# WORMALD

# 2004 AUSTRALIAN STANDARDS UPDATE

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# Sections covered

**Installation Standards Update**

- BCA 2004 and when it applies
- Fire detection Standards referenced in BCA 2004
- AS 1670.1-2004 fire detection installations
- AS 1670.4-2004 sound and intercom systems for emergencies (EWIS)
- AS 1670.3-2004 fire alarm monitoring
- AS 1670.6 Amendment 1. Smoke alarm installations
- ACA cabling rules - where it applied
- Question time

**Equipment Standards Update**

- Fire Indicator Panels – ISO based
- Occupant warning equipment – AS & IEC based
- Fire Detectors and MCPs – ISO based & EN series
- Smoke Alarms –AS & ISO based
- Maintenance
- Future developments
- Question time

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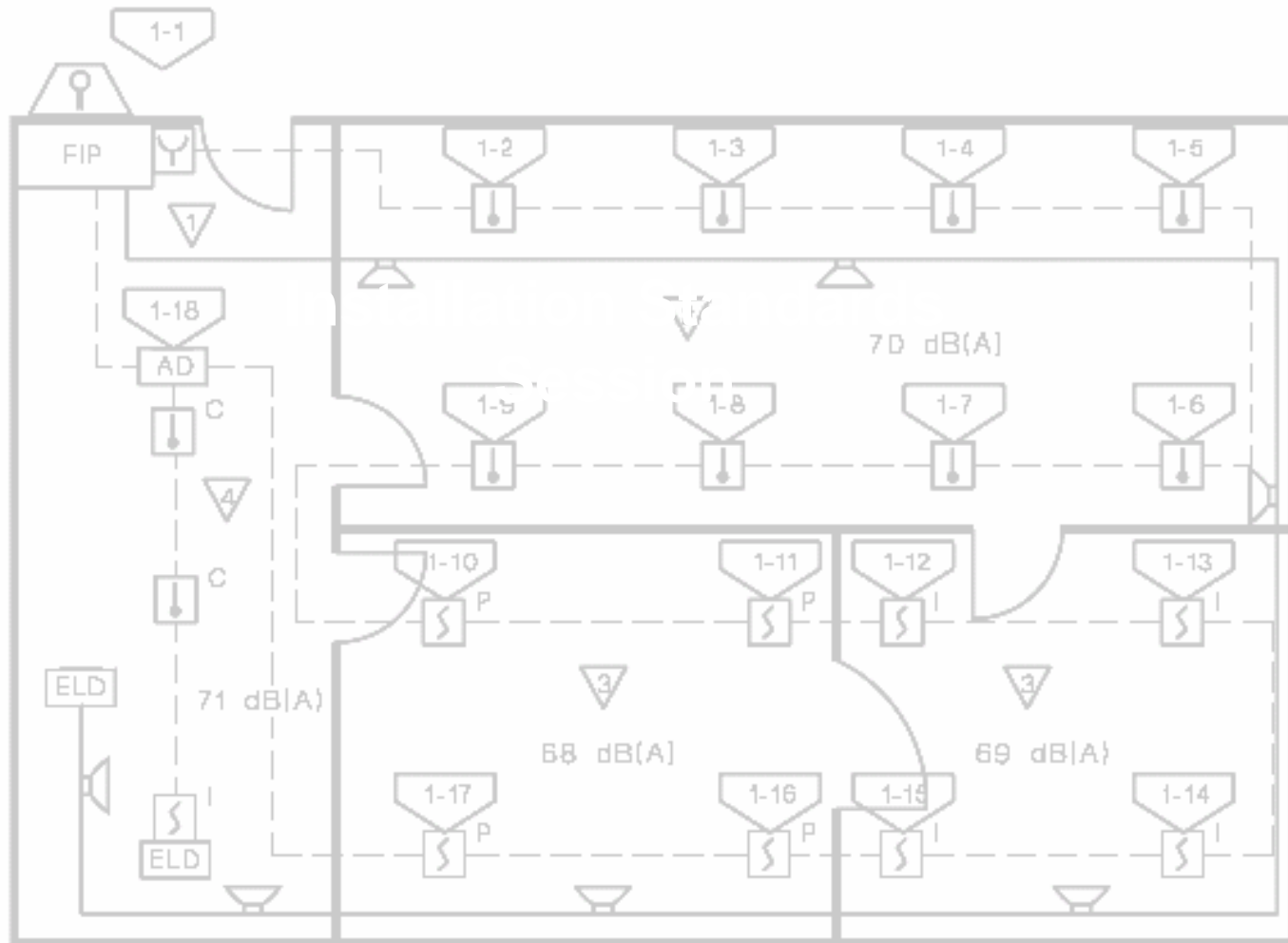
FIGURE D2   TYPICAL ADDRESSABLE SINGLE LINE DRAWING

# BCA 2004

- BCA 2004 is not an amendment but a revision
    - Replaces BCA 96 Amendment 13
- BCA 2004 applies from 1st May 2004.
- BCA 2004 Supplied in bound form
- Will only be revised yearly
- BCA 2004 references a new set of Standards for fire detection and alarm systems published for May 2004.

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- Standards referenced
  - Installation Standards that specify product Standards
  - AS1670.1-2004 Fire Detection and Alarm Systems
  - AS1670.3-2004 Monitoring Systems
  - AS1670.4-2004 Sound systems and Intercom systems for Emergency Purposes (previously EWIS)
  - AS4428.4 (Intercom) in error but included in AS 1670.4
  - AS4428.1 (CIE) in error for smoke management
- Standards no longer referenced
  - AS1603 parts, AS2220 parts

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- AS 1670.1 - 2004 replaces AS1670.1-95 monitored Fire and AS1670.2-97 Local

- Major revision to both content and format

- Connection to Monitoring Service now specified in BCA

- Permits both System Detectors and Smoke/Heat Alarms, but smoke/heat alarms cannot be used to call *Fire Dispatch Centre* (Fire Brigade)
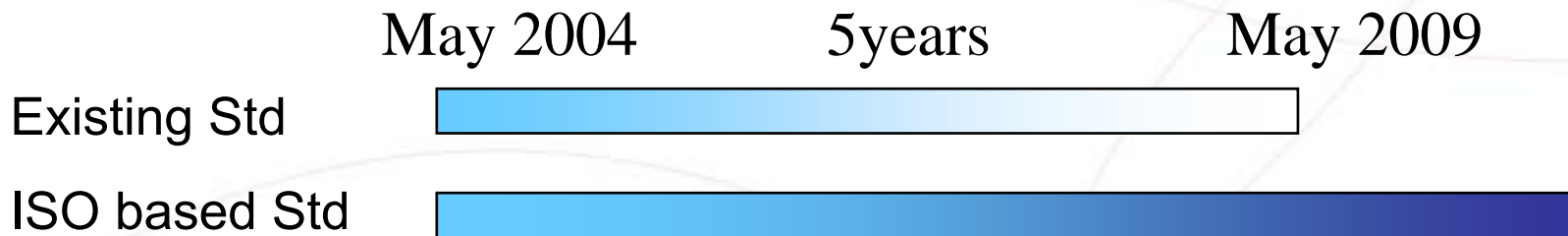
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- Specific Detector Standards have now been nominated

- Several new ISO based product Standards published as Australian Standards

- European Standards for Flame and MCP permitted

- Existing Australian Standards may still be used, except

- AS1603.4 FIP Standard no longer permitted

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- Projects quoted on or DA submitted prior to 1 May 2004 may still be installed to AS1670.1-1995

- Old Australian Standards can also be used for at least 5 years after an equivalent ISO Standard has been accepted as an Australian Standard
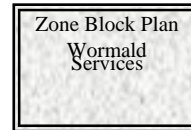
| May 2004 | 5years | May 2009 |
|---|---|---|

Existing Std

ISO based Std

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- ## New - designated building entry point
  - – External Strobe required at the designated building entrance – no bell required
  - – Fire Brigade Panel (FP) to AS4428.3 for the new ISO based Fire indicator panel;
    - Required if FIP does not have zone alarm LEDs
    - May be used where FIP is remote from building entry point

- ## New - designated site entry point – for multiple buildings
  - – Requires either an FIP, Mimic, FP, or
  - – Clear view of building Strobe

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- Requirements for distributed systems rationalised
  - Rules for duplicated path simplified
  - Fire and mechanical protection simplified
  - Duplicate path separation can be eliminated if
    - Underground
    - minimum protection is WSX3
- Alarm acknowledgement facility included
  - Limited to one per sole occupancy unit
  - Control to be within SOU

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- Zone block plan required

  Zone Block Plan
  Wormald
  Services

- Addressable loops will require S/C isolators every 40 devices

- All wiring must comply with AS/ACIF S-009

  - Designated as customer cabling

  - Detection and control

  - Includes DC supplies

  - Emergency Warning 100V a.c. lines (hazardous circuit)

  - AS 1670.1 error in calling for AS3000 for non-ELV

  - Only Mains wiring to be installed to AS3000

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A block plan of the installation, with the position of the FIP clearly indicated, shall be securely mounted adjacent to the FIP, mimic panel, repeater panel and fire brigade panel. The block plan shall be in the form of a permanent diagram that is water resistant and fade resistant, and shall include—

(a) the layout of the building in which the fire alarm system is installed;

(b) the area covered by each zone;

(c) fire brigade panel;

(d) the location of the FIP and all sub-indicator panels (SIP), mimics and repeater panels;

(e) the year of original installation and the date of the latest revision to the block plan;

(f) the location of any other CIE, including sound systems and intercom systems for emergency purposes;

(g) the location of the fire fan control panel;

(h) the location of any fire suppression system controls; and

(i) notice advising, '*In the event of a fire ring* '000' *to ensure fire service response*'.

The block plan shall be displayed in the correct orientation of the building.

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- Photoelectric detectors required in exit paths
  - BCA still calls for photo/ion in 9a building "paths of travel to exits"
- Detectors on external walls deleted
- Additional detectors near doors held open to unprotected area deleted.
- Detectors to be installed in covered walkways deleted
- Detectors required for transportable rooms
- Indicators must be visible from trafficable areas at 45º
- Requirements for CO detectors (mentioned 30 times)
  - Photoelectric smoke detectors, photoelectric smoke alarms or CO fire detectors shall be installed in all sleeping areas.
  - CO detectors shall not be the only detectors in sole occupancy units.
  - FIP needs label

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- Aspirating detectors

- CO detectors

- Flame detectors

- Compares the old and new heat detector rating
  - AS7240.5 types A1, A2, B, C, D & E – Suffix R, S or none
  - AS1603.1 Types TA, TB, TC & TD

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- Sounders or Tone generator-amplifier with Speakers
  - No product Standard (AS1603.6 for bells withdrawn)
  - Emergency load to be powered from primary power source
    - Alternatively;

- AS 1670.4 Sound system for emergency purposes

- ISO 8201 evacuation signals required
  - T3 temporal pattern
  |||| __ |||| __ |||| _____ |||| __ |||| __ |||| __
  - Recommended sound is uniformly increasing frequency during 0.5 s On period

**Single Freq**

**Increasing Freq**

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# Sound System for emergency purposes - Overview

- AS 1670.4 replace AS 2220.2 for design and installation

- AS 60849 (Sound System for Emergency Purposes) replaces the Emergency Warning part of AS 2220.1

- AS 4428.4 (Intercom System for Emergency Purposes) replaces WIP part of AS 2220.1

- AS 2220.1 products have a 5-year transition period

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- New battery calculation requirements with example
  - Identical standby requirements to AS 1670.1
  - Emergency load can come from battery
- Location of WIPs now directly nominated
- Alert signal to ISO 7731, recommended to be similar to AS2220 alert tone

Alert tone

- Evacuate signal to ISO 8201 T3 temporal pattern

500-1200 Hz

  - Recommends 500-1200 Hz rising frequency tone during 0.5 s On period
- Pre-recorded voice message required

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# SPEECH INTELLIGIBILITY

- ## AS 1670.4 Clause 4.3.4 requires:
  - Minimum 65 dB
  - Minimum 75 dB at bedheads
  - ## 10 dB above ambient
  - Not more than 105 dB
    - In error 4.3.6 states 110 dB
  - At end of 24 hr Iq plus 30 min Evac, SPL drop < -6 db
- ## AS 1670.4 Clause 4.3.6 requires:
  - For ambient SPL < 85 dB, CIS ≥ 0.7
  - At end of 24 hr Iq plus 30 min. Evac, CIS ≥ 0.65
  - For ambient SPL >95 db, Use visual warning devices
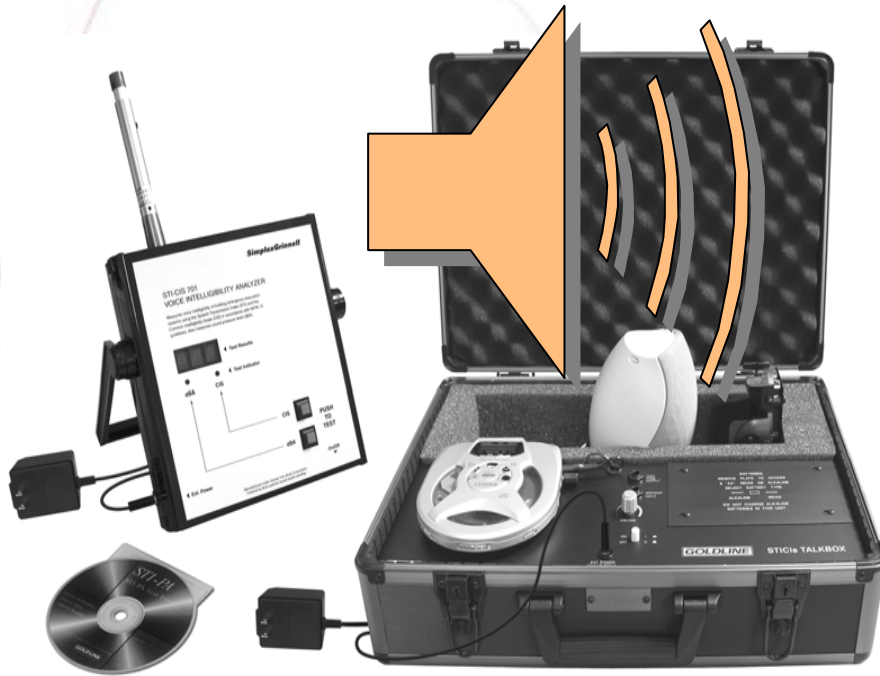
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# SPEECH INTELLIGIBILITY

- Speech intelligibility is not the same as audibility.

- A voice message can be audible (loud enough), but still not be intelligible (understandable).

- Reverberation major problem

- Solutions – use more speakers, acoustic paneling or drapes

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- Ease of use with minimal training.

- Portable, rugged, repeatable and reliable

- Vendor reputation and available factory support for calibration and warranty repair
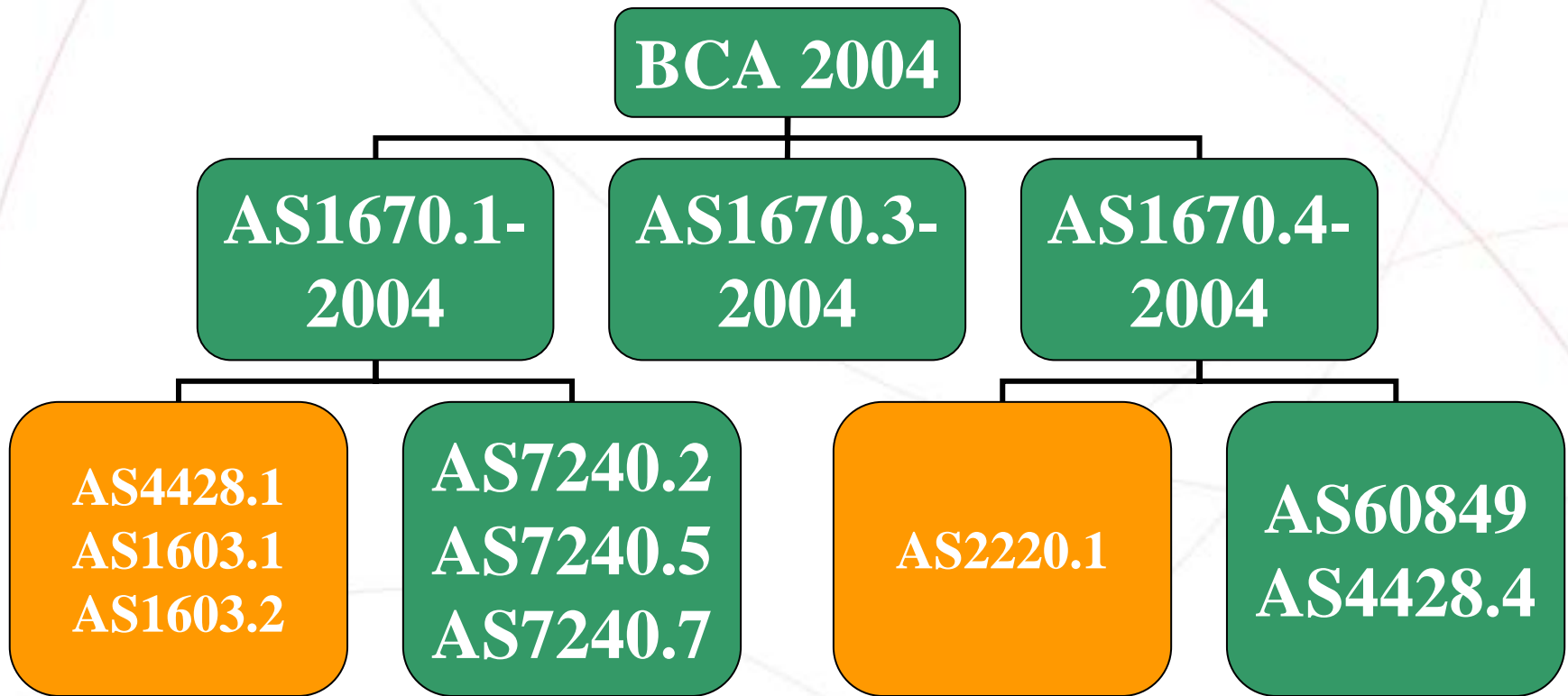
- Reasonable cost

# SPEECH INTELLIGIBILITY

- Talk box speaker transmits to microphone.

- Hand-held meter displays CIS (Common Intelligibility Scale) score and dB(A) level.

- Developed by Bose, Gold Line.

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- Prescriptive requirements requiring two links replaced by minimum reliability metrics

- AS 4418.2 protocol no longer required

- Requirements for link to fire despatch centre added

- Total signal transfer time added

- Monitoring centre equipment requirements added

- Compliance assessment section added

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                        │  BCA 2004   │
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   ┌─────────────┐      ┌─────────────┐      ┌─────────────┐
   │ AS1670.1-   │      │ AS1670.3-   │      │ AS1670.4-   │
   │   2004      │      │   2004      │      │   2004      │
   └──────┬──────┘      └─────────────┘      └──────┬──────┘
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│AS4428.1 │ │AS7240.2 │              │AS2220.1 │ │AS60849  │
│AS1603.1 │ │AS7240.5 │              │         │ │AS4428.4 │
│AS1603.2 │ │AS7240.7 │              └─────────┘ └─────────┘
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*Protecting People & Property*

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# QUESTIONS?

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*Protecting People & Property*

- Amendment 1. - Alarm Acknowledgement Facility
    - Suitable for accommodation where the occupant can investigate
    - Acknowledgement period up to 1 minute
    - Investigation period up to 3 minutes
    - Tyco AAM2 and AAM4 available
- AS 4428.1 can be used at least till May 2009

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- Will replace AS 4428.1
  - Australian publication of ISO Standard based on ISO 7240-2
  - New "Access Level" concept
  - Zone-based
  - Global reset
  - Disable Zones rather than Isolate Zones
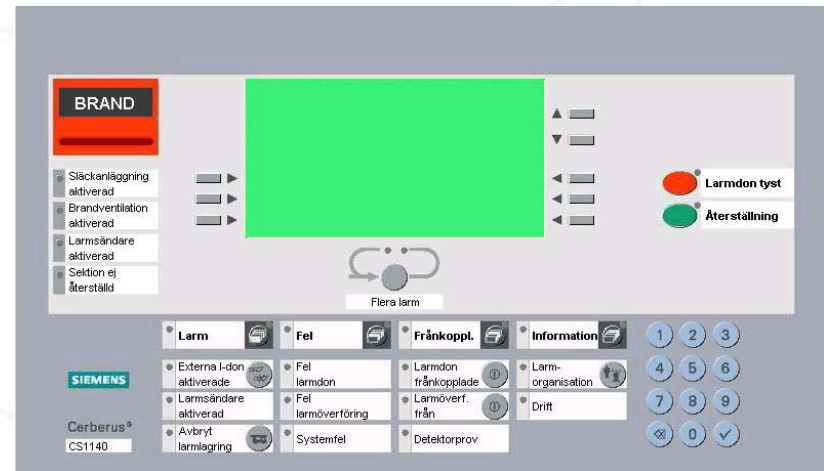  - 5-year transition arrangements

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- Standardized i/o interface to AS 7240.2 c.i.e.
  - Called up by AS 1670.1- 2004
  - Required where individual zone indication is not available
  - May be used to satisfy requirements at a designated site entry point
- Abbreviated as FP
- Based on Swedish fire brigade panel Standard

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- Simple operation for fire fighter
- May be separate or part of the c.i.e.
- Small size suitable for foyers
- Will include a DISABLE key not shown below

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# Flame Detectors

- EN-54 part 10 approved flame detectors permitted

- No equivalent Australian Standard

- S200+ range approved to EN-54 part 10

- ActivFire listed Thorn (TSP) flame detectors include
  - S231i+ (2 wire collective I.S.)
  - S231f+ (2 wire collective flame proof)
  - S261f+ (4 wire collective Relay output flame proof)
  - Future listing S271i+ (I.S. MX addressable loop)

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# Heat Detectors

- ## AS 7240.5
  - Will replace AS 1603.1
  - Australian publication of ISO Standard (based on EN 54-5).
  - Heat detector Types are different to AS 1603.1 Types
  - Guidance to selection in AS 1670.1 Appendix A
  - Alarm indicator requirements reduced
- ## 5 year transitional period

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# Smoke Detectors

- ## AS 7240.7
    - Will replace AS 1603.2
    - Australian publication of ISO Standard (based on EN 54-7).
    - No specific sensitivity classification
    - AS 1668.1 may require smoke tunnel sensitivity requirements
    - Alarm indicator requirements reduced
- ## 5 year transitional period

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# Multi-Sensor Detectors

- AS 7240.15 Photoelectric with heat

- A Standard for a new detector type

- Earlier ActivFire "Multi-sensor" listing category not the same, therefore now changed

- No equivalent AS 1603 Standard

- Intended to reduce false alarm, requiring some temperature component, but tested to ensure adequate sensitivity without heat

- No existing product approved to this standard

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- Amendment 4

- Requires ISO 7731 or ISO 8201 tones
  - ISO 7731 permits the existing smoke alarm sound

- ISO 8201 (T3) required if interconnected to the occupant warning system
  ||||__||||__||||_____||||__||||__||||    <span style="background:red;color:white">Two Tone T3</span>

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- Australian publication of ISO Standard

- Uses ISO tones (7731 and 8201 depending on application)

- Replaces AS 3786 to be withdrawn after 5 years

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- Australian publication, a modification of  IEC 60849
  - Does not include Intercom which is a separate Standard; AS 4428.4

- All installation and maintenance clauses deleted from IEC60849 to make it a product Standard

<span style="background-color:red;color:white">Alert tone</span>　　<span style="background-color:red;color:white">Increasing Freq</span>

- Replaces AS 2220.1 with 5 year transition

- ISO alert and evacuate signals required

- Voice message required

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- Direct calling between WIPs prohibited
- Controls and indicators to Ack faults and control WIP status required
- PSU to comply with AS 4428.5 and can therefore share with AS 4428.1/AS 7240.2
- Max. earpiece SPL specified
- New EMC test specified IEC Standards

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- All parts of AS 1851 to be merged into single Standard

- System Sections will be sold separately, with common Sections

- AS 1851.8 has been revised

- Awaiting completion of other Sections

- 2nd Public Comment draft by June 2004

- **New ISO work items to include**
  - Manual call points
  - CO detectors
  - Line type smoke detectors
  - Compatibility
  - Routing equipment (ASE)
  - Duct sampling equipment
  - Flame detectors
  - Sound systems for emergency purposes equipment
- **Unlikely to develop non-ISO based Australian Standards except installation Standards to meet local requirements**

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