



Model Curriculum

QP Name: Assembly and Wiring Assistant Operator- Standard Control Panel

QP Code: ELE/Q7306

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	After Sales Service
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7137.20
Minimum Educational Qualification and Experience	10th grade or equivalent OR 8th grade with 3 years of relevant experience OR Certificate of NSQF level 2.5 with 1.5 years of relevant experience # Relevant experience in Industrial Automation
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.

- Interpret assembly drawing/work instructions/SOPs for identification of material, tools and equipment required.
- Carry out preparatory activities such as arranging and inspection of tools and equipment etc.
- Carry out assembly of electrical panel and systems.
- Carry out post-work operations such as testing, cleaning, inspection etc.
- Interact and coordinate with the supervisor and colleagues etc.
- Follow safe and healthy work practices.

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 (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
ELE/N3193 - Control Panel Assembly - Preparation & Component Installation	60:00	90:00	45:00	00:00	195:00
Module 1: Control Panel Assembly - Preparation & Component Installation	60:00	90:00	45:00	00:00	195:00
ELE/N3194 - Control Panel Wiring, Testing & Compliance	60:00	90:00	45:00	00:00	195:00
Module 2: Control Panel Wiring, Testing & Compliance	60:00	90:00	45:00	00:00	195:00
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	150:00	180:00	90:00	00:00	420:00

Module Details

Module 1: Control Panel Assembly – Preparation & Component Installation

Mapped to : ELE/N3193

Terminal Outcomes:

- Role and responsibilities of an Electrical Assembly Operator – Control Panel.
- Interpret work instructions and production plans to organize and prepare for control panel assembly.
- Assemble and install control panel components accurately using tools, schematics, and safety standards.

Duration: 60:00	Duration: 90:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Introduction to the role and responsibilities of an Electrical Assembly Operator – Control Panel. • Understand how to read and interpret production schedules and daily targets. • Gain knowledge of updated drawings, job manuals, and work instructions. • Identify and verify the availability of modules and electrical components. • Understand design specifications for component slots, mounting points, and panel layout. • Learn local electrical codes, safety standards, and ergonomic guidelines. • Read and follow electrical schematics for accurate control panel assembly. • Understand the function and purpose of key components (e.g., terminal strips, relays, transformers). • Use digital Bill of Materials (BOM) and smart tools, such as torque-controlled screwdrivers, to accurately mount components in modular enclosures as per specifications. • Learn proper wire gauge selection and insulation techniques to prevent short circuits. • Recognize standard practices for securely fastening components. • Understand the importance of quality checks and secure installation in final inspections.	• Communicate effectively with the supervisor to clarify production targets and job priorities. • Plan production tasks based on instructions and organize work accordingly. • Visually inspect components for physical damage or defects before use. • Set up and position the panel following safety and ergonomic guidelines. • Verify drilled holes, slots, and mounting points as per design requirements. • Assemble components (e.g., terminal strips, relays, transformers) as per schematics. • Perform wiring between components using appropriate gauges and follow circuit diagrams. • Use the correct tools and test devices for accurate installation and measurements. • Apply proper insulation techniques and securely fasten all components. • Conduct a final inspection of the assembled panel and return tools to storage after use.
Classroom Aids:	
Laptop, white board, marker, projector	
Tools, Equipment and Other Requirements	
NA	

Module 2: Control Panel Wiring, Testing & Compliance

Mapped to ELE/N3194

Terminal Outcomes:

- Carry out assembly and installation of electrical panels and its components.
- Perform post assembly activities like inspection, cleaning, storing etc.

Duration: 60:00	Duration: 90:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Describe basic fundamentals of electricity and circuits. • Illustrate current and voltage distribution in series and parallel circuits. • Describe organisational process or procedure for assembly and wiring. • Discuss the information derived from the engineering drawings, wiring diagrams, component symbols, blueprints, job sheet etc. • Perform wiring using automated wire cutting and stripping machines, and digital wire labeling systems to ensure accuracy and speed in panel assembly. • List the tools, measuring instruments, equipment and electrical components required during assembling work. • Describe functioning of electrical panel and control circuits. • Describe functioning and use of various electrical components such as MCB's, relay, contractor, fuse etc. used in machine, control panels and electrical circuits. • Describe the selection criteria of tools, measuring instruments, equipment and electrical components required during assembling work. • Discuss the organisational process of collecting and arranging the tools, measuring instruments, equipment and electrical components from the store. • Summarise the steps to be performed for checking the tools, measuring instruments, equipment and electrical components before use. • Discuss the necessary precautions to avoid any hazard and accident during assembling activities. • List the steps to be performed for preparing the foundation for installing the equipment. • Describe the standards and procedure for installation of electrical panels. • Explain the safety mechanism, do's and don'ts of	• Read the drawing, component symbols and work orders for identifying work requirements, selecting and planning sequence of assembly operations. • Demonstrate the standard operating procedure to use tools, measuring instruments, equipment and electrical components required during assembling work. • Show how to select and arrange the required tools, measuring instruments, equipment and electrical components from the store. • Apply appropriate ways to check the tools, measuring instruments, equipment and electrical components before use. • Use digital multimeters and IoT-enabled test benches to perform real-time fault detection and validate the quality of control panel assemblies. • Show how to calibrate the tools, measuring instruments and equipment before use. • Apply appropriate ways to check that electrical panels is cleaned and free from paint, grease, rust, or other contaminants. • Show how to prepare foundation for installing control cables, MCB's etc. as per the drawing requirement. • Show how to prepare control cables, electrical components like MCB's, contactors, relays etc. as per requirement. • Apply appropriate ways to mount, align and level all attachments and fixtures on electrical panels. • Demonstrate organisational procedure of assembling all the parts of electrical panels as mentioned in drawing/ blueprint. • Apply appropriate ways to fasten the mechanical components/ subassemblies together. • Show how to make the electrical connections of electrical panels by using wires strippers, crimping tool and other insulated tools. • Perform steps to install electrical panel, control circuits etc.

manufacturing process as per SOP. - List the steps to be performed for installing the electrical panel, control circuits etc. in an electrical machine. - Explain the process of escalating the problems faced during installation and assembly activities to the supervisor or concerned authority. - Describe post-assembling processes like cleaning, quality check etc. - Explain methods of inspecting the quality of assembled control panels. - List the commonly occurring defects and their remedies in the electrical panels. - Elaborate the impact of non-conformities on final assembly and their causes to quality assurance standards. - Describe various checks that need to be made to ensure that equipment is safe and ready to use	- Apply appropriate inspection methods to check the assembled components as per the WI. - Ensure that equipment is safe and ready to use (electrical connections, power return and earthing arrangements; equipment calibration, setting parameters). - Perform functional tests on the assembled electrical panels to identify any non-conformities and their causes in it. - Apply appropriate ways to change or repair the faulty electrical panels components as per the observations of tests. - Apply appropriate ways to implement the corrective actions to resolve problems in electric panels.
Classroom Aids:	
Whiteboard, marker pen, computer or laptop attached to LCD projector, scanner, computerspeakers	
Tools, Equipment and Other Requirements	
Cable, Crimping Tool, Desktop, Digital Multimeter, Dot Matrix Printer, ESD Gloves, Ink Jet Printer, Insulation Tape, LanTester, Laptop, Lead Solder, Motherboard Diagnoser, Multi-Function Laser Printer, Network Switch, Post Cards, Router, Scanner, Screw Driver Set, Soldering Flux, Soldering Iron, job sheets, report formats	

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 Assembly and Wiring Operator- Standard Control Panel

Mandatory Duration: 90:00	Recommended Duration: 00:00
Location: On Site	
Terminal Outcomes 1. Explain the fundamental concepts of electronics and electronics components 2. Read the drawing, component symbols and work orders for identifying work requirements, selecting and planning sequence of assembly operations. 3. Arrange tools, measuring instruments, equipment and required components from the store. 4. Perform assembly and installation of electrical panels and its components. 5. Place and connect various parts i.e. MCB, relay etc. in the panel. 6. Make the electrical connections of components with electrical panels by using wirestrippers, crimping tool and other insulated tools. 7. Perform post-assembly activities like cleaning, functionality check etc. 8. Interact and coordinate with supervisor and colleagues 9. Work as per the given timeline and quality standards 10. Maintain a safe, healthy and secure work environment	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Diploma/ ITI/ Certified in relevant CITS Trade	Electronics	2	Electrical panel assembly	1	Trainer	

Trainer Certification	
Domain Certification	Platform Certification
"Assembly and Wiring Assistant Operator- Standard Control Panel, ELE/Q7306, version 4.0". Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Assembly and Wiring Operator- Standard Control Panel "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/ ITI/ Certified in relevant CITS Trade	Electronics/ Electrical	3	Electrical panel assembly	2	Assessor	

Assessor Certification	
Domain Certification	Platform Certification
"Assembly and Wiring Assistant Operator- Standard Control Panel, ELE/Q7306, version 4.0". Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Assembly and Wiring Operator- Standard Control Panel "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
 - Assessment agency deploys the ToA certified Assessor for executing the assessment
 - SSC monitors the assessment process & records
2. Testing Environment:
 - 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 as 10 a.m. and 5 p.m.
 - If the batch size is more than 30, then there should be 2 Assessors.
 - 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
 - Assessor must be ToA certified & trainer must be ToT Certified
 - 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:
 - Surprise visit to the assessment location
 - Random audit of the batch
 - Random audit of any candidate
6. Method for assessment documentation, archiving, and access
 - 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 in the Hard Drives

References

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.

Acronyms and Abbreviations

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
IPR	Intellectual Property Rights