



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

Part 16: Emergency warning control and indicating equipment



AS 4428.16:2020

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Part 16: Emergency warning control and indicating equipment

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Preface

This Standard was prepared by Standards Australia Committee FP-002, Fire Detection, Warning, Control and Intercom Systems, to supersede AS 4428.16:2015, *Fire detection and alarm systems, Part 16: Emergency warning control and indicating equipment*.

The objective of this Standard is to specify requirements, test methods and performance criteria for emergency warning control and indicating equipment (EWCIE) as the main component of an emergency warning system (EWS).

This Standard (AS 4428.16) is in part based on ISO 7240-16:2007, *Fire detection and alarm systems, Part 16: Sound system control and indicating equipment*.

This revision corrects a number of non-technical errors and terminology, and clarifies requirements.

The following technical requirements have been revised:

- (a) Relaxed requirements for a single zone Grade 3 EWCIE.
- (b) Requirements for the silence warning signals manual control.
- (c) Reset operation interlock in manual mode only.
- (d) Provision to override All-emergency zone selection.
- (e) Ready to talk indication.

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.

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Introduction

Emergency warning control and indicating equipment (EWCIE) is the main component of an emergency warning system (EWS). An EWS is the most common system used to provide warning to occupants of fire detected by a fire detection and alarm system. An EWS may be interfaced to other emergency detection systems (EDS), to warn of events such as storms, earthquakes or bomb threats.

All Grades of EWCIE is required to meet general requirements and non-optional functions. Some optional functions (see [Appendix F](#)) are mandatory to conform to this Standard for specific Grades of EWCIE as set out in [Appendix A](#). Where an optional function is implemented, all requirements specified shall be met.

Australian Standard®

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

Part 16: Emergency warning control and indicating equipment

1 Scope

This Standard specifies requirements, test methods and performance criteria for emergency warning control and indicating equipment (EWCIE) as the main component of an emergency warning system (EWS). This Standard covers three Grades of EWCIE to suit different risks and regulatory requirements. The additional requirements for each Grade are set out in [Appendix A](#).

NOTE 1 The EWS provides information to warn occupants within one, or more, emergency zones, to effect appropriate action in indoor or outdoor environments. This includes the use of loudspeakers to broadcast emergency announcements, alert signals in accordance with ISO 7731, and evacuate signals in accordance with ISO 8201, and may include visual and tactile warning devices.

NOTE 2 Installation requirements, use of emergency warning signals, use of visual and tactile warning device, audibility and intelligibility, are given in AS 1670.1 and AS 1670.4.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents for informative purposes are listed in the Bibliography.

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

AS 7240.4, *Fire detection and alarm systems, Part 4: Power supply equipment*

AS 60529, *Degrees of protection provided by enclosures (IP Code)*

AS ISO 7240.1, *Fire detection and alarm systems, Part 1: General and definitions*

AS ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

AS/CA S009, *Installation requirements for customer cabling (Wiring rules)*

AS/NZS 3100, *Approval and test specification — General requirements for electrical equipment*

IEC 60068, *Environmental testing (series)*

IEC 60268-1, *Sound system equipment—Part 1: General*

IEC 60268-4, *Sound system equipment —Part 4: Microphones*

IEC 60721-3-3, *Sound system equipment —Part 3-3: Classification of groups of environmental parameters and their severities—Stationary use at weather protected locations*

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

ISO 7731, *Ergonomics — Danger signals for public and work areas — Auditory danger signals*

ISO 8201, *Alarm systems — Audible emergency evacuation signal — Requirements*

3 Terms and definitions

3.1 Definitions

For the purposes of this document, the following terms and definitions and those in in AS ISO 7240.1 apply.

3.1.1

adjacent

side by side but not necessarily touching

3.1.2

automatic mode

mode in which the emergency warning system (EWS) broadcasts emergency warning signal(s) when triggered by alarm signals received from an emergency detection system (EDS) in accordance with the site-specific configuration for a site

3.1.3

control and indicating equipment

CIE

3.1.3.1

combined CIEs

CIEs sharing a common cabinet

3.1.3.2

integrated CIEs

CIE using one or more common hardware components and shared firmware with other CIE

3.1.4

emergency microphone

microphone to broadcast live speech to emergency zones, overriding any other emergency warning signals or non-emergency microphone in operation or any other non-emergency audio signal

3.1.5

emergency microphone control

manual control to open the emergency microphone audio channel

Note 1 to entry: Also known as press-to-talk (PTT) control.

3.1.6

emergency warning condition

emergency warning signal broadcast to at least one emergency zone

3.1.7

emergency warning signal

alert or evacuate signal with or without pre-recorded speech message, or live speech

3.1.8

emergency zone

whole or a part of the site where an emergency warning signal is broadcast separately

3.1.9

functional condition

condition of the EWCIE described in this Standard

Note 1 to entry: The functional conditions described in this Standard are quiescent, emergency, fault warning, disabled and test conditions.

3.1.10

manual mode

mode allowing manual control of emergency warning signals

3.1.11**may**

indicates the existence of an option

3.1.12**phased evacuation**

pre-configured automatic sequence to broadcast emergency warning signals to emergency zones

3.1.13**quiescent condition**

absence of all other defined functional conditions

3.1.14**shall**

indicates that a statement is mandatory

3.1.15**should**

indicates a recommendation

3.1.16**transmission path**

connection, external to cabinets, between parts of a system for transmission of information or power

3.2 Abbreviations

AC	Alternating current
CIE	Control and indicating equipment
EDS	Emergency detection system
EICIE	Emergency intercom control and indicating equipment
EIS	Emergency intercom system
EMC	Electromagnetic compatibility
EWCIIE	Emergency warning control and indicating equipment
EWIS	Emergency warning and intercom system
EWS	Emergency warning system
FDCIE	Fire detection control and indicating equipment
PSE	Power supply equipment
PTT	Press-to-talk microphone control
RMS	Root mean squared
S/N	Signal-to-noise ratio
THD	Total harmonic distortion
VAD	Visual alarm devices

3.3 Tolerances

Where a specific tolerance or deviation limit is not specified in a requirement or test procedure, a maximum deviation limit of $\pm 5\%$ shall be applied.

4 General requirements

4.1 General

Optional functions are specified as mandatory, optional or excluded [not acceptable] according to the Grade of EWCIE as given in [Appendix A](#).

Functions not specified in this Standard, where included, shall have no effect on the mandatory functions specified in this Standard.

4.2 Combined CIE

Only CIE conforming to a part of the AS 4428 or AS/ISO 7240 series shall share a common cabinet. Multiple cabinets fixed together shall be considered a common cabinet for the purpose of this Clause.

When the EWCIE and other CIE conforming to AS 4428.3, AS 4428.4, or AS 7240.2 are in the same cabinet, they may share common indicators, manual controls and outputs provided —

- (a) a single fault in another CIE does not adversely affect the mandatory functions of more than one emergency zone of the EWS; and
- (b) indication(s) and manual control(s) associated with the EWCIE, which are dedicated to the fault warning function, are clearly identifiable.
- (c) the common indicators, manual controls and output are limited to those listed in [Appendix B](#).

NOTE Refer to AS 4428.4 for requirements of EICIE and its related field devices where EICIE is combined with EWCIE.

4.3 Integrated CIE

Where the EICIE is integrated with the EWCIE to form part of an emergency warning and intercom system, the EWCIE and the EICIE conforming to AS 4428.4 may share hardware and firmware.

Where EWCIE and EICIE are integrated they shall be tested and meet the respective requirements of both AS 4428.16 and AS 4428.4.

In such a case there shall be only one common means of selecting the access level.

EWCIE and FDCIE shall not share common hardware and firmware except for Grade 3 EWCIE.

4.4 Power supply equipment (PSE)

Power supply equipment (PSE) shall conform to AS 7240.4.

The PSE may be internal or external to the EWCIE cabinet.

The PSE may be shared with EWCIE, EICIE and FDCIE.

Where the PSE 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 EWCIE is a Grade 3, or EWCIE and EICIE are combined as an EWIS.

5 Requirements for indications

5.1 Display of functional conditions

The EWCIE shall be capable of indicating the following functional conditions:

- (a) Quiescent condition (see [Clause 6](#)).
- (b) Emergency warning condition (see [Clause 7](#)).
- (c) Fault warning condition (see [Clause 8](#)).
- (d) Disabled condition (optional function) (see [Clause 9](#)).
- (e) Test condition (optional function) (see [Clause 10](#)).

The EWCIE shall be capable of being in any combination of the following functional conditions simultaneously unless all emergency zones are disabled or under test:

- (i) Emergency warning condition.
- (ii) Fault warning condition.
- (iii) Disabled condition.
- (iv) Test condition.

5.2 Identification of indications

All mandatory indications shall be identifiable in accordance with 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 that 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 EWCIE is supplied with power.

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

NOTE For common indicators, see [Appendix B](#).

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

5.5 Additional indications

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

6 Quiescent condition

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

- (a) emergency warning condition;
- (b) fault warning condition;
- (c) disabled condition; or
- (d) test condition.

7 Emergency warning condition

7.1 Reception and processing of alarm signals

The EWCIE shall be capable of receiving and processing alarm signals from an emergency detection system (EDS), other EWCIE or from the operation of manual controls and causing the appropriate emergency warning signals and outputs to be activated within 3 s or within 3 s after the expiry of any delay period (see [Clause 7.7](#)).

After activation, the alarm input condition shall remain until manually reset in accordance with [Clause 7.10](#).

NOTE For information on the interface between EWCIE and the EDS, see [Appendix C](#).

The mandatory indications and outputs shall not be falsified by multiple signals received from the same or different EDS or from the operation of manual controls.

Where the EWCIE and the EDS are in separate or non-adjacent cabinets, failure of the transmission path between the EDS and the EWCIE shall not cause any change of state of the emergency warning condition.

Where the EWCIE is used for non-emergency functions (e.g. paging, music or general pre-recorded announcements), the emergency warning condition shall disable or override any function not associated with the emergency warning condition.

7.2 Indication of alarm signals — optional function

The EWCIE may have provision to indicate the presence of alarm signal(s) from an EDS, without prior manual intervention.

Where provided, the indication shall be as follows:

- (a) A visible indication by at least one of the following means for each emergency zone:
 - (i) A separate light-emitting indicator.
 - (ii) A separate indication on an alphanumeric display.
- (b) An audible indication, as specified in [Clause 7.6](#).

Where the alarm signal indication is exclusively by an alphanumeric display, the alphanumeric display shall —

- (i) be capable of simultaneously indicating an alarm signal for each emergency zone; and
- (ii) meet the requirements specified in [Clause 15.8](#).

Indications shall not be suppressed with the EWCIE in the emergency warning condition or with an emergency zone in the disabled or test conditions.

The reception and indication of signals from the EDS shall not be inhibited with the EWCIE in the manual mode. However, these signals shall not initiate emergency warning condition outputs.

Indications shall activate within 3 s of receiving an alarm signal from the EDS or other EWCIE.

7.3 Alert signal — optional function

At least one alert signal tone shall be provided. One alert signal tone shall approximate the sound of a square wave and have a fundamental frequency of $520 \text{ Hz} \pm 5 \%$, with a third harmonic at 7.6 dB to 11.6 dB down, and a fifth harmonic at 12 dB to 16 dB down on the fundamental. Any other harmonic shall be at least 16 dB down on the fundamental.

At least one temporal pattern shall be provided, consisting of 4 s cycles with 0.5 s on-period followed by a 3.5 s off-period.

NOTE 1 This alert signal is intended for floor wardens when EWCIE is part of an EWS to AS 1670.4. It is also intended to have a minimum impact on the other building occupants. This temporal pattern is outside the requirements of ISO 7731.

The EWCIE may produce other alert signals, provided they are in accordance with ISO 7731.

Where a pre-recorded speech message is used as part of the alert signal, the alert tone shall precede the first pre-recorded speech message for 12 s. Successive alert tones and pre-recorded speech messages shall then continue until either automatically or manually changed, or silenced.

The interval between successive messages shall not exceed 32 s.

Alert signals shall not include silence periods in excess of 12 s.

Where more than one alert signal is provided, each signal shall be clearly distinguishable from the others.

NOTE 2 Additional alert signal tones may also be provided with specific spectral characteristics, with or without speech messages, to suit particular environments.

7.4 Evacuate signal

The EWCIE may produce one or more evacuate signals in accordance with the temporal pattern specified in ISO 8201 and may include pre-recorded keywords.

At least a default evacuate signal shall be provided. The default tone shall approximate the sound of a square wave and have a fundamental frequency of $520 \text{ Hz} \pm 5 \%$, with at least a 3rd harmonic at 7.6 to 11.6 dB down and a 5th harmonic at 12 to 16 dB down on the fundamental. Any other harmonic shall be at least 16 dB down on the fundamental.

Where pre-recorded speech messages are provided the following shall apply:

- (a) Any message shall be preceded by at least 3 consecutive cycles of the ISO 8201 temporal pattern.
- (b) The message shall start after the last completed cycle (4 s). The message shall occupy one or more 4 s periods up to 16 s, followed by 4 s or 8 s silence.
- (c) The first message broadcast of any message cycle shall be in the English language. Subsequent messages may be in other languages.

Where a pre-recorded speech message is not provided, at least the keywords “emergency” and “evacuate” or “fire” and “evacuate”, shall be provided, in accordance with ISO 8201.

NOTE 1 Additional evacuate signal tones with specific spectral characteristics, with or without keywords or speech messages to suit particular environments, may also be provided.

NOTE 2 The evacuate signal may be preceded by an alert signal (see [Clause 7.3](#)).

7.5 Indication of the emergency warning condition

The presence of an emergency warning condition shall be visibly indicated on the EWCIE for each activated emergency zone by at least one of the following:

- (a) A separate light-emitting indicator.
- (b) A separate indication on an alphanumeric display.

The emergency warning signals to be indicated are —

- (i) alert;
- (ii) evacuate; and
- (iii) live speech.

The indications shall not be suppressed.

Where the emergency zone indications are exclusively on alphanumeric display, the alphanumeric display shall be capable of simultaneously displaying the indications for each activated emergency zone.

7.6 Audible indication of alarm signal reception — optional function

An audible indication at the EWCIE of the reception of an alarm signal shall be provided. The audible indication may be the same as that for the fault warning condition. Where they are different, the reception of an alarm signal shall have priority.

The audible indication shall be capable of being silenced by means of a separate manual control at Access Level 1 or Access Level 2. The manual control shall be the same control used for silencing the audible indication in the fault warning condition.

The audible indication shall be silenced automatically when the EWCIE is reset.

Where previously silenced, the audible indication shall re-sound for each newly recognized alarm signal.

NOTE 1 For an explanation of Access Levels, see [Appendix D](#).

NOTE 2 Opening the outer door, or operating an access level 2 key switch, which places the EWCIE at Access Level 2, may also be used to silence the audible indication in addition to the requirement for a separate manual control.

7.7 Delay before entering the emergency warning condition — optional function

The EWCIE may be provided with a facility to introduce, after the processing of an alarm signal, a delay before entering the emergency warning condition. In this case, the following requirements apply:

- (a) Configuration of delays shall be selectable at Access Level 3.

NOTE 1 For more information on Access Levels, see [Appendix D](#)
- (b) The operation of the delay shall be in increments not exceeding 1 min, up to a maximum of 10 min.
- (c) It shall be possible to override the delay by a separate manual control at Access Level 1 or Access Level 2. The delay may also be overridden by a signal from a manual call point.

NOTE 2 The manual call point may form part of the fire detection and alarm system or a separate emergency call point.

- (d) There shall be a provision to switch on and switch off delays by means of —
 - (i) the manual control in [Clause 7.7\(c\)](#); or
 - (ii) a separate manual operation, at Access Level 2.
- (e) There may be a provision to automatically switch on and switch off delays by means of a programmable timer at Access Level 3.
- (f) Configured delays to all other emergency zones shall be automatically overridden when the EWCIE enters the emergency warning condition.
- (g) When a delay is switched on for at least one emergency zone, there shall be a steady visible indication common to all emergency zones by means of a separate light-emitting indicator or a field on the alphanumeric display.

The indication shall flash when an emergency zone with a delay receives an alarm signal and the delay is running.

NOTE 3 For flash rates of indicator, see [Clause 15.7.2](#).

This indication shall be suppressed where the delay override control specified in Item (c) is operated or the EWCIE enters the emergency warning condition.
- (h) A system reset shall restore delays and associated indication.

7.8 Phased evacuation for multi-zone systems — optional function

Multi-zone EWCIE may be provided with a function to output the emergency warning signals in a pre-configured sequence to the emergency zones in the automatic mode. In this case, the following apply:

- (a) The function shall be configurable at Access Level 3.

NOTE For information on Access Levels, see [Appendix D](#).
- (b) When switching from automatic mode to manual mode, the phased evacuation sequence shall halt.
- (c) When switching from manual mode to automatic mode, any phased evacuation sequence that is halted shall resume from the point at which it was halted.
- (d) On returning to automatic mode, any emergency warning signals manually activated while in manual mode shall continue until overridden by the phased evacuation sequence with a higher priority emergency warning signal.
- (e) Phasing time sequences shall not be altered by a disabled emergency zone.

7.9 Silencing the emergency warning signal

7.9.1 Silencing the emergency warning signal from the emergency detection system — optional function

Where the emergency warning signal has been initiated from the EDS, the EWCIE shall be capable of being manually silenced from the EDS.

The silencing procedure may allow for the completion of messages in the process of being broadcast.

7.9.2 Silencing of the emergency warning signals with a manual control — optional function

The emergency warning signals may be manually silenced at the EWCIE at Access Level 2 in both automatic and manual mode. In this case, the following requirements apply:

- (a) A separate manual control shall be provided. The manual control shall have an associated visual indicator to indicate when the emergency warning signal is silenced.
- (b) It shall be possible to manually reactivate the emergency warning signal at Access Level 2.
- (c) The emergency warning signal shall automatically reactivate on the EWCIE receiving a new alarm signal from the EDS.
- (d) The EWCIE shall have an output to signal that the emergency warning signals have been silenced. This may be combined with the general disablement output signal or fault-warning output signal.
- (e) Any phased evacuation sequence shall not be affected.

NOTE This function is not related to the silence period described in ISO 8201.

7.10 Reset of the emergency warning condition

7.10.1 Reset of the emergency warning condition from the emergency detection system — optional function

Where the emergency warning condition has been initiated from the EDS, the EWCIE shall implement a reset instruction from the EDS.

7.10.2 Reset of the emergency warning condition with a manual control — optional function

A separate manual control at the EWCIE may be provided to reset the emergency warning condition. Where present, this control shall only operate after the emergency warning signals are silenced in accordance with [Clause 7.9.2](#), where required (see [Appendix A](#)), provided the manual control is —

- (a) accessible at Access Level 2; and
- (b) used only for reset.

NOTE The reset control may be the same as that used for reset from the fault warning condition.

The reset control shall operate with the EWCIE in manual mode only.

Following a reset operation, the indication of the correct functional condition corresponding to any received signals shall —

- (i) remain; or
- (ii) be re-established within 20 s.

7.11 Output to warning devices — optional function

The EWCIE may have a provision for the activation of warning devices, such as visual warning devices, visual alarm devices (VAD) and vibrating devices, in an emergency zone, provided —

- (a) the outputs for warning devices follow the audible emergency warning condition operating in that emergency zone in both automatic and manual mode;
- (b) the output for warning devices shall be unaffected by the broadcast of live speech; and
- (c) the EWCIE outputs to warning devices are configured at Access Level 3.

NOTE A temporal pattern of warning devices operation may differ from temporal pattern of the audible emergency warning signal.

7.12 Emergency warning condition output signal — optional function

The EWCIE may have a provision for transmitting an output signal to indicate it is in the emergency warning condition.

8 Fault warning condition

8.1 Reception and processing of fault signals

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

The EWCIE shall be capable of simultaneously recognizing all of the faults specified in [Clause 8.3](#), and in [Clause 8.4](#) if provided, unless this is prevented by —

- (a) the presence of emergency warning signals in the same emergency zone;
- (b) the disablement of the corresponding emergency zone or function; or
- (c) the testing of a corresponding emergency zone or function.

The EWCIE 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](#).
- (c) An audible indication, as specified in [Clause 8.5](#).

Where the indication is by means of separate light-emitting indicators, these may be the same as those used to indicate disablement or testing, of the corresponding emergency zones or functions.

Where 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 a separate light-emitting indicator or a separate indication on an alphanumeric display:

- (a) An indication at least common to any power supply fault resulting from —
 - (i) a short-circuit or an interruption in a transmission path to PSE where the PSE is contained in a different cabinet from that of the EWCIE; and
 - (ii) PSE 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 EWCIE 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 supervised function.

The indications may be suppressed during the emergency warning condition.

8.3.2 Faults requiring general indication

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

- (a) Any short-circuit or interruption in a transmission path between parts of the EWCIE contained in more than one cabinet, where the fault does not affect a mandatory function.
- (b) A short-circuit or interruption of the transmission path to the microphone handset where provided, including gooseneck assemblies or flexible cords.
- (c) Any short-circuit or interruption in a transmission path between the EWCIE and the loudspeaker, even where the fault does not affect the operation of the loudspeaker.
- (d) Any short-circuit or interruption in the emergency warning transmission path between the EWCIE and warning devices, where used.

NOTE For output to warning devices, see [Clause 7.11](#).
- (e) A failure of any power amplifier.
- (f) 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 emergency warning condition.

8.3.3 Faults related to the transmission path to the emergency detection system

The EWCIE shall have a provision for an indication of faults related to the transmission path(s) to the EDS by means of at least a separate light-emitting indicator or a separate indication on an alphanumeric display.

An indication shall be given when the transmission of information is affected by any of the following:

- (a) A short-circuit, unless the short-circuit is reported as an alarm.
- (b) An interruption of the transmission path.

8.3.4 Faults related to emergency zones

The EWCIE shall have a provision for an indication of faults related to emergency zones. A short-circuit or interruption of a transmission path between the EWCIE and the loudspeakers or warning devices shall be indicated by means of —

- (a) a separate light-emitting indicator for each emergency zone; or
- (b) a separate indication on an alphanumeric display for each emergency zone.

Each emergency zone indication shall be grouped with other indicators for that emergency zone.

8.3.5 Earth fault

The EWCIE 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 unless otherwise indicated as a fault of a supervised function.

The earth fault monitoring may be provided with a means to be disabled (see [Appendix A](#)).

NOTE Earth fault monitoring may be incompatible with some interconnected EDS.

8.4 System fault

In the case of a system fault as specified in [Clauses 16.3](#) or [16.5](#) in a software-controlled EWCIE, 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 light-emitting indicator or on an alphanumeric display (also see [Appendix A](#)). The indication shall not be suppressed by any other functional condition of the EWCIE, and shall remain until a manual reset or another manual operation at Access Level 2 or Access Level 3 is carried out (see [Appendix D](#)).
- (b) A system fault shall be audibly indicated. This indication shall be capable of being silenced.

8.5 Audible indication of fault warning condition

The audible indication of faults in [Clause 8.2\(c\)](#) shall be capable of being silenced manually by means of the same manual operation used for silencing the audible indication of the emergency warning condition.

The audible indication shall be silenced automatically when the EWCIE is reset from the fault warning condition.

Where 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 by at least one of the following:

- (a) Automatically when faults are no longer recognized.
- (b) Manual operation at Access Level 2.
- (c) Resetting the emergency warning condition.

The reset control shall operate with the EWCIE in manual mode only.

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 EWCIE shall have an output that signals the following fault warning conditions:

- (a) As specified in [Clause 8.3](#).
- (b) As specified in [Clause 8.4](#).
- (c) When the EWCIE is not energized.

9 Disabled condition — optional function

9.1 General

Each emergency zone shall have the means to be independently disabled and re-enabled by a manual operation at Access Level 2.

A single control that disables all emergency zones shall not be provided.

Disabled emergency zones shall inhibit and stop all corresponding indications and outputs, with the exception of the alarm input indication (see [Clause 7.2](#)).

An alarm input associated with a disabled emergency zone shall initiate a phased evacuation.

The EWCIE shall be in the disabled condition when at least one emergency zone is disabled.

A reset from the emergency warning condition or a reset from the fault warning condition shall not affect the disabled condition.

9.2 Indication of the disabled condition

A disabled condition shall be indicated by a separate light-emitting indicator (the general disablement indicator) without any manual action. The indication shall not be suppressed.

9.3 Indication of specific emergency zone in the disabled state

Where there is more than one emergency zone, each disabled emergency zone shall be indicated by means of at least one of the following:

- (a) A separate light-emitting indicator.
- (b) Separate indication on an alphanumeric display.

Each emergency zone indication shall be grouped with the other indicators for that emergency zone.

The indications shall not be suppressed.

Disablements shall be indicated within 2 s of completion of the manual operation.

Where an emergency zone takes more than 2 s to become disabled —

- (i) an indication of disablement in progress shall occur within 2 s; and
- (ii) the emergency zone shall become disabled in not more than 20 s from completing the manual operation.

The same indication may be used as specified in [Clause 9.2](#) (for disablement in progress), provided it is distinguishable from the indication of a completed disablement.

NOTE One means of indicating a disablement in progress is a flashing indication at a different flash rate to other specified flash rates, going steady when the disablement is complete.