

Title	Demonstrate knowledge of electrical test instruments and take measurements		
Level	2	Credits	2

Purpose	<p>This unit standard is for people needing to make basic electrical measurements of voltage, current, resistance, continuity, and insulation.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of electrical test instruments – select and use four electrical test instruments.
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Classification	Electrical Engineering > Core Electrical
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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 or on-job.
- 2 Definitions

Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.

Safe and sound practice – as it relates to the installation of electrical equipment is defined in AS/NZS 3000 (version as cited in Electricity (Safety) Regulations), *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*.
- 3 The *prove-test-prove* method refers to proving the instrument before and after a test to ensure that it works properly, and is particularly important when confirming electrical isolation. Some instruments have fused leads and may give false indication of isolation if the fuse is open circuit or blows during the test. Proving is done by applying the instrument to a circuit that is known to be energised and observing the measured voltage, testing the circuit to be isolated to ensure it is in fact isolated, then proving the instrument again on a circuit that is known to be energised.
- 4 Range
 - a Candidates may refer to current legislation and Standards during assessment.
 - b Demonstration of safe working practices and installation in accordance with *safe and sound practice* are essential components of assessment of this unit standard.

- c All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with:
 - i legislation
 - ii policies and procedures
 - iii ethical codes
 - iv Standards – may include but are not limited to those listed in Schedule 2 of the Electricity (Safety) Regulations 2010
 - v applicable site, enterprise, and industry practice
 - vi where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of electrical test instruments.

Performance criteria

1.1 Explain instrument class classifications.

1.2 Describe four instruments in terms of their principles of operation and their applications.

Range may include but is not limited to – multimeter, clip-on ammeter, insulation tester, earth loop impedance tester, residual current device tester, appliance tester.

1.3 Outline thermal test instrument operation and application.

1.4 State four consequences of incorrect use of test instruments.

Range incorrect uses may include but is not limited to – polarity reversed, use of wrong instrument, incorrect connection to the circuit, incorrect range or function selection, open circuit fuse in fused lead, broken test lead, open circuit test lead.

Outcome 2

Select and use four electrical test instruments.

Range may include but is not limited to – multimeter, clip-on ammeter, insulation tester, earth loop impedance tester, RCD tester, appliance tester.

Performance criteria

2.1 Select the instrument to match the type of measurement in terms of range and class of instrument.

2.2 Inspect instrument visually for safety prior to testing.

- 2.3 Demonstrate the prove-test-prove method according to industry practice.
- 2.4 Take measurements and compare with expected readings.
- 2.5 State the approximate tolerance for each measurement.

Planned review date	31 December 2025
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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 1994	31 December 2013
Review	2	23 April 1996	31 December 2013
Review	3	10 February 1999	31 December 2013
Revision	4	3 April 2001	31 December 2013
Review	5	26 May 2005	31 December 2021
Rollover and Revision	6	15 March 2012	31 December 2021
Revision	7	15 January 2014	31 December 2021
Review	8	21 July 2016	N/A
Rollover and Revision	9	25 May 2023	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 Waihangara Ara Rau Construction and Infrastructure Workforce Development Council qualifications@WaihangaraAraRau.nz if you wish to suggest changes to the content of this unit standard.