



Methodology for Installation of Rooftop Solar Plant

Capacity : 850kWp

Site Details : Endurance Technologies Limited, E-71, Aurangabad, Maharashtra

JUPISOL POWER INDIA PRIVATE LIMITED

REG. OFFICE: G3, WESTERN BUSINESS PARK, OPP SD JAIN SCHOOL, VESU, SURAT - 395007

GSTIN: 24AAF6214M1ZH EMAIL: spatel@jupisolpower.com M: +91 9879284007

Medical Check-up for Fitness verification before entering Site.

Daily discussion and planning meeting before starting work.



OCCUPATIONAL HEALTH AND SAFETY
EHS Form

Site Medical Check-up Form

Form No. Checked By: Approved By: Date: Revision:

CERTIFICATE SERIAL NO.

Project: _____

Examining doctor name: _____ Date: _____ Time: _____

Name	Father's Name	Age	Identification Mark	Sex	Address	Description
Abdullah	Abdullah	45	12345	M	123 St	Employed

Medical and occupational history

Medical Examination with particular reference to:

General Physical:

1. Vision: *OK*

2. Hearing: *OK*

3. Breathing: *OK*

4. Upper Limbs: *OK*

5. Lower Limbs: *OK*

6. Spine: *OK*

7. General (Overall fitness and stability with good eye, hand and feet coordination): *OK*

Any other tests which the examining doctor considers necessary:

I hereby certify that I have personally examined _____ residing at _____ who is desirous of being employed in building and construction work and that his/her age is nearly as can be ascertained from my examination in _____ and that he/she is fit for employment in _____ as an _____.

Reason for:

1. Refresh of certificate

2. Certificate being voided

Signature of doctor: _____
Signature of worker: _____

Date: _____

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Reason for:

1. Refresh of certificate

2. Certificate being voided

Signature of doctor: _____
Signature of worker: _____

Date: _____

Daily Safety Training with work permit

SOME TOOLS ARE IRREPLACEABLE
Protect Your Hands
Don't Wear Loose Clothing

Work Safely
Your family is waiting for you at home

THINK. ACT. SAVE.
WE ALL HAVE THE POWER!

Teamwork Improves

SAFETY
Is a Full Time Job

Don't Make It a Part Time Practice

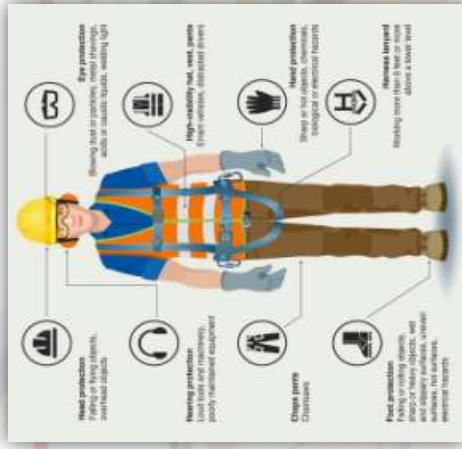
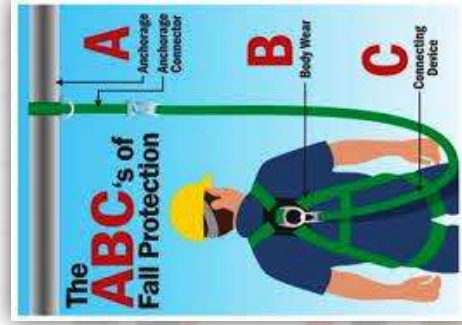


WORK PERMIT

THIS WORK PERMIT IS VALID ONLY FOR THE WORKER(S) IDENTIFIED IN THE WORK PERMIT. IT IS THE RESPONSIBILITY OF THE WORKER(S) TO OBTAIN THE NECESSARY PERMITS FOR THE WORK TO BE DONE.

Project Name: _____
Location: _____
Date: _____
Time: _____

NO.	DESCRIPTION OF WORK	DATE	TIME	INITIALS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				



Unloading and Safely storage Materials



Site Mock-up Walk way, Structure, life line, Modules and Equipment



Life line and Walk way Installation



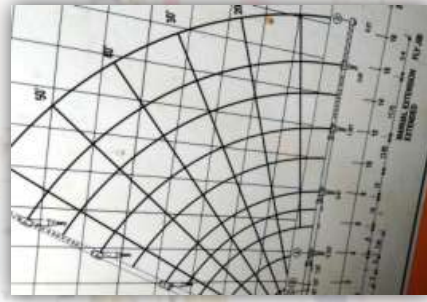
Life line and walk way Erection Inspection



Structure Installation



Lifting Equipments and Farana Inspection done Client (Project Manager)



Glucose-D Mineral water Given to Labour



Solar Modules Lifting on Roof



Solar Modules Sifting and Safety Officer visit on Roof



Solar Modules Installation



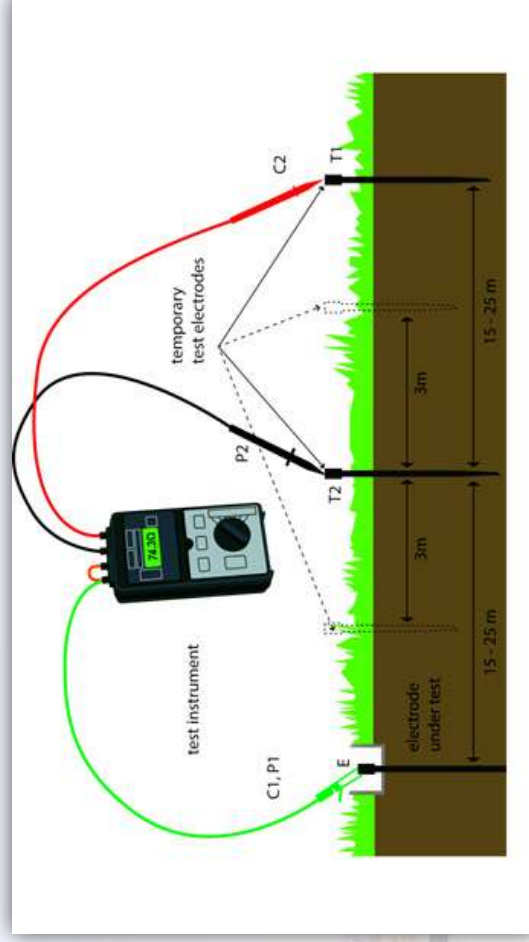
DC wiring, Cable Tray, Module to Module Earthing Installation



GI Earth Strep and Earthing work



Earthing Testing and certificate



TEST & CALIBRATION CERTIFICATE No. 178/2024

Specimen: INITIAL EARTH TESTS
DATE: 8.10.2024

Sl. No.	Reference	Standard	Acceptance Criteria/ Limit
01	0.0	0.0	0.0
02	1.0	1.0	0.0
03	2.0	2.0	0.0
04	3.0	3.0	0.0
05	4.0	4.0	0.0
06	5.0	5.0	0.0
07	6.0	6.0	0.0
08	7.0	7.0	0.0
09	8.0	8.0	0.0
10	9.0	9.0	0.0
11	10.0	10.0	0.0
12	11.0	11.0	0.0
13	12.0	12.0	0.0
14	13.0	13.0	0.0
15	14.0	14.0	0.0
16	15.0	15.0	0.0
17	16.0	16.0	0.0
18	17.0	17.0	0.0
19	18.0	18.0	0.0
20	19.0	19.0	0.0
21	20.0	20.0	0.0
22	21.0	21.0	0.0
23	22.0	22.0	0.0
24	23.0	23.0	0.0
25	24.0	24.0	0.0
26	25.0	25.0	0.0

TEST & CALIBRATION CERTIFICATE No. 178/2024

Specimen: INITIAL EARTH TESTS
DATE: 8.10.2024

Test Location: Hyderabad, India, 500001

Tested By: *[Signature]*

By: *[Signature]*

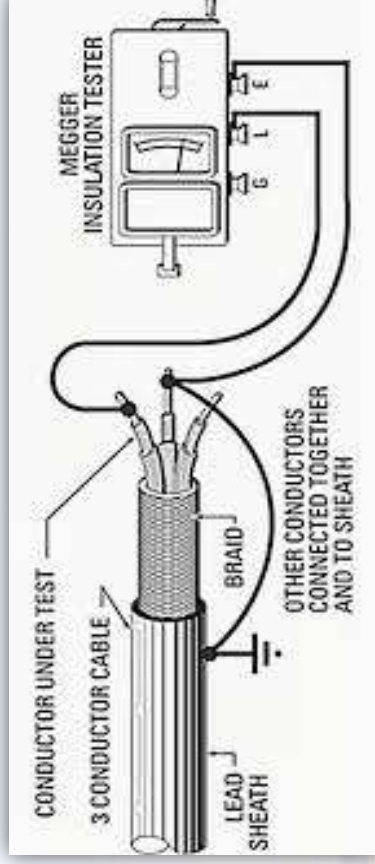
Reg. No. 143/2019 (Mechanical) / Phase 1, Hyderabad

ISO 9001:2015 Certified





Cable Megger Testing and certificate



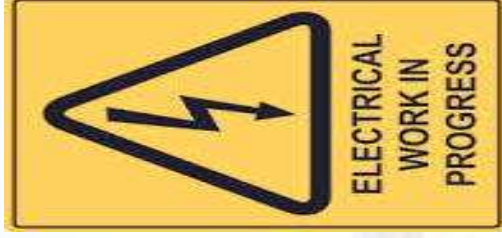
Model	Range	Test Voltage DC	Resolution
DIT 154	0 - 200 MΩ/Ohms	100 V	0.01 MΩ/Ohms
DIT 108	0 - 2000 MΩ/Ohms	250 V	0.1 MΩ/Ohms
DIT 10C	0 - 2000 MΩ/Ohms	500 V	0.1 MΩ/Ohms
DIT 152	0 - 2000 MΩ/Ohms	1000 V	0.1 MΩ/Ohms
DIT 150	0 - 2000 MΩ/Ohms	1000 V	1 MΩ/Ohms

Special Features

- 80 Ahg (5.0) capacity, 1.0mm height leads & minimum marking of 1000
- 0.15% Rdg ± 2.0dg at 25°C ± 5°C
- 2.5mm
- 1.1 to 1.0 Digital
- 0 to 100°C
- 0 to 100°C
- 0 to 100°C
- 15.0 to 150.0 Ohms
- 90 V & 2.5V Auto Battery
- 14.5 x 9.5 x 39 mm approx.
- 2 (Open including Battery Supplied)
- 1 (Polar Connector / Signal Tone Leads (Red & Black))
- 1 x 1.5V AA Battery (Reel - 5x)
- 1 Instruction Manual
- 1 Certificate
- 1.8.02 © 2012 for 7 years, Minimum Lead Terminals & Case
- Approved 2000/06/01 of 100% Government Owned & Case



AC Cable Laying



AC-DC Voltage Testing and Certificate



CERTIFICATE OF CALIBRATION

We hereby certify that this product has been calibrated and found to be in accordance with the applicable SPECIFICATIONS and MECO STANDARDS. Accuracies of the standard equipment used in this calibration are traceable to the National Standards.

MECO METERS PVT. LTD.
 Plot No. EL-50, MIDC Electronic Zone,
 TTC Industrial Area, Mahape,
 Navi Mumbai - 400710 (INDIA)
 Tel : 0091-22-27673311-16, 27673300 (Board)
 Fax: 0091-22-27673310, 27673330
 E-mail : sales@meconst.com
 Web : www.meconst.com

Checked By: S.S
 Date: 15-1-18
 Model No.: 603

ELECTRICAL SPECIFICATIONS - 603
Accuracy: ± 1% reading + 5 digit

AC VOLTAGE	Resolution	Accuracy
100 V	10 mV	± 1% (typ) ± 1 digit
200 V	20 mV	± 1% (typ) ± 1 digit
500 V	50 mV	± 1% (typ) ± 1 digit
1000 V	1 V	± 1% (typ) ± 1 digit

DC CURRENT	Resolution	Accuracy
200 mA	10 μA	± 1% (typ) ± 1 digit
2000 mA	100 μA	± 1% (typ) ± 1 digit
20 A	1 mA	± 1% (typ) ± 1 digit
200 A	10 mA	± 1% (typ) ± 1 digit

RESISTANCE	Resolution	Accuracy
20 Ω	1 Ω	± 1% (typ) ± 1 digit
200 Ω	10 Ω	± 1% (typ) ± 1 digit
2000 Ω	100 Ω	± 1% (typ) ± 1 digit
20 KΩ	1 KΩ	± 1% (typ) ± 1 digit
200 KΩ	10 KΩ	± 1% (typ) ± 1 digit
20 MΩ	1 MΩ	± 1% (typ) ± 1 digit

DC VOLTAGE	Resolution	Accuracy
100 V	10 mV	± 0.5% (typ) ± 1 digit
200 V	20 mV	± 0.5% (typ) ± 1 digit
500 V	50 mV	± 0.5% (typ) ± 1 digit
1000 V	1 V	± 0.5% (typ) ± 1 digit

AC CURRENT	Resolution	Accuracy
200 mA	10 μA	± 1% (typ) ± 1 digit
2000 mA	100 μA	± 1% (typ) ± 1 digit
20 A	1 mA	± 1% (typ) ± 1 digit
200 A	10 mA	± 1% (typ) ± 1 digit

GOOD TEST
 1.5 ± 0.05%
 5.0 ± 0.10%
 5.0 ± 0.10%
 5.0 ± 0.10%

CONFORMITY TEST
 Audible Signal Buzzer: _____
 Low Imp. Load: _____
 Overload Protection: 100% (DC/AC)
 Max. Input Power: 2.5 W (DC/AC)
 Max. Input Voltage: 2.5 V (DC/AC)
 Max. Input Current: 1.0 A (DC/AC)





	Danger Construction work in progress. Parents beware - building sites can be dangerous. Do not allow your children to play anywhere on this site.
	All visitors must report to site office
	Personal protective equipment must be worn in risk areas
	Danger Electricity
	Danger Load any machinery
	Danger Construction Site
	Unauthorised personnel prohibited from this point
	FIRST AID First aid for this site is available
	No children

Termination, ACDB Charging and testing



LT Pannal Termination



Tool Box Talk Stand Meeting



Inverter Installation



Ferulling and Tagging



L. A. Installation



Modules Cleaning System Installation



Pre-Commissioning Check list and Record Sheet

SOLAR PHOTOVOLTAIC SYSTEM
PRE-COMMISSIONING CHECK LIST & RECORD SHEET

CUSTOMER NAME	
DATE OF INSTALLATION	
SITE LOCATION (ADDRESS)	
CHECKED BY	
CONTACT NO	
TPS PROJECT INCHARGE	
VENDOR NAME	

SOP for Pre commissioning & commissioning

1. On Completion of Job of Installation has to be checked as per drg, std, norms & as per checklist below.
2. After all installation found satisfactory then Meggaring of all cables has to be carried out as per Log Sheet 1.
3. Then all continuity & polarity tests are to be carried out as per Log Sheet 2.
4. Then All earthing test to be carried out as per log sheet 3.
5. Then A/B Can be charged & records can be updated in the log Sheet 4. This completes DC part
6. On Completion of DC part ACB & ACDB Can be charged as per OEM Guidance.
7. After ACDB Charging is completed then Inv is ready for DC & AC Inputs.
8. Inverter can be charged as per OEM Guidelines.

Pre-Commissioning Check List

Following the completion of each item on the checklist below check the box to the right of the item. Remember to follow proper safety procedures while performing the system installation check.

A. GENERAL

SL. NO.	GENERAL CHECK DESCRIPTION	CHECK BOX
1.	Before Start of Commissioning work Site supervisor must visit the site, understand the work, risks & plan accordingly. <input checked="" type="checkbox"/> Risk Identified <input type="checkbox"/> Electric Power Sources Identified.	✓
2.	Are all the personnel involved for installation and commissioning trained and competent in work they conduct?	✓
3.	Are the Emergency response plans, developed from a review of potential emergency scenarios, in place?	✓
4.	Is Permit (or) authorization to carry out the work from responsible person(s) at site available?	✓
5.	Are Personnel Protective Equipments (PPE's) like helmet, Safety shoes, hand gloves, eye protection goggles, safety belts, clean water, dry cloth etc. are available at the place of work?	✓
6.	Are the contact details of doctor or nearest hospital available just in case?	✓
7.	Whether All Proper Tools & Equipments are available...?	✓
8.	All concerns are informed	✓
9.	LOTO has been applied wherever required.	✓
10.	Fire Extinguishers are available. Type of Ext. : <u>A, B, C</u>	✓

Checked By & Date : Y

PRE-COMMISSIONING CHECK LIST & RECORD SHEET
LOG SHEET 1 – IR / Meggar Test Report – cables

Date & time of check	
Nominal Solar array capacity	
Site Name	
Checked By	

Sn	Cable Size	From	To	Meggarr Values			Remark
				RY & BN	RB & YN	RYBN & Gnd	
1	ESAT SLOPE	Inverter - 1	ITB - 1	9.2	9.2	9.2	All Value In M ohm
2	4C x 35 mm2	Inverter - 2	ITB - 2	9.2	9.2	9.2	
3	4C x 35 mm2	Inverter - 3	ITB - 3	9.2	9.2	9.2	
4	4C x 35 mm2	Inverter - 4	ITB - 4	9.2	9.2	9.2	
5	4C x 35 mm2	Inverter - 5	ITB - 5	9.2	9.2	9.2	
6	4C x 35 mm2	Inverter - 6	ITB - 6	9.2	9.2	9.2	
WEST SLOPE							
1	4C x 35 mm2	Inverter - 1	ITB - 1	9.2	9.2	9.2	
2	4C x 35 mm2	Inverter - 2	ITB - 2	9.2	9.2	9.2	
3	4C x 35 mm2	Inverter - 3	ITB - 3	9.2	9.2	9.2	
4	4C x 35 mm2	Inverter - 4	ITB - 4	9.2	9.2	9.2	
5	4C x 35 mm2	Inverter - 5	ITB - 5	9.2	9.2	9.2	
6	4C x 35 mm2	Inverter - 6	ITB - 6	9.2	9.2	9.2	

Note :

1. During Checking pls. not that all isolators @ both end are OFF & no one working nearby terminations.
2. After Checking Pls. short all the Cables to ground for discharging.

Checked By (Sign & Name) OK





Thanks