



Australian Government

UEEEEC0017 Develop engineering solutions to analogue electronic problems

Release: 1

UEEEEC0017 Develop engineering solutions to analogue electronic problems

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 develop engineering solutions to analogue electronic problems.

It includes preparing to develop engineering solutions for analogue electronic problems; developing engineering solutions for analogue electronic problems; testing, reporting on and implementing engineering solution for analogue electronic problems.

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

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

Pre-requisite Unit

UEEEEC0067 Troubleshoot basic amplifier circuits

Competency Field

Electronics and Communications

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to develop engineering solutions for analogue electronic

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

problems	applied
	1.2 Risk control measures are applied in accordance with workplace procedures prior to commencing work
	1.3 Extent of the analogue electronic problem is determined from performance specifications, situation reports and in consultation with relevant person/s
	1.4 Activities are planned to meet scheduled timelines in consultation with relevant person/s
	1.5 Effective strategies are identified to ensure solution development and implementation is conducted efficiently
2 Develop engineering solution for analogue electronic problems	2.1 Workplace risk control measures and procedures are applied
	2.2 Principles of analogue electronics circuit device operation characteristics and applications are applied to developing solutions to analogue electronic problems
	2.3 Parameters, specifications and performance requirements related to each analogue electronic problem are obtained in accordance with workplace procedures
	2.4 Approaches to resolving analogue electronic problems are analysed to determine most effective solutions
	2.5 Unplanned events are dealt with safely and effectively in compliance with regulatory requirements and enterprise policies
	2.6 Quality of work is monitored against relevant performance measures and/or established organisational or professional standards
3 Test, report on and implement engineering solution for analogue electronic problems	3.1 Solutions to analogue electronic problems are tested to determine their effectiveness and modified where necessary
	3.2 Adopted solutions are recorded in the required format, including implementation instructions and risk controls
	3.3 Relevant qualified person/s required to implement solutions to analogue electronic problems are

coordinated in accordance with regulatory requirements and workplace procedures

- 3.4** Justification for solutions used to solve analogue electronic problems is recorded for inclusion in work/project development records in accordance with professional standards

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.

Developing engineering solutions for analogue electronic problems must include at least the following:

- two analogue electronic problems

Unit Mapping Information

This unit replaces and is equivalent to UEENEEH145A Develop engineering solutions to analogue electronic problems.

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 UEEEC0017 Develop engineering solutions to analogue electronic problems

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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, including the use of risk control measures
- coordinating work with relevant person/s
- dealing effectively with unplanned events
- determining the extent of the analogue electronic problem
- identifying effective strategies for solution development and implementation
- obtaining analogue electronic parameters, specifications and performance requirements appropriate to each problem
- recording implementation instructions for solutions, including risk controls
- reporting justification for solutions implemented in accordance with professional standards
- testing solutions to analogue electronic problems.

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:

- active filters
- advanced power amplifiers
- amplifiers with given piecewise linear transfer characteristics
- classes of power amplifiers and typical maximum efficiencies for each class
- comparator circuits (open loop, limited swing and hysteresis) using operational amplifiers
- differential amplifiers using discrete components (transistors) to meet system objective
- operation and building of precision half-wave and full-wave rectifiers
- operation of each class and type of power amplifier circuit
- operational amplifier circuits
- oscillators

- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant standards, codes and regulations
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- single-stage analogue electronics.

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 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 developing solutions to analogue electronic problems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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