



उत्पाद मैनुअल
लाइन-संचालित तीन-फेज़ a.c. मोटर्स) IE कोड (दक्षता वर्ग और निष्पादन
आईएस 12615: 2026 के अनुसार

PRODUCT MANUAL

Line Operated Three Phase a.c. Motors (IE Code) Efficiency Classes and Performance
according to 12615: 2026

यह उत्पाद नियमावली सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसधारियों द्वारा विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना-1 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 12615: 2026
	शीर्षक / Title	:	Line Operated Three Phase a.c. Motors (IE Code) Efficiency Classes and Performance
	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	:	Please refer ANNEX – A
c)	नमूने का परिमाण / Sample Quantity	:	One motor
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर / Parameters to be Declared in Test Request	:	As per 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 – B
4.	निरीक्षण एवं परीक्षण योजना Scheme of Inspection and Testing	:	Please refer ANNEX – C

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9, BAHADUR SHAH ZAFAR MARG, NEW DELHI-110002
www.bis.gov.in

5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	All Routine Tests and Type Tests as per IS 12615:2026. <i>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.</i>
6.	लाइसेंस का दायरा /Scope of the Licence:		
“Licence is granted to use Standard Mark as per IS 12615: 2026 with the following scope:			
Line Operated Three Phase a.c. motors, up to and includingV, ...Hz, ... Duty, 2/4/6/8 Poles, Efficiency Class IE 2 /IE 3 /IE 4, Foot Mounted/Flange Mounted/Vertical Shaft, Insulation Class, Rated Outputs.....”			

ANNEX -A **Grouping Guidelines**

1. The following parameters are taken into consideration for the purpose of grouping for efficiency confirmation:

- i. Type of mounting: Foot mounted, flange mounted, Vertical shaft
- ii. Number of Poles: 2,4,6,8
- iii. Efficiency Class: IE2, IE3, IE4
- iv. Insulation Class: B, F or higher
- v. Rated Voltage: up to 1000 V
- vi. Rated Output: 0.12 kW to 1000 kW

Motors with rated output from 0.12 kW to 1000 kW, having same other classifications as above are considered as one group. Motors with lowest and highest rated output in the group shall be tested for covering the entire range of the motors in that group. If the range consists of more than 10 motors, one intermediate rating of motor shall also be tested.

2. The following relaxation may be given when a variety is tested for all the requirements:

- i. If efficiency class of IE4 is tested, IE3 and IE2 shall also be covered.
- ii. For Foot Mounted, Flange Mounted and Vertical Shaft motors, separate samples may not be drawn for Independent Testing. If motor with any one type of mounting is drawn and tested, motors with other type of mounting may be covered by testing the motor for dimensional requirements as per the applicable Indian Standard(s).
- iii. By testing motors of any one rated voltage, motors with other rated voltages can also be covered.

3. When samples are tested to cover the entire range of motors as per IS 12615: 2026, it shall be ensured that at least one sample for each type of pole/insulation shall be tested.

4. The Firm shall declare the varieties of various Three Phase Squirrel Cage Energy Efficient Induction Motors they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

5. During the operation of the Licence, BO shall ensure all the Varieties covered in the Licence are tested in rotation to the extent possible.

6. A typical example for drawal of samples to cover the entire varieties under the scope of the licence is given below for the purpose of general guidance:

- a) **Sample 1:** 0.12 kW, 2 Pole, Efficiency Class IE 2, Insulation Class B, Foot mounted.
- b) **Sample 2:** 30 kW, 4 Pole, Efficiency Class IE 3, Insulation Class F, Flange mounted.
- c) **Sample 3:** 375 kW, 6 Pole, Efficiency Class IE 4, Insulation class F, Vertical shaft.
- d) **Sample 4:** 1000 kW, 8 Pole, Efficiency Class IE 4, Insulation class higher than F, Foot mounted.

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

Sl. No.	Test Equipment	Tests used in with Clause Reference
1	Resistance Meter	Cl. 16.1.2
2	Digital Tachometer	Cl. 16.1.3, Cl. 16.1.4, Cl. 16.1.5
3	Stand Vernier	Cl. 16.2.1
4	HV Test Meter	Cl. 16.1.6
5	Megger (Insulation tester)	Cl. 16.1.1
6	Test Bench Torque measuring device (inline torque meter or a reaction torque sensor)	Cl. 16.2.3
7	Weighing Load cell	Cl. 16.2.3
8	Ammeter, Voltmeter and Wattmeter, or a suitable Digital Power Panel, Multimeter, Contact type Digital Tachometer	Cl. 16.1.3, Cl. 16.1.4, Cl. 16.1.5
9	Micrometer & Vernier Caliper & Stand Vernier	Cl. 16.2.1
10	Stop Watch	Cl. 16.2.3

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

ANNEX C

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, the recommended definition of control unit is: *Motors of the same rating and design manufactured in a day shall constitute a control unit.*

1.3.2 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.

1.3.3 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.

1.4 However, all manufacturers shall ensure compliance of their product 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 Motor and also on its packaging (wherever applicable) provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per Cl. 18 of IS 12615: 2026.

3.2 **Additional Marking requirements:** The motors shall also be marked with the following additional requirement on each 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	Frequency	Remarks	
		Clause	Reference	Sample			
8	Earthing	11.1	IS/IEC 60034-1	Each Motor			
9	Terminal Marking	–	IS/IEC 60034-8	Each Motor			
16.1.1	Insulation Resistance Test	16.1.1	IS 12615:2026	Each Motor			
		–	IS/IEC 60034-27-4				
16.1.2	Measurement of Resistance of Windings of Stator	8.6	IS/IEC 60034-1	Each Motor			
		5.7	IS/IEC 60034-2-1				
16.1.3	No Load Test	9.1	IS/IEC 60034-1	Each Motor			
		–	IS/IEC 60034-2-1				
16.1.4	Locked Rotor Readings of Voltage, Current and Power Input at a suitable reduced voltage	16.1.4	IS 12615:2026	Each Motor			
16.1.5	High Voltage Test	9.2	IS/IEC 60034-1	Each Motor			
16.2.1	Dimensions	16.2.1	IS 12615:2026	One Motor	Motors of each type & design manufactured at the first instance or whenever there is a change in dimension.	If any motor fails, all the motors produced subsequently shall be tested till three consecutive samples pass. For every failure, appropriate steps shall be taken to rectify the defect in subsequent motors and record of the same maintained.	
			IS 1231, IS 2223, IS 2254, IS 8223				
16.2.4	Temperature Rise Test	8	IS/IEC 60034-1	One Motor	Motors of each type & design, manufactured in three months.		
16.2.3	Full Load Test to determine Efficiency, Power Factor and Slip	–	IS/IEC 60034-2-1	One Motor			
12.1	Momentary Excess Torque	12.1	IS 12615:2026	One Motor			
16.2.2	Locked Rotor Test	16.2.2	IS 12615:2026	One Motor			–
Annex C		Customer Specific Tests					
C-1	Vibration Severity of Motor	–	IS 12075	As per the mutual agreement between the manufacturer & the purchaser			
C-2	Noise Levels of Motor	–	IS 12065				
C-3	Degree of Protection by Enclosure	–	IS/IEC 60034-5				
C-4	Over Speed Test	9.7	IS/IEC 60034-1				
C-5	Temperature rise at Limiting Values of Voltage & Frequency variation	8	IS/IEC 60034-1				
C-6	Momentary Overload Test	C-6	IS 12615:2026				