

# QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR ELECTRONICS INDUSTRY

## What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding



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## Introduction

### Qualifications Pack- Solar Panel Installation Technician

**SECTOR:** ELECTRONICS

**SUB-SECTOR:** Solar Electronics

**OCCUPATION:** Installation

**REFERENCE ID:** ELE/Q5901

**ALIGNED TO:** NCO-2004/ NIL

**Solar Panel Installation Technician:** Also known as ‘Panel Installer’, the Solar Panel Installation Technician is responsible for installing solar panels at the customers’ premises.

**Brief Job Description:** The individual at work checks the installation site, understands the layout requirement as per design, assesses precautionary measures to be taken, installs the solar panel as per customer’s requirement and ensures effective functioning of the system post installation.

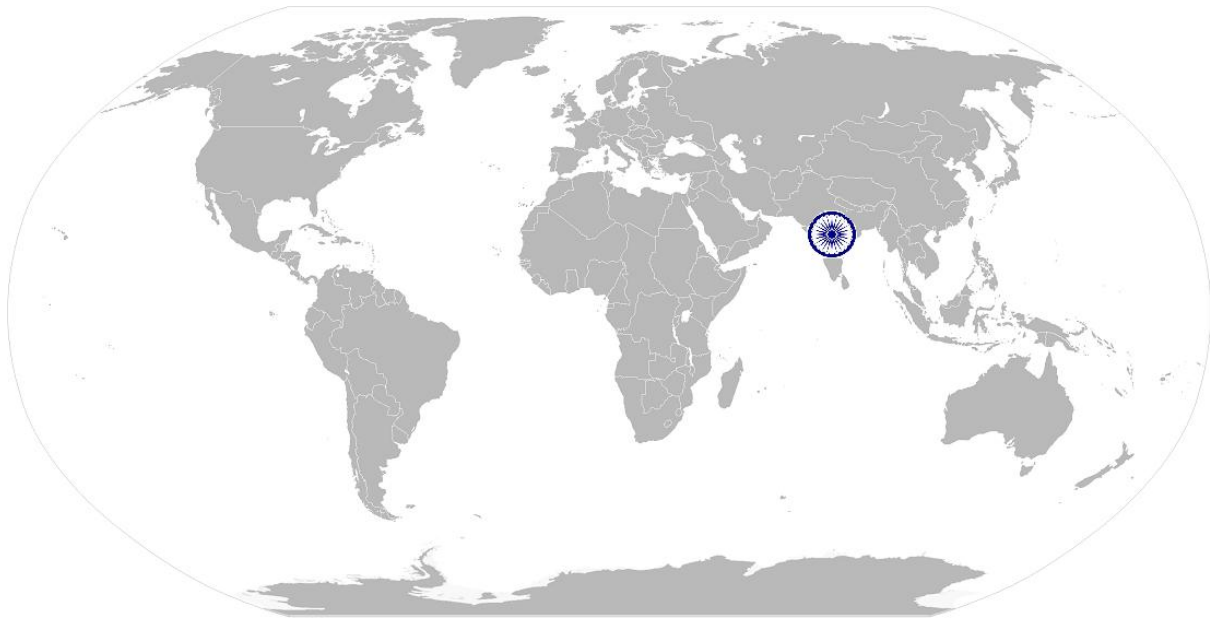
**Personal Attributes:** The individual must have: ability to work in standing position for long hours, good physical strength to handle solar panels and willingness to work in outdoor settings at varied locations such as roof tops, fields, urban or rural.

Qualifications Pack For Solar Panel Installation Technician

|             |                                     |                                     |                  |          |
|-------------|-------------------------------------|-------------------------------------|------------------|----------|
| Job Details | Qualifications Pack Code            | ELE/Q5901                           |                  |          |
|             | Job Role                            | Solar Panel Installation Technician |                  |          |
|             | Credits(NVEQF/NVQF/NSQF) [OPTIONAL] | TBD                                 | Version number   | 1.0      |
|             | Sector                              | Electronics                         | Drafted on       | 24/02/14 |
|             | Sub-sector                          | Solar Electronics                   | Last reviewed on | 24/03/14 |
|             | Occupation                          | Installation                        | Next review date | 24/03/15 |

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| <b>Job Role</b>   | <b>Solar Panel Installation Technician</b><br>Also known as 'Solar Panel Installer'   |
| <b>Role Description</b>                                 | Assessing the installation site, understanding the installation pre-requisites, arranging for installation materials, mounting and installing the panels at customer's premises; and ensuring effective functioning of solar energy system after installation   |
| <b>NVEQF/NVQF level</b>                                 | 4   |
| <b>Minimum Educational Qualifications</b>               | ITI (electrical, mechanical)  |
| <b>Maximum Educational Qualifications</b>               | Diploma (electrical, mechanical)  |
| <b>Training</b>   | Not Applicable  |
| <b>Experience</b>                                       | Minimum 6 months preferred but not mandatory in equipment installation  |
| <b>Applicable National Occupational Standards (NOS)</b> | <p><b>Compulsory:</b></p> <ol style="list-style-type: none"> <li><a href="#">ELE/N5901 Check site conditions, collect tools and raw materials</a></li> <li><a href="#">ELE/N5902 Install the solar panel</a></li> <li><a href="#">ELE/N9952 Coordinate colleagues at work</a></li> <li><a href="#">ELE/N9953 Ensure safety at workplace</a></li> </ol> <p><b>Optional:</b><br/>Not applicable</p> |
| <b>Performance Criteria</b>                             | As described in the relevant OS units   |

# National Occupational Standard



## Overview

This OS unit is about assessing the site conditions where the solar panels would be installed, understanding the customer's requirement and arranging for tools and materials required for solar installation.

**ELE/N5901 Check site conditions, collect tools and raw materials**

|   |   |
|---|---|
| <b>Unit Code</b>                                  | <b>ELE/N5901</b>  |
| <b>Unit Title (Task)</b>                          | <b>Check Site conditions and collect tools and raw materials for solar panel installation</b>   |
| <b>Description</b>                                | This OS unit is about assessing conditions at site where the solar panels would be installed, understanding the customer requirement in installation and arranging for tools and raw materials required for solar panel installation  |
| <b>Scope</b>                                      | <p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> <li>• Understand the work requirement</li> <li>• Check out and assess the site condition</li> <li>• Understand the installation requirement</li> <li>• Collect materials required for installation</li> <li>• Ensure quality material usage and appropriate handling mechanism</li> </ul>   |
| <b>Performance Criteria(PC) w.r.t. the Scope</b>  |   |
| <b>Element</b>                                    | <b>Performance Criteria</b>   |
| <b>Understanding the work requirement</b>         | <p>To be competent, the user/ individual must be able to:</p> <p>PC1. understand the individual work requirement and areas of operation</p> <p>PC2. interact with the supervisor in order to understand the installation targets for the day and/or week</p> <p>PC3. understand the location of installations and optimise the route plan</p> <p>PC4. plan the day's activities and the complete work plan for each installation</p> <p>PC5. coordinate with the various departments and persons involved in installation operation such as design, logistics, material handling and stores</p> <p>PC6. minimise absenteeism and report to work on time</p>   |
| <b>Assessing site conditions</b>                  | <p>To be competent, the user/ individual must be able to:</p> <p>PC7. assess the site level pre-requisites for solar panel installation</p> <p>PC8. decide on the type of mounting to be made such as roof top, open fields, small spaces</p> <p>PC9. ensure that land is levelled for flat surface mounting</p> <p>PC10. decide the type of mounting accessories required for installation as per the site condition</p> <p>PC11. decide the place of installation and ensure maximum period of sunlight is captured in the area</p> <p>PC12. ensure that construction is strong to hold solar panel for 20-25 years, especially, on roof top</p> <p>PC13. inform the customer for any civil construction to be undertaken for installing the panels</p> |
| <b>Understanding the installation requirement</b> | <p>To be competent, the user/ individual must be able to:</p> <p>PC14. understand the location and mounting preference of customers</p> <p>PC15. interact with customers and understand the purpose of installation and suggest alternatives</p> <p>PC16. match the voltage and power output of the type of installation designed and losses with customer's requirement</p>  |

| <b>ELE/N5901</b>  |  | <b>Check site conditions, collect tools and raw materials</b>  |
|---|--|--|
|   |  | <p>PC17. inform customers about the approximate time required for installation and any requirements during installation</p> <p>PC18. get concurrence from the customer on the package of materials to be procured for installation based on agreed design</p>  |
| <b>Collecting material for installation</b>   |  | <p>To be competent, the user/ individual must be able to:</p> <p>PC19. arrange for and collect the solar panels as per customer's requirement</p> <p>PC20. ensure that the quantity of modules / panels match the voltage requirement of the system</p> <p>PC21. arrange for mounting stands as per design</p> <p>PC22. arrange for tools and consumables required for mounting the solar panels</p> <p>PC23. decide on the workforce required and arrange for team</p> <p>PC24. ensure that only company recommended quality materials are used unless specified by customer</p>  |
| <b>Ensuring quality of material and handling</b>  |  | <p>To be competent, the user/ individual must be able to:</p> <p>PC25. ensure all the materials procured are QC passed</p> <p>PC26. ensure that module is not damaged and the outer glass is not broken</p> <p>PC27. understand the material handling requirement and follow the standard operating procedure while moving them</p> <p>PC28. cover the glass module with an opaque material to ensure that there is no electricity generation before installation</p> <p>PC29. ensure standard module handling procedure such as two people should lift a module, module should not be carried on head, etc.</p> <p>PC30. ensure that modules are stored in a way that it is not damaged by falling or by any external disturbance</p> |
| <b>Knowledge and Understanding (K)</b>  |  |  |
| <b>A. Organizational Context</b><br>(Knowledge of the company / organization and its processes) |  | <p>The individual on the job needs to understand:</p> <p>KA1. company's policies on: incentives, personnel management</p> <p>KA2. company's code of conduct</p> <p>KA3. importance of individual's role in the work flow</p> <p>KA4. organisation culture</p> <p>KA5. company's reporting structure</p> <p>KA6. company's documentation policy</p> <p>KA7. company's different department and concerned authority</p> <p>KA8. company's installation policy</p> <p>KA9. company's customer support policy</p>  |
| <b>B. Technical Knowledge</b>   |  | <p>The individual on the job needs to know and understand:</p> <p>KB1. basics on solar energy and power generation systems</p> <p>KB2. use and handling procedure of solar panels</p> <p>KB3. energy storage, control and conversion</p> <p>KB4. basic electrical system and functioning</p> <p>KB5. mechanical equipments and its functioning</p> <p>KB6. maintenance procedure of equipments</p> <p>KB7. site survey, design and evaluation of various parameters</p> <p>KB8. tools involved in installation of system</p> <p>KB9. quality and process standards</p> <p>KB10. occupational health and safety standards</p>   |

**ELE/N5901**

**Check site conditions, collect tools and raw materials**

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|   | <p>KB11. waste management and disposal procedures and standards</p> <p>KB12. importance of wearing protective clothing and other safety gear while carrying out installation</p> <p>KB13. precautions to be taken while handling different electrical and mechanical products</p>  |
| <b>Skills (S)</b>                         |  |
| <b>A. Core Skills/<br/>Generic Skills</b> | <p><b>Reading and writing skills</b></p> <p>The individual on the job needs to know and understand how to:</p> <p>SA1. read product and equipment manuals, installation manuals, etc.</p> <p>SA2. read warnings, instructions and other text material on product labels, components, etc.</p> <p>SA3. fill in job completion form after installation activities have been completed</p>  |
| <b>B. Professional Skills</b>             | <p><b>Using tools and machines</b></p> <p>The individual on the job needs to know and understand:</p> <p>SB1. purpose and specification of tools used in maintenance activity</p> <p>SB2. how to operate/use different tools such as screw driver, inspection fixtures, wire cutter, pliers, tester, spanner, etc.</p> <p>SB3. how to handle tools and equipments and maintain them in a good condition</p> <p><b>Interpersonal skills</b></p> <p>The individual on the job needs to know and understand:</p> <p>SB4. how to interact with supervisor to understand the daily production target</p> <p>SB5. how to interact with co workers in order to co ordinate work processes</p> |

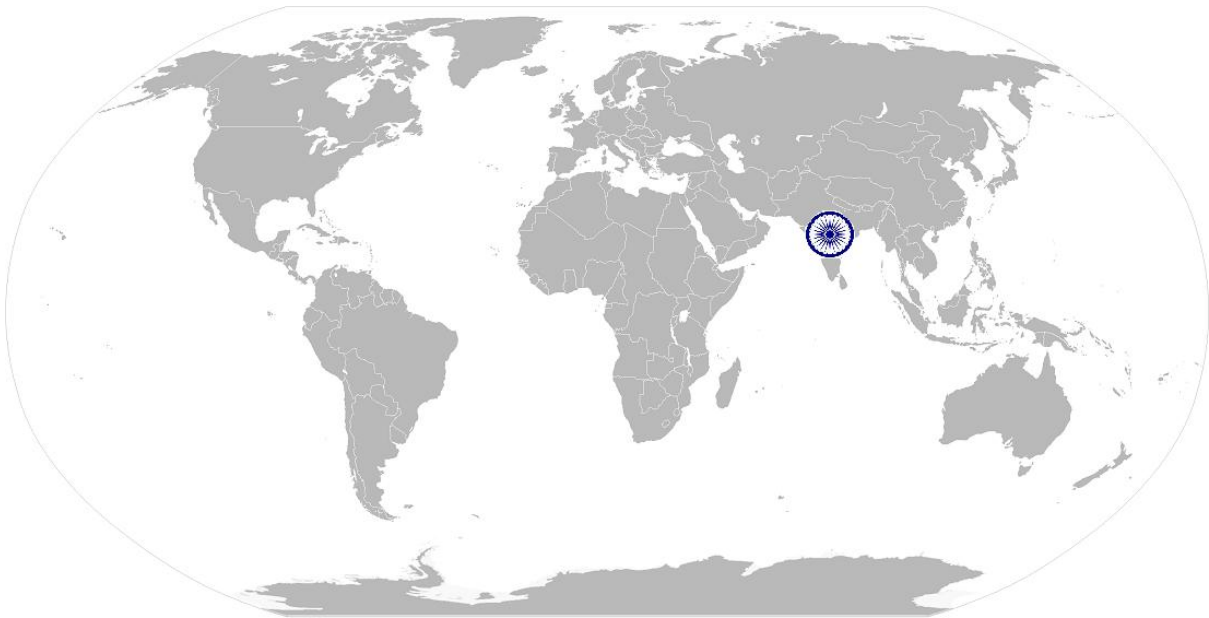
**ELE/N5901**

**Check site conditions, collect tools and raw materials**

## **NOS Version Control**

| NOS Code                               | ELE/N5901         |                  |          |
|--|-------------------|------------------|----------|
| Credits(NVEQF/NVQF/NSQF)<br>[OPTIONAL] | TBD               | Version number   | 1.0      |
| Industry                               | Electronics       | Drafted on       | 24/02/14 |
| Industry Sub-sector                    | Solar Electronics | Last reviewed on | 24/03/14 |
|  |                   | Next review date | 24/03/15 |

# National Occupational Standard



## Overview

This OS unit is about mounting and installing the solar panel at the customer premises. It also includes connecting the solar panels with the inverters and ensuring the functioning of solar power system.



**ELE/N5902**

**Install the solar panel**

|  |   |
|--|---|
| <b>Unit Code</b>   | <b>ELE/N5902</b>  |
| <b>Unit Title (Task)</b>                                       | <b>Install the solar panel</b>  |
| <b>Description</b>   | This OS unit is about mounting and installing the solar panel in the customer premises. It also includes connecting the solar panels with the inverters and ensuring the functioning of solar power system.   |
| <b>Scope</b>   | <p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> <li>• Understand the installation and material usage procedure</li> <li>• Assess mounting requirements</li> <li>• Install the solar panel</li> <li>• Connect the system and check for functioning</li> <li>• Report and document completion of work</li> <li>• Follow quality and safety procedures</li> </ul>  |
| <b>Performance Criteria(PC) w.r.t. the Scope</b>               |   |
| <b>Element</b>   | <b>Performance Criteria</b>   |
| <b>Understanding installation and material usage procedure</b> | <p>To be competent, the user/ individual must be able to:</p> <p>PC1. understand the customer requirement on installation</p> <p>PC2. ensure that all appropriate materials are available during installation time</p> <p>PC3. ensure that the installation meets the local building rules and regulations</p> <p>PC4. ensure to disconnect PV module from any electric sources such as batteries, inverters, etc., before working on the module</p> <p>PC5. check that the module is defect free before installing</p> <p>PC6. ensure to take specified measures such as fire resistance, corrosion resistance for the module during installation</p>  |
| <b>Assessing mounting</b>                                      | <p>To be competent, the user/ individual must be able to:</p> <p>PC7. understand the type of mounting and other accessories required</p> <p>PC8. assess the degree of inclination and angle of tilt of PV module for the specific area, locality or region to enable the system absorb maximum annual sunlight</p> <p>PC9. ensure that sunlight falls perpendicular to the PV module to absorb maximum energy</p> <p>PC10. ensure that panels are mounted in a place where there is no shade at any time of the year</p> <p>PC11. ensure that mounting is strong to withstand wind, rain, etc.</p> <p>PC12. ensure that any special construction requirement for mounting is done by following acceptable quality standards, especially, in rooftop installations</p> <p>PC13. use approved tools for mounting</p> <p>PC14. set the mounting fixture firmly at the desired location</p> |
| <b>Installing the panel</b>                                    | <p>To be competent, the user/ individual must be able to:</p> <p>PC15. remove packaging of the solar panel carefully</p> <p>PC16. handle the panels carefully without damaging the material</p> <p>PC17. take safety measures and wear protection gear such as gloves to avoid shock / injuries while handling modules</p>  |

**ELE/N5902**

**Install the solar panel**

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|  | <p>PC18. cover the module with opaque material while installing to avoid any current generation</p> <p>PC19. ensure that junction box in covered</p> <p>PC20. do not disturb or disassemble any part of the module part during installation</p> <p>PC21. take necessary precautions for fire resistance of modules</p> <p>PC22. use recommended material of solar cable and plugs for electrical connection</p> <p>PC23. Install spare fuse to avoid any short circuits as per company policy</p> <p>PC24. mount the module on the fixture with the mounting rails using bolts and nuts</p> <p>PC25. ensure that the panels are mounted firmly</p>                                       |
| <p><b>Connecting the system and check for functioning</b></p>                            | <p>To be competent, the user/ individual must be able to:</p> <p>PC26. use the cables to connect multiple PV modules in combination to generate the desired voltage and current</p> <p>PC27. choose type of connection, i.e., series or parallel, as per design</p> <p>PC28. use recommended cable to generate maximum voltage</p> <p>PC29. Check the maximum system voltage as per the installation and follow adjustment measures accordingly to match output requirement</p> <p>PC30. ensure that the modules are grounded as specified</p> <p>PC31. connect the system and check for functioning</p> <p>PC32. escalate for any issues faced during the functioning of the system</p> |
| <p><b>Completing the work</b></p>  | <p>To be competent, the user/ individual must be able to:</p> <p>PC33. clean the work area after completing the installation activity</p> <p>PC34. remove all the tools, consumables used from the installation area</p> <p>PC35. fill in the job completion form and get the signature of the customer</p> <p>PC36. inform customers about maintenance of solar panels and procedure for cleaning of solar panels</p> <p>PC37. follow company standards in documentation of installation activities performed</p>   |
| <p><b>Following quality and safety procedures</b></p>                                    | <p>To be competent, the user/ individual must be able to:</p> <p>PC38. remove any metals or jewellery to avoid possibility of current shock during installation activity</p> <p>PC39. wear all safety gears such as work shoes, cotton gloves, goggles while carrying out installation activities</p> <p>PC40. take specified precautionary measures while handling electrical system</p> <p>PC41. keep work area clean and organised</p> <p>PC42. adhere to relevant health and safety standards</p> <p>PC43. dispose off any waste materials in accordance with safe working practices and procedures</p>  |
| <p><b>Knowledge and Understanding (K)</b></p>  |  |
| <p><b>B. Organizational Context</b><br/>(Knowledge of the company / organization and</p> | <p>The individual on the job needs to understand:</p> <p>KA1. company's policies on: incentives, personnel management</p> <p>KA2. company's code of conduct</p> <p>KA3. importance of individual's role in the work flow</p> <p>KA4. organisation culture</p> <p>KA5. company's reporting structure</p> <p>KA6. company's documentation policy</p>   |

**ELE/N5902**

**Install the solar panel**

|   |   |
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| its processes)                            | <p>KA7. company's different department and concerned authority</p> <p>KA8. company's installation policy</p> <p>KA9. company's customer support policy</p>  |
| <b>B. Technical Knowledge</b>             | <p>The individual on the job needs to know and understand:</p> <p>KB1. basics on solar energy system and power generation</p> <p>KB2. solar energy system components such as panels, batteries, charge controllers, inverters</p> <p>KB3. significance of volts, amps and watts: series and parallel connection</p> <p>KB4. handling procedure for solar panels</p> <p>KB5. energy storage, control and conversion</p> <p>KB6. basic electrical system and functioning</p> <p>KB7. mechanical equipment and their functioning</p> <p>KB8. maintenance procedure of equipment</p> <p>KB9. voltage requirement of various equipment</p> <p>KB10. panel mounting and inclination and angle of tilt</p> <p>KB11. placement of solar panel mounting</p> <p>KB12. sunlight and direction assessment</p> <p>KB13. site surveying methods and evaluation parameters</p> <p>KB14. tools involved in installation of system</p> <p>KB15. basic electrical engineering and circuitry</p> <p>KB16. quality and process standards</p> <p>KB17. occupational health and safety standards and waste management procedures</p> <p>KB18. importance of wearing protective clothing and other safety gear while carrying out installation activities</p> <p>KB19. precautions to be taken while handling different electrical and mechanical products</p> |
| <b>Skills (S)</b>                         |   |
| <b>C. Core Skills/<br/>Generic Skills</b> | <p><b>Reading and writing skills</b></p> <p>The individual on the job needs to know and understand how to:</p> <p>SA1. read product and equipment manuals, installation manual, maintenance reports etc.</p> <p>SA2. read warnings, instructions and other text material on product labels, components etc.</p> <p>SA3. fill in job completion form after installation activity is completed</p>  |
| <b>D. Professional Skills</b>             | <p><b>Using tools and machines</b></p> <p>The individual on the job needs to know and understand:</p> <p>SB1. how to operate/use screw driver, inspection fixtures, wire cutter, pliers, tester, spanner, etc.</p> <p>SB2. how to use tools for panel mounting</p> <p><b>Interpersonal skills</b></p> <p>The individual on the job needs to know and understand:</p> <p>SB3. how to interact with co workers in order to co ordinate work processes</p> <p>SB4. how to interact with supervisor to understand the daily target</p>  |

**ELE/N5902**

**Install the solar panel**

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|  | <b>Reflective thinking</b>   |
|  | The user/individual on the job needs to know and understand how:<br>SB5. to improve work processes<br>SB6. to reduce repetition of errors  |
|  | <b>Decision making</b>   |
|  | The individual on the job needs to know and understand:<br>SB7. how to report potential areas of disruptions to work process<br>SB8. when to report to supervisor and when to deal with a colleague depending on the type of concern |

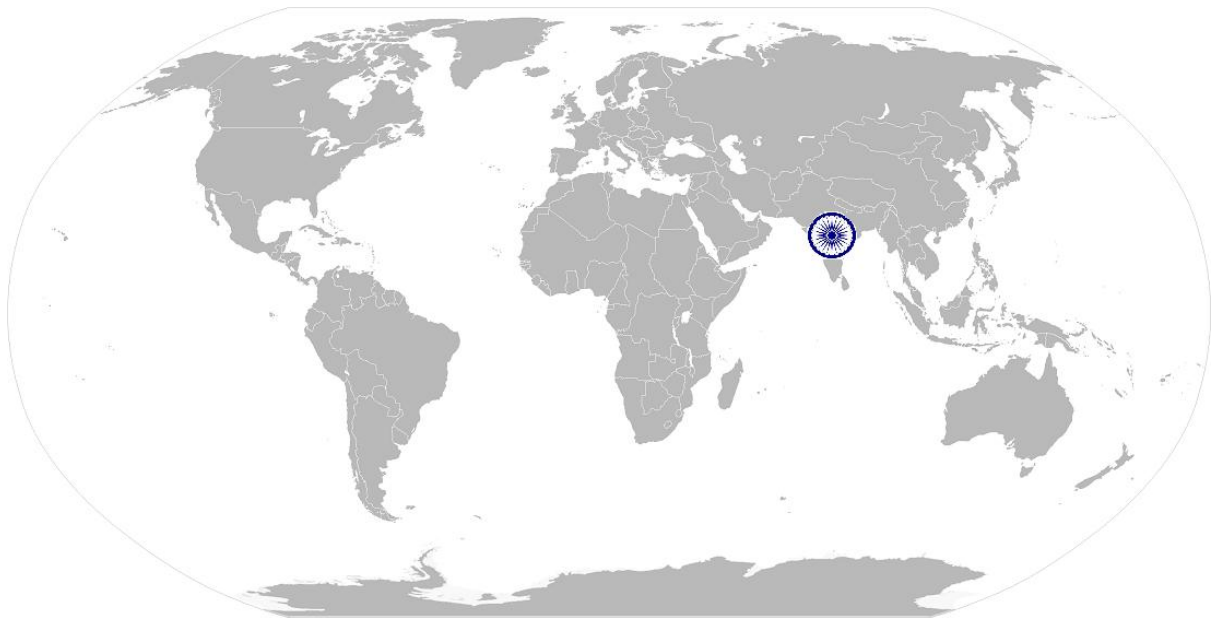
**ELE/N5902**

**Install the solar panel**

**NOS Version Control**

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|--|--------------------------|-------------------------|-----------------|
| <b>NOS Code</b>                                | <b>ELE/N5902</b>         |                         |                 |
| <b>Credits(NVEQF/NVQF/NSQF)<br/>[OPTIONAL]</b> | <b>TBD</b>               | <b>Version number</b>   | <b>1.0</b>      |
| <b>Industry</b>                                | <b>Electronics</b>       | <b>Drafted on</b>       | <b>24/02/14</b> |
| <b>Industry Sub-sector</b>                     | <b>Solar Electronics</b> | <b>Last reviewed on</b> | <b>24/03/14</b> |
|  |                          | <b>Next review date</b> | <b>24/03/15</b> |

# National Occupational Standard



## Overview

This unit is about the individual's level of communication and coordination with colleagues and other departments within the organisation. It also describes about how an individual interact with the team to achieve desired workflow.

**ELE/N9952**
**Coordinate with colleagues at work**

|   |   |
|---|---|
| <b>Unit Code</b>  | <b>ELE/N9952</b>  |
| <b>Unit Title (Task)</b>  | <b>Coordinate with members at work</b>  |
| <b>Description</b>  | This OS unit is about communicating with the co workers during work to achieve the desired output in the workflow.  |
| <b>Scope</b>  | <p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> <li>• Interact with supervisor or superior</li> <li>• Coordinate with colleagues</li> </ul>   |
| <b>Performance Criteria(PC) w.r.t. the Scope</b>  |   |
| <b>Element</b>  | <b>Performance Criteria</b>   |
| <b>Interacting with supervisor</b>  | <p>To be competent, the user/ individual must be able to:</p> <p>PC1. understand and assess work requirements</p> <p>PC2. understand the targets and incentives</p> <p>PC3. understand new operating procedures and constraints</p> <p>PC4. report problems in the field</p> <p>PC5. resolve personnel issues</p> <p>PC6. receive feedback on work standards and customer satisfaction</p> <p>PC7. communicate any potential hazards at a particular location</p> <p>PC8. meet given targets</p> <p>PC9. deliver work of expected quality despite constraints</p> <p>PC10. get trained on latest technologies and updates</p> <p>PC11. receive positive feedback on behaviour and attitude shown during interaction</p> |
| <b>Coordinating with colleagues</b>   | <p>To be competent, the user/ individual must be able to:</p> <p>PC12. interact with colleagues from different functions and understand the nature of their work</p> <p>PC13. receive materials from tool room or stores; deposit faulty modules and tools to stores</p> <p>PC14. pass on work allocation to colleagues in a respective geographical area</p> <p>PC15. share work according to competency and capability</p> <p>PC16. assist colleagues with resolving field problems resolve conflicts and achieve smooth workflow</p> <p>PC17. follow the company policy during cross functional interaction</p>  |
| <b>Knowledge and Understanding (K)</b>  |   |
| <b>A. Organizational Context</b><br>(Knowledge of the company / organization and its processes) | <p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on: incentives, delivery standards, and personnel management</p> <p>KA2. importance of the individual's role in the workflow</p> <p>KA3. reporting structure</p>  |

**ELE/N9952**

**Coordinate with colleagues at work**

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| <p><b>B. Technical Knowledge</b></p>             | <p>The individual on the job needs to know and understand:</p> <p>KB1. how to communicate effectively</p> <p>KB2. how to build team coordination</p>  |
| <p><b>Skills (S) [Optional]</b></p>              |   |
| <p><b>A. Core Skills/<br/>Generic Skills</b></p> | <p><b>Teamwork and multitasking</b></p> <p>The individual on the job needs to know and understand how:</p> <p>SA1. to complete installation on time and as per quality standards specified</p> <p>SA2. to work as a team member for achieving smooth workflow and a satisfied customer</p> <p><b>Communication skills</b></p> <p>The individual on the job needs to know and understand how:</p> <p>SA3. to clearly communicate installation and design instructions to team</p> <p>SA4. to clearly communicate customer’s requirements</p> <p>SA5. to communicate the constraints and quality requirements to team</p> |
| <p><b>B. Professional Skills</b></p>             | <p><b>Decision making</b></p> <p>The individual on the job needs to know and understand:</p> <p>SB1. how to report potential areas of disruptions to work process</p> <p>SB2. when to report to supervisor and when to deal with a colleague depending on the type of concern</p> <p><b>Reflective thinking</b></p> <p>The individual on the job needs to know and understand:</p> <p>SB3. how to improve work process</p> <p><b>Critical thinking</b></p> <p>The individual on the job needs to know and understand:</p> <p>SB4. how to spot process disruptions and delays</p>  |

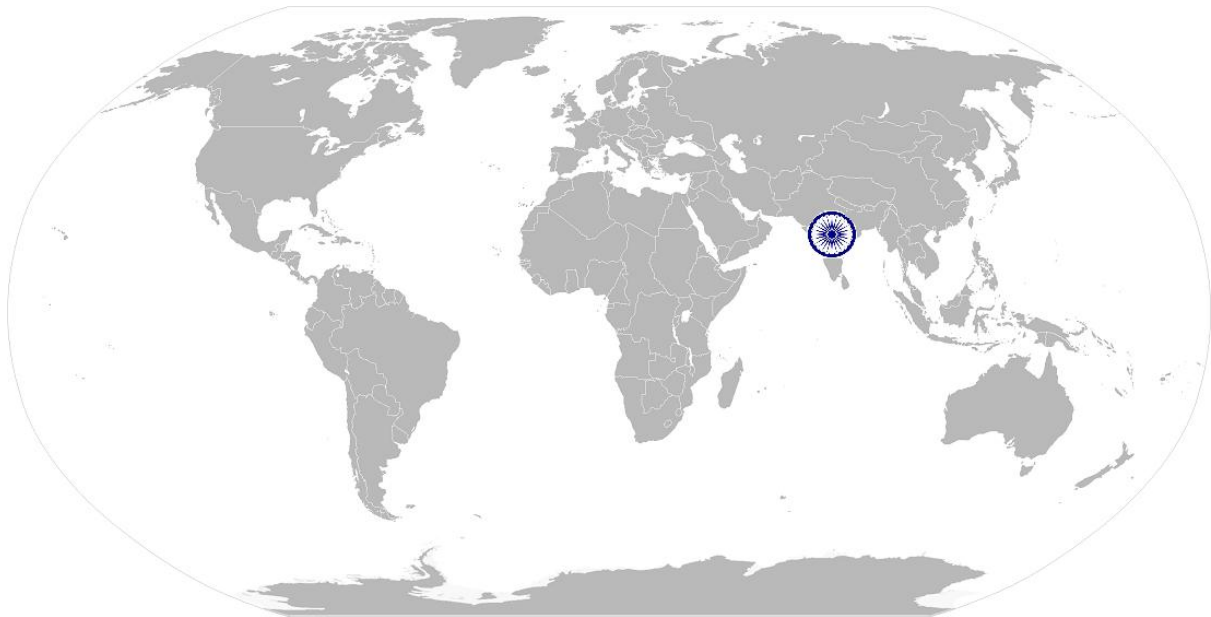


**ELE/N9952**

**Coordinate with colleagues at work**

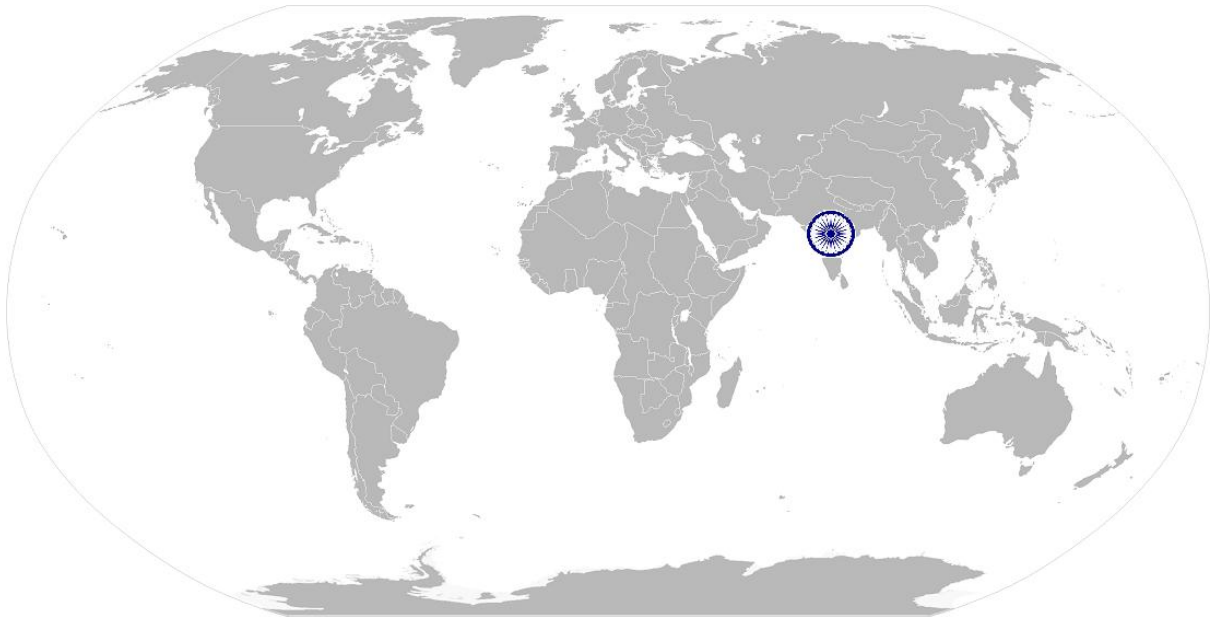
**NOS Version Control**

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|--|--------------------------|-------------------------|-----------------|
| <b>NOS Code</b>                                | <b>ELE/N9952</b>         |                         |                 |
| <b>Credits(NVEQF/NVQF/NSQF)<br/>[OPTIONAL]</b> | <b>TBD</b>               | <b>Version number</b>   | <b>1.0</b>      |
| <b>Industry</b>                                | <b>Electronics</b>       | <b>Drafted on</b>       | <b>24/02/14</b> |
| <b>Industry Sub-sector</b>                     | <b>Solar Electronics</b> | <b>Last reviewed on</b> | <b>24/03/14</b> |
|  |                          | <b>Next review date</b> | <b>24/03/15</b> |



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# National Occupational Standard



## Overview

This unit is about the individual's effort to maintain safety in the workplace and avoid any hazards during the work.

ELE/N9953

**Ensure safety at workplace**

|                                |   |   |
|--------------------------------|---|---|
| National Occupational Standard | <b>Unit Code</b>  | ELE/N9953   |
|                                | <b>Unit Title (Task)</b>  | Ensure safety at workplace  |
|                                | <b>Description</b>  | This OS unit is about maintaining safety in the workplace and avoid any work related hazards.   |
|                                | <b>Scope</b>  | This unit/ task covers the following: <ul style="list-style-type: none"> <li>Follow standard safety procedures while handling an equipment</li> <li>Participate in company's safety drills and workshops</li> </ul>   |
|                                | <b>Performance Criteria(PC) w.r.t. the Scope</b>  |   |
|                                | <b>Element</b>  | <b>Performance Criteria</b>   |
|                                | <b>Following safety measures</b>  | To be competent, the user/ individual must be able to: <ul style="list-style-type: none"> <li>PC1. comply with safety procedures followed in the company</li> <li>PC2. take adequate safety measures while handling hazardous materials or tools</li> <li>PC3. take necessary measures while handling electrical equipment</li> <li>PC4. escalate matters about hazardous materials or things found in the premises</li> <li>PC5. follow appropriate material handling procedures to avoid any damages and injuries</li> <li>PC6. use safety materials such as gloves, goggles, masks, helmets, etc.</li> <li>PC7. undertake adequate safety measures while on work to prevent accidents</li> <li>PC8. ensure zero accidents in work</li> <li>PC9. avoid damage of components due to negligence in ESD procedures</li> <li>PC10. ensure no loss for company due to safety negligence</li> </ul> |
|                                | <b>Participating in drills and workshops</b>  | To be competent, the user/ individual must be able to: <ul style="list-style-type: none"> <li>PC11. participate in regular safety drills for being prepared in the event of a fire or natural calamity</li> <li>PC12. help others during the drill or calamity</li> <li>PC13. administer basic first aid</li> <li>PC14. participate in company organised games and fitness sessions such as yoga, etc.</li> <li>PC15. develop good posture for working so that long term health problems do not arise</li> </ul>  |
|                                | <b>Knowledge and Understanding (K)</b>  |   |
|                                | <b>A. Organizational Context</b><br>(Knowledge of the company / organization and its processes) | The individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KA1. company's policies on: incentives, delivery standards, and personnel management</li> <li>KA2. company occupational safety and health policy followed</li> <li>KA3. company emergency evacuation procedure</li> <li>KA4. company's medical policy</li> </ul>   |

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|                               |   |
|-------------------------------|---|
| <b>B. Technical Knowledge</b> | <p>The individual on the job needs to know and understand:</p> <p>KB1. how to maintain the work area safe and secure</p> <p>KB2. how to handle hazardous material</p> <p>KB3. how to operate hazardous tools and equipment</p> <p>KB4. emergency procedures to be followed such as fire accidents, etc.</p> |
| <b>Skills (S) [Optional]</b>  |   |
| <b>A. Professional Skills</b> | <b>Handling safety equipments</b>   |
|                               | <p>The individual on the job needs to know and understand:</p> <p>SB1. the purpose of using safety materials such as gloves, etc.</p> <p>SB2. how to use safety equipments such as fire extinguisher during fire accidents</p>  |

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## NOS Version Control

|  |                          |                         |                 |
|--|--------------------------|-------------------------|-----------------|
| <b>NOS Code</b>                                | <b>ELE/N9953</b>         |                         |                 |
| <b>Credits(NVEQF/NVQF/NSQF)<br/>[OPTIONAL]</b> | <b>TBD</b>               | <b>Version number</b>   | <b>1.0</b>      |
| <b>Industry</b>                                | <b>Electronics</b>       | <b>Drafted on</b>       | <b>24/02/14</b> |
| <b>Industry Sub-sector</b>                     | <b>Solar Electronics</b> | <b>Last reviewed on</b> | <b>24/03/14</b> |
|  |                          | <b>Next review date</b> | <b>24/03/15</b> |

Qualifications Pack For Solar Panel Installation Technician

Definitions

| Keywords /Terms                      | Description   |
|--------------------------------------|---|
| 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.   |
| Function                             | Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.                                   |
| Sub-function                         | Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.  |
| 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 they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. |
| Performance Criteria                 | Performance criteria are statements that together specify the standard of performance required when carrying out a task.  |
| National Occupational Standards (OS) | 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          | Knowledge and understanding 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.  |

*Qualifications Pack For Solar Panel Installation Technician*

|                             |   |
|-----------------------------|---|
| Core Skills/ Generic Skills | Core skills or generic skills 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. |
|-----------------------------|---|

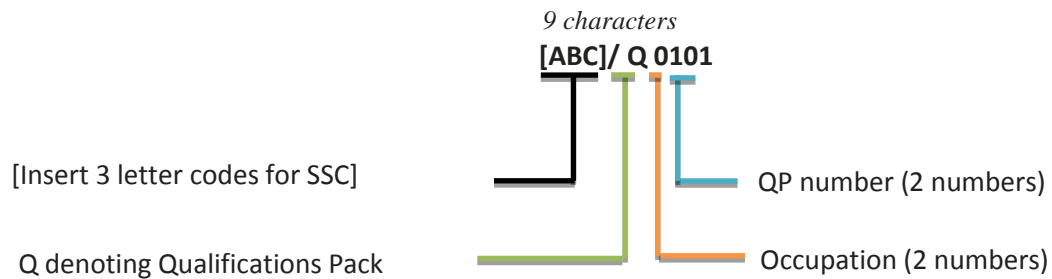
**Acronyms**

| Keywords /Terms | Description  |
|-----------------|--|
| NOS             | National Occupational Standard(s)                      |
| NVQF            | National Vocational Qualifications Framework           |
| NSQF            | National Qualifications Framework                      |
| NVEQF           | National Vocational Education Qualifications Framework |
| QP              | Qualifications Pack                                    |

## Annexure

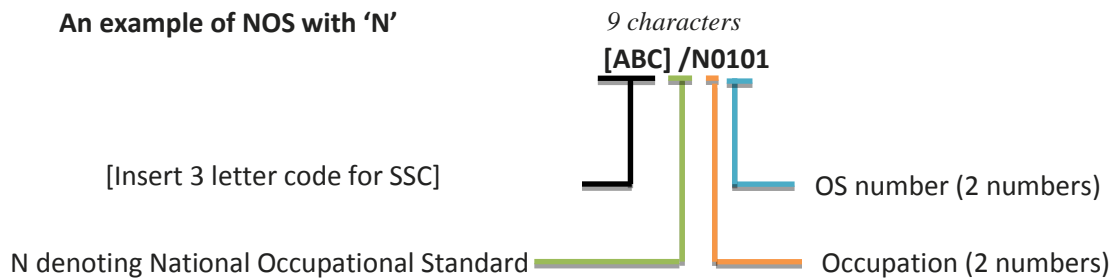
### Nomenclature for QP and NOS

#### Qualifications Pack



#### Occupational Standard

##### An example of NOS with 'N'





*Qualifications Pack For Solar Panel Installation Technician*

The following acronyms/codes have been used in the nomenclature above:

| <b>Sub-sector</b>         | <b>Range of Occupation numbers</b> |
|---------------------------|------------------------------------|
| Passive Components        | 01 - 10                            |
| Semiconductors            | 11 - 20                            |
| PCB Manufacturing         | 21 - 30                            |
| Consumer Electronics      | 31 - 40                            |
| IT Hardware               | 41 - 50                            |
| PCB Assembly              | 51 - 55                            |
| Solar Electronics         | 56 - 60                            |
| Strategic Electronics     | 61 - 65                            |
| Automotive Electronics    | 66 - 70                            |
| Industrial Electronics    | 71 - 75                            |
| Medical Electronics       | 76 - 80                            |
| Communication Electronics | 81 - 85                            |
| PCB Design                | 86 - 90                            |
| LED                       | 91 - 95                            |

| <b>Sequence</b>         | <b>Description</b>              | <b>Example</b> |
|-------------------------|---------------------------------|----------------|
| <b>Three letters</b>    | Industry name                   | ELE            |
| <b>Slash</b>            | /                               | /              |
| <b>Next letter</b>      | Whether <b>QP</b> or <b>NOS</b> | Q              |
| <b>Next two numbers</b> | Occupation code                 | 01             |
| <b>Next two numbers</b> | OS number                       | 01             |