

Title	Demonstrate knowledge of faults, relay systems, and components of diagrams in power system protection systems		
Level	4	Credits	4

Purpose	People credited with this unit standard are able to: demonstrate knowledge of faults managed by power system protection systems; demonstrate knowledge of common types of protection relays operated by the faults; and identify the components in power system protection diagrams.
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Classification	Electricity Supply > Electricity Supply - Power System Maintenance
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Available grade	Achieved
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Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry 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 at www.eea.co.nz.
- 3 Definitions
Asset owner refers to a participant who owns or operates assets used for generating or conveying electricity.
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.
Protection systems may include those associated with prime movers, generators, transformers, bus work and distribution networks including: fault detection systems; shutdown and alarm initiation systems; electrical protective relays; voltage and current transformers; field devices; transducers; programmable logic controllers; computers; and alarm annunciation systems.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of faults managed by power system protection systems.

Performance criteria

1.1 The different causes of faults, and characteristics of faults associated with each cause are described.

Range causes include – electrical or mechanical failure, overload, lightning, wind, fire.

1.2 Types of faults likely to occur in installations and equipment found in the generation, transmission, or distribution sectors are described.

Range at least three faults from one of – generation, transmission, distribution sectors.

1.3 Common terms associated with protection systems are defined.

Range common terms include but are not limited to – stability, discrimination, speed of operation, sensitivity, back-up protection, inverse-time characteristics, definite-time characteristics; evidence of four definitions is required.

Outcome 2

Demonstrate knowledge of common types of protection relays operated by the faults.

Performance criteria

2.1 Types of common protection relays that may be used to provide power system protection are described and their fault codes are identified.

Range evidence of three different types of common protection relays and their fault codes is required.

2.2 The boundaries of protection are described.

Range includes but is not limited to – unit protection, non-unit protection.

Outcome 3

Identify the components in power system protection diagrams.

Performance criteria

3.1 The protection system components in diagrams are identified.

Range components are identified in one protection system diagram from one of – generation, transmission, distribution sectors.

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	19 April 2012	31 December 2020
Review	2	16 March 2017	31 December 2022
Review	3	27 February 2020	N/A

Consent and Moderation Requirements (CMR) reference	0120
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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 qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.