

Title	Demonstrate knowledge of industrial process control		
Level	4	Credits	2

Purpose	<p>This unit standard covers the basic concepts of the control of industrial processes, and is intended for people in the electrical and related trades.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of common transducers; – demonstrate knowledge of open-loop and closed-loop control; and – demonstrate knowledge of control actions and three-term controllers.
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Classification	Electrical Engineering > Core Electrical
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Available grade	Achieved
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Explanatory notes

- 1 This unit standard has been developed for learning and assessment off-job.

- 3 Definitions

Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.

Safe and sound practice – as it relates to the installation of electrical equipment is defined in AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*.

- 2 Assessment
 - a Candidates may refer to current legislation and Standards during assessment.
 - b Demonstration of safe working practices and installation in accordance with *safe and sound practice* are essential components of assessment of this unit standard.
 - c All activities and evidence presented for all outcomes and evidence requirements in this unit standard must be in accordance with:
 - i legislation;
 - ii policies and procedures;
 - iii ethical codes;
 - iv Standards – may include but are not limited to those listed in Schedule 2 of the Electricity (Safety) Regulations 2010;
 - v applicable site, enterprise, and industry practice; and,
 - vi where appropriate, manufacturers’ instructions, specifications, and data sheets.

Outcomes and evidence requirements

Outcome 1

Demonstrate knowledge of common transducers.

Evidence requirements

1.1 Identify and describe transducers in terms of their function and principles of operation and state at least one application for each.

Range may include but is not limited to – photo-diode, solar cell, thermocouple, resistance thermometer, strain gauge, piezo-electric device, float switch, capacitive level transducer, pulse disc, tachogenerator.
Evidence of ten is required.

1.2 State standard control signal ranges used for process control in terms of voltage, current, and pressure.

Outcome 2

Demonstrate knowledge of open-loop and closed-loop control.

Evidence requirements

2.1 Define control terms.

Range may include but is not limited to – comparator, set point value, feedback, deviation, gain, final control element, controlled variable, measuring element, proportional offset.
Evidence of nine is required.

2.2 Describe open-loop control and closed loop control with the aid of a block diagrams.

2.3 Describe the features of closed-loop control systems in terms of measuring, comparing, and adjusting.

2.4 State the advantages of closed-loop control over open-loop control for common control processes in terms of level, temperature, and motor speed.

Outcome 3

Demonstrate knowledge of control actions and three-term controllers.

Evidence requirements

3.1 Explain the objectives of good control systems in terms of low offset, fast response, stability.

3.2 Describe types of control action with the aid of process response diagrams.

3.3 Describe the operation of the three-term controller with the aid of block diagram.

Replacement information	This unit standard replaced unit standard 1711 and unit standard 2026.
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Planned review date	31 December 2019
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	10 February 1999	31 December 2013
Review	2	26 May 2005	31 December 2021
Rollover and Revision	3	15 March 2012	31 December 2021
Revision	4	15 January 2014	31 December 2021
Review	5	21 July 2016	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.