

MAHENDRA TRANSFORMERS (P) LIMITED

F-10, South Side of G.T. Road Industrial Area, N.H. 24, Ghazlabad - 201009 (UP), Phone: 0120-4561635, Mob: 09818140474

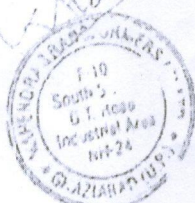
Customer	Bihar State Power Transmission Company Ltd., Patna	Ref.	MT21220308/2022
Contractor	M/s Livindia Infra Pvt. Ltd., C-261, Sector-63, NOIDA	Project	Constr. of 2x50 MVA, 132/33 KV GSS Daudnagar & 3x50 MVA, 132/33 KV GSS Nabinagar against TS No.-13/PR/BSPTCL/2021
LOA No.	13 & 14 Both dated: 24.09.2021	RO	08.03.2022
GUARANTEED TECHNICAL PARTICULARS		Rev.	1 st Issue
For 315 KVA, 33/0.433 KV, E.E. Level-3, Outdoor Station Transformer		Dated	Description

Sr. No.	Technical Particulars	Descriptions
1.	Name of the Manufacturer	Mahendra Transformers (P) Limited
2.	Place	Ghazlabad (UP)
3.	Make	"MAHENDRA"
4.	Application	Oil Immersed, ONAN Station Transformer
5.	Service	Outdoor Type, Step-Down
6.	Continuous Max. Rating (Capacity)	315 KVA Copper Wound
7.	Phase Connection	
A)	HV Winding	Delta
B)	LV Winding	Star
C)	Vector Group reference No. & Symbol	Dyn1
8.	Maximum Temperature Rise	
	i) Of Oil by thermometer	40 °C
	ii) Of Winding by Resistance	45 °C
9.	Limit for hot spot temperature for which the transformer is designed	118 °C (ABOVE AMBIENT OF 50 °C)
10.	Temperature gradient between winding and oil	9.2 °C
11.	Voltage to earth for which the star point will be insulated	
a.	KV (Power Frequency)	3 KV at 50 C/S
b.	KV (Impulse)	N/A on LV Side
12.	Type of Cooling	ONAN
13.	Maximum flux density at normal Voltage & Frequency	
a.	Core	Not Exceeding 1.60 Tesla
b.	Yoke	Not Exceeding 1.60 Tesla
14.	Flux Density in core & Yoke at 110% Voltage	Not Exceeding 1.76 Tesla
15.	Maximum Current Density In Windings amps/sq.mm	
a.	HV Winding	Not Exceeds 2.3 Amp/ SQ.MM
b.	LV Winding	Not Exceeds 2.4 Amp/ SQ.MM
16.	Magnetizing Current (HV) Amps at normal voltage & ratio	Not Exceeding 2 % of full load Current
17.	Power Factor of magnetizing current at normal voltage and ratio	0.10 Approx
18.	Guaranteed No load loss at normal Voltage and Frequency	430 Watts
19.	Guaranteed load loss at normal ratio, rated output, Rated frequency and 75°C average Winding temperature including auxiliary losses, if any.	3200 Watts
20.	Max. Total Losses at 50% Load, Normal ratio, rated Voltage, Rated Frequency at 75°C including auxiliary	1027 Watts

Adopted for NIT-10/PR/BSPTCL
2023

APPROVED

Subject to the response by the supplier as per the contract.



MAHENDRA TRANSFORMERS (P) LIMITED

F-10, South Side of G.T. Road Industrial Area, N.H. 24, Ghaziabad - 201009 (UP), Phone: 0120-4561635, Mob: 09818146472

Customer	Bihar State Power Transmission Company Ltd., Patna	Ref.	MT21220308/2022
Contractor	M/s Livindia Infra Pvt. Ltd., C-261, Sector-63, NOIDA	Project	Constr. of 2x50 MVA, 132/33 KV GSS Daudnagar & 3x50 MVA, 132/33 KV GSS Nabinagar against TS No.- 13/PR/BSP/TC/2021
LOA No.	13 & 14 Both dated: 24.09.2021	RO	08.03.2022
GUARANTEED TECHNICAL PARTICULARS For 315 KVA, 33/0.433 KV, E.E. Level-3, Outdoor Station Transformer		Rev.	1 st Issue
		Dated	Description

Sr. No.	Technical Particulars	Descriptions
21.	losses, if any. Max. Total Losses at 100% Load, Normal ratio, rated Voltage, Rated Frequency at 75°C including auxillary losses, if any.	2956 Watts
22.	Auxiliary loss, if any, at rated loss	N/A
23.	Efficiency at normal ratio, rated voltage, rated frequency and 75°C average winding temperature for the output of	U.P.F 0.8 P.F
i.)	Full load	98.95 98.70
ii.)	3/4 load	99.15 98.94
iii.)	1/2 load	99.31 99.13
iv.)	1/4 load	99.31 99.14
24.	Resistance of	
i.)	HV Windings	41.7 Ohms Phase to Phase
ii.)	LV Windings	5.7 Milli ohms Phase to Phase
25.	Resistance voltage drop at 75°C average winding temperature expressed as percentage of rated voltage	0.944 %
26.	Reactance voltage drop	4.4 %
27.	Impedance voltage at normal and 75°C average winding temperature	
a.	Average winding temperature %	4.5 % (+ 10%)
b.	Between HV & LV Winding %	4.5 % (+ 10%)
28.	Regulation at full load at 75°C	N/A
a.	Unit Power Factor	1.041 %
b.	0.8 Power Factor	3.439 %
29.	Type of Transformer	Core Type
30.	Width of track gauge	Narrow Gauge
31.	Core	
a.	Material of Core Lamination	CRGO, Grade M 4/MOH or Better
b.	Thickness of Core Plates	0.23 to 0.29 mm
c.	Whether Core plate laminations are grain oriented cold rolled	Yes
d.	Insulation of Core Lamination	Self Insulated Carlite Coating
e.	Insulation of Core Bolts	N/A
f.	Insulation of Core Bolts Washers	N/A
g.	Insulation of Core end Plates	Press Board
32.	Winding	
a.	Type of Winding	
i.	HV Windings	Cross over

Adopted for NIT-10/PR1
BSP/TC/2023



MAHENDRA TRANSFORMERS (P) LIMITED

F-10, South Side of G.T. Road Industrial Area, N.H. 24, Ghaziabad - 201009 (UP). Phone: 0120-4561635, Mob: 09818140474

Customer	Bihar State Power Transmission Company Ltd., Patna	Ref	MT1220308/2022
Contractor	M/s Livindia Infra Pvt. Ltd., C-261, Sector-63, NOIDA	Project	Constr. of 2x50 MVA, 132/33 KV GSS Daudnagar & 3x50 MVA, 132/33 KV GSS Nabinagar against TS No. 13/PR/BSPTCL/2021
LOA No.	13 & 14 Both dated: 24.09.2021	RO	09.03.2022
GUARANTEED TECHNICAL PARTICULARS		Rev	Dated
For 315 KVA, 33/0.433 KV, E.E. Level-3, Outdoor Station Transformer			1 st issue
			Description

Sr. No.	Technical Particulars	Descriptions
ii.	LV Windings	Helical
b.	Insulation of HV Winding	DPC
c.	Insulation of LV Winding	TPC
d.	Insulation between HV & LV Winding	Press Board
e.	Power Frequency high Voltage Tests	
i.	Test Voltage for 1 minute, withstand test on high voltage Windings	70 KV rms
ii.	Test Voltage for 1 minute, withstand test on low voltage Windings KV	3 KV rms
iii.	Test Voltage for 1 minute, withstand test on Neutral of high voltage Winding KV crest.	3 KV For LV Neutrals
iv.	Impulse Test on high Voltage windings 1.2/50 full wave withstand	170 KVP
33.	Thickness of Transformer sheet	
a.	Sides	4 mm
b.	Bottom	6 mm
c.	Radiators tubes, if provided	Pressed Steel Radiators
34.	Type & Details of windings hot spot temperature detector	Not Provided
35.	Bushings HV/LV/Neutral	HV LV & Neutrals
1.)	Type	Out Door, Porcelain type
2.)	Dry Flash over Voltage (KV)	70 3
3.)	Wet Flashover Voltage(KV)	70 3
4.)	Dry 60 sec. with stand Test Voltage	70 3
5.)	Wet 60 sec Withstand test voltage	70 3
6.)	Under oil flashover of puncture withstand test voltage (Lower Frequency)	70 3
7.)	Full Wave Impulse withstand test Voltage with 1.2/50 micro second wave Positive, Negative	170 N/A
8.)	Creepage Distance in Air (mm)	900
9.)	Recommended Cap. Setting & Protected (mm)	425
10.)	Weight of Assembled Bushings (Kg)	7 Kgs
11.)	Quantity of Oil (ltr)	N/A
36.	Free Space required at top	2000 mm
37.	Total Volume of Conservator	57.4 ltr
38.	Volume of Conservator between the highest and Lowest Level	28 ltr
39.	Calculated time Constants	
1.)	Neutral Cooling	About 3 Hours

Adopted for NIT-10/PR/BSPTCL/2022

APPROVED

Subject to the condition that the responsibility of the materials supplied as per the drawing shall be that of the contractor.

Electrical Subordinating Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidya Bhawan, Patna-800021



MAHENDRA TRANSFORMERS (P) LIMITED

F-10, South Side of G.T. Road Industrial Area, N.H. 24, Ghazipur - 201009 (UP), Phone: 0120-4561615, Mob: 09818140474

Customer	Bihar State Power Transmission Company Ltd., Patna	Ref	MT21220308/2022
Contractor	M/s Uvinda Infra Pvt. Ltd., C-261, Sector 63, NOIDA	Project	Constr. of 2x50 MVA, 132/33 KV GSS Daudnagar & 3x50 MVA, 132/33 KV GSS Nabinagar against TS No. 13/PR/BSPTCL/2021
LOA No.	13 & 14 Both dated: 24.09.2021	AO	08.03.2022
GUARANTEED TECHNICAL PARTICULARS		Rev.	Dated
For 325 KVA, 33/0.433 KV, E.E. Level-3, Outdoor Station Transformer		1" issue	
		Description	

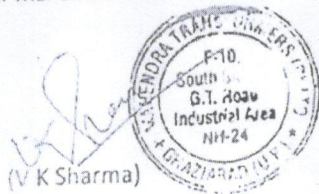
Sr. No.	Technical Particulars	Descriptions
40.	Weight of Copper required to complete the transformer	280 kg appx.
41.	Weight of steel required to complete the transformers	450 Kg appx
42.	Weight of fittings & Parts detached for transport	Nil
43.	Weight of Core & Windings	930 Kg.
44.	Weight of Complete Transformers arranged for transport or the heaviest package	1925 Kg
45.	Weight of oil in the Transformer	545 Kg
46.	Internal Dimensions of transformers tank in Meters	1.155 / 1.165 Mtrs.
a.	Height	1.22 Mtrs.
b.	Length	0.515 Mtrs.
c.	Breadth	
47.	Dimensions of the transformers in Meters appx.	2.135 Mtrs.
a.	Overall height	2.06 Mtrs.
b.	Overall Length	1.19 Mtrs.
c.	Overall Breadth	
48.	Any Accessories or appliances recommended	No
49.	Governing Standards	IS:1180 (P-1)2014
50.	Service	Outdoor
51.	Rated Voltage	
i.	HV Windings	33 KV
ii.	LV Windings	0.433 V
52.	Highest System Voltage	
i.	HV Windings	36 KV
ii.	LV Windings	1.1 KV

*Adopted for AIT-10/PR1
BSPTCL/2023*

For Mahendra Transformers (P) Limited

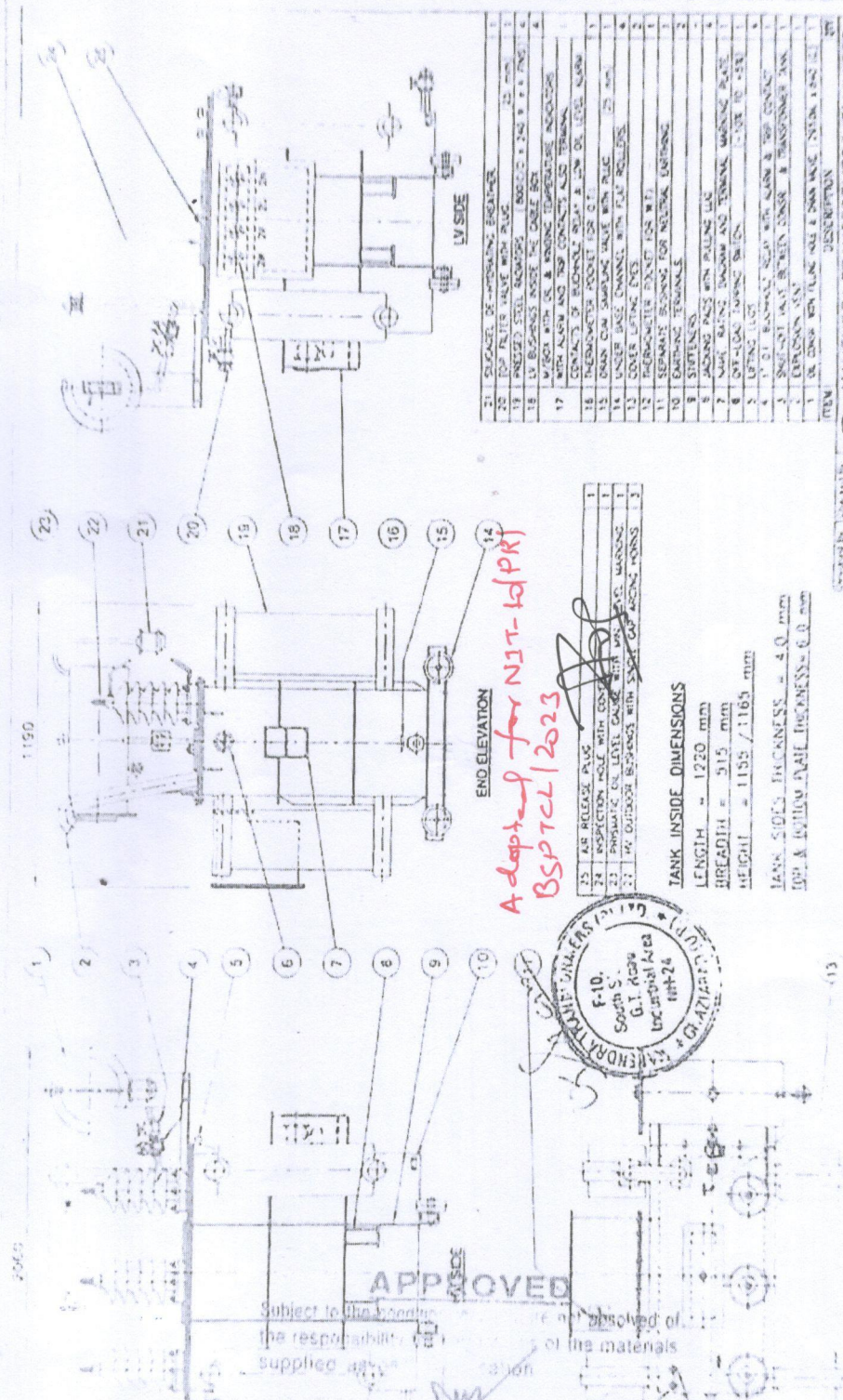
APPROVED

Subject to the condition that they are not absolved of the responsibility for correctness of the materials supplied as per specification



Electrical Engineering Engineer
(Design and Engineering)
Bihar State Power Transmission Company Limited
Vijay Bhawan, Patna-800021

143



END ELEVATION
 A adopted for NIT-10 PRT
 BSP TEL 12023

25	AIR RELEASE PLUG	1
26	INSPECTION HOLE WITH COVER	1
27	SYNCHRONIC OIL LEVEL GAUGE WITH WINDING MARKING	1
28	WINDING MARKING	3

TANK INSIDE DIMENSIONS
 LENGTH = 1220 mm
 BREADTH = 315 mm
 HEIGHT = 1155 / 1165 mm

TANK SIDES THICKNESS = 4.0 mm
 TOP & BOTTOM PLATE THICKNESS = 6.0 mm



APPROVED
 Subject to the condition that the responsibility of the materials supplied shall remain with the supplier.
 Electrical Engineering Engineer
 (Planning and Engineering)
 Bihar State Power Transmission Company Limited
 Vidyut Bhawan, Patna-800021

ITEM WEIGHT CHART

1	COIL & WINDINGS	920 KGS
2	TANK & FITTINGS	460 KGS
3	WEIGHT OF OIL	545 KGS
4	TOTAL WEIGHT	1925 KGS
5	VOLUME OF OIL	645 LTR

PLAN
 ALL DIMENSIONS ARE IN mm
 DIMENSIONS & WEIGHT FIGURES ARE SUBJECT TO SLIGHT VARIATION

MAHENDRA TRANSFORMERS (P) LIMITED
 Patna

TITLE	EXTERNAL ARRANGEMENT FOR 315 KVA 33KV/11KV CAPACITOR WINDING
DATE	14-12-2023
BY	MAHENDRA
CHECKED BY	MAHENDRA
APPROVED BY	MAHENDRA
PROJECT NO.	143
REV.	1
REV.	2
REV.	3
REV.	4
REV.	5
REV.	6
REV.	7
REV.	8
REV.	9
REV.	10
REV.	11
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REV.	96
REV.	97
REV.	98
REV.	99
REV.	100

COMPANY NAME	ALMENDRA TRANSFORMERS LTD. LIMITED P.O. BOX 2000, KARACHI - 20000 KARACHI - 20000		
TITLE	NAME, RATING & DIAGRAM PLATE FOR 315 KVA, 33/0.415 KV, 50 HZ, 3 PHASE, 3 WIRE LOAD TAPING TRANSFORMER		
CUSTOMER	SHEHNAZ THERMAL POWER STATION P.O. KARACHI (C.A. HILL) KARACHI, N.W.F.P.		
P.O. Ref.	KARACHI - 20000 KARACHI - 20000		