



Australian Government

**UEENEEG121A Verify compliance and
functionality of special LV electrical
installations**

Release: 2

UEENEEG121A Verify compliance and functionality of special LV electrical installations

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit covers testing and visual inspection for verifying that an electrical installation in caravan parks, construction and demolition sites, marinas, medical treatment areas, moveable premises installation in consumer's premises are safe and comply with requirements. The unit encompasses procedures for safely conducting mandatory and optional tests, conducting visual inspections, identifying non-compliance defects and mandatory reporting requirements.

Application of the Unit

Application of the Unit **2)**

This unit is intended to augment previously acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit require a license to practice in the work place subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly related to occupational health and safe and contracts of

License to practice

3)

training such as new apprenticeships.

Note:

1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control and lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures.

Pre-Requisites

Prerequisite Unit(s)

4)

Competencies

4.1)

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE101 Apply Occupational Health and Safety
A regulations, codes and practices in the
 workplace

UEENEEE102 Fabricate, dismantle, assemble of
A utilities components

UEENEEE104 Solve problems in d.c circuits
A

UEENEEE105 Fix and secure electrotechnology
A equipment

UEENEEE107 Use drawings, diagrams, schedules,
A standards, codes and specifications

UEENEEE137 Document and apply measures to
A control OHS risks associated with
 electrotechnology work

Prerequisite Unit(s)	4)	
	UEENEEG006 A	Solve problems in single and three phase low voltage machines
	UEENEEG033 A	Solve problems in single and three phase electrical apparatus and circuits
	UEENEEG063 A	Arrange circuits, control and protection for general electrical installations
	UEENEEG101 A	Solve problems in electromagnetic devices and related circuits
	UEENEEG102 A	Solve problems in low voltage a.c. circuit
	UEENEEG103 A	Install low voltage wiring and accessories
	UEENEEG104 A	Install appliances, switchgear and associated accessories for low voltage electrical installations
	UEENEEG105 A	Verify compliance and functionality of low voltage general electrical installations
	UEENEEG106 A	Terminate cables, cords and accessories for low voltage circuits
	UEENEEG107 A	Select wiring systems and cables for low voltage general electrical installations
	UEENEEG108 A	Trouble-shoot and repair faults in low voltage electrical apparatus and circuits
	UEENEEG109 A	Develop and connect electrical control circuits
	UEENEEG120 A	Select and arrange equipment for special LV electrical installations

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills

indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 4 Writing 4 Numeracy 4

Employability Skills Information

Employability Skills 5)

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

<p>6) Elements describe the essential outcomes of a competency standard unit</p>	<p>Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.</p>
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Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

- | | |
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| <p>1 Prepare to inspect and test an electrical installation.</p> | <p>1.1 OHS measures for the site are identified, obtained and understood.</p> <p>1.2 Established OHS risk control measures and procedures in preparation for the work are followed.</p> <p>1.3 Safety hazards, which have not previously been identified, are noted and established risk control measures are implemented.</p> <p>1.4 Documentation or deemed to comply standard</p> |
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ELEMENT

PERFORMANCE CRITERIA

- on which installation is based is reviewed and understood.
- 1.5 Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved on the work site.
- 1.6 Tools, equipment and testing devices needed to verify compliance are obtained in accordance with established procedures and checked for correct operation and safety.
- 1.7 Preparatory work is checked to ensure no damage has occurred and complies with requirements.
- 2 Visually inspect the installation.
- 2.1 OHS risk control measures and procedures for carrying out the work are followed.
- 2.2 The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures.
- 2.3 Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.
- 2.4 Wiring is checked for suitability for the environments in which they are installed and suitably protected from damage or overheating.
- 2.5 Cable conductor sizes are acquired as meeting current-carrying capacity requirements and voltage-drop and fault-loop impedance limitations.
- 2.6 Protection methods and devices are validated as meeting co-ordination requirements for overload and short-circuit protection.
- 2.7 Switchgear and control gear is validated as being appropriately rated and meeting functional requirements.
- 2.8 Evidence that electrical equipment complies with safety requirements is cited.

ELEMENT	PERFORMANCE CRITERIA
3 Conduct safety testing.	<p>2.9 Earthing system components are checked that they are correctly located and conductors correctly sized.</p> <p>2.10 Marking on switchboards are checked for accuracy and clarity and comply with requirements.</p> <p>3.1 OHS risk control measures and procedures for carrying out the work are followed.</p> <p>3.2 The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures.</p> <p>3.3 Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.</p> <p>3.4 Mandatory tests are conducted to verify that: Earthing conductor resistance is sufficiently low Insulation resistance is sufficiently high Polarities are correct Circuit connections are correct Other tests required by a Standard</p> <p>3.5 Testing is conducted to verify that: Fault-loop impedance is sufficiently low Residual current devices operate as intended.</p>
4 Report inspection and test findings.	<p>4.1 OHS risk control work completion measures and procedures are followed.</p> <p>4.2 Work site is cleaned and made safe in accordance with established procedures.</p> <p>4.3 Non-compliance defects are identified and reported in accordance with established procedures.</p> <p>4.4 Recommendations for rectifying defects are made in accordance with established procedures.</p>

ELEMENT

PERFORMANCE CRITERIA

- 4.5 Mandatory documentation is completed in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and verifying compliance and functionality of special electrical installations.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EG121A Electrical installations, testing and verification of special installations

Evidence shall show an understanding of compliance and functionality verification of special electrical installations to an extent indicated by the following aspects:

T1 Technical standards, regulations and codes for special electrical installations encompassing:

- Additional requirements for special installations
- caravan parks
- construction and demolition sites
- marinas
- medical treatment areas
- moveable premises
- HV installation in consumer's premises

T2 Mandatory and optional testing and verification requirements applicable to special installations encompassing:

- Testing techniques
- Features of special installations that can be visually inspected
- caravan parks
- construction and demolition sites
- marinas
- medical treatment areas
- moveable premises
- HV installation in consumer's premises

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment 9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit 9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the performance criteria and range statement
 - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
 - Demonstrate an appropriate level of skills enabling employment
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - Verify compliance and functionality of special electrical installations as describe as described in 8) and including:

- A Selecting correct tools and testing equipment.
- B Identifying visual non-compliance defects.
- C Using effective methods for conducting mandatory and optional tests.

- D Identifying non-compliance from test results.
- E Identifying causes of non-compliance.
- F Completing mandatory reporting.
- G Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

Context of and specific resources for assessment 9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

OHS policy and work procedures and instructions.

Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to verifying compliance and functionality of special electrical installations.

Method of assessment 9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the industry to which this unit applies. This requires assessment in a structured environment which is primarily

intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

**Concurrent
assessment and
relationship with
other units** **9.5)**

There are no concurrent assessment recommendations for this unit.

Range Statement

RANGE STATEMENT

10) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated by verifying compliance and functionality of at least two of the following types of installations

- Caravan parks
- Construction and demolition sites
- Marinas
- Medical treatment areas
- Moveable premises

The electrical installations shall comprise consumer's mains, main earthing system and main switchboard and sub-mains, earthing system and distribution boards, final sub circuits and requirement particular to the installation type.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field 11)
 Electrical