

Australian Standard[®]

Traffic signal lamps

**Part 2: Lamps for a.c. operation
at extra-low voltage**

This Australian Standard was prepared by Committee LG/6, Road Traffic Signals. It was approved on behalf of the Council of Standards Australia on 11 February 1993 and published on 17 May 1993.

The following interests are represented on Committee LG/6:

Australian Chamber of Manufactures
Australian Electrical and Electronic Manufacturers Association
Australian Road Research Board
Austroads
Brisbane City Council
Department of Urban Services, A.C.T.
Metal Trades Industry Association of Australia
Roads and Traffic Authority, N.S.W.
VicRoads

Additional interests participating in preparation of Standard:

Suppliers of traffic signal lamps
Photometric testing laboratories

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 4113.2—2013

Traffic signal lamps

Part 2: Lamps for a.c. operation at extra-low voltage

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Technical Committee LG-006 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 9 September 2013.

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CIE Australia
Department of Planning, Transport and Infrastructure South Australia
Department of Transport and Main Roads, Queensland
IES: The Lighting Society
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NOTES

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PREFACE

This Standard was prepared by the Standards Australia Committee on Road Traffic Signals. It is one of a number of Standards which set out requirements for the equipment associated with traffic signal installations, namely—

AS 2144	<i>Traffic signal lanterns</i>
AS 2339	<i>Traffic signal posts and attachments</i>
AS 2353	<i>Pedestrian push-button assemblies</i>
AS 2578	<i>Traffic signal controllers</i>
AS 2578.1	<i>Part 1: Physical and electrical compatibility</i>
AS 2703	<i>Vehicle loop detector sensors</i>
AS 2979	<i>Traffic signal mast arms</i>
AS 4113	<i>Traffic signal lamps</i>
AS 4113.1	<i>Part 1: Lamps for 240 V a.c. operation</i>
AS 4113.2	<i>Part 2: Lamps for a.c. operation at extra-low voltage (this Standard)</i>

The photometric performance of a traffic signal lantern is a function of the lantern/lamp combination used. Until recently, the lamps used have universally been of the tungsten filament type designed for operation on a 240 V a.c. supply. With the emphasis now given to reducing energy usage in traffic signalling systems, traffic authorities are actively introducing or considering the introduction of lanterns with optical systems based on lamps operated at 10 V a.c. (see Appendix E).

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STANDARDS AUSTRALIA

Australian Standard

Traffic signal lamps

Part 2: Lamps for a.c. operation at extra-low voltage

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies requirements for lamps designed for a.c. operation at extra-low voltage for use in road traffic signal systems. It covers requirements for the mechanical and physical characteristics of such lamps, and their electrical and photometric performance and testing.

NOTES:

- 1 The lamps are intended for use in traffic signal lanterns complying with AS 2144 and will normally be operated on a 10 V, 50 Hz a.c. supply, as required by that Standard. It should be noted that the use of a lamp complying with this Standard does not ensure that the selected lamp/lantern combination will satisfy the photometric performance requirements of AS 2144.
- 2 Appendix A gives guidance on the information which should be provided to facilitate the purchase of traffic signal lamps complying with this Standard.
- 3 Alternative methods for determining compliance with this Standard are given in Appendix B.
- 4 Appendix C sets out details of several lamp types that are currently in use in signalling systems operated by state traffic authorities.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

- | | |
|------|--|
| 1199 | Sampling procedures and tables for inspection by attributes |
| 1399 | Guide to AS 1199—Sampling procedures and tables for inspection by attributes |
| 2144 | Traffic signal lanterns |
| 2490 | Sampling procedures and charts for inspection by variables for percent defective |
| 3900 | Quality management and quality assurance standards |
| 3901 | Quality systems for design/development, production, installation and servicing |
| 3902 | Quality systems for production and installation |
| 3904 | Quality management and quality system elements |

SAA HB18.44	Guide 44—General rules for ISO or IEC international third-party certification scheme for products
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IEC

- | | |
|------|---|
| 61 | Lamp caps and holders together with gauges for the control of interchangeability and safety |
| 61-1 | Part 1: Lamp caps |
| 357 | Tungsten halogen lamps (non-vehicle) |

- 682 Standard method of measuring the pinch temperature of quartz-tungsten-halogen lamps
- ISO
- 2859 Sampling procedures for inspection by attributes
- 2859.1 Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection
- 3951 Sampling procedures and charts for inspection by variables for percent nonconforming
- DIN
- 49842 Lamps for traffic lights
- 49842.1 Part 1: Extra low voltage lamps

1.3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.3.1 Average life—the arithmetic average of the individual lives of the lamps subjected to a life test, the lamps being operated under specified conditions.

1.3.2 Batch—all the lamps of one type put forward at one time for acceptance tests.

1.3.3 Initial readings—the photometric and electric measurements made at the end of the ageing period (see Appendix D).

1.3.4 Life (of an individual lamp)—the length of time during which a complete lamp operates to ‘burn-out’.

1.3.5 Life to X% failures—the length of time during which X% of the lamps subjected to a life test reach the end of their lives, the lamps being operated under specified conditions.

NOTE: This Standard specifies requirements for life to 2% failures and median life (life to 50% failures).

1.3.6 Median life (life to 50% failures)—the length of time during which 50% of the lamps subjected to a life test reach the end of their lives, the lamps being operated under specified conditions.

NOTE: For the assessment of life performance in terms of this Standard, median life is used in preference to average life to reduce testing time. True values of average life can only be obtained when the test is extended until all lamps have failed. It should be noted that for lamps with a mortality distribution which follows a log-normal probability density function, the median life is always less than the average life. For the purpose of this Standard, the median life is required to be not less than 95% of the rated average life (see Clause 3.4.2).

1.3.7 Light-centre length (LCL)—the distance from the geometrical centre of the filament to the contact plate of the cap, including solder.

1.3.8 Lumen maintenance—the luminous flux at a given time in the life of a lamp divided by the initial value of the luminous flux of the lamp and expressed as a percentage of the initial luminous flux.

1.3.9 Rated life—the life declared by the manufacturer or responsible vendor as the life of the lamps.

NOTE: Manufacturers conventionally quote rated life in terms of average values (see Clause 1.3.1).

1.3.10 Rated voltage—the voltage marked on the lamps. If, for special reasons, the lamps are marked with a voltage range, the rated voltage shall be the mean of the marked voltages.

1.3.11 Rated wattage—the wattage marked on the lamp.

1.3.12 Rated luminous flux—the luminous flux marked on the lamp or declared by the manufacturer or responsible vendor, in lumens (lm).

1.3.13 Type—lamps which are identical in photometric and electrical rating.