

Title	Demonstrate knowledge of fire detection and alarm systems and installation practices		
Level	3	Credits	20

Purpose	<p>This unit standard is for the training of fire alarm technicians and covers knowledge of operating principles and installation practices of fire detection and alarm systems using both conventional and addressable devices.</p> <p>People credited with this unit standard are able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> • legislation, standards, and codes for fire detection and alarm systems, including installation considerations; • conventional control equipment for fire detection and alarm systems installation; • addressable fire detection and alarm systems, including installation considerations; • gaseous suppression systems installation; • wiring requirements and procedures for fire detection and alarm systems installation; • commissioning tests and procedures for fire detection and alarm systems.
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Classification	Mechanical Engineering > Fire Detection and Alarm Systems
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Available grade	Achieved
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Guidance Information

- 1 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
 Building Act 2004
 Ministry of Business, Innovation and Employment (MBIE) *Acceptable Solutions (AS) and Verification Methods (VM)*
 Electricity Act 1992
 Electricity (Safety) Regulations 2010
 New Zealand Building Code
 AS/NZS 3000:2018, *Electrical Installations* (known as the Australian/New Zealand Wiring Rules),
 NZS 4512:2021, *Fire Detection and Alarm Systems in Buildings*.
 Available at <https://www.standards.govt.nz/>
 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

2 Definitions

Fire detection and alarm system refers to an installation of apparatus, which performs specified fire related functions in response to the operation of a detector, manual call point, or other input. It includes manual call points, detectors, control and indication equipment, alerting devices, interconnections, fittings, labels, energy sources, and remote signalling devices and may include emergency warning and intercommunication systems (EWIS) where applicable.

Risk group, as used in the AS and VM documents, refers to the classification of spaces within a building according to the activity for which the spaces are used.

Standards refer to NZS 4512:2021, and AS/NZS 3000:2018.

Systems documentation refers to the documentation required to be maintained by NZS 4512:2021 and other relevant standards, including log book, test reports, equipment details and drawings, specifications, contract agreement, software configurations and versions, additions and alterations, fire reports, building consents standards, codes of practice, installation instructions, test and commissioning procedures, test and maintenance records, and as built drawings of installation.

Workplace procedures refer to the documented procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site safety procedures, equipment operating procedures, codes of practice, quality assurance procedures, housekeeping standards, charging of time and materials, management of drawings and documentation, procedures to comply with legislative and local body requirements.

3 Assessment information

- a. Use of standards listed in the references by candidates during assessment is encouraged.
- b. All activities must be done in accordance with applicable standards, systems documentation, plans, equipment specifications, and workplace procedures.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of legislation, standards, and codes for fire detection and alarm systems, including installation considerations.

Performance criteria

- 1.1 Acts, regulations, standards, and codes relevant to the installation of fire detection and alarm systems are identified and the purpose of each is stated.
- 1.2 The relationships between acts, regulations, standards, and codes relevant to fire detection and alarm system installation are outlined.
- 1.3 Fire alarm systems Type 2 to 7 as defined in Appendix B of NZS 4512:2021 are distinguished.
- 1.4 The different risk groups defined in the AS and/or VM documents are stated.

- 1.5 The requirements for registration under the Electricity Act 1992 and the Electricity (Safety) Regulations 2010 are outlined with reference to prescribed work.

Range electrician, electrical installer, electrical service technician, cable joiner, electrical appliance serviceperson.

Outcome 2

Demonstrate knowledge of conventional control equipment for fire detection and alarm systems installation.

Performance criteria

- 2.1 Principles of operation of control equipment are explained with reference to functional units, input and output devices, adjustments, and maintenance facilities in accordance with systems documentation.
- 2.2 Installation procedures and requirements for control equipment are identified and described.
- 2.3 Block schematics for typical control systems are sketched showing functional units, input and output devices, and power supplies.

Outcome 3

Demonstrate knowledge of addressable fire detection and alarm systems, including installation considerations.

Performance criteria

- 3.1 Principles of operation of addressable systems are explained with the aid of block schematic diagrams, and with reference to functional units, protocols, and features including programme access, storage, and maintenance facilities.
- 3.2 Differences in installation practices compared to conventional systems are identified.

Outcome 4

Demonstrate knowledge of gaseous suppression systems installation.

Performance criteria

- 4.1 Principles of operation of gas flood control panels are explained with reference to functional units, input and output devices, adjustments, and maintenance facilities.
- 4.2 Block schematics of typical gas flood systems are sketched showing functional units, input and output devices, power supplies and any interfaces with other building services and systems.
- 4.3 The operations of stage one and stage two alarms are described.

- 4.4 Precautions and health and safety aspects that need to be considered prior to commencement of testing gas flood systems are identified and described.

Outcome 5

Demonstrate knowledge of wiring requirements and procedures for fire detection and alarm systems installation.

Performance criteria

- 5.1 Cables used in conjunction with fire detection and alarm systems are identified.

Range cables – power cables, cables for input and output devices.

- 5.2 The requirements of AS/NZS 3000:2018 and NZS 4512:2021 in relation to the cabling of fire detection and alarm systems are identified.

Outcome 6

Demonstrate knowledge of commissioning tests and procedures for fire detection and alarm systems.

Performance criteria

- 6.1 Visual tests are described.

- 6.2 Electrical tests are described.

- 6.3 Procedures for downloading and uploading of programmes for a typical addressable system are outlined.

- 6.4 Functional tests are described.

- 6.5 Documentation and certification requirements are described.

Replacement information	This unit standard replaced unit standard 17718, unit standard 17719, and unit standard 17723.
Planned review date	31 December 2029

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 October 2006	31 December 2017
Review	2	15 October 2015	31 December 2026
Review	3	27 June 2024	N/A

Consent and Moderation Requirements (CMR) reference

0013

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact the Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.