

Changing the way the world lights for security™



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**

**Pour la traduction française - Voir la couverture arrière.
La traducción al español - Vea la contratapa.**

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>



CAST LED Perimeter Lighting System™

Planning, Installation & Maintenance Guide

Table of Contents

Planning 4-7

Installation 8-11

Appendix 1. Guide to Conduit Wire Connections 12

Appendix 2. Guide to Wire Gauge Selection 13-17

Appendix 3. Mounting Guidelines for Illuminance Values 18

Appendix 4. Testing & Documentation 18

Electrical Specifications 19

System Maintenance 20

Warranty 20-22

Project Record Form 23

TOOLS REQUIRED

- Philip’s and flat head screwdrivers or screw gun
- Wire cutters and strippers
- 7/16” 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

SYSTEM COMPONENTS

- CAST Perimeter Lights (CPL1) - includes luminaire, (2) bolts with nuts, mounting bracket, and (2) wire crimps (#49 Ideal)
- CAST 24 V Perimeter Lighting System Transformer (CPT300, CPT600, E1CPT300, E1CPT600) - includes built-in timer, (2) strain reliefs, (2) wire crimps (#NC-8 Ideal)
- CAST No-Ox® tin-coated landscape lighting wire) purchase separately

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 120-volt GFCI receptacle (or 220/240V for export models). 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.
- Appropriate care should be taken with the operation of tools used in the installation.

1. Determine Luminaire Spacing

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

Typical installations call for mounting on every second post, but higher or lower illumination requirements may call for mounting every post or every third post. Both fence post spacing and fence height influence final illuminance.

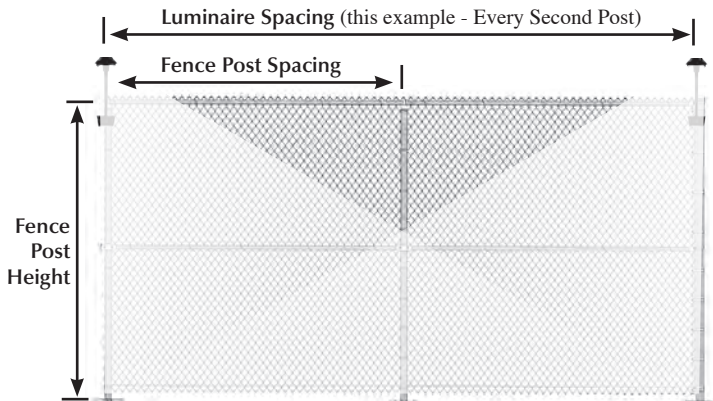


Fig 1. Fence installation with the 3 measurement variables

If a specific minimum illuminance value is required, use the three measurement values (Fig. 1) and refer to charts in “Appendix 3. Mounting Guidelines for Illuminance Values” (p. 18).

Tech Note: Perimeter Lighting Illuminance

The CAST Perimeter Lighting System is intentionally designed to provide low-glare low-level illuminance for long fence lines. This combination maximizes energy efficiency and eliminates disabling glare for guards and cameras while providing sufficient illumination for intruder and vandal detection.

The advantages of low-glare low-level illuminance are:

- **Minimal Contrast.** When lit areas and unlit areas are near in illuminance values, then intruders are more easily detected moving between the two areas. Guards and cameras are able to adjust vision (or exposure) easily between the lit and unlit areas.
- **No Disabling Glare.** Overly bright or direct light sources temporarily blind guards and, for cameras, cause internal reflections and inappropriate exposure compensation. No-glare lighting is the ideal for detection.

2. Determine Wire Run Along Fence & Transformer Location

- a. Without Conduit.** Luminaire connecting wires are weather-proof and UV-rated so they may be attached directly to fence without use of conduit. The wires are attached to fence with permanent or removable cable ties. Wires may be run along top, middle, or bottom horizontal fence pipes to reach each luminaire location. **This is the most cost-effective method and is relatively safe from vandals (since it is difficult to reach through fence to cut these wires).**
- b. With Conduit.** For higher-security applications, wires may be protected (from vandals) when run through 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. For more information on conduit installations, see Appendix 1 (p. 12).

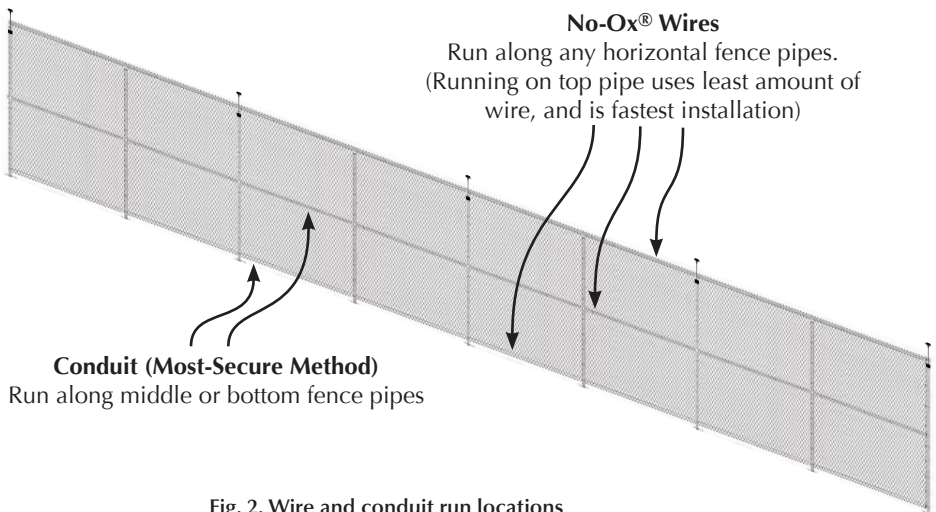


Fig. 2. Wire and conduit run locations

- c. Transformer Location.** For optimal energy-efficiency, transformer should be mounted as close to fence as possible. However, long runs between fence and transformer are acceptable (see charts in Appendix 2, pp. 13-17, for limits).

Ideally, transformer will be positioned so home run wire (from transformer to fence) goes to center luminaire in a wire run. This is called the T-Method and allows for the maximum number of luminaires on a run. It is acceptable to connect home run wire to any luminaire along a wire run. (See p. 6 for more on Wiring Methods.)

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. 8).

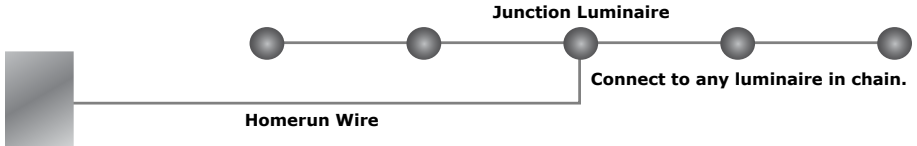
3. Determine Wiring Method

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

1. **T-Method.** This method 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.

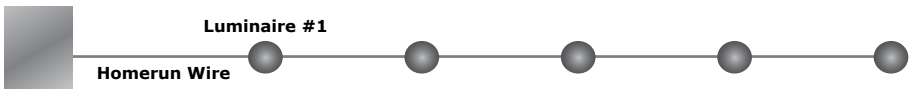
Drawbacks: May use more wire, may require more installation time.



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

Benefits. May use less wire, may be less installation time.

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



T-Method is preferred unless one of the following is true:

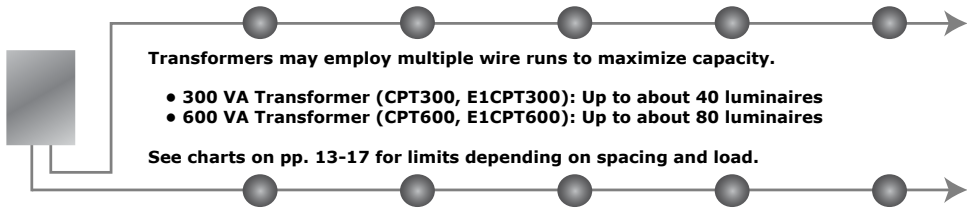
- A. **Transformer is mounted near end of fence.** If transformer must be mounted near the end of the fence, then daisy chain is usually the best method.
- B. **There are less than 12 luminaires in chain.** Voltage loss is minimal for chains of less than 12 luminaires, so daisy chain method is fine.

If undecided on wiring method, then use Wire Gauge Guides (Appendix 2., pp. 13-17) or the online CAST LED System Calculator.

Use of these guides allows you to try different wiring methods to determine best possible outcomes. The online CAST LED System Calculator can be accessed at www.cast-lighting.com/support-installers/system-calculator-installers/ or by scanning QR code to the right.



*Scan to open
CAST LED System
Calculator*



Tech Note: Low-Voltage vs. Line Voltage

The CAST Perimeter Lighting System is powered by a low voltage (24 V) current instead of 120 V (or higher) typically used in commercial outdoor lighting.

The differences between the two types of installation include:

- **Safety.** Currents 30 V (or less) present no risk for electric shock injury - an important safety benefit for both installers and end-users.
- **Relaxed Codes.** NEC has much less restrictive codes that apply to low voltage installations. These include allowance for running wires without conduit (even when buried) and shallower burial depths.
- **Less Wire in System.** Luminaire bodies can be connected directly without need of junction boxes at each luminaire. Also, since low voltage luminaires are not grounded, they are connected with two-wire cable instead of three-wire cable.
- **Voltage Loss.** The only drawback between the two types is that low-voltage currents lose voltage based on distance, load, and resistance. The CAST Perimeter System compensates for this voltage loss by allowing a wide range of voltage input (12 V to 24 V). To ensure that adequate voltage reaches each luminaire, installers should consult tables on pp. 13-17, or use the CAST LED System Calculator (referred to in previous page).

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 (see previous page) for accurate predictions using varying gauges.

The following is a quick guide:

1. Homerun Wire Gauge:

- Use #14/2: For less than 12 luminaires and less than 100 ft. homerun.
- Use #12/2: For more than 12 luminaires or from 100 ft. to 300 ft. homerun.
- Use #10/2: For more than 12 luminaires or from 300 ft. to 750 ft. homerun.

2. Luminaire Connecting-Wire Gauge:

- Use #14/2: For less than 12 luminaires.
- For more than 12 luminaires: Refer to the charts on pp. 13-17 or use CAST LED System Calculator (see previous page).

INSTALLATION

There are three main installation steps: Mount Transformer, Mount Luminaires, and Run Wire. Depending on the size of your crew, you can do each step in turn, or you can split up your crew and do two or three steps at the same time.

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).

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 mains panel) for use with a non-protected receptacle (with in-use weatherproof cover) adjacent to the transformer.

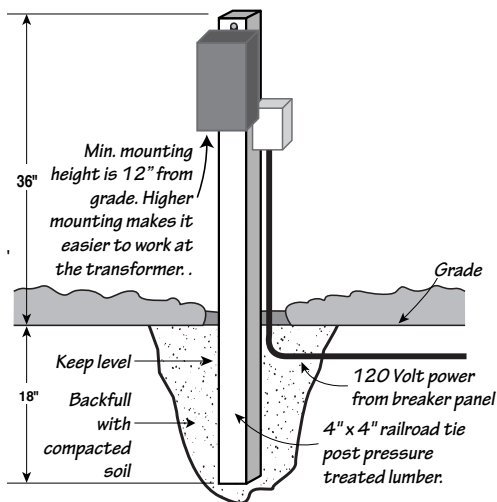


Fig. 3. Transformer Stand

Transformers include mounting hardware.

2. Mount Luminaires on Fence Posts

a. Each luminaire is equipped with a package containing a mounting bracket (saddle clamp), (2) bolts, and (2) nuts.

b. Before attaching to fence, attach one end of bracket to each fixture with supplied bolt. Back off the nut so the bracket extends as far from fixture as possible.

c. Position luminaire against fence post in desired location.

d. Slip the bracket between the fence post and the chain links. Some fences have very heavy links that are tight against the post. Check to see if the links interfere with the bracket. If they do, you can use a long screwdriver or vice grips to bend the links away from the post.

e. With the bracket in position, insert the second bolt through the bracket and screw it into the fixture.

f. Finger-tighten the bracket by spinning the nut on one side then the other, going back and forth until the bracket is tight and parallel to the fixture. Using a 7/16" open-end wrench, continue tightening until fixture is secure.

g. Tighten both nuts so bracket is secure and parallel to junction box.

h. Continue mounting all luminaires to fence.



CPL1 Clamps to Fence Post

3. Run Wire

CAST Lighting No-Ox[®] low-voltage wire is rated for both direct burial and attachment to fence without conduit. Attaching wire to fence with UV and weather-resistant cable ties is the most cost-effective solution since it requires less wire, less labor, and less material expense. This method does expose wire to possible tampering - however, it is difficult to cut a wire that has been secured along a support inside a fence. The more secure alternative to this method is to run wire in PVC or metal conduit. Both options are addressed here.

• Option 1. With Conduit

- a. If conduit is used, starting from the transformer, push out knockout in the transformer's bottom plate. Use threaded 1/2" conduit connector with retaining nut (purchased separately) to attach conduit to transformer.
- b. For the following steps, employ standard methods for running 1/2" conduit and attaching to horizontal fence pipes or burial.
- c. Attach conduit to fence (or bury it). Install a junction box with removable faceplate beneath each luminaire location. This can be a square box or pre-formed T-Junction. A vertical 1/2" conduit connects conduit junction to luminaire junction. Opening at bottom of luminaire junction box is not threaded, so a threaded connector with retaining ring should be used.
- d. Employ standard methods for running wire through conduit. Typically, wire is run through entire length of conduit, then at each junction box, a single wire is spliced into the main line. This wire extends through the vertical conduit into the luminaire junction box. **Do not pull a loop off the main line to extend into the luminaire. See Appendix 1 (p. 12) for making connections.**

• Option 2. Without Conduit

- a. Starting at the transformer, run home-run wire to first luminaire (for Daisy Chain Method) or to a luminaire along the chain (for T-Method). If transformer is not mounted on fence, follow NEC guidelines for burial of low-voltage wire to reach fence location.
- b. Home-run wire can enter first luminaire through bottom opening (with use of supplied strain relief) or it can enter through one of the side openings.
- c. When running wire along fence posts and rails, secure every 18" to 24" with permanent (or re-usable) cable ties. When encountering bands and brackets, run wire through these if possible. Continue running wire to connect all luminaires.



Bottom Entry. For wire run from below, pass wire through strain relief (2 provided with transformer).

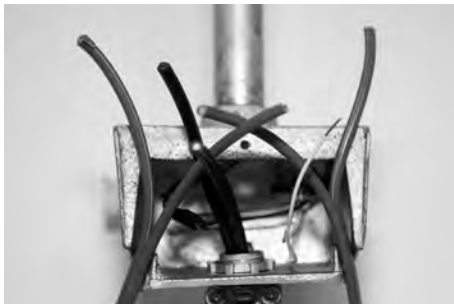


Side Entry. For wire from top rail, form loop and press into bottom side openings.

INSTALLATION (cont.)

4. Connect Wires

After running wire, all luminaires will have from 1 to 3 wires entering each luminaire junction box. Follow these steps to connect wires to luminaires. (Note: These photos show the first luminaire at a T-Junction. The same techniques are used for luminaires with 1, 2, or 3 wires.)



At each junction box, separate legs for each paired wire.



Using manual or automatic wire stripper, remove 1/2" insulation from one leg of each paired wire. Take care not to cut any wire strands.



Line up stripped ends with one white wire (you can twist them slightly to keep them together). Insert them into supplied wire crimp. Make sure all wires are fully inserted into metal part of crimp.



Using crimping tool, squeeze firmly to compress crimp. Pull on each wire to ensure solid connection. Repeat process of stripping and crimping with second leg of each pair.



Pull incoming wires to draw completed crimps into box. Push all wires into box.



Tighten strain relief at bottom of box, replace cover.

5. Transformer Set-Up and System Operation

With transformer unplugged from 120-volt or 220/230-volt receptacle, do the following:

a. Run homerun wire into transformer.

Wire enters transformer from bottom through the 1/2" knockout. If conduit is used, secure a threaded locknut adapter to attach conduit to transformer bottom plate. Without conduit, install provided strain relief to secure entering wires.

b. Strip Wire. Strip 3/4" insulation from each leg of the paired homerun wire. Be careful not to cut any strands.

c. Taps: Loosen set screws in transformer common and voltage tap. Wires are polarity independent; insert one wire leg into common tap, then the other in voltage tap. Tighten both set screws. Pull on both wires to ensure secure connections.

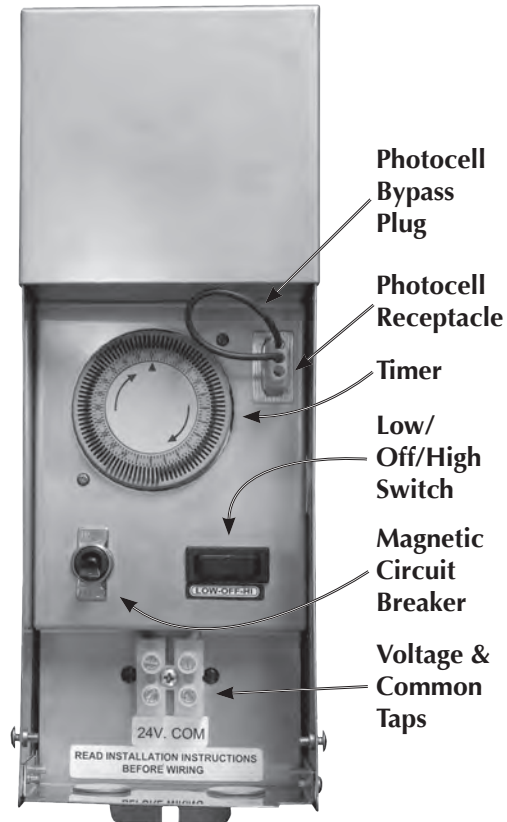
d. Low/Off/High Switch: The 3-position black toggle switch changes voltage output from Low (24 V), Off, to High (26 V).

- ▶ **Use Low setting** except for the following conditions:
- ▶ **Use High setting for:**
 - Fence lines over 200 ft., or
 - More than 10 luminaires, or
 - Homerun lines over 300 ft.

e. Timer: The timer and photocell act as on/off switches in series; the timer is first, so it overrides the photocell. Each tab on dial controls 15 min. of operation. When tab is set towards center, power is "On"; when pushed outwards, power is "Off". Begin by rotating dial clockwise until arrow is aligned with current time (24-hour clock). Then, set on/off cycle by pushing tabs toward center for "On" times. When all tabs are at center, timer is always on and photocell takes full control.

f. Photocell: Transformer is shipped with Photocell Bypass Plug in place. For photocell capability, use CAST Plug-in Photocell (CTPC, CTRPC (remote), or E1CTPC (220/240 V)). To install photocell, remove knockout from transformer enclosure on right side. Remove Bypass Plug then insert photocell plug through knockout. Plug this into photocell receptacle, then secure photocell with locking ring. Position photocell head so it is aimed at sky or bright outdoor region. If transformer is mounted indoors, use Remote Photocell (CTRPC). It has a 20 ft. lead wire to enable mounting photocell on building exterior.

g. Testing and Documentation: See Appendix 4 (p. 18) for instructions.



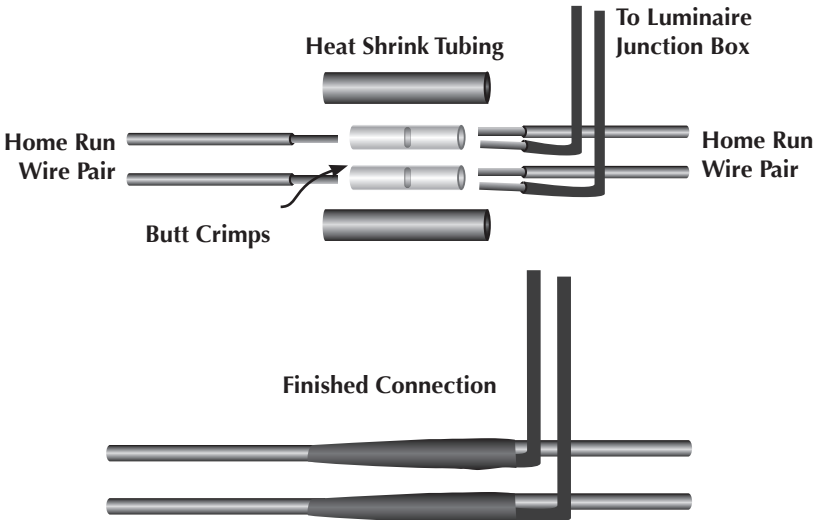
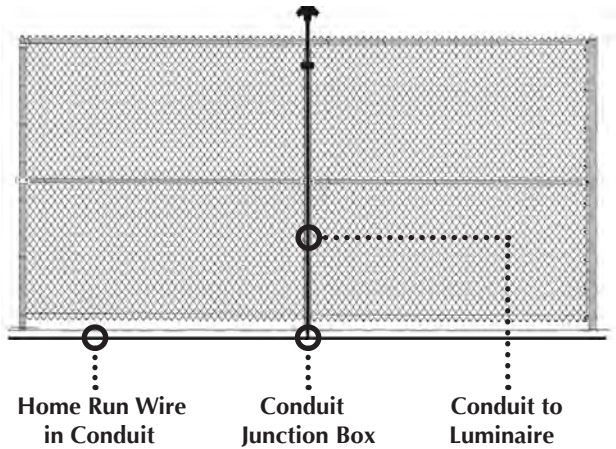
Guide to Butt Crimp Connections for Field Wires

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: CAST Wire Repair Splice Kit (CLWSK) contains an assortment of crimps - including (150) #12-10's and a crimping tool.

Instructions are included with each kit.



Guide to Wire Gauge Selection

These charts are simplified guides to wire gauge selection.

Step 1. Select Wiring Method (Described and illustrated on p. 6)

- **T-Method (Preferred):** Home run wire connected to luminaire along the chain - preferably the center fixture. This method conserves energy and results in less voltage loss so more fixtures can be connected.
- **Daisy Chain:** Home run wire from transformer connects to first fixture, then luminaires are all connected sequentially along the fence.

Step 2. Find Best Wire Gauge for the Chosen Wiring Method

Lighter gauge wire (#14/2) is less expensive than heavier gauge wire (#12/2, #10/2), but results in more voltage loss at the fixtures. Use the following charts to select wire that results in adequate voltage at all fixtures.

- **Chart 1: T-Method with 20-ft. luminaire spacing**
- **Chart 2: T-Method with 30-ft. luminaire spacing**
- **Chart 3: Daisy Chain with 20-ft. luminaire spacing**
- **Chart 4: Daisy Chain with 30-ft. luminaire spacing**

Note 1. Charts Use Single Wire Gauge. For simplification, these charts show systems with a single wire gauge for both home runs and between fixtures. Further material cost savings may be realized by mixing wire gauges in the system (usually a heavier gauge for the home run). For predicting mixed gauge systems, use the CAST Lighting Low Voltage LED & Incandescent System Calculator at www.cast-lighting.com/support-installers/system-calculator-installers/ or scan the QR code to the right.



Scan to open
CAST LED System
Calculator




or


Note 2. Adjusting for Wire Placement on Fence. These charts assume wiring along the top horizontal fence support. If wires are run to middle bottom horizontal supports or using buried conduit, then slightly greater voltage loss will result. If using one of these alternative wiring methods (that results in longer wire runs) then be conservative in chart interpretation (add 1 luminaire to chart).

Note 3. Flexibility in Choosing Wire Gauge. Charts show lightest possible wire gauge for each combination of 'Number of Luminaires' and 'Home Run Length'. This represents the most cost-effective wire choice. You may, however, use heavier gauge wire instead (to reduce energy consumption).

Note 4. High/Low Transformer Settings. CAST Perimeter Lighting Transformers can be set on Low (24 V) or High (26 V). The high setting should be used on systems with more than 12 luminaires. The following charts are calculated with the setting on High (26 V).

	50	100	150	200	250	300	350	400	450	500
31								X	X	X
30								X	X	X
29								X	X	X
28									X	X
27										X
26										X
25										
24										
23										
22										
21										
20										
19										
18										
17										
16										
15										
14										
13										
12										

KEY:  = #14/2  = #12/2  = #10/2

 = Beyond specs, call CAST for assistance

	50	100	150	200	250	300	350	400	450	500
36										
35										
34										
33										
32										
31										
30										
29										
28										
27										
26										
25										
24										
23										
22										
21										
20										
19										
18										
17										
16										
15										
14										
13										

Number of L

Home Run Length (from Transformer to Luminaire)

Home Run Length (from Transformer to Luminaire)

Daisy Chain - 20 Ft. Spacing

Chart 3. Daisy Chain Wire Gauge Guide
20 Ft. Spacing Between Luminaires


Number of Luminaires - 20-Foot Spacing	35	X	X	X	X	X	X	X	X	X
	34	X	X	X	X	X	X	X	X	X
	33		X	X	X	X	X	X	X	X
	32		X	X	X	X	X	X	X	X
	31			X	X	X	X	X	X	X
	30			X	X	X	X	X	X	X
	29				X	X	X	X	X	X
	28					X	X	X	X	X
	27						X	X	X	X
	26							X	X	X
	25								X	X
	24								X	X
	23									X
	22									
	21									
	20									
	19									
	18									
	17									
	16									
15										
14										
13										
12										
11										
10										
9										
	50	100	150	200	250	300	350	400	450	500
	Home Run Length (from Transformer to Luminaire 1)									

Daisy Chain - 30 Ft. Spacing

Chart 4. Daisy Chain Wire Gauge Guide
30 Ft. Spacing Between Luminaires

Number of Luminaires - 30-Foot Spacing										
	50	100	150	200	250	300	350	400	450	500
27			X	X	X	X	X	X	X	X
26			X	X	X	X	X	X	X	X
25				X	X	X	X	X	X	X
24					X	X	X	X	X	X
23							X	X	X	X
22								X	X	X
21									X	X
20										X
19										
18										
17										Ex. 2
16										
15								Ex. 1		
14										
13										
12										
11										
	50	100	150	200	250	300	350	400	450	500
	Home Run Length (from Transformer to Luminaire 1)									

KEY:  = #14/2  = #12/2  = #10/2

 = Beyond specs, call CAST for assistance

- Examples:**
- 400 ft. Home Run, 14 luminaires - Use #12/2 wire
 - 500 ft. Home Run, 16 luminaires - Use #10/2 wire

Appendix 3. Mounting Guidelines for Illuminance Values

Mounting Guidelines for Illuminance Values

The following chart shows minimum illuminance values along fence lines depending on fence post spacing, fence post height, and luminaire spacing.

To use the chart:

- Find appropriate column for fence post spacing.
- Within that column, select column for appropriate luminaire spacing.
- Read illuminance values in row that corresponds to fence post height.

Mounting Guidelines Min. Horiz. Illuminance Values (between adjacent luminaires)*									
Fence Post Height	8' Fence Post Spacing			10" Fence Post Spacing			12' 6" Fence Post Spacing		
	Luminaire Spacing			Luminaire Spacing			Luminaire Spacing		
	Mount Every Post	Mount Every Second Post	Mount Every Third Post	Mount Every Post	Mount Every Second Post	Mount Every Third Post	Mount Every Post	Mount Every Second Post	Mount Every Third Post
4'	28.4 lux 2.6 fc	4.2 lux 0.4 fc	NR	16.8 lux 1.6 fc	NR	NR	9.8 lux 0.9 fc	NR	NR
6'	22.0 lux 2.0 fc	6.4 lux 0.6 fc	NR	16.8 lux 1.6 fc	3.5 lux 0.3 fc	NR	11.0 lux 1.0 fc	1.4 lux 0.1 fc	NR
8'	17.2 lux 1.6 fc	6.9 lux 0.6 fc	2.8 lux 0.3 fc	13.6 lux 1.3 fc	4.4 lux 0.4 fc	1.4 lux 0.1 fc	10.4 lux 1.0 fc	2.4 lux 0.2 fc	NR
10'	13.0 lux 1.2 fc	6.4 lux 0.6 fc	3.2 lux 0.3 fc	9.6 lux 0.9 fc	4.6 lux 0.4 fc	1.7 lux 0.2 fc	9.0 lux 0.8 fc	2.8 lux 0.3 fc	0.8 lux 0.1 fc
12'	9.6 lux 0.9 fc	5.6 lux 0.5 fc	3.1 lux 0.3 fc	8.6 lux 0.8 fc	4.2 lux 0.4 fc	1.9 lux 0.2 fc	7.2 lux 0.7 fc	2.9 lux 0.3 fc	1.1 lux 0.1 fc

KEY	High Level Min. Illuminance (10-30 lux)	Moderate Level Min. Illuminance (5-10 lux)	Low Level Min. Illuminance (1-5 lux)	NR Not Recommended Min. Illuminance (0-1 lux)
-----	---	--	--	--

*Measured at ground level. Values at 18 V input at luminaire (represents center voltage for system size of 17 Perimeter fixtures along 340 ft. fence). Actual values vary within 12 V to 24 V range +/- 10%. Min. Illuminance values calculated at center point between adjacent fixtures. IES Files available on request.

Appendix 4. Testing & Documentation

Testing & Documentation Instructions

With the completed system powered on, perform the following tests using a CAST Digital Volt/Ohm/Amp Meter (CMETER) (clamp-on type) or equivalent. Record results on the Project Record Form on the last page of this manual.

- Test primary voltage at GFCI receptacle, then secondary voltage at 24 V taps.
- Test primary amperage by clamping onto Photocell Bypass Loop (if photocell is in place, unplug then replace with bypass loop), then test secondary amperage by clamping onto one wire leg below the 24 V taps.
- Test voltage at first and last luminaire. If T-Method is used, then test the last luminaire on the longest leg. Voltage probes can be inserted into crimp connectors for testing.
- Record other system data on the Project Record Form.
- Store completed form in the transformer cabinet or other safe place.

ELECTRICAL SPECIFICATIONS

CAST LED Perimeter Light (CPL1)

- Input Voltage: 12 to 24 V AC or DC (polarity independent)
- Input Current & Power: 0.41 A (+/- 10%); 7.0 W (+/- 10%) - Use 8.5 VA for voltage loss calculations
- Power Factor: 0.82 (+/- 0.08)
- Surge and Spike Suppression: TVS transient voltage suppressor (up to 40 V)
- EMI Filtering: Inductors and capacitors for filtering to comply with FCC Class B Conducted and Radiated
- Ambient Temperature Range: -40 °C to 55 °C
- LED Driver: Fully encapsulated in thermally conductive epoxy
- LED Array: (3) Cree XPEHEW Neutral White chips
- Lumen Depreciation (L70): 60,500 hours (according to Cree LM-80 report)
- Color Temperature (CCT): 4,550 °K

CAST Perimeter Lighting Transformers (CPT300, CPT600, E1CPT300, E1CPT600)

- Core Type: Magnetic toroidal, fully encapsulated in epoxy resin
- Input Voltage: 120 V, 50/60 Hz AC (CPT300, CPT600); 220/240 V, 50 Hz AC (E1CPT300, E1CPT600). DC voltage input also acceptable - polarity independent.
- Input Current & Power: 300 VA, 2.5 A (max) (CPT300, E1CPT300); 600 VA, 2.5 A (max) (CPT600, E1CPT600)
- Output Voltage (all models): 24 V (Low Setting); 26 V (High Setting)
- Output Current & Power: 300 VA, 12.5 A (max) (CPT300, E1CPT300); 600 VA, 25 A (max) (CPT600, E1CPT600)
- Over-Current Protection (all models): Magnetic circuit breaker on secondary; primary thermal protection (auto reset)
- Built-In Mechanical Timer: 24-hour, 15-minute on/off increments, power must be continuously supplied to transformer for timer to operate.

SYSTEM MAINTENANCE

CAST LED Perimeter Light (CPL1)

- If debris accumulates on LED glass dome or underside of reflective hat, wipe clean with glass cleaner and soft cloth.
- Re-tighten luminaire bracket bolts.
- Inspect exposed wires for physical damage.

CAST Perimeter Lighting Transformers (CPT300, CPT600, E1CPT300, E1CPT600)

At least once a year:

- Remove cover plate and wipe clean any accumulated debris.
- Re-tighten terminal block screws.
- Clean surface of photocell sensor.

WARRANTY

CAST Lighting warrants its products against defects in material and workmanship. Without charge, CAST Lighting will either repair or replace (CAST Lighting reserves the right to decide between repair or replacement) any properly installed CAST Lighting product which fails under normal operating conditions and has not undergone abuse beyond normal wear-and-tear within the specified warranty period.

All items are warranted from the date of invoice.

Lighting Fixtures (does not include Demo Kit components)

- a. All castings and copper stems: Lifetime Warranty
- b. All galvanized steel stems: 10-Year Warranty
- c. Electrical components: 3-Year Warranty (See LED exceptions below)

Transformers (does not include Electronic Mini-Transformers)

- a. Windings and Stainless Steel (SS Series) Enclosures: Lifetime Warranty (see salt spray exposure exception below)
- b. Mild Steel (PS Series) Enclosures: 3-Year Warranty
- c. Electrical Components: 3-Year Warranty
- d. Photocells and Timers: 3-Year Warranty

Electronic Mini-Transformers: 3-Year Warranty

No-Ox® Wire: 25-Year Warranty

Tools and Meters: 1-Year Warranty

Demo Kit Components: 90-Day Warranty

Incandescent Lamps – No Warranty

WARRANTY (CONT.)

LED Circuits

Cast Lighting LLC warrants its LED circuits (includes LED drivers, chips, and replaceable LED lamps) when purchased from an authorized Cast Lighting distributor to the original purchaser as follows. This warranty is specific to the LED circuit components of CAST Lighting products and does not apply to other lighting fixture parts.

LED Lamps and Integrated LED Circuits: Dynasty LED – 4 years; CAST Integrated LED's & Modules – 5 years; CAST LED Perimeter Light – 3 years. Subject to the following conditions:

All products containing LED circuits must be installed using a Cast Lighting LED-approved power supply (manufactured by Cast Lighting). All dimming must be accomplished by use of a dimming device approved for specific CAST Lighting products. Use of non-approved transformers or dimming devices voids LED warranty.

The following CAST Lighting Transformers are approved for use with CAST Lighting LED's:

- | | | | |
|--------------|-------------|--------------|--|
| • CJT75SSMT | • CJ600SSMT | • CM1200SSMT | Also includes all E1 models (220/240 V Export Series) of these transformers. |
| • CJT150SSMT | • CJ600PSMT | • CM1500SSMT | |
| • CJ300SSMT | • CJ900SSMT | • CPT300 | |
| • CJ300PSMT | • CM900SSMT | • CPT600 | |
| | | | |

A complete list of approved transformers and dimming devices is available in Cast Lighting's published "Transformer and Dimmer Compatibility List" - accessible on product specification pages in the CAST Lighting website.

Transformers

Transformer Warranty covers only properly installed and maintained transformers. Transformers returned and inspected at the Cast Lighting service center found to have the following will not be covered by warranty:

- a. Transformers left operating in a horizontal position or while in contact with the ground,
- b. Transformers left operating without cover in place as evidenced by internal weather or water damage,
- c. Transformers with missing covers or other supplied parts,
- d. Transformers with cut power cords, or that have been altered in any way,
- e. Transformers damaged by loose terminal block screws.

Transformers installed within one thousand feet of any salt water source must be installed in an enclosure such as by Hoffman MFG or in a building, shed or suitable protection to avoid salt spray damage to the transformer. Damage from salt spray is not covered by this warranty. Installations in a building must adhere to specific local electrical code. Contact local electrical authority for details specific to your municipality or governing body.

Transformers that are returned to distributor and claim to be defective must be bench tested by the distributor prior to obtaining an RGA from Cast Lighting. To replace a transformer that is suspected of having a warranted defect the original purchaser must contact Cast Lighting LLC and obtain a return goods authorization (RGA) and ship FOB destination to the Cast Lighting service center identified on the RGA. Transformer will be repaired and returned to

WARRANTY (CONT.)

customer either with a like model swapped out for the returned unit or the actual returned unit being repaired and returned to the customer. Cast Lighting reserves the right to issue a credit, repair, or swap-out with a rebuilt transformer any defective transformer.

If returned transformers are found to require repairs not covered under warranty, then the customer will be notified of the repair charge and given forty-five days from the date of estimate to choose to either repair, return un-repaired, or to abandon ownership. Transformers held over forty five days (without communication from owner) will be considered abandoned and CAST Lighting will assume ownership. If owner authorizes unwarranted repairs, then the owner will be responsible for all repair, packaging, and shipping costs.

In addition to the above, all returned transformers must be tagged with customer's name, contact person, problem encountered, cell phone number and e-mail information. Do not write on transformer with a magic marker. Transformer must be packaged properly to avoid shipping damage.

Claims Procedure

To replace a product that is suspected of having a warranted defect, the original purchaser must contact Cast Lighting LLC and obtain a return goods authorization (RGA) and ship FOB destination to the Cast Lighting service center identified on the RGA. Original owner must include proof of purchase, original purchaser's name, return address and a detailed description of the allegedly defective parts or products.

Purchaser is responsible for the cost of labor to remove, repair, and reinstall any product. Cast Lighting LLC reserves the right to have a Cast Lighting authorized technician inspect the installation prior to removal of product to verify defect claim. If any of the warranted products are found by Cast lighting to be defective, such products will, at Cast Lighting LLC's sole discretion, be replaced, repaired or refunded less an amount directly attributable to the owner's prior use – such use to be calculated as a percentage of published estimated life.

Repaired or replaced product will be returned prepaid according to the shipping information provided by the original purchaser as noted on the RGA. The parties hereto expressly agree that purchaser's sole and exclusive remedy against Cast Lighting LLC shall be for the repair, replacement, or refund of defective products as provided herein. This warranty extends only to product ownership by original purchaser and is not transferable whether to heirs, subsequent owners, or otherwise. This warranty does not cover labor or any other expenses to remove or install any defective, repaired, or replaced product.

This warranty does not apply to any products that have been subject to misuse, mishandling, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, acts of god, improper packaging of returned products, modification, lightning strikes, voltage surges, or operating voltages in excess of +/- 10% of the standard supply voltage of 120 volts or 230/240 volts AC, 50/60 Hz.

The forgoing warranty is in lieu of all other warranties expressed or implied including those of merchantability, fitness, or for any particular purpose or infringement. Original purchaser shall in no event be entitled to, and Cast lighting shall not be liable for indirect, special, incidental, or consequential damages of any nature, including, but not limited to, loss of profit, injury to reputation, and/or loss of customers. No employee or agent of Cast Lighting may extend, modify and /or change the terms of this warranty.

PROJECT RECORD

Project Location: _____

Project #: _____

Client: _____ Installation Date: _____

Installer: _____

Company: _____

Address: _____

Phone: _____ Email: _____

AS-BUILT SYSTEM DATA

◆ **Wire Run #:** _____ # of Luminaires: _____

Location of Luminaires: _____

Wiring Method: Daisy Chain T-Method (connected at L# _____)

High/Low Setting: High Low

Final Readings (system powered on)

Primary Voltage: _____ Primary Amps: _____

Secondary Voltage: _____ Secondary Amps: _____

Luminaire #1 Voltage: _____ End Luminaire Voltage: _____

◆ **Wire Run #:** _____ # of Luminaires: _____

Location of Luminaires: _____

Wiring Method: Daisy Chain T-Method (connected at L# _____)

High/Low Setting: High Low

Final Readings (system powered on)

Primary Voltage: _____ Primary Amps: _____

Secondary Voltage: _____ Secondary Amps: _____

Luminaire #1 Voltage: _____ End Luminaire Voltage: _____

◆ **Wire Run #:** _____ # of Luminaires: _____

Location of Luminaires: _____

Wiring Method: Daisy Chain T-Method (connected at L# _____)

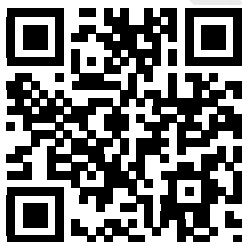
High/Low Setting: High Low

Final Readings (system powered on)

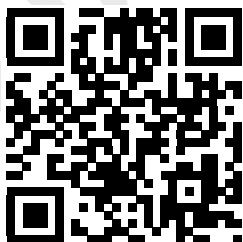
Primary Voltage: _____ Primary Amps: _____

Secondary Voltage: _____ Secondary Amps: _____

Luminaire #1 Voltage: _____ End Luminaire Voltage: _____



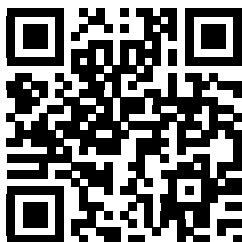
CAST LED Perimeter Light
Product Web Page



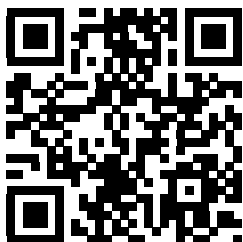
CAST LED Perimeter Light
Brochure



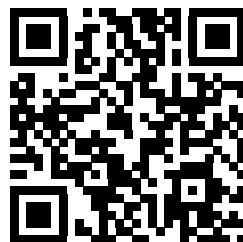
CAST LED Perimeter Light
Installation Training Video



CAST LED Perimeter Light
English Instructions



CAST LED Perimeter Light
Manual en Español



CAST LED Perimeter Light
Manuel Français