

Title	Demonstrate introductory knowledge of building management systems		
Level	4	Credits	5

Purpose	<p>This unit standard is intended for use in the training and assessment of electricians beyond trade level and covers the knowledge of building management system (BMS) requirements for industrial and commercial buildings.</p> <p>People credited with this unit standard are able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> – building management systems; – climatic requirements for building occupants and installed equipment; – building climate control; – principles and methods of providing personal security requirements for building occupants and installed equipment; and – building automation safety and backup.
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Classification	Electrical Engineering > Electrotechnology
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 References
 Building Act 2004;
 Electricity Act 1992;
 Electricity (Safety) Regulations 2010;
 Energy Efficiency and Conservation Act 2000;
 Health and Safety at Work Act 2015;
 AS/NZS 1269.0:2005, *Occupational noise management – Overview and general requirements*;
 AS/NZS 1680.1:2006, *Interior and workplace lighting – Part 1: General principles and recommendations*;
 AS/NZS 3000:2007, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*, including Amendment 1;
 NZS 4303:1990, *Ventilation for acceptable indoor air quality*;
 and all subsequent amendments and replacements.

- 3 Definitions
BMS – Building management system.
HMI – human-machine interface.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.
Introductory knowledge – means employing a broad knowledge of the subject matter, incorporating some theoretical concepts, to make an informed judgement.
SCADA – *supervisory control and data acquisition*.
UPS – uninterrupted power supply.
- 4 All activities must comply with: any policies, procedures, and requirements of the organisations involved; the standards of relevant professional bodies; any relevant legislative and/or regulatory requirements; and industry practice.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of BMSs.

Performance criteria

- 1.1 Building management systems are described in terms of purpose, general operation, and the services and systems that are controlled.
- 1.2 Methods of providing central control of building services are described in accordance with industry practice.
- Range light, power, heat, security, ventilation.
- 1.3 Components of a BMS are described in terms of purpose, operation, electrical requirements, and control and communication requirements.
- Range includes but is not limited to – systems architecture, controller hardware including PC SCADA or HMI via Ethernet to modular equipment controllers, power supplies, input/output point boards, controller boards, compact controllers, analogue and digital point blocks.
- 1.4 Essential services are identified and described in terms of priority and the effects on the services if they are disrupted in accordance with health and safety and industry practice.
- Range evidence of four essential services is required.

Outcome 2

Demonstrate knowledge of climatic requirements for building occupants and installed equipment.

Performance criteria

2.1 Conditions necessary for personal comfort for the occupants of buildings are described in terms of maximum and minimum requirements and why these limits should not be exceeded in accordance with relevant standards.

Range temperature, temperature fluctuations, air cleanliness, humidity, air movement, static electricity, illumination, audible noise, electrical interference.

2.2 Ideal conditions required for electrical and mechanical devices installed in buildings are described in terms of maximum and minimum requirements and why these limits should not be exceeded in accordance with equipment manufacturers' instructions.

Range temperature, air cleanliness, humidity, air movement and chill factor, static electricity, illumination.

2.3 Air moisture content is described in terms of absolute humidity, humidity ratio, relative humidity, specific humidity, dew point, and frost point.

2.4 Effects of humidity on the human body and electrical, electronic, and mechanical devices are described.

Range three effects for each.

Outcome 3

Demonstrate knowledge of building climate control.

Performance criteria

3.1 Heating and cooling loads of a building for a given environmental condition are determined and described in accordance with industry practice.

Range heat gains, heat losses, building material losses, temperature range.

3.2 Principles and methods used for efficient energy control in buildings are explained.

Range New Zealand electricity and gas tariff systems, electronic energy controllers, ventilation.

Outcome 4

Demonstrate knowledge of principles and methods of providing personal security requirements for building occupants and installed equipment.

Performance criteria

4.1 Principles and methods of providing personal security in buildings are explained in accordance with industry practice.

Range fire, entry control, lighting.

4.2 Principles and methods of providing security for equipment installed in buildings are explained in accordance with industry practice.

Range fire, entry control, lighting.

Outcome 5

Demonstrate knowledge of building automation safety and backup.

Performance criteria

5.1 Considerations relating to building and building occupants' safety and security are explained in terms of system failures and power outages.

5.2 Measures that can be implemented to circumvent potential problems caused by system failures and power outages are described.

5.3 Principles that determine the need for providing standby and emergency power supplies in buildings are described in accordance with industry practice.

Range generator types, UPS power supplies, hybrid supply combinations.

5.4 Critical zoning and critical zones are identified and described in terms of purpose, principles, priorities, and requirements in accordance with industry practice.

Range may include but is not limited to – operating theatres, air control towers, air conditioning systems, access, security systems, high and low pressurised zones, depleted oxygen zones, mechanical services, stairwells; maintenance of power supply to critical services.
evidence of seven is required.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	19 June 2009	31 December 2024
Rollover and Revision	2	15 March 2012	31 December 2024
Revision	3	15 January 2014	31 December 2024
Rollover and Revision	4	25 March 2021	31 December 2024
Review	5	2 March 2023	31 December 2024

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.