VCC

LED Lenses & Mounting Components

VISUAL COMMUNICATIONS COMPANY, INC.

CLIPLITE®

VISUAL COMMUNICATIONS COMPANY, INC.
7920-G Arjons Dr., San Diego, CA 92126
In CA (858) 549-6900 (800) 522-5546
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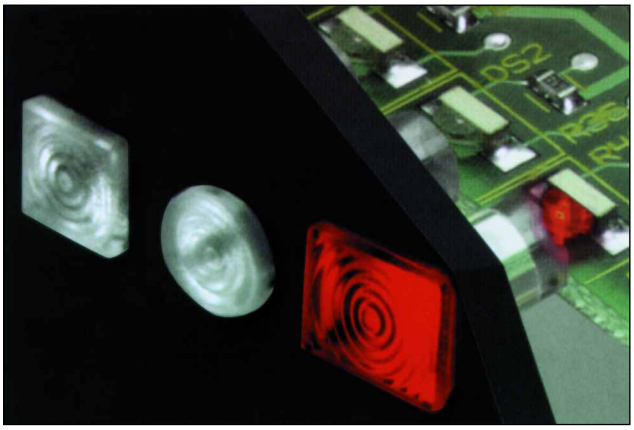
LITEPIPES FOR SURFACE MOUNT LEDs



U.S. & Foreign Pat. Pend.

SPECIFICATIONS

MATERIAL: Litepipe - Acrylic, optical grade, (Clear).
Grommet - Polyethylene, (black).
Spring Clip - Stainless Steel (natural).

MOUNTING: Panel hole: round .171" Dia.(4.32mm).
square .180" X .180" (5.08mm X 5.08mm).
rectangular .170" X .250" (4.38mm X 6.86mm).
Panel thickness .062" min. (1.57mm).
Litepipes from .200" to .500" use grommet retainer.
Litepipes from .500" to 2.00" the spring clip is recommended for rigidity.

LED: Surface mount, vertical and horizontal LEDs.
Litepipes for blending multicolor LEDs are available on special request.

ORDERING CODES

LPC XXX CTP

MODEL
- LPC (Round)
- LPS (Square)
- LPR (Rectangular)
- RTN 150 (GROMMET)
- RTN 250 (SPRING CLIP)

COLOR
CTP CLEAR

Equals length in inches
(Min. 020 = .200" / Max. 200 = 2.0")

020	038	056	074	092	112	135	157	180
022	040	058	076	094	115	137	160	182
024	042	060	078	096	117	140	162	185
026	044	062	080	098	120	142	165	187
028	046	064	082	100	122	145	167	190
030	048	066	084	102	125	147	170	192
032	050	068	086	105	127	150	172	195
034	052	070	088	107	130	152	175	197
036	054	072	090	110	132	155	177	200

NOTE:
Round - .200" to 2.0"
Square - .300" to 2.0"
Rectangular - .300" to 2.0"
Nonstandard lengths available on request.

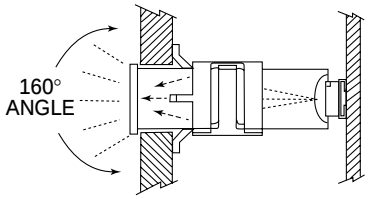
APPLICATION – CLIPLITE litepipes provide a method of transmitting the light of a surface mount LED to the display panel. Both vertical and horizontal PCB surface mount LEDs can be displayed in this manner. The litepipe is also capable of blending multicolor LED light into a single color.

INTENSITY – CLIPLITE litepipes have a unique near flush design and are still able to provide up to 160 degrees of viewing angle. This light output achievement is accomplished by using a concave shape on the receiving surface which collects the LEDs light and the fresnel rings on the display surface which disperses the light.

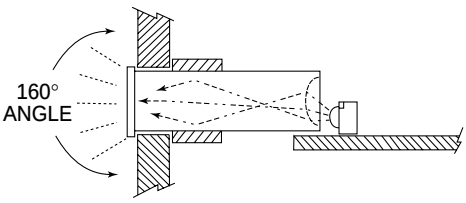
VERSATILITY – CLIPLITE litepipes are available in .020" increments from .200" to 2.0". This wide range of lengths simplifies the PCB positioning in relation to the display panel. Litepipes are secured directly to the display panel with no mechanical attachment to the PCB. Thus the installation and removal to the circuit board can be accomplished without disturbing the display panel.

INSTALLATION – CLIPLITE litepipes are easy to install. Slide the litepipe thru the panel opening and slip the retainer in place. Finish the installation by pressing the retainer up against the display panel.

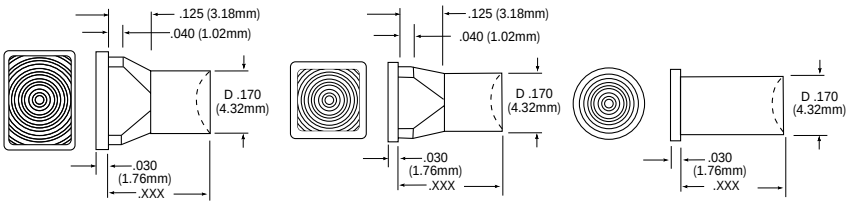
LITEPIPE WITH VERTICAL SURFACE MOUNT LED



LITEPIPE WITH HORIZONTAL SURFACE MOUNT LED



OUTLINE DRAWING

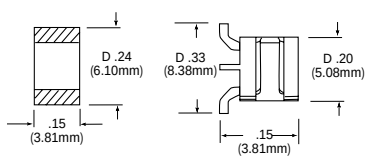


Rectangular .190 X .270
(4.83mm X 6.86mm)

Square .200 X .200
(5.08mm X 5.08mm)

Round .190 Dia.
(4.82mm)

MOUNTING COMPONENTS



GROMMET

SPRING CLIP

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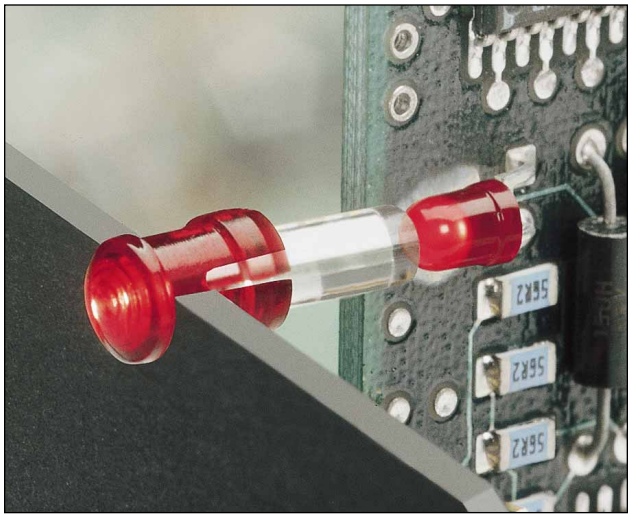
LITEPIPES & PANEL LENSES FOR PCB MOUNTED LEDs



U.S. & Foreign Pat. Pend.

SPECIFICATIONS

MATERIAL: Litepipe - Acrylic (Optical grade)
Lense - Polycarbonate; Ring - Polypropylene (U.L. Listed Material).

DESIGN: LIPEPIPE (3mm and 5mm) with annular ring and locking tab engages into the annular groove of VCC's low profile lense. Lense mounts the litepipe securely to the display panel and provides 180 degrees of viewing angle.

MOUNTING: LITEPIPE 3mm - Mates with VCC's lenses model SMB 200 and SMQ 250. Panel mounting hole .171 (4.3mm) on 1/4" centers. Panel thickness 1/32" to 1/8". Litepipe lengths from .200" to 1.200".

LITEPIPE 5mm - Mates with VCC's lense model CLB 300 and SQB 400. Panel mounting hole .250 (6.35mm) on 3/8" centers. Panel thickness 1/32" to 1/4". Litepipe lengths from .360" to 1.360". For panels less than 3/16" use SPC 125 spacer.

LENSE RETAINING RING - available for added security (RNG 190, 3mm & RNG 268, 5mm).

STANDOFF Use VCC's standoff to adjust the height of a standard LED above the PCB and maintain a maximum .050" clearance between litepipe and LED. See VCC's STD Series data sheet.

ORDERING CODE: LITEPIPE

LSV 020 CTP

MODEL — LSV (3mm), LCV (5mm)
PRODUCT CODE
COLOR — CTP CLEAR

LSV – CODE LENGTH (inches)
020 (.200") 040 (.400") 060 (.600")
080 (.800") 100 (1.00") 120 (1.20")

LCV – CODE LENGTH (inches)
036 (.360") 056 (.560") 076 (.760")
096 (.960") 116 (1.16") 136 (1.36")

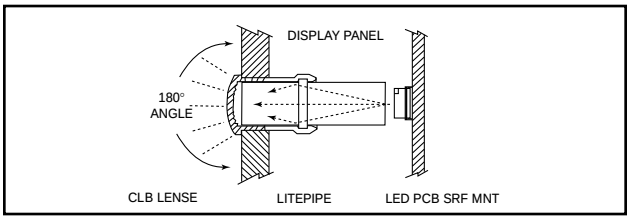
VERSATILITY – CLIPLITE litepipe and lense easily provide a means of transmitting the light from PCB mounted LEDs to the front display panel. Both styles of LEDs, surface mount and standard packages, can be displayed in this manner.

BRIGHTNESS – CLIPLITE litepipe by itself has a limited angle of view. However, when used with VCC's fresnel lense the light is disbursed over the entire lense surface producing 180 degrees of viewing.

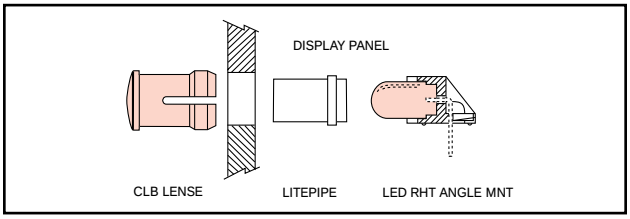
APPLICATION – CLIPLITE litepipes and lenses are available for use with both surface mount and standard packaged LEDs in 3mm and 5mm configurations. Because there is no physical connection between the litepipe and the PCB mounted LED, the circuit board can be installed or removed without disturbing the panel display.

INSTALLATION – CLIPLITE litepipe and lense are easy to install. Insert the lense thru the panel opening and snap the litepipe into the lense. For added security in harsh environments, a retaining ring is available.

LITEPIPE & SURFACE MOUNT LEDs



LITEPIPE & RIGHT ANGLE LEDs



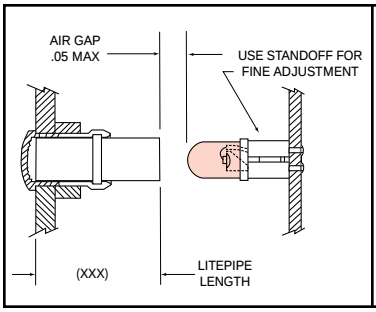
ORDERING CODE: LENSE

CLB 300 RTP

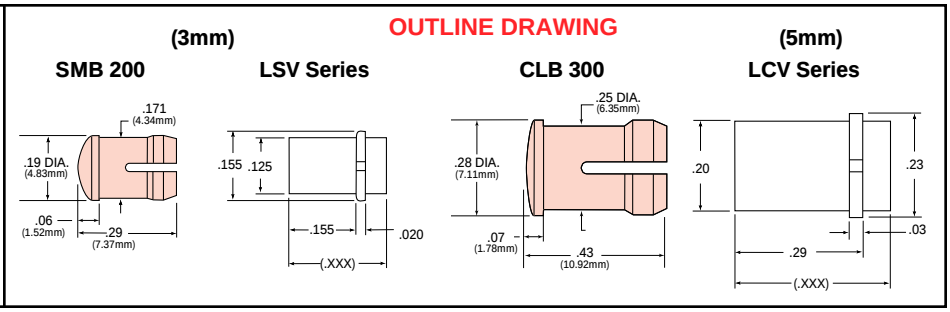
MODEL — SMB 200 (RND 3mm), SMQ 250 (SQ 3mm), CLB 300 (RND 5mm), SQB 400 (SQ 5mm), SPC 125 (Spacer for CLB 300 & SQB 400)

COLOR

RTP	Red Transparent
ATP	Amber Transparent
GTP	Green Transparent
BTP	Blue Transparent
YTP	Yellow Transparent
CTP	Clear Transparent



OUTLINE DRAWING



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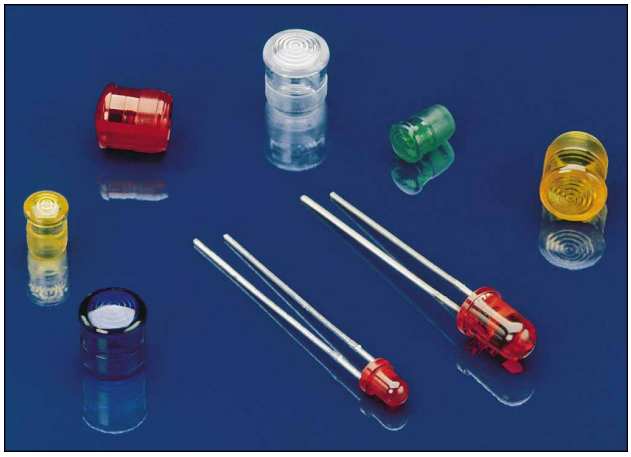
LOW PROFILE PANEL LENSES FOR PCB MOUNTED LEDs



U.S. & Foreign Pat. Pend.

VERSATILITY – CLIPLITE, installed in display panel, is used with PCB mounted LEDS. Lenses remain attached to the display or panel door while the LEDs are fixed to the PCB. The lenses are ideal for use together with the CONXRITE connector assembly.

BRIGHTNESS – CLIPLITE utilizes fresnel rings to increase apparent brightness and viewing angle up to 180 degrees with either diffused or nondiffused LEDs.

PROTECTION – CLIPLITE helps prevent IC failures caused by electrostatic discharge (ESD). Introduction of ESD thru an exposed panel mounted LED is capable of damaging or destroying a semiconductor. A CLIPLITE mounted LED helps guard components from ESD up to 16 kv while affording the LED physical protection.

INSTALLATION – CLIPLITE is inserted thru panel opening, retaining ring pressed into place. PCB mounted LEDs slide into lenses when the panel cover is closed or the PCB card is inserted into the case.

SPECIFICATIONS

MATERIAL: Lense - Polycarbonate; Ring - Polypropylene , (U.L. Listed Materials).

DESIGN: Low profile lenses with fresnel rings.

MOUNTING: Mounts thru front of panel, retaining ring secures the lense in place.

3mm (SMC 170) mounts in a .171" (4.4mm) hole on 1/4" centers. Panel thickness 1/32" to 3/32".

5mm (CML 325), mounts in a .281" (7.2mm) hole on 3/8" centers. Panel thickness 1/32" to 1/4".

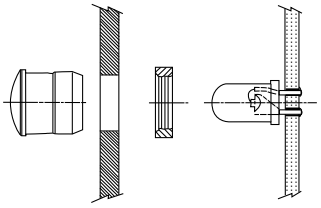
ORDERING CODES

CMC 321 RTP
MODEL **COLOR**

SMC 170 (3mm) L/Profile Lense
CMC 321 (5mm) L/Profile Lense
CML 325 (5mm) Extended Lense
RNG 132 (3mm) Retaining Ring
RNG 234 (5mm) Retaining Ring

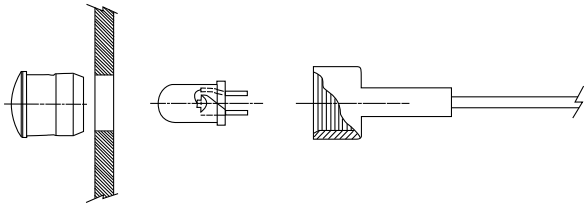
RTP Red Transparent
ATP Amber Transparent
GTP Green Transparent
BTP Blue Transparent
YTP Yellow Transparent
CTP Clear Transparent

PANEL MOUNTED LENSE WITH PCB MOUNTED LED



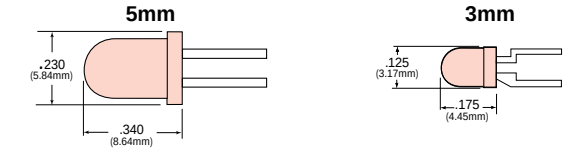
Install lense thru panel, secure with retaining ring. The PCB mounted LED then slides into lense.

PANEL MOUNTED LENSE WITH CONXRITE CONNECTOR

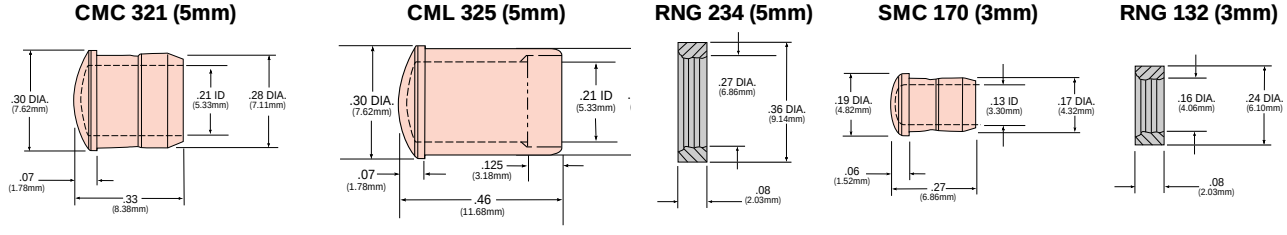


Install lense thru panel, insert LED into connector, press connector on to lense to complete installation.

RECOMMENDED LEDs



OUTLINE DRAWING



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MOISTURE SEALED LOW PROFILE LENSES FOR LEDs

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SPECIFICATIONS

MATERIAL: Lense - Polycarbonate; Ring - Polypropylene , Seal - J-Von (U.L. Listed Materials).

DESIGN: Low profile lenses with moisture seal.

TESTING: Environmental testing performed by Consolidated Labs, Inc. for moisture sealing, shock, vibration and standard operating temperatures. Meets Nema 3 standards.

MOUNTING: Mounts thru front of panel, compression of the seal is accomplished by pressing the retaining ring or CONXRITE connector in place.

5mm (CMS 322), mounts in a 9/32" (7.2mm) hole on 3/8" centers. Panel thickness 1/32" to 1/8". Hole should be deburred but not chamfered.

ORDERING CODES

CMS 322 RTP
MODEL **COLOR**

CMS 322 (5mm) L/Profile Lense with moisture seal
RNG 268 (5mm) Retaining Ring

RTP Red Transparent
ATP Amber Transparent
GTP Green Transparent
BTP Blue Transparent
YTP Yellow Transparent
CTP Clear Transparent

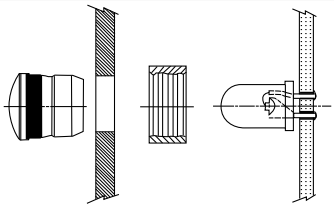
VERSATILITY – CLIPLITE, installed in display panel, provides a moisture seal effective against splash and drip conditions. The lense can be used with either circuit board mounted or panel mounted LEDs. For PCB mounting applications the lense remains attached to the display or panel door while the LEDs are fixed to the PCB. The lense is ideal when used with the CONXRITE connector for mounting the LED directly to the display panel.

BRIGHTNESS – CLIPLITE utilizes fresnel rings to increase apparent brightness and viewing angle up to 180 degrees with either diffused or nondiffused LEDs.

PROTECTION – CLIPLITE tests show it is an effective moisture seal in splash and drip conditions. In addition, the lense helps prevent IC failures caused by electrostatic discharge (ESD). A CLIPLITE mounted LED guards components from ESD up to 16 kv while affording the LED physical protection.

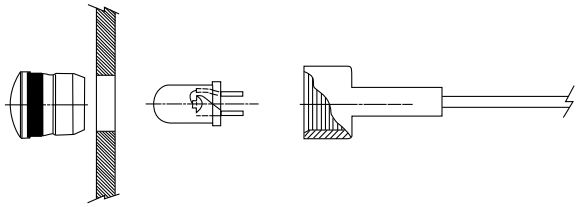
INSTALLATION – CLIPLITE is inserted thru panel opening, retaining ring is then pressed into place compressing the seal. PCB mounted LEDs slide easily into lense allowing simple insertion or removal of the PCB. Panel mounting of the LED is accomplished with the CONXRITE connector which also serves to compress the moisture sealing ring.

PANEL MOUNTED LENSE WITH PCB MOUNTED LED



Install lense thru panel,press ring on to lense to compress seal. PCB mounted LED slides into lense.

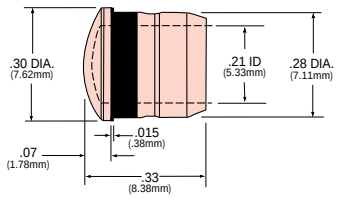
PANEL MOUNTED LENSE WITH CONXRITE CONNECTOR



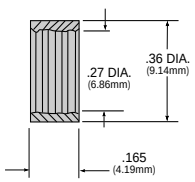
Install lense thru panel, insert LED into connector, press connector on to lense to compress seal.

OUTLINE DRAWING

CMS 322 (5mm)

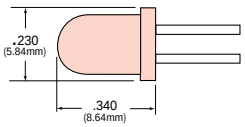


RNG 268 (5mm)



RECOMMENDED LEDs

5mm



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LENSE MOUNTS FOR 3mm & 5mm LEDs

U.S. & Foreign Pat. Pend.

SPECIFICATIONS

MATERIAL: Lense - Polycarbonate; Spacer - Polypropylene. (U.L. Listed Materials).

DESIGN: Standard and low profile lenses with fresnel rings and striated lines. CLR 301 Low Profile Lense is available without fresnel rings.

MOUNTING: Mounts thru front of panel. Mounting holes should be deburred but not chamfered.
3mm (SML 190, SMB 200) mounts in a .171 ± .002 (4.34mm) hole on 1/4" centers. Panel thickness for SML 190, 1/32" to 1/16"; SMB 200, 1/16" to 1/8". 5mm (CLF 280, CLB 300, CLR 301) mounts in a .250 ± .002 (6.35mm) hole on 3/8" centers. Panel thickness for CLF 280, 1/16" to 1/8"; CLB 300 and CLR 301, 1/32" to 1/4"; for panels less than 3/16", use SPC 125 spacer.
Lense retaining ring - available for added security (RNG 190, 3mm & RNG 268, 5mm)

ORDERING CODES

CLF 280 RTP

MODEL — **COLOR**

SML 190 (3mm) Std. Hgt.	RTP Red Transparent
SMB 200 (3mm) L/Profile	ATP Amber Transparent
CLF 280 (5mm) Std. Hgt.	GTP Green Transparent
CLB 300 (5mm) L/Profile	BTP Blue Transparent
CLR 301 (5mm) L/P Plain	YTP Yellow Transparent
SPC 125 (Spacer for CLB 300 and CLR 301)	CTP Clear Transparent

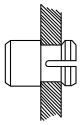
VISIBILITY – CLIPLITE produces up to 180 degrees of viewing angle using standard 3mm and 5mm LEDs.

BRIGHTNESS – CLIPLITE utilizes striated lines and fresnel rings to increase apparent brightness up to 125% and viewing angle up to 180 degrees with either diffused or nondiffused LEDs. A low profile lense without rings or lines is available for direct sunlight applications.

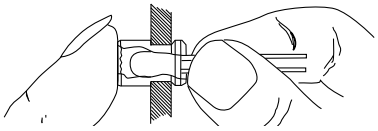
PROTECTION – CLIPLITE helps prevent IC failures caused by electrostatic discharge (ESD). Simply walking across a carpet can generate 10,000 volts. Introduction of this ESD thru an exposed panel mounted LED is capable of damaging or destroying a semiconductor. A CLIPLITE mounted LED helps guard components from ESD up to 16 kv while affording the LED physical protection.

INSTALLATION – CLIPLITE, standard or low profile, requires no assembly tools; just snap into a panel opening and insert LED. Cost effective operation is complete in only 6 seconds.

SIMPLE TWO-STEP INSTALLATION

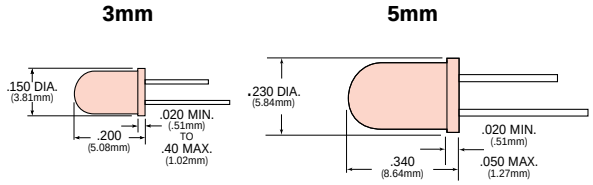


1. Snap the CLIPLITE into panel hole.

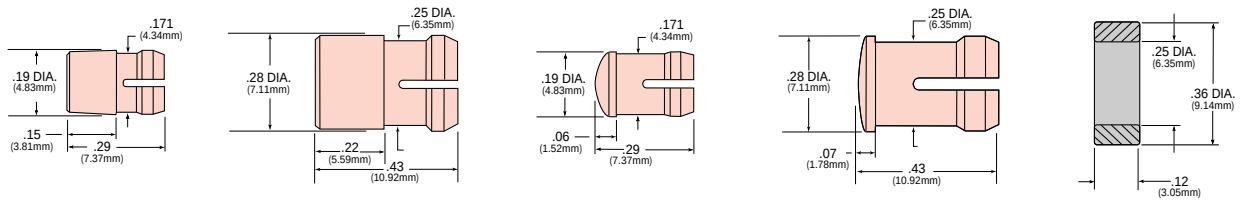


2. While holding the CLIPLITE tight to the panel with your finger, insert the LED into the CLIPLITE from the back.

RECOMMENDED LEDs



OUTLINE DRAWINGS



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SQUARE LENSE/MOUNTS FOR 3mm AND 5mm LEDs

U.S. & Foreign Pat. Pend.

SPECIFICATIONS

MATERIAL: LENSE - Polycarbonate; Spacer - Nylon (U.L. Listed).

MOUNTING: Mounts thru front of panel. Mounting holes should be deburred but not chamfered.

3mm (SMQ 250) mounts in .171 ± .002 (4.34mm) round hole on 1/4" centers. Panel thickness from 1/16" to 1/8".

5mm (SQL 360) mounts in .250 ± .002 (6.35mm) square punched hole on 3/8" centers.

Panel thickness from 1/16" to 1/8".
5mm (SQB 400) mounts in .250 ± .002 (6.35mm) round hole on 3/8" centers. Panel thickness from 1/32" to 1/4"; for panels less than 3/16", use SPC 125 spacer.

Standard metal or plastic washers can also be used to increase panel thickness if necessary.

PUNCH SOURCES: Porter Precision, Cincinnati, OH Strippet, Houdaille Ind., Akron, NY Unipunch Products, Buffalo, NY Wiederman Co., King of Prussia, PA.

ORDERING CODES

SQL 360 RTP

MODEL

SMQ 250 (3mm) Low Profile
SQB 400 (5mm) Low Profile
SQL 360 (5mm) Std. Hgt.
SPC 125 (Spacer for SQB 400)

COLOR

RTP	Red Transparent
ATP	Amber Transparent
GTP	Green Transparent
BTP	Blue Transparent
YTP	Yellow Transparent
CTP	Clear Transparent

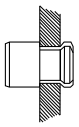
VISIBILITY – CUBELITE standard square lense offers 20% more viewing area over a round indicator light. CUBELITE'S unique patented features include striated lines and fresnel rings permitting up to 180 degrees viewing angle with any stock 3mm or 5mm LED.

DESIGN – CUBELITE standard lense mounts in a square hole. Its uniform lense thickness produces an even light pattern with no dark corners. CUBELITE low profile square lense mounts in a round hole. This lense has a .070 inch max panel height and still produces 180 degree viewing angle. CUBELITE'S design permits use of either diffused or nondiffused LEDs.

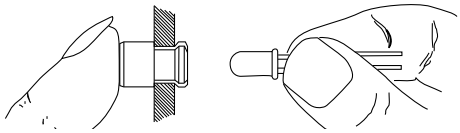
PROTECTION – CUBELITE helps prevent IC failures caused by electrostatic discharge (ESD). Simply walking across a carpet can generate 10,000 volts. Introduction of this ESD thru an exposed panel mounted LED is capable of damaging or destroying a semiconductor. A CUBELITE mounted LED helps guard components from ESD up to 16,000 volts as well as affording the LED physical protection.

INSTALLATION – CUBELITE, standard or low profile, requires no assembly tools; just snap into a panel opening and insert LED. Cost effective operation is complete in only 6 seconds.

EASY TWO-STEP INSTALLATION

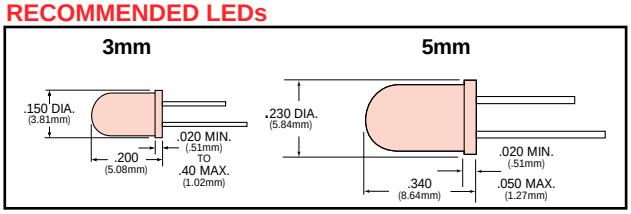


1. Snap CUBELITE in a 1/4" panel hole.



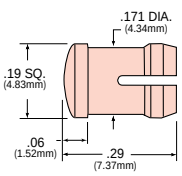
2. While holding the CUBELITE tight to the panel with your finger, insert the LED into the CUBELITE from the back.

RECOMMENDED LEDs

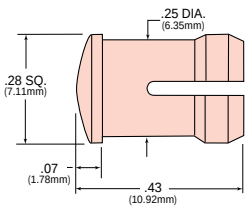


OUTLINE DRAWINGS

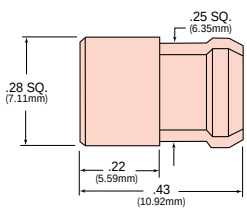
SMQ 250 (3mm)



SQB 400 (5mm)



SQL 360 (5mm)



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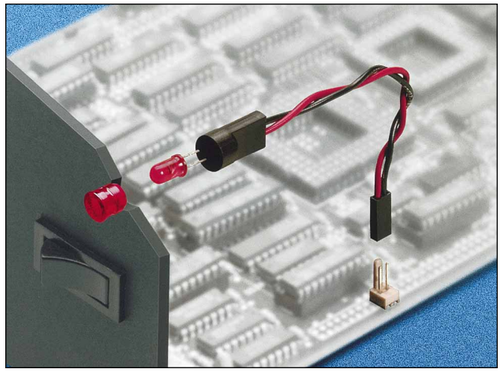
PRE-WIRED SOLDERLESS LED INTERCONNECT



U.S. & Foreign Pat. Pend.

CONXRITE – This modular cabling assembly is designed for use in the electrical connection of panel mounted LEDs to printed circuit boards. This plug-in system eliminates many of the problems associated with wiring display panel mounted LEDs.

APPLICATIONS – Designed to make quick and easy plug-in connections between panel mounted LEDs and the PCB. The modular concept of panel and header housings along with different wire lengths offer a cost reducing solution to cabling problems.

VERSATILITY – Multiple panel mounted LED devices can be connected to PCB mounted headers. A uniquely designed three finger box terminal mates with leads .017" in diameter to .025" square. Cables are available in four, six, eight, twelve, eighteen and twenty four inch lengths.

INSTALLATION – Modular cabling systems simplify the electrical connection from panel to PCB and eliminate the need for assembly tools. Cost savings from the discontinuing of soldering and terminal crimping operations are substantial.

SPECIFICATIONS

MATERIAL: Panel Connector Socket & Ring - Thermoplastic.
Header Connector - Thermoplastic (UL listed materials)
Terminals - Phosphor bronze, tin plated.
Wire - 22 AWG, 7 strand copper, insulated.

ELECTRICAL: Terminal - 3 amp continuous service.
Unique three-finger design mates to round, square or rectangular leads .017" to .025".

MOUNTING: Panel Connector 3mm - Mates with SMC 170.
Panel Connector 5mm - Mates with CMC 321 & CMS 322.
Can be mated with CLIPLITE models CLF 280, CLB 300, CLR 301, CLIPLITE clipmount models CLP 125, 127, 129 and CUBELITE SQB 400. See data sheets on lenses and mounts.

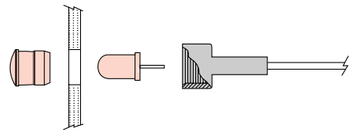
Panel Thickness: - SMC 170, max .100"
CMC 321 & CMS 322, max .125 inch. CLF 280, CLP 125, 127 & 129 max .110". CLB 300, CLR 301 & SQB 400 max .250". Use SPC 125 spacer for panels less than 3/16" with CLB, CLP & SQB.
Panel Socket 450 470 max .250", use RNG 242 ring for additional security.

LED lead trimming - SMC 170, CMC 321, CMS 322 and 450 470 socket .250" ± .010".

Hole Size - SMC 170 .171" (11/64").
CMC 321 and CMS 322 .281" (9/32").
Use .250" for all other mounts. All holes deburred but not chamfered.

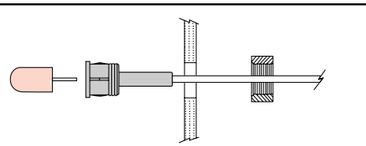
Header Connector - Mates with VCC positive locking header 450 series. Also mates with standard and friction header .025" pins on .100" centers.

PANEL MOUNT LENSE & CONNECTOR



Insert LED into connector. Install lense in panel opening. Press connector and lense together.

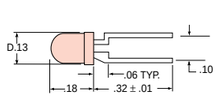
PANEL SOCKET, FRONT RELAMPABLE



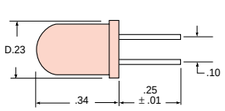
Insert LED into socket. Press socket into panel and secure with ring.

RECOMMENDED LEDs

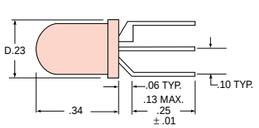
3mm Bi-Lead
Use "B" Connector



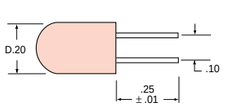
5mm Bi-Lead
Use "C" Connector



5mm Tri-Lead
Use "D" Connector



5mm Flangless
Use "K" Connector



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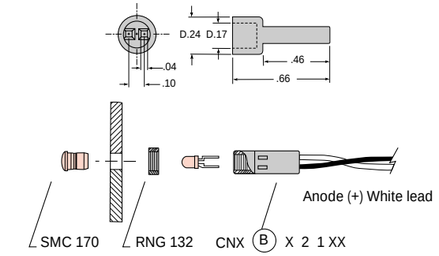
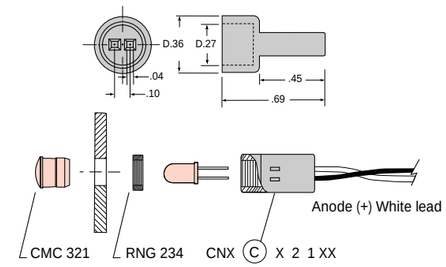
PRE-WIRED SOLDERLESS LED INTERCONNECT

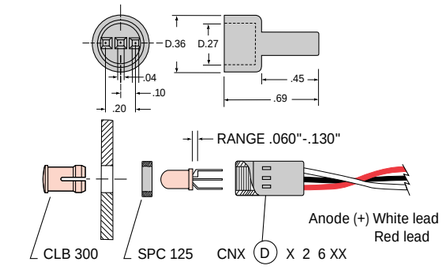
(B) 450 120 Panel Connector for 3mm Bi-Lead LED.



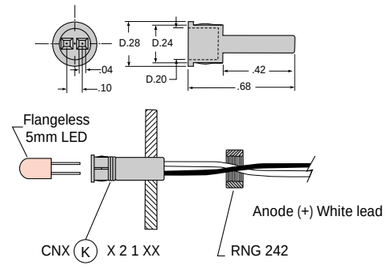
(C) 450 220 Panel Connector for 5mm Bi-Lead LED.



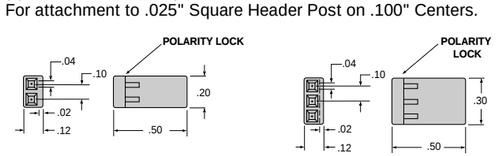
(D) 450 230 Panel Connector for 5mm Tri-Lead LED.

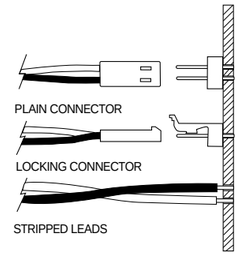


(K) 450 470 Panel Socket, Front Relampable LED.
With 5mm Flangeless Bi-Lead LED

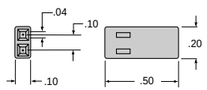


(E) 450 302 Polarity Lock Bi-Lead Header Connector
(F) 450 303 Polarity Lock Tri-Lead Header Connector
For attachment to .025" Square Header Post on .100" Centers.





(G) 450 402 Plain Bi-Lead Header Connector.



ORDERING CODE

CNX C E 2 1 04

TERMINATION | WIRE SIZE | WIRE COLOR | WIRE LENGTH

Note: 450 030 wire terminal is standard when a connector is ordered.

A	450 030 - TERMINAL BRIGHT TIN		22 AWG	1 - WHT- BLK	04 - 4 INCH
B	450 120 - 3mm Panel Connector	2 Lead			06 - 6 INCH
C	450 220 - 5mm Panel Connector	2 Lead		6 - WHT - RED- BLK	08 - 8 INCH
D	450 230 - 5mm Panel Connector	3 Lead			12 - 12 INCH
E	450 302 - Locking Header Connector	2 Lead			18 - 18 INCH
F	450 303 - Locking Header Connector	3 Lead			24 - 24 INCH
G	450 402 - Plain Header Connector	2 Lead			
K	450 470 - Panel Socket	2 Lead			
X	Wire Leads- Stripped Ends				

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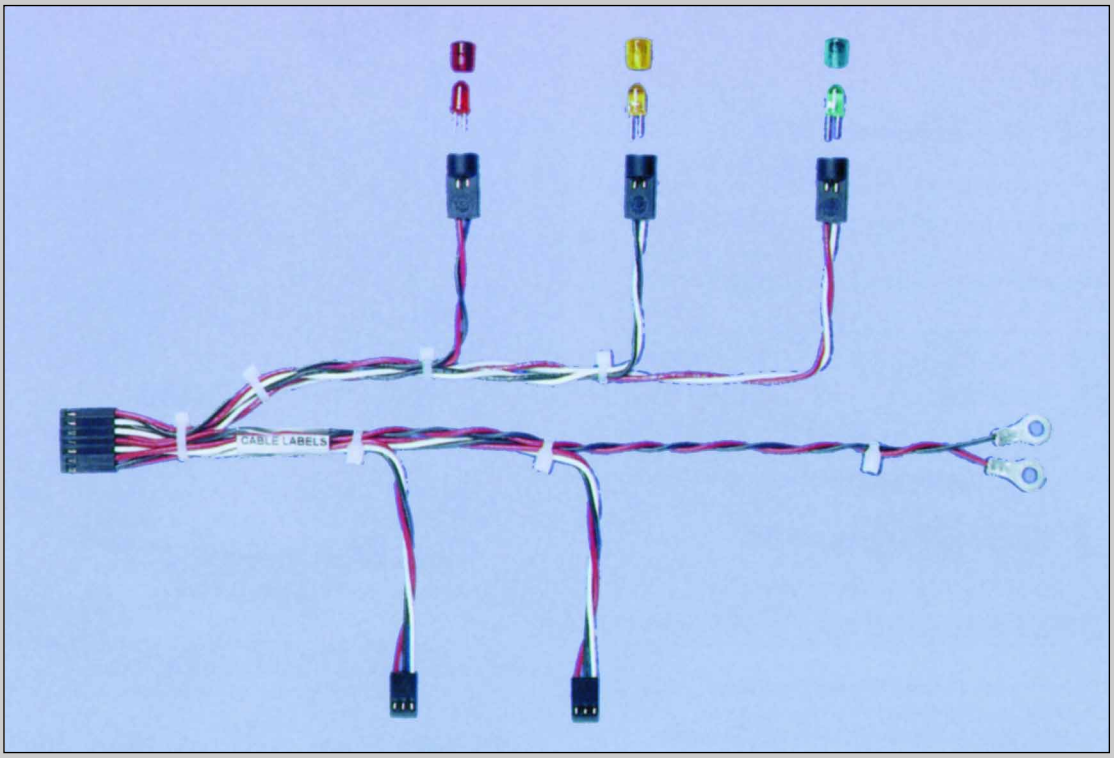
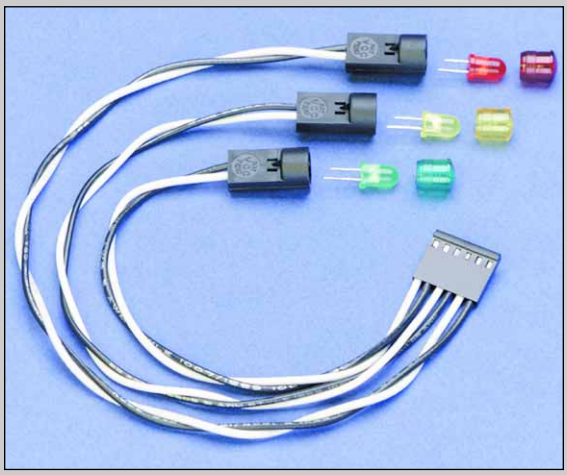
STANDARD CABLES FOR CUSTOM APPLICATIONS

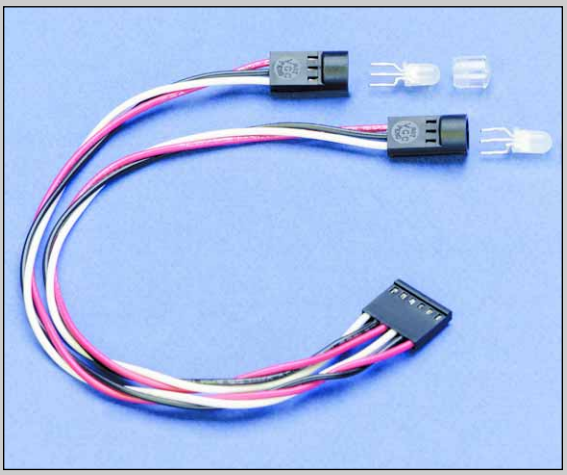


U.S. & Foreign Pat. Pend.

CABLE ASSEMBLIES, CONNECTIONS FOR LEDs, FANS, SWITCHES, ETC.



THREE BI-LEAD LEDs WITH POLARITY LOCKING HEADER



DUAL TRI-LEAD LEDs WITH POLARITY LOCKING HEADER

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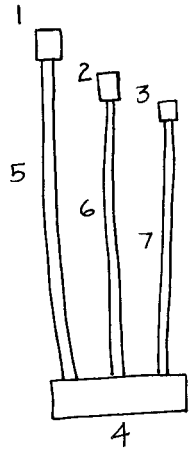
CUSTOM CABLES CONCEPT TO COMPLETION

CUSTOMERS CONCEPT SKETCH

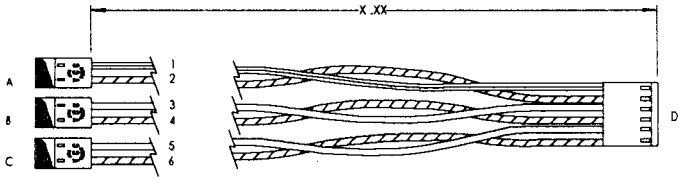


EXAMPLE OF SKETCH

BILL OF MATERIALS

1, 2 & 3	450 220 CONNECTOR
4	450 306 CONNECTOR
5	4 INCH WIRE
6	8 INCH WIRE
7	12 INCH WIRE

ENGINEERING DRAWING



Customer Name: _____

Address: _____

_____

Customer Part Number: _____

Customer approval: _____

Date of approval: _____

NOTES:

1) Material: U.L. Rating - "Thermoplastic material used on a secondary circuit"
2) Wire: 22 awg (105° C) color Red/Black / White
3) Mounting: CMC 321 or CMS 322 lense - panel hole size .281"

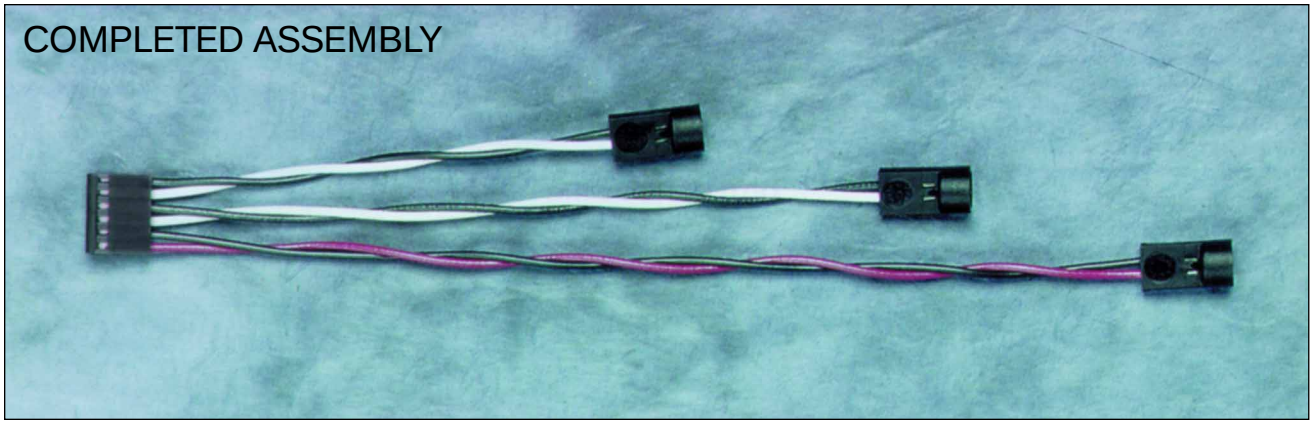
BILL OF MATERIALS

ITEM	P/N	DESCRIPTION	COLOR	LENGTH
A	450220	VCC - 5MM CONNECTOR		
B	450220	VCC - 5MM CONNECTOR		
C	450220	VCC - 5MM CONNECTOR		
D	450306	VCC - 6 POSITION LOCKING HEADER CONNECTOR		
1	WIRE	22 AWG	RED	4.00"
2	WIRE	22 AWG	BLACK	4.00"
3	WIRE	22 AWG	WHITE	8.00"
4	WIRE	22 AWG	BLACK	8.00"
5	WIRE	22 AWG	WHITE	12.00"
6	WIRE	22 AWG	BLACK	12.00"

U.S. / FOREIGN PAT. ISSUED & PEND.

TOLERANCES	REVISIONS			VCC P/N: CNX 2206 4812		
DECIMAL	NO	DESCRIPTION	DATE	BY	VISUAL COMMUNICATIONS COMPANY INC.		
ANGLE	1				7920-G ARJONS DRIVE SAN DIEGO, CA 92126 U.S.A.		
DIAMETER	2				DRAWN BY JMS	SCALE N/A	MATERIAL
RADII	3				CHK'D	DATE 03/04/99	DRAWING NO.
	4				TRACED	APP'D	
	5						

COMPLETED ASSEMBLY



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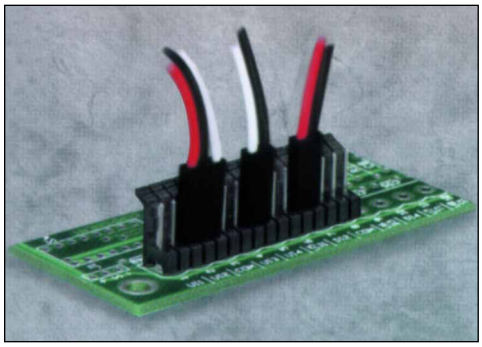


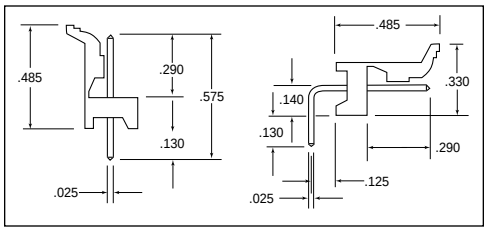
U.S. & Foreign Pat. Pend.

POSITIVE LOCKING POLARITY HEADER

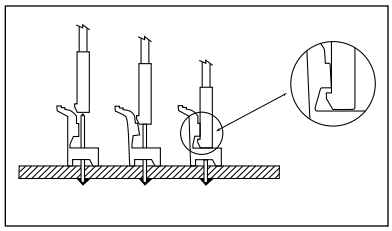
FEATURES

- Locking lever provides polarity integrity by restricting insertion of locking header in reverse.
- Lever clicks and locks preventing header connector from being retracted inadvertently.
- Locking header available in 2 to 28 pin positions, vertical or horizontal configuration.
- Designed for both vertical and horizontal mounting on the printed circuit board.
- Pins are .025" square brass, tin plated, located on .100" centers.
- Locking header mates with VCC locking header connectors P/N 450 30X or equal.

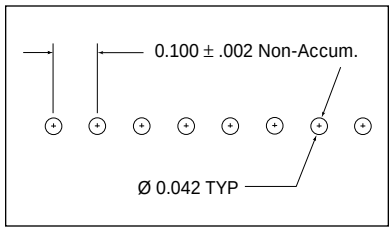
OUTLINE DRAWINGS



HEADER LOCKING FEATURE



PCB HOLE LAYOUT



SPECIFICATIONS

MATERIAL Body - Thermoplastic (black) U.L. 94 V2
Pins - Brass .025" square tin plate

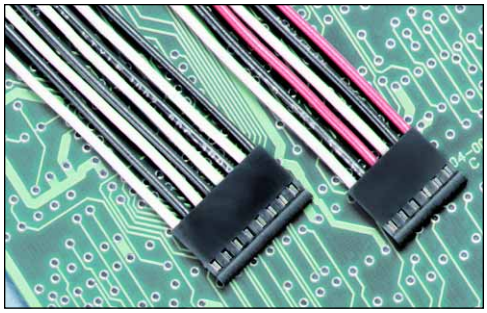
Spacing - Pins on .100" centers
Header - Mates with VCC locking header connector, 450 30X series or equal.

ORDERING CODES

CNX V06 NTP

MODEL — **PLATING**

PIN CONFIGURATION - 02 TO 28 CIRCUITS
V = VERTICAL / # CIRCUITS
H = HORIZONTAL / # CIRCUITS



U.S. & Foreign Pat. Pend.

HEADER CONNECTOR / TRI-FINGER TERMINAL

FEATURES

- Header connector mates with VCC locking header CNX xxx, Molex 6373, 7478 friction header or equal.
- Header connectors 2, 3, 4, 6 and 8 position are end-to-end stackable.
- Header connectors with or without locking tab, rated U.L. 94 V0.
- Terminal's unique tri-finger design mates with pins from .017" round to .025" square.
- Terminals for use specifically with VCC header connectors.
- Terminals designed for use with 22 gauge wire.

SPECIFICATIONS

MATERIAL Header connector - Thermoplastic (black) U.L. 94 V0
Terminals - Phosphor bronze, tin plated.
Rate 3 amp continuous service.
Wire - 22 AWG, 7 strand copper, PVC insulated.

MOUNTING: Plain header connector 450 320 mates with any standard .025" square header on .100" centers. Locking header connectors 450 302 thru 308 mates with VCC positive locking header 450 series. Also mates with standard and friction header .025" pins on .100" centers.

ORDERING CODES

450 302

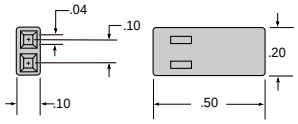
MODEL — **NUMBER OF POSITIONS**

301	1	LOCKING
302	2	LOCKING
303	3	LOCKING
304	4	LOCKING
306	6	LOCKING
308	8	LOCKING
401	1	NON-LOCKING
402	2	NON-LOCKING

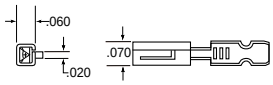
Note: Connector width equals .100" X the number positions i.e. 3 x .100" = .300" width.

OUTLINE DRAWING

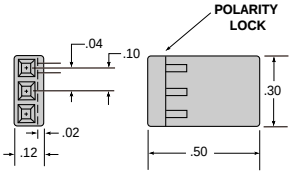
NON-LOCKING HEADER CONNECTOR



TRI-FINGER TERMINAL



LOCKING HEADER CONNECTOR



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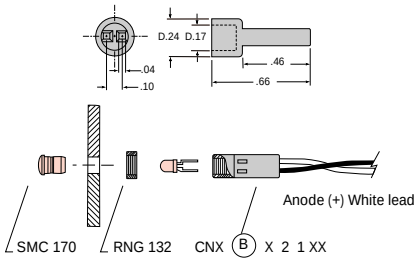
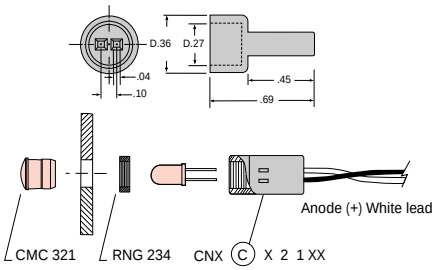
CUSTOM CABLE ASSEMBLY ORDER FORM

PANEL CONNECTORS FOR 3m & 5mm LEDs

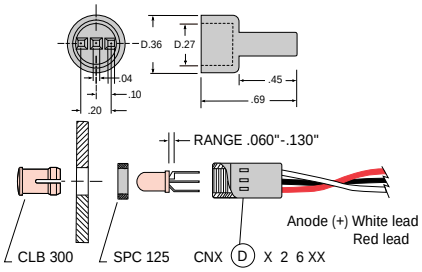
450 120 Panel Connector for 3mm Bi-Lead LED.



450 220 Panel Connector for 5mm Bi-Lead LED.

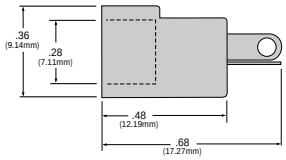


450 230 Panel Connector for 5mm Tri-Lead LED.



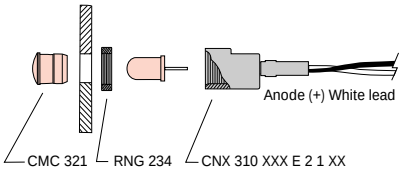
PANEL CONNECTOR WITH RESISTOR FOR 5mm LEDs

CNX 310 WITH RESISTOR



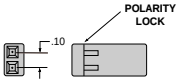
RESISTOR VALUES

P/N	VALUE	P/N	VALUE
310 012	120 OHMS	310 056	560 OHMS
310 018	180 OHMS	310 120	1200 OHMS
310 033	330 OHMS	310 220	2200 OHMS



Note: For additional panel connector specifications and lense information refer to page 8.

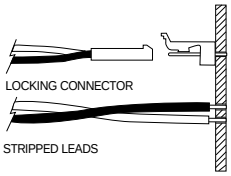
HEADER CONNECTORS



P/N	DESCRIPTION
450 301	1 POSITION LOCKING
450 302	2 POSITION LOCKING
450 303	3 POSITION LOCKING
450 304	4 POSITION LOCKING
450 306	6 POSITION LOCKING
450 308	8 POSITION LOCKING
450 401	1 POSITION NON LOCKING
450 402	2 POSITION NON LOCKING

Note: For additional header connector specifications refer to page 12.

WIRE CONFIGURATION



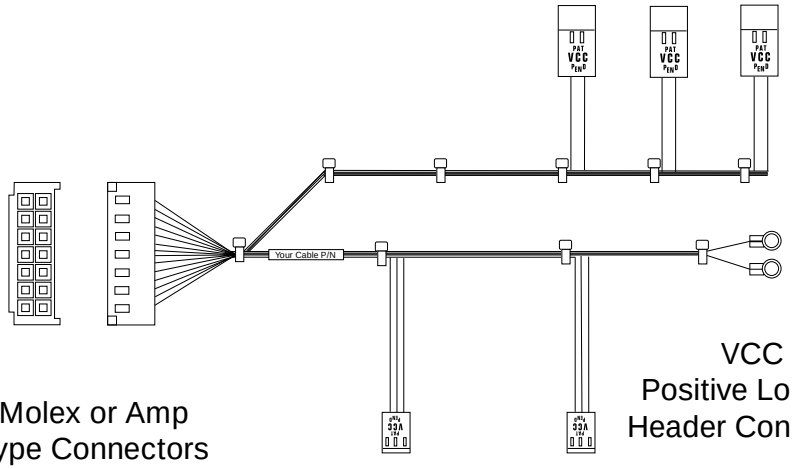
COLOR WHITE & BLACK
WHITE, RED AND BLACK

GAUGE 22 AWG

LENGTH (LENGTH IN INCHES)
4" 6" 8" 12" 18"
24" 36" 48" 60"

Note assemblies without header connector will have stripped leads.

Select your components and we will build your assembly.



VCC
LED Panel
Mount Connectors

AMP
Ring Terminal

VCC
Positive Locking
Header Connector

Molex or Amp
Type Connectors

CONXRITE®

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PANEL INTERCONNECT PRE WIRED WITH RESISTOR

U.S. & Foreign Pat. Pend.

SPECIFICATIONS

MATERIAL: Panel connector, Ring and Header connector - Thermoplastic (U.L. Listed Material)
Terminals - Phosphor bronze, tin plated
Wire - 22 AWG 7 strand copper, insulated

MOUNTING: Recommended Panel Mounts - Mate with CMC 321, CML 325 and CMS 322 lenses. Also with CLF 280, CLB 300, CLR 301 CLIPLITE, SQB 400 CUBELITE & CLP 125, 126, 127, 129 CLIPMOUNTS. See data sheets for specs pages 4, 5, 6 & 19.

Panel Thickness - CMC 321 & CMS 322 from .090" to .125". For .032" to .062" RNG 234 ring required. CML 235 from .30" to .090" RNG 268, from .110" to .170" RNG 234 and from .190" to .250" ring not required.

Hole Size - CMC 321, CMS 322 and CML 325 use .281".

LED Lead Length - CMC 321 & CMS 322 lenses, trim leads to.250" ± .010". CML 325 lense trim leads to .275" ± .010".

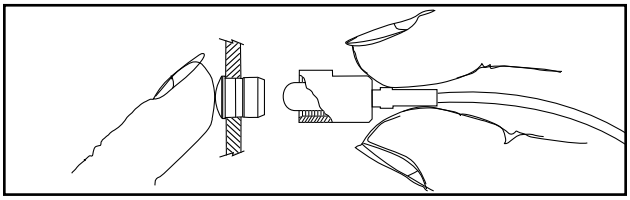
APPLICATION – CONXRITE makes quick and easy plug-in connections between panel mounted LEDs with lenses and a power source. Utilizing various cable lengths and cable terminations, CONXRITE offers a cost reducing solution to interconnection problems.

VERSATILITY – CONXRITE with ballast resistor can be used on circuits from 3 to 28 volts. Panel thickness can vary from 1/32 to 1/4 inch. Makes positive panel connections for either wet or dry applications with CMS lense. See data sheet for CLIPLITE AND CUBELITE lense mounts.

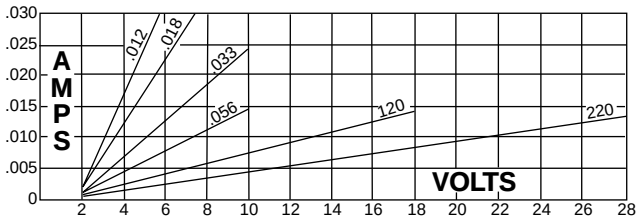
DESIGN – CONXRITE has a molded plastic body with self-contained 1/4 watt resistor. Pre-attached wires are provided with terminals, header connector or with stripped leads.

INSTALLATION – Modular cabling system's plug-in feature simplifies the electrical connection from panel mounted LEDs to PCB, eliminating the need for assembly tools. Cost and time savings from the elimination of soldering and terminal crimping operations are substantial.

EASY INSTALLATION



RESISTOR SELECTOR



ORDERING CODES

CNX 310 056 E 2 1 08

MODEL

RESISTOR

CODE	OHM	CODE	OHM
012	120	056	560
018	180	120	1200
033	330	220	2200

TERMINATIONS

CODE	DESCRIPTION
E	LOCKING HEADER CONNECTOR
X	WIRE LEAD ENDS STRIPPED

WIRE GAUGE

CODE	DESCRIPTION
2	22 AWG

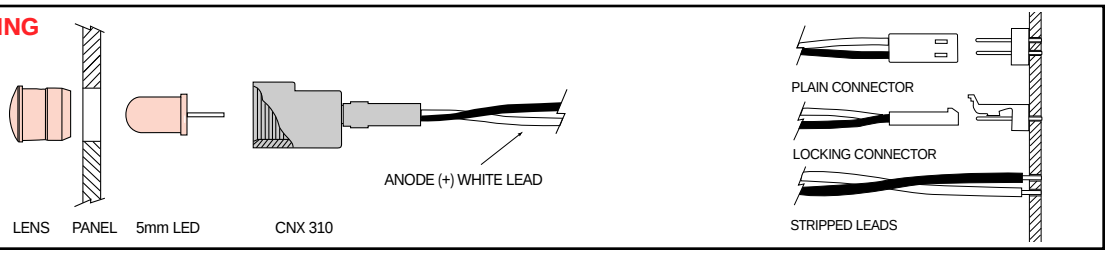
WIRE COLOR

CODE	DESCRIPTION
1	BLK - WHT

LENGTH IN INCHES

CODE		LENGTH
04	-	4 INCHES
06	-	6 INCHES
08	-	8 INCHES
12	-	12 INCHES
18	-	18 INCHES
24	-	24 INCHES

OUTLINE DRAWING



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PCB STANDOFFS FOR BI/TRI-LEAD COMPONENTS

U.S. & Foreign Pat. Pend.

APPLICATION – P-C-LITE component standoffs are designed for printed circuit board mounting of multi-lead devices ie. LEDs, IR emitter/detectors, lamps, resistors, capacitors, transistors and diodes.

VERSATILITY – P-C-LITE component standoffs cope with various problems in mounting passive components. These include height control, lateral stability, lead retention, lead shorting and removal of soldering residue.

DESIGN – P-C-LITE component standoffs provide lead separation and retention for both bi and tri-lead components. Molded tabs retain the component and standoff as a unit permitting preassembly operations. Clearance pads are provided for proper pcb cleaning.

INSTALLATION – P-C-LITE component standoffs permit the use of various shapes and sizes of LEDs, as well as other bi/tri-lead components. Device height control is simplified with mounts ranging in lengths from .100 to 1.00 inch in increments of .010 inch.

SPECIFICATIONS

MATERIAL: Standoff - Thermoplastic U.L. 94 V0. Color, Black.

DESIGN: Channels provide lead separation and lateral stability for components. Molded tabs retain component leads within the standoff for preassembly. Raised pads allow for easy pcb cleaning.

MOUNTING: Suitable for passive components, bi-lead, tri-lead, 3mm, 5mm, LEDs, resistors, capacitors, diodes. Standoffs vary in height from .100 minimum to 1.0 inch maximum, increments of .010 inch.

NEW U.L. 94 V0.

ORDERING CODE

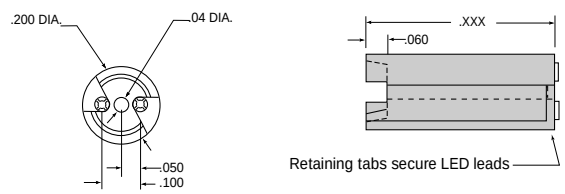
STD XXX BLK

Length in Inches (.100 to 1.0 inch) — Color

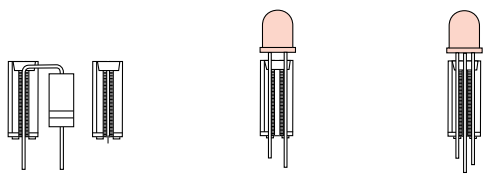
100	200	300	400	500	600	700	800	900
110	210	310	410	510	610	710	810	910
120	220	320	420	520	620	720	820	920
130	230	330	430	530	630	730	830	930
140	240	340	440	540	640	740	840	940
150	250	350	450	550	650	750	850	950
160	260	360	460	560	660	760	860	960
170	270	370	470	570	670	770	870	970
180	280	380	480	580	680	780	880	980
190	290	390	490	590	690	790	890	990

also available in one inch

OUTLINE DRAWING



MOUNTING CONFIGURATIONS



SINGLE LEAD BI-LEAD TRI-LEAD

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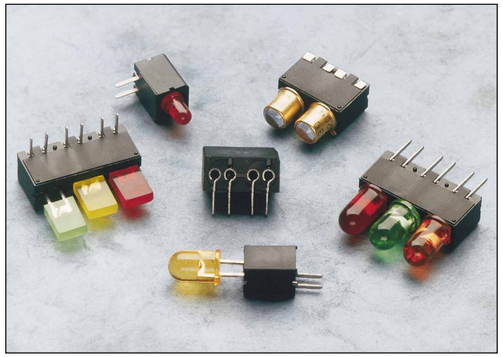
LED MOUNTING SOCKETS FOR CIRCUIT BOARDS - THT & SMT



U.S. & Foreign Pat. Issued & Pend.

APPLICATION – P-C-LITEs are used as circuit board mounting sockets for status, logic and fault detection lights. Also used for back panel lighting, front panel function lights and mounting of photodetection type devices.

VERSATILITY – P-C-LITEs are relampable, no direct soldering to LED. PCH and SMD series mount horizontally, PCV series mounts vertically. The PCV can be installed on one side of the PCB while the LEDs are inserted from the reverse side of the board.

DESIGN – P-C-LITEs are manufactured from UL listed thermoplastics. Unique contact design permits automatic adjustment to the various sizes and shapes of LED leads. Also accommodate IR emitters, phototransistors and incandescent bi-pin lamps.

INSTALLATION – P-C-LITEs are wave soldered (PCH/PCV) or surface mounted (SMD) to PCB along with other components. Sockets are provided with polarity identification. Molded standoffs permit easy board cleaning. Lock-type security for component leads in high vibration and shock environments.

SPECIFICATIONS

MATERIALS: Housing - Thermoplastic, U.L. 94 V0 (black).
Contacts - Phosphor bronze, 60/40 tin plated.

MOUNTING: PCH Series - Thru hole, horizontal mounting sockets, .035 (.89mm) holes on .100 (2.54mm) centers. (see pattern on next page).

PCV Series - Thru hole, vertical mounting sockets, .035 (.89mm) holes on .100 (2.54mm) centers with optional .060 (1.52mm) holes for opposite side mounting. Same side mounting, delete the .060 holes. (see pattern on next page).

SMD Series - Surface mount, horizontal mounting sockets, .060 (1.52mm) X .060 (1.52mm) component pad. (see pattern on next page).

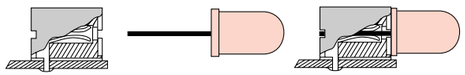
SMD 330 available in bulk, on tape/reel and in tubes.

SMD 660 & 990 available in bulk and in tubes. NOTE: Insert LED leads into SMD socket from pad end only.

Spacer - STD standoff series (see specs. on page 11).

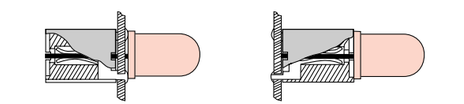
LED DATA: Type - 3mm or 5mm.
Leads - Min. .017 (.43mm) round or square. Max. .030 (.76mm) thickness - .040 (1.02mm) width.

HORIZONTAL MOUNT PCH & SMD SERIES



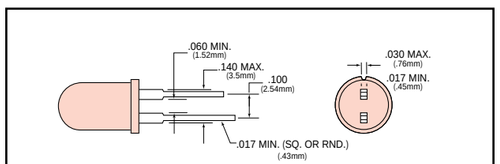
Insert LED - trim LED or bend LED leads for security.

VERTICAL MOUNT PCV SERIES



Opposite Side Mounting | Same Side Mounting

LED LEAD DIMENSIONS



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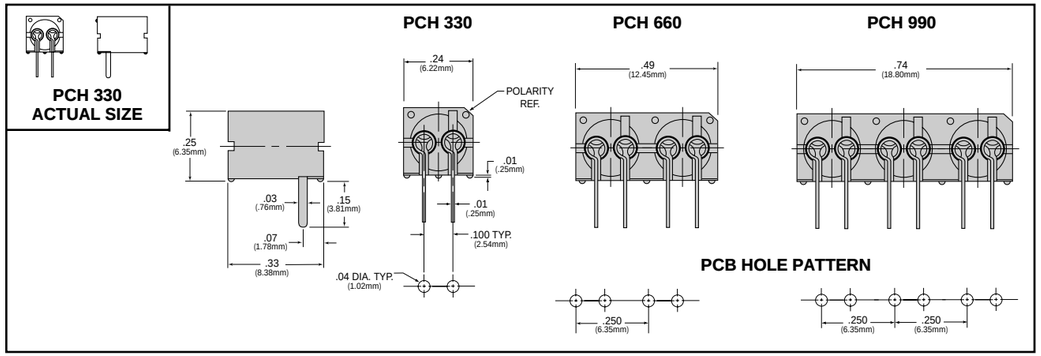
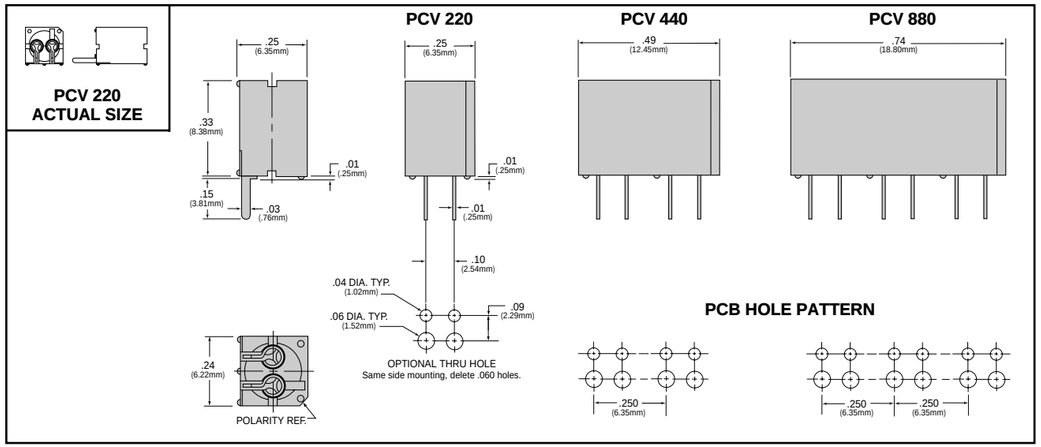
OUTLINE DRAWINGS & ORDERING CODES

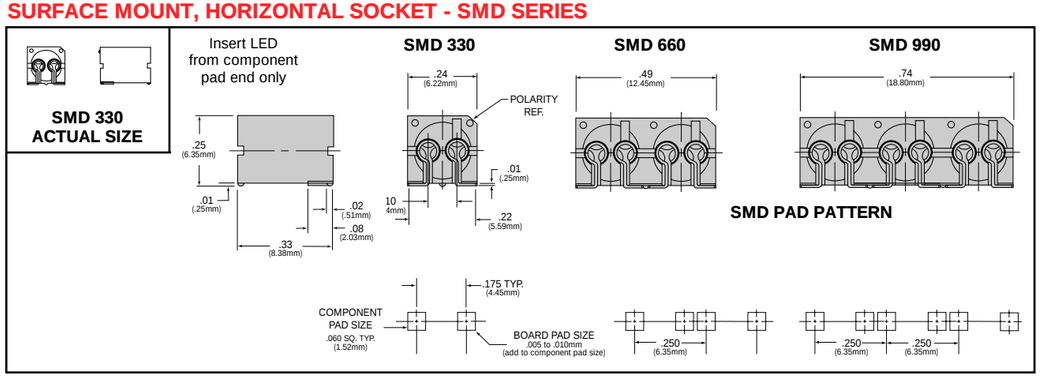
THRU HOLE, HORIZONTAL SOCKET - PCH SERIES



THRU HOLE, VERTICAL SOCKET - PCV SERIES



SURFACE MOUNT, HORIZONTAL SOCKET - SMD SERIES



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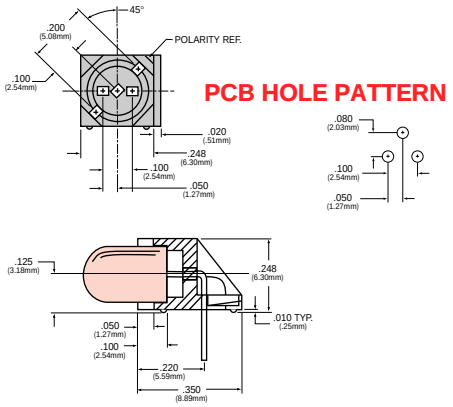
OUTLINE DRAWINGS

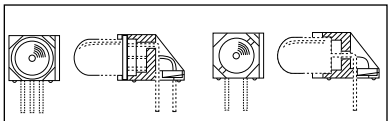


PCB MOUNT FOR BI/TRI-LEAD LEDs

FEATURES

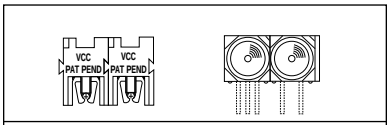
- Right angle PCB mount for bi and tri-lead LEDs for use as logic and diagnostic indicators.
- Accommodates round and rectangular shapes of LEDs with or without flanges.
- Dove-tail interlock feature allows mounting of both mono and multi-colored LEDs.
- Mount forms LED leads which are locked into position by retaining tabs.
- Formed LED leads are staggered in their length permitting easier PCB insertion.
- Molded standoffs permit the easy cleaning of PCB after wave solding operation.

PCB MOUNTING OF BI & TRI-LEAD LEDs



Form leads with the mount, snap leads into retaining tabs.

PCB MOUNTING OF LEDs IN ARRAYS



Bi-lead and tri-lead LEDs can be combined with dove-tail interlocking feature.

SPECIFICATIONS

MATERIALS: Housing – Thermoplastic (black) U.L. 94 V0.

MOUNTING: PCH 175 – Right angle thru-hole mount for LEDs. Can be used as a single LED mount or banded together in an array with its dove-tail interlocking feature.

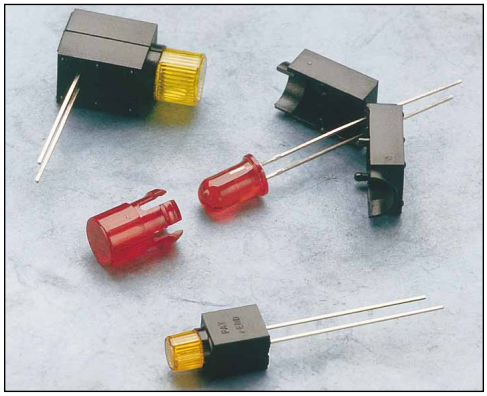
When banded together with the PCH 175 the LEDs are on .250" centers.

LED: 5mm size - round or rectangular shape with or without flange. Bi-lead, standard .100" lead spacing. Tri-lead, either .050" or .100" lead spacing. Both the bi-lead and tri-lead LEDs can also be combined in arrays with one another.

ORDERING CODES

PCH 175

MODEL



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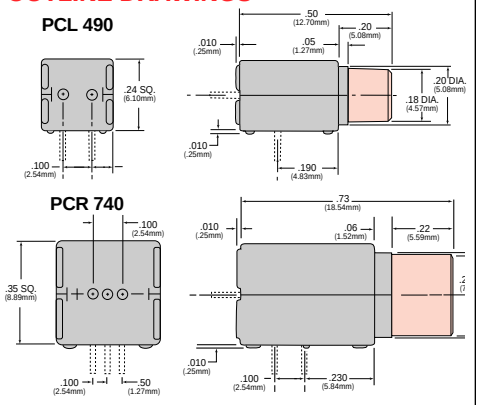
OUTLINE DRAWINGS



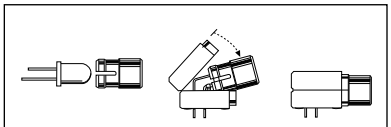
RECOMMENDED LEDs See Cliplite Lense Data Page.

PCB MOUNTS FOR 3mm & 5mm LEDs

FEATURES

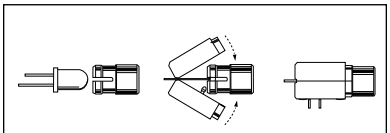
- Wave solders horizontally or vertically without special jigs or fixtures.
- Stabilizes LED during packaging and physically protects after assembly.
- Mounts flush, recessed or fully extended thru display panel without attachments.
- Height compatible with switches and other circuit board mounted components.
- Increases LED apparent brightness and viewing angle up to 180 degrees.
- Guards against IC damage by electrostatic discharge transmitted thru exposed LED.

HORIZONTAL MOUNT



Snap LED into lense – insert LED leads through holes in mount base – close mount, bending leads into position.

VERTICAL AMOUNT



Snap LED into lense – insert LED leads through holes in mount base – close mount.

SPECIFICATIONS

MATERIAL: Body – General Purpose Nylon (U.L. Listed Materials).

Lense – Polycarbonate (U.L. Listed).

MOUNTING: P C board, horizontally or vertically on .100 inch hole centers.

3mm (PCL 490 with SML 190) panel thickness from 1/64" to 3/16" thru a 7/32" clearance hole.

5mm (PCR 740 with CLF 280) panel thickness from 1/32" to 9/32" thru a 5/16" clearance hole. CLP series of the CLIPLITE clipmounts may also be used.

Permits flush mounting to full projection of the lense portion thru the panel.

LEDs: Standard LEDs, diffused or nondiffused. See drawings. No attempt should be made to bend a lead with a stepped thickness.

ORDERING CODES

PCL 490

MODEL (BODY)
PCL 490 (3mm)
PCR 740 (5mm)

SML 190 RTP

MODEL (LENS)
SML 190 (3mm)
CLF 280 (5mm)

COLOR

RTP	Red Transparent
GTP	Green Transparent
ATP	Amber Transparent
YTP	Yellow Transparent
CTP	Clear Transparent
BTP	Blue Transparent

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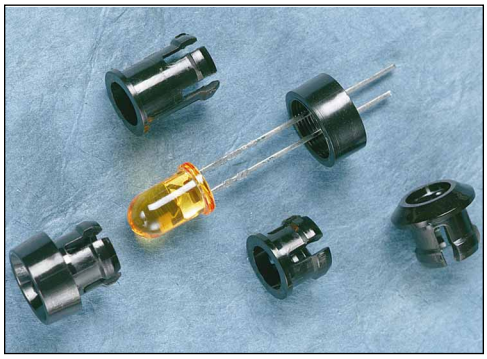
COMMLITE® LED MOUNTING CLIPS

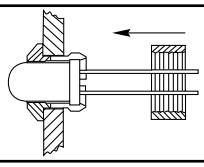


U.S. & Foreign Pat. Pend.

FEATURES

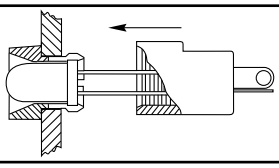
- Universal, used for mounting all standard 5mm LEDs.
- Low cost installation method for panel mounting LEDs.
- Styles include inner/outer reflector, standard and extended clip types.
- Accommodate panel thickness ranging from .032" to .250".
- LEDs are replaceable when mount is used with Conxrite socket
- Various styles of Clipmounts' vastly increase the engineer's range of selection.

CLIPMOUNT WITH RING



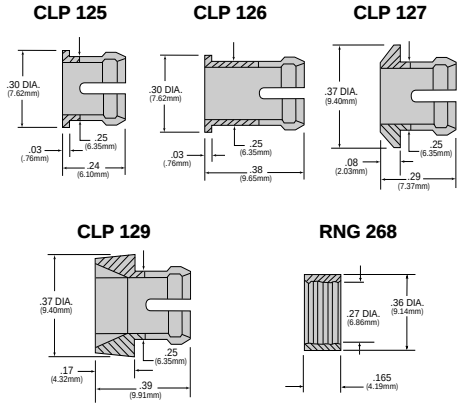
Snap the Clipmount into the panel – Insert LED – Press the ring in place to complete the assembly.

CLIPMOUNT WITH CONXRITE



Snap the Clipmount into the panel – Insert LED – Press the CONXRITE in place to complete the assembly.

OUTLINE DRAWINGS



SPECIFICATIONS

MATERIAL Clip - Polycarbonate, Ring - Polypropylene (U.L. Listed Materials).

DESIGN Style - Inner, outer reflector, standard clip, (short and extended).

MOUNTING: Mount thru front of panel. Mounting holes should be deburred but not chamfered. Hole size .250" (6.35mm), holes on 3/8" centers.

Panel thickness for CLP 125, 127 & 129, 1/32" to 1/8". For CLP 126, 1/8" to 1/4". Complete assembly using RNG 268. Clipmounts CLP 125, 127 & 129 with CONXRITE, maximum panel thickness .110". With CLP 126, maximum .250" panel thickness.

LEDs: 5mm standard or low profile, diffused or non-diffused.

ORDERING CODES

CLP 125 BLK

MODEL
CLP 125 Standard clip
CLP 126 Extended clip
CLP 127 Outer reflector clip
CLP 129 Inner reflector clip
RNG 268 retaining ring

COLOR
BLK Black only

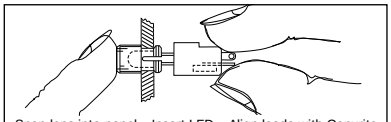
CONXRITE® SOLDERLESS LED CONNECTOR

U.S. & Foreign Pat. Pend.

FEATURES

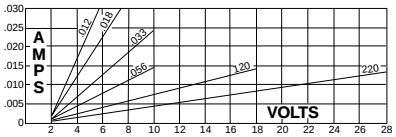
- Internal resistor for 3V to 28V circuits, when external resistor is required or desired, Conxrite is available without built-in resistor.
- Requires no tools – provides a simple fast press-fit connection to either Cliplite or Clipmount.
- Stress-relieved connection controls the problem of broken LED leads.
- When preassembled to the wiring harness final assembly of the panel mounted LED is greatly simplified.
- Various colored Cliplite lenses are available for use with the Conxrite.
- Makes field replacement of defective LEDs practical and cost-effective.

EASY INSTALLATION

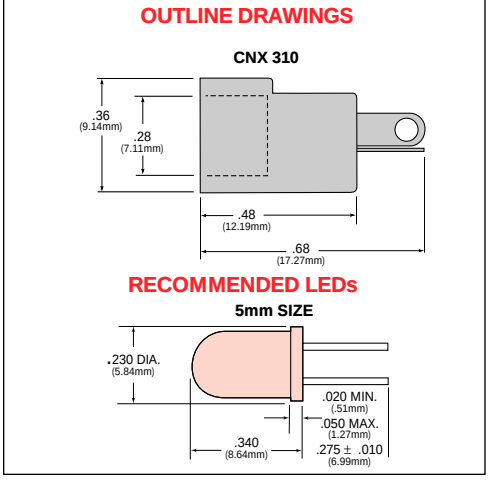


Snap lens into panel – Insert LED – Align leads with Conxrite spring contacts – Press fit to back of lens/mount.

RESISTOR SELECTION GUIDE



OUTLINE DRAWINGS



SPECIFICATIONS

MATERIAL:

HOUSING — Polypropylene (natural).

TERMINALS — Phosphor bronze, tin plated, compatible with LED leads

RESISTOR — Melf 1/4 watt resistor provides current limiting to 28 volts.

PANEL MOUNTS — Recommended lense CMC 321 and CMS 322. Cliplite and Clipmount are also acceptable mounts.

NOTE: Trim LED lead length to . 275 +/-.010 (7.24mm).

ORDERING CODES

CNX 310 012

MODEL

RESISTER CODE

CODE	VALUE
000	NO RESISTOR
012	120 OHMS
018	180 OHMS
033	330 OHMS
056	560 OHMS
120	1200 OHMS
220	2200 OHMS

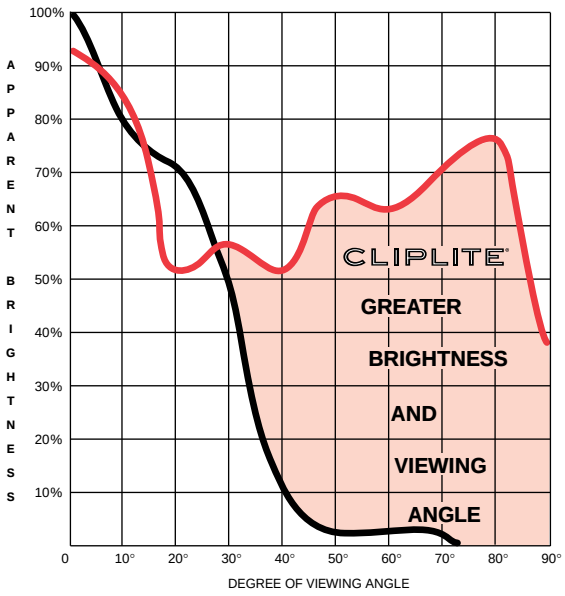
CLIPLITE® / CUBELITE®

VISUAL COMMUNICATIONS COMPANY, INC.
7920-G Arjons Dr., San Diego, CA 92126
In CA (858) 549-6900 (800) 522-5546
FAX (858) 549-3520 www.vcclite.com

BRIGHTNESS COMPARISON
VCC's LED LENSE MOUNTS vs EXPOSED LEDs

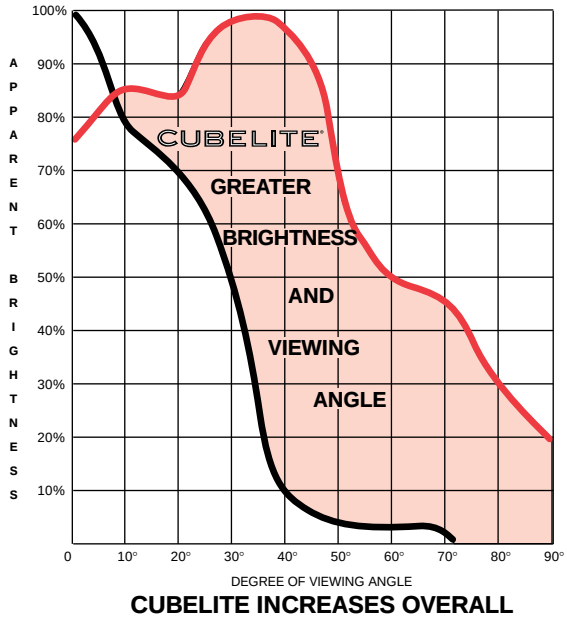
USING A POINT SOURCE LED

INDEPENDENT TEST CONDUCTED BY
INSTRUMENT DEVELOPMENT ENGINEERING ASSOCIATES, INC. MONTROSE, CA



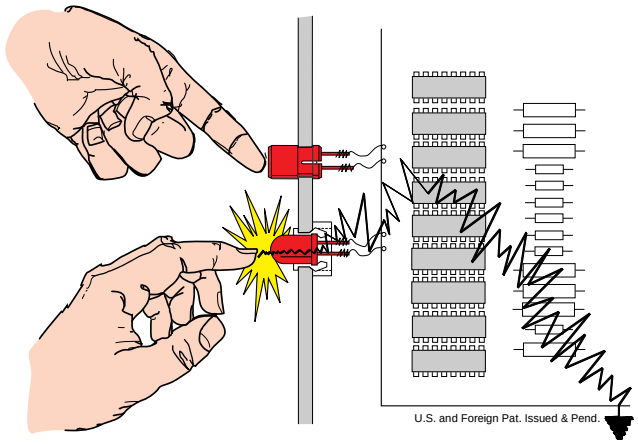
CLIPLITE INCREASES OVERALL LED VISIBILITY BY MORE THAN 125%

CLIPLITE — EXPOSED LED



CUBELITE INCREASES OVERALL LED VISIBILITY BY MORE THAN 140%

CUBELITE — EXPOSED LED



STATIC SHIELD

LED LENS MOUNTS PROTECT ICs UP TO 16 KV

By simply walking across a carpeted floor a person can generate 10,000 volts of electrostatic discharge (ESD). Tests reveal that an exposed panel mounted LED can permit transmission of ESD onto PC boards at a level as low as 7 KV, resulting in faults and catastrophic failures of ICs and other semi-conductor components.

Visual Communications Company offers you protective lense and mounting devices for LEDs to combat ESD, **(Cliplite & Cubelite).** Tests using these devices show that transmission of ESD does not occur until 15-16 KV is reached. This is a level sufficiently high enough to provide protection against electrostatic discharge.