



PERIMETER™

ADVANCED PERIMETER SECURITY

**IF IT'S NOT LIT,
IT'S NOT SECURE**

CAST LED

Perimeter Lighting System

Planning, Installation & Maintenance Guide

SYSTEM COMPONENTS

(purchased separately or in kits)

- **CAST LED Perimeter Lights**
- **CAST Perimeter Lighting Transformer**
- **CAST Photocell**
- **CAST No-Ox® Tin-Coated Landscape Lighting Wire**
- **CAST Posi-Tap Wire Splice Quick Connect**

Advisory and Disclaimer: Before undertaking the installation, servicing, or maintenance of a low-voltage lighting system, individuals should obey any applicable codes, guidelines, and restrictions that may apply in their regions. CAST Lighting is not liable for any consequences that may arise from the use of material in this manual.

Patents Pending.

Dear Professional,

Congratulations on your purchase of a CAST LED Perimeter Lighting System. You can be sure that all system components will endure years of environmental exposure and continue to perform optimally for the life of the installation.

This booklet gives you a simple step-by-step guide to the design, planning, installation and maintenance of the system.

If you have any questions, please don't hesitate to contact our technical support staff.

Yours Truly,



*David Beausoleil
President, CAST Lighting*



CAST LED Perimeter Light
Installation Training Video

To jump start your training on how to install the CAST LED Perimeter Lighting System, watch this 11-minute video: Scan QR code to right or go to: <http://www.youtube.com/watch?v=v3VT0uH1nes&feature=youtu.be>



PERIMETER™

Planning, Installation & Maintenance Guide

Table of Contents

| | |
|--|-------------|
| Planning ----- | 4-8 |
| Installation ----- | 8-11 |
| Mounting Luminaires on Fence Posts ----- | 8-10 |
| Appendix 1. Testing & Documentation ----- | 9 |
| Appendix 2. Guide to Conduit Wire Connections ----- | 11 |

TOOLS REQUIRED

- Philip’s and flat head screwdrivers or screw gun
 - Wire cutters and strippers
 - 7/16” or 1/2” open-end wrench
 - For conduit installation, 1/2” conduit with 3-Way Junction Boxes and lock rings
 - UV-resistant, weatherproof cable ties
 - Narrow shovel or trenching tool
 - Channel Lock #909 Crimper
 - Dull knife for splitting cable if using Pos-Tap (CPQC1)
-

SAFETY PRECAUTIONS

- Installation of a low-voltage lighting system may be subject to permits, inspections, or other regulations. Check with your local electrical or building inspector.
 - The transformer must be plugged into a GFCI receptacle. A licensed electrician must perform the installation and maintenance of this receptacle.
 - Transformer and lights may not be installed within 10 ft. of a pool, spa, or other water feature.
 - The transformer may become hot and should not be mounted to vinyl siding. It must be mounted in a vertical orientation at least 12” from the ground.
 - If transformer is mounted in a Hoffman style enclosure provide adequate ventilation to dissipate heat.
-



Before you proceed make sure you have done the correct wire sizing and transformer sizing which is a **DIRECT RESULT** of the (wattage) load of the system (determined by the quantity of fixtures you are installing) and the distance of the fence, the wire gauge you are using **AND** the distance of the transformer to the lights. Proper planning prevents poor performance. Call the office for any design help you may require. If you are installing one of our pre-engineered kits all you need to do is follow the instructions provided with each kit.

1. Determine Luminaire Spacing

Each luminaire is mounted at the top of a vertical fence post. Luminaire spacing is dependent on illumination needs.

Typical installation call for mounting the CPL1 series every other fence post (twenty feet apart) while the higher power CPL3 series are typically mounted every other fence post (twenty feet apart) for the 8 watt CPL38 and 13 watt CPL312 units and every third post (thirty feet apart) for the 16 watt CPL316 and 25 watt CPL325 units

(* for specific illuminance values for each fixture model contact factory or web site to obtain AGI32 iso candela plot reference graphic illustrations)

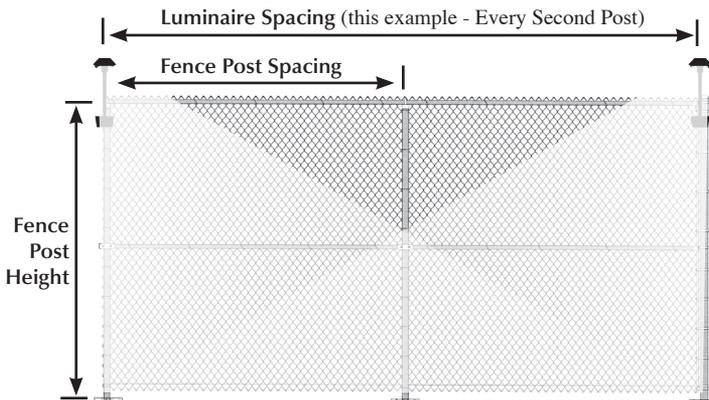


Fig 1. Fence installation with the 3 measurement variables

2. Determine Wire Run Along Fence & Transformer Location

a. Without Conduit. Luminaire connecting wires are low voltage weatherproof and UV rated so they may be attached directly to a fence rail without the use of conduit. The wires can also be direct burial at the base of the fence and from the transformer to the fence location. The wires are attached to fence rail with UV resistant cable ties, place cable ties every eighteen inches. Wires may be run along the top, middle or bottom horizontal fence pipe to reach each luminaire location. When running wire along the middle or bottom rail we recommend using a heat shrink wire splice connection directly

beneath each luminaire and splicing a # 16-gauge wire that feeds the luminaire from the bottom or middle rail. Installer does not want to run a loop of wire from bottom or middle rail into and out of the luminaire as this uses excessive wire and causes unnecessary voltage loss to the system. The most cost-effective method is to attach the wire to the top horizontal rail, this is the safest location to keep the wire away from vandals (since it is hard to reach through fence to cut wires) Places wire at 7:00 o clock orientation on horizontal rail.

b. With Conduit. For higher security applications, wires may be protected (from vandals) when run thru a 1/2" PVC or metal conduit. This conduit is best run along bottom or middle horizontal fence pipes. A junction box is installed directly beneath each luminaire, and a vertical conduit connects to luminaire junction box.

c. Transformer Location. For optimal energy efficiency transformer should be mounted as close to fence as possible, However, long runs between fence and transformer

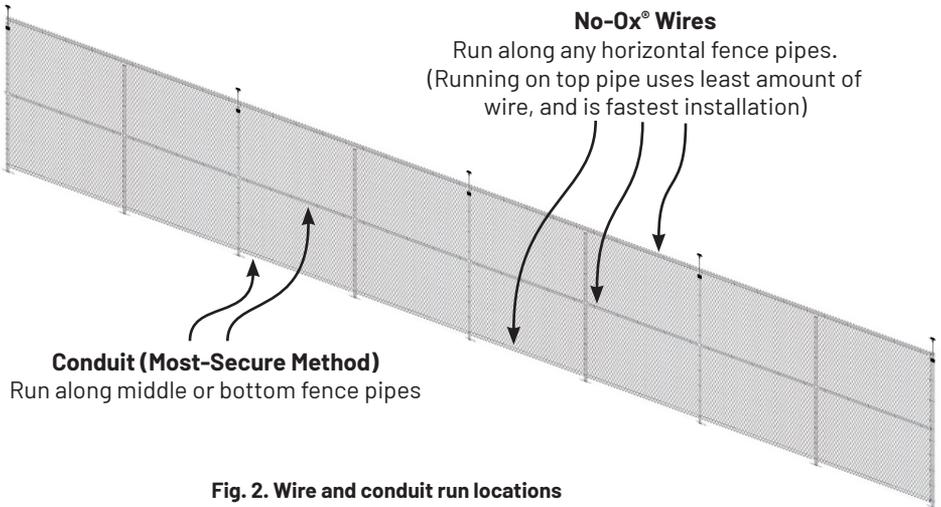


Fig. 2. Wire and conduit run locations

are acceptable. INSTALLER must run voltage loss calculations to insure the cable selected, distance of area to be illuminated and quantity of fixtures will operate in the acceptable voltage range and the correct wattage transformer has been selected. (Contact factory for assistance)

d. Transformer can be mounted indoors or outdoors. Outdoor installation can be accomplished by mounting the transformer to the side of a building (but not on vinyl siding), on the fence itself, or with use of a transformer mounting stand (Fig. 3, p. 7).

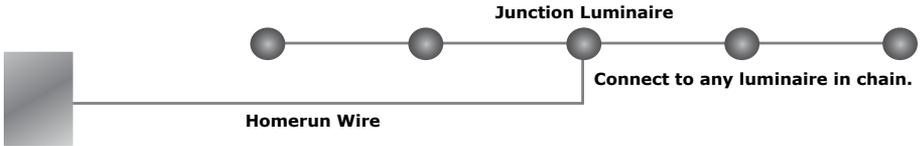
PLANNING (cont.)

3. Determine Wiring Method

Two Methods. Two wiring methods are used for connecting perimeter luminaires.

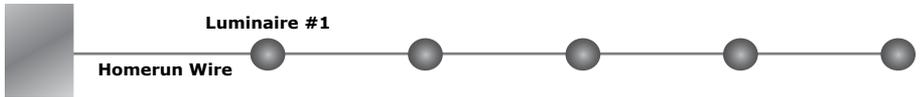
- 1. T-Method.** This method is the most desirable and connects the transformer to any luminaire along the chain - usually near the middle. Luminaires to either side of the "junction luminaire" are called left or right "legs".

Benefits: Less voltage loss, more luminaires can be run on chain.



- 2. Daisy Chain.** This method connects the transformer to the first luminaire on a fence line; wires connect each subsequent luminaire in a chain.

Drawbacks. Voltage loss is greater at last luminaire in chain, fewer luminaires can be run on chain.



Transformer is mounted near end of fence. If transformer must be mounted near the end of the fence, then daisy chain is usually the best method.

4. Determine Wire Gauges

When selecting wire gauge, consider homerun wire (transformer to first luminaire) then consider wires connecting luminaires. Homeruns carry the full load of the system so, for longer runs, it makes sense to use a heavier gauge for the homerun; wires connecting luminaires can be the same as the homerun, or may be a lighter gauge. Refer to the CAST LED System Calculator.

No-Ox Wire Amperage Ratings. 30V or Less

| Wire Gauge | Wire Amperage Rating. (check with clamp-on AMP Meter) | Load only to 80% capacity of wire as per NEC Guideline not to exceed 25 Amps |
|------------|---|--|
| #16-2 | 10 | 8 |
| #14-2 | 15 | 12 |
| #12-2 | 20 | 16 |
| #10-2 | 30 | 24 |
| #8-2 | 50 | 25 |

INSTALLATION

There are five main installation steps:

Mount Transformer, Mount Luminaires, Run Wire, Select correct Voltage Tap and Test Operating Voltage on completion.

1. Mount Transformer

Transformer can be mounted indoors or outdoors. Outdoor installation can be accomplished by mounting the transformer to the side of a building (but not on vinyl siding), on the fence itself, or with use of a transformer mounting stand (see diagram) or in a Hoffman enclosure.

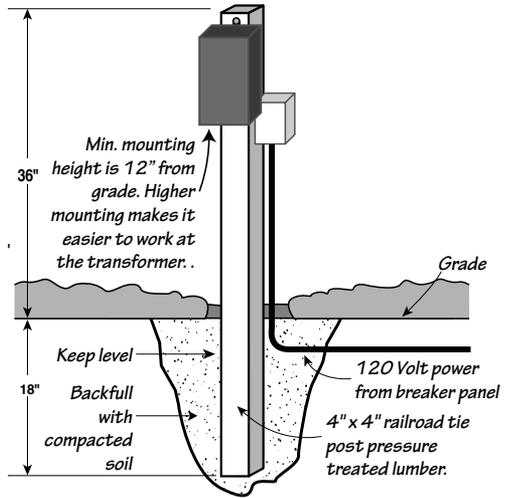


Fig. 3. Transformer Stand

Transformer must be mounted vertically with transformer's bottom plate at least 12" above ground or floor. Transformer must either be plugged into a GFCI receptacle fitted with an in-use weather-proof cover, or a GFCI-protected breaker (at main panel) for use with a non-protected receptacle (with in-use weatherproof cover) adjacent to the transformer. Transformers include mounting hardware.

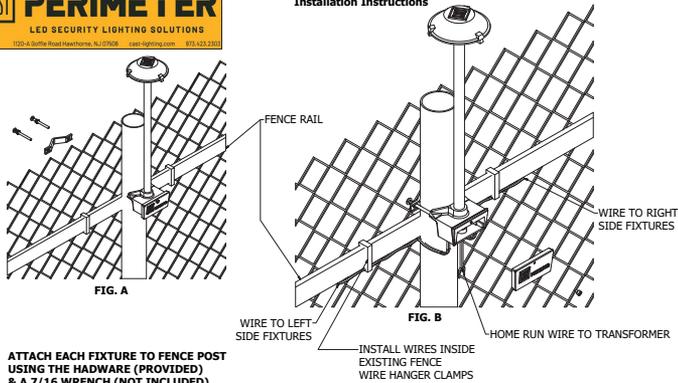
2. Mount Luminaires on Fence Posts

Please follow the Mounting Instruction Sheet provides with the Series fixture.

SERIES 1 (CPL1)



CAST LED Perimeter Light (CPL1):
Installation Instructions



ATTACH EACH FIXTURE TO FENCE POST USING THE HARDWARE (PROVIDED) & A 7/16 WRENCH (NOT INCLUDED) AS SHOWN ON FIG. A.

NOTE:
CABLE TIE NO-OX WIRE TO FENCE POST USING UV RESISTANT CABLE TIES OR INSTALL IN PVC CONDUIT

INSTALL ALL FIXTURES AS REQUIRED ON FENCE LINE OR AS NEEDED ON SITE. ONCE FIXTURES ARE SECURED IN PLACE REMOVE FRONT COVER & MAKE ALL CONNECTIONS INSIDE USING THE "WIRE CONNECTORS" (SUPPLIED WITH EACH FIXTURE).

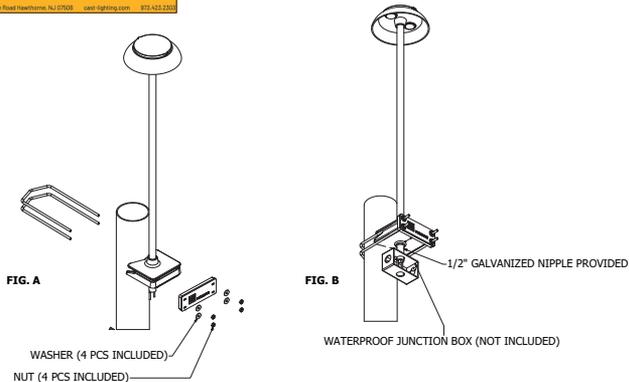
PATENT PENDING

CLITINCPL1 02-01-2018 1/2

SERIES 1 (CPL12X, 13X, 14X)



CAST LED HI-POWER Perimeter Light (CPL12X, CPL13X & CPL14X):
Installation Instructions



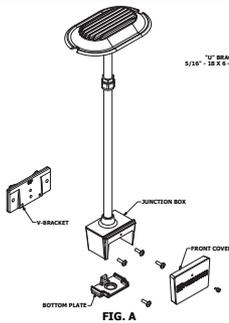
ATTACH FIXTURE TO FENCE POST USING THE HARDWARE (PROVIDED) 7/16 WRENCH (NOT INCLUDED)

ONCE FIXTURE IS INSTALLED TO THE FENCE POST PROCEED WITH THE INSTALLATION OF JUNCTION BOX (NOT INCLUDED) AT THE BASE OF THE 1/2" NPT GALVANIZED NIPPLE AS SHOWN ON FIG. B.

GENERATION 3 SERIES (CPL38, 312, 316, 325, IR1D, IR2D, IR1D1W)

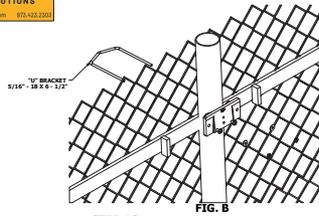


CAST LED 3 Gen. Perimeter Light (CPL38, CPL312, CPL316, CPL325):
Installation Instructions



TOOLS NEEDED:
-1/2" WRENCH (NOT INCLUDED)
-PHILLIP SCREW DRIVER (NOT INCLUDED)
-FLAT HEAD SCREW DRIVER (NOT INCLUDED)

STEP #1.
REMOVE "V-BRACKET", FRONT COVER
& BOTTOM PLATE FROM FIXTURE.



STEP #2.
ATTACH EACH "V-BRACKET" TO FENCE POST
USING THE HARDWARE (PROVIDED)
AS SHOWN ON FIG. B.

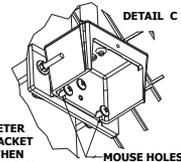
PLEASE NOTE:
WHEN INSTALLING "U" BRACKET ON SMALL DIAMETER
FENCE POSTS THE THREADED PORTION OF "U" BRACKET
WILL HIT THE FRONT COVER PLATE OF FIXTURE WHEN
MOUNTING TO THE "V" BRACKET. AFTER TIGHTENING "V"
BRACKET TO POST USE HACKSAW TO CUT EXCESS THREAD
FROM "U" BRACKET BEFORE MOUNTING FIXTURE.

PATENT PENDING

STEP #3.
INSERT SCREWS IN TWO LOWER MOUSE HOLES.
REST FIXTURE ON SCREWS AND INSERT TOP SCREW,
LEVEL & TIGHTEN ALL THREE SCREWS.



FIG. C



MOUSE HOLES

CLITINCPL3 02-01-2018 1/2

Select the Correct Voltage Tap

Depending on the wattage of the transformer you have chosen, all Perimeter transformers are provided with multiple voltage taps to choose from to power your system. The higher voltage taps are used to overcome line loss experienced with long wire runs from the transformer to the first fixture. The Voltage Taps you can choose from to compensate for this line loss include 24Volt, 26Volt, 28Volt and 30Volt. **IT IS IMPORTANT YOU CHOOSE THE RIGHT VOLTAGE TAP SO THAT THE FIRST FIXTURE DOES NOT OPERATE ABOVE 26 VOLTS AND THE LAST FIXTURE DOES NOT OPERATE BELOW 12 VOLTS.** Installer needs to verify the power at the homerun fixture and the last fixture to insure proper operating voltage of the system.

Appendix 1. Testing & Documentation

Testing & Documentation Instructions

With the completed system powered on, perform the following tests using a Volt/Ohm/Amp Meter (clamp-on type) or equivalent. Test primary voltage at GFCI receptacle, then secondary voltage at 24 V taps.

- Test primary amperage by clamping onto Loop provided in Transformer, make sure you have not overloaded the amperage capacity as listed on the transformer. Then test secondary amperage by clamping onto one wire leg below the 24 V taps. Again, make sure you have not overloaded the capacity of the wire. (See Page 6)
- Test voltage at first and last luminaire. If T-Method is used, then test at the homerun fixture and the last luminaire on the longest leg. Voltage probes can be inserted into crimp connectors for testing. Ensure fixture is operating between the range of 26V & 12V
- Use Sharpie marker to record data on inside cover of transformer.

Posi-Taps (CPQC1) can be used with all Series luminaire wire connections



1 PC WIRE SPLICE CONNECTOR KIT

Instructions:
PART #CPQC1

CONTENTS:
2 PCS POSI-TAP W/ #14 GAUGE GLAND
2 PCS COMBO #12 & #10 GAUGE GLAND



STEP #1.
SEPARATE THE TWO LEGS OF THE SPT FIXTURE POWER WIRE.
MAKE SURE NOT TO CUT INSULATION AND EXPOSE BARE CONDUCTOR.



STEP #3.
PLACE GLAND OVER WIRE.
SCREW POSI-TAP CONNECTOR DOWN
SO THE PIN PIERCES THE INSULATION
& THE BODY SCREWS DOWN
& RESTS FIRMLY AGAINST WIRE INSULATION.



STEP #2.
SELECT APPROPRIATE WIRE GAUGE GLAND.
YELLOW IS FOR #14 GAUGE,
BLACK IS FOR # 12 & # 10 GAUGE SPT WIRE.



STEP #4.
STRIP 3/8" INSULATION OFF FIXTURE LEAD WIRE.
DO NOT TWIST WIRE STRANDS. PLACE WIRE
INSIDE BACK OF POSI-TAP WIRE CONNECTOR BODY
SO WIRE REACHES BOTTOM OF CAVITY
& RESTS AGAINST METAL CONNECTION POST
AND WIRE INSULATION RESTS JUST ABOVE TOP OF METAL
CONNECTION POST. TIGHTEN UPPER WIRE GLAND DOWN FULLY.

CLITINPOSITAP 02-01-2018 1/2

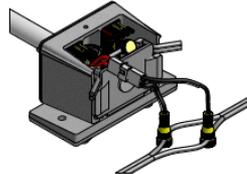


1 PC WIRE SPLICE CONNECTOR KIT

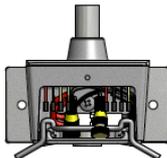
Instructions:



STEP #5.
COMPLETED POSI-TAP WIRE SPLICE CONNECTION
MAKE SURE BOTH THE BOTTOM GLAND
AND THE BACK SCREW CONNECTIONS ARE TIGHT TO
INSURE A GOOD CONNECTION.



STEP #6.
INSERT MALE QUICK CONNECTOR INTO
FEMALE FIXTURE QUICK CONNECT.



STEP #7.
PLACE POSI-TAP WIRE SPLICE AND FIXTURE QUICK CONNECT
INSIDE JUNCTION BOX FOR A COMPLETED FIXTURE CONNECTION.

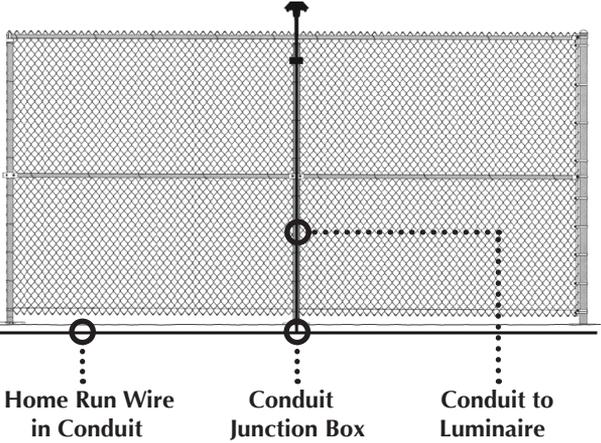
CLITINPOSITAP 02-01-2018 2/2

Appendix 2. Guide to Conduit Wire Connections

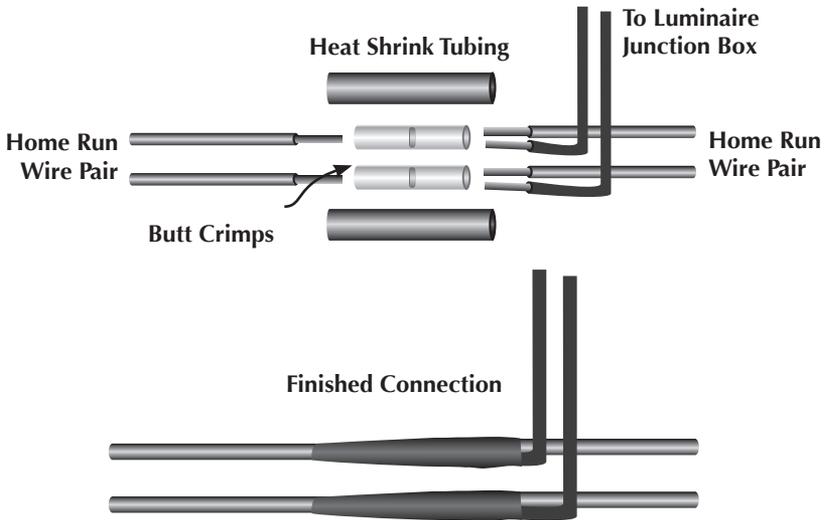
Guide to Butt Crimp Connections for Field Wires

In cases where a home run wire is run along bottom of fence (with or without conduit) a splice connection must be made (in the home run wire) to run a single paired wire up to the luminaire junction box. In this case, the best connector to use is the butt crimp connector, sealed with heat shrink tubing.

CAST Lighting manufactures a series of butt crimp connector kits for this purpose. Each kit includes (2) butt crimps and two sections of heat shrink tubing. The following kits should be used dependent on wire gauges:



- #14/2 Home Run connected to #14/2 Fixture Lead Wire: #12-10 Butt Crimp (CLWS10)
- #12/2 Home Run connected to #12/2 Fixture Lead Wire: #12-10 Butt Crimp (CLWS10)
- #10/2 Home Run connected to #10/2 Fixture Lead Wire: #6 Butt Crimp (CLWS6)
- #12/2 Home Run connected to #14/2 Fixture Lead Wire: #12-10 Butt Crimp (CLWS10)
- #10/2 Home Run Connected to #14/2 Fixture Lead Wire: #12-10 Butt Crimp (CLWS10)



Note: When stripping insulation off wire conductor it is extremely important that you do not cut any of the .010" wire strands as this degrades the wire gauge causing unnecessary voltage loss in the system.

Note: If you are installing wire in extremely cold conditions 30°F or colder the wire must be kept warm when unspooling to avoid possible cracking of the insulation. (keep warm in the cab of a truck or store inside overnight)



PERIMETER™

THE SPECIALISTS IN LOW-VOLTAGE OUTDOOR LIGHTING.

CAST Perimeter™ of NJ, USA specialize in manufacturing low voltage precision lighting to deliver the most effective perimeter security lighting solutions in the world.

6 INDUSTRY AWARDS AND COUNTING

- ▶ Product Innovation Award
Architectural Products
- ▶ Best In Category—Industrial, Vandal,
Emergency & Exit—Light Fair
International
- ▶ Most Innovative Product of the Year—
Light Fair International
- ▶ Best of Security Products ASIS
Accolades
- ▶ Homeland Security Finalist—“Best
Perimeter Protection Solution”
Government Security News
- ▶ Top 30 Technology Innovations
Security Sales & Integration

CONTACT US

For more information, site estimates,
kit choices, and pricing.

DIRECT LINE:

| | |
|----------------|--|
| EMAIL | perimeter@cast-lighting.com |
| PHONE | 973.423.2303 |
| FAX | 973.423.2304 |
| ONLINE | cast-lighting.com/perimeter |
| ADDRESS | 1120-A Goffle Rd, Hawthorne, NJ 07506 |

Patents: US Patent 8, 845,124; 9,360,197;
9,593,832; 9,777,909; Intl Patents; Other
Patents Pending.

GSA Advantage! www.gsaAdvantage.gov
Contract #GS-07F-183CA.

Cast Perimeter™ is a division of CAST
Lighting which specializes in the research,
innovation and manufacturing of low
voltage LED lighting solutions.