



Australian Government

**Assessment Requirements for UEEEC0072
Troubleshoot microcontroller-based
hardware systems**

Release: 1

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Modification History

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

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 (WHS/OHS) requirements, workplace procedures and practices, including using risk control measures
- applying sustainable energy principles and practices
- calculating parameters correctly and accurately
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- providing solutions to microcontroller component/circuit problems
- providing written justification for the solutions to problems
- taking measurements correctly and accurately
- using an industry standard programming environment to load, test and debug code
- using methodical problem-solving methods
- using a microcontroller's internal communications peripherals to communicate with a secondary device, including microcontroller, computer and/or sensor.

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:

- dealing with intermittent faults
- electronic fault-finding techniques and fault identification techniques
- fault-finding methods, including visual inspection, sectional testing, split-half tests and component isolation
- input/output (I/O) ports: analogue/digital
- integrated peripherals, including timers, interrupts, hardware multiplier, internal oscillators, comparators, analogue to digital converter's (ADC's) and digital to analogue converter's (DAC's), pulse width modulation (PWM) modules and serial ports
- interfacing different logic level voltages in a microcontroller circuit

- microcontroller-based systems troubleshooting
- microcontroller internal peripheral communication circuitry and associated hardware and protocols (examples include but not limited to recommended standard 232 (RS-232), I²C, SPI, and 1 wire)
- microcontroller systems, including:
 - digital systems concepts associated with microcontroller-based systems
 - microcontroller architecture
 - microcontroller instruction set
 - microcontroller manufacturers
 - microcontroller system block diagram
- relevant data storage types
- relevant job safety assessments or risk mitigation processes
- relevant logic level standards
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- reset circuit
- system clock circuitry.

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 that reflect current industry practices in relation to fault finding microcontroller-based hardware
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

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