

Fire detection, warning, control and intercom systems—System design, installation and commissioning

Part 1: Fire



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- Association of Hydraulic Services Consultants Australia
- Australasian Fire and Emergency Service Authorities Council
- Australian Building Codes Board
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Australian Institute of Building Surveyors
- CSIRO
- Deafness Forum of Australia
- Department of Human Services, Vic.
- Engineers Australia
- Fire Protection Association Australia
- National Electrical and Communications Association
- National Fire Industry Association
- Property Council of Australia
- Society of Fire Safety

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AS 1670.1:2015 (Incorporating Amendment No. 1)

Australian Standard®

Fire detection, warning, control and intercom systems—System design, installation and commissioning

Part 1: Fire

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PREFACE

This Standard was prepared by the Standards Australia Committee FP-002, Fire Detection, Warning, Control and Intercom Systems, to supersede AS 1670.1–2004.

This Standard incorporates Amendment No. 1 (November 2017). 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.

The objective of this revision is to adopt a number of AS 7240 Standards which have been published since 2004, to increase flexibility of design and installation and to simplify the design and installation requirements to meet the National Construction Code.

Many of the Australian equipment Standards referenced in this Standard are intended to be removed from a future revision of this standard. The Standards to be removed are detailed in Clause 1.3.

Statements expressed in mandatory terms in notes to Figures and Tables are deemed to be requirements of this Standard.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

This Standard incorporates commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by 'C' preceding the clause number and is printed in italics in a box. The commentary is for information only and does not need to be followed for compliance with the Standard.

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STANDARDS AUSTRALIA

Australian Standard

Fire detection, warning, control and intercom systems—System design, installation and commissioning

Part 1: Fire

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out requirements for the design, installation and commissioning of fire detection and alarm systems comprising components complying with the requirements of the appropriate product Standards. Specific requirements suppression for special hazards systems are outside the scope of this standard.

NOTES:

- 1 Where detection and control and indicating equipment forms part of a smoke control system in accordance with AS/NZS 1668.1, specific requirements are specified in Section 7.
- 2 Where detection and control and indicating equipment forms part of a special hazard system in accordance with AS 4214 series, the additional requirements are covered in AS 1670.5 Fire—Special Hazards.
- 3 Commissioning requirements are set out in Appendix J.
- 4 Maintenance requirements for fire detection and alarm equipment are given in the relevant sections of AS 1851.

1.2 APPLICATION

All fire detection and alarm systems shall comply with the requirements of Section 2 and Section 3, Section 4, Section 5, Section 6 and Section 7.

This standard requires that detection be provided throughout all areas of the building; however where systems are installed to solely meet the requirements of the NCC refer to the NCC for areas to be protected.

1.3 NORMATIVE REFERENCES

The following are the normative reference documents in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS

1603	Automat	tic fire detection and alarm systems
1603.1	Part 1:	Heat detectors
1603.2	Part 2:	Point type smoke detectors
1603.3	Part 3:	Heat alarms
1603.5	Part 5:	Manual call points
1603.7	Part 7:	Optical beam smoke detectors
1603.8	Part 8:	Multi-point aspirated smoke detectors
1603.11	Part 11:	Visual warning devices
1603.13	Part 13	Duct sampling units
1603.14	Part 14:	Point type carbon monoxide (CO) fire detectors

1603.17 Part 17: Warning equipment for people with hearing impairment

AS	
1670	Fire detection, warning, control and intercom systems—System design, installation and commissioning
1670.1	Part 1: Fire
1670.4	Part 4: Emergency warning and intercom systems
2053	Conduits and fittings for electrical installations
2118	Automatic fire sprinkler systems
2118.1	Part 1: General systems
2118.4	Part 4: Sprinkler protection for accommodation buildings not exceeding four storeys in height
2118.6	Part 6: Combined sprinkler and hydrant system in multistorey buildings
2484 2484 2	Fire—Glossary of terms Part 2: Fire protection and firefighting equipment
2404.2	Tart 2. The protection and menghting equipment
2676	Guide to the installation, maintenance, testing and replacement of secondary batteries in buildings
3786	Smoke alarms using scattered light, transmitted light or ionization
4029	Stationary batteries—Lead-acid
4428	Fire detection, warning, control and intercom systems-Control and indicating
1170 1	equipment
4426.1	Part 3 Fire brigade papel
4428.5	Part 5: Power supply units
4428.6	Part 6: Alarm signalling equipment
4428.9	Part 9: Requirements for wire-free alarm zone circuits
4428.16	Part 16: Emergency warning control and indicating equipment
7240	Fire detection and alarm systems
7240.2	Part 2: Control and indicating equipment (ISO 7240-2: 2003, MOD)
7240.3	Part 3: Audible alarm devices
7240.4	Part 4: Power supply equipment (ISO 7240-4: 2003, MOD)
7240.5	Part 5: Point-type heat detectors (ISO 7240-5: 2003, MOD)
7240.6	Part 6: Carbon monoxide fire detectors using electro-chemical cells
7240.7	Part 7: Point-type smoke detectors using scattered light, transmitted light or ionization (ISO 7240-7: 2003 MOD)
7240.8	Part 8: Carbon monoxide fire detectors using an electro-chemical cell in
/	combination with a heat sensor
7240.10	Part 10: Point-type flame detectors
7240.11	Part 11: Manual call points (ISO 7240-11: 2005, MOD)
7240.12	Part 12: Line type smoke detectors using a transmitted optical beam
7240.15	Part 15: Point-type fire detectors using scattered light, transmitted light or
	ionization) sensors in combination with a heat sensor (ISO 7240- 15: 2004, MOD)
7240.20	Part 20: Aspirating smoke detectors
7240.21	Part 21: Routing equipment
7240.22	Part 22: Smoke-detection equipment for ducts (ISO 7240-22: 2007, MOD)
7240.23	Part 23: Visual alarm devices
7240.24	Part 24: Sound system loudspeakers
7240.25	Part 25: Components using radio transmission paths
7240.27	Part 27: Point-type fire detectors using a scattered-light, transmitted-light or ionization smoke sensor, an electrochemical-cell carbon-monoxide

sensor and a heat sensor

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AS/CA S009	Installation Requirements for Customer Cabling (Wiring Rules)
AS/NZS 1668 1668.1	The use of mechanical ventilation and air-conditioning in buildings Part 1: Fire and smoke control in buildings
3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
3013	Electrical installations—Classification of the fire and mechanical performance of wiring system elements
4130	Polyethylene (PE) pipes for pressure applications
IEC 60331 60331-25	Tests for electric cables under fire conditions—Circuit integrity Part 25: Procedures and requirements—Optical fibre cables
AS IEC 61672 61672.1	Electroacoustic Part 1: Sound level meters
ISO 8201	Acoustics—Audible emergency evacuation signal
NCC	National Construction Code of Australia, (BCA, Volume One)
EN 54 54-10 54-11	Fire detection and fire alarm systems Part 10: Flame detectors—Point detectors Part 11: Manual call points

The following normative references are intended to be excluded from the next revision of this Standard.

NOTE: A revision of this Standard is likely to be published 24 months after this publication.

AS

1603	Automatic fire detection and alarm systems		
1602 1	Dert 1. Uset detectors		
1003.1	Part 1: Heat detectors		
1603.2	Part 2: Point type smoke detectors		
1603.5	Part 5: Manual call points		
1603.7	Part 7: Optical beam smoke detectors		
1603.8	Part 8: Multi-point aspirated smoke detectors		
1603.13	Part 13 Duct sampling units		
1603.14	Part 14: Point type carbon monoxide (CO) fire detectors		
4428	Fire detection, warning, control and intercom systems-Control and indicating		
	equipment		
4428.1	Part 1: Fire		
4428.5	Part 5: Power supply units		
4428.9	Part 9: Requirements for wire-free alarm zone circuits		
EN			
54	Fire detection and fire alarm systems		
54-10	Part 10: Flame detectors—Point detectors		
54-11	Part 11: Manual call points		

For the purpose of this Standard, the definitions given in AS 2484.2, the NCC and those below apply.

1.4.1 Adjacent

Side-by-side but not necessarily touching.

1.4.2 Air damper

A motorized mechanical damper that opens or closes to control air as part of a smoke control system.

1.4.3 Air-handling plant

A component part of an air-handling system that includes equipment providing air movement, as well as equipment for the purpose of controlling the direction, rate of airflow, division of airflow or condition of air (i.e. concentration level of contaminants, temperature and humidity).

1.4.4 Air handling system

A system for the purpose of directing air in a positive and controlled manner to or from specific enclosures by means of air-handling plant, ducts, plenums, air-distribution devices or automatic controls.

1.4.5 Air-pressurization system

An air-handling system designed to establish a pressure differential in accordance with AS/NZS 1668.1.

1.4.6 Alarm acknowledgment facility (AAF)

That part of the control and indicating equipment (CIE) that provides a delay for an occupant to clear nuisance detector activation before the activation is processed as a fire alarm.

1.4.7 Alarm Delay Facility (ADF)

A part or configuration of FDCIE used to reduce nuisance general alarms by providing a local warning which if not cleared after a defined delay, will escalate to a general alarm. If fire is detected by some other means consisting, at least, of heat detection, then it will escalate to a general alarm.

1.4.8 Alarm Signalling Equipment (ASE)

That part of control and indicating equipment (CIE) designed to communicate alarm and fault signals and other information between the fire detection and alarm system and a monitoring service provider.

1.4.9 Alarm Verification Facility (AVF)

That part of the control and indicating equipment (CIE) that provides an automatic resetting or equivalent function for alarm signals and only permits subsequent alarms to initiate occupant warning system, alarm signalling equipment or ancillary control functions.

1.4.10 Baseline data

Data derived from the approved design and commissioning which serve as a basis for subsequent comparison with the data derived from inspection, test and survey.

1.4.11 Circulation space

Areas within a building that are used for pedestrian travel which is a passage way, corridor, hallway, stairway, lobby, atrium, an open plan office, enclosed walkway and mall, shop, areas in a room that provides an exit path from another room, paths of travel to exits in loading docks, designated paths of travel leading to exits from car spaces in car parks, and other paths of travel to exits.