



उत्पाद मैनुअल

आई एस 13340 (भाग 1) : 2024/ आई ई सी 60831-1 : 2014 के अनुसार
1000 वॉट तक एवं सहित वोल्टता रेटित धारक ए. सी. सिस्टम के स्वतः रोपी टाइप के शंट
संधारित्र भाग 1 सामान्य - प्रदर्शन, परिक्षण और रेटिंग - सुरक्षा अपेक्षाएँ - संस्थापन एवं प्रचालन
के लिए मार्गदर्शिका (दूसरा पुनरीक्षण) के लिए

दस्तावेज संख्या - पीएम/आईएस 13340 (भाग 1)/ आई ई सी 60831-1 /2/ दिसंबर 2024
*विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I
के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग
सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा।
दस्तावेज का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया
जा सकता है।*

PRODUCT MANUAL FOR

SHUNT POWER CAPACITORS OF THE SELF-HEALING TYPE FOR a.c. SYSTEMS
HAVING A RATED VOLTAGE UP TO AND INCLUDING 1 000 V PART 1 GENERAL
— PERFORMANCE, TESTING AND RATING — SAFETY REQUIREMENTS — GUIDE
FOR INSTALLATION AND OPERATION (SECOND REVISION)

ACCORDING TO IS 13340(Part 1) : 2024/IEC 60831-1 : 2014

Document No - PM/IS 13340 (Part 1)/IEC 60831-1/2/December 2024

*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.*

भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

मानक भवन, ९, बहादुर शाह ज़फ़र मार्ग

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उत्पाद मैनुअल

1000 वॉट तक एवं सहित वोल्टता रेटित धारक ए. सी. सिस्टम के स्वतः रोपी टाइप के शंट संधारित्र भाग 1 सामान्य - प्रदर्शन, परिक्षण और रेटिंग - सुरक्षा अपेक्षाएँ - संस्थापन एवं प्रचालन के लिए मार्गदर्शिका (दूसरा पुनरीक्षण)
आई एस 13340 (भाग 1) : 2024/ आई ई सी 60831-1 : 2014 के अनुसार

PRODUCT MANUAL

SHUNT POWER CAPACITORS OF THE SELF-HEALING TYPE FOR ac SYSTEMS HAVING A RATED VOLTAGE UP TO AND INCLUDING 1 000 V PART 1 GENERAL — PERFORMANCE, TESTING AND RATING — SAFETY REQUIREMENTS — GUIDE FOR INSTALLATION AND OPERATION (SECOND REVISION)

ACCORDING TO IS 13340(Part 1) : 2024/IEC 60831-1 : 2014

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

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.	:	13340(Part 1) : 2024/IEC 60831-1 : 2014
	शीर्षक Title	:	Shunt Power Capacitors of the self-healing type for AC systems having a rated voltage upto and including 1000V
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	NA

b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer ANNEX – A
c)	नमूने का परिमाण Sample Quantity	:	1 Capacitor + 2 dummy capacitors
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer ANNEX – B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day:	:	Please refer ANNEX-D
6.	लाइसेंस का दायरा /Scope of the Licence	:	
	Licence is granted to use Standard Mark as per IS 13340(Part 1) : 2024/IEC 60831-1 : 2014 with the following scope:		
	Name of the Product	Shunt power capacitors of the self-healing type for AC systems	
	Rating	Rated Output: ____ kVAR, Rated Voltage: ____ V, Rated Frequency: ____ HZ, Phase: Single and/or Three phase, Type of connection: With ____ connection, Temperature Categories: Insulation Levels: ____	

ANNEX – A

समूहीकरण दिशानिर्देश **Grouping Guidelines**

1. The parameters as given below shall be considered for grouping of 'Shunt power capacitors of the self-healing type for AC systems having a rated voltage up to and including 1000 V' as per IS 13340 (Part 1) : 2012/ IEC 60831-1 : 2002 for GOL/CSoL:
 - a. Rated Output
 - b. Rated Voltage
 - c. Rated frequency
 - d. Temperature category
 - e. Phases
 - f. Type of connection
 - g. Insulation Levels
2. Capacitors with different rated outputs shall be considered as one group, provided the parameters stated at 1(b), 1(c) & 1(d) remain the same. Capacitors with the highest rated output in a group shall be tested for covering the entire range of capacitors in that group.
3. If capacitors with wider temperature category are tested, capacitors with a narrower operating temperature range shall also be covered. For e.g., if temperature category -5/B is tested, temperature categories -5/A, +5/A and +5/B shall also be covered.
4. Capacitors with lower insulation levels shall be covered if capacitors with higher insulation levels are tested. For e.g, Capacitor with insulation level 3/- kV shall be covered if capacitor with insulation level 3/8 kV is tested.
5. To cover all varieties in the scope of the Licence with respect to number of phases and type of connection, at least one three phase capacitor of each connection type and one single phase capacitor shall be tested.
6. The Firm shall declare the varieties of Capacitors they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
7. Power Filter Capacitors, if intended to be covered, shall be tested independently for all applicable requirements.
8. 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

परीक्षण उपकरणों की सूची
List Of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Major test equipment required to test as per the Indian Standard

Sl. No.	Tests Used In With Clause Reference	Test Equipment/ Chemical
1.	Capacitance Measurement - Cl. No. 7	Capacitance Bridge
2.	Tan delta measurement - Cl. No. 8, 13, 14	Loss Factor Meter
3.	Voltage Test between terminals - Cl. No. 9.1, 9.2 Voltage test between terminals and container -Cl. No. 10.1,10.2	High Voltage tester
4.	Sealing test - Cl. No. 12	Heating Oven and temperature recorder
5.	Thermal stability test - Cl. No. 13	Servo Stabilizer, Reactors, Heating Oven and temperature recorder
6.	Discharge Test - Cl. No. 16	Break Down Tester
7.	Ageing test - Cl. No. 17	Thermal stability unit, Charge discharge unit, Temperature recorder
8.	Test of internal discharge device – Clause 11	Multimeter

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

ANNEX – C

निरीक्षण और परीक्षण की स्कीम

Scheme Of Inspection And Testing

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan 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 defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: **Shunt power capacitors of the self-healing type for AC systems of same rating manufactured in a day** shall constitute a control unit. The manufacturer has the choice to define their own control unit/batch/lot and submit the same to the BIS

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 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. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

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

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of

cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on **each Shunt power capacitors of the self-healing type for AC systems** provided always that the material so marked conforms to each requirement of the specification. Marking shall be done as per IS 13340 (Part 1) : 2024/IEC 60831-1 : 2014.

4. Additional Marking requirements: The material shall also be marked with the following additional requirement on packaging:

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

5. REJECTION - All 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
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)	
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control	
Cl.	Requirement	Test Methods			No. of Sample	Frequency
		Clause	Reference			
7	Capacitance measurement and output calculation	7	IS 13340 (Part 1)/ IEC 60831-1	R	Every capacitor unit/ bank	
8	Measurement of the tangent of the loss angle (tan δ) of the capacitor	8		R		
9.1	Voltage tests between terminals	9.1		R		
10.1	Voltage tests between terminals and container	10.1		R		
11	Test of the internal discharge device	11		R		
12	Sealing test	12		R		
22	Discharge device	22		R		
23	Container connection	23		R		
24	Protection of the environment	24		R		
25	Other safety requirements	25		R		
13	Thermal stability test	13	IS 13340 (Part 1)/ IEC 60831-1	S	One	Once in three years from each type and design of capacitor unit/ capacitor bank
14	Measurement of the tangent of the loss angle (tan δ) of the capacitor at elevated temperature	14		S	One	
9.2	Voltage tests between terminals	9.2		S	One	
10.2	Voltage tests between terminalsand container	10.2		S	One	

PM/IS 13340 (Part 1)/IEC 60831-1/2/ December 2024

15	Lightning impulse voltage test between terminals and container	15	IS 13340 (Part 1)/ IEC 60831-1	S	One	Once in three years from each type and design of capacitor unit/ capacitor bank
16	Discharge Test	16		S	One	
17	Ageing test	17		S	One	
18	Self-healing test	18		S	One	
19	Destruction test	19		S	One	

ANNEX – D

एक दिन में संभावित परीक्षण

Possible Tests in a day

1. Capacitance Measurement and output calculation (Cl. 7)
2. Measurement of the tangent of the loss angle ($\tan \delta$) of the capacitor (Cl. 8)
3. Voltage tests between terminals (Cl. 9.1)
4. Voltage tests between terminals and container (Cl. 10.1)
5. Test of the Internal Discharge Device (Cl. 12)
6. Sealing test (Cl. 8)