



Australian Government

UEEEL0078 Install and commission whole current electricity meters

Release: 2

UEEEL0078 Install and commission whole current electricity meters

Modification History

Release 2. Updated Elements and Performance Criteria number sequence.

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

This unit replaces and is not equivalent to UEEEL0013 Install, set up and commission interval metering.

Modifications this release include:

- The title has been changed
- Prerequisite requirements amended
- Significant changes have been made to performance criteria to reflect current industry practice
- The Range of conditions has been amended to specify essential operating conditions
- Significant changes have been made to Performance Evidence to reflect current industry practice
- Significant changes have been made to Knowledge Evidence to reflect current industry practice
- Minor amendments made to Assessment Conditions.

Application

This unit involves the skills and knowledge required to the install, configure and commission whole current electricity meters comprised of single-element, multi-element (Multi-Tariff) and polyphase, for measurement of energy for end use consumers.

It includes working safely in accordance with work order and workplace procedures in planning, installing and configuring whole current electricity meters; testing and evaluating integrity and compliance of meter wiring and Main-Earth-Neutral (MEN) systems in accordance with AS/NZS3000; fixing and relocating meters; making power and communication connections; configuring meters and checking functionality; and completing the necessary service metering certificates of completion and documentation.

It also includes performing risk assessments and hazard identification and control for working on or near energised electrical equipment and in confined spaces and potentially asbestos containing materials; performing electrical tests; performing and confirming safe isolation and restoration of electrical supply; communicating with others such as distributors, electricity retailers and meter providers; confirming integrity of metering enclosure; identifying and reporting defects and problems in metering enclosures and associated installation to relevant bodies; and demonstrating knowledge of Meter Installation Authorisation Schemes and national and local metering service and installation rules and requirements.

This unit does not cover installing and commissioning Current Transformer (CT) meters; High Voltage Current Transformer / Voltage Transformer Meters (HVCT/VT meters) – HV metering.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

If this unit is delivered as part of a Certificate III Electrician qualification it should be done concurrent to UEEEL0039 Design, install and verify compliance and functionality of general electrical installations, and final determination of competence only made after completion of UEEEL0039.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations

UETDRRF004 Perform rescue from a live LV panel

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install whole current meter

PERFORMANCE CRITERIA

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

- 1.1** Scope of work activity is confirmed from the work order / instruction, in consultation with supervisor / authorised person
- 1.2** Appropriate electricity meter and enclosure are identified and confirmed in accordance with workplace

procedures

- 1.3** Customer is advised of proposed work and scheduling in accordance with job requirements/specifications and workplace procedures
- 1.4** Work Health and Safety (WHS) / Occupational Health and Safety (OHS) requirements and relevant workplace procedures including de-energising, isolation and energising are identified and implemented
- 1.5** Hazards are identified, risks assessed, and risk control measures and Safe Work Method Statements (SWMS) applied
- 1.6** Switchboard on which the meter is to be installed is inspected and evaluated for compliance with safety and functionality requirements and industry standards
- 1.7** Approval to rectify safety and/or functionality defects identified by visual inspection of the switchboard is sought from relevant person/s in accordance with workplace procedures
- 1.8** Installation and any rectification work is planned and sequenced appropriately in consultation with relevant person/s and in accordance legislative framework
- 1.9** Confirmation that safe isolation of the installation, access to a communication's connection and implementation of any relevant safeguards to associated metering services can be completed in accordance with job requirements is obtained
- 1.10** Resources, materials, tools, equipment and testing devices are obtained and checked for correct operation and safety and against job requirements and specifications in accordance with workplace procedures
- 1.11** Personal Protective Equipment (PPE) is selected, checked and used accordance with workplace procedures

2 Install whole current electricity meter

- 2.1** Need to test or measure live work is determined in accordance with WHS/OHS requirements, workplace procedures and SWMS
- 2.2** Pre installation tests and assessments are carried out, correct meter to be replaced confirmed and information

documented in accordance with workplace procedures

- 2.3** Approval to rectify safety and/or functionality defects identified by testing and assessment is sought from relevant person/s in accordance with workplace procedures
- 2.4** Work activities outside of the limits of own authority and/or qualification are identified, and assistance sought if required in accordance with operating instructions and workplace procedures
- 2.5** Existing meter is isolated by authorised person and checked and tested to confirm 'deenergised' in accordance with workplace procedures and WHS/OHS requirements
- 2.6** Approved rectification work is carried out to comply with industry standards and in accordance with workplace procedures
- 2.7** Meter is installed to comply with relevant technical industry standards, job specifications and workplace procedures and requirements
- 2.8** Meter power and communication connections, and where required communications technology device installation, are made in accordance with manufacturer and job specifications and workplace procedures
- 2.9** Meter is configured and functionality confirmed in accordance with manufacturer specifications and workplace procedures
- 2.10** Work progress is monitored against the approved pre-start risk assessment (workplan) and adjustments to the plan made, as required, in accordance with workplace procedures
- 2.11** Test procedures are performed to establish and confirm a neutral integrity test point (NITP), integrity of MEN, phase rotation where applicable, and main earth connections in accordance with workplace procedures
- 2.12** Ongoing checks of the quality of installation are undertaken in accordance with workplace procedures
- 2.13** Installation is carried out efficiently without unnecessary waste of materials or damage to apparatus circuits, the surrounding environment or services using

sustainable energy principles

- 2.14** Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment

3 Complete meter installation activity and report completion of work

- 3.1** WHS/OHS work completion risk control measures and workplace procedures are followed
- 3.2** Supply is reinstated 'energised' to the installation in accordance with workplace procedures
- 3.3** Final inspection and tests are made to ensure the installation conforms to job requirements and workplace procedures
- 3.4** Worksite and tools are cleaned and made safe, and waste disposed of, in accordance with workplace procedures
- 3.5** Where required, hazardous waste is removed and disposed of in accordance with regulatory requirements and workplace procedures
- 3.6** Final visual inspection of installation and work area is performed to ensure the work site is left clean of any hazardous materials or substances in accordance with workplace procedures
- 3.7** 'As-installed' meter or rectification work is documented, and appropriate person/s notified in accordance with workplace procedures
- 3.8** Installation and certification compliance report/s and other documentation is updated and submitted, as required, in accordance with workplace procedures
- 3.9** Work supervisor or authorised person/s notified of completion of work and the completion of activity is documented in accordance with the pre-start risk assessment (workplan)
- 3.10** Metering installation work outcomes, configurations and completion of work is communicated to the customer 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.

Installing and commissioning whole current electricity meters must include all the following meter types:

- single element bi-directional whole current electricity meters
- multi-element (Multi-Tariff) whole current electricity meters
- meters with internal load control switching
- three-phase whole current electricity meters

Connections of metering equipment must include:

- arrangement of meter neutrals, and neutral and active links in accordance with jurisdictional requirements
- electricity supply

Unit Mapping Information

This unit replaces and is not equivalent to UEEEL0013 Install, set up and commission interval metering.

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 UEEEL0078 Install and commission whole current electricity meters

Modification History

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- Prerequisite requirements amended
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- Minor amendments made to Assessment Conditions.

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 and workplace procedures and practices, including:
 - completing risk assessment and implementing risk control measures
 - inspecting and evaluating safety and functionality compliance of the switchboard
 - identifying and eliminating hazards such as Asbestos Containing Materials (ACMs)
 - producing draft pre-start risk assessment (workplan) including any rectification work and need for issuance of Safe Work Method Statements (SWMS)
- completing all work in accordance with relevant workplace procedures, industry standards, manufacturer specifications and regulation
- communicating with customers about metering installation work outcomes, planned interruption notification work on accordance with required legislative framework, and configurations completion of work schedule
- carrying out required pre and post installation tests and assessments
- installing, configuring and commissioning whole current electricity meters

- installing communication connection devices
- rectifying compliance defects
- reinstating supply to the installation safely
- performing final inspection and tests to ensure installed meter conforms to work order and job requirements
- cleaning and making safe work area and tools and removing and disposing of consumable items and waste materials including meters and any hazardous substances
- conducting final visual checks of the meter installation activity and work area to ensure the work site is left clean of any potential hazards or inappropriate materials
- completing and submitting installation compliance certification and documentation and reporting meter installation completion of work activities to relevant person/s
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment.

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:

- the contestable market and market participants overview:
 - purpose of a contestable market
 - market participants and their roles and responsibilities encompassing electricity retailers
 - reasons for meter and the regulated market
 - regulatory timeframes (AER)
 - regulatory framework
- relevant WHS/OHS legislated and regulation requirements including:
 - identifying hazards at customers premises
 - identifying hazards at electrical switchboards
 - identifying known electrical design hazards
 - performing site specific risk assessment
 - carrying out job safety assessments and/or risk mitigation processes
 - implementing critical controls including PPE
 - principles of duty of care responsibilities
 - risks and hazards of working on or near live electrical equipment and conductors
 - risks associated with testing or measuring live
 - risks associated with lifting and shorting CT circuits, opening slides on test blocks, CATIV connectors to test equipment
 - safeguards for potential fault currents
 - safeguards potential arc flash and arc flash burns
 - safeguards of potential risks with other services (e.g. gas meters)
- hazards and mitigation requirements of Asbestos Containing Materials (ACMs), including:

- ACMs code of practice
- identifying ACMs
- meters containing ACMs
- other components ACMs
- drilling, removal, disposal, and decontamination
- hazards and mitigation requirements of other potential hazardous materials and substances in metering installation work
- isolation requirements and risks, including:
 - isolating customer load via m/s or rewirable fuse
 - isolating supply to meter via SPD / MPD / MIL
 - confirming isolated – proving safe to work
- whole current electricity meter concepts and installation, including:
 - purpose, types and applications
 - single and polyphase (multi-element) meters
 - classes of meter types (e.g. integrated, Whole Current [WC], functions (e.g. controlled load, net and gross as well as those with internal load control switching), and typical construction and associated risks
 - relevant state/territory regulator whole current electricity meter commissioning requirements and specifications
 - communication methods and arrangements as well as:
 - segregation and dangers of exposure to conductive parts
 - configuration techniques and practices
 - communications technology devices (e.g. antenna/transmitter)
 - installing communications technology devices and cables in the proximity of LV conductors, mountings and routing cables
 - performance verification and rectification of communication problems
 - importing and exporting energy incorporating power and energy difference
 - installation and power connection arrangements and segregation with gas metering
 - procedures for configuring meter parameter
- current industry practices and technologies, including:
 - scope for meter installer
 - managing defects
 - meter reading
 - meter disposal (including identified Asbestos Containing Materials (ACMs) meters)
 - metering details (administration)
 - communications technology device and cabling installation
 - planned interruptions notification and network isolations
- standard wiring configurations, including:
 - single phase
 - single phase with Communication Links (CL)

- three-phase
- three-phase with Communication Links (CL)
- net generation
- gross generation
- meter layouts and requirements as determined by meter providers
- non-standard configurations (e.g. ANNA – looped neutral – multiple occupancy; rural – multiple meter locations, SWER systems; network load control devices; direct supply to metering; embedded networks)
- electrical testing techniques and practices, including:
 - test methods and pre-test calibration of test equipment
 - types of electrical tests including live tests
 - pre and post work tests
 - polarity and neutral tests
 - phase rotation
 - MEN integrity tests
 - pre energisation tests
 - equipment integrity tests
- facilities for the installation of metering equipment including:
 - seals or locks to metering equipment
 - local jurisdictional rules and procedures related to Service Protection Device/s (SPD) / Meter Protection Device/s (MPD) / Meter Isolation Link (MIL)
 - meter equipment panel
 - meter equipment components
 - metering equipment enclosure
 - physical protection and segregation of metering equipment
 - meter equipment enclosure fixing requirements
 - metering equipment fixing requirements
 - isolated and unattended locations and locking of metering enclosures
- location and accessibility of metering equipment for different types of premises
- documentation including:
 - Australian standards (e.g. wiring rules), codes of practice
 - National Electricity Law
 - Meter Installation Authorisation Schemes
 - meter provider rules
 - rules or Service and Installation Rules (SIRs)
 - planned legislative interruption notification framework - National Energy Customer Framework (NECF) guidelines
 - customers' electricity retailer provider certificates of compliance or completion
 - work orders and job requirements
 - Safe Work Method Statements (SWMS)

- labelling of metering equipment and metering installation components
- workplace procedures encompassing meter equipment and installation pre-start risk assessment (workplan)
- manufacturer specifications
- communicating technical information including requirements for:
 - liaising with customers
 - liaising with retailers
 - liaising with supervisors and/or authorised persons
 - resolving interruptions and complaints.

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 suitable 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, facilities, equipment and personal protective equipment (PPE) currently used in industry
- resources used should reflect current industry practices in relation to installing and setting up interval meters
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

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