Performance Specification for Above Ground On-Crossing Pedestrian Detection Systems
CONTENTS
Section
1 Introduction
2 Functional Requirements
3 Normative References
4 History
Appendix A Informative Guide
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1 INTRODUCTION

1.1 This specification details the essential requirements for above ground on-crossing pedestrian detection systems on public highways.

1.2 This specification supersedes TR 2179 B from the date of issue and the previous approval process described therein.

1.3 As a statutory requirement equipment manufactured according to this specification must be approved before its use is permitted on the public highway.

1.4 Statutory Approval (Approval) shall be in accordance with the requirements for Self-Certification set out in TRG 0600.

1.5 Within this specification, “The Product” 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.

1.6 Guidance to potential users of this Product is given in Appendix A.

Implementation

1.7 This specification will be immediately implemented from the date of issue for all new approvals.

Equipment Approvals for this product issued under the previous procedures defined in TRG 0500 will remain valid and no retrospective action will be required providing the build state of that equipment remains unmodified.

Glossary of Terms

1.8 A comprehensive glossary of terms is given in the Highways Agency document TA 84 Code of Practice for Traffic Control and Information Systems for All-purpose Roads.
2 FUNCTIONAL REQUIREMENTS

General

2.1 The Product defined in this Specification provides the detection functions that assist the safe passage of pedestrians at a pedestrian crossing.

Performance

2.2 The detection zone requirements for this Product are as shown on Figure 2.1.

2.3 For the purpose of this specification a minimum sized person is defined as having a height greater than or equal to 1 metre, width 0.5 metre, depth 0.2 metres, mass of 20 Kg.

2.4 The conditions of 2.3 shall include a person seated in a wheelchair, pushchair or invalid carriage.

2.5 For the purpose of this specification a maximum sized person is defined as having at least a height of 2.0 metres, width of 0.75 metres, depth of 0.35 metres, mass of 80 Kg.

2.6 In addition to pedestrians the Product shall also detect cyclists, and mounted equestrian riders.

2.7 The performance criteria shall apply, irrespective of apparel worn, all meteorological condition and ambient light levels.

Must Detect Zone

2.8 The Product shall be capable of being configured on site to set the dimensions of the must detect zone anywhere between the minimum and maximum dimensions defined in Figure 2.1.

2.9 The Product shall maintain a continuous detect condition output when a minimum sized person is detected moving in this zone in a direction perpendicular to the Product at all speeds between:

   i) 0.5 metres per second;
   ii) 10 metres per second.

2.10 The Product shall produce a detect condition for any motor vehicle, moving parallel to the footway, at a speed greater than or equal to 10kph, in either direction through this zone.

2.11 The product shall detect any target equal to or greater than that defined in 2.3 within 500 ms of entering the zone.

May Detect Zone

2.12 The Product may detect people, cyclists, mounted rider or vehicles in this zone.

Must Not Detect Zone

2.13 The Product shall not detect pedestrians, cyclists, mounted riders or vehicles in this zone.

2.14 In the event of a detected malfunction or degradation of performance below that required by this specification and the ability to diagnose this, the detector shall follow the process for a category 2 fault.
Mutual Interference

2.15 The Product shall be designed and tested to ensure that it does not affect, or is affected by, the operation of another similar Product when correctly mounted and tested in the following positions:

i) back to back with the housings 25 ± 10mm apart;

ii) at right angles with the backs of the housings 25 ±10mm apart;

iii) face to face at 20m apart;

iv) side by side at 10m apart, facing the same direction.

Interface

2.16 The interface between the Product and an approved Signal Controller shall be in accordance with TR 2523.

2.17 An indicator showing the output status of the Product and, if available, the fault status, shall be positioned such that it is visible from behind and below the unit.

2.18 An option may be included that will inhibit the operation of the status indicator when the ambient light falls below 55 LUX.

Electrical Requirements

2.19 The Product shall operate from a 24v ±20% supply either AC (RMS, 50Hz) or DC.

2.20 The Product shall conform with the requirements of BS 7671 Requirements for Electrical Installations.

2.21 An interruption of the Product’s electrical supply shall cause a Category 1 fault. Fault categories are detailed in Failure modes.

Construction

2.22 The housing shall be coloured in accordance with the Zebra, Pelican and Puffin Pedestrian Crossings Regulations and General Directions 1997.

2.23 The housing shall be supplied with a fixing bracket that will permit a detector to be accurately aligned to satisfy the performance requirements.

2.24 The bracket shall be supplied with a locking arrangement capable of maintaining the alignment of a detector and should be designed to resist vandalism.

Reliability

2.25 The Product shall be designed and manufactured to have a MTBF (Mean Time Between Failure) prediction figure of greater than or equal to 20,000 hours continuous operation.

Fault Modes

Category 1

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

2.27 When power is returned, the Product shall resume normal operations within 5000 ms.
Category 2

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

2.29 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.
Figure 2.1
“On–Crossing” Zone of Detection

- **Footway**
  - Must NOT detect zone
- **Kerb**
  - Must NOT detect zone
- **Must detect zone**
  - Crossing width
    - 6 metres (min.)
    - 16 metres (max.)
  - Crossing length
    - 2.4 metres (min.)
    - 4.0 metres (max.)

- **May detect zone**
  - 0.5 metres
  - 1 metre
3 NORMATIVE REFERENCES

References

3.1 Where undated references are listed, the latest edition of the publication applies.

British Standards

3.2 The British Standards Institution, London, publishes British Standards.

Contact: +44 (0) 1344 404 429

BS 7671 Requirements for Electrical Installations
BS 7987:2001 Road Traffic Signal Systems
BS EN 50293 Electromagnetic Compatibility (Road traffic Signal Systems Product Standard)
BS EN 60529 Specification for Degrees of Protection Provided by Enclosures (IP Code)

Specifications

3.3 Specifications are published by the Highways Agency.

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TRG 0600 Self-Certification Procedures for Statutory Approval of Traffic Signal Control Equipment
TR 2500 Specification for Traffic Signal Controller
TR 2523 Traffic Signal Equipment Interfacing Specification

Other Publications

TSRGD Traffic Signs Regulations and General Directions
ZPPRGD The Zebra, Pelican and Puffin Pedestrian Crossings Regulations and General Directions
MCHW Volume 1 Specification for Highways Works
Traffic Signs Regulations (Northern Ireland) 1997
Road Traffic Regulation Order 1997 (Northern Ireland)
Disability Unit Circular 1/91
TA 84 Code of Practice for Traffic Control and Information Systems All-purpose Roads
### Roads

<table>
<thead>
<tr>
<th>TAL 1/02</th>
<th>The installation of Puffin Pedestrian Crossings</th>
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4 HISTORY

TR 2179  Issue A  November 1996
TR 2179  Issue B  February 2002
TR 2506  Issue A  May 2005

Approval of this document for publication is given by the undersigned:

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APPENDIX A  INFORMATIVE GUIDE

General

A1 This appendix is an informative guide to Systems Integrators and Highways Authorities who wish to purchase / hire and use Pedestrian/Vehicle Detection Equipment, for use with Pedestrian facilities associated with Permanent Traffic Signal Controllers, that has been declared conformant to this specification. Prospective purchasers/hirers should ensure that the procurement contract address the following issues.

A2 The Procurement Contract should specify that the connector should be as either the Bulgin plug as described in paragraph A3 or the flying lead as described in A4.

A3 Where the Product is fitted with Bulgin Buccaneer type plugs, Series PX0728/P 9 pole (or equivalent) the connection designations should be as Table A1.

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<thead>
<tr>
<th>Contact</th>
<th>Circuit</th>
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<tbody>
<tr>
<td>Pin 1</td>
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<td>Red</td>
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<td>Orange</td>
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<tr>
<td>Pin 9</td>
<td>Spare</td>
<td>Pink/Brown</td>
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</table>

Table A1
Bulgin Plug Pin Designations

A4 Alternatively, where the detector is to be supplied with a flying lead it should be made of cable generally in accordance with Def-Stan 61-12 (Part 4) 7/0.2 mm PVC insulated, overall braid screened, PVC sheathed (code 7/2/10C or equivalent). The terminated cable should have a minimum length of 1 metre and the same colour designations as in Table A1.

Marking and Labelling

A5 The purchase contract should ensure that the Vehicle Detection Equipment is fitted with a label displaying the following:

i) The unique product identifier including serial number

ii) The HA Specification and associated Appendix against which it has been declared compliant.

iii) The electrical supply requirements of the Product;