

# TOPAS

---

## Traffic Open Products and Specifications

### ***TOPAS 2542A***

### ***Performance Specification for Non-Contact Pedestrian Signal Demand Equipment***

<b>Revision</b>	<b>Date</b>	<b>Scope</b>	<b>Authorised by</b>
A	25/2/21	Final	Board

© Traffic Open Products And Specifications Limited 2021.

This document is the property of Traffic Open Products And Specifications Limited and shall not be reproduced in any media in part or in full without the prior written permission of Traffic Open Products And Specifications Limited unless this copyright statement is attached.

Contains public sector information licensed under the Open Government Licence v3.0 and are reproduced and adapted by permission.

#### **Limitation of Liability**

Traffic Open Products And Specifications Limited does not accept any liability for any losses damages injury or death or other adverse consequence arising from the use or application of this document and the information therein

*[This page has been left intentionally blank*

## TOPAS 2542A

### PERFORMANCE SPECIFICATION FOR NON CONTACT PEDESTRIAN SIGNAL DEMAND EQUIPMENT

## CHANGE LOG

Specification first issue so no change log entries.

## CONTENTS

### Section

- 1 Introduction
- 2 Functional Requirements
- 3 References

**Appendix A:** Detection Zones

**Appendix Z:** Technical File Content

# 1 INTRODUCTION

1.1 This performance specification covers the necessary requirements for equipment used in conjunction with traffic pedestrian equipment, to provide facilities which insert pedestrian demands, without the need to physically press the standard pedestrian demand push button.

**Note.** Throughout this specification the term 'pedestrian' refers to all types of non-vehicle users, including cyclists and equestrians.

1.2 TOPAS specifications are explicitly purchasing specifications and compliance with them is not mandatory. However Local and other Purchasing Authorities may typically require that equipment purchased complies with TOPAS specifications and is TOPAS registered.

1.3 Manufacturers may register products as being compliant with this specification, using the process defined in TOPAS 0600.

1.4 TOPAS registration requires manufacturers submit a Technical File to an appropriate Technical Assessor to aid compliance verification. The content requirement for the Technical File is defined in Appendix Z of this specification.

1.5 Within this specification, "The Product" shall mean all components necessary to provide a complete operational unit meeting the requirements of this specification and the common requirements defined in TOPAS0600.

## ***Implementation***

1.6 This specification will be immediately implemented from the date of issue for all new TOPAS Registrations.

## ***Glossary of Terms and Abbreviations***

1.7 A comprehensive glossary of terms and abbreviations may be found in the Institute of Highway Engineers guidance note "Traffic Control and Information systems".

TOPAS Terms are defined in TOPAS 0600 and TOPAS 0601.

## 2 FUNCTIONAL REQUIREMENTS

### General

2.1 The Products defined in this specification are used to provide a supplementary method of inserting a pedestrian demand at signalled crossings, specifically without the need for users to make physical contact with any part of the pedestrian demand or display unit.

2.2 For safety reasons Products are explicitly not permitted to provide any indication of right-of-way.

**Note** The right of way indication is controlled by a traffic signal controller compliant with TOPAS 2500.

2.3 For safety reasons Products are explicitly not permitted to issue any sounds which may be confused with the standard audible right-of-way indications provided by pedestrian demand or display units.

2.4 For safety reasons Products are explicitly not permitted to internally generate voltages in excess of ELV.

2.5 Products may be retrofitted to existing pedestrian demand or display units or incorporated into the units during manufacture.

2.6 Products shall not alter the appearance of pedestrian demand or display units, such that they are no longer compliant with the requirements of TSRGD.

### Operation

2.7 Where the Product uses gestures (such as moving a hand near the Pedestrian demand or display unit) a demand shall be applied and removed, constrained by the following conditions:

- a) The Product must respond to objects creating a gesture with a presented surface area of 35 cm<sup>2</sup> or greater.
- b) A gesture must be detected when presented within 20mm to 200mm from the pedestrian unit.
- c) A gesture may be detected when presented within 0mm to 20 or 200mm to 300mm from the pedestrian unit.
- d) A gesture shall not be detected when presented further than 300mm from the pedestrian unit.
- e) The gesture has been present for 1 second. Gestures of less than 0.5 second duration are to be ignored.
- f) The demand shall be removed within 1 second of the gesture falling outside of the may detect range.

**Note.** The must and may detect zones are shown graphically in Appendix A

2.8 Where the Product uses a remote activation device (such as a mobile phone), a demand shall be inserted and cancelled, constrained by the following conditions:

- a) The demand has been actively requested by the user and has not been generated merely by the transmitter being in vicinity of the pedestrian unit.
- b) The must detect range between the transmitter and the pedestrian unit shall be 0m to 2.0m.
- c) The may detect range between the transmitter and the pedestrian unit shall be 2.0m to 4.0m

- d) Demands originating from remote activation devices at ranges of greater than 4.0m shall be ignored.
- e) The remote activation has been present for between 0.5 and 1 second.
- f) The demand shall be removed within 1 second of the remote activation being removed.

2.9 The Product shall not activate pedestrian demand inputs other than the one intended and shall not respond to extraneous transmissions, for example from passing vehicles.

**Note:** For the purposes of testing it can be assumed that pedestrian demand or display units are positioned no closer than 1.5m to each other.

### ***Interfaces – Electrical***

2.10 The Product shall be capable of being powered by standard 24V AC and 24V DC detector supplies provided by TOPAS 2500 compliant controllers, as defined in TOPAS 2523.

**Note.** DC supplies may be negative or positive with respect to earth.

2.11 Where 24V supplies are brought into any pedestrian demand or display unit, the cables and connectors used shall ensure that faulty wiring, caused for example by a poor or disconnected joint, does not expose the 24V supply, allowing it to potentially come into contact with any pedestrian signal connection within the unit.

**Note.** The use of female connectors for the power source are considered sufficient to meet this requirement.

2.12 No connection shall be made to any pedestrian indicator signal, including the red symbol, green symbol, demand accepted indicator, audible or tactile unit drives.

2.13 In the absence of power the product shall insert a permanent pedestrian demand via the demand insertion interface defined in sections 2.14 to 2.16.

### ***Interfaces – Demand Insertion***

2.14 The means to insert the demands shall be volt free and meet the requirements of TOPAS 2523 – Parallel Output Interface.

2.15 When inserted a demand shall exist for a minimum of 200 milliseconds.

2.16 Insertion of demands may be via an independent input to the controller or via a connection in parallel with the standard pushbutton within the pedestrian demand unit.

**Note.** The use of an independent input is preferred as it allows the controller to determine that the product is working via its normal DFM functionality, but this may require additional cabling and possibly controller configuration.

### ***Fault monitoring and indication***

2.17 The Product shall undertake internal fault monitoring and detect failures that would prevent it from operating correctly. Such failures include (but are not limited to):

- Software failures or lockups.
- Power supply failures.
- Sensor / intentional emitter failures.

2.18 In the event of any operational failure the product shall insert a permanent pedestrian demand via the demand insertion interface defined in sections 2.14 to 2.16.

2.19 A means to reset the Product and bring it back into operation shall be provided.

2.20 The Product may provide an indication of normal operation (such as a flashing LED). If provided this shall:

- g) Not be visible outside the pedestrian demand or display unit when its door is closed.
- h) Shall be 'daylight viewable' when the door of the pedestrian demand or display unit is fully open.

## ***Construction***

2.21 The Product construction shall be suitable for the on-street environment that will be experienced, including specific measures to mitigate against water damage due condensation or water leaking into the pedestrian demand or display unit enclosures.

## ***Reliability***

2.22 The Product shall have a design life of at least 10 years. Where optical or wireless emitters are used evidence of their expected life shall be included in the Technical File.

## ***EMC and Environmental requirements***

2.23 The Product shall be tested to and comply with the requirements of BS EN 50293 (Electromagnetic Compatibility Road Traffic Signal Systems).

2.24 Where the Product is an intentional radio transmitter it shall comply with Radio Equipment Directive and be tested to the requirements of IR2030 and the relevant additional tests defined in BS EN 301489-3.

2.25 Where the Product emits any form of coherent light (for example low power laser light) it shall be compliant with and tested to the applicable classes of IEC 60825. No emitters in excess of Class 1 shall be present in the product.

**Note.** Where the Product uses a laser device (including any optical lensing) which is unmodified by the product manufacturer and the device has evidence of testing and compliance with IEC 60825, further independent testing is not required.

2.26 The Product shall be designed not to be triggered erroneously by adverse weather conditions including, heavy rain falling snow and blowing leaves.

2.27 The Product shall be tested and meet the Environmental requirements of TOPAS 2130.

## ***Documentation***

2.28 Full installation, commissioning and maintenance instructions shall be published for the Product. These shall be identifiable by part number and issue state.

## ***Labelling***

2.29 In addition to mandatory markings (such as CE or equivalent) the Product shall also be clearly marked with:

- i) Its Product designation (such as the manufacturers part number) and a unique serial number.
- j) Its power supply requirements in terms of operating voltage range and power or current consumption.
- k) Where the Product emits any form of coherent light (for example low power laser light) it shall include the prescribed Class 1 Laser Product label.

## 3 REFERENCES

3.1 Where undated references and standards are listed, the latest issue of the publication applies.

### **British Standards**

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

BS EN 50556	Road Traffic Signal Systems
BS EN 50293	Electromagnetic Compatibility Road Traffic Signal Systems Product Standard
BS EN 12675	Traffic Signal Controllers – functional safety requirements

### **Specifications**

3.3 TOPAS Limited specifications are available at [www.topasgroup.org.uk](http://www.topasgroup.org.uk)

TOPAS 0600	TOPAS Registration Process
TOPAS 2523	Traffic Control Equipment Interfacing Specification
TOPAS 2130	Environmental Tests for Road Traffic Control Equipment

### **Other Publications**

3.4 Other publications can be obtained from various sources including the Stationary Office:

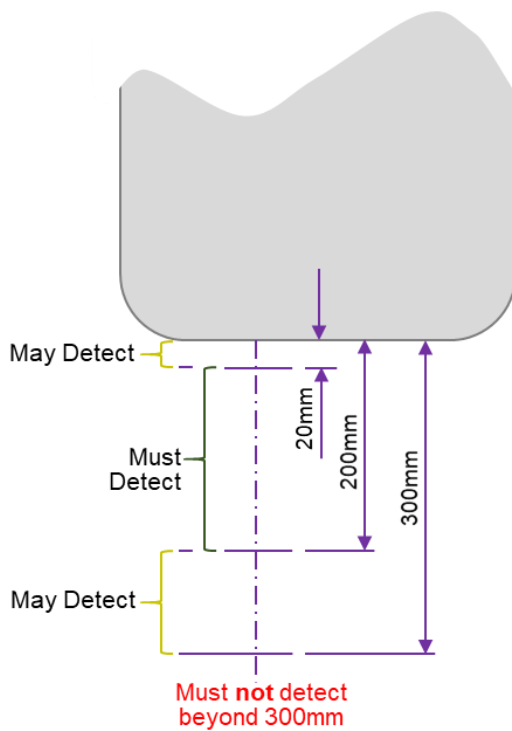
TSRGD	Traffic Signs Regulations and General Directions
IR2030	UK Interface Requirements 2030 – Licence Exempt Short Range Devices
IEC 60825-1	Safety of laser products - Part 1: Equipment classification and requirements



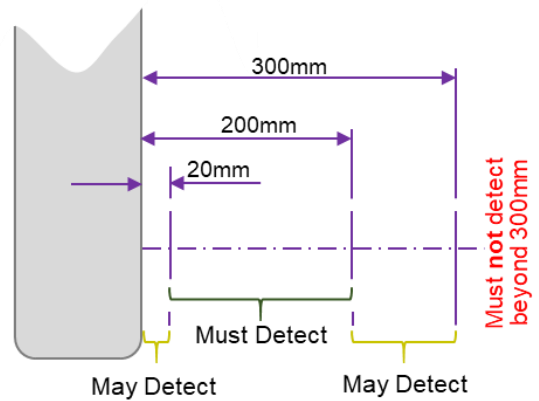
## APPENDIX A – DETECTION ZONES

The must and may detection zones described in clause 2.7 are outlined below.

Example where gesture is to be detected is underneath the pedestrian unit.



Example where gesture is to be detected in front of the pedestrian unit.



## APPENDIX Z -TECHNICAL FILE CONTENT

This appendix defines the necessary content for a Technical File (a collection of relevant documents) which must be reviewed by an appropriate Technical Assessor as part of the TOPAS Registration process (See TOPAS 0600).

The 'ticked' items are required to be present in a Technical File used to support TOPAS Registration against TOPAS 2542A. **Please read the description criteria carefully.**

<i>Ref</i>	<i>Item</i>	<i>Description</i>	<i>Required</i>
1	Overview document	A summary document outlining the product, specifying which TOPAS and other relevant specification(s) the product has been designed to comply with, together with a detailed table of contents for the Technical File.  Where external certificates or documents are referred to these shall be included either: (a) within this overview document; or (b) supplied separately as part of this Technical File.	✓
2	QA accreditation certificate(s)	A copy of the Quality Management Registration Certificates for the organisation applying for TOPAS Product Registration.	✓
3	Details of all required standards and regulations including CE/CA requirements that apply to the Product	A list of all standards to be complied with.  Including explicit CE/CA declarations of performance/conformity for those standards, including all certificates, shall be included in this Technical File.	✓
4	A functional design description of the product	Title, document number, version and date of the overall System Design Document for the Product.	✓
5	Product part numbers	A list of top-level assembly part numbers and their issue states including all firmware / software part numbers and issues.	✓
6	Statement of Compliance	A clause-by-clause statement of compliance against TOPAS 2542A confirming compliance or non-compliance and referencing supporting evidence.  (An example template can be found on the TOPAS website)	✓

7	Functional test procedures and results	A list of all functional test schedules and test result documents (by document number and issue) that substantiate the Statement of Compliance.	✓
8	BS EN 50293 EMC test procedures and results	(a) Title, document number, version and date of the EMC test performance requirement document.  Copies of the results of EMC testing undertaken by an appropriately qualified independent approved test house <u>must</u> be included in the Technical File.	✓
9	Optical test procedures and results required by this specification	For all products which have any defined optical performance requirements  (a) Title, document number, version and date of the optical test performance requirement document.  Copies of the results of optical testing undertaken by an appropriately qualified independent approved test house <u>must</u> be included in the Technical File.	✓
10	Environmental test results	(a) A list of relevant Environmental tests performance requirements defined in TOPAS 2130.  Copies of the results of the Environmental testing undertaken by an appropriately qualified independent approved test house <u>must</u> be included in the Technical File.	✓
11	Radio Equipment Regulations test results	For all products which include any transmitting and/or receiving radio equipment  (a) A copy of the RER Declaration Of Conformity  (b) Reference to the RER Technical Documentation for the product (by title, document number and version).  (c) Copies of the results of radio testing, undertaken by an appropriately qualified independent approved test house <u>must</u> be included in the Technical File. The test results should be those identified in the RER Technical Documentation and should cover any specific IR2030 requirements for the type of radio used.  A copy of the Type Examination Certificate for radio equipment not covered by a Designated EN standard.	✓
12	Primary Safety Test procedure and results	For Traffic signal Control equipment only:  (a) The title, document number, version and date of the Primary Safety Test schedule.  (b) A copy of the test results must be included as part of the Technical File.	N/A

13	Failure Mode Analysis	For Traffic signal Control equipment only Title, document number, version and date of the product failure mode analysis requirements and results.	N/A
----	-----------------------	--	-----