



Australian Government

Department of Education, Employment and Workplace Relations

UEENEEH070B Terminate and connect components, conductors, wiring and cables for electronic circuits

Release: 1

UEENEEH070B Terminate and connect components, conductors, wiring and cables for electronic circuits

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

1)

1.1) Descriptor

This unit covers the implementation, performance and evaluation of component connections and terminations of conductors, wiring, cables, and other recognised mediums. It encompasses implementing reliable termination and connection processes, working to specifications, safe use of connection and termination tools, safe use of termination and/or soldering devices, selection and placement of components, termination and connection preparation, termination and connection techniques, and evaluating termination and connection work.

Application of the Unit

Application of the Unit 4)

This unit shall apply to persons entering work in electro technology and may be used in school based vocational programs.

Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit do not require a license to practice in the work place. However practice in this unit is subject to regulations directly related to occupational health and safe and contracts of 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, lifting equipment and the like. 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) 2)

2.1) Competencies

There are no prerequisite competencies for this unit.

Employability Skills Information

Employability Skills	3) 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.
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Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare to implement connection/termination processes that include components, conductors, wiring and cables for electronic circuits.	1.1 OHS procedures for a given work area are identified, obtained and understood through established routines and procedures.
	1.2 Established OHS risk control measures and procedures are followed in preparation for the work.
	1.3 Safety hazards, which have not previously been identified, are reported and advise on risk control measures, are sought from the work supervisor.
	1.4 The scope and nature of work to be undertaken is determined from documentation and instructions from work supervisor.
	1.5 An implementation and work plan is developed to ensure the work is co-ordinated effectively with others.

ELEMENT	PERFORMANCE CRITERIA
2 Connect/terminate components, conductors, wiring and cables.	1.6 Materials required for the work are obtained in accordance with established routines and procedures.
	1.7 Tools, equipment, measuring and termination and connection devices needed to carry out the work are obtained and checked for correct operation and safety.
	2.1 Established OHS risk control measures and procedures for carrying out the work are followed.
	2.2 Components and connection/termination methods and devices are selected in accordance with their specified type and rating. (See Note 1)
	2.3 Components and conductors are placed in accordance with specification/drawing and correct polarity.
	2.4 Terminations and connections are prepared in accordance to ensure reliability of connections in accordance with industry standards. (See Note 2)
	2.5 Termination and connections are made using devices and techniques that comply with manufacturer's requirements and industry standards.
3 Evaluate completed connections and terminations of components, conductors, wiring and cables.	2.6 Procedures for identifying and responding to non-routine events including defects are coordinated and actioned in accordance with established procedures.
	2.7 Connection/termination activities are carried out efficiently without waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices.
	3.1 Established OHS risk control measures and procedures for carrying out the work are followed.
	3.2 Defects in component placement, connections and terminations are identified by visual inspection and recorded.

ELEMENT	PERFORMANCE CRITERIA
	3.3 Solutions to non-compliant work are developed and responded to in accordance with established procedures and requirements 3.4 Connections and terminations are performance tested for compliance with the specified Standard and non-compliance performance characteristics identified and recorded. 3.5 Rework is carried out to rectify defects and non-compliant performance characteristics to manufacturer's requirements and industry standards. (See Note 3) 3.6 Connections and terminations are confirmed compliant with established procedures and requirements
4 Complete and document connections and terminations activities.	4.1 OHS risk control work completion measures and procedures are followed. 4.2 Work site is cleaned and made safe in accordance with established procedures. 4.3 Evaluation documentation confirming compliance of the connections and terminations is verified in accordance with established procedures and requirements 4.4 Inspection, testing, and rectification work is documented in accordance with established procedures.

Notes.

1. Connections methods include crimping, soldering and use of vendor specific devices.
2. Preparation includes sheath and insulation stripping and approved cleaning methods.
3. Rework may include the application of desoldering techniques

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) 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 terminating and connecting components, conductors, wiring and cables for electronic circuits.

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

The extent of the essential knowledge and associated skills (EKAS) required is given in Volume 2 - Part 2.2 EKAS. It forms an integral part of this unit.

- 2.1.4 Basic cable and conductor terminations
- 2.1.8 Electronic cable and conductor terminations
- 2.5.1.2 Drawings and diagrams
- 2.9.1.1 Electronic component basics
- 2.11.5 Basic electrical testing and measuring devices and techniques
- 2.11.11.1 Electronic soldering equipment and techniques
- 2.18.1 Occupational Health and Safety principles
- 2.18.9 Electronic safe working practices

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 the 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-preferred model for apprenticeships. However, where summative (or final) assessment is used it must 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 accord 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 everyday work influence decisions about how/how much 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.

EVIDENCE GUIDE

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 - UEE07'. 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:
 - Terminate and connect components, conductors, wiring and cables for electronic circuits as described in 8) and including:
 - A Developing implementation and work plan
 - B Selecting components and termination and connection devices in accordance with their specified type and ratings.
 - C Placing components correctly.

EVIDENCE GUIDE

- D Preparing terminations and connections correctly.
- E Making reliable terminations and connections in accordance with industry standards.
- F Identifying defects and non-compliant performance
- G Rectifying defects and non-compliant performance characteristics to requirements.
- H Evaluating reliability of termination and connection work
- I Providing solutions for non-compliant work
- J Documenting termination and termination activities accurately
- K Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a 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 terminating and connecting components, conductors, wiring and cables for electronic circuits.

EVIDENCE GUIDE

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 that the specified essential knowledge and associated skills are assessed 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)

For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:

UEENEEE002B Dismantle, assemble and fabricate electro technology components

UEENEEE007B Use drawings, diagrams, schedules and manuals

AND

UEENEEG012B Solve fundamental problems in electrical systems

OR

UEENEEG049B Solve problems in complex polyphase power circuits

The critical aspects of occupational health and safety covered in unit UEENEEE001B and other discipline specific occupational health and safety units shall be incorporated in relation to this unit.

Range Statement

RANGE STATEMENT

8) 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 using a representative range of components, conductors, wiring and cables for electronic circuits in terminating and connecting components, conductors, wiring and cables.

This shall include:

- Selection and placement of at least five different types of electronic components.
- Connection of electronic components by soldering.
- Termination and connection of a coaxial cable.
- Termination and connection of a high performance copper cable.
- Termination of an insulated cable by using a crimped connection.

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

2.2) Literacy and numeracy skills

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	3	Writing	3	Numeracy	3
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Custom Content Section

Competency Field	5)
	Electronics