

# 245 KV CURRENT TRANSFORMER TYPE: IMB 245

CLIENT: (AS APPLICABLE) NOTE:-1.Drawings approval subject to valid type test reports, to be checked during acceptance tests.  
2.For EPC contractors only.

END CUSTOMER:  
APTRANSCO

W.O. NO.: (AS APPLICABLE)

PROJECT: (AS APPLICABLE)

P.O. NO.: (AS APPLICABLE)

QTY.: (AS APPLICABLE)

CT RATIO:  
400/1

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/ Isolators/IVT in the substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturers as mentioned in the drawings. The EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolator /IVTs requirement and capatibility.

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

SR. NO.	REFERENCE OF STD DRGS/ DOCUMENTS	REV.	DESCRIPTION
1.	1HYT903320-044	A	GENERAL ARRANGEMENT
2.	1HYT903320-045	A	RATING PLATE
3.	1HYT903320-046	B	SECONDARY TERMINAL BOX

Drawing approval subject to valid vendor registration

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Ⓐ New drg. prepared.

Ⓑ Change in sr no. 3

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Prepared: SR	Checked: PDS	Approved: SN
Without Sep. PL.: <input type="checkbox"/>	Same PL.Same No.: <input type="checkbox"/>	Sep. PL.Other No.: <input type="checkbox"/>
Derived by:	Supersedes:	Supersedes by:
A   2021-01-12		
B   2021-01-21		

**LIST OF DOCUMENTS FOR IMB 245 TYPE CT**



Scale NTS

T.Sh. 1

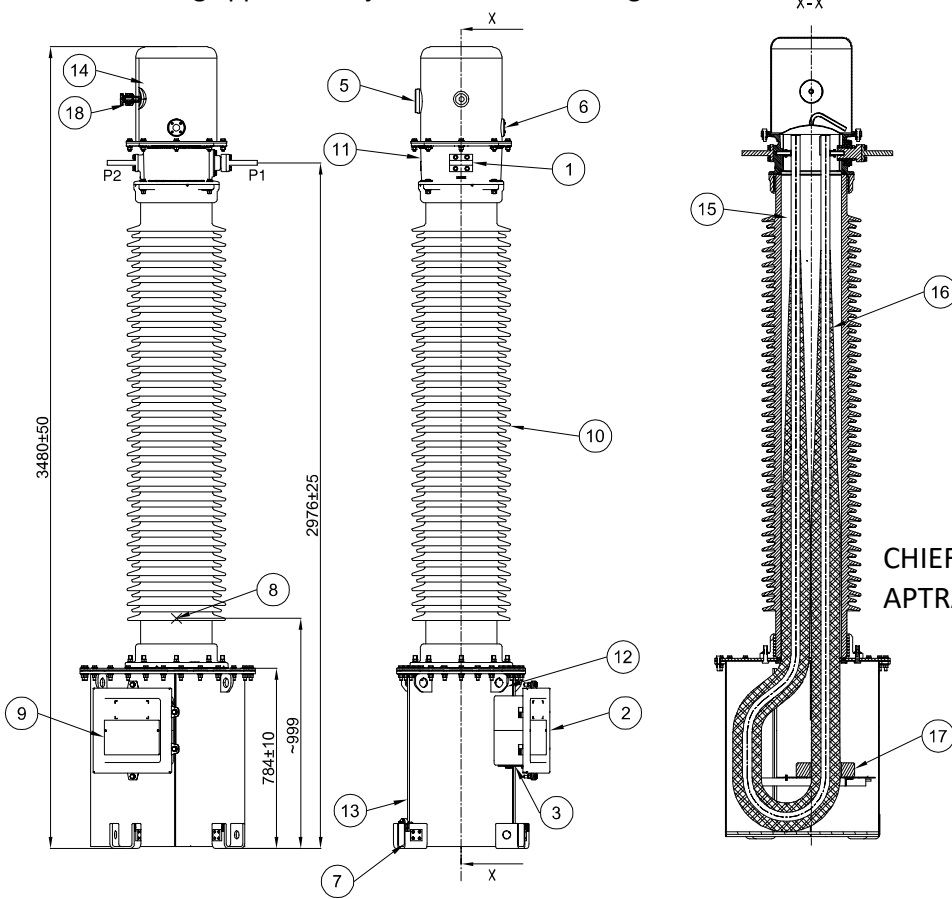


1HYT903320-043

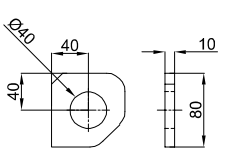
Sheets 1

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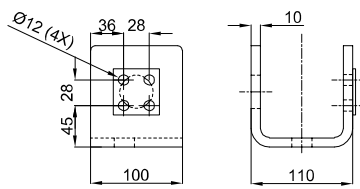
Drawing approval subject to valid vendor registration



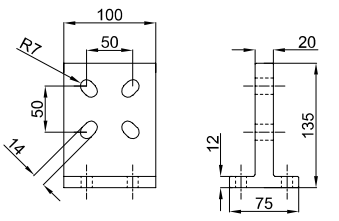
DETAILS OF LIFTING LUG (12)



DETAILS OF EARTHING TERMINAL (7)



DETAILS OF PRIMARY TERMINAL (1)



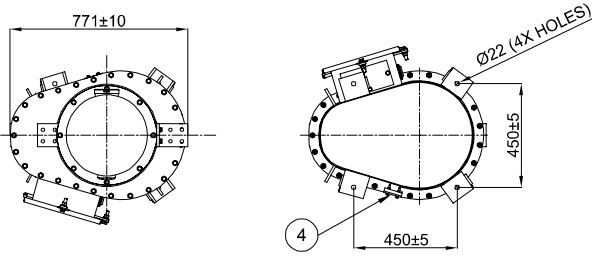
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\*HOT DIP GALVANISED ON OUTER SURFACE & PAINTED ON INNER SURFACE  
 INNER SURFACE PAINTED WITH OIL RESISTIVE PAINT

18	PRESSURE RELEASE DEVICE	-	SS / BRASS
17	CORE STACK	-	-
16	PRIMARY WINDING	-	PRIMARY CONDUCTOR (ALU)
15	TRANSFORMER OIL	~140kg	EHV GRADE - IEC:60296
14	OIL EXPANSION SYSTEM	1	TANK - ALU. EXP. SYSTEM - N2 GAS.
13	BOTTOM TANK AND TANK COVER	1	M.S HDG*
12	LIFTING LUG	4	M.S HDG*
11	CONNECTION HEAD	1	ALU.
10	INSULATOR	1	PORCELAIN
9	NAME PLATE	1	ALU.
8	CENTRE OF GRAVITY	-	-
7	EARTH CLAMP	4	S.S. WELDED OVER M.S.
6	OIL LEVEL INDICATOR	1	TOUGHENED GLASS
5	OIL FILLING COVER	1	ALU.
4	OIL DRAIN PLUG WITH BLANKING PLATE	1	M.S HDG*
3	REMOVABLE UNDRILLED GLAND PLATE	1	M.S HDG*
2	SECONDARY TERMINAL BOX	1	M.S HDG*
1	PRIMARY TERMINAL	2	ALU.
Sr. No.	Item Description	Qty.	Material

Revision Details:  
 (A) New dfg. prepared.

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NOTES:

- 1) DEVIATION FOR DIMENSIONS WITHOUT SPECIFIED TOLERANCES AS PER IS: 2102 - (EXTRA COARSE).
- 2) ALL NUTS, BOLTS AND WASHERS ARE OF STAINLESS STEEL/ MS HOT DIP GALVANIZED
- 3) ALL DIMENSIONS ARE IN mm.
- 4) TOTAL WEIGHT 1050 kg approx.
- 5) CREEPAGE DISTANCE 6125 mm.
- 6) ALL FERROUS PARTS EXPOSED TO ATMOSPHERE ARE HOT DIP GALVANIZED.
- 7) GENERAL TOLERANCE AS PER IS:2768-C

Revision		245 kV OUTDOOR CURRENT TRANSFORMER TYPE IMB 245	GENERAL ARRANGEMENT DRAWING (Small Tank)	Prepared: SR	Checked: SNP	Approved: SN	file: 3320-044	Total sh. 1
A	2021-01-12						1HYT903320-044	Sh.No. 1

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Revision Details:  
Ⓐ New dwg prepared.

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250

<b>ABB</b> Current transformer		APPSIL	Production year - YYYY	Made in India	
Serial number	nnnnnnn	Type	IMB 245	Frequency	50 Hz
Insulation level	245/460/1050	Standard	IEC: 61869-1,2	Temperature range	-5 to +50 °C
Rated pri. normal current	400A	Total mass(Approx)	1050 kg	Total creepage minimum	6125mm
Max continous primary current	480A	Insulation oil(Approx)	140 kg	Ith	40/1 kA/s
GA Drawing	1HYT903320-044	Suitable for Hot line washing	Yes	Idyn	100 kAp

RATIO	400/1
CORE-1	1S1-1S2
CORE-2	-
CORE-3	-
CORE-4	-
CORE-5	-

AUX. REACTOR CONNECTION DETAIL FOR CORE ONLY

1. CONNECT SHORTING LINK BETWEEN \_\_\_\_ FOR THE RATIO OF \_\_\_\_ RESPECTIVELY. TAKE OUTPUT FROM \_\_\_\_.

2. DO NOT CONNECT SHORTING LINK FOR THE RATIO OF \_\_\_\_.

CORE	CORE-1	CORE-2	CORE-3	CORE-4	CORE-5
I A	400/1	-	-	-	-
Vk V/ B VA	5	-	-	-	-
CI	0.2S	-	-	-	-
ISF/ALF	≤5	-	-	-	-
Io mA	-	-	-	-	-
Rct Ω	-	-	-	-	-

END CUSTOMER: APTRANSCO
ABB WORKS ORDER NO: (AS APPLICABLE)
PROJECT: (AS APPLICABLE)
Caution 1)Ensure D3(Tan Delta) Bushing connection with Earth 2)Secondary terminals must be short circuited before burden is disconnected

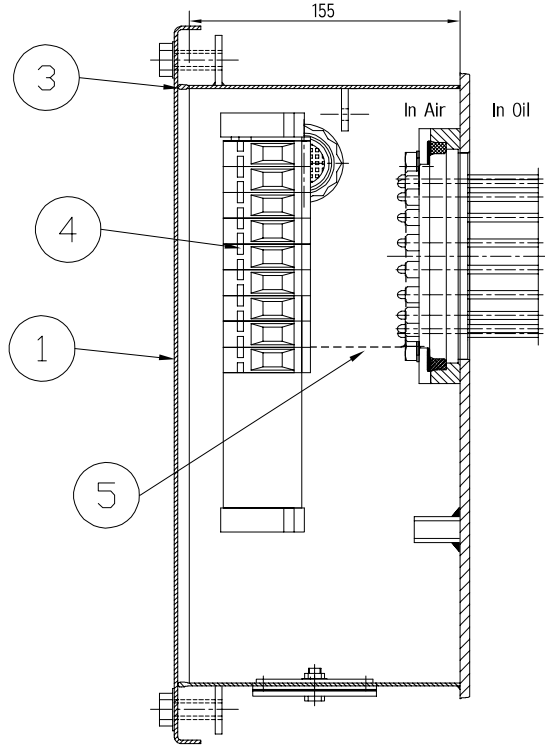
Serial number nnnnnnn to be decided when manufactured  
 Production year yyyy = Actual year, date & month of Production  
 Material: Aluminium 2mm Thk.  
 Letter height 3 mm

**CHIEF ENGINEER/PROJECTS**  
**APTRANSCO/Vs/Vijayawada**

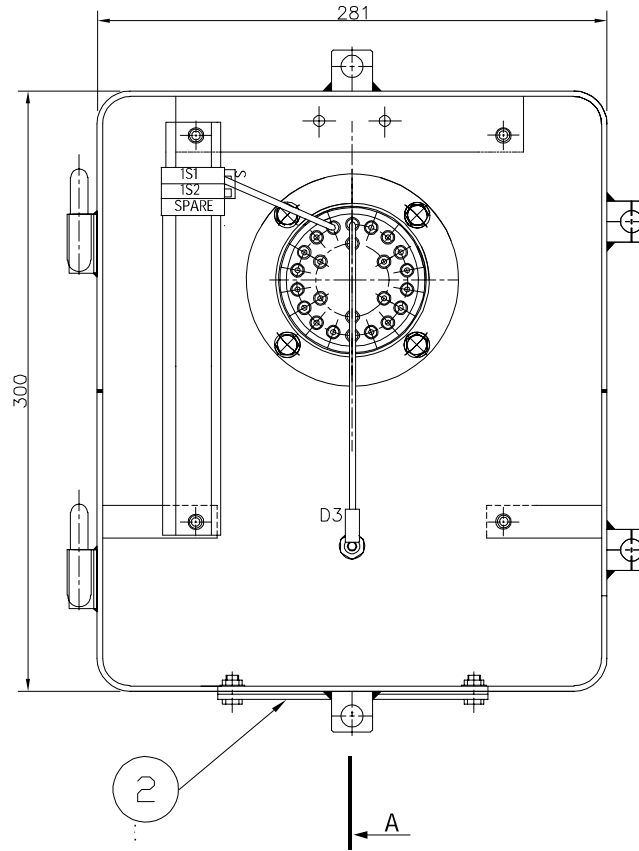
Revision		245 kV OUTDOOR CURRENT TRANSFORMER TYPE IMB 245	RATING PLATE	Prepared: SR	Checked: PDS	Approved: SN	File: 3320-045	Total sh. 1
A	2021-01-12			<b>ABB</b> APPSIL			<b>1HYT903320-045</b>	Sh.No. 1

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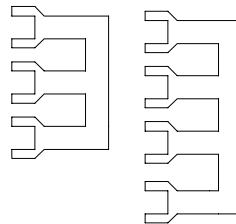
Drawing approval subject to valid vendor registration



Section-AA

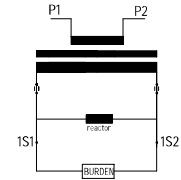


D3= Tan δ measuring terminal



S-Shorting link

FOR CORE 1 ONLY



FOR RATIO OF 400/1  
(REACTOR IS CONNECTED INTERNALLY IN TANK)

CHIEF ENGINEER/PROJECTS  
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5	COPPER WIRE
4	SERIES TERMINAL STUD TYPE
3	EPDM GASKET
2	UNDRILLED GLAND PLATE (3mm Thk.)
1	COVER
SR NO.	ITEM DESCRIPTION

NOTES : -

- 1) DEGREE OF PROTECTION IP 55
- 2) THE SECONDARY TERMINAL BOX IS HOT DIP GALVANISED
- 3) D3 TERMINAL IS FOR THE MEASUREMENT OF POWER FACTOR AND LOSS ANGLE
- 4) THE BOX IS SUITABLE FOR ACCOMMODATING SECONDARY CABLES OF 1100 V
- 5) STEEL SHEET 3.15 mm THICK HOT ROLLED
- 6) ALL DIMENSIONS ARE IN mm. GENERAL TOLERANCE AS PER ISO: 2768-c
- 7) NO. OF WIRES SHOWN IN THE TERMINAL BLOCK ARE INDICATIVE ONLY

Revision Details:  
B Gland plate thickness added BOM created reactor detail added

Revision Details:  
A New Drawing prepared

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Revision			
A	2021-01-13		
B	2021-01-21		

CURRENT TRANSFORMER  
TYPE : IMB 245  
SEC. TERMINAL BOX : DETAILS

DRAWN: SR  
**ABB** APPSIL

CHECKED: PDS

APPRD: SN

file: 3320-046

1HYT903320-046

TOTAL SH. 1  
Sh. NO. 1

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**Annexure-A**  
**GUARANTEED TECHNICAL PARTICULARS FOR**  
**CURRENT TRANSFORMERS (245kV CT: 400 / 1 A)**

1	Type of tank/Installation Dead/Live Tank Type	Dead tank, Single phase, Oil Filled, Outdoor Type
2	Type of mounting	Pedestal Mounting
3	Manufacturer's Name and address and Country of Manufacture	Hitachi Energy India Limited (Formerly - APPSIL) Maneja, Vadodara – 390013 India
4	Whether Conforming to IEC 61869 standard	Yes
5 a) i)	Primary and Secondary winding made out of	Primary – Aluminum, Secondary – Copper
ii)	Primary windings -Design density for short circuit current -Conductivity of metal used -	Aluminum - 44.64 Amp/mm <sup>2</sup> (approx.) - As per IEC
b)	i) Area of cross section of primary winding	896 mm <sup>2</sup> (approx.)
	ii) Area of cross section of secondary winding	Metering : 0.82 mm <sup>2</sup> (approx.)
c)	Material used for providing secondary terminals	Brass (Primary Terminal will be Al)
d)	Material used for providing secondary terminals	Brass Drawing approval subject to valid vendor registration
e)	Whether Primary is Rigid Bar type in case of live tank	Not applicable
6	Rated primary voltage (kV rms)	220 KV / root3
7	Rated highest voltage (kV rms)	245 KV
8	Rated frequency (Hz)	50 Hz
9	Rated primary current (A)	400 A
10	Rated secondary current (A)	1
11	Ratio taps (on secondary side only)	On Secondary Side
12	Type of insulation	Class A
13	Seismic acceleration (g)	0.3 g vertical
14	RIV at 1.1 x Rated voltage (mv)	< 500 micro volts
15	Tank material and Tank coating	Mild Steel, HDG
16	Hardware exposed to atmosphere	HDG
17	Bolts, Nuts and Washers	MS Hot dip galvanized.
18	Porcelain housing and it make (Single piece only)	Hollow type, IEC/BHEL/ABIL/ADI/Modern or Equivalent Make
19	Sealing (Nitrogen gas cushion/Metal bellow)	Nitrogen cushion
20	Instrument security factor	≤5 (For Metering core only)
21	Whether Tan Delta test tap provided	Yes
22	Whether secondary terminal plate is of molded epoxy resin type	Yes
23	Whether primary terminal bushings are of molded Epoxy cast resin/Glass fiber reinforced Polymer	Molded cast resin & Porcelain
24	Whether all seals are of "O" ring type	Yes "O" ring & Flat gasket
25	Whether all "O" Rings are fixed in machined grooves with adequate space for compression'	Yes
26	Whether the main hollow insulator has the flanges cemented at both ends	Yes
27	Whether "O" Rings are of Nitrile butyl rubber	Yes (NBR)

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	or Viton					
28	Whether the Short circuit Ampere-turns of the CT being supplied is same as type tested CTs	Yes				
29	Tan Delta	Shall be less than 0.350%				
30	Whether ratio selection is achieved only in secondary	Yes				
31	Whether ratio selection is achieved only in secondary	Yes				
32	Whether Non return drain valve for oil sampling is arranged for 132kV and above CT/IVT	Bolt Type				
33	Acceptable limit of temperature	As per IS/IEC				
34	Partial Discharge Level	< 5 at $U_m \times 1.2/\sqrt{3}$ , < 10 at $U_m$ (where $U_m$ is highest system voltage)				
35	Rated short time withstand current for 1 sec. duration (kA rms)	40 kA				
36	Rated dynamic withstand current (kAp)	100 kA				
37	Rated continuous thermal current (pu) where pu = rated current	120% of rated primary current				
38	1.2/50 micro second impulse withstand voltage (kVp)	1050				
39	One minute power frequency withstand voltage (kV rms) of primary winding (Dry)	460				
40	One minute power frequency withstand voltage of secondary winding (kV rms)	3				
41. a)	Minimum total creepage distance of insulator bushing (mm)	6125 mm (25mm/kV) Porcelain Insulator				
b)	Protected creepage of distance of bushing (mm)	Not Applicable				
42	Details of Cores	Core-I	Core-II	Core-III	Core-IV	Core-V
42.1	Current Ratios A/A	400				
42.2	Output burden (VA)	5				
42.3	Class of accuracy	0.2S				
42.4	Accuracy limit factor / ISF	≤5				
42.5	Min. knee point voltage (kpv) in volts	-				
42.6	Secondary resistance corrected to 75 deg.C in ohms	-				
42.7	Max. Exciting current (mA) at - 20% of knee point voltage - 50% of knee point voltage - 100% of knee point voltage	- - -				
42.8	Application	Metering				
43	Weight of oil (Kg.)	140 Kg (approx.)				
44	Approximate weight of Copper used (Kgs)	2 Kg.				
45	Approximate weight of Steel used (Kgs)	130 kg.				
46	Total Weight (Kg.)	1050 kG. (approx.)				
47	Mounting details	450x450 (Please refer GA enclosed)				
48	Overall dimensions	Please refer GA drawing enclosed				
49	Characteristics (whether graphs enclosed):					
a)	Ratio and phase angle curves	Yes				
b)	Magnetisation curves	NA				
c)	Ratio correction factor curves	NA				

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50	Core	
a)	Area of cross section (sq.cm.)	NA
b)	Flux density at rated primary current and rated burden	As per Standard design practice
c)	Grade	Nano Core For Metering Core

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