



Australian Government

UEEIC0031 Set up and configure human-machine interface (HMI) and industrial networks

Release: 1

UEEIC0031 Set up and configure human-machine interface (HMI) and industrial networks

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 set up and configure human-machine interface (HMI) and industrial networks.

It includes preparing the process control schemes that meet safety and process requirements, and selecting control equipment and interconnecting cabling and tubing/piping based on calculated and measured arrangements.

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

UEECD0043 Solve problems in direct current circuits

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

UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals

UEEIC0041 Solve problems in pressure measurement components and systems

UEEIC0038 Solve problems in density/level measurement components and systems

UEEIC0039 Solve problems in flow measurement components and systems

UEEIC0043 Solve problems in temperature measurement components and systems

UEEIC0029 Set up and adjust PID control loops

UEEIC0030 Set up and adjust advanced PID process control loops

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

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

1 Prepare to set up and configure HMI and industrial networks

- 1.1** Scope of the control system is determined from job specifications
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for the control system are identified, obtained and applied
- 1.3** Control apparatus and interconnecting components required for control system are arranged and determined from job specifications and in accordance with process control systems and relevant industry standards

2 Set up and configure HMI and industrial networks

- 2.1** Manufacturer specifications and limitations of relevant control apparatus is sought and comparisons made with process parameters and control requirements in accordance with job specifications
- 2.2** Control apparatus is selected in accordance with compatibility with process parameters, control requirements and relevant environmental conditions
- 2.3** Specified apparatus ingress protection (IP) rating is sought from manufacturer specifications, as required
- 2.4** Control valves are selected in accordance with percentage travel flow and loop-and-process characteristics, optimum size, range ability, ability to cope with process pressures and relevant environmental conditions

3 Select interconnecting cabling and tubing/piping

- 3.1** Control cabling and configuration are selected in accordance with relevant environmental conditions and interconnection requirements
- 3.2** Tubing/piping and accessories are sized to capacity and pressure requirements in accordance with job specifications
- 3.3** Route lengths of cable and tubing/piping are determined from site drawings in accordance with job specifications

- 3.4** Process control system is arranged and specifications for all selected items are 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.

Setting up and configuring HMI and industrial networks must include the following:

- at least two process control systems with:
 - more than one input
 - more than one final control element

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI113A Set up and configure human-machine interface (HMI) and industrial networks.

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 UEEIC0031 Set up and configure human-machine interface (HMI) and industrial networks

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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
 - using risk control measures
- comparing process parameters and control requirements with the control apparatus
- determining control apparatus and interconnecting components required for control system
- determining the scope of the control system
- documenting control system arrangement and specifications for items selected
- preparing to set up and configure human-machine interface (HMI) and industrial networks
- seeking specified apparatus ingress protection (IP) rating from manufacturer specifications
- selecting control valve in accordance with workplace procedures and relevant industry standards
- selecting interconnecting cabling and tubing/piping
- setting up and configuring HMI and industrial networks.

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:

- analogue and digital signals
- distributive control principles (DCS)
- purpose and application of control system networks
- relevant apparatus IP rating
- relevant HMI and industrial networks
- relevant industry process control systems
- relevant interconnecting cabling and tubing/piping
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications and operating instructions

- relevant process parameters and control requirements
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace instructions, policies and procedures
- telemetry components
- telemetry installation
- telemetry overview
- telemetry systems.

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 and equipment currently used in industry
- resources that reflect current industry practices in relation to setting up and configuring HMI and industrial networks
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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