

MODEL TECHNICAL SPECIFICATIONS OF SRTPV SYSTEM

(As per MNRE and BESCO Specifications)

Boundary conditions for support to Grid connected Solar PV Applications for All Category of beneficiaries, including Individuals, Industrial / Commercial / Non Commercial entities to be 1 kWp to 500 kWp.

Applicable BIS /Equivalent IEC Standards / Applicable MNRE Specifications

A. Solar PV Modules	Standard Description		Standard Number
	Modules		
	(i)	(a) Crystalline Silicon Terrestrial PV modules (b) Thin film Terrestrial PV modules (c) Concentrator PV modules	- IEC 61215 / IS 14286 - IEC 61646 / Eq. IS - IEC 62108
	(ii)	(a) Construction requirements (b) Testing & Safety qualification	- IEC 61730 (Pt. 1) / Eq. IS - IEC 61730 (Pt. 2) / Eq. IS
	(iii)	PV modules to be used in a highly corrosive atmosphere (Coastal area etc,) must qualify Salt Mist corrosion Testing	- IEC 61701 / IS 61701
Each PV module must use RFID tag which must contain the following information as per MNRE requirements: (i) Name of the manufacturer of PV Module (ii) Name of the manufacturer of Solar Cells (iii) Month and year of manufacture (separately for solar cells and module) (iv) Peak wattage, Im, Vm and FF for the module (v) Unique SI. No. and Model No. of the module (vi) Date and year of obtaining IEC PV module qualification certificate (vii) Name of the test lab issuing IEC certificate (viii) Country of origin(separately for solar cells and module) (ix) I-V curve for the module (x) Other relevant information on traceability of solar cells and module as per ISO 9000 series AUTHORISED TESTING LABORATORIES / CENTERS Performance of PV Modules, at STC conditions, must be tested and approved by one of the IEC / NABL Accredited Testing Laboratories including Solar Energy Centre of MNRE. For small capacity PV modules up to 50 Wp capacity STC performance will be sufficient. WARRANTY: PV modules used in solar power system must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years			
B. BOS Item / System	Standard Description		Standard Number
Power Conditioners / Inverters including MPPT & Protections. (More than 100Wp and up to 20kWp capacity only)	i	Environmental Testing	IEC 60068 - 2 (1, 2, 14, 30) / Equivalent BIS Std
	ii	Efficiency Measurements	IEC 61683 / IS 61683
	iii	Product safety standard	IEC 62109-1 (2010) IEC 62109-2 (2011)
	iv	Grid Connectivity utility interface	IEC 61727:2004 (as per IEEE 519 specifications)
	v	Test procedure for islanding prevention measures for utility/ interconnected PV inverters	IEC 62116 or IEEE 1547 and IEEE 1547.1
	vi	Electromagnetic compatibility and Electro Magnetic Interference	IEC 61000-6-1:2007 IEC 61000-6-3:2007 IEC 61000-3-2:2006 IEC 61000-3-3:2006
	vii	Ingress protection	IP 54 (for outdoor)/ IP 21 (for indoor) As per IEC 529
*Note: for testing SI. No. i & ii beyond 10 kVA self-certification by manufacturers are acceptable in case if the Charge controller is not built-in the inverter, IEC 62093 test is required separately for charge controller			

Storage Batteries	Capacity Test ; Charge / Discharge Efficiency and self discharge	As per relevant BIS Std.
Cables	General Test and Measuring Method PVC insulated cables for working voltage upto and including 1100 V and UV resistant for outdoor installation for A.C. cables. (It is suggested to use D.C. rated, UV resistant Photovoltaic cable having plug and play capability cables)	IEC 60227 / IS 694, IEC 60502 / IS 1554 (Part I & II)
Earthing	Grounding	IS 3043: 1986
Switches/ Circuit Breakers/ Connectors	General Requirements Connectors –safety A.C. /D.C.	IEC 60947 Part 1,11, III / IS 60947 Part 1,11, III EN 50521
Junction Boxes/ Enclosures for Invertors / Charge Controllers / Luminaries	General Requirements	IP 65 (for outdoor)/ IP 21 (for indoor) As per IEC 529
Meters	As per CEA Guidelines	
Grid Connectivity	As prevalent in the State	
	AUTHORISED TESTING LABORATORIES / CENTERS : Test Certificates/ Reports for the B o S items / components can be from any one of the IEC / NABL Accredited Testing Laboratories or MNRE approved centers.. WARRANTY: The mechanical structures, electrical works , storage batteries etc and SPV power plants / systems must be warranted for a minimum period of 5 years	