

**Domain****AIR CONDITIONING AND  
REFRIGERATION****Title:****Carry out commercial wiring****Level: 3****Credits: 14****Purpose**

This unit standard specifies the competencies required to carry out commercial wiring. It includes plan and prepare for work; perform wiring; and perform housekeeping.

This unit standard is intended for those who works as air conditioning and refrigeration artisans.

**Special Notes**

1. Entry information:

Prerequisite

- *Unit 1157 - Demonstrate basic knowledge of workplace health and safety.*

2. To demonstrate competence, at minimum evidence is required to perform wiring on one (1) cold and one (1) freezer room.

3. Assessment evidence may be collected from a real workplace or a simulated workplace or an appropriate simulated realistic environment in which air conditioning and refrigeration operations are carried out.

4. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or company's guidelines and instructions.

5. Glossary of terms:

- "ACR" refers to Air conditioning and Refrigeration systems
- "Specifications" refers to any, or all of the following: manufacturer's specifications and recommendations, workplace specific requirements
- "Circuit" refers to a closed path through which an electric current flow or may flow
- "Electrical circuit" refers to an electric device that provides a path for electrical current to flow.
- "DIN" refers Deutsche Institute for Normung, its design for securing and attaching electrical and industrial control products.

6. Regulations, legislation and standards relevant to this unit standard include the following:
  - Labour Act, No. 11, 2007
  - Occupational Health and Safety Regulations No. 18, 1997 and all subsequent amendments.
  - Import and Export control act, 1994.
  - NAMS/ESI LVEIWS 001: ed 1.0 2021
  - NAMS/ESI 002: ed 1.0 2021
  - NAMS/ESI 02: 2021
  - NAMS 5149-2: 2021 (ISO 5149-2:2014)
  - SANS 10147: 2014
7. Performance of all elements in this unit standard must comply with industry standards.
8. This unit standard applies to single-phase and three-phase air conditioning and refrigeration systems.

## **Quality Assurance Requirements**

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website [www.nta.com.na](http://www.nta.com.na).

## **Elements and Performance Criteria**

### **Element 1: Plan and prepare for work**

#### **Range**

Tools and equipment may include but not limited to multi-metres, drill machines, drill bits, punches, cable knives, wire strippers, pliers, and crimping tools.

Materials may include but are not limited to silicone, tray, cloth, insulation tape, connector block, cable ties saddle, lux, glands, and trucking.

#### **Performance Criteria**

- 1.1 Work instructions including job cards, specifications and operational details are interpreted and confirmed.
- 1.2 Workplace inspection is carried out in line with safety standards.

- 1.3 Safety requirements are applied in line with safety and workplace policies.
- 1.4 Tools and equipment are selected in line with the job requirements.
- 1.5 Material required are selected and obtained in line job specifications.
- 1.6 Calibration requirements for tools, instruments and equipment are carried out in line with job requirements.
- 1.7 Environmental protection requirements are outlined and followed in line with environmental legislative requirements.

## **Element 2: Perform Wiring**

### **Range**

Electric circuit diagrams may include but is not limited to single circuit; and three phase wiring for cold and freezer rooms.

Electrical Component may include but are not limited to contactors; overload; stop and start button; thermostats; pressure switch and solenoid valves; defrost timer; defrost heaters; and door heaters.

Wiring may include but not limited to cold, and freezer rooms.

Hand tools may include but not limited to pliers, screw drivers, crimping tools, and knives.

Materials may include but are not limited to two, three, four, and six core cables; insulation tape; block connectors; lux; glands; and cable crimp.

### **Performance Criteria**

- 2.1 Information required for drawing electrical circuit diagrams are outlined in line with job specifications.
- 2.2 Electrical circuit are drawn in line with job specifications.
- 2.3 Information required for wiring are outlined in line with job specifications.
- 2.4 Electrical components are mounted DIN rail in the control box in line with job specifications.
- 2.5 Wiring is carried out in line with job specifications.
- 2.6 Verification of Circuits is performed in line with job specifications.

## **Element 3: Perform housekeeping**

## **Range**

Housekeeping may include but not limited to work completion; cleaning; arranging; and storing of tools and equipment.

## **Performance Criteria**

- 3.1 Work area is cleared of waste, cleaned, restored and secured in line with job specifications.
- 3.2 Reusable material is collected and stored in line with job specifications.
- 3.3 Equipment used are cleaned, checked, maintained and stored in line with job specifications/work instructions.

## **Registration Data**

<b>Subfield:</b>	Electrical Engineering
<b>Date first registered:</b>	28 March 2018
<b>Date this version registered:</b>	
<b>Anticipated review:</b>	
<b>Body responsible for review:</b>	Namibia Training Authority