“Designed to target the tunnel vision of today's distracted driver.”

In-Road Crosswalk Systems

866.466.4836
www.LaneLight.com
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1.0 Installer Responsibility

It is the installer’s responsibility to ensure the equipment is installed properly, safely, and per industry standards. The installer is responsible for system maintenance and operation. The installer is responsible for damaged units due to improper installation and incorrect wiring. It is the installer’s responsibility to contact LaneLight in case of misunderstanding of the instructions in this manual, disagreeing with the instructions in this manual, or if unable to perform a given instruction in this manual. Please read all instructions and requirements in this manual before going to site. Always keep a copy on-site.

The installer is liable for the system’s final operation and safety. The instructions in this manual are subject to change without notice.

2.0 Warranty Information

LaneLight provides a 5 year limited warranty on the supplied equipment (excluding batteries) only if the warranty report is sent back, signed, and completed properly. The warranty period starts from the date of delivery.
3.0 System Overview

3.1 Introduction
Installing a LaneLight system requires certified cables, connectors, crimping tools, gel, and epoxy. It is the installer’s responsibility to ensure these materials are LaneLight certified, in good condition, and verify quantities. There are various quality control tips necessary to ensure system longevity. A LaneLight system is usually broken down to two circuits. One circuit is for output and activated devices; AWG18/3LL cable is used. The other circuit is for input and activation devices; AWG18/4Act cable is used.

Output circuit devices may include in-road warning lights, RRFBs, LED enhanced signs, beacons, and more. Input devices include pushbuttons, LaneLight’s bollard system, LaneLight approved microwave sensors, and more. This document will introduce a typical LaneLight crosswalk.

LaneLight crosswalks must only be controlled by LaneLight controllers to avoid device damage and warranty loss, to ensure electrical safety and code, to follow specifications and mitigate liability, and to ensure system longevity and proper operation.

3.2 Installation Video

Internet connection required:
http://www.itemltd.com/inventories/installation
3.3 Typically Supplied Components

From LaneLight you may receive varying quantities depending on the plans and drawings supplied during the quoting and purchasing process. The main components required for a LaneLight crosswalk include:

1) LaneLight manufactured, approved, and tested control cabinet – cabinet type and size may vary depending on location and application.

2) MLK150 LED fixtures

3) MLK150 housing with pre-assembled junction box

4) AWG18/3LL direct burial cable conforming to LaneLight specifications

5) Backer rod – approved filler for saw-cuts to be cast in epoxy

6) LaneLight314 hydrophobic gel filled connectors for splices within the junction box

7) LaneLight8882 re-enterable gel to fill and seal the junction boxes

8) Lexan leveling tools and screws and nuts

9) LaneLight STATA-FLEX epoxy and catalyst to cast MLK150 housing in place and fill in saw-cuts

10) LaneLight approved activation device(s)

11) Optional side flashers (wired or wireless)
3.4 Required Tools

Tools in this list are not supplied, and are required for a complete and proper installation of a LaneLight crosswalk. This list may not be complete for your specific project and/or installation. Please create a checklist for your specific project which may include additional work such as repaving the road, mounting traffic poles, loop cutting and coring, installing activation devices, installing additional devices and side flashers, installing the control cabinet, painting and finishing the crosswalk.

The tools in this list are required for installing the LaneLights only:

1) Installation manual(s)
2) Multimeter for voltage and current readings
3) All supplied LaneLight Boxes
4) Asphalt cutting saw
5) Asphalt core drill with 8” bit
6) Industrial Vac (wet and dry)
7) Jackhammer with asphalt bit
8) Drill with stirring bit for epoxy mixing
9) Graduated buckets
10) Masking tape
11) Chalk for marking
12) Measuring tape
13) Generator to power tools
14) Water source for cutting and cleaning
15) Fish tape
16) Cable and wire cutters
17) Cable and wire strippers
18) Torque Wrench
19) Vice grips
20) LaneLight314 Crimper
21) Flat and Philips screwdriver set sizes 00-2
22) Construction lights (for night work)
23) Ladder (for fishing cable through poles)
24) Traffic control plan, personnel, and gear per local codes and regulations
25) For cabinet and sign mounting you may require a drill with a step bit, banding tool, hex sockets, ratchets, and other tools not specified here.
4.0 Installation Procedure

Use a traffic control plan, and traffic safety gear such as high visibility vests, cones, flags, and signs are necessary to close the appropriate lanes while working. Follow local codes, laws, and regulations when working on-site. It is the installer’s responsibility to perform the steps outlined in this manual in a safe and legally compliant manner.

Step 1: Marking and cutting and coring

Use chalk and the tape measure to mark the LaneLight locations and cable run to be cut in the asphalt.

Cut a 3/8” wide by 2 ½” deep slot (3 ½” where activation cable will share the same slot).

Core 8” diameter holes at 3” depth for the LaneLights.
Step 2: Cleaning and cutting the cores
Wash and vacuum the cuts and cores.

Use the jackhammer to break out the cored halves, and smooth the hole’s bottom. Ensure there are no sharp protrusions.

Clean all loose material from the holes and surrounding road surface.
Step 3: LaneLight Assembly

LaneLights are assembled on-site to ensure cable run fit. Obstacles, such as man holes, may require cable routing.

Assemble the LaneLights after measuring the wire lengths. Push the cable through the junction box as shown in the section view below. Strip back 4” of the cable to expose the wires. Do not cut or expose the copper in the wires. If the strippers cut the wire, dispose of the cut section and ensure you have 4” of wire exposed.

6” of cable must pass through the wire nuts from each side. Refer to video in section 3.2 for further illustration.

Hand tighten the cable gland for water protection. Do not over tighten. After tightening ensure the cable will not slide off, and is not deformed or crushed in the cable gland.

Never strip the wires.

Use the provided LaneLight314 connectors to connect each LaneLight in parallel.
Step 4: String assembly and initial test

Assemble multiple LaneLights in strings, and place them into the designated areas. This may be done in sections for traffic control considerations.

Don’t forget to place the activation cable (AWG18/4Act) below the LaneLights if running in the same slot.

Cable(s) should not chafe on any edges, and should have a small amount of slack between LaneLights. The slack must not be long such that the cable will rise and float when the epoxy is poured.

Beyond this step your site, cuts and cores, and LaneLight assemblies need to be dry and clean at all times. Moisture and rain will create electrical shorts, chemical imbalance in the epoxy and gel, and fill in beneath the asphalt and cause lifting and heaving when pavement temperatures drop.

The control cabinet must be assembled and mounted on the pole. All cables must be continuously run with no splicing to the control cabinet. Use fish tape to run the cable through any conduit, pull boxes, and pole(s). Use the banding tool to mount the cabinet or the provided Pelco mounts. For specific cabinets additional instructions may be provided.

Install the activation devices as per their attached instructions and run cable(s) accordingly. Install any side flashers or auxiliary devices as per their attached instructions and run cable(s) accordingly.

Wire and connect all devices to the control cabinet, and power on your controller. Connect your LaneLights (AWG18/3LL) to terminal blocks labeled markers output 1 or 2, out+/- 1 or 2, PWR1+ PWR1- or PWR2+ PWR2- according to the wiring diagram attached in your cabinet, or at the appendix of this document.

LaneLights require a fused 24VDC connection with red wire denoting the positive, and black wire denoting the negative.

Ensure your LaneLight assembly is operating properly, and your connections are secure. You may leave the LaneLights on during Step 5: Aiming your LaneLights, but ensure to power off the system and your controller for Steps 6 and 7.
Step 5: Aiming your LaneLights
LaneLights are directional units that project light at a certain angle.
LaneLights must be aimed toward drivers.
The grounding screw must be (facing traffic) at the front of the MLK150 fixture so it doesn’t ride against the LED engine (black portion/potting material) of the fixture. The MLK150 housing may be rotated in position by loosening the Philips bolts holding the O-ring of the junction box. The bolts must be retightened.

QC Tip: Do not over tighten Lexan cover screws to avoid damaging the threads in the inserts. M8x1.25 bolts are later used to secure

**Snow plowable:**
Insert the LED fixture inside the housing, then place the leveling plate on top and attach using the provided cover screws. Push the assembly to the rear of the core.

**Non-Snow plowable:**
Lay the LED fixture next the housing, attach the leveling plate to the hub using the provided cover screws.
Step 6: Mixing the epoxy

Follow WHMIS guidelines and local codes when handling flammable, explosive, and/or corrosive material. Open in well ventilated area. Read Step 7 before mixing the epoxy.

NEVER mix or pour epoxy in a wet environment or rain. Water and moisture will cause the epoxy to lift and heave when the temperature drops.

Caution: once the epoxy is poured, the process is irreversible. Before using the epoxy, properly aim and test the LaneLights. To test the LaneLights, please reference the wiring diagram. Ensure no electrical connections are live for the next step.

Do not substitute epoxy and catalyst. Approved products are provided from the manufacturer.

Mixing:

- Keep cans warm, above 65°F. Keep them in the cab of a truck if necessary.
- Use a drill-driven paint mixing paddle and a ½” AC drill (not cordless).
- Pre-stir the resin to an even thickness.
- Make sure that solids on can bottom are mixed in.
- Add catalyst: use ½ oz catalyst per gal of epoxy if over 70F, and ¾ oz/gal if under 70F
- Mix thoroughly, one minute if hot, 2 minutes if cold.
  *If a small quantity is needed, reduce all quantities by equal proportions, and mix it in a graduated bucket.

Caution: once mixed, you only have 5 to 15 minutes until the epoxy starts to harden and cannot be poured. Once set in the road, the epoxy may take longer to harden, due to the cooling effect of the pavement in cooler temperatures.

Tape around the saw-cuts to keep the road clean before pouring the epoxy. Place the provided backer rod on top of the cable(s) in the saw-cuts. Push backer down to ensure the cable doesn’t float when the epoxy is poured. Do not use a sharp edge because it may puncture the cable and cause a short circuit.
Step 7: Casting the MLK150 hubs with epoxy

Use backer rod pieces to stop any poured epoxy into the cores from overflowing into the sawcuts.

This is a time sensitive step. Pour epoxy to completely fill void around and under the housing – fill to within ¼ of the top of the housing, do this all in one pour. Remove the leveling tool once epoxy is firm.

If the epoxy is poured in sections, stages, or not in one pour the LaneLights will lift after a few months due moisture buildup and hardened epoxy cracking.

A final pour of epoxy can be done to level with pavement surface if necessary, but must not by thicker than ¼”.

Caution: If epoxy begins to harden before completion, do not try to use it. If epoxy hardens before the fixture void can be completely filled, the fixture will need to be lifted and the hardened epoxy removed. If this made pulling the cable out of the housing necessary, the installer must ensure that the cable is re-installed properly.

After filling the core hole with epoxy, you may proceed to fill the sawcuts.

Ensure the MLK150 hubs and cable do not lift. You may use a 5lb sand bag on top of the leveling plate to keep it from lifting.
**Step 8: Sealing the junction boxes**

After the epoxy hardens and the road is dry you may test your lights one more time.

Pull apart the membrane between the two halves of the LaneLight8882 gel pouch. This can be done by rolling up one bottom corner of the bag, compressing the contents until the membrane between the two halves bursts, and allowing the two sides contents to combine.

Squeeze and turn the gel pouch to mix well for one minute. Cut one corner of the pouch, and pour into the wiring sub-base opening. Pause when full to allow air bubbles to escape.

Fill the entire void beneath the black plastic retaining ring, up to, and slightly above the ring. All connectors must be in the junction box. The gel may require a few seconds to settle. The gel requires 20-30 minutes to set.

Do not apply electrical power or turn on the system if the gel is in liquid form.
Step 9: Closing and testing the system
Place the MLK150 fixture inside the housing carefully. Ensure the wires are clear from the LED engine (black portion underneath the fixture). Ensure the grounding screw is clear from the LED engine. The grounding screw must be facing oncoming traffic.

Do not allow any wiring to be pinched between LED fixture edges or housing. Pinched wires eventually short circuit, and will cause the system to fail in a few months.

Tighten down the provided M8x1.25 bolts to 32ft-lbf (384in-lbf) and verify using the torque wrench.

Power on the system and test it multiple times. Leave the work site clean and tidy. Submit warranty report to manufacturer.
5.0 Troubleshooting
LaneLights are Direct Current nonlinear devices. In nominal operating conditions LaneLights consume 2.4W (±10%) which equates to 0.1A @ 24VDC each. LaneLights fail in open circuit or short circuit mode.

5.1 Technical support and ticket system
LaneLight requires a copy of your warranty report to be submitted before technical support. Attempt the instructions provided in section 5 before contacting LaneLight.

5.1.1 Contact LaneLight for replacement units
The simplest way to contact LaneLight is through filling a ticket. Create a user name, and provide your project # (usually a label stuck on your cabinet door with a number like this 0001.012.0123 Somewhere PI, CA). You will need to submit a copy of your warranty report, with a brief description of the problem, steps taken to solve the problem, and pictures of the control cabinet, LaneLights, and any relevant activation devices.

http://ticket.lanelight.com/

5.1.2 On-site technical support
If you require troubleshooting support, you may contact LaneLight technical support but you will need to be on-site, with a multimeter, tools, and ready to follow a few steps. A representative may guide you through a series of steps to understand the problem and assist you in fixing it.

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