



Australian Government

UEEEEC0065 Solve problems in basic electronic circuits

Release: 1

UEEEEC0065 Solve problems in basic electronic circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to solve electronic circuit problems.

It includes determining correct operation of single source parallel and series-parallel circuits and providing electronic solutions. It also includes working safely; applying problem-solving procedures, including the use of voltage, current and resistance measuring devices; and providing solutions derived from measurements and calculations to predictable problems in multiple path circuits.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

No other licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Electronics and Communications

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to work on electronic circuits

2 Solve electronic circuit problem

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS requirements and workplace procedures for a given work area are obtained and applied
- 1.2** WHS/OHS risk control measures and workplace procedures are followed
- 1.3** Nature of the circuit/s problem is obtained from documentation or from work supervisor to determine the scope of work to be undertaken
- 1.4** Advice is sought from work supervisor to ensure the work is coordinated effectively with relevant person/s
- 1.5** Sources of materials required for work are established in accordance with workplace procedures
- 1.6** Tools, equipment and testing devices needed to carry out the electronic work are obtained and checked for correct operation and safety
- 2.1** WHS/OHS risk control measures and workplace procedures are followed
- 2.2** Need to test and measure live work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace safety procedures
- 2.3** Electronic circuits are checked and isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.4** Problem solving is approached methodically applying principles of electronic circuits using measured and calculated values
- 2.5** Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- 2.6** Electronic circuit problems are solved without unnecessary damage to apparatus, circuits, the surrounding environment or services using sustainable

		energy practices
3 Complete work and document problem-solving activities	3.1	WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Justification for electronic circuit solutions used to resolve circuit problems is documented
	3.4	Work completion is documented and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Solving problems in basic electronic circuits must include at least the following:

- two types of circuit problems in single source parallel and series-parallel electronic circuits

Unit Mapping Information

This unit replaces and is equivalent to UEENEEH169A Solve problems in basic electronic circuits.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEC0065 Solve problems in basic electronic circuits

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (WHS/OHS) requirements, workplace procedures and practices, including using risk control measures
- determining the operating parameters of an existing circuit
- altering an existing circuit to comply with specified operating parameters
- developing circuits to comply with a specified function and operating parameters
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- behaviour of electrical/electronic circuits for various values of voltage, current, resistance, impedance, inductance, capacitance and reactance and variable parameters, including:
 - single source circuits
 - series circuit configurations
 - parallel circuit configurations
 - series-parallel circuit configurations
- circuit configurations, including:
 - circuit configurations are single source alternating current (a.c.) and direct current (d.c.) circuits
 - series circuits
 - parallel circuits
 - series-parallel circuits
- connection of test/measuring devices into a circuit, including safety procedures and circuit arrangement of test/measuring devices
- electronics circuit principles

- features of testing/measuring devices, including safety, user calibration and parameter and range settings
- power supplies for electronics circuit principles
- relationship between variable parameter in electrical/electronic circuits, including:
 - variable parameters
 - voltage
 - current
 - resistance
 - impedance
 - inductance
 - capacitance
 - reactance
- relevant manufacturer specifications
- relevant job safety assessments or risk mitigation processes, including safe working practices and solving problems in electronic circuits
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- types of voltage testers, multimeters, clamp meters, continuity testers and insulation resistance testers and their application.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to solving problems in electronic circuits
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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