



## LaneLight™ MLK150

### LED-Illuminated In-Road Marker System UNI DIRECTIONAL

DIMENSIONS	STANDARD SPECIFICATIONS	OPTIONS																																												
<p style="text-align: center;">Housing</p>	<table border="0"> <tr> <td>Technology</td> <td>Active LED</td> </tr> <tr> <td>Dimensions - LED module</td> <td>150mm x 125mm (5.9" x 5")</td> </tr> <tr> <td>Dimensions - Housing</td> <td>175mm (7")</td> </tr> <tr> <td>Protrusion from pavement</td> <td>3 mm (.12") or Flush Mount option</td> </tr> <tr> <td>Housing depth (incl. sub base)</td> <td>65mm (2.56")</td> </tr> <tr> <td>Daytime visible</td> <td>Yes, to 3000 ft (dimmbable by PWM at night)</td> </tr> <tr> <td>Snowplowable</td> <td>Yes, with Flush Mount option</td> </tr> <tr> <td>Housing - LED module</td> <td>Stainless Steel</td> </tr> <tr> <td>- Housing</td> <td>Aluminum</td> </tr> <tr> <td>Sealing</td> <td>IP68</td> </tr> <tr> <td>Load rated</td> <td>5,000 kg compression</td> </tr> <tr> <td>Operating temperature</td> <td>-20C to +50C</td> </tr> <tr> <td>Lens</td> <td>Boron/glass</td> </tr> <tr> <td>LED face</td> <td>Uni-directional</td> </tr> <tr> <td>LEDs per unit</td> <td>16</td> </tr> <tr> <td>LED color</td> <td>Amber, Red, Green, White, or bi-color</td> </tr> <tr> <td>Light intensity</td> <td>Over 3,500,000 cd/m2</td> </tr> <tr> <td>Activation</td> <td>Optional</td> </tr> <tr> <td>Power</td> <td>Hardwired; Low voltage AC, DC models ; 2.5w (nominal)</td> </tr> <tr> <td>Controller</td> <td>Microprocessor; (sold separately)</td> </tr> <tr> <td>Wiring</td> <td>18 AWG direct burial or drain equipped conduit 2 or 3 wire configurations</td> </tr> <tr> <td>MUTCD compliant</td> <td>YES</td> </tr> </table>	Technology	Active LED	Dimensions - LED module	150mm x 125mm (5.9" x 5")	Dimensions - Housing	175mm (7")	Protrusion from pavement	3 mm (.12") or Flush Mount option	Housing depth (incl. sub base)	65mm (2.56")	Daytime visible	Yes, to 3000 ft (dimmbable by PWM at night)	Snowplowable	Yes, with Flush Mount option	Housing - LED module	Stainless Steel	- Housing	Aluminum	Sealing	IP68	Load rated	5,000 kg compression	Operating temperature	-20C to +50C	Lens	Boron/glass	LED face	Uni-directional	LEDs per unit	16	LED color	Amber, Red, Green, White, or bi-color	Light intensity	Over 3,500,000 cd/m2	Activation	Optional	Power	Hardwired; Low voltage AC, DC models ; 2.5w (nominal)	Controller	Microprocessor; (sold separately)	Wiring	18 AWG direct burial or drain equipped conduit 2 or 3 wire configurations	MUTCD compliant	YES	<p>LED Colour : Amber, Red, Green, White, or bi-color</p> <p>Special Voltages</p> <p>Passive Activation Systems</p> <p>Integration with traffic control devices.</p> <p>Addressable chip for control (chasing, flashing, etc.)</p>
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<p>Intelligent Traffic Equipment Marketing Ltd. 16-755 Vanalman Ave. Victoria, BC, Canada V8Z 3B8 1.866.466.4836 <a href="http://www.ItemLtd.com">www.ItemLtd.com</a></p>																																														

## Specification: Lighted Pedestrian Crosswalks

Date: 03/01/2015

### DESCRIPTION

The system consists of the materials for the installation of a hardwired LaneLight In-Roadway Illuminated Marker System to be used for the pedestrian crossing in (Location), at (Site) to alert motorists that they are approaching an active pedestrian crossing occupied or about to be occupied by one or more pedestrians.

The installer's responsibilities would consist of installing the In-Roadway Illuminated Marker System and auxiliary components such as LED signs, pushbuttons, and the construction of facilities to support the system, as outlined in these specifications and in strict adherence to the manufacturer's installation requirements as outlined in, but not limited to, the manufacturer's installation instructions.

### PRIOR TO INSTALLATION

Several utilities may exist in the area; any and all utilities' locations shown in any plans should be considered approximate. The installer shall be responsible for calling the appropriate authority and all affected utility companies prior to any drilling or excavation on this project.

The installer shall stake all proposed accessible push button station locations, bollard locations, ground box locations, conduit, and pole locations after utility locations are finalized. The engineer having authority must approve these locations prior to any drilling or excavation on the project.

The in-roadway lights shall conform to the current edition of the MUTCD. Roadside beacons or LED signs shall conform to the current edition of the MUTCD, or bear interim approval.

### WARRANTY

**System components shall have a warranty period of 5 years against manufacture defects and failure under normal use.**

## TECHNICAL SPECIFICATION

**High Performance LED In-Roadway Marker: ITEM LaneLight model MLK150 uni directional Amber LED).**

**IMPORTANT:** If the installer wishes to submit an alternate system for an approved equal, specifications of the proposed alternate that conform to the following specifications shall be submitted to the Engineer having jurisdiction at least twenty (20) working days prior to the bid opening date as determined in the bid solicitation notice. No proposed "equal" product proposed after the ten day advance will be accepted, and it is therefore assumed the successful bidder on this project will install the specified product if no approval has been issued by the Engineer Having Jurisdiction.

## IN-ROADWAY LIGHTS

### **Mechanical Characteristics – Upper Housing**

Nominal Dimensions – diameter = 150mm; height = 30.5mm,  
Assembly Material – Heat treated, M8x20 DIN912 cast A4 stainless steel or equal, (bi-directional) configuration,

**IN-ROADWAY PROFILE SHALL NOT EXCEED 0.125 INCHES ABOVE PAVEMENT SURFACE.**

Lens – prismatic- Borofloat hardened glass, 2 per marker; **NO PLASTIC LENS OR BODY COMPONENTS SHALL BE EXPOSED TO TRAFFIC.**

All electrical terminations shall occur within the marker housing; under no circumstances shall any electrical connection be made in the pavement outside the marker housing. Connection housing shall accommodate further encapsulation of the wiring connectors, and all connectors shall be encapsulated.

Tested - Water ingress to IP68.

LED Module attached to the base with two stainless steel high grade screws;  
Removal/replacement of the upper housing shall be capable of being accomplished in five minutes or less.

### **Mechanical Characteristics – Lower Housing**

Nominal Dimensions – diameter = 7 inches (178.5mm); housing height = 1.375 inches (35mm).

Material – Corrosion-resistant aluminum alloy or equal,  
Tested - Minimum of 45,000 kg compressive strength,  
Install depth w/wiring sub base – 2.75 inches (65mm)

### **Optical Characteristics**

Bulbs – 16 (sixteen total, eight per lens) proprietary ITEM specification, ultra bright design

Colormetrics: Amber, white, green, red: to comply with MUTCD specifications  
Daytime visibility – range: to exceed **3000 feet** regardless of ambient light conditions.

### **Electrical Characteristics**

Supply Voltage: 12 to 48VDC,

Power consumption /marker: 2.5W daytime amber/ 2W daytime white,  
Feedback Voltage: <24VDC,  
PWM Amplitude: <24VDC at 500Hz,  
Ambient temperature range: -30C to 65C

#### **Installation into Roadway**

One 3/8" slot to be cut, 2 1/2" depth; and 7" or 8" diameter round holes, 2 3/4" depth round cores cut, centered over the slot where markers are to be placed. To avoid risk of stress fractures being produced by ingress into the road surface, **ONLY ROUND CORE HOLES ARE TO BE MADE IN THE PAVEMENT FOR INSTALLATION OF THE ROAD MARKERS, WITHOUT EXCEPTION.**

The uppermost part of the LED module shall be mounted flush with the pavement surface, to the rear of the opening in the pavement where the LED module is located. **WITHOUT EXCEPTION, NO DEFLECTORS OR OTHER PROTECTIVE APPARATUS SHALL BE REQUIRED FOR PROTECTION OF THE LED MODULE.**

**Mounting and Bedding; ITEM approved resilient-setting Epoxy Resin ITEM-Flex or factory approved equal.**

## **PERIPHERAL CONTROL EQUIPMENT**

**LaneLight Controller; NEMA Mk5 (for stand-alone system) or Mk6 (for signal interface or rack mounted-stand alone)**

Process Control Unit (PCU)  
Supply Voltage 12 to 48VDC (typically 24V DC or 48V DC) OR 110 to 240 volts AC with factory supplied power converter.

Transient/Inrush current limiting – internal on all outputs.

Overload –internal, auto-reset circuit breakers on outputs, selectable amperage thresholds on two channels

Power Factor Correction – provided, Power Output limiting – 120%;  
Short Circuit – Continuous protection, intermittent cycle permitted;  
Day/ night mode control – automatic photocell activated;  
Night Brightness Adjust 15%-100%,

ON Time Selector 1 - 60 seconds,

Pattern Mode Selector:

Crosswalk- On, on/off flash, 60/40 flash, pulsed flash,  
or "Emergency Vehicle" pulse/alternating flash

Logic inputs for connecting sequential pedestrian detectors to determine direction of pedestrian travel

Inputs for sequential contact closure for calculation of a trigger speed of approaching traffic

Programmable auxiliary contacts (optional) to provide control to external signaling devices.

Prioritization of traffic flow (optional) after pedestrian service while storing pedestrian calls.

Accessible log files for historical data retrieval.

Seven day timer override of input start and time-out function.

Remote monitoring and configuration capable, Windows GUI software included.

The fully programmable timer function shall be adjustable from within the Windows software when accessing the controller.

Housing: Cabinet back plate (surface) or cabinet rack (standard rack 4 unit height) mount.

### **Signal Interface LaneLight Controller AC-Carrier Signal output Mk7 (SILC)**

Process Control Unit (PCU) LaneLight Signal Interface **designed for connection with intersection signal controller**

Supply Voltage 95 to 260VAC (typically 110V AC or 220V AC)

Capacity-20 amp output (100 LaneLight MLK150 maximum connected load) or unlimited capacity with addition of repeater units, controlled by the controller

Temperature range: -40 to +160 degrees F

Transient/Inrush current limiting – internal on all outputs,

Overload –internal, auto-reset circuit breakers on outputs,

Power Factor Correction – provided, Power Output limiting – 120%,

Short Circuit – Continuous protection, intermittent cycle permitted,

Day/ night mode control – Dynamic photo-sensor activated, Night Brightness Adjust 15%-100%,

Control Inputs: 120V AC from Amber or Red signal outputs of intersection controller

Flash rate: Selectable "pulsed" flash rate or steady on, either selectable in either AMBER signal controller output activated or signal controller RED signal output activated LaneLight phases.

Programming via USB port; either direct or remote with dedicated software (included)

Remote firmware upgrade capable

Accessible log files for historical data retrieval  
Shelf or rack mountable

Cooling by internal fan

Color: Black

### **LaneLight Delineation Rack-mount Controller AC-Carrier Signal output Mk7 (SILC)**

Process Control Unit (PCU) LaneLight Signal Interface **designed for connection with intersection signal controller**

Supply Voltage 95 to 260VAC (typically 110V AC or 220V AC)  
Capacity-20 amp output (100 LaneLight MLK150 maximum connected load) or unlimited capacity with addition of repeater units, controlled by the controller

Temperature range: -40 to +160 degrees F

Transient/Inrush current limiting – internal on all outputs,

Overload –internal, auto-reset circuit breakers on outputs,

Power Factor Correction – provided, Power Output limiting – 120%,  
Short Circuit – Continuous protection, intermittent cycle permitted,  
Day/ night mode control – Dynamic photo-sensor activated, Night Brightness Adjust 15%-100%,

Control Inputs: Contact closure or analog/digital signal

Flash rate: Selectable "pulsed" flash rate, steady on, variable or fixed speed chasing sequence, or other custom programmable sequence  
Programming via USB port; either direct or remote with dedicated software (included)

Remote firmware upgrade capable

Accessible log files for historical data retrieval  
Shelf or rack mountable

Cooling by internal fan

Color: Black

## PERIPHERAL ACTIVATION EQUIPMENT

### Push-to-Walk Assemblies

Standard Push Button Quantity 2;

Polara Bulldog BDLM3 2" ADA equipped with Frame and 5x7 R10-(type) Sign

Pelco SE series, inductive or electromechanical 2" ADA, equipped with Frame and 5x7 R10-(type) Sign

Polara Model X annunciating pushbutton system with dynamic volume level control, Polara XAVCU2-DC controller, proprietary cable system

### PhotoBollard PB 4G Pedestrian Activation Assemblies (optional)

Bollard pedestrian detection assembly - ITEM PhotoBollard

Dimensions: (8" x 8" square x 42") (8" diameter round x 42")

Construction: .25" aluminum

Finish: Powder Coated

Color: (White) (Black) (Forest Green) (Bronze) (Gray) or (Custom)

Sensors: Infra red, through-beam, high gain, wide angle, cross talk prevention design, easy set up.

(Non - internally illuminated)

(Internally illuminated)

Power consumption (per bollard) non illuminated 0.5w at 12 or 24 VDC

Logic: When connected to LaneLight controller; Entry detected, system activated. Exit detected after a pre-set minimum, system de-activated. Exit not detected, or detected prior to the pre-set minimum, system times out.

Stand alone, or in dual channel controller: Entry detected, system activated.

Wiring: ITEM 18/4 auxiliary cable, color coded; direct burial rated.

Optional extended range version (up to 200 foot separation)

### FLIR C-Walk or SafeWalk Video Pedestrian Activation Assemblies (optional)

Housing, Aluminum, with integrated rain/sun shield (additional sunshield optional), Glass lens.

Dimensions: 4.5" diameter body

Finish: Powder Coated

Color: Black

Sensors: Color CMOS

Power consumption (per unit) 3w at 12 or 24 VDC

Mode of operation: Entry detected, system activated.

Wiring: ITEM shielded co-axial cable

Interface installs in LaneLight controller cabinet

Usage: one or two cameras per crossing, dependent on crossing width.

## **IN-ROAD WIRING SYSTEM**

LaneLight control cable –18/3, 0.31” o.d. (nominal), with dry water block system and tinned conductors, outer jacket labeled “LANELIGHT XW”.

LaneLight pushbutton/Photobollard cable –18/4, 0.31” o.d. (nominal), with dry water block system and tinned conductors, outer jacket labeled “LANELIGHT PPB”.

LaneLight 3/8” Mini-conduit equipped with drain tees and LaneLight AWG22 wire with PPB wiring run in a separate conduit (typical concrete installation)

Sub-Base Encapsulation – 3M Scotchcast 8882, or equal.

Waterproof connectors: Silicon filled w/cap; 3M 314, 316IR; or ITEM engineer approved equal.

## **POWER SUPPLY**

### **AC (Grid) Powered System**

System powered by 120 volts line voltage; converted to 24 volts DC by manufacturer designed and supplied device.

**Solar Powered System ITEM SP1, SP2, SP3 or SPECIAL, to be determined by the manufacturer.**

System shall be solar powered with manufacturer designed and supplied solar/battery power package. The system shall consist of a single solar panel and pole mount, solar charge regulator, circuit breakers for panels, batteries, and load, terminal strip for all connections pertaining to the solar power equipment, two batteries capable of providing (15)(30) days autonomy; NEMA cabinet with #2 lock, with LaneLight controller and any auxiliary activation controllers or equipment interfaces capable of being mounted within.

Cabinet shall be supplied with mounting hardware for a 3.5” to 4.5” OD pole.



## PERIPHERAL EQUIPMENT OPTIONS

### LED ENHANCED SIGNS

Signs shall be LANELIGHT LED signs or approved equal

Signs shall be size (30")(36")(48")

Signs shall be W11-2 LED type with FYG reflective sheeting;

Signs shall be R1-6 LED type with FYG reflective sheeting;

Signs shall be R10-15 LED type with FYG reflective sheeting;

Signs shall be S1-1 LED type with FYG reflective sheeting;

Signs shall have (2 x 4") (4 x 2") (8 x 1") LED synch-flash units

Signs shall have (2 x 4") (5 x 2") (5 x 1") LED synch-flash units

Signs shall be equipped with ITEM e-z mount brackets.

Signs shall connect directly to the in-pavement lighting wiring with same color coded connectors, or direct to the controller.

### RRFB INDICATORS

**Subject to FHWA rulings, the RRFB concept may not be included in the upcoming MUTCD; therefore any RRFB device deployed in a system must be controlled either directly or remotely by the system controller, and its flash pattern shall be adjustable to any specified pattern and match the pattern, and flash in synchronization with that of the in-roadway lights.**

Each RRFB rectangular beacon indication shall be a minimum size of approximately 7" wide x 3" high.

The two RRFB indications shall be aligned horizontally, with the longer dimension of the indication horizontal, and a minimum space between the two indications of approximately 7".

The light intensity of the RRFB's indications shall meet the minimum specifications of the Society of Automotive Engineers (SAE) standard J595.

Each RRFB to be supplied with all required hardware to install assembly on any size pole. All exposed hardware shall be anti-vandal.

Each RRFB shall be located between the bottom of the crossing warning sign and the top of the supplemental downward diagonal arrow plaque.

Each RRFB beacon shall alternately flash in synch with the LaneLights, controlled throughout the crossing cycle duration by the LaneLight controller.

## **LED OVERHEAD CROSSWALK LUMINAIRES**

Overhead Lighting shall be ITEM/Swarco FuturLUX Crosswalk LED Luminaire or approved equal;

Crosswalk LED Luminaire shall illuminate the curb ramp and the crosswalk and past the mid point of the crossing;

Crosswalk LED Luminaire shall provide the equivalent light output of a conventional 250 watt sodium vapor light;

Crosswalk LED Luminaire shall be controlled by the crosswalk system controller, to illuminate the crossing upon activation of the LaneLights.

Crosswalk LED Luminaire shall illuminate the profile of the pedestrian from the oncoming traffic side of the pedestrian;

Crosswalk LED Luminaire shall run at a level of 10% brightness when no pedestrian is in or waiting to use the crosswalk, and increase in brightness to 100% when the crosswalk is activated either manually or automatically by the pedestrian.

Crosswalk LED Luminaire shall be mounted on an engineered pole, capable of supporting optional solar power equipment and battery/control boxes, as provided by the LED Crosswalk Luminaire manufacturer;

Pole foundation design shall be approved by an authority capable of evaluating its requirements.

Date: 03/01/2015