

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

**Item: 145kV CT**

**Ratio:** 200/1A, 1 C

**Creepage:** 31mm/kV

**Customer:** APTransco, Andhra Pradesh

**List of Standard Drawings/Documents:**

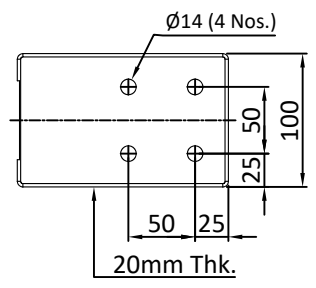
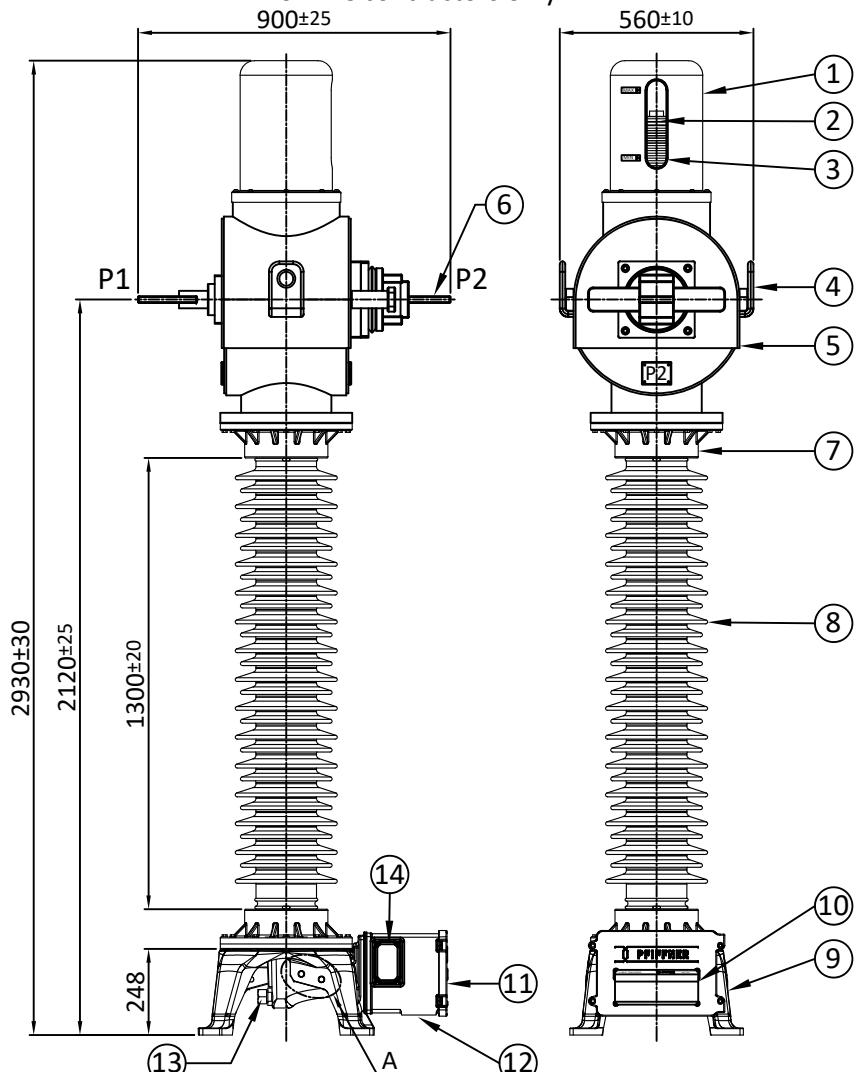
Sl. No.	Description	Drawing/ Doc No.
1	General Arrangement	APTR-11.31.145J1
2	Rating Plate	APTR-11.31.145J2
3	Terminal Box GA	APTR-11.31.145J3
4	Sectional View	APTR-11.31.145J4
5	GTP	--

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 compatibility.

Variation of Tan Delta Value from 10KV  $\mu\text{m}/\sqrt{3}$  shall be not exceed 15%.

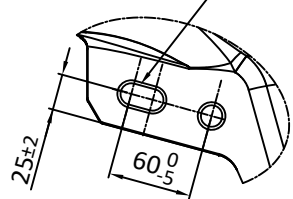
CHIEF ENGINEER/PROJECTS  
 APTRANSCO/VS/Vijayawada

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

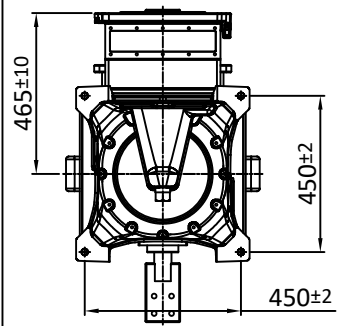


TERMINAL DETAIL

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	BELLOW 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 : 380 kg ±10%  
 TOTAL OIL WEIGHT : 90 kg ±10%  
 CREEPAGE DISTANCE : ≥4495 mm

Drawing approval subject to valid vendor registration

Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.

REV.NO.	DESCRIPTION	APPV'D	REV. DATE
GEN. TOL : NA	MATERIAL : NA		ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.
WEIGHT : NA			
NAME	SIGN	DATE	SPEC : NA
DRAWN	DHM	20.04.2023	FINISH : NA
CHK'D	CHM	20.04.2023	
APPV'D	CHM	20.04.2023	
TITLE : GENERAL ARRANGEMENT 145KV CT		DWG NO. : APTR-11.31.145J1	
SHEET 1 OF 1		REV. NO. : 00	

**PIFFNER**  
 Instrument Transformers Pvt.Ltd.  
 NASHIK, INDIA

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

CHIEF ENGINEER/PROJECTS  
 APTRANSCO/Vs/Vijayawada

This document must not be copied without our written permission and the content and nor be used for any unauthorised purpose. Contravention will be prosecuted. © PFIFFNER


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.

IF IN DOUBT ASK



**PFIFFNER** Instrument Transformers Pvt.Ltd.  
NASHIK, INDIA

**CURRENT TRANSFORMER**

CUSTOMER : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.		PO No. : -----	
YEAR : ----	SPECIFICATION : IS 16227, IEC 61869	H.S.V. : 145kv	SERIAL NO. : -----
TYPE : JOF 145 W	STC. : 31.5 kA for 1S	INSULATION LEVEL : 275 kv/650 kvp	RATED PRIMARY CURRENT : 200 A
FREQUENCY : 50 Hz	Idyn : 78.75 kAp	TOTAL CREEPAGE DISTANCE : ≥ 4495mm	RATED CONT. THERMAL CURRENT : 240 A
CORE NO.	1		
RATIO	200/1		
PRI. TERMINAL	P1-P2		
SEC. TERMINAL	1S1-1S2		
VA	5		
CLASS	0.2S		
ISF/ALF	≤5		
Vk (V) min.	--		
max Iexc at Vk (mA)	--		
Rct (Ω)	--		
Total weight	380 ±10% kg	Oil weight	90 ±10% kg

234±0.2

240


94±0.2

100

Ø1.7 (04 Nos.)

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

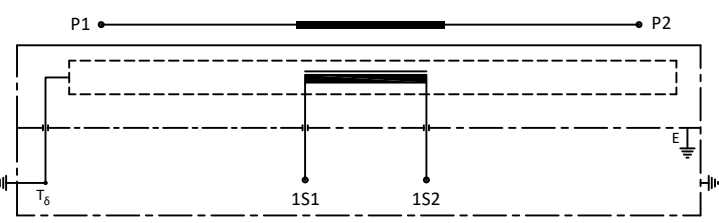
Variation of Tan Delta Value from 10KV um/sqrt 3 shall be not exceed 15%.



**PFIFFNER** Instrument Transformers Pvt.Ltd.  
NASHIK, INDIA

**CURRENT TRANSFORMER**

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<sub>δ</sub>' shall always be connected to earth & disconnect only for measurement.

140±0.2

148

98±0.2

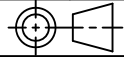
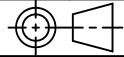

105

Ø1.7 (04 Nos.)

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	DESCRIPTION	APPV'D	REV. DATE
REV.NO.	GEN. TOL : NA		
	MATERIAL : 1mm thick Aluminium metal photo		
	WEIGHT : NA	ALL DIMENSION ARE IN MM. UNLESS OTHRWISE SPECIFIED.	
	NAME : DHM	SIGN	DATE : 20.04.2023
DRAWN	CHM		20.04.2023
CHK'D	CHM		20.04.2023
APPV'D	CHM		20.04.2023
 <p><b>PFIFFNER</b> Instrument Transformers Pvt.Ltd. NASHIK, INDIA</p>		<p>TITLE : RATING PLATE 145 kv CT</p>	
		<p>SHEET 1 OF 1   REV. NO. : 00</p>	

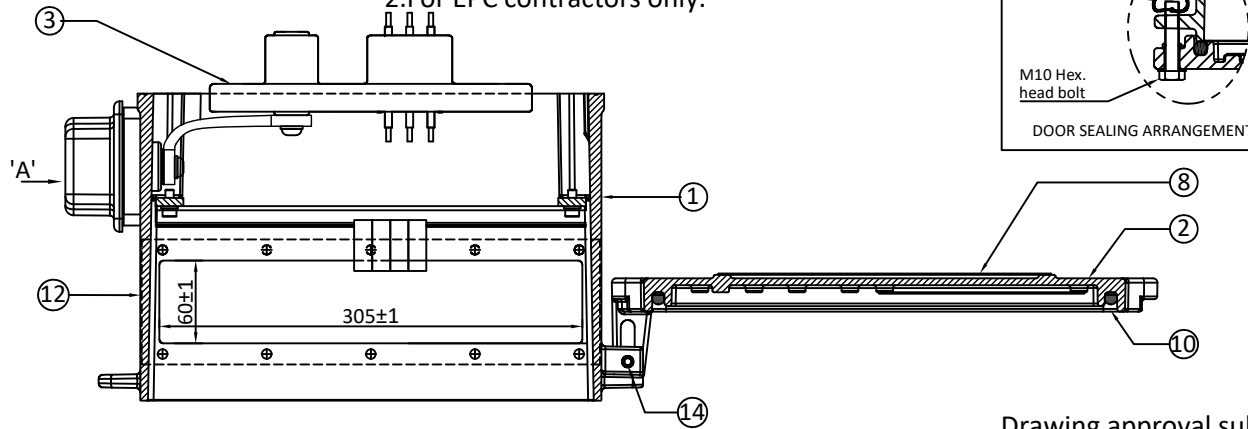
This document must not be copied without our written permission and the content and nor be used for any unauthorised purpose. Contravention will be prosecuted. PFIFFNER

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

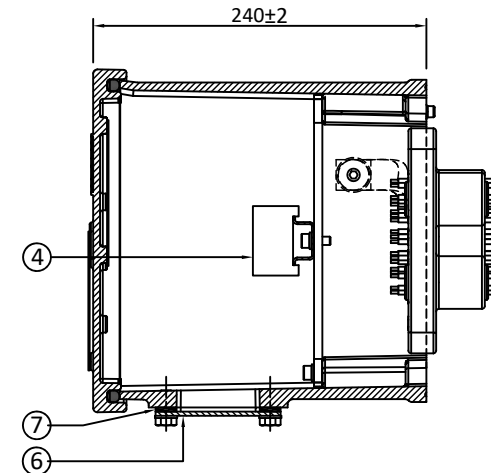
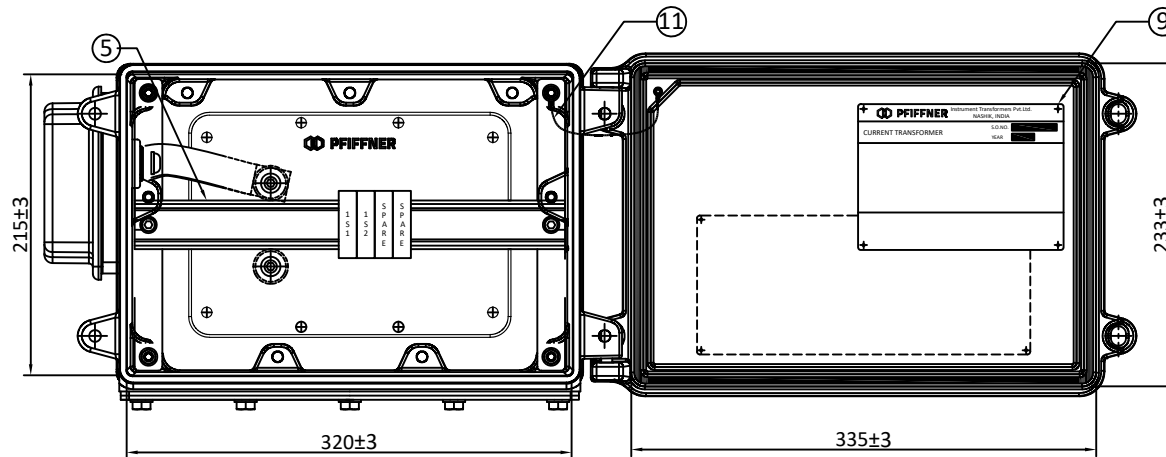


SR.NO.	DESCRIPTION	QTY.	MATERIAL
1	TERMINAL BOX	1	ALUMINIUM
2	TERMINAL BOX DOOR	1	ALUMINIUM
3	SECONDARY LEAD OUT	1	EPOXY
4	STUD TYPE TERMINAL BLOCK (KBT M4 )	2+2 SPARE	MAKE - ELMEX
5	TERMINAL CARRIER RAIL	2	STEEL
6	GLAND PLATE	1	ALUMINIUM
7	GLAND PLATE GASKET	1	NEOPRENE RUBBER
8	RATING PLATE	1	ALUMINIUM
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 <sub>δ</sub> ) MEASUREMENT TERMINAL	1	BRASS
14	HINGES	2	S.S. TENSION PIN
15	TAN DELTA EARTH LINK	1	COPPER (NICKEL PLATED)

Drawing approval subject to valid vendor registration

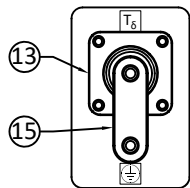
DEGREE OF PROTECTION : IP 55

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



Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.

This document must not be copied without our written permission and the content and nor be used for any unauthorised purpose. Contravention will be prosecuted. PFIFFNER



Detail 'A'

**WARNING**  
"T<sub>δ</sub>" TERMINAL - DO NOT OPEN WHEN IN SERVICE

Item : 12

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

REV.NO.	DESCRIPTION	APPV'D	REV. DATE
01			
GEN. TOL : NA		MATERIAL : NA	
WEIGHT : NA		ALL DIMENSION ARE IN MM. UNLESS OTHERWISE SPECIFIED.	
NAME	SIGN	DATE	SPEC : NA
DRAWN	DHM	20.04.2023	FINISH : NA
CHK'D	CHM	20.04.2023	SCALE : N.T.S.
APPV'D	CHM	20.04.2023	SHEET SIZE : A3
TITLE : TERMINAL BOX GA 145KV CT			DWG NO. APTR-11.31.145J3
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.

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

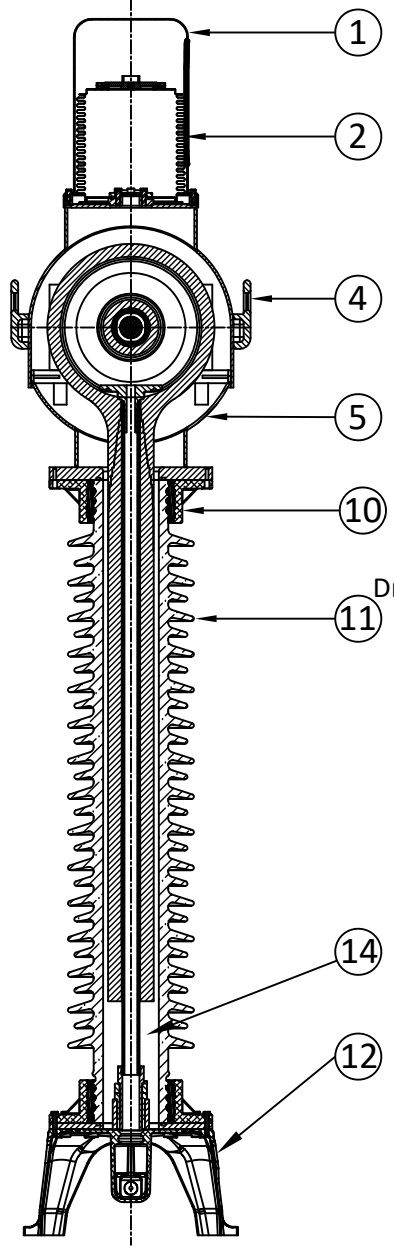
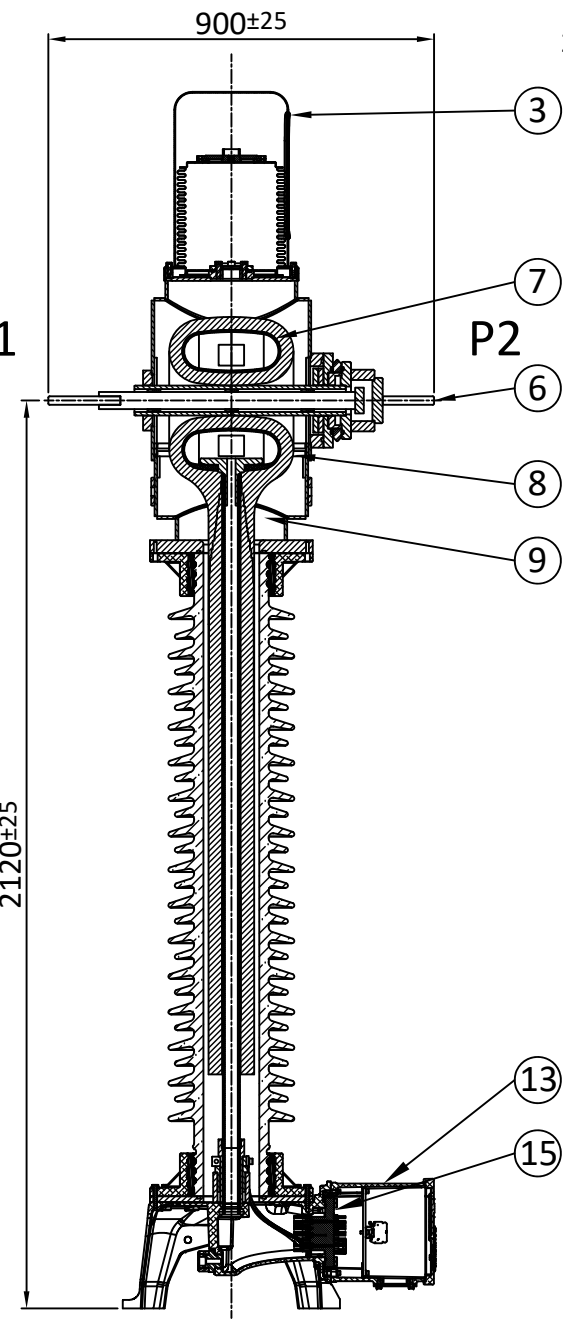
Notes:

- 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

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

Customer : TRANSMISSION CORPORATION OF ANDRA PRADESH LTD.



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

This document must not be copied without our written permission and the content and nor be used for any unauthorised purpose. Contravention will be prosecuted. © PFIFFNER

IF IN DOUBT ASK

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	DHM		20.04.2023		SCALE : N.T.S.	
CHK'D	CHM		20.04.2023	FINISH : NA	SHEET SIZE : A3	
APPV'D	CHM		20.04.2023		DRG NO.	
<b>PFIFFNER</b> Instrument Transformers Pvt.Ltd. NASHIK, INDIA					TITLE : SECTIONAL VIEW 145KV CT	
					APTR-11.31.145J4	
					SHEET 1 OF 1	
					REV. NO. : 00	

**Annexure-A****GUARANTEED TECHNICAL PARTICULARS FOR CURRENT TRANSFORMERS**

**JOF 145 W OUTDOOR CURRENT TRANSFORMERS  
(145kV 200A CT, 1 Core 31mm 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	PFIFNER 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 1250mm <sup>2</sup> Secondary - Copper alloy of C/S area 1.168mm <sup>2</sup>
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 Drawing approval subject to valid vendor registration
6	Rated primary voltage (kV rms)	132 kV
7	Rated highest voltage (kV rms)	145 kV
8	Rated frequency (Hz)	50 Hz
9	Rated primary current (A)	200A
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	Porcelain housing and it make (Single piece only)	IEC/Modern/Ravikiran
17	Sealing (Nitrogen gas cushion/Metal Bellow)	Stainless Steel Bellows
18	Instrument security factor	≤ 5 (For Metering core )
19	Tan Delta	< 0.5%
20	Partial Discharge Level	< 5pC at 1.2 x Um /√3, < 10pC at Um (where Um is highest system voltage)
21	Rated short time withstand current for 1 sec. duration (kA rms)	31.5 kA
22	Rated dynamic withstand current (kAp)	78.75
23	Rated continuous thermal current (pu) where pu = rated current	Rated Extended Primary Current 120%
24	1.2/50 micro second impulse	650 kVp

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

Sl.No	Particulars	Description
	withstand voltage (kVp)	
25	One minute power frequency withstand voltage (kV rms) of Primary winding (Dry)	275 kV rms
26	One minute power frequency withstand voltage of secondary winding (kV rms)	3 kV
27 a)	Minimum total Creepage distance of insulator bushing (mm)	31mm/kV Porcelain Insulator / 4495 mm
b)	Protected Creepage of distance of bushing (mm)	Not Applicable
28	Details of Cores	Core 1
i)	Current Ratios A/A	200/1A
ii)	Output burden (VA)	5
iii)	Class of accuracy	0.2S
iv)	ISF	≤ 5
v)	Min. knee point voltage (kVp) in volts	-
vi)	Secondary resistance corrected to 75 deg.C in ohms	--
vii)	Max. Exciting current (mA) at V <sub>k</sub> - 100% of knee point voltage	-
viii)	Application	
29	Weight of oil (Kg.)	120kg ± 10% (approx.)
30	Total Weight (Kg.)	470 ± 10% (approx.)
31	Mounting details	450mm x 450mm (Refer GA Drawing)
32	Suitable for altitude-Max (Meters)	1000
33	Secondary Terminal Box Arrangement	Single door Box

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 compatibility.

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

CHIEF ENGINEER/PROJECTS  
APTRANSCO/VS/Vijayawada

Drawing approval subject to valid vendor registration