**Solar Electric Technician (Level 2)**

**Module 5: Installation and assembly**

**E12: Assignment – Interpret the SLD and prepare a wiring diagram**

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| **E12: ASSIGNMENT MEMO** | |
| **Date** | …. |
| **To** | Participants |
| **From** | Trainers |
| **Subject** | Interpreting the SLD and prepare a wiring diagram. |
| **What** | Interpret the SLD and prepare a wiring diagram. |
| **Why** | To enable participants to perform cable routing and conduiting. |
| **How** | 1. Group of 2 or 4. 2. Gather the required SLD. 3. As per the given instruction, review the SLD and prepare a wiring diagram. 4. Answer the questions and discuss the results. |
| **Time** | 120’ |

**Interpret the SLD and prepare a wiring diagram based on the SLD**

**Reference single line diagram.**

A diagram of a machine

Description automatically generated

**Instructions**

Gain a clear understanding of the provided single line diagram for a grid-connected solar PV system. Review the main components found in the SLD Follow each step to conclude the practice session.

**Introduction and review of the single line diagram (SLD)**

Gain a clear understanding of the provided single line diagram for a grid-connected solar PV system.

Review the main components found in the SLD, such as:

* Solar PV modules
* String inverters
* Combiner boxes
* DC disconnects
* AC disconnects
* Meters (both DC and AC)
* Circuit breakers
* Earthing system

Study the provided SLD, identify all key components and connections. Highlight safety devices such as fuses, circuit breakers, and disconnect switches.

Follow the steps mentioned below, ask questions with the trainer wherever you encounter confusion.

**Step 1: Identify and categorize the key components and their role in the system.**

* List all components from the SLD (e.g., PV array, inverter, main distribution board, etc.).
* Discuss the function of each component and how they are interconnected.
* Note the cable types, wire gauges, and safety devices required for each section of the system (e.g., DC to AC transitions).

**Step 2: Convert the single line diagram into a detailed wiring diagram.**

**PV array to inverter connection**

* Draw the wiring layout for connecting solar PV modules in series and parallel, indicating the positive and negative connections.
* Represent the connections between the PV array and the inverter, including the combiner box and DC disconnect switch.

**Inverter to AC distribution**

* Map out the connection from the inverter to the AC distribution board, showing the AC disconnect switch, breakers, and meters.
* Show the flow of current from the inverter to the utility grid through the grid-tied connection.

**Safety and protection devices**

* Ensure that the correct placement of surge protection devices (SPDs), circuit breakers, and earthing points are reflected.
* Include any monitoring or metering equipment for both DC and AC sides.

**Best practices**

* Make sure that all wire sizes and protection devices (fuses, breakers) match the system's specifications.
* Label each connection clearly, using industry-standard symbols for clarity.
* Ensure that all components, including disconnect switches and breakers, are placed in accordance with the system's design and safety requirements.

**Step 3: Verify that the wiring diagram accurately reflects the single line diagram and complies with installation standards.**

* Exchange the wiring diagrams with another group for review.
* Identify any potential errors or areas for improvement in the wiring diagrams, such as incorrect cable sizing, missing connections, or unclear labels.
* Discuss the importance of proper cable routing, conduit placement, and protection devices in the overall installation.

**Step 4: Reflect on the exercise and the key learning outcomes.**

* Present the completed wiring diagram to the class, explaining their interpretation of the SLD and the logic behind their wiring layout.
* Discuss any challenges faced during the process of converting the SLD into a wiring diagram.

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| **Answers** |
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