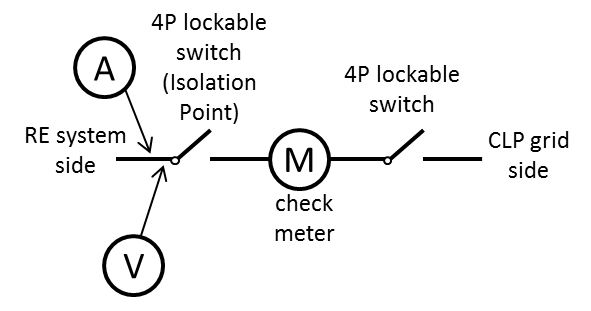
**{title}**

**Check-list before the Site Test**

1. Perform visual inspection for the whole RE system.
2. Check all wiring connections for the whole RE system.
3. Anti-islanding Test
   1. Connect the voltage terminals & current transformer (CT) of oscilloscope / data logger to the RE system side of 4P lockable isolation switch (Isolation Point).



* 1. Close **­‘AI-2’ 4P 100A LOCKABLE ISOLATOR** 4P isolation switch located at **Outside area of R/F Chiller Plant Room** from the grid supply side.
  2. *Close* ***‘MCB-13’ 4P 80A AC MCB*** *lockable isolation switch (Isolation Point) located at* **Outside area of R/F Chiller Plant Room** *from the RE system side.*
  3. Close all the below switching devices in MCB board,
     1. **‘PV System’ 3P 100A AC MCCB**
  4. Simulate the system disturbance by opening the lockable isolation switch (Isolation Point), record the voltage and current waveforms by oscilloscope/data logger to demonstrate the anti-islanding time <200ms.

1. Check for the “Grid Turn-on Delay” for the RE system is 300 sec.
2. The harmonic content of voltage and current waveforms will be recorded by oscilloscope/data logger.
3. Review and download the record waveform/data from oscilloscope/data logger.
4. Complete the T&C Report at P.2 of this document & Electricity (Wiring) Regulations. Work Completion Certificate – WR1 form, then sent to CLP for arranging CLP witness of site test.

**Testing and Commissioning Procedures for Grid Connection of RE System**

1. Check installation, earth bonding and wiring for the grid-connection section.
2. Harmonic current distortion test as per “Check-list before the Site Test”.
3. Demonstrate anti-islanding protection circuit to meet 0.2s protection time as per “Check-list before the Site Test”.
4. Measure the earth fault loop impedance of the RE system.
5. Measure the line-neutral loop impedance of the RE system.
6. Measure the RCD/RCBO trip time if applicable.
7. Inspect DC & AC dual-source warning labels along the path from RE system to CLP’s power infeed.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Part 1 – Grid Connected Renewable Energy System Summary** | | | | | | | |
| **A) RE System Information** | | | | | | | |
| CLP’s Application No. | | | |  | | | |
| RE Type | | | |  | | | |
| Power Rating (kW) | | | |  | | | |
| Current Rating (A) - | | | |  | | | |
| No. of Phase | | | |  | | | |
| RE Installation Address | | | |  | | | |
| **B) Lift Availability (only apply to new construction building)** | | | | | | | |
| Lift availability? | | | | Yes | No Remarks: | | |
| **C) Contractor Information** | | | | | | | |
| Contact Person | | | |  | | | |
| Phone Number | | | |  | | | |
| **D) Documents Submitted** (Please tick where applicable) | | | | | | No of Sheet | Remarks |
|  | Part 1 – Grid Connected Renewable Energy System Summary | | | | |  |  |
|  | Part 2 – T&C Results & Photos | | | | |  |  |
|  | Part 3 – Photos for Renewable Energy System Installation | | | | |  |  |
|  |  | | 3.1 - Overview of RE equipment (e.g. PV Panels, Wind Turbine & etc) and RE equipment inside Plantroom (e.g. Inverter, switchgear & etc) | | |  |  |
|  |  | | 3.2 - Nameplate & Technical Data Plate of RE equipment (e.g. Inverter, isolation transformer & etc) | | |  |  |
|  |  | | 3.3 - Earthing Connection of RE equipment | | |  |  |
|  |  | | 3.4 - DC warning labels at all DC Switchgear & panel and rating of all DC switchgears | | |  |  |
|  |  | | 3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears (from RE system and extend to CLP’s power infeed) | | |  |  |
|  |  | | 3.6 - PV Schematics & Main Electrical Schematic Diagram in Plant Rooms | | |  |  |
|  |  | | 3.7 - FiT/RE Meter Location, Meter Board’s dimension & Cable Terminations | | |  |  |
|  |  | | 3.8 - CLP’s Revenue Meter & Substation | | |  |  |
|  | Part 4 – Other Related Information (e.g. other related RE system or special information) | | | | |  |  |
|  | Operation Procedure | | | | |  |  |
|  |  | | Cover Page (Basic Information, Safety Procedure, Attachment List, REC & REW Information & Signature) | | |  |  |
|  |  | | Renewable Energy System Schematic | | |  |  |
|  |  | | Main Electrical Schematic | | |  |  |
|  |  | | Renewable Energy System Location Plan in the Premises | | |  |  |
|  |  | | CLP’s RE/FiT Meter Location Plan with access route | | |  |  |
|  | Electricity (Wiring) Regulations. Work Completion Certificate – WR1 form | | | | |  | |
|  |  | Part 1, 2 & 3 from Form WR1 | | | |  |  |
|  |  | Renewable Energy System Schematic | | | |  |  |

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| --- | --- | --- | --- | --- |
| **Part 2 – T&C Results & Photos** | | | | |
|  | Single Phase RE System (Please only provide test results for the connected phase L1/L2/L3) | | | |
|  | Three Phase RE System (Please only provide test results for all three phase L1, L2 & L3)  (Remark: either one photo for all three phases test result or three separate photo for single phase results) | | | |
| **Tests** | | **Photos & Results** | | |
| **Phase L1** | **Phase L2** | **Phase L3** |
| Anti-islanding time | | {%image} |  |  |
|  | | Results: {data} ms | Results: ms | Results: ms |
| Total Harmonic Current Distortion (should not exceed 5%) | |  |  |  |
|  | | Results: % | Results: % | Results: % |

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| **Part 2 – T&C Results & Photos** | | | | | |
| **Tests** | | **Photos & Results** | | | |
| **Phase L1** | **Phase L2** | | **Phase L3** |
| Earth fault loop impedance  (should comply with EMSD’s CoP) | |  |  | |  |
|  | | Results:  Ω | Results:  Ω | | Results:  Ω |
| Line to neutral loop impedance | |  |  | |  |
|  | | Results:  Ω | Results:  Ω | | Results:  Ω |
| RCD/RCBO trip time  (if applicable) | |  |  | |  |
|  | | Results:  ms | Results:  ms | | Results:  ms |
| **Part 3 – Photos for Renewable Energy System Installation** | | | | | |
| **3.1 - Overview of RE equipment (e.g. PV Panels, Wind Turbine & etc) and RE equipment inside Plantroom (e.g. Inverter, switchgear & etc)** | | | | | |
| **Description** |  | | |  | |
| **Photos** |  | | |  | |
| **Description** |  | | |  | |
| **Photos** |  | | |  | |
| **Part 3 – Photos for Renewable Energy System Installation** | | | | | |
| **3.1 - Overview of RE equipment (e.g. PV Panels, Wind Turbine & etc) and RE equipment inside Plantroom (e.g. Inverter, switchgear & etc)** | | | | | |
| **Description** |  | | |  | |
| **Photos** |  | | |  | |
| **Description** |  | | |  | |
| **Photos** |  | | |  | |
| **Part 3 – Photos for Renewable Energy System Installation** | | | | | |
| **3.1 - Overview of RE equipment (e.g. PV Panels, Wind Turbine & etc) and RE equipment inside Plantroom (e.g. Inverter, switchgear & etc)** | | | | | |
| **Description** |  | | |  | |
| **Photos** |  | | |  | |
| **Description** |  | | |  | |
| **Photos** |  | | |  | |

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| --- | --- | --- | --- | --- |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.2 – Nameplate, Technical Data Plate & Installation of RE equipment (e.g. Inverter, isolation transformer & etc)** | | | | |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.2 - Nameplate & Technical Data Plate of RE equipment (e.g. Inverter, isolation transformer & etc)** | | | | |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.2 - Nameplate & Technical Data Plate of RE equipment (e.g. Inverter, isolation transformer & etc)** | | | | |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.3 - Earthing Connection of RE equipment** | | | | |
|  | PV System (Please only provide information in **3.3.1**) | | | |
|  | Wind Turbine System (Please only provide information in **3.3.2**) | | | |
|  | **3.3.3** Others | | | |
| 3.3.1 Earthing Connection of PV system | | | | |
|  | PV Panels Metallic Frame to PV Panels Metallic Frame (Typical) | | | |
|  | PV Panels Metallic Frame to PV Panels Metallic Supporting Frame (Typical) | | | |
|  | PV Panels Metallic Supporting Frame to Earthing Terminal (Typical) | | | |
| **Description** | | PV Panels Metallic Frame to PV Panels Metallic Frame | | PV Panels Metallic Frame to PV Panels Metallic Supporting Frame |
| **Photos** | |  | |  |
| **Description** | | PV Panels Metallic Supporting Frame to Earthing Terminal | | Others: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.3 - Earthing Connection of RE equipment (Cont’d)** | | | | |
| 3.3.2 Wind Turbine Metallic Parts to Earthing Terminal | | | | |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| 3.3.3 Others | | | | |
| **Description** | |  |  | |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.4 - DC warning labels at all DC Switchgear & panel and rating of all DC switchgears (Cont’d)** | | | | |
| Please attach the **PV Schematic** and add **cloud mark** indication for DC warning labels at DC switchgear/DC switchgears’ metal box and attach their photos with description on the next page. | | | | |
|  | | | | |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.4 - DC warning labels at all DC Switchgear & panel and rating of all DC switchgears (Cont’d)** | | | | |
| **Description** | | Panel Name: | | Panel Name: |
| **Photos** | |  | |  |
| **Description** | | DC Switchgear Name & Rating: | | DC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.4 - DC warning labels at all DC Switchgear & panel and rating of all DC switchgears (Cont’d)** | | | | |
| **Description** | | DC Switchgear Name & Rating: | | DC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | | DC Switchgear Name & Rating: | | Panel Name: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.4 - DC warning labels at all DC Switchgear & panel and rating of all DC switchgears (Cont’d)** | | | | |
| **Description** | | Panel Name: | | DC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | | DC Switchgear Name & Rating: | | Panel Name: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.4 - DC warning labels at all DC Switchgear & panel and rating of all DC switchgears (Cont’d)** | | | | |
| **Description** | | DC Switchgear Name & Rating: | | DC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | | DC Switchgear Name & Rating: | | DC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.4 - DC warning labels at all DC Switchgear & panel and rating of all DC switchgears (Cont’d)** | | | | |
| **Description** | | DC Switchgear Name & Rating: | | DC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC (along the path from RE system to CLP’s power infeed)** | | | | |
| Please attach the **PV Schematic** and add **cloud mark indication** for AC dual source power supply warning labels at all AC switchgear & panel and attach their photos with description on the next page. | | | | |
|  | | | | |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears(along the path from RE system to CLP’s power infeed) (Cont’d)** | | | | |
| Please attach the **Main Electrical Schematic** and add cloud mark indication for AC dual source power supply warning labels at all AC switchgear & panel and attach their photos with description on the next page. | | | | |
|  | | | | |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears (along the path from RE system to CLP’s power infeed) (Cont’d)** | | | | |
| **Description** | | AC Switchgear Name & Rating: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | | Panel Name: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears (along the path from RE system to CLP’s power infeed) (Cont’d)** | | | | |
| **Description** | | Panel Name: | | Panel Name: |
| **Photos** | |  | |  |
| **Description** | | AC Switchgear Name & Rating: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears (along the path from RE system to CLP’s power infeed) (Cont’d)** | | | | |
| **Description** | | AC Switchgear Name & Rating: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | | Panel Name: | | Panel Name: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears (along the path from RE system to CLP’s power infeed) (Cont’d)** | | | | |
| **Description** | | Panel Name: | | Panel Name: |
| **Photos** | |  | |  |
| **Description** | | AC Switchgear Name & Rating: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears (along the path from RE system to CLP’s power infeed) (Cont’d)** | | | | |
| **Description** | | Panel Name: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | | AC Switchgear Name & Rating: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.5 - AC dual source power supply warning labels at all AC switchgear & panel and rating of all AC switchgears (along the path from RE system to CLP’s power infeed) (Cont’d)** | | | | |
| **Description** | | AC Switchgear Name & Rating: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Description** | | AC Switchgear Name & Rating: | | AC Switchgear Name & Rating: |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.6 – PV Schematics & Main Electrical Schematic Diagram (with cloud mark of RE System) in Plant Rooms** | | | | |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Description** | |  | |  |
| **Photos** | |  | |  |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | | | |
| **3.7 – FiT/RE Meter Location, Meter Board’s dimension & Cable Terminations** | | | | |
| **Description** | | Overview of Meter Location | | Meter Board Dimension: |
| **Photos** | |  | |  |
| **Description** | | Cable Terminations | | Choose an item. |
| **Photos** | |  | |  |

|  |  |  |
| --- | --- | --- |
| **Part 3 – Photos for Renewable Energy System Installation (Cont’d)** | | |
| **3.8 – CLP’s Revenue Meter & Substation** | | |
| **Description** | CLP's Revenue Meter No: |  |
| **Photos** |  |  |
| **Description** |  | Choose an item. |
| **Photos** |  |  |

|  |  |  |
| --- | --- | --- |
| **Part 4 – Other Related Information (e.g. other related RE system or special information)** | | |
| **Description** |  |  |
| **Photos** |  |  |
| **Description** |  |  |
| **Photos** |  |  |