London Streets

Kerbside Pedestrian Detector For Use At Far – Sided Pedestrian Signals Crossing With Call Cancel Facilities Requirement Specification

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1. DOCUMENT CONTROL

1.1 Document History

Version	Date	Author / Reviewer	Changes since previous issue
0.0	08/07/2015	Orlando Jaward	First draft
0.1	08/07/2015	Trevor Hardy	First review
1.0	03/09/15	Gurmeet Sahotay	Final

2. NORMATIVE REFERENCES

- BS EN 50110 – Operation of Electrical Installations
- TR 2500A – Specification for Traffic Signal Controller
- TR 2523A – Traffic Control Equipment Interfacing Specification
- TR 2130 – Environmental Tests for Motorway Communications and Portable and Permanent Traffic Control Equipment
- TRG 0600 – Self-Certification Procedures for Statutory Approval of Traffic Control Equipment
- BS EN 50293 – Electromagnetic Compatibility – Road Traffic Systems
- ETSI EN 300 440 - Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range.
- BS EN 50556 – Road Traffic Signal Systems
- BS EN 60950 – Information Technology Equipment – Safety
- BS EN 60068 – Environmental Testing – Vibration Tests & Measurements
- MCH 1969 – Traffic Control System Design for All Purpose Roads
- LTH 1/98 - The Installation of Traffic Signals and Associated Equipment
- TA15 Pedestrian Facilities at Traffic Signal Installations
- TA16 General Principles of Control by Traffic Signals
- LTN1/95 - The Assessment of Pedestrian Crossings
- LTN2/95 - The Design of Pedestrian Crossings
- TAL 4/91 - Audible and Tactile Signals at Pelican Crossings
- TAL 5/91 - Audible and Tactile Signals at Signal Controlled Junctions
- TAL 10/93 "Toucan" an unsegregated crossing for pedestrians and cyclists
- TAL 4/98 - Toucan Crossing Developments. DfT
- TAL 16/99 -The use of Above Ground Vehicle Detectors
- TAL 2/03 - Signal-control at Junctions on High Speed Roads
- TD 50/04 - The Geometric Layout of Signal-Controlled Junctions and Signalised - Roundabouts, Design Manual for Roads and Bridges (DMRB).
- TAL 5/03, Walking Bibliography. Department for Transport (DfT).
- TA 84/06 - The Code of Practice for Traffic Control and Information Systems - Design Manual for Roads and Bridges (DMRB).
- LTN 2/95 - The Design of Pedestrian Crossings. TSO.
- TAL 3/03 - Equestrian Crossings. DfT
- Chapter 5 - The Traffic Signs Manual, Road Markings 2003. TSO.

- Traffic Signs Regulations and General Directions 2002. TSO.

2.1 General

2.1.1 Within this specification, "Kerbside Pedestrian Detector" (KPD) shall mean all components necessary to provide a complete operational system meeting the requirements of this specification and the Common Requirements defined in TRG 0600

2.1.2 This specification defines the essential functional requirements for the Product to detect people that are waiting with the intention to cross the carriageway at the kerbside of far-sided pedestrian signals crossing with call cancel facilities.

2.1.3 Materials used in the Product must be covered by suitable written guarantees for safety, quality, suitability and fitness for purpose as defined within this specification.

2.1.4 Within this specification the term Product or Detector shall have the same meaning.

2.1.5 The products shall comply with all relevant parts that are applicable to current edition(s) of Regulations listed under normative references

2.1.6 When requested, the manufacturer shall supply relevant product technical documentation, certification and test results.

2.2 Definitions

A comprehensive glossary of terms is given in Highways Agency document TA 84 Code of Practice for Traffic Control and Information Systems for All-Purpose Roads.

3. PHYSICAL

3.1 Appearance

3.1.1 Design of the Product's housing shall be of minimal size and is made to ergonomically blend with existing street equipment to reduce the 'eye clutter' associated with older types of street equipment.

3.1.2 The Product including its interface wirings and fixings shall be 'black' in colour.

3.2 Dimensions

3.2.1 Length ≤ 200mm (lateral – direction across face of Unit) x Width ≤ 150mm (vertical - direction across face of Unit) x Depth ≤ 120mm (Face to back of Unit) x Overall height ≤ 200mm (to base of mounting bracket).

3.2.2 The Unit shall have a standard interface cable (length ≥ 1120mm) and fitted with HA specified Bulgin Buccaneer connectors. As per TR2505A table F1

3.3 Construction

3.3.1 The equipment housing shall be constructed in such a manner and from materials to meet the environmental requirements defined in TR 2130.

3.3.2 Where the Unit opens to allow internal access for configuration, serial communication, reprogramming, adjustments, etc., the door and fixings shall be retained.

3.3.3 Where section 3.3.2 applies, internal wiring shall consider the opening of the Unit without obstruction to the fixings.

3.3.4 Where accessible external fixings are required, the accesses shall be tamper proof.

3.3.5 The shape of the unit including fixing brackets shall be such that it can be easily installed onto both new and existing traffic signal control poles by a competent installer.

3.3.6 The unit's design, shape, bracketry and cabling shall be compatible with existing street equipment so that existing sites can be easily upgraded without extra equipment and/or major modifications to the existing street equipment and/or infrastructure.

3.4 Mechanical

3.4.1 The weight of the Product shall not exceed 2.0Kg including bracketry and/or not exceed the maximum load bearing of its mounting bracketry.

3.4.2 The unit shall be suitable for installation including bracketry by single authorised operative using standard and/or specified engineering tools.

3.5 Classification

3.5.1 The Product shall be identified and/or labelled with the following information:

- Serial number
- Manufacturer name, trademark or identification mark
- Date of manufacture
- Electrical power requirements (Voltage, Current, Frequency)
- Manufacturer's model type number
- CE Marking
- Firmware version number (if relevant)
- 'Warning Label' to ensure safe use and/or protection to road users (if relevant)

3.6 Environmental

3.6.1 The Product shall be protected to a minimum of IP65 rating

3.6.2 The Product shall be capable of operating at a minimum lower temperature limit of –20°C and at minimum upper temperature limit of +70°C

3.6.3 The Product shall comply with BS EN 60068 vibration specifications

3.6.4 Where applicable, the Product shall comply with ETSI EN 300 440 Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range.

3.6.5 The Product shall be designed and evaluated against regulations RoHS Directive 2002/95/EC – Restriction of Hazardous Substances Directive and WEEE Directive 2002/96/EC – Waste Electrical and Electronic Equipment recycling.

3.6.6 Where the Product is installed at close proximity to other street equipment, the Product shall operate without interference and/or hindrance to any collocated street equipment.

3.7 Product Housing

3.7.1 Modern innovated Product housing that is simple and easy to install, blends with the street equipment infrastructure environment, and is inconspicuous is recommended.

3.7.2 However, current approved pedestrian kerbside detector housing is acceptable and may be used to house the Product.

4. FUNCTIONAL REQUIREMENTS

4.1 Performance

4.1.1 This specification defines the essential minimum functional requirements for a Product to detect a person and/or people who are waiting at the kerbside of far-sided pedestrian signals crossing with call cancel facilities.

4.1.2 The Product shall be capable of detecting and monitoring pedestrians waiting at the kerbside of a far-sided pedestrian signal crossing with Call Cancel facilities to cross the carriageway.

4.1.3 Monitoring the kerbside is to ensure that invitation for pedestrian to cross is only implemented when a pedestrian is present at the kerbside 'wait to cross area' and demand to cross activated.

4.1.4 The Product shall be capable of detecting pedestrians waiting at the kerbside to cross the carriageway at a minimum ambient lighting level of 10 lux.

4.1.5 The Product shall also be capable of detecting pedestrians waiting at the kerbside to cross the carriageway at night time also.

4.1.6 The Product shall not detect static or moving vehicles.

4.1.7 The Product shall be capable of shadow rejection in the kerbside waiting area.

4.2 Kerbside Zone Dimensions

4.2.1 The detection zone requirements for this Product are as shown on Figure 1.0 in section 5. Dimension **X** shall be between 2.4m to 10.0m and dimension **Y** shall be between 1.0m to 5.0m.

4.2.2 The Product shall be capable of detecting cyclists, mounted riders and pedestrians waiting at the kerbside 'wait to cross area'.

4.3 Detector Output

4.3.1 The Product shall produce a voltage free output on detecting a target with an ON impedance of less than 50 ohms and an Open Circuit maintained up to 400V peak.

4.3.2 Visual indication of the detector status shall be provided on the detector via an LED indicator or equivalent.

4.4 Must Detect Zone

4.4.1 For the purpose of this specification the Product shall be configurable on site to set the dimensions of the 'must detect zone' shown on Figure 1.0 in section 5.

4.4.2 The maximum and minimum dimensions of the 'must detect zone' shall be defined in the manufacturer's Product performance specification.

4.4.3 The Product shall provide a continuous detect output when a person is either stationary or moving within the kerbside wait to cross zone.

4.4.4 The Product shall output the Detect condition within 500 mS of a pedestrian entering the wait to cross zone.

4.5 May Detect Zone

4.5.1 The Product may produce either 'a target detected' or 'no target detected' condition in the 'may detect zone' as shown on Figure 1.0 in section 5.

4.6 Must Not Detect Zone

4.6.1 The Product shall not detect pedestrians, cyclists, mounted riders or vehicles in the 'must NOT detect' zone as shown in Figure 1.0 in section 5.

4.6.2 In the event of a malfunction or degradation of performance being detected below that required by this specification, the Product shall follow the process for a category 2 fault.

4.7 Fault Modes.

4.7.1 Category 1

4.7.1.1 The Detect output shall present a high impedance output within 3000 ms.

4.7.1.2 When power is restored, the Product shall resume normal operations within 5000 ms.

4.7.2 Category 2

4.7.2.1 The Detect output shall present a high impedance output within 3000 mS.

4.7.2.2 If the Product is designed with auto fault correction and the fault condition ceases, then the Product shall resume normal detection operation and the fault output signal shall be removed.

4.8 Product Installation

4.8.1.1 The Contractor shall produce and furnish TfL with an installation guide and/or instructions for the Product.

4.8.1.2 The Contractor shall provide sufficient information to enable an Installation and/or Maintenance Engineer and/or Technician to install and/or maintain the Product without supervision.

4.8.2 Detector Pole Mounting

4.8.2.1 The Product shall be capable of been installed on either side of the far-sided pedestrian signal crossings on a standard traffic signal pole above a pedestrian demand unit at a height between 3.0m to 4.5m. The kerbside detection zone shall include tactile paving on the pavement.

4.8.2.2 Where the width (Figure 1.0 **X** metres) of the kerbside wait to cross area is greater than 4.5m, more than one of the same Products shall be capable of been collocated to cover the whole wait to cross area.

4.8.2.3 Special tool and kit of parts shall be provided for fixing or removing of the Product from its bracketry to enhance tamper resistant.

4.8.3 Detector Alignment

4.8.3.1 The Product shall operate as per normal without interference to nearby equipment when collocated in proximity to other traffic signal control equipment.

4.8.3.2 Product shall be aligned when installed to meet these requirements.

4.8.4 Kerbside Area of Detection

4.8.4.1 Facility to enable clear line of sight alignment of detector with kerbside area of detection shall be provided. Provision shall also be made to configure the area of detection at ground level.

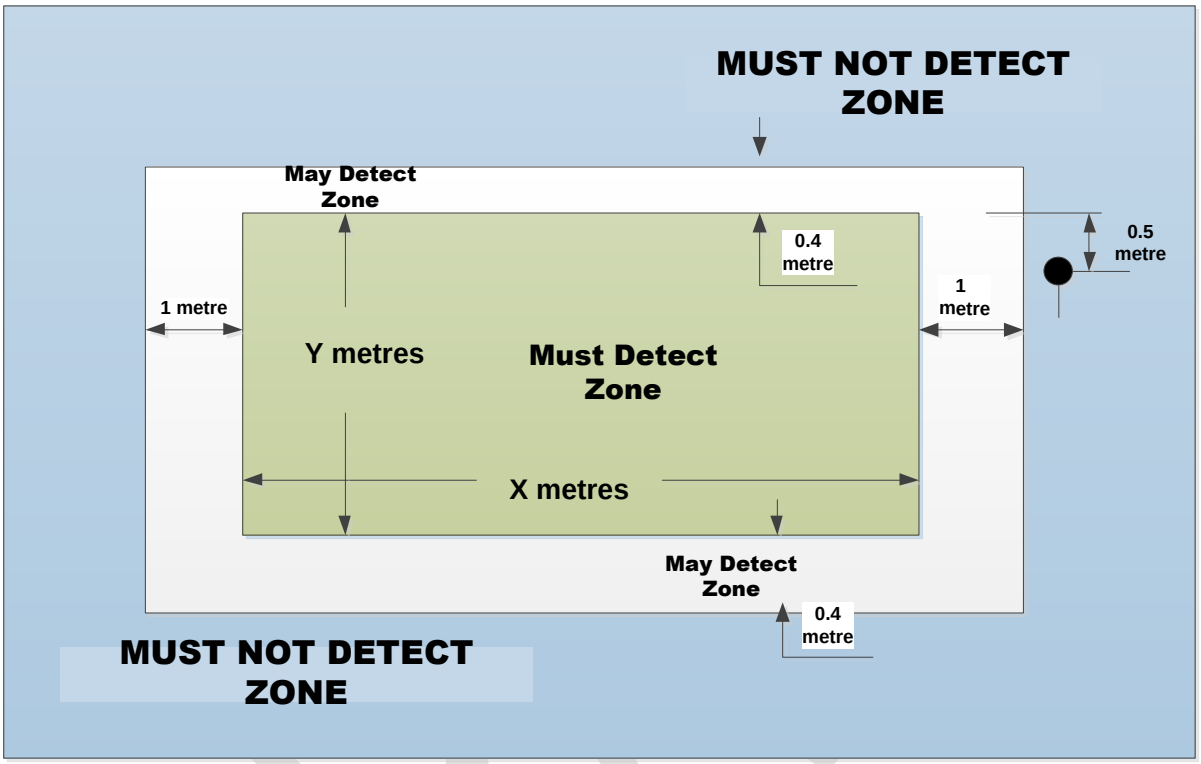
4.8.5 Access and Maintenance

4.8.5.1 Means of access to the Product shall be provided for configuration and maintenance purposes even at ground level.

4.8.5.2 The Product shall have an accurate method of monitoring and/or configuring the precisely kerbside wait to cross area.

5. ZONE OF DETECTION FOR KERBSIDE PEDESTRIAN DETECTOR

ZONE OF DETECTION FOR KERBSIDE PEDESTRIAN DETECTOR



LEGEND

● **KERBSIDE PEDESTRIAN DETECTOR Mounting Pole Position**

X & Y – These dimensions shall be declared by the supplier within the following parameters:
X = 2.4 to 10.0m
Y = 1.0 to 5.0m

Figure 1.0 – Kerbside Pedestrian Detector Zone of Detection