Title	**Demonstrate knowledge of and build circuits using digital electronic devices that interface with ADC and DAC functions**		
Level	**3**	**Credits**	**3**

Purpose	This unit standard is intended for use in a senior secondary school environment, pre-employment electronics courses, or electronics technicians. People credited with this unit standard are able to: – demonstrate knowledge of and build circuits using digital electronic devices that interface with ADC and DAC functions.

Classification	Electronic Engineering > Electronics Technology

Available grade	Achieved, Merit, and Excellence

Criteria for Merit	The candidate must provide an in-depth description of analogue to digital conversion, provide three examples of practical applications, and give reasons why the conversion is needed in these applications.

Criteria for Excellence	The candidate must provide a comprehensive description of analogue to digital conversion that includes three different techniques used in practical applications, and their advantages and disadvantages.

Guidance Information

1 This unit standard can be awarded with Achieved, Merit, or Excellence. For the Achieved grade to be awarded, the outcome must be achieved as specified in the outcome statement. For Merit or Excellence to be awarded, the candidate must meet the Merit or Excellence criteria specified above.

2 Definitions
ADC – analogue-to-digital conversion.
DAC – digital-to-analogue conversion.
Digital electronic devices – integrated circuits with discrete functions such as buffer, inverter, monostable, astable, Schmitt trigger, half-adder, decoder/driver, JK-flipflop.

3 References
Health and Safety at Work Act 2015;
Safety in Technology Education – A Guidance Manual for New Zealand Schools,

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available from https://technology.tki.org.nz/Technology-in-the-NZC/Safety-in-Technology-Education;
and all subsequent amendments and replacements.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of and build circuits using digital electronic devices that interface with ADC and DAC functions.

Performance criteria

1.1 Describe the operation and practical application of digital electronic devices.

Range operation includes – input, output, process;
evidence of four devices is required.

1.2 Demonstrate knowledge of the operation of ADC and DAC circuits and analogue to digital conversion.

Range includes but is not limited to – three-bit ADC circuit, three-bit DAC circuit, difference between analogue and digital information.

1.3 Describe analogue-to-digital and digital-to-analogue converts in terms of a practical application.

1.4 Construct circuits to demonstrate how digital devices can be linked to ADC or DAC functions.

Range discrete components or programmed microcontroller circuits.
evidence of four digital electronic devices in one or more circuits is required.

Replacement information	This unit standard replaced unit standard 19744.

Planned review date	31 December 2025

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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 April 2010	31 December 2012
Review	2	15 April 2011	31 December 2024
Rollover and Revision	3	15 March 2012	31 December 2024
Revision	4	15 January 2014	31 December 2024
Rollover	5	27 January 2015	31 December 2024
Review	6	24 June 2021	N/A

Consent and Moderation Requirements (CMR) reference	0003

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

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.

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