**Solar Electric Technician (Level 2)**

**Module 5: Installation and assembly**

**E8: Assignment – Connecting PV modules in series and parallel**

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| **E8: ASSIGNMENT MEMO** | |
| **Date** | …. |
| **To** | Participants |
| **From** | Trainers |
| **Subject** | Connecting PV modules in series and parallel. |
| **What** | Connect PV modules in series and parallel. |
| **Why** | Participants will have clear idea what happened when PV modules in series and parallel. |
| **How** | 1. Group of 2 or 4. 2. Gather the required tools/equipment. 3. As per the given site condition and drawing, identify the parts of accessories used and the drawing. 4. Answer the questions and discuss the results. |
| **Time** | 90’ |

**Connect the provided solar PV modules in series and parallel connections and measure voltage and currents.**

**Required tools/equipment**

* Solar PV modules
* Multimeter (for measuring voltage and current).
* PV cables and MC4 connectors.
* Wire cutters, crimping tools, insulation tape.
* PV module specifications for reference.
* Safety gloves and protective equipment

**Instructions**

Follow each step to conclude the practice session.

**Step 1: Connect two or more solar PV modules in series and measure the combined output voltage and current.**

* Connect the positive terminal of one module to the negative terminal of the next module using MC4 connector or as per the instruction or diagram provided.
* Continue connecting modules in this manner until all are connected in series.
* Measure the total voltage across the positive terminal of the first module and the negative terminal of the last module using a multimeter.
* Measure the current by connecting the multimeter in series with the modules.
* Record the voltage and current values.

**Step 2: Connect two or more solar PV modules in parallel and measure the combined output voltage and current.**

* Connect all positive terminals of the modules together and all negative terminals together as per the instruction or diagram provided.
* Use MC4 connectors or junction boxes for parallel connections.
* Measure the total voltage across the positive and negative terminals using a multimeter.
* Measure the total current by connecting the multimeter in series with the combined output.
* Record the voltage and current values.

**Step 3: Connect two sets of solar PV modules, each in series, and then combine them in parallel, measuring the combined output.**

* Connect two modules in series as described in Step 1.
* Connect another set of two modules in series.
* Connect the two sets of series-connected modules in parallel (positive to positive and negative to negative).
* Measure the total voltage and current using a multimeter.
* Record the voltage and current values.

**Step 4: Group review and discussion (Instructor-led discussion)**

* Each group must present the voltage and current readings from each configuration (series, parallel, mixed).
* Discuss the differences in voltage and current for each configuration.
* Review the practical applications of series and parallel connections in real-world solar PV installations.

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| **Summary of findings** |
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