



Australian Government

UEEEL0080 Plan and analyse wiring systems, circuits, control and protection for electrical installations

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to plan and analyse wiring systems, circuits, control and protection for electrical installations.

It covers knowledge and application of schemes for protection of persons and property, correct functioning, ensuring compatibility with the supply, arranging installations into circuits and planning switchgear/controlgear and protective devices, selecting wiring systems compatible with the installation conditions, selecting cables that comply with required current carrying capacity, voltage drop and earth fault loop impedance limitations, coordination between protective devices and conductors and documenting arrangement decisions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

No prerequisites

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to plan and analyse wiring systems,	1.1 The scope and nature of the electrical installation is determined from job specifications

circuits, control and protection

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| | 1.2 | Load requirements for individual current using equipment are determined from job specifications and/or consultation with appropriate people |
| | 1.3 | Cable routes, the route lengths of cable, and the conditions in which the wiring system is to operate is determined from job specifications or from consultation with appropriate people |
| 2 | Evaluate and plan electrical circuits, control and protection | |
| | 2.1 | Circuits, control and protective devices are planned to ensure safe and functional operation of the installation and to comply with relevant requirements |
| | 2.2 | Earthing is planned to comply with the multiple earthed neutral (MEN) system requirements |
| | 2.3 | Protective devices are selected to meet the required switching and tripping currents, coordination and discrimination for overload and short circuit protection in accordance with relevant industry technical standards |
| | 2.4 | Residual current devices (RCDs) are planned to meet the required circuit switching and tripping currents, in accordance with relevant industry technical standards |
| | 2.5 | Switchgear/control gear is planned to meet current and voltage requirements and confirmed suitable for environmental conditions (ingress protection (IP) ratings) and functional requirements |
| | 2.6 | Switchboards are planned to accommodate control and protective devices, links, safety services and other distributor equipment in accordance with relevant industry technical standards |
| 3 | Plan wiring systems and cables for general electrical installations | |
| | 3.1 | Wiring system is planned and suitable for the environments in which it will operate |
| | 3.2 | Cable conductor sizes are planned to meet current carrying capacity requirements and voltage drop and earth fault loop impedance limitations in accordance with relevant industry standards |
| | 3.3 | Circuit protective devices are planned to meet requirements for co-ordination with conductor current carrying capacity in accordance with relevant industry |

		standards
	3.4	Earthing system components are planned to meet multiple earthed neutral (MEN) system in accordance with relevant industry standards
4 Document electrical installation wiring systems, circuits, control and protection	4.1	Rationale for device and wiring system planning and calculations are documented
	4.2	Manufacturer data is referenced in planning of equipment to ensure materials comply with safety requirements and relevant industry standards
	4.3	Electrical installation arrangement and specifications for all items are documented

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Electrotechnology Training Package Companion Volume Implementation Guide.

Planning circuits for control and protection and selecting wiring systems and cables for at least two different general electrical installations, including:

- a main switchboard, supplying more than one circuit each for:
 - lighting
 - socket outlets
 - fixed appliances
- one installation must include a circuit supplying a three-phase load
- one installation must include a distribution board separate from the main switchboard

Unit Mapping Information

This is a new unit.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>