



Fire detection, warning, control and intercom systems—Control and indicating equipment

Part 4: Emergency intercom control and indicating equipment



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Australian Standard®

**Fire detection, warning, control and
intercom systems—Control and
indicating equipment**

**Part 4: Emergency intercom control and
indicating equipment**

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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 4428.4—2004, *Fire detection, warning, control and intercom systems—Control and indicating equipment, Part 4: Intercommunication systems for emergency purposes*.

This standard is referenced in AS 1670.4, *Fire detection, warning, control and intercom systems—System design, Installation and commissioning, Part 4: Sound systems and intercom systems for emergency purposes*.

The objective of this Standard is to specify the equipment requirements for intercommunication systems used to assist in the safe evacuation of building occupants in the event of a fire alarm or other emergency.

This Standard clarifies the integration requirements with an EWCIE and also aligns testing requirements with AS 4428.16:2015.

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.

CONTENTS

	<i>Page</i>
FOREWORD	4
1 SCOPE	5
2 NORMATIVE REFERENCES	5
3 DEFINITIONS AND ABBREVIATIONS	6
4 GENERAL REQUIREMENTS	7
5 REQUIREMENTS FOR INDICATIONS	8
6 QUIESCENT CONDITION	8
7 WIP CALL CONDITION	9
8 FAULT WARNING CONDITION	10
9 ZONE CLEARED CONDITION—OPTIONAL FUNCTION	12
10 MANUAL CONTROL OF NETWORKED EICIE—OPTIONAL FUNCTION	12
11 MANUAL CONTROLS FOR EICIE	12
12 INTERFACE TO EXTERNAL CONTROL DEVICE(S)—OPTIONAL FUNCTION	13
13 DESIGN REQUIREMENTS	13
14 ADDITIONAL DESIGN REQUIREMENTS FOR SOFTWARE-CONTROLLED EICIE	18
15 MARKING	21
16 TESTS	21
17 TEST REPORT	34
 APPENDICES	
A COMMON INDICATIONS, CONTROLS AND OUTPUTS WHEN THE EICIE AND EWCIE ARE COMBINED	35
B EXPLANATION OF ACCESS LEVELS	36
C DESIGN FOR SOFTWARE-CONTROLLED EICIE	38
 BIBLIOGRAPHY	 39

FOREWORD

The emergency intercom control and indicating equipment (EICIE) may be a separate unit or may be physically combined with the emergency warning control and indicating equipment (EWCIE) complying with AS 4428.16.

The tests specified in this Standard subject the equipment to conditions likely to be met in practice, such as corrosion, vibration, direct impact, indirect shock and electromagnetic interference. Some tests are intended to assess the performance of the EICIE under such conditions. The performance of the EICIE is assessed from the results obtained in specific tests. This Standard is not intended to place any other restrictions on the design and construction of such equipment.

STANDARDS AUSTRALIA

Australian Standard

Fire detection, warning, control and intercom systems—Control and indicating equipment

Part 4: Emergency intercom control and indicating equipment

1 SCOPE

This Standard specifies requirements, test methods and performance criteria for emergency intercom control and indicating equipment (EICIE) for use in buildings and structures.

2 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard.

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

AS

4428 Fire detection, warning, control and intercom systems—Control and indicating equipment

4428.3 Part 3: Fire brigade panel

4428.16 Part 16: Emergency warning control and indicating equipment

7240 Fire detection and alarm systems

7240.1 Part 1: General and definitions

7240.2 Part 2: Control and indicating equipment (ISO 7240-2:2003, MOD)

7240.4 Part 4: Power supply equipment (ISO 7240-4:2003, MOD)

60068 Environmental testing

60068.1 Part 1: General and guidance

60068.2.1 Part 2.1: Tests—Tests A: Cold

60068.2.2 Part 2.2: Tests—Tests B: Dry heat

60068.2.6 Part 2.6: Tests—Test Fc: Vibration (sinusoidal)

60068.2.47 Part 2.47: Test—Mounting of compounds, equipment and other articles for vibration, impact and similar dynamic tests

60068.2.75 Part 2.75: Tests—Test Eh: Hammer tests

60068.2.78 Part 2.78: Tests—Test Cab: Damp heat, steady state

60529 Degrees of protection provided by enclosures (IP Code)

AS/CA

S004 Voice performance requirements for customer equipment

IEC

60721 Classification of environmental conditions

60721-3-3 Part 3-3: Classification of groups of environmental parameters and their severities—Stationary use at weatherprotected locations

62599 Alarm systems

62599-2 Part 2: Electromagnetic compatibility—Immunity requirements for components of fire and security alarm systems

3 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

For the purposes of this Standard, the definitions in AS 7240.1 and those below apply.

3.1.1 *Adjacent*

Side by side but not necessarily touching.

3.1.2 *Cabinet*

Housing that affords a degree of protection and robustness to its constituent parts and sub-assemblies.

3.1.3 *Duplex operation*

Operation of transmitting and receiving apparatus at one location in conjunction with associated transmitting and receiving equipment at another location, the processes of transmission and reception being concurrent.

3.1.4 *Functional condition*

Condition of the EICIE characterized by its indication at the EICIE.

NOTE: The functional conditions recognized in this Standard are—

- (a) the quiescent condition;
- (b) the WIP call condition;
- (c) the fault warning condition; and
- (d) the zone cleared condition.

3.1.5 *Handset*

A hand held device combining a microphone and earpiece.

3.1.6 *Off hook*

The status of a handset, when removed from its normal position of rest, initiating an outgoing call or receiving an incoming call.

3.1.7 *On hook*

The status of a handset, when in its normal position of rest, terminating a call or permitting notification of an incoming call.

3.1.8 *Quiescent condition*

Functional condition characterized by the absence of the WIP call condition, the fault warning condition and zone cleared condition.

3.1.9 *Warden handset*

A field mounted device incorporating a microphone and earpiece to permit full duplex communication with the EICIE.

3.1.10 *Warden intercom point (WIP)*

The location on a floor or evacuation zone, where equipment is provided, through which instructions can be received from the controlling emergency intercom control and indicating equipment (EICIE).

3.2 Abbreviations

CIE	Control and indicating equipment
EICIE	Emergency intercom control and indicating equipment
EIS	Emergency intercom system
EWCIIE	Emergency warning control and indicating equipment
EWIS	Emergency warning and intercom system
EWS	Emergency warning system
SPL	Sound pressure level
WIP	Warden intercom point

4 GENERAL REQUIREMENTS

4.1 General

The EICIE shall be provided with a user interface comprising indicators and manual controls grouped together according to the emergency zone where WIPs are provided.

The EICIE shall also have a handset on a flexible cord to allow it to be held for voice communication with WIP handsets while viewing and accessing the controls.

The EICIE and WIP handset shall be shown to be compatible with the EICIE.

If functions other than those specified in this Standard are provided, they shall not affect compliance with any requirements of this Standard.

4.2 Combined CIE

When the EICIE and other CIE complying with AS 4428.3, AS 4428.16, or AS 7240.2 are in the same cabinet, they may share common indicators, manual controls and outputs as given in Appendix A, provided—

- (a) a single fault in another CIE does not adversely affect the mandatory functions of the emergency intercom system; and
- (b) indication(s) and manual control(s) associated with the EICIE, which are dedicated to the fault warning function are clearly identifiable.

4.3 Integrated CIE

Where the EICIE is integrated with the EWCIIE to form an emergency warning and intercom system, the EICIE and EWCIIE may share hardware and firmware. In such cases, there shall be only one common means of selecting the access level.

4.4 Power supply

Power supply equipment shall comply with the requirements of AS 7240.4.

The power supply equipment may be internal or external to the EICIE cabinet.

Where the power supply is shared with other CIE, it shall include overload protection and the means to individually disconnect the power to each CIE.

Separate overload protection and disconnect facilities are not required where the EICIE is combined with the EWCIIE.

5 REQUIREMENTS FOR INDICATIONS

5.1 Display of functional conditions

The EICIE shall be capable of unambiguously indicating the following functional conditions:

- (a) Quiescent condition (Clause 6).
- (b) WIP call condition (Clause 7).
- (c) Fault warning condition (Clause 8).
- (d) Zone cleared condition (optional function) (Clause 9).

The EICIE shall be capable of being simultaneously in any combination of the following functional conditions:

- (i) WIP call condition.
- (ii) Fault warning condition.
- (iii) Zone cleared condition (optional function).

5.2 Identification of indications

All mandatory indications shall be clearly identifiable, except where otherwise specified in this Standard.

5.3 Indications on alphanumeric displays

Where an alphanumeric display is used to display indications relating to different functional conditions, these may be displayed at the same time, provided for each functional condition, there is only one window in which all of the fields relating to that functional condition are grouped.

5.4 Indication of the supply of power

A visible indication shall be given by means of a separate light-emitting indicator while the EICIE is supplied with power.

For combined CIE in accordance with Clause 4.2, a common indicator may be utilized, provided that at least a general fault is indicated at the EWCIE when power is not available to the EICIE.

NOTE: For common indicators, see Appendix A.

Where the EICIE is distributed, an indication of supply of power shall be required at each distributed cabinet that provides mandatory manual controls.

5.5 Additional indications

Where indications are used in addition to mandatory indications, these shall not result in contradiction or confusion.

6 QUIESCENT CONDITION

Any kind of system information may be displayed during the quiescent condition, provided no indications are given that can be confused with indications used in—

- (a) the WIP call condition;
- (b) the fault warning condition; or
- (c) the zone cleared condition.

7 WIP CALL CONDITION

7.1 Reception and processing of WIP call signals

The EICIE shall be capable of receiving and processing call signals from WIPs, or other EICIE.

The mandatory indications shall not be falsified by signals received from multiple WIPs, networked EICIE or from the operation of manual controls.

Direct calling between WIPs shall not be permitted.

7.2 Indication of WIP call signals at the EICIE

7.2.1 General

The EICIE shall have provision to indicate the presence of call signal(s) from WIPs, without prior manual intervention. The indication shall be both visual (Clause 7.2.2) and audible (Clause 7.2.3).

7.2.2 Visual indication of WIP call signal reception

The following shall apply:

- (a) A separate light-emitting indicator for each WIP as specified in Clause 13.7 or an alphanumeric display as specified in Clause 13.8, or both.
- (b) Where the call signal indication is exclusively on an alphanumeric display, the alphanumeric display shall be capable of simultaneously indicating a call signal from each WIP.
- (c) The visual call indicator shall be red and shall flash when a call is initiated and become steady upon connection.
- (d) The visual call indicator shall flash when the call is terminated at the EICIE and the WIP handset remains off hook.
- (e) The visual call indicator shall be visible at Access Level 1 (see Note 1).
- (f) The indications shall not be suppressed.
- (g) Indications shall activate within 5 s of a WIP call signal being initiated.

NOTE: For flash rates of indicators, see Clause 13.7.2.

7.2.3 Audible indication of WIP call signal reception

An audible indication at the EICIE on reception of a WIP call shall be provided.

The reception of a WIP call signal shall have priority and be distinguishable from the fault audible indication.

The audible call indication shall be silenced when the EICIE handset is off hook or when all WIP call signals have been terminated.

NOTES:

- 1 Access levels are explained in Appendix B.
- 2 Opening the outer door or operating a 003 key switch which places the EICIE at Access Level 2 may also be used to silence the audible indication, in addition to the requirement for a separate manual control.

7.3 Audible call indication at WIP

7.3.1 General

An audible signal shall be provided at the WIP to indicate the presence of a call signal from EICIE to WIP, without prior manual intervention.

7.3.2 *EICIE initiated call*

A WIP called by the EICIE shall result in a call tone as specified in Clause 13.11. If the handset has been removed from the hook, but held down manually, the sound pressure level (SPL) in the handset earpiece shall not exceed the limits permitted by AS/CA S004.

7.3.3 *Confidence tone*

When the WIP handset at the EICIE is removed from its cradle to make a call, a confidence tone shall be heard in the ear piece to confirm that the handset is operational.

7.3.4 *Ring tone*

When the WIP handset is off hook to make a call, a ring tone shall be heard in the ear piece to confirm that the call is being made. The tone shall be at the same rate as the flashing visual call indication at the EICIE. The ring tone at the WIP handset shall continue until the call is connected or the WIP handset is placed on hook.

7.3.5 *Call-on-hold tone*

When the EICIE WIP handset is off hook and the call is placed on hold, an on-hold tone shall be heard in the ear piece of the WIP on hold. The tone shall be at the same rate as the flashing visual call indication. The call-on-hold tone at the WIP handset shall continue until the call is connected or the WIP handset is placed on hook.

NOTE: For Clauses 7.3.3, 7.3.4 and 7.3.5, AS/CA S002 defines tones used in the telecommunication industry. Users of telecommunication systems are accustomed to these tones and these tones should be used on the EICIE.

8 FAULT WARNING CONDITION

8.1 Reception and processing of fault signals

The EICIE shall enter the fault warning condition when signals are received which, after any necessary processing, are interpreted as a fault.

The EICIE shall be capable of simultaneously recognizing all of the faults specified in Clauses 8.3 and 8.4.

The EICIE shall enter the fault warning condition within 100 s of the occurrence of the fault or the reception of a fault signal.

8.2 Indication of fault warning condition

The presence of faults in specified functions shall be indicated without prior manual intervention. The fault warning condition shall be established when the following are present—

- (a) a visible indication by means of a separate light-emitting indicator (the general fault warning indicator);
- (b) a visible indication for each recognized fault, as specified in Clauses 8.3 and 8.4; and
- (c) an audible indication.

If the indication is on an alphanumeric display that cannot simultaneously indicate all of the faults, the following shall apply:

- (i) The presence of fault indications that have been suppressed shall be indicated.
- (ii) Suppressed fault indications shall be capable of being displayed by means of a manual operation at Access Level 1 or Access Level 2, which interrogates only fault indications.

8.3 Indication of faults in specified functions

8.3.1 *Faults requiring specific indication*

The following faults shall be indicated by means of separate light-emitting indicators or an alphanumeric display or both:

- (a) An indication at least common to any power supply resulting from—
 - (i) a short-circuit or an interruption in a transmission path to power supply equipment, where the power supply is contained in a different cabinet from that of the EICIE; and
 - (ii) power supply equipment faults, as specified in AS 7240.4.
- (b) An indication of any short circuit or interruption, at least common to all transmission paths between parts of the EICIE contained in more than one mechanical cabinet, that is capable of affecting a mandatory function and which is not otherwise indicated as a fault of a supervision function.

NOTE: The indications may be suppressed during the emergency warning condition.

8.3.2 *Faults requiring general indication*

The following faults shall be indicated at least by means of the general fault warning indicator:

- (a) Any short-circuit or interruption in a transmission path between parts of the EICIE contained in more than one cabinet, where the fault does not affect a mandatory function.
- (b) An indication of the rupture of any fuse or the operation of any isolating or protective device that is capable of affecting a mandatory function in the EIS.

8.3.3 *Faults related to WIP transmission path*

The EICIE shall have a provision for an indication of faults related to WIP transmission paths. A short-circuit or interruption of a transmission path between the EICIE and the WIPs shall be indicated by means of a separate light-emitting indicator or a separate indication on an alphanumeric display or both for each WIP transmission path.

8.3.4 *Earth fault*

The EICIE shall have a provision for a common indication related to any single earth fault of less than 50 k Ω that is capable of affecting a mandatory function and which is not otherwise indicated as a fault of a supervised function. The earth fault monitoring may be provided with a means to be disabled at Access Level 2 or Access Level 3.

8.4 System fault

In the case of a system fault, as specified in Clauses 14.4 or 14.6 in a software-controlled EICIE, as a minimum, the following shall apply:

- (a) A system fault shall be visibly indicated by means of the general fault warning indicator and a separate system fault light-emitting indicator. The indication shall not be suppressed by any other functional condition of the EICIE, and shall remain until a manual reset at Access Level 2 or Access Level 3 is carried out.
- (b) A system fault shall be audibly indicated. This indication shall be capable of being silenced.

8.5 Silencing of audible indication

The audible indication of faults specified in Clause 8.2 shall be as follows:

- (a) Silenced manually by means of the silence control.
- (b) Suppressed when a WIP call is being initiated or in progress.

- (c) Silenced automatically if the EICIE is automatically reset from the fault warning condition.

If previously silenced, the audible indication shall re-sound for each newly recognized fault.

8.6 Reset of fault indications

The indications of faults in Clause 8.3 shall be capable of being reset—

- (a) automatically within 100 s when faults are no longer recognized; or
- (b) by a manual operation at Access Level 2.

Following the completion of the reset process, the indication of the correct functional conditions corresponding to any received signals shall either remain or be re-established within 100 s.

8.7 Fault warning condition output signal

The EICIE shall have an output that signals the fault warning condition specified in Clauses 8.3 and 8.4 or if the EICIE is not energized.

Where the EICIE is integrated with EWCIE, this output may be provided by the EWCIE.

8.8 External silencing of the EICIE Fault Condition—Optional function

The WIP fault condition may be manually silenced from the EWCIE.

9 ZONE CLEARED CONDITION—OPTIONAL FUNCTION

The EICIE may indicate when an emergency zone has been cleared. Where indicators are provided, the following shall apply:

- (a) Evacuation zone cleared controls and indicators shall comply with the colour specified in this Standard and be grouped with each evacuation zone of WIPs as provided.
- (b) The indicators shall be subject to the testing of indicators (see Clause 13.12). The indicator test may be used to clear all zone cleared indications or have dedicated clear function.

10 MANUAL CONTROL OF NETWORKED EICIE—OPTIONAL FUNCTION

Where the EICIE has facilities to take manual control of the same WIP from more than one EICIE the following shall apply:

- (a) If manual control is taken at an EICIE, that EICIE shall also automatically gain control of the EIS system.
- (b) Where manual control is gained by another EICIE, all active calls to WIPs shall transfer to the new EICIE and be operational within 5 s.
- (c) The EICIE shall have the facility to follow the hierarchy of EWCIE.

11 MANUAL CONTROLS FOR EICIE

11.1 EICIE controls

The EICIE shall have a provision to manually initiate or accept communication with WIPs. The following shall apply:

- (a) The control(s) shall be operational at Access Level 2.
- (b) A separate control shall be provided to initiate individual duplex calls to each WIP.