

TOPAS

Traffic Open Products and Specifications

TOPAS 2544A

Performance Specification for Wait Indicator Equipment

Revision	Date	Scope	Authorised by
A(7)	20/4/23	FINAL	Board

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TOPAS 2544A

PERFORMANCE SPECIFICATION FOR WAIT INDICATOR EQUIPMENT

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CHANGE LOG

Specification first issue so no change log entries.

Corrigendum 9/12/24

- Clarification of requirements for evidence for optical testing – note at Clause 2.9
- Updated reference for legislation
- Updated Appendix Z – no content change

Updated Appendix Z -no content change

1 INTRODUCTION

1.1 This performance specification covers the necessary requirements for Wait Indicator equipment used in conjunction with traffic control systems. Specifically, it covers equipment to TSRGD Diagrams 4003, 4003.3 and 4003.6. For other push button equipment see TOPAS 2511.

Note. Throughout this specification the term 'pedestrian' refers to all types of non-motor 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.

1.6 This Specification includes requirements for equipment for portable and permanent traffic signalling systems. Performance requirements for portable traffic signalling systems are defined in TOPAS 2540. Only if a facility or requirement for a portable traffic signalling system is NOT provided in TOPAS 2540 shall the requirements of this specification apply.

Implementation

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

Glossary of Terms and Abbreviations

1.8 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 information and instructions to pedestrians by means of illuminated signs.

2.2 In the event of any ambiguity of interpretation then the requirements of TSRGD take precedence over this specification.

2.3 This specification provides functional definitions for Wait Indicator equipment supporting any of the legends permitted in TSRGD or specially authorised by the Secretary of State. In Scotland and Wales the devolved Assemblies provide a similar role. In Northern Ireland the Department for Regional Development undertakes this role.

2.4 This Specification collates those parts of BS 505, TR 1020, TR 2206 and other specifications that have not been assimilated into BS EN 12368, TSRGD:2016 or into other locations for the purposes of ensuring definition of functionality.

2.5 For safety reasons Wait Indicator Equipment Products are explicitly not permitted to internally generate voltages greater than Extra Low Voltage (ELV).

Wait Indicator Units

2.6 The functional performance for Pedestrian Wait Indicator boxes shall be as defined in the following sections. Note: Nearside pedestrian signal and demand units shall confirm to TOPAS 2511, which defines their operational characteristics.

2.7 The legends shall conform to the requirements of TSRGD diagrams 4003, 4003.3 or 4003.6 only or be specially authorised by the Secretary of State. In Scotland and Wales the devolved Assemblies provide a similar role. In Northern Ireland the Department for Regional Development undertakes this role.

Note: TSRGD 2016 no longer permits the installation of new Pelican Crossings in England, Scotland, or Wales. The full definition of Pelican requirements are retained to allow "triple legend" Wait Indicators to be replaced at existing sites, for example as the result of a 'knockdown', and for use in Northern Ireland, where new Pelican Crossings are still permitted.

Optical Performance

2.8 The optical performance for Wait Indicator boxes shall be as defined in the following sections. Note that the performance for nearside signal units is described in TOPAS 2511. The optical performance criteria below apply solely to the internally illuminated part of the Wait Indicator legend in the bright state unless otherwise stated.

2.9 In the bright state the on-axis intensity shall exceed 2cd and shall not exceed 35cd. In the dimmed state the on-axis intensity shall be as defined in CLC TS 50509 (between 15% and 38% of the actual bright state intensity). The on-axis measurement direction is the direction perpendicular to the plane of the WAIT symbol and centred on the illuminated area of the symbol

NOTE Optical test reports included in the technical file shall include the measured values of on-axis bright light output; the voltage applied to achieve bright; the measured values of on-axis dimmed light output; the voltage applied to achieve this dimming; the calculated dimming ratio

2.10 Intensity distribution measured (as a fraction of the on-axis intensity) for the angles shown in Table 1 shall be at least the value shown.

		Horizontal Angle (deg)			
		0	+/-10	+/-20	+/-35
Vertical Angle (deg)	10	81	75	50	31
	0	100	81	63	38
	-10	81	75	50	31
	-20	56	53	31	25

Table 1 Percentage Intensity Distribution for Wait Indicator Legends

2.11 The intensity for angles greater than +/-60° in the horizontal plane through the measurement axis shall not exceed 50% of the on-axis intensity.

2.12 Chromaticity of illumination. The legend shall be illuminated such that the text elements of the legend "WAIT" meet either:

- a) the accepted UK white of TSRGD for VMS (BS EN 12966:2014 White C2).
or
- b) the accepted UK yellow of TSRGD for VMS (BS EN 12966:2014 Yellow C2).

2.13 The chromaticity of the text elements of the legend "WAIT" excluding the blue surround shall be measured.

2.14 The chromaticity of the text elements of section 2.13 shall meet the same criteria in the dim state as in the bright state.

2.15 Uniformity: Intensity measurements shall be made using a circular mask of a diameter that just excludes the blue surrounding of the white text. Five measurements shall be made at locations determined by the independent test house and nominally in the centre and four extreme corners of the text. The ratio between the highest and the lowest measured intensities shall not exceed 4.0.

2.16 No optical measurements are required for unlit parts of the legend that convey information.

Electrical Performance

2.17 No voltage in excess of Extra Low Voltage (ELV) supply as defined in BS7671 shall be permitted in the Product.

2.18 Acceptable ranges of Extra Low Voltage ELV supply are specified in the Power Supplies section of TOPAS 2523.

2.19 The internal illumination for a wait indicator shall be in the 'off' state for those applied voltages corresponding to the off state of ELV traffic signals.

2.20 All wiring, termination, earthing and labelling shall be in accordance with BS 7671.

2.21 Dimming: When supplied with a voltage intended to dim the light output the on-axis intensity shall reduce to those levels defined in section 2.9. The dimming voltages shall be one of:

- a) For ELV installations, ELV as defined in CLC TS 50509.
- b) For LV installations, suitably transformed LV.

2.22 The dimming voltage range shall be clearly marked on the product label, see also section 2.37 below.

2.22.1 The means of applying the supply voltage for the Product may be either centralised from the controller or distributed as defined in BS EN 50556.

2.22.2 Except for portable signals the means of controlling the bright / dim state for the Product shall be centralised from the controller or distributed as defined in BS EN 50556.

Construction and Mechanical Performance

- 2.23 Mechanical performance requirements for Wait Indicator equipment are provided in the appropriate parts of TOPAS 2130.
- 2.24 Means shall be provided for securely fixing the housing to the signal pole. Access to the fixing shall only be available from inside the housing.
- 2.25 Means shall be provided to permit access to the housing to facilitate the installation and termination of electrical cables and for maintenance purposes.
- 2.26 Access to the interior of the housing shall be secured by a T key or by other means as agreed with the purchaser.
- 2.27 The colour of the Product shall be in accordance with TRSGD.
- 2.28 There shall be space available within the base of the Product to incorporate both an audible and tactile device (to TOPAS 2509 and TOPAS 2508 respectively).
- 2.29 The product shall be designed such that when correctly fitted, it can be sealed to prevent the ingress of moisture.
- 2.30 The button, tactile equipment, audible equipment, non-contact push-button and any bulb light source, shall be easily replaceable if damaged or faulty.
- 2.31 Those items identified in section 2.30 above shall be capable of being replaced without the need for specialist tools.
- 2.32 All external corners and edges of the housing, excepting lower edges, shall be rounded to at least 4 mm radius and all other external edges shall have a radius of at least 1.5 mm.

EMC and Environmental requirements

- 2.33 The environmental performance and testing requirements for Wait Indicator equipment are provided in the appropriate parts of TOPAS 2130. The equipment shall be tested mounted to a section of pole as intended in normal service operation.
- 2.34 Wait Indicator equipment shall conform to the requirements of BS EN 50293. This shall be evidenced in the Technical File.

Reliability

- 2.35 The Product shall have a design life of at least 10 years.

Documentation

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

Labelling

- 2.37 In addition to mandatory markings (such as CE or equivalent) the Product shall also be clearly marked with:
- a) Its Product designation (such as the manufacturers part number) and a unique serial number.
 - b) Its power supply requirements including, the operating voltage range(s) and corresponding power or current consumption. Permitted voltage ranges are defined in TOPAS 2523.
 - c) 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
CLC TS 50509	Use of LED signal heads in road traffic signal systems

Specifications

3.3 TOPAS Limited specifications are available at www.topasgroup.org.uk

TOPAS 0600	TOPAS Registration Process
TOPAS 2523	Performance specification for Traffic Control Equipment Interfacing Specification
TOPAS 2130	Performance specification for Environmental Tests for Road Traffic Control Equipment
TOPAS 2540	Performance specification for traffic signalling systems for temporary traffic management
TOPAS 2508	Performance Specification for Tactile Equipment for use at Pedestrian Crossings
TOPAS 2509	Performance Specification for Audible Equipment for use at Pedestrian Crossings
TOPAS 2511	Performance Specification for Nearside Signal and Demand Units

Other Publications

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

TSRGD	Traffic Signs Regulations and General Directions
IEC 60825-1	Safety of laser products - Part 1: Equipment classification and requirements

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 2544A. **Please read the description criteria carefully.**

<i>Ref</i>	<i>Item</i>	<i>Description</i>	<i>Required</i>
1	Overview document	<p>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.</p> <p>Where external certificates or documents are referred to these shall be included either:</p> <p>(a) within this overview document; or</p> <p>(a) (b) supplied separately as part of this Technical File.</p>	✓
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	<p>A list of all standards to be complied with.</p> <p>Including explicit CE/CA declarations of performance/conformity for those standards, including all certificates, shall be included in this Technical File.</p>	✓
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	<p>A clause-by-clause statement of compliance against TOPAS 2544A confirming compliance or non-compliance and referencing supporting evidence.</p> <p>(An example template can be found on the TOPAS website)</p>	✓

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	<p>(a) Title, document number, version and date of the EMC test performance requirement document.</p> <p>(a) 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.</p>	✓
9	Optical test procedures and results required by this specification	<p>For all products which have any defined optical performance requirements</p> <p>(a) Title, document number, version and date of the optical test performance requirement document.</p> <p>(a) 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.</p>	✓
10	Environmental test results	<p>(a) A list of relevant Environmental tests performance requirements defined in TOPAS 2130.</p> <p>(a) 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.</p>	✓
11	Radio Equipment Regulations test results	<p>For all products which include any transmitting and/or receiving radio equipment</p> <p>(a) A copy of the RER Declaration Of Conformity</p> <p>(b) Reference to the RER Technical Documentation for the product (by title, document number and version).</p> <p>(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.</p> <p>(a) A copy of the Type Examination Certificate for radio equipment not covered by a Designated EN standard.</p>	✓
12	Primary Safety Test procedure and results	<p>For Traffic signal Control equipment only:</p> <p>(a) The title, document number, version and date of the Primary Safety Test schedule.</p> <p>(b) A copy of the test results must be included as part of the Technical File.</p>	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
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