

LED Pedestrian Hand / Person / Countdown Modules Specification and Requirements Checklist

16" x 18" Module

1 Overview

1.1 Purpose

The purpose of this specification is to provide the minimum performance requirements for a 16 x 18 LED pedestrian signal module with a countdown timer (hereafter called module) with "walking person", "upraised hand", and "countdown digit" icons. This specification refers to definitions and practices described in *Pedestrian Traffic Control Signal Indicators - Light Emitting Diode (LED) Signal Modules Version August 04, 2010* and the 2009 Manual of Uniform Traffic Control Devices (MUTCD) and contains additional requirements to ensure optimum long term reliability and performance. Product supplied to this specification shall comply to the latest version of the ITE PTCSI LED signal specification and the additional requirements listed herein.

1.2 Manufacturers Requirements and Approvals

1.2.1 Manufacturers supplying products to this specification must be a registered participant and have the part numbers being provided listed on the *Intertek-ETL LED Traffic Signal Modules Certification Program* approved products website. Products shall be manufactured in a facility certified to the Intertek-ETL program requirements.

1.2.2 All LED Pedestrian Signal Modules shall be produced in a NAFTA participating country.

1.2.3 Acceptable brands/models shall be Dialight, GE or Leotec as listed on ETL LED Traffic Signal Modules Certified Products List and certified facility. Please indicate the brands/models proposed with your bid.

2 Physical & Mechanical Requirements

2.1 General

2.1.1 Installation requirements: Installation of a module into existing pedestrian signal housings shall only require the removal of the existing optical unit components, i.e., lens, lamp module, gaskets, and reflector; shall be weather tight and fit securely in the housing; and shall connect directly to existing electrical wiring. Installation shall not require special tools.

2.2 The LED Signal Module

2.2.1 The lens shall have a textured outer surface to reduce glare. No screws shall be used to attach the lens

2.2.2 Icons that are not illuminated shall not be readily visible to the pedestrian at the far end of the crosswalk that the pedestrian signal head indication controls

2.2.3 All icons and numbers shall have a uniform incandescent, non-pixilated appearance.

2.2.4 All LED utilized to illuminate the Hand and Person icons, shall be LED that have been manufactured utilizing materials that have industry acceptance as being suitable for uses in outdoor applications.

2.2.5 The countdown signal shall display the time remaining in seconds, beginning with the start of the pedestrian clearance interval and ending at the end of the pedestrian clearance interval. Countdown displays should not be used during the walk interval. Upon termination of the countdown sequence the countdown shall remain blank until the beginning of the next pedestrian change interval

2.2.6 The countdown shall be capable of counting down from 99 to 0. There shall be no leading zeros for numbers less than 10. The display of the "1" digit in the tens position shall be in the right hand portion of the digit.

2.2.7 The configurations of the walking person icon, upraised hand icon and countdown digits are illustrated in Figure 1, Figure 2, and Figure 3 respectively.

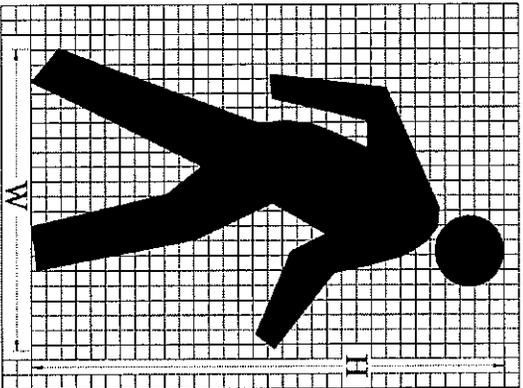


Figure 1—Walking Person icon

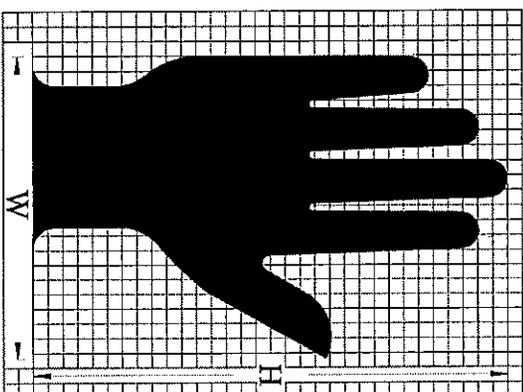


Figure 2—Upraised Hand icon

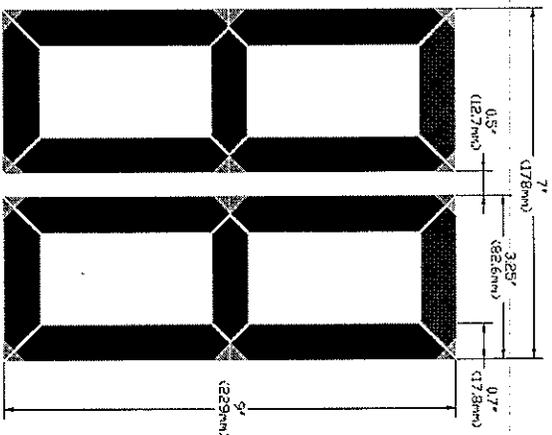


Figure 3—Countdown Display

2.3 Module Identification

2.3.1 In addition to the labeling requirements of the TTE specification, all modules must be labeled with the ETL Verified label shown in Figure 4. This label designates the compliance and listing with the Intertek-ETL Traffic Signal Certification Program.

3 Electrical

3.1 General

3.1.1 The following color scheme shall be used for the module's AC power leads: Orange for the upraised hand, Blue for the walking person, and White for common.

3.1.2 The AC power leads shall exit the module via a rubber grommetted strain relief, and shall be terminated with insulated female quick connect terminals with spade / tab adapters. The leads shall be separate at the point at which they leave the module.

3.1.2.1 All external wiring utilized in the modules shall be anti-capillary type wire to prevent the wicking of moisture to the interior of the module.

3.1.3 The Hand, Person, and Countdown Icons shall utilize 3 separate power supplies. For ease of installation, the countdown module shall be internally wired to the incoming AC power from the hand / person AC signal lines. All power supplies shall be located inside the signal module.

3.1.3.1 All power supplies shall be conformal coated for additional protection.

3.1.4. Typical Power at 25°C (77°F) for the Pedestrian Signal Modules shall be 11 watts for the hand, 10 watts for the person and 8 watts for the digits.

4.0 Countdown Module

4.1 Countdown Drive Circuitry

4.1.1 The countdown portion of the signal shall have a high off-state input impedance so as not to provide a load indication to conflict monitors and interfere with the monitoring of the pedestrian signal. The input impedance of the countdown circuitry shall be sufficiently high enough to allow for up to four units connected on the same channel.

4.1.2 It shall be impossible for the display to countdown during a solid Hand indication.

4.2 Countdown Functionality

4.2.1 Per MUTCD Manual 2009 edition, "Countdown displays should ONLY be used during the "Clearance Cycle". They should NOT be used during the walk interval or during the yellow change interval of a concurrent vehicular phase". A countdown pedestrian signal is required for all crossing with a pedestrian clearance interval of 7 seconds or greater. The pedestrian clearance time is to be calculated based in the pedestrian speed of 3.5 feet per second. Thus any crossing greater than 24.5 feet would be required by the 2009 MUTCD to have a countdown pedestrian signal

4.2.2 The countdown timer module shall have a micro-processor capable of recording the pedestrian crossing timing when connected to a traffic controller. It shall be capable of displaying the digits 0 through 99.

4.2.3 When connected, the module shall blank out the display during the one (1) learning cycle only while it records the countdown time using the Walk (Person) & Don't Walk (Flashing Hand) signal indications. The hand and person icons shall be displayed as normal during this cycle

4.2.4 The countdown timer module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.

4.2.5 The countdown module shall register the time for the walk and change intervals individually and shall begin counting down at the beginning of the pedestrian change interval. The countdown module shall display the numerals in a continuous display and shall not flash during the countdown.

4.2.6 When the flashing Hand becomes solid, the module shall display 0 for one second and then blank-out. The display shall remain dark until the beginning of the next countdown.

4.2.7 In the event of a pre-emption sequence during the pedestrian change interval, the countdown module shall skip the pre-empted change time and reach "0" at the same time as the flashing Hand becomes solid and then remain dark until the next cycle.

4.2.8 In the cycle following a pre-emption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown shall remain synchronized with the signal indications and always reach 0 at the same time as the Flashing Hand becomes solid.

4.2.9 The countdown timer shall be capable of displaying 2 consecutive complete Pedestrian Phases outputted by the traffic controller (no steady Hand signal between cycles). NOTE: When a controller is programmed with the option to serve a second consecutive pedestrian phase (walk followed by flashing don't walk) if a pedestrian activates a pedestrian button during the change interval, and the controller is set to allow a second consecutive phase, the countdown will blank out during the walk, and restart counting down the correct time during the flashing don't walk, just as in a regular PED phase.

4.2.10 The countdown module shall not display an erroneous or conflicting time when subjected to defective load switches. Should there be a short power interruption during the PED change interval or if voltage is applied to both the hand and person simultaneously, the display will go to "0" then blank.

4.2.11 The countdown module shall have accessible dip-switches for the user selectable options. The unit shall have a removable plug on the rear allowing easy access to control the user selectable functions. The unit shall be shipped from the factory with all switches in the default "Off" position. With the exception of the test mode, these dip switch selectable functions would typically be set at the initial installation of the Pedestrian signal.

4.2.11.1 Dip Switch 1. Dark Cycle following a timing change

4.2.11.1.1 Default Operation: In the default position this function is disabled. With this function disabled the countdown module will operate as follows:

- If the clearance mode is shortened for a single cycle, for example for an emergency vehicle preemption, the countdown will return to normal operation on the following cycle using the learned timing
- If the countdown module detects two (2) consecutive shortened pedestrian clearance modes of identical length the countdown timer will display the new shorter time on the following cycle without the need for new blank learning cycle.
- If the countdown module detects a longer cycle, for example a programmed timing change, it will automatically display the lengthened time on the next cycle without the need for a new blank learning cycle

4.2.11.1.2 Optional Operation: With Dip switch 1 in the "on" position the countdown module will operate as follow:

- Any time the countdown module detects a timing change, either shorter or longer the countdown will run a new "learning" cycle. It will be blank for one cycle. After this blank cycle the unit will return to normal operation on the following cycle and display the new clearance timing learned.

4.2.11.2 Dip Switch 2. Disable auto-sync mode.

4.2.11.2.1 Default Operation: In the default "off" position the auto-sync is enabled. With this function enabled the countdown module will operate as follows:

- Countdown start with the start of the "Flashing Hand" clearance mode.
- If in the "learning cycle" the countdown module detects a lag between the end of the walk mode and the start of the clearance mode the lag time will be measured and reduced from the firstsecond in order to synchronize the end of the countdown "0" with the start of the solid hand signal.

4.2.11.2.2 Optional Operation: With Dip switch 2 in the "on" position the auto-sync is disabled. With this function disable the countdown will operate as follows:

- Countdown starts at the end of the walk signal and disregards any lag time in the start of the flashing hand signal.
- If clearance interval in not in full seconds then the final second of the countdown may be truncated as the hand signal becomes solid
- If there is a brief power loss to the hand signal, < 1 sec, the unit may start counting for up to 2 second before it detects the power loss and goes blank

4.2.11.3 Dip Switch 3. Disables countdown operation.

4.2.11.3.1 Default operation: In the default position the countdown timer is enabled. With this function enabled the countdown will operate as follows:

- Countdown will function normally following either the default operation mode or if set, the selected dip switch options.
- 4.2.11.3.2 Optional Operation: With Dip switch 3 in the “on” mode the countdown timer module is disabled. With this function disabled the countdown will operate as follows:
 - No countdown will be displayed but the hand / person portion of the pedestrian signal will operate a normal.

4.2.11.4 Dip Switch 4. Memory Mode

4.2.11.4.1 Default operation: In the default position the memory, in the event of a power loss, is disabled. With the memory disabled the countdown will operate as follows:

- Countdown will maintain the learned clearance timing in memory
- In then event of a power loss to the unit of two (2) seconds or more in duration the memory will be lost and the timer will need to enter a new “learning” cycle upon the restoration of power

4.2.11.4.2 Optional operation: With Dip switch 4 in the “on” position the memory is enabled. With this function enabled the countdown will operate as follows:

- Countdown will store the information from the “learning” cycle in memory for use in case of power loss
- Upon returning from a power loss the countdown will use the timing stored in memory and not require the need for a new “learning” cycle

4.2.11.5 Dip Switch 5. Diagnostic Test sequence

4.2.11.5.1 Default Operation: With this function in the “off” position the countdown will operate as follows:

- Countdown will function normally following either the default operation mode or if set, the selected dip switch options.

4.2.11.5.2 Optional operation: With Dip switch 5 in the “on” position the diagnostic test mode is enabled. With this function enabled the countdown will function as follows:

- Countdown mode is disabled, to allow for diagnostic testing.
- Upon application of power to either icon the countdown module will sequentially test the individual segments of the digits.
- Upon also turning on Dip switch 4 the countdown will light up all segments to display the digit “88”.

5. Quality Assurance

5.1 General

5.1.1 Potential suppliers must complete and submit the LED Module Supplier checklist shown in Table 3 and provide a copy of the checklist with the submission of any proposals.

5.2 Manufacturers’ Serial Numbers

5.2.1 Each module shall be identified with a unique serial number to allow for traceability to the manufacturer’s production test data

6.0 Warranty Requirements

6.1 Warranty

6.1.1 Manufacturers shall provide a written warranty issued by the factory located in the NAFTA country of module origin with the following minimum provisions:

6.1.2 Modules shall, at the manufacturer’s option, be repaired or replaced if the module fails to function as intended due to

workmanship or material defects within the first 60 months from the date of delivery.

6.1.3 Modules shall, at the manufacturer's option, be repaired or replaced if the module exhibit luminous intensities less than the minimum specified values within the first 60 months of the date of delivery.

6.1.4 Upon request, the LED lamp module manufacturer shall provide written documentation of its ability to satisfy a worst-case, catastrophic warranty claim.

6.1.4.1 A current corporate annual report duly-certified by an independent auditing firm, containing financial statements illustrating sufficient cash-on-hand and net worth to satisfy a worst-case, catastrophic warranty claim is an example of suitable documentation.

6.1.4.2 The documentation shall clearly disclose:

- a) The country in which the factory of module origin is located
- b) The name of the company or organization that owns the factory of module origin including any and all of its parent companies and/or organizations, and their respective country of corporate citizenship.

6.1.4.3 For firms with business and/or corporate citizenship in the United States of less than seven years, the process by which the end-users/owners of the modules will be able to obtain worst-case, catastrophic warranty service in the event of bankruptcy or cessation-of-operations by the firm supplying the modules within North America, or in the event of bankruptcy or cessation-of-operations by the owner of the factory of origin, shall be clearly disclosed.

Figure 4.
Intertek- ETL Verified Label

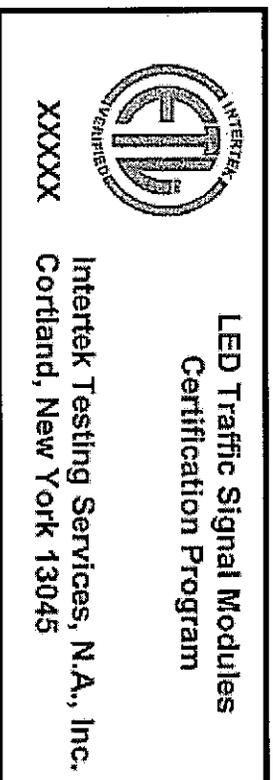


Table 3. LED Module Supplier Checklist

Below checklist must be completed and provided with this submission. Substantiation data must be submitted in either book form or electronic (disc) format. In all cases the substantiation data being submitted must be indexed and tabulated referencing the appropriate article number.

Vendor / Manufacturer Information:

Distributor Name:

Address:

City:

State:

Contact Name:

Contact Phone No.

LED Module Manufacturer:

Name:

Address:

City:

State:

Contact Name:

Contact Phone No.

LED Module Manufacturing Location:

Address:

City:

State:

Country:

LED Module Manufacturer's Part Numbers: _____

Section	Requirements	Comply Y / N ¹	Substantiation Requirements
1.2.1	<p align="center">Per ITE PTCSI Part 2 LED Pedestrian Signal Modules, August 4, 2010 With Countdown and Additional Requirements Specified by this Document</p> <p>Product to comply with the ITE Pedestrian Traffic Control Signal Indicators: Light Emitting Diode (LED) Signal Modules requirements dated August 4, 2010</p>		Intertek ETL test lab results Report # _____ Date of Report _____
1.2 Manufacturers Requirements			
1.2.1	Manufacture participates in Intertek-ETL LED Traffic Signal Module Certification program and proposed base products, excluding countdown only modules, are listed on the ETL website for the program.		Provide letter of participation from ETL and copy of web page from ETL web site showing product listing.
1.2.2	All Modules produced in NAFTA participating country.		Provide Statement of Country of Origin on Manufacturer's letterhead.
2. Physical & Mechanical Requirements – Summary			
2.1.1	Stand-alone units shall fit into PTCSI approved Pedestrian signal housings without modification to the housing or special tools.		
2.2.1	Lens Outer surface textured to reduce glare.		
2.2.2	Icons, or outline of icons not readily visible in the off state from the far end of an intersection		
2.2.3	All icons shall have a uniform incandescent appearance.		Provide a copy of the Data Sheet for the LEDs utilized in the Traffic Module.
2.2.4	The LEDS shall be suitable for outdoor applications.		
2.2.5	Countdown consists of two "7 segment" digits capable of displaying 0 through 99.		
2.3.1	Modules to be labeled with Intertek-ETL verified label.		Provide drawing of label to be used.
3. Electrical Requirements – Summary			
3.1.1	Wire color shall be blue for walking person, orange for the hand and white for the AC common		
3.1.2	AC wires shall exit the housing via a rubber grommetted strain relief, and shall be terminated with insulated female quick connect terminals with spade / tab adapters.		
3.1.2.1	All external wiring shall be anti-capillary type wire.		Provide wire specification.
3.1.3	Hand / Person Icons shall utilize 3 separate power supplies. Countdown module must have separate power supply but may take power from the Incoming Hand/ Person power wires. All power supplies shall be located internal to the module.		
3.1.3.1	All power supplies shall be located internal to the module and be conformal coated.		
3.1.4	Nominal power shall be: 11 Watts - Hand 10 Watts - Person 8 Watts - Digits.		Intertek ETL test lab results Report # _____ Date of Report _____ Page # _____
4.1 Countdown Drive Circuitry			
4.1.1	Countdown timer shall have high off-state impedance to allow for 4 units to be connected to the same channel.		

Section	Requirements Per ITE PTCSI Part 2 LED Pedestrian Signal Modules, August 4, 2010 With Countdown and Additional Requirements Specified by this Document	Comply Y / N ¹	Substantiation Requirements
4.1.2	Countdown shall have an internal conflict monitor making it impossible to display a countdown during a solid hand indication.		
4.2 Countdown Functionality (when required).			
4.2.1	Countdown only displays during the Pedestrian Clearance Interval.		
4.2.2	Countdown shall have microprocessor capable of recording the pedestrian crossing timing when connected to traffic controller.		
4.2.3	Countdown shall be blank during first "learning" cycle after connection while recording time required for countdown.		
4.2.4	Countdown monitors controller for changes and reprograms automatically if needed.		
4.2.5	Countdown begins count at start of the pedestrian change interval.		
4.2.6	When flashing hand becomes solid countdown displays "0" for 1 second when hand becomes solid then goes blank.		
4.2.7	Upon pre-emption the countdown reaches "0" at the same time the hand becomes solid.		
4.2.8	Countdown returns to normal operation after pre-emption.		
4.2.9	Countdown shall be capable of timing 2 consecutive complete pedestrian cycles (no hand signal) outputted by the traffic controller.		
4.2.10	Countdown shall not display erroneous time when connected to a defective load switch.		
4.2.11	Countdown shall have user accessible dip switches via a removable plug on rear that shall allow easy access.		Provide detailed Countdown timer operating manual
4.2.11.1	Sw.1 Blank Cycle Following a Timing Change – Default setting is OFF.		Provide Module Manufacturer's Instruction Sheet.
4.2.11.2	Sw. 2 Disables Auto Sync mode – Default setting is OFF.		Provide Module Manufacturer's Instruction Sheet.
4.2.11.3	Sw 3 Disables the countdown when the switch is "on" Default setting is OFF		Provide Module Manufacturer's Instruction Sheet.
4.2.11.4	Sw. 4 Stores Time Value in Memory (Immediate Restart) – Default setting is OFF.		Provide Module Manufacturer's Instruction Sheet.
4.2.11.5	Sw. 5 Test Mode – Default setting is OFF. Illuminates segments sequentially when turned "on" When turned on with Sw. 4 all LEDs shall illuminate		Provide Module Manufacturer's Instruction Sheet.
6.0 Warranty Requirements			
6.1.1	Manufacturer shall issue a written warranty statement, stating compliance to the warranty requirements of this document.		Attach Manufacturer's Warranty Statement.
6.1.2	Module to be repaired or replaced if the module fails to function as a result of workmanship or material defects within 60 months of date of delivery.		Attach Manufacturer's Warranty Statement.
6.1.3	Modules that fail to comply with the minimum intensity requirements within the first 60 months shall at the manufacturer's option, be repaired or replaced.		Attach Manufacturer's Warranty Statement.

¹ For all sections above where non-compliance is indicated, please provide a detailed explanation on a separate sheet.