

Title	Demonstrate knowledge of generic electronic products or systems for electronics technicians		
Level	4	Credits	10

Purpose	<p>This unit standard is intended for electronics technicians who are responsible for the diagnosis and repair of generic electronic products or systems.</p> <p>People credited with this unit standard are able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> – technology employed in generic electronic products or systems; and – equipment associated with electronic products or systems.
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Classification	Electronic Engineering > Core Electronics
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 Definitions
 - a.c.* – alternating current.
 - CNC* – computer numerical control.
 - CPU* – central processing unit.
 - d.c.* – direct current.
 - DMI* – desktop management interface.
 - DVI* – digital visual interface.
 - HDMI* – high-definition multimedia interface.
 - IEEE* – Institute of Electrical and Electronics Engineers.
 - IR* – infra-red.
 - SCADA* – supervisory control and data acquisition.
 - USB* – universal serial bus.
- 3 References
 - Electricity Act 1992;
 - Electricity (Safety) Regulations 2010;
 - Health and Safety in Employment Act 1992 and associated regulations;
 - and all subsequent amendments and replacements.

- 4 Range
- a Generic electronic products or systems may include but are not limited to – broadcast radios, audio amplifiers, programmable logic controllers, variable frequency drives, industrial control systems, CNC controllers, mobile data terminals, televisions and satellite receivers, audio recorders, analogue and digital video recorders, data projectors, electronic game consoles, and compact disc players.
 - b All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with legislation, policies, procedures, ethical codes, Standards, applicable site and enterprise practice, and industry practice; and, where appropriate, manufacturers' instructions, specifications, and data sheets.
- 5 Recommended skills and knowledge:
Unit 19747, *Demonstrate and apply fundamental knowledge of microcontrollers*, or demonstrate equivalent knowledge and skills.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of technology employed in generic electronic products or systems.

Range evidence of two different generic electronic products or systems is required.

Performance criteria

- 1.1 Electronic product or system functions are described with reference to block diagrams.
- 1.2 Function and theory of operation of each block is explained.
- 1.3 Expected signals and voltages in each block are stated.
- 1.4 Circuit block interfaces are outlined and the nature of the interface signals is identified.
- 1.5 Typical symptoms for given fault conditions are described in terms of expected changes in signals and voltages attributable to the fault.
- 1.6 The use of test equipment to take measurements and perform adjustments is explained.
- 1.7 Main functions of the CPU in the electronic products or systems identified are described.
- 1.8 The functions of software imbedded in electronic products or systems are described.

- 1.9 Software adjustments that are available to modify product performance are described.
- 1.10 Hazards associated with servicing electronic products or systems are identified and their safe management is described.

Outcome 2

Demonstrate knowledge of equipment associated with electronic products or systems.

Range associated equipment may include but is not limited to – hard wired remote controls, wireless remotes, amplifiers, hydraulic systems, pneumatic systems, motors, distribution systems, external storage devices; evidence of two different associated products or systems is required.

Performance criteria

- 2.1 The operation of equipment associated with the electronic products or systems is described with the aid of circuit diagrams.
- 2.2 The method of interfacing associated equipment with electronic products or systems is described.
- 2.3 Features and specification of the interfaces between the associated equipment and electronic products or systems are described.
- 2.4 Human interface systems are described in terms of type, user friendliness, and reliability.
- 2.5 Theory of operation of common interfacing methods used with the associated equipment is described in terms of method and expected data transfer.
- Range may include but is not limited to – serial communications, parallel communications, SCADA, HDMI, DVI, IR communications, USB, IEEE 1934 interface, d.c. voltage control, a.c. voltage control, variable frequency control; evidence of two types of interface is required.
- 2.6 Expected measurements at given points of the associated equipment are described.
- 2.7 Typical symptoms for given fault conditions are described.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 July 2011	31 December 2024
Review	2	25 May 2023	31 December 2024

Consent and Moderation Requirements (CMR) reference

0003

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