



Model Curriculum

QP Name: Wireman Control Panel Electronics

QP Code: ELE/Q7302

QP Version: 3.0

NSQF Level: 3

Model Curriculum Version: 3.0

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	10th Grade Pass OR 8th Grade Pass + NTC (2 years after 8th) OR 8th Grade Pass + 2 years relevant experience and 18 Years
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	27/01/2022
Next Review Date	27/06/2025
NSQC Approval Date	27/01/2022
QP Version	3.0
Model Curriculum Creation Date	27/01/2022
Model Curriculum Valid Up to Date	27/06/2025
Model Curriculum Version	3.0
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
Bridge Module	10:00	20:00	00:00	00:00	30:00
Module 1: Introduction and orientation to the role of an In-Store Demonstrator	10:00	20:00	00:00	00:00	30:00
ELE/N7302: Wire control panel	50:00	100:00	00:00	150:00	300:00
Module 2: Wire control panel	50:00	100:00	00:00	150:00	300:00
ELE/N9972: Communicate and coordinate effectively with others	15:00	15:00	00:00	00:00	30:00
Module 3: Process of communicating and coordinating effectively with others	15:00	15:00	00:00	00:00	30:00
ELE/N1003: Work effectively, sustainably and safely	15:00	15:00	00:00	00:00	30:00
Module 4: Work Ethics, sustainability and safety practice	15:00	15:00	00:00	00:00	30:00
DGT/VSQ/N0101 - Employability Skills (30 Hours)	30:00	00:00	00:00	00:00	30:00
Module 5: 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: Introduction and orientation to the role of a Wireman Control Panel Electronics

Bridge Module

Terminal Outcomes:

- Discuss the job role of a Wire Control Panel Electronics.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the size and scope of the electronic industry and its sub-sectors. • Discuss the role and responsibilities of a Wire Control Panel Electronics. • Describe various employment opportunities for a Wire Control Panel Electronics. 	<ul style="list-style-type: none"> • Awareness of the control panel • Knowledge of connections • Knowledge about AC – DC
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
NA	

Module 2: Wire Control Panel

Mapped to ELE/N7302

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: 50:00	Duration: 100:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List and define the parameters of an electric circuit such as voltage, current and resistance • Define Ohm’s and Kirchoff’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 • 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 	<ul style="list-style-type: none"> • 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

<ul style="list-style-type: none"> • 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 	
<p>Classroom Aids</p>	
<p>Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop</p>	
<p>Tools, Equipment and Other Requirements</p>	
<p>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</p>	

Module 3: Process of communicating and coordinating effectively with others

Mapped to ELE/N9972

Terminal Outcomes:

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

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of personal grooming. • Explain the organisation's policy on code of conduct. • Explain the organisation's reporting structure and documentation policy. • Explain how to communicate effectively through all means including face-to-face, telephonic as well as written. • Explain different types of information that colleagues might need and the importance of providing the same as and when required. • Explain the rights and duties w.r.t PwD at workplace. • Explain the organisation policies and standards to support PwD. 	<ul style="list-style-type: none"> • Show how to maintain personal hygiene and professional appearance. • Show how to report work completed as per the schedule to superior and inform of any deviations or anomalies.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
NA	

Module 4: Work Ethics, sustainability and safety practice

Mapped to ELE/N1003

Terminal Outcomes:

- Describe the process of achieving optimum productivity and quality.
- Explain the importance of implementing health and safety procedures.
- Demonstrate the process of organising waste management and recycling.
- Explain the importance of conserving resources.

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of time management. • Explain the organizational safety and health policy. • List different waste categories such as dry, wet, recyclable, non-recyclable and single-use plastic items. • Explain the usage of different colours of dustbins to dispose waste. • Explain the methods of waste disposal. • Explain the methods of recycling as well as repairing and reusing electronic components. • Explain the efficient utilisation of material and water. • Explain the basics of electricity and prevalent energy-efficient devices. • List ways to recognise common electrical problems. • List common practices of conserving electricity. 	<ul style="list-style-type: none"> • Show how to take ESD precautions while doing work. • Demonstrate the use of appropriate Personal Protective Equipment (PPE). • Show how to identify and segregate recyclable/non-recyclable and hazardous wastes. • Demonstrate the process of cleaning the tools, machines and equipment. • Show how to connect electrical equipment and appliances properly when in use and turn off when not in use.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
NA	

Module 5: 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
<ul style="list-style-type: none"> • 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 6: On-the-Job Training

Mapped to In-Store Demonstrator

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
<p>“Wireman Control Panel Electronics”, “ELE/Q7302,v3.0”, Minimum accepted score is 80%</p>	<p>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%</p>

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
<p>“Wireman Control Panel Electronics”, “ELE/Q7302,v3.0”, Minimum accepted score is 80%</p>	<p>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%</p>

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