

1. Module details

Module name

Rail Signalling Wiring Systems

Module duration

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 18–20 hours.

Module code

NUE 607

Discipline code

0703110

2. Module purpose

This module provides the knowledge and skills for control wiring and cabling of signalling equipment, jointing of copper cables and installation of rail track connections.

3. Prerequisites

NUE 604.1 Rail signalling systems concepts, and

NUE 606 Rail signalling control systems

4. Relationship to competency standards

This module provides part of the underpinning knowledge and skills in the ‘Evidence Guide’ of specific units of competency in the National Electrotechnology Training Package and provides similar support, where mapped, to equivalent units in the National Metals and Engineering Competency Standards and Transport and Distribution Competency Standards. For details refer to the module to unit maps, available from ElectroComms & Energy Utilities Qualifications Standards Body of Australia Ltd.(EESQBA)

5. Content

Rail Wiring and Cabling Practices

- Signal cable conductors
- Tool selection
- Cable and wiring terminations
- Cable and wiring fixings
- Basic wire and cable testing

Cable Jointing Basics

- Tool selection
- Jointing kit selection
- Cable jointing
- Potential hazards

Track Bonding and Leads

- Purpose and types of bonding
- Interpret bonding plans
- Accessories
- Cable selection
- Installation

6. Assessment strategy

Assessment methods

Assessment should be progressive reflecting a holistic approach to ensure the module purpose is met. To assist in ensuring validity, reliability and fairness assessment instruments should include practical exercises, assignments and written tests consisting of a number of item types, such as multiple choice, short answer and problem solving.

Conditions of assessment

Learning and assessment will take place in an environment that is conducive to a learner's development.

7. Learning outcome details

Learning outcome 1

Demonstrate the installation of wiring and cabling for signal equipment.

Assessment criteria

- 1.1 State the standard methods used to identify cable conductors for signal cables.
- 1.2 Demonstrate the selection and correct use of wiring terminating tools.
- 1.3 Demonstrate wiring and terminating practices.
- 1.4 Describe the general practice for layout, running, jumpering and fixing of conductors.
- 1.5 Explain basic cable testing procedures.
- 1.6 Demonstrate safe practices in securing of temporary, new and redundant wiring.

Learning outcome 2

Perform basic jointing for a variety of signalling cables.

Assessment criteria

- 2.1 Demonstrate the selection and correct use of jointing tools.
- 2.2 Demonstrate the selection of various materials for jointing cables. .
- 2.3 Describe the methods of jointing various cable types.
- 2.4 Identify potential hazards when jointing cables.

Learning outcome 3

Describe the installation of track bonding and associated wiring.

Assessment criteria

- 3.1 Explain the reasons for track circuit bonding and traction bonding.
- 3.2 Determine the requirements of a variety of track bonding plans.
- 3.3 Identify the range of bonding accessories for track circuit bonding and traction bonding.
- 3.4 Identify the size and types of cables used for track and traction bonding.
- 3.5 Identify potential hazards when performing bonding activities.

8. Delivery of the module

Delivery strategy

Delivery strategies must be suitable for learning both theoretical and practical aspects described in the module purpose. It is considered that the most effective method to achieve this is by integration of theory and practice where students learn by experimentation, research and reports. It is recommended that learning and assessment be facilitated in a holistic manner that may require learning outcome sequence other than that indicated in the module.

Resource requirements

Resources should be sufficient for students to carry out learning activities on an individual basis.

Suggested Learning Resource:

- Include relevant equipment
- Include manuals or other relevant materials
- Relevant codes, standards and/or regulations

Where this module is used in an approved Traineeship or Apprenticeship program learners should be advised to obtain, where available, respective EEQSBA1 **User Guides** (*these outline in detail what training and work performance the Learner is required to undertake for the program*).

Occupational health and safety requirements

A safe and healthy environment will be provided for students and teachers as well as the particular safety procedures followed as part of the learning / teaching activity and content.