उत्पाद मैनुअल
विधुतीय वाहन चालकता चार्जिंग पद्धति भाग 23 डी. सी विधुतीय वाहन प्रदाय उपकरण आईएस 17017 (Part 23): 2021 के अनुसर

PRODUCT MANUAL
ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM PART 23 d.c. ELECTRIC VEHICLE SUPPLY EQUIPMENT according to IS 17017 (Part 23): 2021

यह उत्पाद नियमावली सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसधारियों द्वारा विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना-I के अंतर्गत प्रमाणन के संचालन में एकरूपता और पारदर्शिता सुनिश्चित करने के लिए संदर्भ सामग्री के रूप में उपयोग की जाएगी। बीआईएस प्रमाणन प्राप्त करने के इच्छुक भावी आवेदक भी इस दस्तावेज़ का उपयोग कर सकते हैं।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	**मानक संख्या / IS No.**	:	IS 17017 (Part 23): 2021
	शीर्षक / Title	:	ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM PART 23 d.c. ELECTRIC VEHICLE SUPPLY EQUIPMENT
	संशोधनों की संख्या **No. of amendments**	:	Nil
2.	**नमूनाकरण दिशानिर्देश / Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	Nil *Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.*
b)	**समूहीकरण दिशानिर्देश** **Grouping Guidelines**	:	1. Manufacturer shall submit declaration for each of the model of EV Charger they intend to cove in the scope of licence. 2. For Grant of Licence/ Change in Scope of Licence, each Model of EV Charger is to be tested. 3. During the operation of the Licence, BO shall ensure that all the model(s) covered in the Scope of the Licence are tested in rotation to the extent possible.

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c)	**नमूने का परिमाण / Sample Quantity**	:	1 Equipment (with all the accessories)
d)	**परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर** **Parameters to be Declared in Test Request**		Parameters as given in scope of licence *Note: Apart from the above, any other requirements/ parameters may also be declared as per the standard, as applicable.*
3.	**परीक्षण उपकरण की सूची** **List of Test Equipment**	:	Please refer **ANNEX – A**
4.	**निरीक्षण एवं परीक्षण योजना** **Scheme of Inspection and Testing**	:	Please refer **ANNEX – B**
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**	:	All tests *Note: This section is for the guidance of BIS Certification Officers/ Technical Auditors of BIS Authorized Outside Surveillance Agencies(OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/ auditor.*

6. लाइसेंस का दायरा / Scope of the Licence:

"Licence is granted to use Standard Mark as per **IS 17017 (Part 23): 2021** with the following scope:

Name of the product	***dc Electric Vehicle Supply Equipment***
Model No./ Type designation	
Power supply Input	_____V, _____A ____Hz, _____Phase a.c./d.c, Plug and cable connected/ Permanently connected
Power supply Output	_____V, _____A
Intended Use	Indoor/ Outdoor use locations with restricted access/ non-restricted access
Mounting Method	*(as per cl.5.5 of IS 17017 (Part 1))*
Protection against electric shock	Class I/ Class II/ Class III
Type of Insulation	basic insulation/ reinforced insulation / double insulation
System control	a) regulated d.c. electric vehicle supply equipment: • controlled current charging or • controlled voltage charging, or • combination of a) and b) b) non-regulated d.c. electric vehicle supply equipment
System	System A/ System C
Thermal Management System	thermal sensing/ thermal sensing and thermal transport/ none
Degree of Protection	

ANNEX- A
List of Test Equipments
(Indicative List, For Guidance Only)

Sl. No.	Test Equipment	Tests used in with Clause Reference
1	Draught free location, Ambient temperature 27° ± 2°C; Humidity 65 ± 5 percent	General requirements
2	Artificial Load with dedicated electric vehicle simulator for each system; Voltmeter; Ammeter; Stop watch; EV-simulator; CP oscillator	Continuous continuity checking of the protective conductor – Cl 6.3.1.2, Cl B 9.3.4
3	Control Pilot System as per Fig 2 of IS 17017(Part 23); Voltmeter; Artificial load; EV simulator	Energization of the power supply to the EV – Cl 6.3.1.4
4	Artificial Load; Stop Watch; Standard Test set up as per Table 56 of IS 17017(Part 23)	De-energization of the power supply to the EV – Cl 6.3.1.5
5	Voltmeter; Ammeter; Stop watch DC Supply test system as per Fig 3 of IS 17017(Part 23); Artificial load with a dedicated Electric Vehicle Simulator for each system Standard test setup as per Table 65 of IS 17017(Part 23); EV Simulator	Measurement of Voltage and Current – Cl 6.3.1.102, A 4.4
6	EV Simulator for Normal condition test, Abnormal condition test, Artificial load	Latching of Vehicle Coupler – Cl 6.3.1.103
7	DC. electric vehicle supply equipment to an artificial load with a dedicated electric vehicle simulator for each system	Compatibility assessment – Cl 6.3.1.104
8	Test setup with Test load, Fault Resistance capable of test scenarios as per Table 32 of IS 17017(Part 23); Stop watch; Voltmeter Ammeter; Insulation Resistance tester/Megger	Insulation Check before charging – Cl 6.3.1.105
9	Artificial load with a dedicated electric vehicle simulator as per Table 4 of IS 17017(Part 23) Voltmeter; Ammeter; EV Simulator	Protection against overvoltage between positive terminal DC + and negative terminal DC – at the interface – Cl 6.3.106
10	Metal plate or an equivalent hard material Artificial load and a dedicated electric vehicle simulator; Voltmeter	Verification of vehicle connector latching – Cl 6.3.107
11	Artificial load; EV simulator	Control Circuit Supply Integrity – Cl 6.3.108
12	Artificial load; EV simulator	Short Circuit check before charging – cl 6.3.1.109
13	Artificial load; EV simulator	User initiated Shutdown – cl 6.3.1.110
14	EV simulator	Wake up of dc EV supply equipment by EV – cl 6.3.2.101
15	EV simulator / Communication tester	Communications Cl 7
16	Earth Continuity Tester; Isolated AC Power Supply Mechanical Jointed Test Finger:	Protection against electric shock – Cl 8

17	Voltmeter; Ammeter	Conductive electrical interface requirements Cl 9
18	Visual inspection	Requirements for adapters Cl 10
19	Visual Inspection	Cable Assembly requirements Cl 11
20	Vernier caliper; IP Test Apparatus as per IS/IEC 60529; Meg-ohmmeter; High voltage tester; Conductive Metal Foil Electrode Temperature Rise Test Setup; EV Charge Simulator; Mechanical Impact Test Apparatus	EV supply equipment constructional requirements and tests (Cl 12)
21	**S**hort-Circuit Test Rig	Overload and short circuit protection (Cl 13)
22	Automatic reclosing devices (ARDs)	Automatic reclosing of protective devices (Cl 14)
23	Emergency Stop Functional Tester Oscilloscope	Emergency switching or disconnect (Cl 15)

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

ANNEX B
Scheme of Inspection and Testing

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence manufacturers will implement a Quality Assurance Plan (QAP) i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or sub-contracting/ sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 Recommended Levels of Control/ Control Unit:

1.3.1 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in Table 1. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.2 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING

The manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

i) Shared testing resources like common facility,

ii) Cluster based testing facility,

iii) Sub-contracting to outside laboratories which may either be:

a) BIS recognised/ empanelled laboratories, or

b) Any accredited laboratory as per ISO/IEC 17025

2.1 Test Records- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING

The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each d.c. Electric Vehicle Supply Equipment provided always that the product so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the provisions of IS 17017 (Part 23):2021.

3.2 **Additional Marking requirements**: The following details shall also be marked on each product and packaging:

a) "For BIS certification details please visit www.bis.gov.in"

4. REJECTION

The production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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

(Recommended Levels of Control by BIS- for Guidance Only)

(1)				(2)		
Test Details				**Levels of Control**		
Cl.	**Requirement**	**Test Methods**		**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**			
6	Charging Modes and Functions	6	IS 17017 (Part 23)	Each EV Charger		
7	Communications	7	IS 17017 (Part 1)	Each EV Charger		
8	Protection against Electric Shock	8	IS 17017 (Part 23)	Each EV Charger		
9	Conductive Electrical Interface requirements	9	IS 17017 (Part 23) IS 17017 (Part 1)	Each EV Charger		
10	Requirements for Adaptors	10	IS 17017 (Part 1)	Each EV Charger		
11	Cable Assembly requirements	11	IS 17017 (Part 23) IS 17017 (Part 1)	Each EV Charger		
12	EV supply equipment constructional requirements and tests					
12.1	General	12.1	IS 17017 (Part 23) IS 17017 (Part 1)	Each EV Charger		
12.2	Characteristics of Mechanical Switching Devices	12.2	IS 17017 (Part 1)	Once in a month		
12.3	Clearances and Creepage Distance	12.3	IS 17017 (Part 23) IS 17017 (Part 1)	Once in a month		
12.4	IP degrees	12.4		Once in a year		
12.5	Insulation Resistance	12.5		Each EV Charger		
12.6	Touch Current	12.6		Each EV Charger		
12.7	Dielectric Withstand voltage	12.7		Each EV Charger		
12.8	Temperature Rise	12.8	IS 17017 (Part 1)	Once in a month		
12.9	Damp Heat Functional Test	12.9		Once in a month		
12.10	Operating Temperature Limits	12.10				
12.11	Mechanical Strength	12.11	IS 17017 (Part 23)			
12.101	Input Current	12.101	IS 17017 (Part 23)	Each EV Charger		
12.102	Specific Requirements for Liquid Cooled d.c. EV Supply Equipment	12.102		Once in a month		
12.103	Power supply cords	12.103		Once in a month		
12.104	Stress relief test	12.104		Once in a month		
12.105	Abnormal operation and simulated fault condition tests	12.105		Once in a month		

12.106	Protection against electrically caused fire	12.106		Once in a month
12.107	Protection against chemical hazards	12.107		Once in a month
12.108	Enclosures	12.108		Once in a month
12.109	Components bridging insulation	12.109		Once in a month
13	Overload and short circuit protection	13	IS 17017 (Part 23) IS 17017 (Part 1)	Once in a month
14	Automatic reclosing of protective devices	14		Once in a month
15	Emergency switching or disconnect	15	IS 17017 (Part 1)	Each EV Charger
16	Marking And Instructions	16	IS 17017 (Part 23) IS 17017 (Part 1)	Each EV Charger
101	Specific Requirements For D.C. EV Supply Equipment	101	IS 17017 (Part 23)	Once in a month

Note-1: In addition, complete testing shall be repeated whenever there is a change in design of the product, components or parts.