Title	**Demonstrate knowledge of installation practices and procedures for customer premises systems**		
Level	**3**	**Credits**	**5**

Purpose	This unit standard covers the knowledge requirements for the installation of basic extra low voltage and low voltage customer premises systems cabling, equipment, systems, and services. People credited with this unit standard are able to demonstrate: – basic knowledge of cabling and cable support installation practice of customer premises systems; – knowledge of installation requirements for customer premises systems equipment; – basic knowledge of power systems used in customer premises systems installations; and – knowledge of commissioning customer premises systems installations.

Classification	Electrical Engineering > Electrotechnology

Available grade	Achieved

Guidance Information

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

2 References
AS/NZS ISO/IEC 15018:2019, *Information technology - Generic cabling for homes*;
AS/NZS 3000:2007– *Electrical installations (known as the Australia/New Zealand Wiring Rules)*;
AS/NZS 3080:2013, *Information technology - Generic cabling for commercial premises*;
TIA/EIA-568A – Commercial Building Wiring Standard;
Building Act 2004;
Electricity Act 1992;
Electricity (Safety) Regulations 2010;
Health and Safety at Work Act 2015;
Telecommunications Act 2001;
Resource Management (National Environmental Standards for Telecommunication Facilities) Regulations 2016;
Local Body regulations;

Telecommunications Carriers' Forum *Code for Residential, SOHO and Multi-dwelling Premises Wiring (Premises Wiring Code of Practice)* (2011) available at https://1library.net/document/zp7jv37z-telecommunications-carriers-residential-dwelling-premises-wiring-premises-practice.html;
and all subsequent amendments and replacements.

3 Definitions

ac – alternating current.
Basic knowledge – employing some operational and theoretical knowledge of the subject matter to interpret available information.
CPE – Customer Premises Equipment.
dc – direct current.
EME – Electromagnetic Emissions.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.
UPS – uninterruptable power supply.

4 Range

All activities and evidence presented for all outcomes and performance criteria 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, manufacturer instructions, specifications, and data sheets.

5 Assessment

a Evidence for this unit standard may be demonstrated through either knowledge assessment or practical assessment. The use of diverse forms of evidence in assessment against this unit standard is encouraged.
b The assessment of this unit standard must be related to the candidate's area of workplace practice, and must be completed within industry acceptable time frames.

Outcomes and performance criteria

Outcome 1

Demonstrate basic knowledge of cabling and cable support installation practice of customer premises systems.

Performance criteria

1.1 Explain suitability of common cables for a given application.

Range cables − copper, coaxial cable, fibre, waveguide;
applications may include but are not limited to − CPE, broadcasting, radio systems, home automation system, TV reception systems, home networks, signals and communications;
evidence of two cable types across four applications is required.

1.2 Explain colour coding or labelling, used to identify cables or cable pairs, in cabling.

Range copper, coaxial cable, fibre, waveguide;
evidence of two cable types across four applications is required.

1.3 Explain termination methods for common cables including any specialist tools that are required.

Range cables – copper, coaxial cable, fibre, waveguide;
terminations may include but are not limited to – wire wrap, solder, crimp, DB connectors, insulation displacement connectors, co-axial connectors, RJ connectors, fibre connectors, fibre fusion splicing;
evidence of two cable types across four applications is required.

1.4 Explain methods employed to join cables and their limitations.

Range copper, coaxial cable, fibre, waveguide.

1.5 Explain cable support systems installation practices.

Range support systems – cable tray, ladder rack, trunking, conduit, catenary wire, aerial support systems, wiring looms, bus systems;
mounting hardware – fittings, fixtures, fastenings.

1.6 Explain management practices for cable support systems.

Range support systems – cable tray, ladder rack, trunking, conduit, aerial, buried;
management practice – bend radius, securing, grounding, bonding, labelling, separation of services, diversity routes, cable handling techniques.

Outcome 2

Demonstrate knowledge of installation requirements for customer premises systems equipment.

Performance criteria

2.1 Identify suitability of frames, cabinets, and/or boards for a given application.

Range may include but is not limited to – cabinets, racks, frames, distribution boards, gateways, network rack, construction, seismic suitability, suitability for loads.

2.2 Explain equipment installation practices.

Range locations – equipment room and/or closet, patch-panels, cabinets, pedestals;
mounting methods – wall mount, pole mount, plinth, rack mount;
other considerations – electrical isolation, dissimilar metals, seismic suitability, dust control during installation.

Outcome 3

Demonstrate basic knowledge of power systems used in customer premises systems installations.

Performance criteria

3.1 Explain types of power systems and their purpose in terms of installations.

Range dc power, ac power, battery backup, renewable energy, inverters, UPS.

3.2 Identify protection devices used in installations and their application.

Range earthing, circuit breakers, fuses, thermal overloads, surge protection, lightning protection, static protection.

3.3 Explain termination methods for extra-low voltage power cables.

Range pillar and post, crimp lug, terminal blocks, polarity, plug and socket.

Outcome 4

Demonstrate knowledge of commissioning customer premises systems installations.

Performance criteria

4.1 Identify reasons for performing commissioning tests.

Range safety, performance, harm to equipment, damage to cabling, incorrect function, compliance, warranties.

4.2 Explain common commissioning testing.

Range visual inspections, polarity, functional tests, end to end tests, remote control access.

4.3 Identify information required before handover of installation.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	14 December 2017	31 December 2024
Review	2	2 March 2023	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 Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihangaararau.nz if you wish to suggest changes to the content of this unit standard.