

Title	Demonstrate fundamental knowledge of external communication concepts relevant to electronic security services		
Level	3	Credits	4

Purpose	<p>This unit standard covers elementary knowledge of external communications for electronic security installers.</p> <p>People credited with this unit standard are able to demonstrate fundamental knowledge of:</p> <ul style="list-style-type: none"> – telecommunications concepts in terms of electronic security services; – operation and use of telecommunications networks and systems relevant to electronic security services; and – the operation of electronic security system communications paths.
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Classification	Electronic Engineering > Electronic Security
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been designed for learning and assessment off-job.
- 2 Definitions
 - DTMF* – dual tone frequency modulation.
 - GSM* – global system for mobile.
 - GPRS* – general packet radio service.
 - IP* – internet protocol.
 - LAN* – Local Area Networks.
 - PABX* – Private Automatic Branch Exchanges.
 - PCS* – personal communications systems.
 - PSTN* – Public Switched Telephone Network.
 - WAN* – Wide Area Networks.
- 3 References – Specific to Electronic Security Industry
 - New Zealand Security Association (Inc), *Code of Practice for Alarm Monitoring Centres*, 2007;
 - New Zealand Security Association (Inc), *Code of Practice for Closed Circuit Television Surveillance Systems*, 2006;
 - New Zealand Security Association (Inc), *Code of Practice for Electronic Access Control*, 2008;
 - New Zealand Security Association (Inc), *Code of Practice for Intruder Alarm Systems*, 2007;

AS/NZS 2201.1:2007, *Intruder alarm systems – Client's premises – Design, installation, commissioning and maintenance*;
 AS/NZS 2201.5:2008, *Intruder alarm systems – Alarm transmission systems*;
 NZS 4301.3:1993, *Intruder alarm systems – Detection devices for internal use*;
 NZS/AS 2201.2:1992, *Intruder alarm systems – Central stations*;
 NZS/AS 2201.4:1990, *Intruder alarm systems – Wire-free systems installed in client's premises*;
 and all subsequent amendments and replacements.

References – General to Electronic Security Industry

Building Act 2004;

Electricity (Safety) Regulations 2010;

Health and Safety in Employment Act 1992;

Health and Safety in Employment Regulations 1995;

Private Security Personnel and Private Investigators Act 2010 Privacy Act 1993;

AS/NZS 3000:2007, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*;

NZS 4512:2010, *Fire detection and alarm systems in buildings*;

NZS 4514:2009, *Interconnected smoke alarms for houses*;

Telecommunications Act 2001;

Local territorial authority requirements;

and all subsequent amendments and replacements.

- 4 Guidelines for connection of intruder alarm systems to telephone lines are contained in *Access Standards Newsletters* issued periodically by Telecom NZ Ltd, available from www.telepermit.co.nz.
- 5 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 and standards, and industry practice; and where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and performance criteria

Outcome 1

Demonstrate fundamental knowledge of telecommunications concepts in terms of electronic security services.

Performance criteria

- 1.1 Elementary concepts of telecommunications are described in simple non-mathematical terms and with reference to their relevance to electronic security services.

Range	concepts – sound, frequency, wavelength, bandwidth, frequency spectrum, modulation, demodulation, attenuation, analogue, digital bits and bit rates.
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- 1.2 The transmission media employed in telecommunications are described with reference to general characteristics, structure, and applications.
- Range transmission media – unshielded twisted pair, data cable, coaxial cable, fibre optic cable, microwave systems, cellular radio, wired and wireless networks for LANs, UHF/VHF Radio.
- 1.3 Basic components and concepts of a data network are described with reference to the operation of the network.
- Range components – computer, file server, modem;
concepts – channel access and collision avoidance; bus, ring, and star topologies.

Outcome 2

Demonstrate fundamental knowledge of the operation and use of telecommunications networks and systems relevant to electronic security services.

Performance criteria

- 2.1 The PSTN is described in terms of its operation and the services provided.
- Range switching plan and topology, PABX, bandwidth limitations.
- 2.2 Network concepts and services are described in terms of their operation, the services provided, and the key features of each in terms of electronic security services.
- Range data network services – leased data services, packet switch network;
radio network services – mobile radio, cellular network, PCS;
computer networks – LANs, WANs, Internet.
- 2.3 The principles of digital multiplexing are outlined.
- Range analogue-digital conversion, sampling, time division multiplexing, demultiplexing, digital-analogue conversion.
- 2.4 Data communication over the PSTN is described in terms of electronic security services applications.

Outcome 3

Demonstrate fundamental knowledge of the operation of electronic security system communications paths.

Performance criteria

3.1 The operation of a simple monitored security alarm system is explained with the aid of a diagram and with reference to components, signalling, and the transmission of data.

Range components – dialler, alarm receiver, transmission formats, Contact ID, handshakes, kiss off, tone and pulse signalling, DTMF, line seizure, ringing, automation systems, PABX.

3.2 The operation of a simple data modem is explained in respect to remotely programming an electronic security system, with the aid of a diagram, and with reference to components, signalling methods, and the transmission of data.

Range upload/download, fax bypass, baud rate, bandwidth, modem strings.

3.3 The operation of dual path and wireless backup communication methods are explained with the aid of a diagram and with reference to components signalling methods, and the transmission of data.

Range radio backup, cellular backup, GSM, GPRS, contact ID capture, IP monitoring, polled networks, encryption, anti-substitution, firewall.

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	19 November 2010	31 December 2021
Revision	2	17 June 2011	31 December 2021
Review	3	24 January 2019	31 December 2021

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>.