

CG Power and Industrial Solutions Limited
Switchgear Division: Power Systems

A-3 MIDC, Ambad, Nashik 422 010, Maharashtra, India
T: +91 253 238 2271-75 F: +91 253 238 1247



Owner	M/s.Bihar State Power Transmission Company Limited
Specification NO	NIT-29/PR/BSPTCL/2021
NOA NO	02/CE/ Trans.(O&M)/MISC-25/2021/PATNA Dated 04.03.2022
Manufacturer	CG Power and Industrial Solutions Limited
Rating	145 kV , 8800 pF Capacitor Voltage Transformer
Document NO	S1/CV/T/640/RO

DATA SHEET FOR 145 kV CVT (8800 pF)

1. GENERAL

- a. Name & address of the manufacturer : M/s.CG Power and Industrial Solutions Limited, A-3, MIDC, Ambad, Nasik (India)
- b. Manufacturer's type designation : CVE 145/650/50, Single Phase, Outdoor
- c. Standard Applicable : IS 16227-1&5, IEC 61869-1&5
- d. Rated Voltage (U_{Pr}) kV : 145 kV/ $\sqrt{3}$
- e. Number of Secondary : Three
- f. Rated Frequency (Hz) : 50 Hz
- g. Type of installation : Single Phase, Outdoor

2. GUARANTEED RATINGS

- | | Wdg I | Wdg II | Wdg III |
|--|---------------------------|--------|---------|
| a. Rated Output (Each Secondary Winding) : | 50 VA | 50 VA | 50 VA |
| b. Total Simultaneous Burden (VA) : | 50 VA / 0.2 | | |
| c. Rated Total Thermal Burden (VA) : | 300 VA (100 VA / winding) | | |

	Wdg I	Wdg II	Wdg III
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d. Accuracy Class :	3P	3P	0.2
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e. Ratio Error : $\pm 0.2\%$

f. Phase Error : ± 10 min

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

Electrical Superintendent
(Operation & Maintenance)
BSPTCL Patna 800021

Registered Office:
CG House, 6th Floor, Dr Annie Besant Road, Worli, Mumbai 400 030, India
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Corporate Identity Number: L99999MH1937PLC002641

murugappa



Adopted for NET 98/PR/BSPT
2021
18/08/22

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- g. Rated Voltage Factor :
i. Continuous : 1.2
ii. 30 Seconds : 1.5
- h. Capacitance :
i. Of high voltage capacitance(pF) : 9860 +10%, - 5% pF
ii. Of intermediate voltage capacitance(pF) : 81855 +10%, - 5% pF
iii. For carrier frequency of coupling (pF) : 8800 +10%, - 5% pF
- i. Natural frequency of coupling (kHz) : More than 600 kHz.
- j. Self-tuning frequency of CVT : More than 600 kHz.
- k. Band Width (kHz) : 40 kHz to 500 kHz
- l. Temperature rise over ambient : Max.55°C as per IS 1622-1&5
temperature at 50°C
- m. One minute power frequency test : 3 kV rms
voltage of secondary winding (kV rms)
- n. One minute power frequency test : 4 kV rms
voltage of H.F. terminal (kV rms)
- o. One-minute power frequency test : 275 kV rms
voltage of capacitor (kV rms) (dry&wet)
- p. 1.2/50 μ s impulse withstand test : +/- 650 kVp
voltage of the capacitor (kVp)
- q. Corona extinction voltage : 105 kV rms
- r. Radio interference voltage at 1.1Um/ $\sqrt{3}$: 500 μ V
at 1.0 MHz in μ V
- s. Partial Discharge :
@ 145 kV– Less than 10 pC
@92 kVrms – Less than 5pC
- x. Seismic Acceleration horizontal : 0.3g

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[Signature]
09/05/2022
Electrical Superintending Engineer
(Operation & Maintenance)
BSPICL Patna 800021

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[Signature]
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Adopted for NET 38/PR/
BSP TCL/2021
18/08/22

CG Power and Industrial Solutions Limited
Switchgear Division: Power Systems

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370

CONSTRUCTIONAL DETAILS

a. Overall Dimensions :

- i. Overall height (mm) : Refer G.A.Drg.No.BSPT3244-200
- ii. Height upto top of terminal pad : Refer G.A.Drg.No.BSPT3244-200
from mounting plane
- iii. Diameter and length of terminal : Dia.30 mm and 80 mm long

- Material of terminal pad : Aluminium
- v. Mounting dimensions and diameter of mounting holes : 450 X 450 mm and 4 holes of dia. 18 mm each.

- b. Total Mass (kg) : 300 +/- 10% kg

- c. Quantity of oil (kg) : 50 +/- 10% kg

- d. Whether CVTs are hermetically sealed. : Yes, "O" ring and stainless steel bellow.
If so, how?

- e. Standard to oil conforms generally : IS335(1993)

=> Standard reference range of frequencies for which the accuracies are valid -> 96% to 102% for protection and 99% to 101% for measurement.

=> Winding of CVT - Copper only

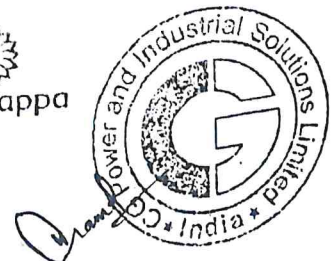
=> High frequency capacitance for entire carrier frequency range -> within 80% to 150% of rated capacitance

=> Equivalent series resistance over entire carrier frequency range -> < 40 mΩ

Adopted for NER 38/
BSPTCL/2021
18/08/22

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DRG.NO: BSPT3244-200C0

IF IN DOUBT, ASK

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369

LIST OF DRGS./ DOCUMENTS APPLICABLE FOR 145 kV CVT (8800 pF)

SR. NO.	DESCRIPTION	DRG./DOC.NO.
01	GENERAL ARRANGEMENT	BSPT3244-200C1/R0
02	RATING/SCHEMATIC PLATE	BSPT3244-200C2/R0
03	SECONDARY TERMINAL BOX G.A.	BSPT3244-200C3/R0
04	GUARANTEED TECHNICAL PARTICULARS	S1/CV/T/640/R0
05	LIST OF TYPE TEST REPORTS	S1/CV/T/641/R0

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Electrical Superintending Engineer
(Operation & Maintenance)
BSPTCL Patna 800021

Approved 30/08/2021
BSPTCL/2021
NIT



CUSTOMER : BIHAR STATE POWER TRANSMISSION COMPANY LTD.		TITLE : LIST OF DRGS./ DOCUMENTS APPLICABLE FOR (145 kV CVT)	
PROJECT : VARIOUS S/S IN BIHAR	PO NO. : 02/PATNA/ICE/TRANS.(O&M)/MSC-25/2021 DTD 04.03.2021	CG Power and Industrial Solutions Limited	
S.O. NO. : BSPT3244/200	QUANTITY : 207 NOS.	S1 - DIVISION, AMBAD, NASHIK	
S.R. NO. : S-745870 TO S-745876		DRG.NO: BSPT3244-200C0	
DATE : 20.04.2022		REV 0	

DRG.NO: BSPT3244-200C1

CUSTOMER	BHARAT STATE POWER TRANSMISSION COMPANY LTD.
PROJECT	VARIOUS S/S IN BIHAR
PO. NO.	02P/ATVAC/TRANS./04M/AMISC.-25/2021 DTD 04.03.2021
S.O. NO.	BSP/3244/200
QUANTITY	207 NOS.
S.R. NO.	S-745870 TO S-745876

CAPACITOR VOLTAGE TRANSFORMER

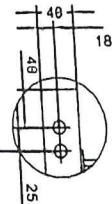
4-Holes of Ø18
for CVT Mounting

Electrical Superintending Engineer
(Operation & Maintenance)
BSPCL, Patna-800021

APPROVALS
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supplied as per specification.

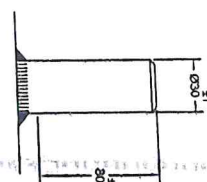
APPROVED

DETAIL C



2x Ø14 Diagonally
opposite

ITEM - 10



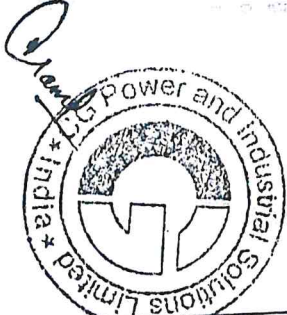
ITEM-1

S.R.NO	QTY.	DESCRIPTION	MATERIAL
1	1	H.V. TERMINAL Ø30x60 mm LONG	ALUMINIUM
2	1	HOOD	ALUMINIUM
3	2	PORCELAIN FLANGE	ALUMINIUM
4	1	PORCELAIN INSULATOR *	PORCELAIN
5	1	OIL LEVEL INDICATOR ON EAU	POLYCARBONATE
6	1	TANK COVER	ALUMINIUM
7	1	SECONDARY TERMINAL BOX	ALUMINIUM
8	1	RATINGSCHEMATIC PLATE	ALUMINIUM (METAL PHOTO)
9	4	LIFTING LUGS	STEEL HOG
10	2	EARTHING HOLES	—
11	1	EAU TANK	STEEL HOG
12	1	OIL SAMPLING VALVE (FOR EAU)	STEEL GALVANISED

* MAKE OF PORCELAIN : IEC / CJI / MODERN

TOTAL MASS	: 300 kg	±10%
TOTAL OIL MASS	: 50 kg	±10%
TOTAL CREEPAGE	: 3625 mm (Min)	

NR Adapted for
38 PR / B SPTCL / 2024
18/08/22



GEN. TOL.		MATH. SPEC.		TITLE: GENERAL ARRANGEMENT (145 KV CVT)	
THIRD ANGLE PROJECTION		SCALE: NTS		CG Power and Industrial Solutions Limited SI - DIVISION, AMBAID, NASHIK	
ALL DIMS. IN MM. UNLESS OTHERWISE SPECIFIED.	ORIG CHD APPD	INITIALS	NAME NSB HARI USS	DRG. NO: BSPT3244-200C1	
NO	REVISION	SIGN	DATE	REV 0	

DRG.NO: BSPT3244-200C2

IF IN DOUBT, ASK

367

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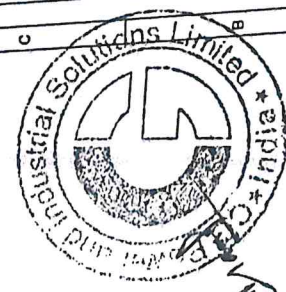
CUSTOMER : BIHAR STATE POWER TRANSMISSION COMPANY LTD.
PROJECT : VARIOUS S/S IN BIHAR
PO. NO. : 02PATNACE/TRANS.(OSM)/MSC-25/2021 DTD 04.03.2021
S.O. NO. : BSPT3244/200
QUANTITY : 207 NOS.
S.R. NO. : S-745870 TO S-746076

Electrical Superintending Engineer
(Operation & Maintenance)
OPERATION CODE NO. BSPT3244/200C2

Subj to the condition that you are not absolved of the responsibility for correctness of the material supplied as per specification

All letters in this blocks (250X15) will be in RED colour on natural aluminium background

Adopted for WPT 32/PR/1
BSPT-CL/2021
18/06/21



4-Holes of ϕ 4

250

238

CAPACITOR VOLTAGE TRANSFORMER		RATING AND SCHEMATIC PLATE	
TYPE	145 KV	TEMP. RANGE	-5°C TO +50°C
STD.	50 Hz	CAP. UNITS	1 Nos.
S.O.	275 KV / 650 KVAR	TOTAL MASS	300 ± 10% kg
S.R. NO.	1.200NT/1.5-30SEC	MINERAL MASS	25 ± 10% kg
INTERMEDIATE VOLTAGE		MINERAL MASS	25 ± 10% kg
A = HV TERMINAL		132000V/5	
C1 = PRI CAPACITANCE		141.1n	
C2 = SEC CAPACITANCE		231.2n	
NHF = HF TERMINAL		110V/3	
L = COMPENSATING CHOKE		50	
N = NEUTRAL		3P	
T1 = INT. TRANSFORMER		50VA/0.2	
P1-F6 = FRC FUSE (16 AMP)		300 VA	
E = EARTH SCREEN			
Za = BETWEEN HV & LV			
G = DRAINING DEVICE			
		CAUTION -	
		1) SHORT CIRCUIT THE CAPACITOR UNITS WHEN ERECTING OR REMOVING AND REMOVE THE SHORT CIRCUIT BEFORE PRETEST OR COMMISSIONING	
		2) UNDER NO CONDITIONS SHOULD THE LOAD-BURDEN VALUES MENTIONED ON THE RATING PLATE BE EXCEEDED.	
		3) WHEN TERMINAL NHF IS NOT USED FOR HF TRANSMISSION IT MUST BE CONNECTED TO EARTH (AS SUPPLIED NHF IS CONNECTED TO EARTH)	

IMPORTANT

BEFORE COMMISSIONING IT IS ESSENTIAL TO CHECK THE LOW VOLTAGE RATIO OF CVT. (REFER INSTRUCTION MANUAL.)

DURING SERVICE PLEASE CLOSE THE TERMINAL BOX COVER FIRMLY TO ENSURE PROPER SEALING OF BOX.

PLUG UNUSED HOLES ON THE GLAND PLATE.

TITLE: RATING / SCHEMATIC PLATE (145 KV CVT)		DATE: 20.04.2022	
GEN. TOL.	MATL. SPEC.	THIRD ANGLE PROJECTION	SCALE NTS
INITIALS	NAME	ORG	NSB
ALL DIMS. IN MM UNLESS OTHERWISE SPECIFIED.	CHO	APPO	USS
CG Power and Industrial Solutions Limited S1 - DIVISION, AMBAD, NASHIK		DRG.NO: BSPT3244-200C2	
REV 0		REV 0	

IF IN DOUBT, ASK

DRG.NO: BSPT3244-200C3

CUSTOMER : BIHAR STATE POWER TRANSMISSION COMPANY LTD.
PROJECT : VARIOUS SS IN BIHAR
PO. NO. : 02PNTNACETRANS. (03M)MISC-262021 DTD 04.03.2021
S.O. NO. : BSPT3244/200
QUANTITY : 207 NOS.
S.R. NO. : S-745870 TO S-746076

EARTHING PROVISION

SECONDARY BOX COVER

SEALING GASKET

HINGE

GLAND PLATE

SECONDARY TERMINAL BOX

TOP VIEW

FRONT VIEW

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

SPARK GAP TERMINAL MOUNTING BRACKET APPROVED

F1 F2 F3 F4 F5 F6 HRC FUSE (15amp)

270x10 Inside

LOCKING ARRANGEMENT THROUGH SCREW

RATING & SCHEMATIC PLATE

SIDE VIEW

EPOXY MONOBLOCK

Electrical Superintending Engineer
(Operation & Maintenance)
BSPTL Panna-80003

NO	REVISION	SIGN	DATE
1	6		
2			

GEN. TOL.	WALT. SPEC.
THIRD ANGLE PROJECTION	
SCALE: NTS	INITIALS
ALL DIMS. IN MM. UNLESS OTHERWISE SPECIFIED.	NAME
	NSB
	CHD
	USB
DATE: 20.04.2022	

TITLE: SECONDARY BOX G.A.
(145 KV CVT)



CG Power and Industrial Solutions Limited
S1 - DIVISION, AMBAD, NASHIK

DRG.NO: BSPT3244-200C3

REV 0

