



Australian Government

UEEIC0011 Develop electrical integrated systems

Release: 1

UEEIC0011 Develop electrical integrated 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 develop electrical integrated systems.

It includes working safely; analysing and adapting project specifications, device applications and capabilities; system programming methods using diagnostic tools in developing and documenting an electrical integrated system.

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 have been completed plus all the competencies in one (1) of the identified Pathway Unit Group(s)

Common Unit Group

ICTICT203 Operate application software packages

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

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

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

Electrotechnology Pathway Group

UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits

Electrical Pathway Group

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to develop an electrical integrated system

PERFORMANCE CRITERIA

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

- 1.1** Types and locations of loads and control devices are determined from project specifications and customer requirements
- 1.2** Number of control bus networks and current requirements are determined from load calculations for devices
- 1.3** Appropriate placement of system devices in system scheme is determined from bus network power and load parameters whilst maintaining system stability
- 1.4** Integrated system is developed to comply with regulator safety and manufacturer specifications
- 1.5** Number of devices and accessories required for the system is documented using manufacturer title and identification (ID) for each component
- 1.6** Relevant programming and diagnostic tools are downloaded to compatible computer and checked for accurate operation and safety
- 2.1** Hazards are identified, risks assessed and control measures implemented
- 2.2** Modes of programming are applied to developing the electrical integrated system in accordance with manufacturer and programming software instructions
- 2.3** Manufacturer instructions and recommendations are followed when programming system devices to project specifications
- 2.4** Parameters for operation of loads are programmed to project specifications within manufacturer designated range

2 Program integrated system devices

- | | | |
|---|------------|--|
| | 2.5 | Programmed system database is saved and backed up in accordance with manufacturer instructions |
| 3 Load and test electrical integrated system | 3.1 | Work health and safety (WHS)/occupational health and safety (OHS) risk control work measures and workplace procedures are followed |
| | 3.2 | Database of integrated system programs are transferred to the network in accordance with workplace procedures |
| | 3.3 | Integrated system functions are tested for compliance with project and manufacturer specifications |
| | 3.4 | Diagnostic tools are used to locate system faults, defects or anomalies |
| | 3.5 | Defects or anomalies are corrected to comply with project requirements and manufacturer specifications |
| | 3.6 | Integrated system is documented and a copy given to client/representative |

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 electrical integrated systems must include the following:
- six of the following functions:
 - corridor linking
 - direct load control
 - energy saving on dimmers
 - light level maintenance
 - multiple load control
 - panic button
 - passive infrared sensor (PIR) enable/disable
 - restrike delays
 - scenes

- two-way switching
- typical master bedroom
- using more than one programming mode
- transferring a program database to a network and testing functionality
- finding at least five hardware and five software faults

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI141A Develop electrical integrated systems.

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 UEEIC0011 Develop electrical integrated systems

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 appropriate modes of programming to develop the integrated system
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- checking programming and diagnostic tools
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining types and location of loads and control devices
- documenting integrated system and giving to relevant person/s
- downloading programs to network successfully
- following manufacturer instructions and recommendations in programming devices and setting load operating parameters
- inspecting and testing electrical integrated system for compliance
- loading and testing integrated systems
- placing system devices appropriately in the system scheme
- preparing to develop an integrated system
- programming integrated system devices
- saving and backing up programmed system database
- using diagnostic tools to locate and correct system defects, faults and anomalies
- using electrical integrated systems
- using load calculations to correctly determine number of networks and current requirements.

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:

- applications and advantages of integrated systems
- system components, including:

- support devices for control bus supply and control
- support devices for programming, interconnection between networks and integration with third party systems
- types and capabilities of output devices
- lighting dimmer capabilities and selection
- controlling distributed signalling interface (DSI) and communicating with digital addressable lighting interface (DALI) electronic ballasts
- types and capabilities of input devices
- network specifications, including:
 - bus system cable type, polarity, length and acceptable topologies
 - importance of the location of output and input devices and control bus power supplies
 - ensuring control bus stability and multiple network connectivity
 - low voltage (LV) supply, overcurrent and surge protection
- software for system and device programming, monitoring and controlling
- system and device programming, including:
 - addressing conventions for networks, devices, applications, output groups, types of control and outputs, including 'on', 'off', a specific level, and over a specific time
 - personal computer (PC) programming tools and methods, including configuring networks
 - database using addressing tools and objects, function objects, editing, altering and transferring the database to a network
 - importance of project documentation and backup
- system fault-finding processes
- fault finding using multimeters, oscilloscope, system analysers and diagnostic software
- bus networks
- databases
- diagnostic tools
- electrical integrated systems
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes, including risk control measures
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- system components
- interconnections between networks and integration with third-party systems
- types and capabilities of input and output devices
- lighting dimmer capabilities and selection, including controlling DSI and communicating with DALI electronic ballasts.

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

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