



Australian Government

UEEEL0057 Plan electrical installations with a low voltage demand up to 400 A per phase

Release: 2

UEEEL0057 Plan electrical installations with a low voltage demand up to 400 A per phase

Modification History

Release 2. Minor change. Typographic error in prerequisites corrected.

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 electrical installation with a low voltage (LV) demand up to 400 ampere (A) per phase.

It includes planning, arranging and identifying resources for an electrical installation. It also includes arrangement of circuits; metering and control; cable route planning; specifying type and rating of switchgear, control gear, protection devices and wiring based on calculated and deemed-to-comply solutions and planning documentation.

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

Pre-requisite Unit

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

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0018 Select wiring systems and cables for low voltage general electrical installations

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

UEEEL0021 Solve problems in electromagnetic devices

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

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan electrical installation

2 Arrange installation circuits, control and metering

PERFORMANCE CRITERIA

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

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|------------|--|
| 1.1 | Work health and safety (WHS)/occupational health and safety (OHS) risk control measures and workplace procedures for carrying out work are followed |
| 1.2 | Nature of the electrical installation is determined from job specifications |
| 1.3 | Safety and regulatory requirements for electrical installation are identified, obtained and applied in accordance with relevant industry standards and safe work practices |
| 1.4 | Electricity tariffs required are discussed with appropriate person/s to determine control and metering needs of the installation |
| 2.1 | Circuits are arranged to ensure safe and functional operation of the installation in accordance with relevant industry standards |
| 2.2 | Circuits are arranged in accordance with relevant industry standards and job specifications |

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| | 2.3 | Control and metering of the installation are arranged in accordance with relevant industry standards and job specifications |
| | 2.4 | Earthing is arranged in accordance with relevant industry standards and energy supplier requirements |
| 3 Identify cables protection and switchgear | 3.1 | Fault levels at relevant point/s of the installation are determined from calculations and/or information from the energy supplier |
| | 3.2 | Wiring systems selected are confirmed as meeting sustainable energy practices and job specifications |
| | 3.3 | Cable conductor sizes are confirmed to meet current-carrying capacity requirements and voltage-drop and fault-loop impedance limitations and short circuit performance |
| | 3.4 | Protection methods and devices are identified to meet coordination requirements for overload and short circuit protection |
| | 3.5 | Switchgear and control gear are identified to meet fault levels, current voltage and ingress protection (IP) ratings and functional requirements |
| | 3.6 | Earthing system components are identified to meet requirements of the earthing system used |
| | 3.7 | Evidence is obtained that electrical equipment selected is in accordance with WHS/OHS and safe work practices |
| 4 Document electrical installation plan | 4.1 | Equipment identified for the installation is documented with supporting calculations in accordance with workplace procedures |
| | 4.2 | Electrical installation is documented in accordance with workplace procedures and forwarded to relevant person/s |

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.

Planning electrical installations with a LV demand up to 400 A per phase must include at least the following:

- a main switchboard current transformer (CT) metering
- multiple tariffs or tenants
- distribution boards - single
- three phase final sub-circuits
- consumer mains
- main earthing system and main switchboard and sub-mains
- earthing system and distribution boards
- final sub-circuits and requirement particular to the installation type

Electrical installations must include at least the following:

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG125A Plan electrical installations with a low voltage demand up to 400 A per phase.

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 UEEEL0057 Plan electrical installations with a low voltage demand up to 400 A per phase

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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 one occasion and include:

- arranging electrical installations to comply with control, metering, safety and other regulatory and functional requirements
- specifying appropriate type and size of cables
- specifying protection methods and devices that meet coordination requirements for overload and short circuit protection
- specifying switchgear and control gear that meet fault level, current, voltage and ingress protection (IP) ratings and functional requirements
- selecting appropriate earthing system components
- documenting installation plan, specifications of equipment, equipment locations, cable routes and schedules and supporting calculations
- arranging electrical installations to comply with control, metering, safety and other regulatory and functional requirements
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- applying sustainable energy practices
- following workplace procedures
- identifying cable protection and switchgear, including:
 - identifying protection methods and devices
 - identifying switchgear and control gear
- planning electrical installations, including applying job specifications.

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:

- low voltage (LV) electrical installations with demand of up to 400 ampere (A) per phase,

including:

- electrical metering arrangements encompassing:
 - purpose, types and applications
 - metering equipment
 - arrangements for metering
- ingress protection rating
- relevant industry standards, including cable protection and switchgear
- relevant manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- 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, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

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