



Australian Government

UEEIC0018 Diagnose and rectify faults in digital controls systems

Release: 1

UEEIC0018 Diagnose and rectify faults in digital controls systems

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 digital controls systems.

It includes preparing, diagnosing and rectifying faults. It also includes completing and reporting fault diagnosis, interpreting diagrams and technical data, applying knowledge of digital systems to logical fault-finding processes, implementing fault rectification, and safety and functional testing.

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

Pre-requisite Unit

Where prerequisite pathways have been identified, all competencies in the Common Unit Group must be have been completed plus all the competencies in one (1) of the identified Pathway Unit Group(s)

Common Unit Group

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

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Electrical Pathway Group

UEECD0020 Fix and secure electrotechnology equipment

UEEEL0003 Arrange circuits, control and protection for electrical installations

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0008 Evaluate and modify low voltage heating equipment and controls

UEEEL0009 Evaluate and modify low voltage lighting circuits, equipment and controls

UEEEL0010 Evaluate and modify low voltage socket outlets circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Instrumentation and Control Pathway Group

UEECD0045 Solve problems in multiple path extra-low voltage (ELV) a.c. circuits

UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals

UEEIC0041 Solve problems in pressure measurement components and systems

UEEIC0038 Solve problems in density/level measurement components and systems

UEEIC0039 Solve problems in flow measurement components and systems

UEEIC0043 Solve problems in temperature measurement components and systems

UEEIC0029 Set up and adjust PID control loops

UEEIC0030 Set up and adjust advanced PID process control loops

UEEIC0048 Verify compliance and functionality of instrumentation and control installations

UEEIC0031 Set up and configure human-machine interface (HMI) and industrial networks

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to diagnose and rectify faults

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 are identified and applied.
- 1.2** Hazards are identified, risks are assessed and control

measures implemented

- 1.3** Safety hazards not previously identified are reported on job safety assessment and advice on risk control measures is sought from relevant person/s
- 1.4** Extent of work is determined from reports, other documentation and discussions with appropriate person/s
- 1.5** Appropriate person/s are consulted to ensure work is coordinated effectively with others
- 1.6** Tools, equipment and testing devices required for diagnosing faults are obtained in accordance with workplace procedures and checked for correct operation and safety

2 Diagnose and rectify faults

- 2.1** WHS/OHS risk control measures and procedures for carrying out the work are followed
- 2.2** Need to test or measure live electrical components is determined in accordance with workplace procedures
- 2.3** Circuits/machines/plant are checked and isolated in accordance with workplace procedures
- 2.4** Logical diagnostic methods are applied to diagnose electronic control system apparatus faults by employing measurements and estimations of system operating parameters
- 2.5** Scenarios are tested as suspected cause of system faults
- 2.6** Fault causes are identified and relevant person/s engaged where fault is outside scope of digital subsystems
- 2.7** Faults in electronic components of control system are rectified
- 2.8** System is tested and verified as operating to specified job requirements
- 2.9** Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- 2.10** Methods for dealing with unplanned situations are selected based on safety and specified work outcomes

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|---|-------------|--|
| | 2.11 | Diagnosis and rectification work activities are performed using sustainable energy principles and practices without wasting materials, damaging apparatus, the surrounding environment or services |
| 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 | Relevant person/s is notified of system fault rectification 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.

Diagnosing and rectifying faults in digital control systems must include at least four of the following faults:

- open circuit
- short circuit
- incorrect or failed connections
- insulation failure
- unsafe condition
- apparatus/component failure
- related mechanical failure

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI139A Diagnose and rectify faults in digital controls systems.

Links

Companion Volume implementation guides are found in VETNet - -

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