Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.

Item: 245kV CT

Drawing approval subject to valid vendor registration

Ratio: 800-600-400/1A, 5C

Creepage: 25mm/kV

Customer: APTransco, Andhra Pradesh

List of Standard Drawings/Documents:

Sl. No.	Description	Drawing/ Doc No.
1	General Arrangement	APTR-01.25.245J1
2	Rating Plate	APTR_01.25.245J2_ REV No.01
3	Terminal Box GA	APTR-01.25.245J3_ REV No.01
4	Sectional View	APTR-01.25.245J4
5	GTP	--

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.

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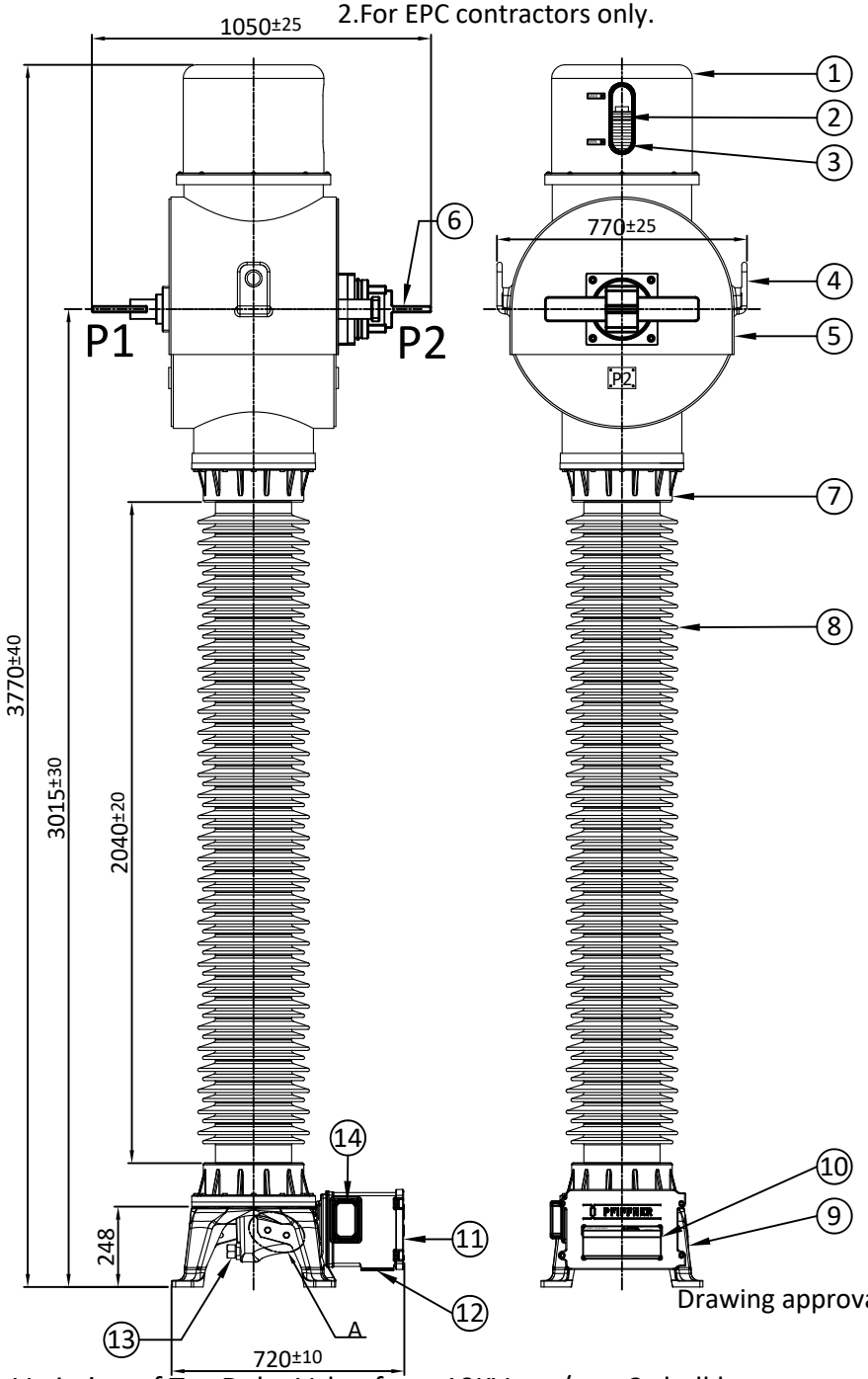
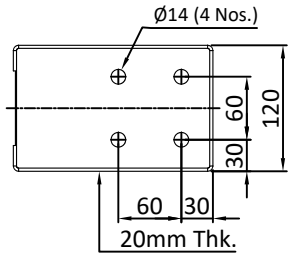
CHIEF ENGINEER/PROJECTS
APTRANSCO/VS/Vijayawada

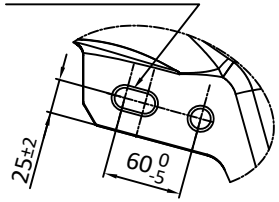
NOTE:-1.Drawings approval subject to valid type test reports,
to be checked during acceptance tests.
2.For EPC contractors only.



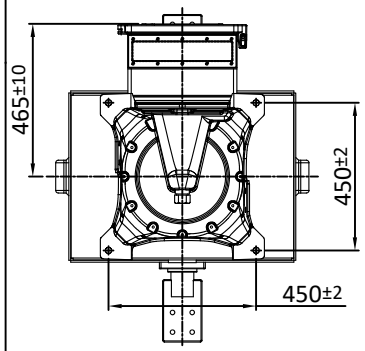


TERMINAL DETAIL

2Nos. of Ø15
Hole for Earthing
Diagonally opposite



Detail 'A'



CT MOUNTING DETAIL

NO.	QTY.	DESCRIPTION	MATERIAL
01	01	BELLOWS COVER	ALUMINIUM
02	01	BELLOWS	STAINLESS STEEL
03	01	BELLOWS LEVEL INDICATOR	POLYCARBONATE
04	02	LIFTING LUG	ALUMINIUM
05	01	HOUSING	ALUMINIUM
06	02	PRIMARY TERMINAL	ALUMINIUM
07	02	INSULATOR FLANGE	ALUMINIUM
08	01	INSULATOR	PORCELAIN
09	01	BASE	ALUMINIUM
10	01	RATING PLATE	ALUMINIUM
11	01	TERMINAL BOX	ALUMINIUM
12	01	GLAND PLATE	ALUMINIUM
13	01	OIL SAMPLING VALVE	STEEL GALVANISED
14	01	TAN DELTA MEASUREMENT TERMINAL	BRASS

TOTAL WEIGHT : 720 kg ±10%
TOTAL OIL WEIGHT : 180 kg ±10%
CREEPAGE DISTANCE : ≥6125 mm

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CHIEF ENGINEER/PROJECTS
APTRANSCO/VS/Vijayawada

Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.

Drawing approval subject to valid vendor registration

Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.

REV.NO.	DESCRIPTION	APPV'D	REV. DATE
GEN. TOL. : NA	MATERIAL : NA		
WEIGHT : NA			
	NAME / SIGN / DATE	SPEC : NA	ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.
DRAWN	M.D. / 06.03.2023		
CHK'D	M.C. / 06.03.2023	FINISH : NA	SCALE : N.T.S.
APPV'D	R.P. / 06.03.2023		SHEET SIZE : A3

PFIFFNER
Instrument Transformers Pvt.Ltd.
NASHIK, INDIA

TITLE : GENERAL ARRANGEMENT 245kV CT

DWG NO. APTR-01.25.245J1

SHEET 1 OF 1 | REV. NO. : 00

CB2-2TF-6125

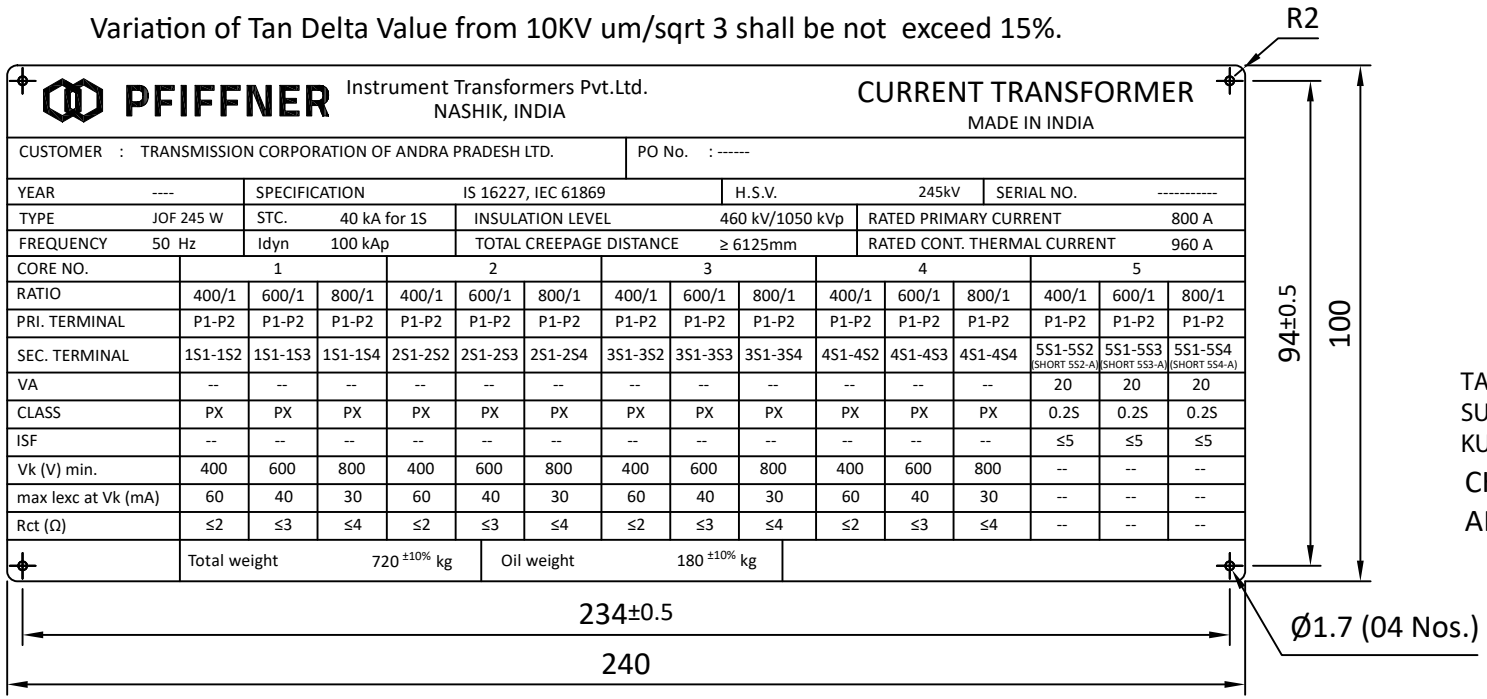
IF IN DOUBT ASK

Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.

PFIFFNER Instrument Transformers Pvt.Ltd. NASHIK, INDIA

CURRENT TRANSFORMER
MADE IN INDIA

CUSTOMER : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.							PO No. : ------									
YEAR ----	SPECIFICATION IS 16227, IEC 61869						H.S.V. 245kV			SERIAL NO. ----------						
TYPE JOF 245 W	STC. 40 kA for 1S			INSULATION LEVEL 460 kV/1050 kVp			RATED PRIMARY CURRENT 800 A									
FREQUENCY 50 Hz	Idyn 100 kAp			TOTAL CREEPAGE DISTANCE ≥ 6125mm			RATED CONT. THERMAL CURRENT 960 A									
CORE NO.	1			2			3			4			5			
RATIO	400/1	600/1	800/1	400/1	600/1	800/1	400/1	600/1	800/1	400/1	600/1	800/1	400/1	600/1	800/1	
PRI. TERMINAL	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	P1-P2	
SEC. TERMINAL	1S1-1S2	1S1-1S3	1S1-1S4	2S1-2S2	2S1-2S3	2S1-2S4	3S1-3S2	3S1-3S3	3S1-3S4	4S1-4S2	4S1-4S3	4S1-4S4	5S1-5S2 (SHORT 5S2-A)	5S1-5S3 (SHORT 5S3-A)	5S1-5S4 (SHORT 5S4-A)	
VA	--	--	--	--	--	--	--	--	--	--	--	--	20	20	20	
CLASS	PX	PX	PX	PX	PX	PX	PX	PX	PX	PX	PX	PX	0.2S	0.2S	0.2S	
ISF	--	--	--	--	--	--	--	--	--	--	--	--	≤5	≤5	≤5	
Vk (V) min.	400	600	800	400	600	800	400	600	800	400	600	800	--	--	--	
max Iexc at Vk (mA)	60	40	30	60	40	30	60	40	30	60	40	30	--	--	--	
Rct (Ω)	≤2	≤3	≤4	≤2	≤3	≤4	≤2	≤3	≤4	≤2	≤3	≤4	--	--	--	
	Total weight 720 ±10% kg			Oil weight 180 ±10% kg												



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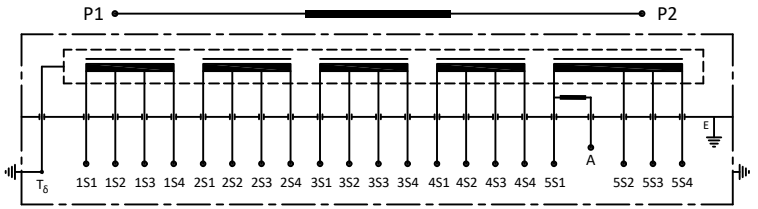
APTRANSCO/VS/Vijayawada

PFIFFNER Instrument Transformers Pvt.Ltd. NASHIK, INDIA

CURRENT TRANSFORMER
MADE IN INDIA

SERIAL NO. ---------
YEAR ----



CAUTION : - Short all sec. terminals when not in use or before disconnecting burdens. Also check bellows position.
- Capacitance & Tan delta terminal 'T_δ' shall always be connected to earth & disconnect only for measurement.

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

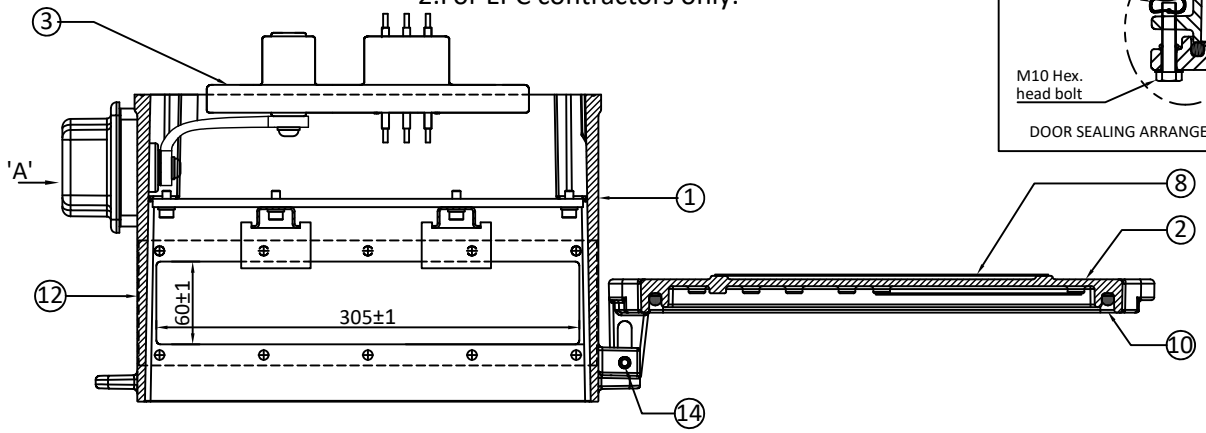
Drawing approval subject to valid vendor registration

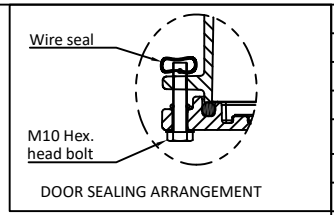
Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.

01	AS PER CUSTOMER COMMENTS.			CHM	17.04.2023
REV.NO.	DESCRIPTION			APPV'D	REV. DATE
GEN. TOL. : NA				MATERIAL : 1mm thick Aluminium metal photo	
WEIGHT : NA					
	NAME	SIGN	DATE	SPEC : NA	ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.
DRAWN	M.D.		06.03.2023		
CHK'D	M.C.		06.03.2023	FINISH : NA	SCALE : N.T.S.
APPV'D	R.P.		06.03.2023		SHEET SIZE : A3
PFIFFNER Instrument Transformers Pvt.Ltd. NASHIK, INDIA				TITLE : RATING PLATE 245 kV CT	DWG NO. APTR_01.25.245J2
					SHEET 1 OF 1 / REV. NO. : 01

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

IF IN DOUBT ASK



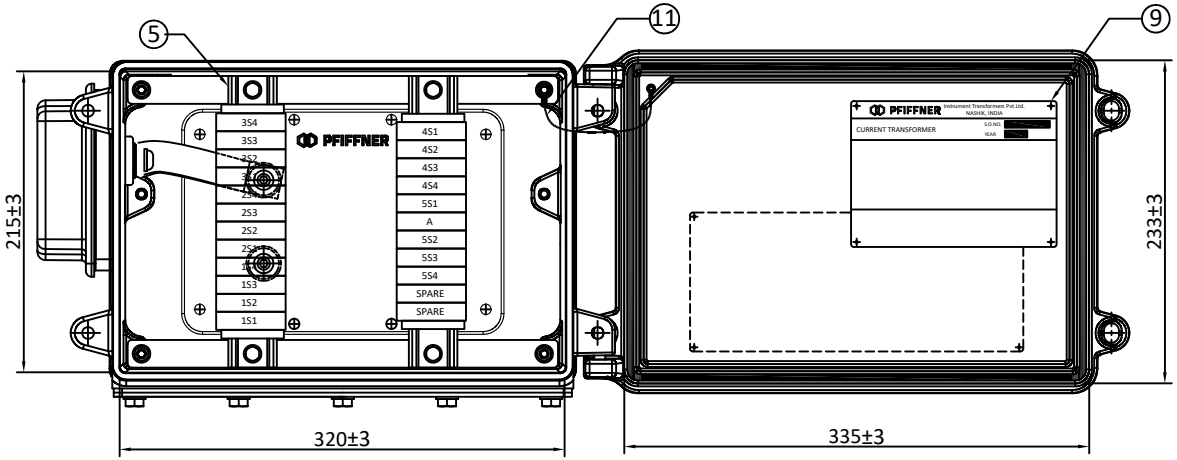


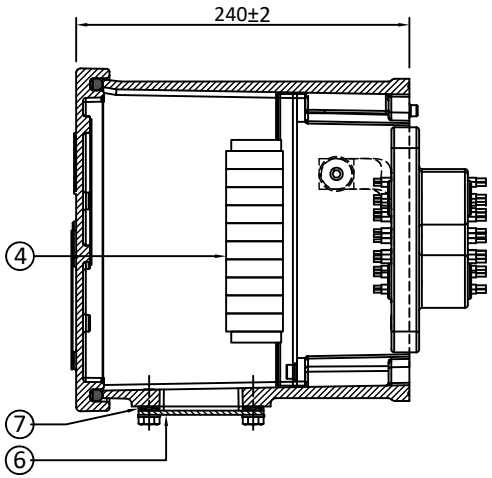
DOOR SEALING ARRANGEMENT

SR.NO.	DESCRIPTION	QTY.	MATERIAL
1	TERMINAL BOX	1	ALUMINIUM
2	TERMINAL BOX DOOR	1	ALUMINIUM
3	SECONDARY LEAD OUT	1	EPOXY
4	STUD TYPE TERMINAL BLOCK (KBT M4)	21+2 SPARE	MAKE - ELMEX
5	TERMINAL CARRIER RAIL	2	STEEL
6	GLAND PLATE	1	ALUMINIUM
7	GLAND PLATE GASKET	1	NEOPRENE RUBBER
8	RATING PLATE	1	ALUMINIUM
9	SCHEMATIC DIAGRAM PLATE	1	ALUMINIUM
10	DOOR GASKET	1	EPDM RUBBER
11	DOOR EARTHING CABLE	1	PVC INSULATED COPPER CABLE
12	WARNING STICKER	1	ALUMINIUM
13	TAN DELTA (T_δ) MEASUREMENT TERMINAL	1	BRASS
14	HINGES	2	S.S. TENSION PIN
15	TAN DELTA EARTH LINK	1	COPPER (NICKEL PLATED)

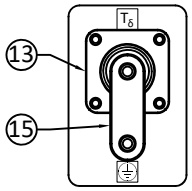
DEGREE OF PROTECTION : IP 55

Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.





Drawing approval subject to valid vendor registration



Detail 'A'

WARNING
'T_δ' TERMINAL - DO NOT
OPEN WHEN IN SERVICE

Item : 12

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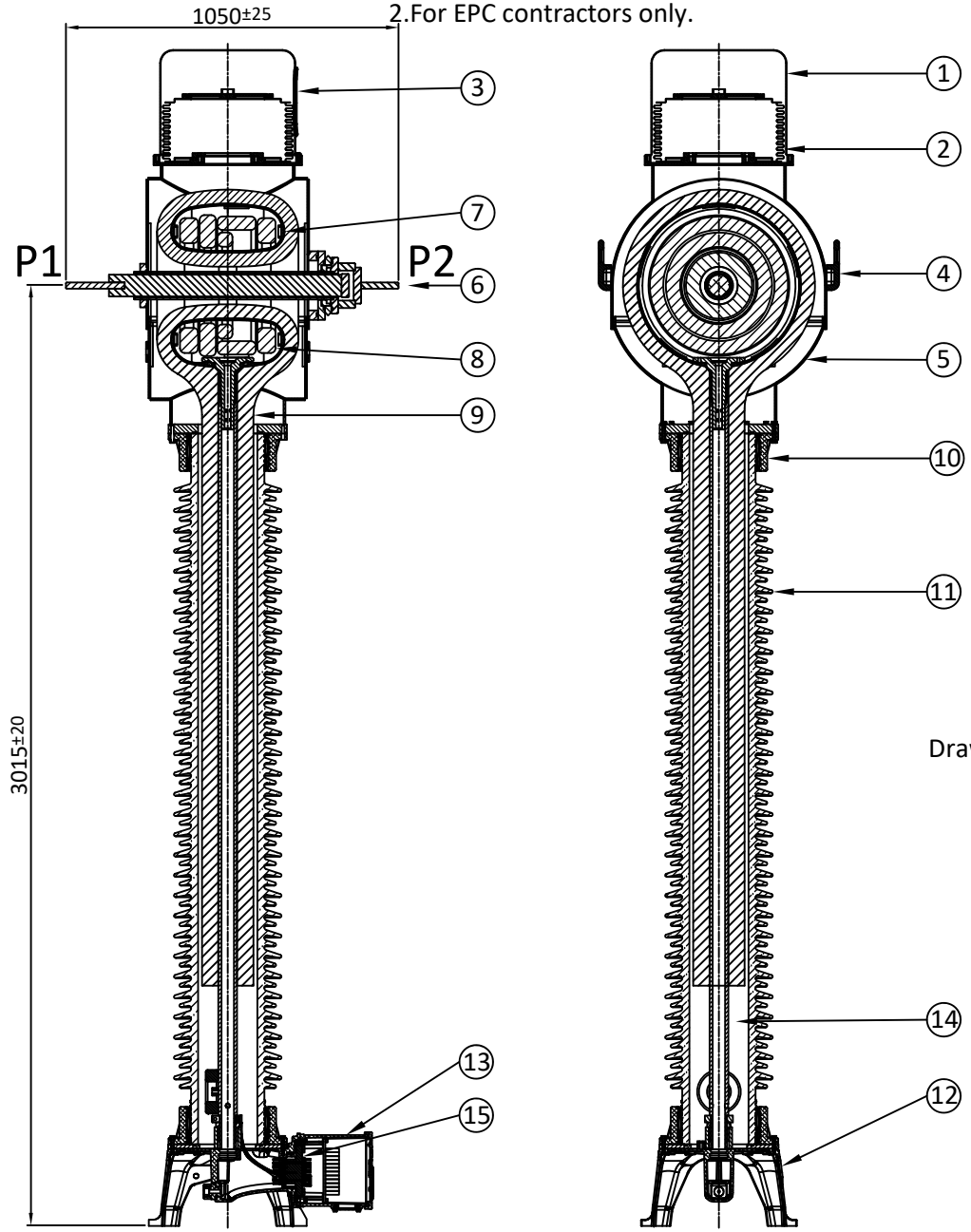
CHIEF ENGINEER/PROJECTS
APTRANSCO/VS/Vijayawada

Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.

01	AS PER CUSTOMER COMMENTS.			CHM	17.04.2023
REV.NO.	DESCRIPTION			APPV'D	REV. DATE
GEN. TOL. : NA				MATERIAL : NA	
WEIGHT : NA					
	NAME	SIGN	DATE	SPEC : NA	ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.
DRAWN	M.D.		06.03.2023		
CHK'D	M.C.		06.03.2023	FINISH : NA	SCALE : N.T.S.
APPV'D	R.P.		06.03.2023		SHEET SIZE : A3
PFIFFNER Instrument Transformers Pvt.Ltd. NASHIK, INDIA				TITLE : TERMINAL BOX GA 245kV CT	DWG NO. APTR-01.25.245J3
					SHEET 1 OF 1 / REV. NO. : 01

IF IN DOUBT ASK

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



NO.	QTY.	DESCRIPTION	MATERIAL
01	01	BELLOWS COVER	ALUMINIUM
02	01	BELLOWS	STAINLESS STEEL
03	01	BELLOW LEVEL INDICATOR	POLYCARBONATE
04	02	LIFTING LUG	ALUMINIUM
05	01	HOUSING	ALUMINIUM
06	02	PRIMARY TERMINAL	ALUMINIUM
07	01	CORE BOX	ALUMINIUM
08	01	SECONDARY CORES	CRGO & NANO
09	01	ACTIVE PART	OIL IMPREGNATED PAPER
10	02	INSULATOR FLANGE	ALUMINIUM
11	01	INSULATOR	PORCELAIN
12	01	BASE	ALUMINIUM
13	01	TERMINAL BOX	ALUMINIUM
14	--	INSULATING OIL	EHV Grade - MINERAL OIL
15	01	SECONDARY LEADOUT	EPOXY

Notes:
- Insulating oil shall be EHV Grade as per IS 335, IEC 296
- Core : CRGO Si-Fe/ Equivalent high permeability material, MU- Metal, NANO - crystalline
- Secondary winding - Enamelled copper

Drawing approval subject to valid vendor registration

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CHIEF ENGINEER/PROJECTS
APTRANSCO/VS/Vijayawada

Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.

REV.NO.	DESCRIPTION	APPV'D	REV. DATE
GEN. TOL. : NA	MATERIAL : NA		
WEIGHT : NA			
	NAME / SIGN / DATE	SPEC : NA	ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.
DRAWN	M.D. / 07.03.2023		
CHK'D	M.C. / 07.03.2023	FINISH : NA	SCALE : N.T.S.
APPV'D	R.P. / 07.03.2023		SHEET SIZE : A3

PFIFFNER
Instrument Transformers Pvt.Ltd.
NASHIK, INDIA

TITLE : SECTIONAL VIEW 245kV CT

DRG NO. APTR-01.25.245J4

SHEET 1 OF 1 | REV. NO. : 00

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

Annexure-A

GUARANTEED TECHNICAL PARTICULARS FOR CURRENT TRANSFORMERS

JOF 245 W OUTDOOR CURRENT TRANSFORMERS
(245kV 800A CT, 5 Core 25mm Creepage)

Sl.No	Particulars	Description
1	Type of tank/Installation Dead/Live Tank Type	Live Tank, Single Phase, Oil Filled, Outdoor Type
2	Type of mounting	Pedestal Mounting
3	Manufacturer's Name and address and Country of Manufacture	PFIFFNER Instrument Transformers Pvt Limited, Gat No. 176, 178/2, Sarul, Nashik 422010, Maharashtra, INDIA
4	Whether Conforming to IEC 61869 Standard	Yes, IEC 61869-1&2
5 a)	Primary and Secondary winding made out of	Primary - Aluminium alloy of C/S area 1960 mm^2 Secondary - Copper alloy of C/S area 1.168mm^2
b)	Material used for providing Primary Terminals	Aluminium
c)	Material used for providing secondary Terminals	Copper Alloy
d)	Whether Primary is Rigid Bar type in case of live tank	Yes, Rigid Bar type
6	Rated primary voltage (kV rms)	220 kV
7	Rated highest voltage (kV rms)	245 kV
8	Rated frequency (Hz)	50 Hz
9	Rated primary current (A)	800A
10	Rated secondary current (A)	1A
11	Ratio taps (on secondary side only)	On Secondary Only
12	Type of insulation	Class A
13	Seismic acceleration (g)	0.3g
14	RIV at 1.1 x Rated voltage (mv)	< 500 Micro Volts
15	Tank material and Tank coating	Aluminium Tank with Natural Finish
16	Hardware exposed to atmosphere	Stainless Steel
17	Bolts, Nuts and Washers	Stainless Steel
18	Porcelain housing and it make (Single piece only	IEC/Modern/Ravikiran
19	Sealing (Nitrogen gas cushion/Metal Bellow	Stainless Steel Bellows
20	Instrument security factor	≤ 5 (For Metering core)
21	Whether Tan Delta test tap provided	Yes
22	Whether secondary terminal plate is of moulded epoxy resin type	Yes (Epoxy Monoblock)
23	Whether primary terminal bushings are of molded Epoxy cast resin/Glass fiber reinforced Polymer	Not Applicable
24	Whether all seals are of "O" ring type	Yes, "O" Rings
25	Whether all "O" Rings are fixed in machined grooves with adequate	Yes

Drawing approval subject to valid vendor registration

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CHIEF ENGINEER/PROJECTS
APTRANSCO/VS/Vijayawada

Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.

Sl.No	Particulars	Description
	space for compression'	
26	Whether the main hollow insulator has the flanges cemented at both ends	Yes
27	Whether "O" Rings are of Nitrile butyl rubber or Viton	Yes (Viton)
28	Whether the Short circuit Ampere turns of the CT being supplied is same as type tested CTs	Yes
29	Tan Delta	< 0.5%
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	Yes
33	Acceptable limit of temperature	As per IS/IEC
34	Partial Discharge Level	< 5pC at 1.2 x Um /√3, < 10pC at Um (where Um 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
37	Rated continuous thermal current (pu) where pu = rated current	Rated Extended Primary Current 120%
38	1.2/50 micro second impulse withstand voltage (kVp)	1050 kVp
39	One minute power frequency withstand voltage (kV rms) of primary winding (Dry)	460 kV rms
40	One minute power frequency withstand voltage of secondary winding (kV rms)	3 kV
41 a)	Minimum total Creepage distance of insulator bushing (mm)	25mm/kV Porcelain Insulator / 6125 mm
b)	Protected Creepage of distance of bushing (mm)	Not Applicable

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CHIEF ENGINEER/PROJECTS
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Drawing approval subject to valid vendor registration

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

Sl.No	Particulars	Description				
42	Details of Cores	Core 1	Core 2	Core 3	Core4	Core 5
i)	Current Ratios A/A	800-600-400/1-1-1-1-1A				
ii)	Output burden (VA)	NA	NA	NA	NA	20
iii)	Class of accuracy	PX	PX	PX	PX	0.2S
iv)	ISF	NA	NA	NA	NA	5
v)	Min. knee point voltage (kpv) in volts	800 600 400	800 600 400	800 600 400	800 600 400	NA
vi)	Secondary resistance corrected to 75 deg.C in ohms	2-3-4	2-3-4	2-3-4	2-3-4	NA
vii)	Max. Exciting current (mA) at Vk - 100% of knee point voltage	30-40-60	30-40-60	30-40-60	30-40-60	NA
43	Weight of oil (Kg.)	180kg ± 10% (approx.)				
44	Approximate weight of copper used (Kg)	25kg				
45	Approximate weight of Steel used (Kg)	100kg				
46	Total Weight (Kg.)	720 ± 10% (approx.)				
47	Mounting details	450mm x 450mm (Refer GA Drawing)				
48	Overall dimensions	Please Refer Attached GA Drawing				
49	Characteristics (whether graphs enclosed):	No				
a)	Ratio and phase angle curves	No				
b)	Magnetization curves	No				
c)	Ratio correction factor curves	No				
50	Core					
a)	Area of cross section (sq.cm.)	As per Standard Design Practice				
b)	Flux density at rated primary current and rated burden	As Per Standard Design Practice				
c)	Grade	Nano-crystalline core for Metering CRGO steel or other equivalent alloys for Protection Cores				
51	Cantilever strength (kG)	400 KG				

Drawing approval subject to valid vendor registration

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.

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CHIEF ENGINEER/PROJECTS
APTRANSCO/VS/Vijayawada

Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.