

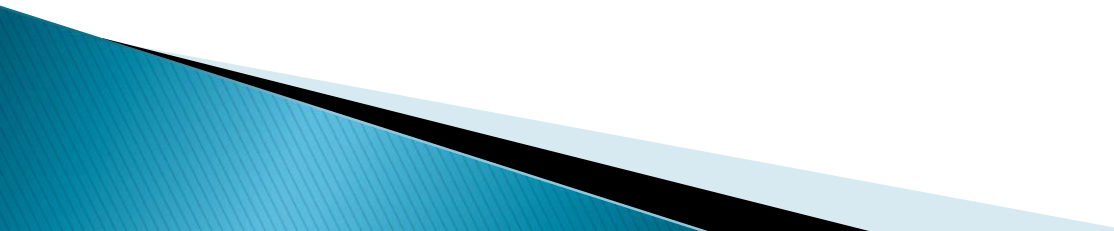
Standardization of Specification for Distribution transformers DDUGJY Projects and availability of level II DTs for the Projects

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**Standard: a Document,
approved by a recognized body,
that provides rules, guidelines ,
techniques of design,
installation, commissioning.**



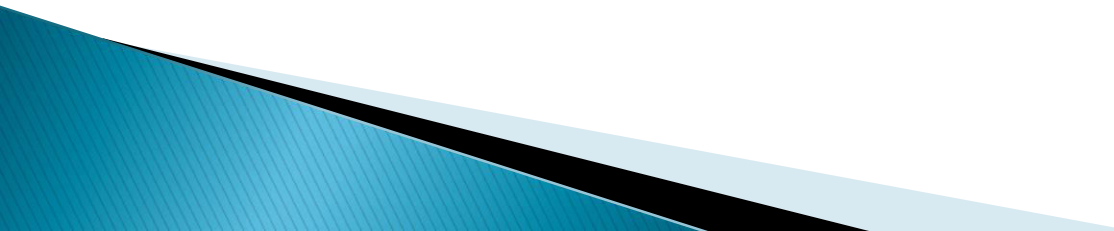
Specification?

A document that specifies

- ▶ requirements
 - ▶ Design
 - ▶ Behavior/characteristics
- in a complete, precise and verifiable manner.

Distribution Transformer	IS 1180 (part-1) 2014
HV bushings LV bushings	IS 2099 IS 7421
Insulating Kraft Paper Insulating Press Board	IS – 9335 IS – 1576
Oil specification	IS 335
Installation and maintenance of transformers	IS – 10028

Technical Specifications

- ▶ According to climate condition
 - I. Max ambient air temperature (0C) : 50
 - II. Min ambient air temperature (0C) : -5
 - III. Max average daily ambient air temperature (0C) : 40
 - IV. Maximum altitude above mean sea level (Metres) : To be specified by the user
- 

Transformers shall conform to the following specific parameters

Item	11 kV DTR
System voltage (max.)	12 kV
Rated voltage HV	11 kV
Rated voltage LV	433 V
Frequency	50 Hz \pm 5%
No. of Phases	Three
Connection HV	Delta
Connection LV	Star
Vector group	Dyn-11
Type of cooling	ONAN

- ▶ Core material: Cold rolled grain oriented annealed steel lamination having low loss.
- ▶ Winding: up to 250kVA winding shall be wound from Super Enamel covered / Double Paper covered aluminium conductor
250 and above windings shall be wound from Super Enamel covered / Double Paper covered copper conductor

- ▶ Tap: Tapping shall be provided for transformers above 100 kVA rating
- ▶ Tr. Oil: Use of recycled oil is not acceptable

Insulation Level

Voltage(kV)	Impulse Voltage (kVp)	Power frequency voltage (kV)
0.433	–	3
11	95	28

Distribution transformer Losses

Rating(kVA)	3 @ 50 % loading	3 star @ 100 % loading
25	210	695
63	380	1250
100	520	1800
250	1050	3150

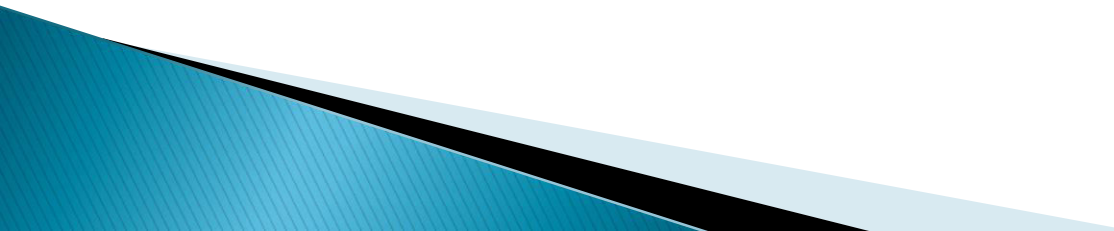
Distribution transformer Losses as per 1180 , 1st Feb' 2016

Rating (kVA)	Energy Efficiency level -1 @ 50 % loading	Energy Efficiency level -1 @ 100 % loading	Energy Efficiency level -2 @ 50 % loading	Energy Efficiency level -2 @ 100 % loading	Energy Efficiency level -3 @ 50 % loading	Energy Efficiency level -3 @ 100 % loading
25	210W	695W	190W	635W	175W	595W
63	380W	1250W	340W	1140W	300W	1050W
100	520W	1800W	475W	1650W	435W	1500W
250	1050W	3150W	980W	2930W	920W	2700W

- ▶ **PERCENTAGE IMPEDANCE:** 75 °C shall be 4.5%
- ▶ **Temperature rise:** Top oil temperature rise measured by thermometer : 35 deg Cent

Winding temperature rise measured by resistance method : 40 °C

Specifications in nameplate and their significance

1. Make
 2. Sl. No.
 3. Standard:
 4. Frequency: 50 Hz
 5. Type of cooling: ONAN/ONAF/OFAF
 6. kVA: 63100kVA
- 

7. Volt. at No Load: HV: 11000V, LV: 430V
8. Amps: HV: 5.25A, LV: 133A
9. Vector group: Dyn11
10. Impedance Volt.: %
11. no. of Tap
12. Year of Manufacture:
13. Core & winding weight:

- 14. Volume of Oil:
- 15. Total weight:
- 16. Drawing No.
- 17. Guaranteed max. Temp. Rise in Oil.:45°C
- 18. Connection Diag.
- 19. Connection Symbol.
- 20. Customer reference.



















POWER MAKER

MANUFACTURED BY: 40000

STANDARD IS :	POWER	MANUFACTURED NO :	40000
R.M.A.	100	FREQUENCY	50/60Hz
VOLTS IN :	230V	COILING TYPE	WIRE WOUND
NO. OF COILS :	2	WINDING GROUP	Wye 11
AMPERES :	10.0	WINDING OF W. A ₂	1.000
W. A ₁	1.000	TOTAL WINDING W. A ₂	0.333
PHASES :	3	WINDING OF W. A ₁ W. A ₂	1.000
W. A ₁	1.000	WINDING OF W. A ₁	1.000
WINDING W. A ₁	1.000	WINDING OF W. A ₂	1.000

PROPERTY OF :
 COMPANY NAME :

WINDING W. A₁ W. A₂ W. A₃ W. A₄ W. A₅ W. A₆ W. A₇ W. A₈ W. A₉ W. A₁₀ W. A₁₁ W. A₁₂ W. A₁₃ W. A₁₄ W. A₁₅ W. A₁₆ W. A₁₇ W. A₁₈ W. A₁₉ W. A₂₀ W. A₂₁ W. A₂₂ W. A₂₃ W. A₂₄ W. A₂₅ W. A₂₆ W. A₂₇ W. A₂₈ W. A₂₉ W. A₃₀ W. A₃₁ W. A₃₂ W. A₃₃ W. A₃₄ W. A₃₅ W. A₃₆ W. A₃₇ W. A₃₈ W. A₃₉ W. A₄₀ W. A₄₁ W. A₄₂ W. A₄₃ W. A₄₄ W. A₄₅ W. A₄₆ W. A₄₇ W. A₄₈ W. A₄₉ W. A₅₀ W. A₅₁ W. A₅₂ W. A₅₃ W. A₅₄ W. A₅₅ W. A₅₆ W. A₅₇ W. A₅₈ W. A₅₉ W. A₆₀ W. A₆₁ W. A₆₂ W. A₆₃ W. A₆₄ W. A₆₅ W. A₆₆ W. A₆₇ W. A₆₈ W. A₆₉ W. A₇₀ W. A₇₁ W. A₇₂ W. A₇₃ W. A₇₄ W. A₇₅ W. A₇₆ W. A₇₇ W. A₇₈ W. A₇₉ W. A₈₀ W. A₈₁ W. A₈₂ W. A₈₃ W. A₈₄ W. A₈₅ W. A₈₆ W. A₈₇ W. A₈₈ W. A₈₉ W. A₉₀ W. A₉₁ W. A₉₂ W. A₉₃ W. A₉₄ W. A₉₅ W. A₉₆ W. A₉₇ W. A₉₈ W. A₉₉ W. A₁₀₀





THANKS