



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

**Part 4: Emergency warning and intercom systems**

STANDARDS  
Australia



AS 1670.4:2018

This Australian Standard® was prepared by FP-002, Fire Detection, Warning, Control and Intercom Systems. It was approved on behalf of the Council of Standards Australia on 29 November 2018.

This Standard was published on 21 December 2018.

The following are represented on Committee FP-002:

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 Health and 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

This Standard was issued in draft form for comment as DR AS 1670.4:2018.

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

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

[www.standards.org.au](http://www.standards.org.au)

[www.saiglobal.com](http://www.saiglobal.com) (sales and distribution)

ISBN 978 1 76072 322 4



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

**Part 4: Emergency warning and intercom systems**

Originally as part of AS 2220—1978.  
Previous edition AS 2220.2—1989.  
Revised and redesignated as AS 1670.4—2004.  
Second edition AS 1670.4:2015.  
Third edition 2018.

**COPYRIGHT**

© Standards Australia Limited 2018

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, unless otherwise permitted under the Copyright Act 1968 (Cth).

## Preface

This Standard was prepared by the Standards Australia Committee FP-002, Fire Detection, Warning, Control and Intercom Systems, to supersede AS 1670.4–2015, *Fire detection, warning, control and intercom systems — System design, installation and commissioning, Part 4: Emergency warning and intercom systems*.

The objective of this Standard is to specify the design, installation and commissioning requirements for emergency warning systems and emergency intercom systems used in buildings for the evacuation of building occupants in the event of a fire or other type of emergency.

This Standard specifies the use of emergency warning control and indicating equipment (EWCIE) which conforms to AS 4428.16, Grades 1. Four equipment Standards referenced in this Standard contain an applicable period. These Standards are listed at the end of [Clause 1.3](#).

Maintenance requirements for emergency warning and intercom systems are given in AS 1670.51.

Appendices have been aligned with AS 1670.1 where the topics are the same.

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 edition also permits the use of two editions of relevant Standards relating to components. See [Table 1.8](#) for the list of relevant editions of the Standards which apply throughout this document.

Notes to clauses in this Standard do not form a mandatory part for conformance with this Standard. They are of an advisory nature only and are used to give explanation or guidance to the user on recommended considerations or technical procedures, or to provide an informative cross-reference to other documents or publications.

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

# Contents

<b>Preface</b> .....	<b>ii</b>
<b>Introduction</b> .....	<b>v</b>
<b>Section 1 Scope and general</b> .....	<b>1</b>
1.1 Scope.....	1
1.2 Application.....	1
1.3 Normative references.....	1
1.4 Definitions.....	2
1.5 Abbreviations.....	5
1.6 Measurements.....	6
1.6.1 Tolerance.....	6
1.6.2 Spacing.....	6
1.7 System design.....	6
1.7.1 General.....	6
1.7.2 Baseline data.....	6
1.7.3 Alterations to existing systems.....	7
1.8 Application of normative references.....	8
<b>Section 2 System configuration</b> .....	<b>9</b>
2.1 Components.....	9
2.1.1 General.....	9
2.1.2 Components emergency warning system (EWS).....	9
2.1.3 Components emergency intercom system (EIS).....	9
2.1.4 Connectable devices.....	9
2.2 Emergency zone limitations.....	10
2.3 Networked CIE.....	10
2.4 Distributed parts of CIE.....	10
2.5 Transmission path faults.....	10
<b>Section 3 Installation requirements</b> .....	<b>12</b>
3.1 General.....	12
3.2 Control of connectable devices.....	12
3.2.1 General.....	12
3.2.2 Supervision.....	12
3.3 Control and indication equipment (CIE).....	12
3.3.1 Location.....	12
3.3.2 Cover or door.....	13
3.3.3 Clearance.....	13
3.3.4 Working environment.....	13
3.3.5 Emergency zone block plan.....	13
3.4 Equipment cabinets.....	14
3.4.1 Fire isolation.....	14
3.4.2 Labelling.....	14
3.5 Power supply equipment (PSE).....	14
3.5.1 General.....	14
3.5.2 Main power source.....	14
3.5.3 Standby power source.....	14
3.5.4 Power supply equipment rating.....	15
3.5.5 Standby power source capacity.....	15
3.5.6 Battery capacity calculation.....	15
3.5.7 PSE selection.....	16
3.5.8 Batteries and cabinets — Location.....	16
3.5.9 Battery wiring.....	16
3.6 Cabling systems.....	17
3.6.1 General.....	17
3.6.2 Conductors.....	17

3.6.3	Cable marking.....	17
3.6.4	Termination.....	17
3.6.5	Stress on conductors.....	18
3.6.6	Joints.....	18
3.6.7	Transmission path supervision.....	18
3.6.8	Transmission path protection.....	19
3.7	Emergency procedures.....	19
3.8	Operator's instructions.....	19
3.9	Commissioning of system.....	19
<b>Section 4</b>	<b>Emergency warning system installation requirements.....</b>	<b>20</b>
4.1	General.....	20
4.2	Functional requirements.....	20
4.2.1	Distribution of audible emergency warning signals.....	20
4.2.2	Initiation.....	20
4.2.3	Locations of manual call point (MCP).....	20
4.2.4	Manual call points (MCP).....	20
4.3	Delay before entering emergency condition.....	21
4.4	Alert signal duration in automatic mode.....	21
4.5	Evacuate signal.....	22
4.6	Visual alarm signals.....	22
4.7	Output from emergency loudspeakers.....	23
4.8	Speech messages.....	23
4.9	Intelligibility.....	23
4.10	Interconnection to the FDCIE.....	24
4.11	Competing sound systems.....	24
4.12	Use of the emergency warning system for non-emergency purposes.....	24
<b>Section 5</b>	<b>Emergency intercom system installation requirements.....</b>	<b>25</b>
5.1	General.....	25
5.2	EICIE.....	25
5.3	Warden intercom points (WIP).....	25
5.3.1	General.....	25
5.3.2	Sound levels during an emergency.....	25
5.3.3	Location.....	25
5.3.4	Crosstalk, clarity and intelligibility.....	25
5.3.5	Audible call signal.....	26
<b>Appendix A</b>	<b>(informative) Commissioning.....</b>	<b>27</b>
<b>Appendix B</b>	<b>(informative) Wiring systems.....</b>	<b>31</b>
<b>Appendix C</b>	<b>(informative) Power source calculation examples.....</b>	<b>33</b>
<b>Appendix D</b>	<b>(normative) Drawings and symbols.....</b>	<b>35</b>
<b>Appendix E</b>	<b>(informative) Designer's statement.....</b>	<b>38</b>
<b>Appendix F</b>	<b>(informative) Installer's statement.....</b>	<b>40</b>
<b>Appendix G</b>	<b>(informative) Commissioning statement.....</b>	<b>41</b>
<b>Appendix H</b>	<b>(normative) Sound pressure level measurements.....</b>	<b>45</b>
<b>Appendix I</b>	<b>(normative) Measurement of speech intelligibility.....</b>	<b>47</b>
<b>Appendix J</b>	<b>(informative) Methods of measuring speech intelligibility.....</b>	<b>49</b>
<b>Appendix K</b>	<b>(informative) Lettering checklist.....</b>	<b>52</b>
	<b>Bibliography.....</b>	<b>53</b>

## Introduction

An emergency warning system and emergency intercom system functions as a life-safety system when it is installed within a building or site. It may utilize control and indicating equipment with full manual controls (e.g. AS 4428.16, Grade 1) in combination with an emergency intercom system (e.g. AS 4428.4).

The purpose of a system installed to this Standard is to facilitate an orderly evacuation, relocation or direction of personnel in emergencies such as, but not limited to, fire, smoke, civil commotion, bomb threats, siege, explosion, leakage of toxic substances or fumes, and structural damage. A guide to the development of evacuation procedures is described in AS 3745.

To achieve this aim, the emergency warning and emergency intercom system has the following capabilities as appropriate:

- (a) Receive alarm signals from an emergency detection system.
- (b) Delivery of intelligible speech for emergency announcements and directions.
- (c) Provide audible, and where required, visual emergency warning signals.
- (d) Provision for automatic and manual operation.
- (e) Continuous operation under conditions of the emergency.
- (f) Independence from other systems in manual operation.
- (g) Provide means of communication between the chief warden and the floor or area wardens.

# Australian Standard®

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

### Part 4: Emergency warning and intercom systems

#### Section 1 Scope and general

##### 1.1 Scope

This Standard specifies requirements for the design, installation and commissioning of emergency warning and emergency intercom systems comprised of components conforming to the requirements of the applicable normatively referenced Standards.

NOTE 1 The general procedures for the use of the emergency warning and intercom systems and the response of personnel are given in AS 3745.

NOTE 2 Where an installer's statement is requested a typical example is given in [Appendix F](#).

##### 1.2 Application

Where the emergency warning system functions are required they shall be installed to meet the requirements of [Sections 1, 2, 3](#) and [4](#) of this Standard. AS 4428.16 Grade 2 and Grade 3 emergency warning control and indicating equipment (EWCIE) shall not be used to satisfy the requirements of this Standard.

Where the emergency intercom system functions are required, they shall be installed to meet the requirements of [Sections 1, 2, 3](#) and [5](#) of this Standard.

##### 1.3 Normative references

The following are the normative documents referenced in this Standard:

NOTE 1 Documents referenced for informative purposes are listed in the Bibliography.

NOTE 2 See [Clause 1.8](#) for the list of acceptable editions of the listed relevant normative references.

AS 1269, *Occupational noise management* (series)

AS 1603.11, *Automatic fire detection and alarm systems, Part 11: Visual warning devices*

AS 1603.17, *Automatic fire detection and alarm systems, Part 17: Warning equipment for people with hearing impairment*

AS 1670.1, *Fire detection, warning, control and intercom systems—System design, installation and commissioning, Part 1: Fire*

AS 1670.4, *Fire detection, warning, control and intercom systems—System design, installation and commissioning, Part 4: Emergency warning and intercom systems*

AS 2220.1, *Emergency warning and intercommunication systems in buildings, Part 1: Equipment design and manufacture*

AS 2484.2, *Fire—Glossary of terms, Part 2: Fire protection and firefighting equipment*

AS 4428.4, *Fire detection, warning, control and intercom systems—Control and indicating equipment, Part 4: Emergency intercom control and indicating equipment*

AS 4428.16, *Fire detection and alarm systems, Part 16: Emergency warning control and indicating equipment*