



**PRODUCT MANUAL FOR SOLAR PHOTOVOLTAIC WATER
PUMPING SYSTEMS - PART 1 CENTRIFUGAL PUMPS
AS PER IS 17018(PART1):2018**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 17018(PART 1):2018
	Title	:	Solar photovoltaic water pumping systems- Centrifugal Pumps.
	No. of Amendments	:	Nil
2	Sampling Guidelines		
a)	Raw material		Pumpset- Clause 6 of IS 17018 (Part 1) PV array- BIS Registered (SDOC)
b)	Grouping guidelines	:	Please refer ANNEX-A
c)	Sample size	:	One complete unit of solar PV water pumping system
3	List of Test Equipment		Please refer ANNEX-B
4	Scheme of Inspection and Testing		Please refer ANNEX-C
5	Possible Tests in a day		Protection test of Solar PV converter/Controller-Cl. 7.4.4
6	Scope of Licence:		Please refer ANNEX- D

ANNEX - A

Grouping Guidelines

1. The following guidelines shall be followed for grouping of Solar Photovoltaic Water Pumping Systems as per IS 17018(Part1):2018 for GoL/CSoL:
 - a) A 'series' may be defined as a group of pump sets of the same type having the same Head, Discharge and Delivery Size. Any change in these parameters will be treated as a different series.
 - b) Sample from each series shall be tested to cover entire variety in that particular series.
 - c) Alternate models of a controller used with a particular variety of pumpset and PV array already covered in the scope of licence may be permitted provided the alternate models have the same efficiency, voltage range, Power range and current rating.
 - d) Similarly alternate models of a PV array used with a particular variety of pumpset and controller already covered in the scope of licence may be permitted provided the alternate models have the same rating in Watts peak (W_p).
2. The Firm shall declare the varieties of Solar Photovoltaic Water Pumping Systems intended to be covered in the Licence. The Scope of Licence may be restricted based on the manufacturing and testing capabilities of the Manufacturer.
3. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible

ANNEX-B**LIST OF TEST EQUIPMENT***Major test equipment required to test as per the Indian Standard*

Sl. No	Tests used in with Clause reference	Test equipment
1	Solar Photo Voltaic (PV) Converter/Controller efficiency, 7.4.1, 7.4.2	Simulator, Power meter etc.
2	Solar Photo Voltaic (PV) Converter/Controller efficiency, 7.4.3	Power meter, IR tester etc.
3	Pumpset with solar PV converter/dc Controller 7.1	Automatic testing panel(including voltmeter, ammeter, wattmeter, frequency meter) etc.
4	Whole day performance of pump,10.3, 7.1	Automatic testing panel, Sun simulator as per Annexure B of IS 17018 (Part 1), Pyranometer, Electromagnetic flow meter of adequate size etc.

The above list is indicative only and may not be treated as exhaustive.

ANNEX- C

SCHEME OF INSPECTION AND TESTING

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipment.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirements of IS 17018 : 2018.

4. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

4.1 All the production which conforms to the Indian Standard and covered by the licence should be marked with Standard Mark.

5. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

Table 1

Table 1

(1)				(2)	(3)		
Test Details				Test equipment requirement	Levels of Control		
Cl.	Requirement	Test Methods		R: required (or) S: Sub-contracting permitted	No. of Sample	Frequency	Remarks
		Clause	Reference				
5	CONSTRUCTIONAL FEATURES						
5.2.6	Photo Voltaic Array	5.2.6.3, 5.2.6.4	IS 17018 (Part 1)	S	One	Each consignment	PV module shall be in compliance with the provisions of Quality Control Order on Compulsory Registration, issued by MNRE.
		5.2.6.5 to 5.2.6.7, 5.2.6.9, 5.2.6.10.	IS 17018 (Part 1)	S	One	Each consignment	No further testing is required, if accompanied with test certificate
5.3	Material of Construction	5.3	IS 17018 (Part 1)	S	Conformity may be established with relevant Indian Standards.		
7	PERFORMANCE						
7.4	Solar Photo Voltaic (PV) Converter/ Controller	7.4.1	IS 17018 (Part 1)	R	Every Converter/ Controller		No further testing is required, if accompanied with test certificate

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		7.4.3	IS 17018 (Part 1)	S	Once in a year for each design of the converter/ controller body	—
		7.4.4	IS 17018 (Part 1)	S	One (out of every 50 controller / converter or once in a month, whichever is earlier)	—
7.4.6	Cable requirements	7.4.6	IS 17018 (Part 1)	—	—	Shall be ISI marked.
8	Provision for Earthing	8.1	IS 17018 (Part 1)	R	Every motor	—
9	Ratings	9	IS 17018 (Part 1)	R	Every module	—
10	TESTS FOR HYDRAULIC AND ELECTRICAL PERFORMANCE OF PUMPSET					
6, 7.2, 10.1	Pumpset requirements	6	IS 17018 (Part 1)	R	Each consignment	No further testing is required, if accompanied with test certificate.
7.1, 10.3	Whole day Performance (with Sun simulator)	7.1.1, 7.1.2, 10.3, Annex B	IS 17018 (Part 1)	R	One pump-set of each motor rating (Out of every 100 or once in a month whichever is earlier)	—

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	Whole day Performance (real condition testing)	10.3, Annex B	IS 17018 (Part 1)	R	One pump-set of each motor rating (Out of every 250 or once in a month, whichever is earlier)	—
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NOTE-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

NOTE-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

