

TECHNICAL SPECIFICATION OF 25, 63,100 AND 200 kVA, 11/0.433 kV, 22/0.433 kV, 33/0.433 kV, Star 1, Star 2, Star 3, Star 4 & Star 5, THREE PHASE, DISTRIBUTION TRANSFORMERS OUTDOOR TYPE OIL IMMERSSED WITHOUT CSP FEATURE.

**Maharashtra State Electricity Distribution Company**  
**Limited**

**MATERIAL SPECIFICATIONS CELL**

TECHNICAL SPECIFICATION

FOR

**TECHNICAL SPECIFICATION OF 25, 63,100 AND 200 kVA,  
11/0.433 kV, 22/0.433 kV, 33/0.433 kV, Star 1, Star 2,  
Star 3, Star 4 & Star 5, THREE PHASE, DISTRIBUTION  
TRANSFORMERS OUTDOOR TYPE OIL IMMERSSED  
WITHOUT CSP FEATURE.**



Annexure-I

TECHNICAL SPECIFICATION NO.

CE/MMC/MSC-I/3Phase (25-200kVA)/DT/T/2017/01,  
Amended on Date: 12.05.2017

(Amended as per guidelines by Ministry of Power)

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**TECHNICAL SPECIFICATION OF 25, 63,100 AND 200 kVA, 11/0.433 kV, 22/0.433 kV, 33/0.433 kV, Star 1, Star 2, Star 3, Star 4 & Star 5, THREE PHASE, DISTRIBUTION TRANSFORMERS OUTDOOR TYPE OIL IMMERSSED WITHOUT CSP FEATURE.**

**MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY**

**TECHNICAL SPECIFICATION OF 25, 63,100 AND 200 kVA, 11/0.433 KV, 22/0.433 KV, 33/0.433 KV, Star 1, Star 2, Star 3, Star 4 & Star 5, THREE PHASE, DISTRIBUTION TRANSFORMERS OUTDOOR TYPE OIL IMMERSSED WITHOUT CSP FEATURE.**

CE/MMC/MSC-I/3Phase (25-200kVA)/DT/T/2017/01.

**1 Scope:-**

- 1.1 This specification covers design, manufacturing, testing and delivery of **25, 63, 100 and 200 kVA, 11/0.433 , 22/ 0.433 kV & 33/0.433 kV, Star 1, Star 2, Star 3, Star 4 & Star 5, three phase distribution transformers without CSP feature oil immersed, Oil Natural (ONAN)** suitable for 11 kV, 22 kV & 33 kV, 50 Hz, Distribution system.
- 1.2 The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.
- 1.3 It is not the intent to specify herein complete details of design and construction. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements.
- 1.4 The design and constructional aspects of materials shall not withstanding any anomalies, discrepancies, omissions, in-completeness, etc. in these specifications and will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant Indian Standards, IEC standards, I.E. Rules, I.E. Act and other statutory provisions.
- 1.5 The Bidder/supplier shall bind himself to abide by these considerations to the entire satisfaction of the purchaser and will be required to adjust such details at no extra cost to the purchaser over and above the tendered rates and prices.
- 1.6 Tolerances:  
The tolerance of guaranteed performance figures shall be as specified in the (Part-I) table 1 of latest issue of IS 2026 **except losses** or relevant International Standard except wherever specified otherwise in this specification.

**2 System Particulars:-**

The transformers shall be suitable for outdoor installation with following system particulars and they should be suitable for service under fluctuations in supply voltage as permissible under Indian Electricity Rules.



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2.1	Nominal System Voltage	:	11 kV or 22 kV or 33 kV
2.2	Corresponding Highest System Voltage	:	12 kV or 24 kV or 36 kV
2.3	Rated Basic Insulation Level	:	75 KVp or 125 KVp or 170 KVp
2.4	Neutral earthing	:	Solidly earthed
2.5	Frequency	:	50 Hz with $\pm 3$ % tolerance
2.6	Number of Phases	:	3

**3 SERVICE CONDITIONS:**

3.1 Equipment supplied against the specification shall be suitable for satisfactory operation under the following tropical conditions:-

i	Max. ambient air temperature	:	50 Deg. C
ii	Max. relative humidity	:	100 %
iii	Max. annual rainfall	:	1450 mm
iv	Max. wind pressure	:	150 kg/sq.m.
v	Max. altitude above mean sea level	:	1000 mtrs.
vi	Isoceraunic level	:	50
vii	Seismic level (Horizontal acceleration)	:	0.3 g.
viii	Climatic Condition	:	Moderately hot and humid tropical climate conducive to rust and fungus growth.
ix	Reference Ambient Temperature for temperature rise	:	50 Deg C

3.2 The climatic conditions are prone to wide variations in ambient conditions and hence the equipment shall be of suitable design to work satisfactorily under these conditions.

3.3 The equipment shall be for use in moderately hot and humid tropical climate conducive to rust and fungus growth.

3.4 The Distribution Transformer shall be mark with standard mark governed by BIS as per clause 13.4 of IS 1180(Part 1):2014].

3.5 The Distribution Transformer shall bear star 1 or 2 or 3 or 4 or 5 rating label approved by BEE (Bureau of Energy Efficiency).

3.6 The Distribution Transformer shall bear level 2 (star 1 of BEE) or 3 (star 2 of BEE) ratings label approved by BIS (Bureau of Indian Standard) as per IS 1180 ( Part1): 2014.

3.7 The Bidder/ Manufacturer shall possess the BIS license for offered product.

3.8 The Bidder/ Manufacturer shall possess the BEE certification for offered product.

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**4 APPLICABLE STANDARDS:-**

- 4.1 The design, manufacture and performance of the equipment shall comply with all currently applicable statutes, regulations and safety codes. Nothing in this specification shall be construed to relieve the bidder off his responsibilities.
- 4.2 The Distribution Transformers shall conform to IS: 1180 (Part 1) : 2014 amended up to date or other International Standards for equal or better performance. Unless otherwise modified in this specification the Distribution Transformers shall comply with the Indian Standard Specification IS 1180 latest.
- 4.3 Unless otherwise specified, the equipment offered shall conform to amended up to date Indian, IEC, British or U.S.A. Standards and in particular, to the following:-
- 4.4 The applicable standards are as follows :

Sr.No.	IS number	IS name
1.	IS:1180(Part-1) : 2014	Outdoor type oil immersed distribution transformers up to and including 2500 kVA, 33KV.
2.	IS:2026(Part I to IV)	Specification for power transformer
3.	IS:335/1993	New insulating oil- Specification (fourth revision)
4.	IS:2099/1986, IS: 7421-1988, IS:3347 (Part-I /Sec-2)-1979, IS:3347 (Part-I /Sec-1)-1982 amended up to date	Bushing
5.	IS 5	Colours for ready mixed paints and enamels.
6.	IS 13730 (Part-27)1996	Specification for particular types of winding wires.
7.	IS: 3073/1974, IS: 3070( Part-II)	Specifications for L.A's
8.	CEA Guidelines August -2008	Manual on transformers
9.	Gazette notification by Ministry of Power dated 16.12.2016	Revised losses of distribution transformer

- 4.5 In case of conflict arising out due to variations between the applicable standard and the standards specified herein the provisions of this specification should prevail.

**5 Specific Technical requirement:**

**5.1 Standard kVA Ratings:-**

The standard ratings for three phase transformer shall be 25,63,100 & 200 kVA as per IS 1180 (Part-I):2014

**5.2 Nominal voltage ratings**

- i Primary voltage : 11 kV/ 22 kV/33 kV  
ii Secondary voltage : 0.433 kV

