Title	**Describe polarity and phasing tests on electricity supply networks**		
Level	**4**	**Credits**	**3**

Purpose	People credited with this unit standard are able to: describe polarity tests in LV systems, and describe phasing tests in LV and HV installations and works.

Classification	Electricity Supply > Electricity Supply - Core Skills

Available grade	Achieved

Guidance Information

1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable industry and legislative requirements.

2 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of the Health and Safety at Work Act 2015; Electricity Act 1992; Electricity (Safety) Regulations 2010; and any subsequent amendments and replacements; Electricity supply industry codes of practice and documented enterprise procedures, including *Safety Manual – Electricity Industry* (SM-EI) (2015) Wellington: Electricity Engineers' Association, available from www.eea.co.nz.

3 Definitions
AC means alternating current.
Asset owner refers to a participant who owns or operates assets used for generating or conveying electricity.
HV is defined as high voltage and includes voltages greater than 1000 volts AC.
Industry requirements include all asset owner requirements; manufacturers' specifications; and enterprise requirements which cover the documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
LV is defined as low voltage and includes voltages exceeding 50 volts AC but not exceeding 1000 volts AC.

Outcomes and performance criteria

Outcome 1

Describe polarity tests in LV systems.
Performance criteria

1.1 Polarity terms are described.

Range low voltage, naming and colour identification of live conductors, earth and neutral conductors.

1.2 Reasons for correct supply polarity in LV systems are described.

Range safety (to life and property), risk prevention of exposure to shock and fire damage, live conductors to be switched, neutral conductors at ‘O’ or earth potential, commissioning and re-commissioning of equipment.

1.3 The effects of incorrect polarity, high impedance neutral, and open circuit neutral in an LV installation are described.

Range phase – neutral reversal, voltage to remote earth, rise of earth potential, voltage fluctuations in supply with change of load.

1.4 Methods for testing polarity in LV systems are described.

Range may include but is not limited to – voltage measurement to a remote earth, measurement of current in phase, neutral and earthing lead conductors, and continuity measurements to identify conductors prior to connection;
evidence of two methods is required.

Outcome 2

Describe phasing tests in LV and HV installations and works.

Performance criteria

2.1 Phasing terms are described.

Range includes but is not limited to – vector grouping of transformers, phase marking and identification of conductors (R, W, B, A, B, C).

2.2 Purpose of phasing checks is described.

Range paralleling supplies and transformers, reconnection of conductors (cables and overhead) after repair, commissioning new equipment and re-commissioning after repair, phase rotation of supplies.

2.3 Methods for testing of phasing are described.

Range may include but is not limited to – use of phasing phones, continuity tests, comparison of voltages between a known source and connections being tested, use of high voltage phasing and voltage detection equipment;
evidence of two methods is required.

Planned review date	31 December 2024

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 March 2014	31 December 2021
Review	2	28 November 2019	N/A

Consent and Moderation Requirements (CMR) reference	0120

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

Comments on this unit standard

Please contact Connexis - Infrastructure Industry Training Organisation at qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.