



Australian Government

UEEEEC0067 Troubleshoot basic amplifier circuits

Release: 1

UEEEEC0067 Troubleshoot basic amplifier 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 troubleshoot basic amplifier circuits.

It includes preparing to troubleshoot basic amplifiers, solving basic amplifier circuit problems, completing work and reporting on problem-solving 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

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 troubleshoot basic amplifiers

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 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 Scope of the fault is obtained from documentation or discussions with relevant person/s to determine scope of work
 - 1.4 Instructions for coordinating work with others are obtained from relevant person/s and applied
 - 1.5 Materials required for work are determined in accordance with workplace procedures
 - 1.6 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
- 2 Solve basic amplifier circuit problems**
- 2.1 WHS/OHS risk control measures and workplace 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 Circuits are isolated, as necessary, in accordance with WHS/OHS requirements and workplace procedures
 - 2.4 Fault finding is undertaken methodically applying principles of basic amplifiers and using measured and calculated values of parameters
 - 2.5 Unexpected situations are dealt with safely and with the approval of relevant person/s
 - 2.6 Fault-finding activities are conducted efficiently minimising unnecessary waste of materials, damage to apparatus, the surrounding environment or services applying sustainable energy practices
- 3 Complete work and report on problem-solving activities**
- 3.1 WHS/OHS risk control measures and procedures are applied
 - 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
 - 3.3 Justification for troubleshooting solutions is provided in the required format
 - 3.4 Work completion is reported and relevant 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.

Troubleshooting basic amplifier circuit problems must include at least the following:

- two faults on at least two different types of operational amplifier configurations

Unit Mapping Information

This unit replaces and is equivalent to UEENEEH139A Troubleshoot basic amplifier 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 UEEEC0067 Troubleshoot basic amplifier 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 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
- isolating circuits/machines/systems
- coordinating work with relevant person/s
- determining live testing/measurement requirements
- dealing effectively with unplanned events
- identifying and accessing materials, tools, apparatus and testing devices
- accurately taking measurements and calculating parameters
- applying methodical problem-solving techniques
- providing justification for the solutions to problems
- providing solutions to amplifier circuit problems
- using of engineering terms and formulae
- calculating of gain bandwidth product
- calculating of gain and frequency response
- using engineering formulas for calculating gain and bandwidth
- using and verifying operation of an operational amplifier.

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:

- amplifier terminal characteristics
- basic amplifier principles, including:
 - amplifier types
 - gain bandwidth product

- decibels, engineering terms and formulae
- calculation of gain and frequency response
- measurement of gain and frequency response
- amplifier configurations - inverting, non-inverting; differential; comparator and summing; need for, and effects of, positive and negative feedback in an amplifier circuit
- practical amplifiers
- negative feedback
- relevant manufacturer specifications
- relevant 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.

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 troubleshooting basic amplifiers
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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