

<b>Title</b>	<b>Demonstrate knowledge of fire detection and alarm systems and installation practices</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>20</b>

<b>Purpose</b>	<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, for fire detection and alarm systems, demonstrate knowledge of: legislation, standards, and codes; input and output devices; conventional control equipment; addressable systems; gas flood systems; wiring requirements and procedures; and commissioning tests and procedures.</p>
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<b>Classification</b>	Mechanical Engineering > Fire Detection and Alarm Systems
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<b>Available grade</b>	Achieved
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### Explanatory notes

- References
  - Building Act 2004
  - Ministry of Business, Innovation and Employment (MBIE) *Acceptable Solutions (AS) and Verification Methods (VM)*. Available at <http://www.dbh.govt.nz/AS/VM-documents>
  - Electricity Act 1992
  - Electricity Regulations 1997
  - New Zealand Building Code
  - AS/NZS 3000:2007, *Electrical Installations* (known as the Australian/New Zealand Wiring Rules)
  - NZS 4512:2010, *Fire Detection and Alarm Systems in Buildings*.
- 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.
  - Standards* refer to NZS 4512:2010.
  - Risk group*, as used in the AS/VM documents, refers to the classification of spaces within a building according to the activity for which the spaces are used.
  - Standards* refers to NZS 4512:2010 and AS/NZS 3000:2007.

*Systems documentation* refers to the documentation required to be maintained by NZS 4512:2010 and other relevant standards, including log book, test reports, equipment details and drawings, specifications, contract agreement, software configurations and versions, additions and alterations, contract agreement, fire reports, building consents standards, codes of practice, installation instructions, test and commissioning procedures, test and maintenance records, and as built drawings of installation.

### 3 Assessment

Use of standards listed in the references by candidates during assessment is encouraged.

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## Outcomes and evidence requirements

### Outcome 1

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

#### Evidence requirements

- 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 Types 2 to 7 as defined in Appendix B of NZS 4512:2010 are distinguished.
- 1.4 The different risk groups defined in the AS/VM documents are stated.
- 1.5 The requirements for registration under the Electricity Act 1992 and the Electricity Regulations 1997 are outlined with reference to prescribed work.

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

### Outcome 2

Demonstrate knowledge of input and output devices for fire detection and alarm systems.

Range input and output devices – conventional, addressable.

#### Evidence requirements

- 2.1 Principles of operation of devices are explained in accordance with device specifications.
- 2.2 Installation procedures and requirements for devices are identified and described in accordance with the standards and systems documentation.

**Outcome 3**

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

**Evidence requirements**

- 3.1 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.
- 3.2 Installation procedures and requirements for control equipment are identified and described in accordance with the standards and systems documentation.
- 3.3 Block schematics for typical control systems are sketched showing functional units, input and output devices, and power supplies.

**Outcome 4**

Demonstrate knowledge of addressable fire detection and alarm systems.

**Evidence requirements**

- 4.1 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 in accordance with systems documentation.
- 4.2 Differences in installation practices compared to conventional systems are identified.

**Outcome 5**

Demonstrate knowledge of gaseous suppression systems.

**Evidence requirements**

- 5.1 Principles of operation of gas flood control panels are explained with reference to functional units, input and output devices, adjustments, and maintenance facilities in accordance with systems documentation.
- 5.2 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.
- 5.3 The operations of stage one and stage two alarms are described in accordance with systems documentation.
- 5.4 Precautions and health and safety aspects that need to be considered prior to commencement of testing gas flood systems are identified and described.

**Outcome 6**

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

**Evidence requirements**

- 6.1 Cables used in conjunction with fire detection and alarm systems are identified.  
Range cables – power cables, cables for input and output devices.
- 6.2 The requirements of AS/NZS 3000:2007 and NZS 4512:2010 in relation to cabling of fire detection and alarm systems are identified.

**Outcome 7**

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

**Evidence requirements**

- 7.1 Visual tests are described in accordance with the standards.
- 7.2 Electrical tests are described in accordance with the standards.
- 7.3 Procedures for downloading and uploading of programmes for a typical addressable system are outlined in accordance with equipment specifications.
- 7.4 Functional tests are described in accordance with the standards and systems documentation.
- 7.5 Documentation and certification requirements are described in accordance with the standards.

<b>Replacement information</b>	This unit standard replaced unit standard 17718, unit standard 17719, and unit standard 17723.
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<b>Planned review date</b>	31 December 2020
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**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	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

**Please note**

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMRs). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

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**Comments on this unit standard**

Please contact Competenz at [qualifications@competenz.org.nz](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.