

March 18, 2025

BOSTON TRANSPORTATION DEPARTMENT Specifications for Light Emitting Diode (LED) Pedestrian Signals

General

The purpose of this specification is to provide the minimum performance requirements for LED pedestrian signal modules that include “walking person” icon, “upraised hand” icon, and numeric countdown (herein after called module or modules).

All modules shall conform to the 2023 Manual on Uniform Traffic Control Devices (MUTCD), and ITE’s Pedestrian Traffic Control Signal Indicators: Light Emitting Diode (LED) Signal Modules, dated August 4, 2010, as amended. This document shall be referred to as “PTCSI”.

This specification refers to definitions and practices described in the PTCSI. This specification is not restricted to any specific LED technology.

At a minimum, the LED modules shall meet the following requirements:

- Maximum Overall Module Dimensions – one piece, 16” H x 18” W x 4” D
- Walking Person & Upraised Hand Display– 11” H x 7” W
- Numeric Countdown Display – 9” H x 7” W, 2-digit
- Chromaticity
 - Walking Person – solid icon, white
 - Upraised Hand – solid icon, Portland orange
 - Numeric Countdown – Portland Orange
- Lens & Shell Material - UV Stabilized Polycarbonate conforming to ASTM specifications
- Environmental – Dustproof and weatherproof enclosure
- Operating Voltage Range – 80V to 135V (60Hz AC)
- Operating Temperature – - 40 degree C to +74 degree C

Walking man/ upraised hand, overlay, display shall be positioned to the left of the countdown display.

All LED indications shall have an automatic dimming circuit for night illumination to reduce long-term degradation to the LEDs.

Physical and Mechanical Requirements

General

LED pedestrian signal modules shall be designed as a sealed retrofit replacement for existing signal lamps and shall not require special tools for installation. Retrofit replacement LED pedestrian signal modules shall fit into existing or proposed pedestrian

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signal housings built to BTM Pedestrian Signal Specifications dated March 18, 2025, without modification to the housing.

Installation of a retrofit replacement LED pedestrian signal module into an existing pedestrian housing shall only require removal of the cover and visor.

The manufacturer's name, trademark, operating characteristics, and serial number shall be permanently marked on the backside of the LED signal module. A label shall be placed on the LED signal module certifying compliance to this specification.

LED Drive Circuitry

The individual LED light sources shall be wired so that a catastrophic failure of one LED light source will not result in the loss of illumination in more than 20 percent of the LED light sources. The LED signal module shall be operationally compatible with currently used controllers and conflict monitors. The LED signal circuitry shall prevent false controller conflict monitor action due to excessively high off-state input impedance.

Connections

Three color coded, 600 volt, #16AWG minimum, jacketed wires conforming to the National Electric Code, rated for 105 degrees Celsius shall be supplied to connect to the signal housing terminal block via standard fork/spade adapter to female slip terminations. The fork/spade adapter shall allow the connection of wires to a screw terminal or quick connect terminal block.

Burn-in Procedure

Each new LED pedestrian signal module shall undergo the burn-in procedure in order to cause any electronic infant mortality to occur and to detect any electronic component reliability problem before the product is shipped to be installed. This procedure requires the LED module to be energized for minimum of continuous 24 hours at operating voltage at a 100% duty cycle, and in an ambient temperature of 60 Degrees Celsius (140F).

Submittal

Prior to manufacture of the order, the supplier shall submit a cut sheet with proposed mechanical and electrical features for approval by the Engineer. If so requested, the supplier shall provide a sample of the proposed product for evaluation and approval by the Engineer.

Warranty

Manufacturers shall provide a certificate of conformance to this specification for each lot of LED signal modules shipped to the City of Boston Transportation Department. Each LED signal module shall be serialized by the manufacturer. Manufacturers shall comply with the following provisions:

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1. Replacement or repair of an LED pedestrian signal module that exhibits a failure due to workmanship or material defects within the first 60 months of field operation
2. Replacement or repair of LED pedestrian signal modules that exhibit either greater than 50 percent light output degradation or that fall below the minimum intensity levels within the first 60 months of field operation.

To prevent the LED module warranty from being voided, the connecting leads on the module shall not be cut. The original LED module leads shall be connected to the signal head terminal block as continuous wire without splices.