Model Curriculum

QP Name: Wireman Control Panel Electronics

QP Code: ELE/Q7302

QP Version: 4.0

NSQF Level: 3

Model Curriculum Version: 4.0

Electronics Sector Skills Council of India || 155, 2nd Floor, ESC House, Okhla Industrial Area- Phase 3, New Delhi– 110020

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Training Parameters

Sector	**Electronics**
Sub-Sector	Industrial Automation
Occupation	Manufacturing
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7411.0301
Minimum Educational Qualification and Experience	Grade 10th or equivalent or Grade 8th with 3 year relevant experience or Previous relevant Qualification of NSQF Level (2.5) with 1.5 Years of relevant experience. # Relevant Experience in Electrical & Electronics
Pre-Requisite License or Training	NA
Minimum Job Entry Age	NA
Last Reviewed On	07.10.2025
Next Review Date	07.10.2028
NSQC Approval Date	07.10.2025
QP Version	4.0
Model Curriculum Creation Date	07.10.2025
Model Curriculum Valid Up to Date	07.10.2028
Model Curriculum Version	4.0
Minimum Duration of the Course	420 Hours
Maximum Duration of the Course	420 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills:

- Discuss the method of wire control panel.
- Describe the process of communicating and coordinating effectively with others.
- Explain the importance of work Ethics, sustainability and safety practice.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Recommended)	On-the-Job Training Duration (Mandatory)	Total Duration
ELE/N6321: Planning and Preparation for Control Panel Wiring	**45:00**	**60:00**	**00:00**	**75:00**	**180:00**
Module 1: Role of a Control Panel Wireman Electronics along with planning and preparation for panel wiring.	45:00	60:00	00:00	75:00	180:00
ELE/N6322: Execution and Completion of Control Panel Wiring	**45:00**	**90:00**	**00:00**	**75:00**	**210:00**
Module 2: Execution and Completion of Control Panel Wiring	45:00	90:00	00:00	75:00	210:00
DGT/VSQ/N0101 - Employability Skills (30 Hours)	**30:00**	**00:00**	**00:00**	**00:00**	**30:00**
Module 3: Employability Skills (30 Hours)	30:00	00:00	00:00	00:00	30:00
Total Duration	**120:00**	**150:00**	**00:00**	**150:00**	**420:00**

Module Details

Module 1: Role of a Control Panel Wireman Electronics along with planning and preparation for panel wiring.

Mapped to ELE/N6321

Terminal Outcomes:

- Describe the process of identifying work requirement from the supervisor.
- Demonstrate the process of Wiring the control panel.
- Explain the importance of reporting problems to supervisor.

Duration: 45:00	Duration: 60:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the role and responsibilities of a Wireman – Control Panel (Electronics); explain the scope of the control panel wiring industry, basic components used (such as relays, contactors, MCBs, terminal blocks, PLC interfaces), and potential employment opportunities in industrial automation and electrical assembly sectors. • List and define the parameters of an electric circuit such as voltage, current and resistance • Define Ohm's and Kirchhoff's law and implement it for calculations • Categorize electric circuits into series and parallel depending on the type of connection and create such circuits • Define automation and identify the types of automation such as fixed and programmable • Identify the basic elements of an automated system are power, program and control system • Differentiate between closed loop and open loop control system • List the components of an electromechanical control system such as power supply source, converter, electrical motor and mechanical system • Illustrate proper usage of wiring diagrams and schedules	• Construct different types of joints such as tap splice joint, pigtail splice joint and Britannia joint • Demonstrate proper procedure for crimping and soldering wires • Select the active, passive and electromechanical components as per their use • Demonstrate using the wiring diagram to do the wiring • Prepare a basic layout of the components on the panel board of the enclosure • Comply the steps to wire an electrical control panel

• Identify the different types of joints as well as wires and cables • List the factors to be considered while determining the wire size such as current drawn, number of phases, voltage source and allowable voltage drop • Categorize the wires into different types and sizes as per the marking on their outer sheath • List wire preparation methods • Differentiate between the different types of cable trays • Illustrate how to perform wiring by using jointing system and looping system • List the purpose and principles of the earthing system • Differentiate between system and equipment grounding • • Define electrical/electronic diagram and identify its types • Identify the various components of a control panel such as cables and circuit elements • Differentiate between the different types of cables used in a control panel • Identify the factors to be considered while choosing a wire such as wire gauge and wire • Illustrate how to perform correct sizing and stripping of the chosen wires • List the panel layout considerations • Identify the type and number of components that are to be used in the control panel accurately • Follow the steps to add a new circuit to the panel	

Classroom Aids
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop
Tools, Equipment and Other Requirements

Wiring diagram, Diode, transformer, LED, transistor, capacitor, resistor, inductor, thermistor, ICs, PLCs, relays, contactors, circuit breakers, solenoids, actuators, PCB, controllers, motor, generator, timer, switches, Screw driver, ratchet, spanner, inspection fixture, plier, tester, hammer, hand bender, ladder, utility knife, soldering/desoldering iron, soldering/desoldering station, crimping tool, voltmeter, ammeter, wattmeter, megger

Module 2: Execution and Completion of Control Panel Wiring

Mapped to ELE/N6322

Terminal Outcomes:

- Explain the importance of communicate effectively with supervisor and colleagues.
- Implement the practices related to gender and PwD sensitization.

Duration: 45:00	Duration: 90:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Understanding of BOMs and use smart inventory systems to prepare materials and tools. • Wiring using precision tools, pre-labeled cables, and wire routing software. • Use digital multimeters, continuity testers, and advanced cable analyzers. Perform software-based signal integrity checks and validate performance using BMS systems where applicable. • Understand the purpose and functions of electrical control panels in industrial and commercial settings. • Interpret electrical wiring diagrams, schematics, and panel layout drawings accurately. • Identify various types of control devices, components, and their roles within the control panel. • Explain the standards and regulations related to electrical wiring and panel construction (e.g., IEC, NEC, local codes). • Recognize safety practices and risk management procedures associated with control panel wiring. • Understand the principles of circuit protection including the use of fuses, circuit breakers, and overload relays. • Differentiate between power and control wiring and their respective handling procedures. • Understand earthing, grounding, and shielding requirements in control panel systems. • Learn best practices for planning and sequencing panel wiring tasks for efficient execution.	• Prepare and organize tools, materials, and wiring kits required for control panel construction. • Mark and layout components accurately on control panel enclosures based on design specifications. • Perform mechanical mounting of components like relays, contactors, terminals, and circuit breakers. • Execute proper wiring techniques, including cable routing, stripping, crimping, and termination. • Apply correct colour coding and wire numbering for traceability and compliance. • Use measuring and testing instruments to verify continuity, insulation resistance, and circuit integrity. • Troubleshoot and rectify wiring issues using standard diagnostic procedures. • Conduct final inspection and testing to ensure compliance with technical and safety standards. • Document wiring modifications and update panel drawings accordingly. • Work independently and as part of a team to complete panel wiring tasks within given timelines.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	

Tools, Equipment and Other Requirements
Wiring diagram, Diode, transformer, LED, transistor, capacitor, resistor, inductor, thermistor, ICs, PLCs, relays, contactors, circuit breakers, solenoids, actuators, PCB, controllers, motor, generator, timer, switches, Screw driver, ratchet, spanner, inspection fixture, plier, tester, hammer.

Module 3: Employability Skills (30 Hours)
Mapped to DGT/VSQ/N0101

Terminal Outcomes:

- Discuss about Employability Skills in meeting the job requirements
- Describe opportunities as an entrepreneur.
- Describe ways of preparing for apprenticeship & Jobs appropriately.

Duration: 30:00	Duration: 00:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain constitutional values, civic rights, responsibility towards society to become a responsible citizen • Discuss 21st century skills • Explain use of basic English phrases and sentences. • Demonstrate how to communicate in a well-behaved manner • Demonstrate how to work with others • Demonstrate how to operate digital devices • Discuss the significance of Internet and Computer/ Laptops • Discuss the need for identifying business opportunities • Discuss about types of customers. • Discuss on creation of biodata Discuss about apprenticeship and opportunities related to it.	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Computer, UPS, Scanner, Computer Tables, LCD Projector, Computer Chairs, White Board OR Computer Lab	

Module 4: On-the-Job Training

Mapped to Wireman Control Panel Electronics

Mandatory Duration: 150:00	Recommended Duration: 00:00
Location: On Site	

Terminal Outcomes

1. Explain the importance of collect and analyze the production schedule from the supervisor.
2. Use wiring drawings, job instructions or work manuals
3. Demonstrate install the feeder pipe and pull the feeder wires into the panel.
4. Demonstrate connect all the bare copper wires to the ground bus.
5. Explain how to follow applicable local electrical codes and standards
6. Explain the importance of report about inadequate quantity of consumables such as connectors, screws, nuts, etc.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma/ I.T.I/ Certified in relevant CITS Trade	Electronics/ Mechanical / Electrical	1	Electronics	1 year preferably	Electronics	

Trainer Certification	
Domain Certification	**Platform Certification**
"Wireman Control Panel Electronics", "ELE/Q7302,v4.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the **Wireman Control Panel - Electronics** "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, V2.0", with minimum score of 80%

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma/ I.T.I/ Certified in relevant CITS Trade	Electronics/ Mechanical / Electrical	2	Electronics	1 year preferably	Electronics	

Assessor Certification	
Domain Certification	**Platform Certification**
"Wireman Control Panel Electronics", "ELE/Q7302,v4.0", Minimum accepted score is 80%	Recommended that the Assessor is certified for the **Wireman Control Panel - Electronics** "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, V2.0", with minimum score of 80%

Assessment Strategy

1. Assessment System Overview:
    - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
    - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
    - The assessment agency deploys the ToA certified Assessor for executing the assessment
    - SSC monitors the assessment process & records
2. Testing Environment

    To ensure a conducive environment for conducting a test, the trainer will:
    - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
    - Check the duration of the training.
    - Check the Assessment Start and End time to be 10 a.m. and 5 p.m. respectively
    - Ensure there are 2 Assessors if the batch size is more than 30.
    - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
    - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
    - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
    - Check the availability of the Lab Equipment for the particular Job Role.
3. Assessment Quality Assurance levels / Framework:
    - Question papers created by the Subject Matter Experts (SME)
    - Question papers created by the SME verified by the other subject Matter Experts
    - Questions are mapped with NOS and PC
    - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
    - The assessor must be ToA certified and the trainer must be ToT Certified
    - The assessment agency must follow the assessment guidelines to conduct the assessment
4. Types of evidence or evidence-gathering protocol:
    - Time-stamped & geotagged reporting of the assessor from assessment location
    - Centre photographs with signboards and scheme-specific branding
    - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
    - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
5. Method of verification or validation:

    To verify the details submitted by the training centre, the assessor will undertake:
    - A surprise visit to the assessment location
    - A random audit of the batch
    - A random audit of any candidate
6. Method for assessment documentation, archiving, and access

    To protect the assessment papers and information, the assessor will ensure:
    - Hard copies of the documents are stored
    - Soft copies of the documents & photographs of the assessment are uploaded / accessed

from Cloud Storage

- Soft copies of the documents & photographs of the assessment are stored on the Hard drive

References

Glossary

Term	Description
Declarative knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
ISO	International Organization for Standardization
NCO	National Occupational Standards
NOS	National Skills Qualification Committee
NSQF	National Skills Qualification Framework
OJT	On-the-Job Training
OMR	Optical Mark Recognition
PC	Performance Criteria
PwD	Persons with Disabilities
QP	Qualification Pack
SDMS	Skill Development & Management System
SIP	Skill India Portal
SME	Small and Medium Enterprises
SOP	Standard Operating Procedure
SSC	Sector Skill Council
TC	Trainer Certificate
ToA	Training of Assessors
ToT	Training of Trainers
TP	Training Provider