



Australian Government

UEEEEC0028 Fault find and repair complex power supplies

Release: 1

UEEEEC0028 Fault find and repair complex power supplies

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 fault find and repair complex power supplies.

It includes preparing to find and repair faults in complex power supplies, finding and repairing faults, and completing and reporting on repair activities.

Permits may be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

No 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

UEECD0043 Solve problems in direct current circuits

UEEEEC0060 Repairs basic electronic apparatus faults by replacement of components

Competency Field

Electronics and Communications

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to find and repair faults in complex power

PERFORMANCE CRITERIA

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

1.1 Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures

supplies	for relevant work area are identified, obtained and applied
1.2	WHS/OHS risk control measures are applied in accordance with workplace procedures prior to commencing work
1.3	Nature of the fault is obtained from documentation or discussions with relevant person/s to determine scope of work
1.4	Relevant person/s is consulted to ensure the work is coordinated effectively with others
1.5	Materials required for the work are determined in accordance with workplace procedures
1.6	Tools, equipment and testing devices required for work are obtained in accordance with workplace procedures and checked for correct operation and safety
2 Find and repair faults	2.1 WHS/OHS risk control measures and procedures are applied
	2.2 Need to test and measure live work is determined in accordance with WHS/OHS requirements and workplace procedures
	2.3 Apparatus is isolated, as required, in accordance with WHS/OHS requirements and workplace procedures
	2.4 Fault finding is approached methodically, applying principles of complex power supplies, analysing faults through reference to block and schematic diagrams and using measured and calculated values of power supply parameters
	2.5 Apparatus components are dismantled, as necessary, and parts stored to protect against loss or damage
	2.6 Faulty components are rechecked and their fault status confirmed
	2.7 Materials required for repair work are sourced and obtained in accordance with workplace procedures
	2.8 Effectiveness of the repair is tested in accordance with workplace procedures
	2.9 Apparatus is reassembled, tested and prepared for return

to customer

2.10 Unplanned situations are dealt with safely and with approval of relevant person/s

2.11 Fault-finding and repair activities are carried out efficiently without waste of materials, damage to apparatus, the surrounding environment or services applying sustainable energy practices

3 Complete and report repair activities

3.1 WHS/OHS risk control measures and workplace procedures are applied

3.2 Work area is cleaned and made safe in accordance with workplace procedures

3.3 Justification is made in the required format for repairs to apparatus

3.4 Work completion is documented in accordance with workplace procedures and relevant person/s notified

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.

Finding and repairing faults in complex power supplies must include at least the following:

- fault finding two faults in each of the following types of power supply:
 - linear regulated power supply
 - switch mode power supply

Unit Mapping Information

This unit replaces and is equivalent to UEENEEH138A Fault find and repair complex power supplies.

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 UEEEC0028 Fault find and repair complex power supplies

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 methodical fault-finding techniques
- applying relevant risk identification, assessment, reporting and control requirements
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- applying sustainable energy principles and practices
- coordinating work with relevant person/s
- dealing effectively with unplanned events
- determining live testing/measurement requirements
- determining scope of work
- efficiently finding faults
- finding and repairing faults in complex power supplies
- identifying and accessing materials, tools, apparatus and testing devices
- isolating circuits/machines/system
- providing justification for the repairs
- replacing components without damage
- selecting relevant test equipment and test methods
- making and analysing measurements to verify circuit operation.

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:

- complex power supplies fault finding and repair
- off-line switching regulators
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes

- relevant standards, codes and regulations
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- relevant principles of switching regulation
- series regulation
- series regulator employing closed loop control
- switching regulation - closed loop control of output
- block and schematic diagrams for typical power supply circuits
- heatsink selection considerations
- circuit protection methods - crowbar and current-limiting
- verification of circuit operation
- fault-finding techniques
- electromagnetic radiation (EMR) considerations with switch mode supplies
- inductance and transformer theory
- diode and semiconductor basics
- rectification and filtering.

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 suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable 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 finding and repairing faults in complex power supplies
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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