AS 2578—2009

Australian Standard®

Traffic signal controllers

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This Australian Standard® was prepared by Committee LG-006, Road Traffic Signals. It was approved on behalf of the Council of Standards Australia on 22 October 2009.
This Standard was published on 3 December 2009.

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- AUSTROADS
- Australian Industry Group
- Brisbane City Council
- CIE Australia Inc.
- Department for Transport, Energy and Infrastructure, SA
- IES: The Lighting Society
- Lighting Council of Australia
- Main Roads Department, Qld
- Main Road Western Australia
- Roads and Traffic Authority of NSW
- VicRoads

This Standard was issued in draft form for comment as DR 08218.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard®

Traffic signal controllers

Originated as AS 2578—1983.
Second edition 2009.

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Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 9308 8

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PREFACE

This Standard was prepared by Standards Australia Committee LG-006, Road Traffic Signals, to supersede AS 2578.1—1983, *Traffic signal controllers*, Part 1: *Physical and electrical compatibility*.

The objective of this Standard is to provide mechanical, electrical and functional requirements for traffic signal controllers for physical and electrical interchangeability and for functional compatibility between controllers of different manufacture.

The terms ‘normative’ and ‘informative’ are used to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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FOREWORD

The Standard is structured as follows:

Section 1 provides the scope, definitions and general requirements, such as the environmental requirements and the expansion capability of controllers to meet the various configurations that may be required.

Section 2 provides the mechanical and electrical requirements for the controller housing, including the Flasher Unit and Site Identification Encoder, but excluding the Logic Module.

Section 3 provides the requirements for the controller Logic Module electronics.

Section 4 provides the requirements for the controller software and the functional requirements for the controller software.

Appendix A provides a guide for information that should be provided to a manufacturer when purchasing a controller.

Appendix B provides details of the data format for Electronic Identities for electronic modules.

Appendix C provides details for connectors and connector pin functions for connectors for the Logic Module.

Appendix D provides details of the connectors and connector pin functions for connectors for the Flasher Unit.

Appendix E provides details of the connectors and connector pin functions for connectors for the Site Identification Encoder.

Appendix F provides the mechanical details for all of the connectors defined in Appendices C to E.

Appendix G provides informative information regarding hazards and the approach to achieving functional safety.

Appendix H provides additional information for the controller housing. This includes terminal block arrangements and electrical wiring diagrams.

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STANDARDS AUSTRALIA

Australian Standard
Traffic signal controllers

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the mechanical, electrical and functional requirements for the control equipment used for operation of road traffic signals, with the objective of ensuring that, as far as practicable—

(a) controllers from different manufacturers will be physically interchangeable; and

(b) controllers from different manufacturers will have functional compatibility.

NOTE: The requirements of this Standard may not ensure total physical and electrical interchangeability, but should enable a replacement controller to be installed with a minimum of alteration.

The Standard seeks to ensure compatibility between the electronic modules (i.e. the Logic Module, the Flasher Unit and the Site Identification Encoder) mounted in the controller housing. The Standard is necessarily prescriptive in some areas to achieve this purpose.

NOTE: Compliance with this Standard may not ensure full compatibility between Logic Modules and housings of different manufacture since the method of dimming the signal displays is not specified.

The Standard specifies general requirements for the design and construction of traffic signal controllers to meet the needs of users. The Standard specifies technology that has been proven in the field to provide safe and reliable operation.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1055	Acoustics—Description and measurement of environmental noise (series)
1275	Metric screw threads for fasteners
1319	Safety signs for the occupational environment
2353	Pedestrian push-button assemblies
2700	Colour standards for general purposes
2703	Vehicle loop detector sensors
60068	Environmental testing
60068.2.6	Part 2.6: Tests—Test Fc: Vibration (sinusoidal)
60068.2.29	Part 2.29: Tests—Test Eb and guidance: Bump
60269	Low-voltage fuses
60269.1	Part 1: General requirements
60529	Degrees of protection provided by enclosures (IP Code)

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AS	
61508	Functional safety of electrical/electronic/programmable electronic safety-related systems
61508.1	Part 1: General requirements
61508.2	Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems
61508.3	Part 3: Software requirements
61508.4	Part 4: Definitions and abbreviations
AS/NZS	
1768	Lightning protection
2144	Traffic signal lanterns
2276	Cables for traffic signal installations
2276.1	Part 1: Multicore power cables
2276.2	Part 2: Feeder cable for inductive type vehicle-detector loops
3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
3100	Approval and test specification—General requirements for electrical equipment
3190	Approval and test specification—Residual current devices (current-operated earth-leakage devices)
61000	Electromagnetic compatibility (EMC)
61000.4	Part 4: Testing and measurement techniques
61000.6	Part 6: Generic standards
61558	Safety of power transformers, power supply units and similar
61558.2.6	Part 2.6: Particular requirements for safety isolating transformers for general use (IEC 61558-2-6:1997, MOD)
ACMA	Telecommunications Labelling (Customer Equipment and Customer Cabling) Notice 2001 as amended.
AS/ACIF S008	Telecommunications Technical Standard (Requirements for customer cabling products – AS/ACIF S008:2006) 2006
JEDEC	Common Flash Interface Standard, JEDEC JESD68.01
PCMCIA	PC Card Standard, Release 8.0

1.3 DEFINITIONS

For the purpose of this Standard, the following definitions and those given in AS/NZS 2144 apply.

1.3.1 Accident

An unintended event that may cause harm.

1.3.2 ACMA

Australian Communications and Media Authority (ACMA). The body responsible for regulating communications and media.

1.3.3 A-Tick

Telecommunications compliance labelling

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1.3.4 Conflict (conflicting signal displays)

A conflict exists where right of way is given to two traffic movements that cannot safely operate together.

1.3.5 Controller

An automatic device that regulates the sequence and timing of the illumination of traffic signal lanterns.

NOTE: A traffic signal controller is hereinafter referred to as a 'controller'.

1.3.6 Coordination facilities

Equipment provided remotely or within a controller to enable it to operate in conjunction with one or more adjacent controllers, with a defined time relationship between their respective signal sequences.

1.3.7 C-Tick

Radiocommunications and EMC compliance labelling.

1.3.8 EMC

Electromagnetic compatibility.

1.3.9 Error

Any abnormal condition or failure detected by the controller that does not prevent the controller from providing safe operation.

1.3.10 Facility Switch

An externally accessible means of switching a signal installation to 'ON', 'OFF' or 'FLASH'.

1.3.11 Fail-safe

A property of a system, by virtue of its design, whereby the system maintains a safe state regardless of failures. However, the system may not continue to operate while the fault is present.

1.3.12 Fault

Any condition or failure detected by the controller that prevents the controller from providing safe operation.

1.3.13 Flash mode

A mode of operation in which a predetermined combination of yellow aspects are flashing.

1.3.14 Flasher Unit

A self-contained unit that supplies the flashing active voltage to signal aspects for the Flash mode of operation.

1.3.15 Flashing yellow facility

A feature that causes the flashing operation of a predetermined combination of yellow aspects when the normal signal operation is discontinued.

1.3.16 Flexilink

A mode of operation providing coordinated control of traffic movements in the road network, in accordance with the time of day and the day of week.

1.3.17 Harm

Death or personal injury, but may also include damage to property or the environment.

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