

Australian Standard™

**Automatic fire detection and alarm  
systems**

**Part 7: Optical beam smoke detectors**

This Australian Standard was prepared by Committee FP-002, Fire Detection, Warning, Control and Intercom Systems. It was approved on behalf of the Council of Standards Australia on 18 October 1996 and published on 5 December 1996.

---

The following interests are represented on Committee FP-002:

Audio Engineering Society  
Australian Building Codes Board  
Australian Chamber of Commerce and Industry  
Australian Chamber of Manufactures  
Australian Construction Services —Department of Administrative Services  
Australian Electrical and Electronic Manufacturers Association  
Australian Fire Authorities Council  
Australian Fire Protection Association  
Building Owners and Managers Association of Australia  
CSIRO—Division of Building, Construction and Engineering  
Commonwealth Fire Board  
Deafness Forum of Australia  
Department of Defence  
Fire Protection Industry Association of Australia  
Insurance Council of Australia  
National Electrical Contractors Association of Australia  
New Zealand Fire Equipment Association  
New Zealand Fire Protection Association  
Telstra Corporation

---

#### **Keeping Standards up-to-date**

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at [www.standards.com.au](http://www.standards.com.au) and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Australian Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at [mail@standards.com.au](mailto:mail@standards.com.au), or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

---

Australian Standard™

**Automatic fire detection and alarm  
systems**

**Part 7: Optical beam smoke detectors**

First published as AS 1603.7—1996.  
Reissued incorporating Amendment No. 1 (December 2001).

**COPYRIGHT**

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd  
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 0812 9

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee FP-002, Fire Detection, Warning, Control and Intercom Systems. The objective of this Standard is to augment the existing AS 1603 series of product Standards which has, until now, not made an allowance for optical beam smoke detectors.

*This Standard incorporates Amendment No. 1 (December 2001). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

This Standard is the result of a consensus among representatives on the Joint Committee to produce it as an Australian Standard.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

## CONTENTS

	<i>Page</i>
<b>SECTION 1 SCOPE AND GENERAL</b>	
1.1 SCOPE.....	4
1.2 APPLICATION .....	4
1.3 REFERENCED DOCUMENTS.....	4
1.4 CLASSIFICATION .....	5
1.5 DEFINITIONS.....	5
1.6 INTERPRETATION OF SPECIFIED LIMITING VALUES.....	6
1.7 NEW DESIGNS AND INNOVATIONS .....	6
<b>SECTION 2 FUNCTIONS</b>	
2.1 GENERAL.....	7
2.2 SENSITIVITY ADJUSTMENTS .....	7
2.3 MEANS OF ALIGNMENT .....	7
2.4 RESET FACILITY (OPTIONAL) .....	7
<b>SECTION 3 DESIGN AND CONSTRUCTION</b>	
3.1 GENERAL.....	8
3.2 MATERIALS AND COMPONENTS .....	8
3.3 ELECTRICAL .....	8
3.4 CONNECTING FACILITIES.....	9
3.5 INDICATING FACILITIES .....	9
3.6 LIGHT SOURCES.....	9
3.7 ENCLOSURES.....	9
3.8 MOUNTING FACILITIES .....	9
<b>SECTION 4 PRODUCT MARKING .....</b>	<b>10</b>
<b>SECTION 5 ASSESSMENT OF COMPLIANCE</b>	
5.1 CRITERIA OF ASSESSMENT AND TEST SCHEDULE .....	11
5.2 FUNCTIONAL ASSESSMENT .....	11
5.3 ENDURANCE ASSESSMENT .....	13
5.4 REPORT.....	15
<b>APPENDICES</b>	
A NORMAL OPERATION TEST.....	17
B MAXIMUM RANGE TEST .....	19
C CONTROL OF ALIGNMENT TEST .....	20
D FIRE TEST .....	22
E VISIBLE LIGHT REJECTION TEST .....	23
F LONG-TERM STABILITY TEST.....	25
G COMPENSATION TESTS.....	26

## STANDARDS AUSTRALIA

## Australian Standard

## Automatic fire detection and alarm systems

## Part 7: Optical beam smoke detectors

## SECTION 1 SCOPE AND GENERAL

## 1.1 SCOPE

A1 | This Standard specifies the minimum design and performance requirements and methods of test for optical beam smoke detectors (beam detectors) used in automatic fire detection and alarm systems. These detectors generate a fire alarm signal when smoke from a fire partly obscures the light path between the beam emitter and beam receiver units.

## 1.2 APPLICATION

This Standard applies to optical beam smoke detectors intended for installation in accordance with AS 1670, and connected to compatible control and indicating equipment.

## 1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

## AS

1670	Automatic fire detection and alarm systems—System design, installation and commissioning
2362	Automatic fire detection and alarm systems—Methods of test for actuating devices
2362.4	Method 4: Voltage stability test
2362.5	Method 5: Insulation resistance test
2362.6	Method 6: Static discharge test
2362.7	Method 7: Electromagnetic interference test
2362.8	Method 8: Impulse voltage withstand test
2362.9	Method 9: High frequency disturbance test
2362.10	Method 10: Low temperature test
2362.11	Method 11: Damp heat test
2362.12	Method 12: Dry heat test
2362.13	Method 13: Corrosion test
2362.15	Method 15: Vibration test
2362.16	Method 16: Impact test
2362.17	Method 17: Sensitivity test
2362.19	Method 19: Dust test
2362.25	Method 25: Indicator visibility test
2484	Fire—Glossary of terms
2484.2	Part 2: Fire protection and firefighting equipment
2546	Printed boards
A1   2546.3	Part 3: Design and use
2706	Numerical values—Rounding and interpretation of limiting values
3100	Approval and test specification—General requirements for electrical equipment