



Australian Government

UEEEEC0024 Diagnose and rectify faults in electronic display circuits

Release: 1

UEEEEC0024 Diagnose and rectify faults in electronic display 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 diagnose and rectify faults in electronic display circuits.

It includes fault finding and repair of faults in cathode ray tubes, liquid crystal and plasma display circuits. It also includes working safely, applying logical diagnostic methods and rectifying faults, safety and functional testing, and completing the necessary service documentation.

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

UEEEEC0070 Troubleshoot faults in television receivers

Competency Field

Electronics and Communications

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to diagnose and rectify electronic display

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

circuit faults	for a given work area are identified and applied
	1.2 WHS/OHS risk control measures and workplace procedures are followed in preparation for the work
	1.3 Safety hazards which have not previously been identified are risk assessed, documented and risk control measures devised and implemented in consultation with appropriate person/s
	1.4 Extent of faults is determined from reports, documentation and discussions with appropriate person/s
	1.5 Appropriate person/s is consulted to ensure the work is coordinated effectively with others involved on the worksite
	1.6 Tools, equipment and testing devices needed to diagnose faults are obtained in accordance with workplace procedures and checked for correct operation and safety
2 Diagnose and rectify electronic display circuit faults	2.1 WHS/OHS risk control measures and workplace procedures for carrying out electronic display circuit work are followed
	2.2 Need to test and measure live work is determined in accordance with WHS/OHS requirements and, as required, conducted in accordance with workplace safety procedures
	2.3 Circuits/machines/plant are checked and isolated in accordance with WHS/OHS requirements and workplace procedures
	2.4 Logical diagnostic methods are applied to diagnose display circuits faults, employing measurements of circuit operating parameters referenced to display operating specifications
	2.5 Suspected fault scenarios are tested as being the source of display circuit problems
	2.6 Faults in the electronic components of the display circuits are rectified to display circuits operation and industry standards
	2.7 Circuits are tested to verify that the display operates as intended in accordance with industry standards and to

		specified requirements
	2.8	Unplanned situations are responded to in accordance with workplace procedures, discussions with appropriate person/s and consistent with job specifications and requirements in a manner that minimises risk to personnel and equipment
	2.9	Diagnosis and rectification activities are carried out efficiently without waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy practices
3	Complete and report fault diagnosis and rectification activities	
	3.1	WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2	Worksite is made safe in accordance with workplace safety procedures
	3.3	Rectification of faults is documented in accordance with workplace procedures
	3.4	Appropriate person/s is notified in accordance with workplace procedures that display circuit faults have been rectified

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.

Diagnosing and rectifying faults in electronic display circuits must include at least the following:

- two circuit faults in two different types of displays

Unit Mapping Information

This unit replaces and is equivalent to UEENEEH176A Diagnose and rectify faults in electronic

display 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 UEEEC0024 Diagnose and rectify faults in electronic display circuits

Modification History

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

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 one occasion and include:

- applying logical diagnostic methods
- using fault scenarios to test the source of circuit faults
- identifying the cause faults using logical diagnostic methods
- rectifying faults effectively
- verifying that the display operates correctly
- documenting fault rectification
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, workplace procedures and practices, including using risk control measures
- applying sustainable energy principles and practices
- connecting test/measuring devices into a circuit in accordance with industry standards.

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:

- electronic displays faults, applying safe working practices and relevant standards, codes and regulations, including:
 - cathode ray tube displays encompassing:
 - operation and characteristics of various types of cathode-ray tubes, including delta, in-line and precision in-line
 - voltages, statics and x-rays around cathode ray tubes
 - set-up and adjustment techniques
 - rear and front projection television systems
 - typical faults
 - plasma displays and their circuit control operation encompassing:
 - advantages of flat panel displays (over conventional cathode ray tubes and raster

- geometry)
- theory of plasma gas discharge and phosphor excitation
- scanning techniques (column/row addressing)
- luminance/colour aspects (the need to re-address pixels to control light output)
- gamma correction considerations (reversal of the gamma correction that is carried out at the television studio to compensate for the non-linearity of light output of a conventional cathode ray tube)
- plasma flat panel construction (and handling)
- liquid crystal displays and the control circuit operation encompassing:
 - principles of transmissive liquid-crystal display (LCD) (as opposed to reflective types)
 - light polarisation (polarisation twisting characteristics of liquid crystal and the need for polarisation filters in display panel)
 - voltage/current requirements and need for electric field
 - fluorescent back light (need for high frequency operation and power requirements)
 - scanning techniques (colour/row addressing and thin film transistors)
 - light attenuation (caused by the many layers/filters the back light has to pass through)
 - construction and handling
- display circuit diagnostics encompassing:
 - sub-system components (i.e. functional blocks) and their operating parameters
 - factors effecting system performance
 - typical faults, their symptoms and cause
 - fault diagnosis procedures and testing
 - sub-system adjustments
- advance electronic measuring instruments encompassing:
 - test/measuring devices and their application: frequency counters and synthesisers, spectrum analysers, noise and distortion meters, and radio frequency (RF) communications service monitor
- connection of test/measuring devices into a circuit encompassing:
 - safety procedures
 - loading and matching
 - storage and delay
 - circuit arrangement of test/measuring devices
- taking and interpreting readings
- notion of decibels, including dBm, dBr, dBu and dBo
- WHS/OHS enterprise responsibilities encompassing:
 - provisions of relevant WHS/OHS legislation
 - principles and practice of effective WHS/OHS management
 - management arrangements relating to regulatory compliance
 - enterprise hazards and risks, control measures and relevant expertise required
 - characteristics and composition of workforce and their impact on WHS/OHS management

- relevance of enterprise management systems to WHS/OHS management
- analysis of working environment and design of appropriate WHS/OHS management systems
- analysis of relevant data and evaluation of WHS/OHS system effectiveness
- assess resources to establish and maintain WHS/OHS management systems
- relevant manufacturer specifications
- 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 simulated suitable 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 diagnosing and rectifying faults in display circuits
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

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