

Title	Install standard and non-standard domestic systems, appliances, and equipment		
Level	4	Credits	25

Purpose	<p>This unit standard is intended for electrical technicians and servicepersons, who develop and install standard and non-standard solutions across a broad range of situations to meet customer requirements.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – develop solutions for the installation of domestic systems or appliances, and associated equipment and services; – prepare for installation of domestic systems or appliances, and associated equipment and services; – co-ordinate the installation of domestic systems or appliances, and associated equipment and services, in accordance with specifications; – co-ordinate configuration routines of domestic systems or appliances, and associated equipment; – test and commission domestic systems or appliances, associated equipment and services; – ensure regulatory compliance when working on domestic systems or appliances, and associated equipment and services; and – handover site to customer on completion of installation.
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Classification	Electrical Engineering > Electrical Appliance Servicing
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Available grade	Achieved
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Prerequisites	Unit 27911, <i>Demonstrate knowledge of workplace safety in an electrotechnology or telecommunications environment</i> ; Unit 28881, <i>Enhance workplace safety and mitigate environmental impacts in an electrotechnology or telecommunications environment</i> ; or demonstrate equivalent knowledge and skills.
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Guidance Information

- 1 This unit standard has been developed for learning and assessment on job or off job in a simulated workplace environment or combination under adequate supervision as defined in the Electricity Act 1992, unless the candidate is registered and licenced under the Electricity Act 1992.

- 2 Recommended unit standards for entry
30643, *Demonstrate knowledge of the installation of electrotechnology systems on customer premises*;
30651, *Explain regulatory requirements for installing and servicing extra-low and low voltage customer premises systems*;
31729, *Demonstrate knowledge of domestic systems and appliances*.
- 3 References
Consumer Guarantees Act 1993;
Electricity Act 1992;
Electricity (Safety) Regulations 2010;
Fair Trading Act 1986;
Hazardous Substances and New Organisms Act 1996 1 October 2018 reprint;
Health and Safety at Work (Hazardous Substances) Regulations 2017;
Health and Safety at Work Act 2015;
Privacy Act 1993;
Resource Management Act 1991;
Contract and Commercial Law Act 2017, *Part 3 Sale of Goods*;
New Zealand Electrical Codes of Practice, ISSN 0114-0663, available from www.worksafe.govt.nz;
and all subsequent amendments and replacements.
- 4 Definitions
a.c. – alternating current.
Company practice – those practices and procedures that have been circulated by the company for use by their employees.
COC – Certificate of Compliance.
Complex installation – three or more appliances, components or subsystems used or operating together in a domestic environment.
Co-ordinate – includes supervision, facilitation, and active involvement in the work to be completed.
CPU – central processing unit.
d.c. – direct current.
Electrical technicians and servicepersons – for the purposes of this unit standard means, people who hold or who are working towards electrical registration as an Electrical Service Technician, Electrical Appliance Serviceperson (endorsed to disconnect and connect), or Electrical Appliance Serviceperson.
ESC – Electrical Safety Certificate.
Industry acceptable time-frame – the length of time within which a competent person at this level could reasonably be expected to perform the task. In the appliance service industry time is a significant factor in judging competence. Assessors must, therefore, ensure that the time taken is representative of industry expectations for the type of servicing undertaken.
Industry conventions – a set of agreed, specified, or generally accepted standards.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.
Non-standard – three or more services used or operating together to provide a purpose-built domestic system solution based on customer or installation requirements.
Safe and sound practice – as it relates to the installation of electrical equipment is defined in AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*.

TCP/IP – transmission control protocol/internet protocol.

USB – universal serial bus.

SDoC – Supplier Declaration of Conformity (producer statement).

5 Range

a Competence may be assessed on:

- i domestic systems which may include but are not limited to – air conditioning, home ventilation, heating, extractor, climate control, central vacuum, enterprise specific system, purpose built domestic solution; and
- ii domestic appliances which may include but are not limited to – cooking range, oven, cooktop, dishwasher, washing machine, dryer, refrigerator, freezer, waste disposal, large coffee machine, air purifier, microwave oven.

b Evidence of two different domestic system installations is required for each outcome of this unit standard, with one being a non-standard solution, except where otherwise indicated in Outcomes 3 and 4.

c Evidence of six appliance installations with at least two different appliances and where at least two are complex installations, except where otherwise indicated in Outcomes 3 and 4.

d Electrical, radiation, and workshop or laboratory safety practices must be observed at all times.

e All work must be performed within industry acceptable time-frames.

f All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with:

- i legislation;
- ii company policies and procedures;
- iii ethical codes;
- iv standards which may include but are not limited to those listed in Schedule 2 of the Electricity (Safety) Regulations 2010;
- v safe and sound practice;
- vi applicable site, company and industry practice, and industry conventions;
- vii where appropriate or applicable, environmental requirements, manufacturer instructions, specifications, data sheets and manufacturer, supplier and company health and safety procedures.

6 Persons assessing against this unit standard are required to hold a current practising licence at or above the level being sought by the trainee.

Details about classes of registration for electrical workers are available at EWRB Electrical Licensing Classes.

Outcomes and performance criteria

Outcome 1

Develop solutions for the installation of domestic systems or appliances, and associated equipment and services.

Performance criteria

- 1.1 Identify the requirements and scope of the domestic systems or appliances, and associated equipment and services.
- Range may include but is not limited to – equipment specification, customer requirements, budgetary constraints, company policies and procedures, health and safety.
- 1.2 Develop specifications in consultation with customer and/or supervisor.
- Range may include but is not limited to – other resources, trades and services, work plan, installation plan, time line.
- 1.3 Evaluate standard and non-standard solutions to meet customer requirements.
- Range solutions – functional, non-functional; non-functional solutions may include but are not limited to – usability, reliability, interoperability, scalability, security.
- 1.4 Prepare and present recommended solution to customer for approval.

Outcome 2

Prepare for installation of domestic systems or appliances, and associated equipment and services.

Performance criteria

- 2.1 Prepare for the installation.
- Range may include but is not limited to – additional required resources and trade services, required materials, site access requirements, work plan, installation plan, specifications and drawings, supervisor or manager guidance.
- 2.2 Arrange permits or consents.
- Range may include but is not limited to – Permit to Work, site access, security consents, customer consent.
- 2.3 Develop safety plans in accordance with company requirements.

Outcome 3

Co-ordinate the installation of domestic systems or appliances, and associated equipment and services, in accordance with specifications.

Performance criteria

3.1 Co-ordinate the installation of hardware and equipment, and the termination of required services.

Range hardware – domestic systems or appliances, associated equipment;
services – other trades, power supply;
evidence of five is required across all installations.

3.2 Co-ordinate the connections and interfaces between the domestic systems or appliances, and associated equipment in accordance with customer and manufacturer's specifications.

Range may include but is not limited to – termination, labelling, securing, cable tray, trunking, conduit;
evidence of three examples is required across all installations.

3.3 Complete documentation in accordance with company requirements.

Range may include but is not limited to – labelling of systems and equipment, complete as-built documentation, recording of installation progress, updating of records and technical documentation;
evidence of two installations is required which includes the use of electronic records system.

Outcome 4

Co-ordinate configuration routines of domestic systems or appliances, and associated equipment.

Performance criteria

4.1 Co-ordinate configuration of hardware using appropriate available options.

Range may include but is not limited to – software, hand-held controller, remote control, computer interface, CPU, micro-processor, embedded, manual;
evidence of three is required across all installations.

4.2 Co-ordinate configuration of interfaces to enable communication between hardware and software.

Range may include but is not limited to – TCP/IP and ethernet addressing, serial communication, parallel communication, wireless communication, IR communication, USB, d.c. voltage control, a.c. voltage control, variable frequency control;
evidence of three types of interfaces is required.

Outcome 5

Test and commission domestic systems or appliances, associated equipment and services.

Performance criteria

5.1 Select test equipment to perform commissioning testing in accordance with manufacturer's instructions, specifications and commissioning requirements.

Range may include but is not limited to – safety testing, operational testing, acceptance testing, specification testing, performance verification.

5.2 Perform tests in a manner which does not impact on performance of other working systems or equipment.

5.3 Compare test results against design specifications to confirm performance is within permitted parameters.

Outcome 6

Ensure regulatory compliance when working on domestic systems or appliances, associated equipment and services.

Performance criteria

6.1 Perform risk assessment and manage any hazards on arrival at worksite.

Range may include but is not limited to – services mark up, utility clearances, other services interference, job safety analysis, stakeholder health and safety processes, consent requirements, work permit requirements.

6.2 Maintain worksite in accordance with regulations.

Range may include but is not limited to – environmental management, health and safety, industry requirements, worksite policies, industry best practice.

6.3 Complete electrical tests, and complete or collect certificates in accordance with regulations.

Range may include but is not limited to – ESC, COC, SDoC (producer statement).

Outcome 7

Handover site to customer on completion of installation.

Performance criteria

7.1 Co-ordinate site departure procedures in accordance with company practice.

Range may include but is not limited to – system checks, system restored to automatic or standby, ventilation system restored to normal.

7.2 Perform walk-through to confirm remedial work has been completed in accordance with company and industry practice, and co-ordinate post-installation site restoration.

Range remedial may include but is not limited to – fire stopping, associated contractor services, wall repair, painting, floor coverings.

7.3 Handover support materials to the customer in accordance with contract and company requirements.

Range may include but is not limited to – as-built drawings, performance certification, test and commissioning results, maintenance material, product leaflet and instructions, testing instructions, troubleshooting guide, recording in electronic records system, product guarantee, producer statement, ESC, COC.

7.4 Complete post-job tasks.

Range may include but is not limited to – log and file information in relevant systems, complete customer reports as required, close out job tasks in appropriate management systems.

Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 March 2019	N/A

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>.

Comments on this unit standard

Please contact The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.