



Australian Government

UEEIC0024 Plan the electrical installation of integrated systems

Release: 1

UEEIC0024 Plan the electrical installation of 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 plan the electrical installation of integrated system.

It includes implementing integrated system scenario and installation by determining bus system parameters, topology and installation requirements, bus system cables and terminations, control and dimming methods; and planning and documenting integrated installation plan.

A network topology is the arrangement of a network, including its nodes and connecting lines. In a bus network topology, every workstation is connected to a main cable called the bus.

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

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 Determine integrated system scenario

PERFORMANCE CRITERIA

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

- 1.1** Customer requirements for scenes, events and controls in an integrated system are determined from job specifications and appropriate person/s
- 1.2** Types and locations of integrated system loads are determined from job specifications and customer requirements
- 1.3** Types and locations of control (input) devices of integrated system are determined from job specifications and customer requirements
- 1.4** Budget for the integrated system is determined from customer and appropriate person/s
- 2 Plan integrated system**
 - 2.1** Hazards are identified, risks assessed and control measures implemented
 - 2.2** Integrated system devices and capabilities are incorporated the system plan
 - 2.3** Number and types of output devices to meet scenario specified are chosen for compatibility with system loads
 - 2.4** Number and types of control (input) devices to meet system scenario specified are obtained
 - 2.5** Integrated systems are planned to comply with bus system and supply voltage parameters in accordance with job specifications
 - 2.6** Other control methods are considered in developing an integrated system plan in accordance with workplace procedures
 - 2.7** Integrated systems are planned within cost and budget constraints

	2.8	Final plan is documented and submitted to appropriate person/s for approval in accordance with workplace procedures
3 Implement integrated system installation	3.1	Work health and safety (WHS)/occupational health and safety (OHS) risk control work measures and workplace procedures are followed
	3.2	Integrated system is arranged using appropriate topology in accordance with workplace procedures
	3.3	Connection chart/diagram between devices in the integrated system is developed in accordance with workplace procedures
	3.4	Appropriate cable for the bus system is selected and connected at devices and accessories using the methods and the polarity specified by manufacturer specifications

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.

Electrical installation of integrated systems must include the following:

- three integrated systems one of which has at least four separate scenes and five control requirements

Documentation must include the following:

- explanations of how the customer requirement will be achieved
- a material list with costs and a marked-up floor plan showing relationship of load groups to input device/s

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI140A Plan the electrical installation of 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 UEEIC0024 Plan the electrical installation of 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 relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- arranging an integrated system using an acceptable topology
- complying with a given budget
- complying with manufacturer instructions/specifications
- considering other control methods in planning the integrated system
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining customer requirements for integrated system
- determining scenario specifications including number and types of control systems
- developing a connection chart/diagram
- developing appropriate topology for integrated system
- documenting integrated system plan
- identifying integrated system scenario
- implementing an integrated system installation
- planning installations of integrated system
- planning integrated system to comply with bus system and supply voltage parameters

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:

- acceptable and unacceptable topologies for a single network
- bus system parameters, including:
 - how bus systems work
 - network topology
 - voltage and current limits

- cable type and length limits
- network impedance
- network and device status indication
- low voltage (LV) supply, voltage parameters and quality
- supply sources such as uninterruptible power supplies (UPS) and inverters may adversely effect voltage parameters and waveform
- cabling, including:
 - insulation resistance testing precautions and prohibitions
 - LV cable terminations and conductor size
 - bus cable polarity and pairing, termination requirements and techniques
 - field and enclosure segregation requirements related to related to relevant industry standards
- supply and load protection, including:
 - conductors and protection device coordination
 - protection on supply and load side of system devices
 - use of residual current devices (RCDs)
- output devices, including:
 - relay connections for extra-low voltage (ELV) and LV loads
 - dimmer types
 - supply and load connections for the various dimmer types
- installation requirements for input devices, including:
 - passive infrared detectors
 - light level control
 - key inputs
 - touch screens
- acceptable and unacceptable topologies for a single network
- connection chart/diagrams
- devices and connections for other control methods, including:
 - distributed signalling interface (DSI) and gateway dimming and control
 - devices and connections digital addressable lighting interface (DALI) dimming and control
 - zero to 10 volts analogue control
- installation requirements for input devices
- installations of integrated systems for input devices, including passive infrared detectors, light level control, key inputs, and touch screens
- job specifications and customer requirements
- LV supply, voltage parameters and quality, including supply sources such as UPS and inverters which may adversely affect voltage parameters and waveforms
- manufacturer documentation
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation

processes

- relevant cabling industry standards, including:
 - cable type and length limits, including network impedance
 - how bus systems work and network topology
 - voltage and current limits
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- risk control measures
- supply and load protection
- acceptable and unacceptable topology requirements for a single network.

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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