available in a wide variety of colors including white, and in intensities approaching that of incandescent lamps. Bi-color LEDs are available in several color combinations.

LEDs are available in three primary styles; water clear lens for highest brightness but smallest viewing angle, color clear lens for increased viewing angle at a somewhat reduced light output, and color diffused lens for the widest viewing angle at greater reduction in light output. Light output for LEDs is measured in millicandellas (mcd) and is specified by minimum and typical values.

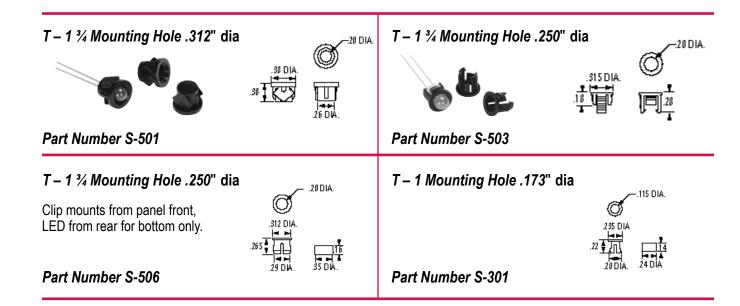
LEDs are DC (direct current) devices, although SoLiCo can provide a number of our products configured to use LEDs as AC (alternating current) devices.

The technology of LEDs is evolving very rapidly these days, to the point that any specifics we print in our catalog may be obsolete or superceded almost immediately.

Please contact us to discuss your specific LED indicator requirements. We have the experience and technical knowledge to find your solution.

Material Specifications	Operating Temperature	UL Rating
High-Temperature Nylon (bases)	140°C	94V-2
Polycarbonate (lenses and bases)	135°C	94V-2

LED Mounting Clips



Imprinting

Hot Stamping

Hot stamping uses a heated metal die, engraved with the required legend, under pressure to force ink into a plastic surface, offering excellent durability. Hot stamping is normally done in black or white, and is best suited to text and simple line art. If no ink color is specified, hot stamping will be done in black, and the orientation of the imprint will be horizontal.

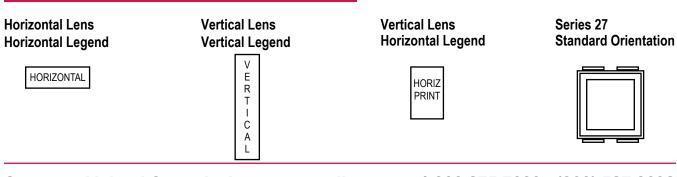
Hot stamp charges are "per imprint", which is defined as a marking applied in one operation. The tooling charge for a Hot Stamp Die (not already available) is \$185.00 per die. Minimum quantity is 100 pieces. A set-up charge of \$35.00 will apply to quantities of less than 500 pieces per legend.

Pad Printing

Pad printing (also known as transfer printing), uses a soft rubber pad to pick up ink from an engraved plate and transfers it to the part to be marked. Pad printing is normally done in black or white, but can be done in any color for which ink is available. If no ink color is specified, white ink will be used. Text and images can be very accurately reproduced with this method. For additional durability in abrasive or high-wear applications, a clear overcoat can be applied over the marking.

Pad print charges are "per hit", which is defined as a marking applied in one operation. The artwork and plate charge for a Pad Print Plate (not already available) is \$185.00. Depending on size and complexity, multiple legends can be accommodated on a single plate, please contact the sales department for details. Minimum quantity is 100 pieces per legend. A set up charge of \$35.00 will apply to quantities of less than 500 pieces.

Marking Orientation



Marking Department

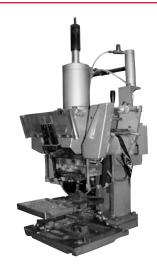
Pad Printing

SoLiCo has the capability of pad printing on almost any of our product surfaces. Pad printing, sometimes referred to as transfer printing, is especially well suited for curved or irregular surfaces. Our equipment can produce high resolution results on convex, concave, and flat caps as well as all lenses and most switch accessories. We can produce a variety of text and custom symbols. If a specific symbol or word is not available we can produce the cliché to accommodate almost any request that can physically fit on the product surface. Standard ink color is white, black is optional, and custom ink colors are available as special purchase options.



Hot Stamp

Hot stamping, while one of the oldest technologies, still offers a cost-effective permanent marking. A heated die, with the image to be marked, and a special foil (ribbon) are pressed onto a plastic surface, depositing the "ink" into the surface. Hot stamping is best suited for text, and low-resolution graphics. As the pigment is actually "melted" into the surface, it provides excellent durability, and good visual contrast.



YAG Laser

SoLiCo's most recent addition to our marking department is our YAG Laser. It is a high-power, high-speed unit with the ability to produce extremely high-resolution graphics. It has a 12" x 12" stage, allowing multiple parts to be marked with a single set-up. Depending on the base material, it is suitable for direct imaging, or using an opaque overcoat, producing a reverse-image style of marking.





Other SoLiCo Products



Sorenson Lighted Controls Illuminating Innovation

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