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CG Power and Industrial Solutions Limited
Switchgear Division: Power Systems
A-3 MIDC, Ambad, Nashik 422 010, Maharashtra, India
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2. FOR EPC CONTRACTS ONLY

GUARANTEED TECHNICAL PARTICULARS FOR 33KV VCUUM CIRCUIT BREAKERS

Sr. No	Description	36KV VCBs (1600A/2000A)
1	a) Name of Manufacturer and Country	CG POWER and Industrial Solutions Limited, India
	b) Manufacturer's type destination	36kV Outdoor VCB
2	Applicable Technical Standards	IEC-62271-100/IS:13118
3	a) Rated voltage (kV)	36 kV
	b) Frequency (Hz)	50 Hz
4	Number of Poles	3 Poles
5	Class (Outdoor / Indoor)	Outdoor
6	Rated Normal Current : a) Under Site Condition (Amps)	1600A/2000A
	b) Frequency (Hz)	50 Hz
7	Rated Short Circuit breaking current	
	a) RMS Value of AC component of raised short circuit current (kA)	25kA
	b)Percentage DC Component	<50% DC Component
	c)Asymmetrical breaking current (Including DC component)	As per IS:131181/1991/ IEC-62271-100
	d)Certificate r Report No	2008TC00701, 2008TC00798
	e)Oscillegram	As per Type Test Report
8	Rated short circuit making current (kA)	62.5
9	First pole to clear factor	1.5
10	Rated transient recovery voltage for terminal faults	As per IS:131181/1991/IEC-62271-100
11	Rated characteristics for short line faults	Applicable for breakers of rated voltage more than 52KV only as per IEC
12	Rated operating sequence	O-0.3 sec –CO-3 min- CO
13	Rated duration of short circuit (Sec)	3 sec
14	Rated out of phase breaking current (kA)	6.46Ka
15	Opening time (ms)	<40ms
16	Arcing time(ms)	
	a) At 10% rated breaking current	20ms max
	b) At 25% rated breaking current	20ms max
	c) At 50% rated breaking current	20ms max
	d) At 100% rated breaking current	20ms max
17	Breaking time (ms)	

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Corporate Identity Number : L99999MH1937PLC002641

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	a) At 10% rated breaking current	60ms max
	b) At 25% rated breaking current	60ms max
	c) At 50% rated breaking current	60ms max
	d) At 100% rated breaking current	60ms max
18	Closing time(ms)	100ms max.
19	Maximum pole discrepancy time	
	a) Opening (ms)	Not applicable as breaker offered is gang operated type
	b) Closing (ms)	Not applicable as breaker offered is of gang operated type
20	Rated line charging breaking current (kA)	Applicable for breakers of rated voltage more than 52KV only as per IEC
21	Maximum cable charging current	
	a) On supply side	50A
	b) On line side	50A
22	Rated small inductive breaking current (kA)	As per clause No. 4.112 of IS: 13118/1991/IEC-62271-100
23	Maximum rise of temperature over ambient temperature for current rating under clause 6	Within limits of IS:13118/1991/IEC-62271-100
24	Interrupting capacity based on duty cycle	
	a) AC Component (kA)	25
	b) Percentage DC component	<50% DC component
25	Latching current (kA)	Not applicable
26	Number of breaks in series per pole	One
27	Length of contact travel (mm)	22(+2,-2)mm
28	Total length of break per pole (mm)	22(+2,-2)mm
29	Rate of contact travel	
	a) A tripping (meters/sec)	1.0 to 1.5
	b) At closing (meters/sec)	0.7 to 1.2
30	Type of devise, if any used, to obtain uniform voltage distribution between breaks	Not Applicable
31	Recovery voltage distribution between breaks in percentage of rated voltage	Not Applicable
	a) Single line to ground faults	Not Applicable
	b) Interruption of short lines	Not Applicable
	c) Switching off unloaded transformers	Not Applicable
32	Type of main contacts	BUTT Shaped
33	Type of arcing contacts or arc control device	Not Applicable for VCB
34	Material of contacts	

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	a) Main	Copper Chromium Alloy
	b) Arcing	Not Applicable for VCB
	c) Auxiliary	Copper
35	Whether contacts silver plated	Main contacts not silver plated
36	Paint/ Color Shade	Interior & Exterior Paint Shade LG:631 of IS:5
37	Thickness of silver plating	Adequate
38	Contact Pressure	Adequate
39	Insulation level of breaker	
	i) 1 minute power frequency withstand voltage (kV rms)	70
	ii) Switching surge withstand test voltage (kV peak)	170
	iii) Impulse withstand test voltage (k Peak)	170
	iv) Maximum dynamic p.f. over voltage withstand (kV Peak)	170
40	Minimum Clearance in air	
	a) Between phases (mm)	420mm
	b) Between live parts to earth (mm)	3700mm
	c) Centre to centre distance between phases	700mm
	d) The safe boundaries during a breaking operation for circuits breakers within external exhaust for ionized gases of flames	Not Applicable
41	Whether circuit breaker is suitable for fixed trip, operation or trip free operation and it is provided with a lockout devices Preventing closing of breaker	Trip Free, lock out device not applicable
42	Method of closing	
	a) Normal	Mechanical /Electrical
	b) Emergency	Mechanical ON/OFF
43	Type of closing mechanism	Motorized spring closing mechanism
44	a) Normal voltage of closing	220VDC
	b) Pick up range	85% to 110% of 220VDC
45	a) Normal voltage of Tripping	220VDC
	b) Pick up range	70% to 110% of 220VDC
	c) Power at normal voltage of closing mechanism (watts)	600W maximum

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	d) Power at 85% of Normal voltage (Watts)	260W maximum
46	Type of Tripping Mechanism	Spring
47	Normal voltage of tripping coils (Volts)	220VDC
48	a) Power at normal voltage for tripping coils (watts)	200W Maximum
	b) Power at 70% normal voltage for tripping coils (watts)	150W Maximum
49	Arc duration at 100%(ms) interrupting capacity	
	a)Opening arcing time , no of loops and time including resister current duration (cycle) Resister current duration	Not applicable since concealed Vacuum Interrupter
	Resistor current duration (Cycle)	Not applicable since concealed Vacuum Interrupter
	Total length of arc	Not applicable since concealed Vacuum Interrupter
	Total interruption time from instant of trip coil enerzisation to are extenuation resistor current	Not applicable since concealed Vacuum Interrupter
	b)Closing time measured from instant of application of power to closing device up to arcing contacts touching (cycles)	Not applicable since concealed Vacuum Interrupter
50	Critical current (current giving longest arc when break takes place) kA	As per IS/IEC
51	a)Recovery voltage when circuit breaker is tested as 100% rated breaking capacity (kV Inst)	As per IS/IEC
	b)Rate of rise of re-striking voltage as breaking	
	i)For 30% breaking capacity (kV/micro-sec)	As per IS/IEC
	ii)for 100% breaking capacity(kV/micro-sec)	As per IS/IEC
	c)Maximum over voltage factor of the circuit breaker when switching off	
	i)Unloaded transformer	As per IS/IEC
	ii)Loaded Transformer	As per IS/IEC
	iii)Open circuited lines	As per IS/IEC
52	When switching synchronous system a)Maximum current(kA)	Not Applicable
	b)Maximum contacts of 1 pole (kV)	Not Applicable
53	No of opening the circuit breaker is capable of performing without inspection, replacement of contacts or other main parts	

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	a)at 50% rated current	10000
	b)at 100% rated current	10000
	c)at current corresponding to 50% rated breaking capacity	300
	d) At current corresponding to 100% rated breaking capacity	100
54	a)Weight of complete circuit breaker (kg)	700kg. approx
	b)Impact loading for foundation design include dead load, plus impact value on opening at maximum interrupting rating in terms of equivalent static load	900kg
	c)Overall dimensions Height(mm) ; Width(mm); Length(mm)	As per G.A. Diagram enclosed with list of enclosures
55	Porcelain	
	a)Make	Birla NGK/VISHAL/JAIPUR GLAAS/RAVI KIRAN/CJI Porcelain
	b) Type	Hollow
	c)Descriptive pamphlet	-
	d)Weight	26kg approx
	e)Transport Dimensions	As per manufacture's standard
	f)Height above floor required to remove porcelain (mm)	3721mm +/-10%
	g)Insulation class	36Kv
	h)One minute dry power frequency withstand kV rms	70
	i)10 sec wet power frequency withstand kV rms	70
	j)flash over voltage (kV)	>70
	k)Full wave impulse withstand voltage kV peak	170
	l)Switching surge withstand voltage kV peak	170
	m)Corona discharge voltage (kVrms)	Not Applicable
	n)Nature of dielectric	Air
	o)Creepage distance Total Protected	 900mm minimum Not Applicable
	p)Volume of insulating medium per porcelain (Liters)	Not Applicable
	q)Permissible safe cantilever loading on installed porcelain (kg-m)	2000kg

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56	Operating Mechanism	
	a)Mechanically operated or pneumatically operated or hydraulically operated	Mechanically operated
	b)For stored energy mechanism	
	1.Spring charging motor	
	i)Rating KW	300W maximum
	ii)Rating Kw	230VAC
	iii)Power Frequency withstand voltage	2KV for one minute
	iv)Time required for the motor to charge the spring fully	Less than 15sec
	v)Power required at the normal voltage to charge the springs fully	300W Maximum
	vi)Specification Reference	IS:996
	2 Spring closing /opening	
	i)Number of springs	2
	ii)Type	Helical
	iii)Number of turns	As per design of manufacturer
	iv)Guage	
	v)External Diameter	
	vi)Stiffness	
	vii)Materials	
	viii)Force develop in full charges position	
	ix)Specification ref	
57	Details of Vacuum for 33KV VCB	
	a)Make of vacuum bottle/Interrupter	CGPISL
	b)Pressure maintained in the vacuum interrupter	10^{-6} Torr
	c)Gap between the contacts in vacuum	22(+2,-2)mm
	d)Area of contacts	As per design
	e)Allowable Increase in vacuum interrupter	Not Applicable
	f)Measure if any to be taken for maintaining normal pressure in the vacuum interrupter	No vacuum interrupter to be replaced after contact erosion exceeds specified limits of 3mm
	g)Periodically maintenance of the following	
	i)For maintaining vacuum interrupter chamber	No, Vacuum interrupter to be replaced after contact erosion exceed specified limits of 3mm
	ii)For changing contacts	Periodic lubrication of mechanism moving parts required
	iii)Other maintenance schedule if any	None
	iv)Method of checking pressure in the	Power frequency high voltage test

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	vacuum interrupter and procedure to check up	
58	No of auxiliary contacts provided	
	a)those closed when breaker is closed	12
	b)those open when breaker is closed	12
	c)those adjustable with respect to position of main contacts	Not adjustable
	d)Continuous rating of contacts	2A at 220VDC
	e)Breaking capacity of contacts	2.5A
59	Whether equipment covered by this bid have been fully type tested and if so whether the copies of the type test report enclosed with bid offer.	Yes

1) Minimum 300mm plinth shall be maintained for Circuit Breakers in the substation during foundation works to ensure safe live to ground clearances as per IE rules.
2) Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings, the EPC contractors shall be instructed to supply the same in line with breaker requirement and compatibility.

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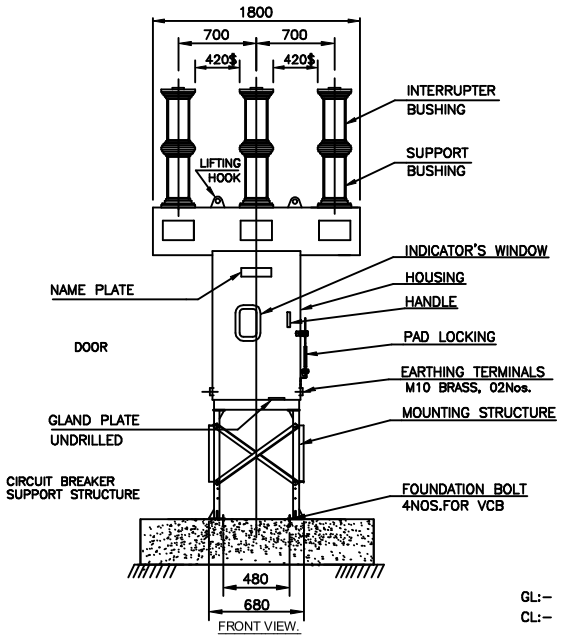
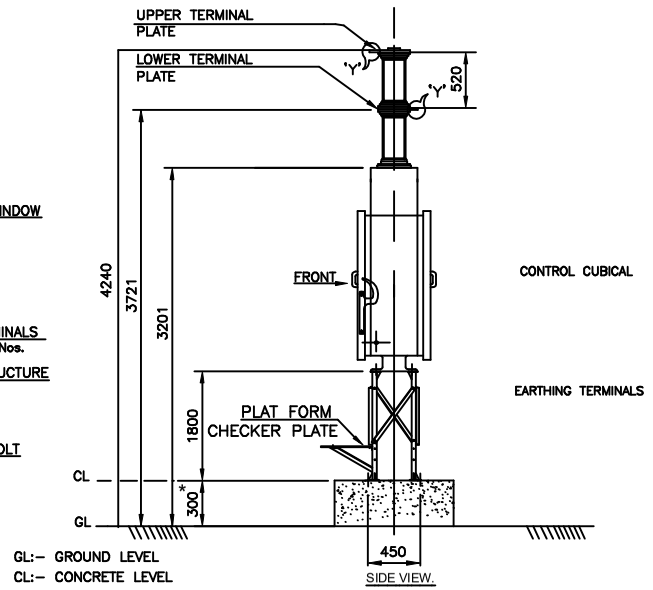
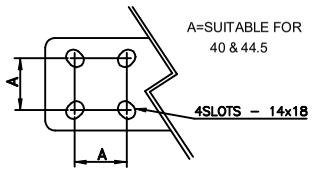
$ PHASE TO PHASE CLEARANCE 420mm





DETAIL AT 'Y'



DETAILS OF PALM OF LOWER AND UPPER TERMINAL PLATES

NOTES:-

1) TOTAL WEIGHT :– 550Kg.(APPROX.)
2) FINISH :– INTERIOR & EXTERIOR PAINT SHADE LG:631 OF IS:5
3) TOTAL CREEPAGE DISTANCE :– 900MM (25mm/kV.(FOR INSULATORS)
4) * :– TO INCREASE THE LOWEST LIVE PART TO GROUND CLEARANCE, CHANGE THE PLINTH HEIGHT, IF REQUIRED.
5) OPERATION COUNTER, MECHANICAL ON–OFF INDICATOR, SPRING CHARGING HANDLE ARE PROVIDED.
6) 2.5 Sq.mm PVC INSULATED COPPER COLOUR CODED WIRE SHALL BE USED FOR CONTROL CKT. & 1.5 Sq.mm PVC INSULATED COPPER COLOUR CODED WIRE FOR OTHER CKT.
7) SUPPORTING STRUCTURE FOR BREAKER SHALL BE HOT DIP GALVANISED.
8) CONTROL CUBICAL SHALL BE MADE OF 3.0mm THICK SHEET STEEL & DOORS & COVERING SHEETS SHALL BE MADE OF 2.0MM THICK SHEET STEEL.
9) 10% JOB SHALL BE OFFERED FOR AN INSPECTION.
10) DEGREE OF PROTECTION : IP55
11) ALL TERMINAL BLOCKS WILL BE OF STH4 (CONNECTWELL)/ KBTM4 (ELMAX).

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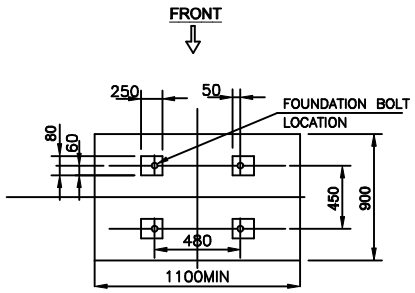
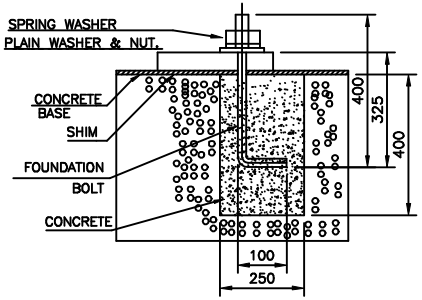
FOUNDATION PLAN DETAILS



DETAILS OF FOUNDATION BOLT - M20X400



RATING:-	
RATED VOLTAGE	36kV
RATED CURRENT	2000A
BASIC INSULATION LEVEL	70kV r.m.s/ 170kVpk
SHORT TIME RATING	25kA r.m.s FOR 3sec
SYSTEM	33kV, 50Hz EFFECTIVELY EARTHED
TOLERANCE	ON DIMENSIONS ±5%

FILE NAME:
DRG. NO. TPV001-GB
REV 0

No	REVISION	DATE	DRAWN
5			
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2			
1			

CUSTOMER : APTRANSCO

TITLE: GENERAL ARRANGEMENT DRAWING FOR 36KV OUTDOOR PCVCB

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 1 OF 2
THIRD ANGLE PROJECTION
ALL DIMENSIONS ARE IN mm
SCALE- NTS

W.O.NO. TPV001
DRG. NO. TPV001-GB
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RATING PLATE DETAILS

PORCELAIN CLAD VACUUM CIRCUIT BREAKER

CG Power and Industrial Solutions Limited.
Medium Voltage Switchgear Divn.
Ambad, Nashik-422010.
MADE IN INDIA.

RATING TO : IEC62271-100
CIRCUIT BREAKER TYPE : 36PV25A
SR.NO : ##

VOLTAGE	36	kV	BREAKING CAPACITY	25	kA		
CURRENT	2000	AMP	MAKING CAPACITY	62.5	kAp	###	YEAR
FREQUENCY	50	Hz	SHORT TIME CURRENT	25	kA FOR	3	SEC
NO OF POLES	3		DC. COMPONENT	<50%	BIL	70/170	kVp

OPERATING SEQUENCE/DUTY : O - 0.3Sec - CO - 3Min - CO
CUSTOMER PO REFERENCE :

SHUNT TRIP 220 VDC CLOSING COIL 220 VDC

Sr.Nos.

YEAR TO BE INCORPORATED IN WHICH JOB IS DESPATCHED

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1			

CUSTOMER : APTRANSCO

TITLE: RATING PLATE DETAILS FOR 36KV OUTDOOR PCVCB

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 2 OF 2
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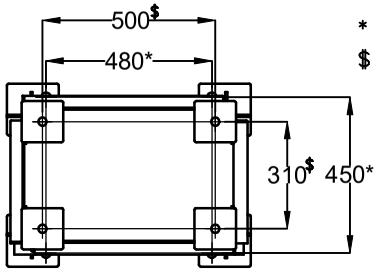

TOP VIEW

* DIMENSIONS FOR FOUNDATION HOLES.
$ DIMENSIONS FOR PCVCB MOUNTING ON STRUCTURE.

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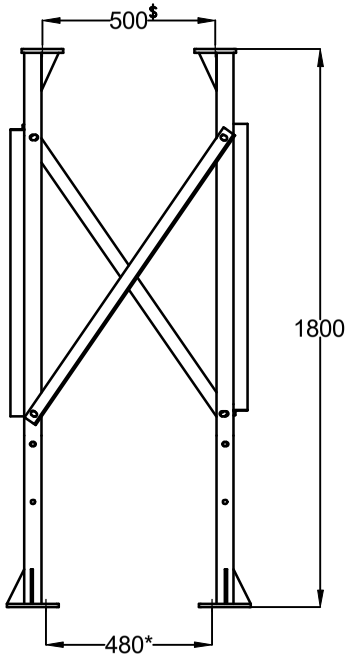
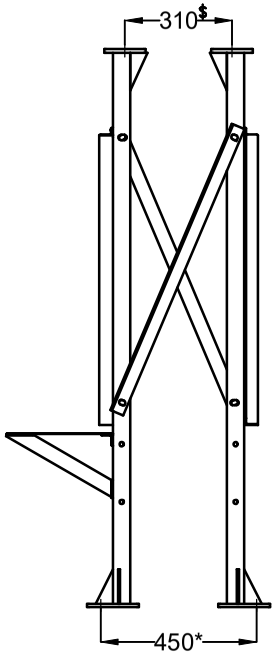
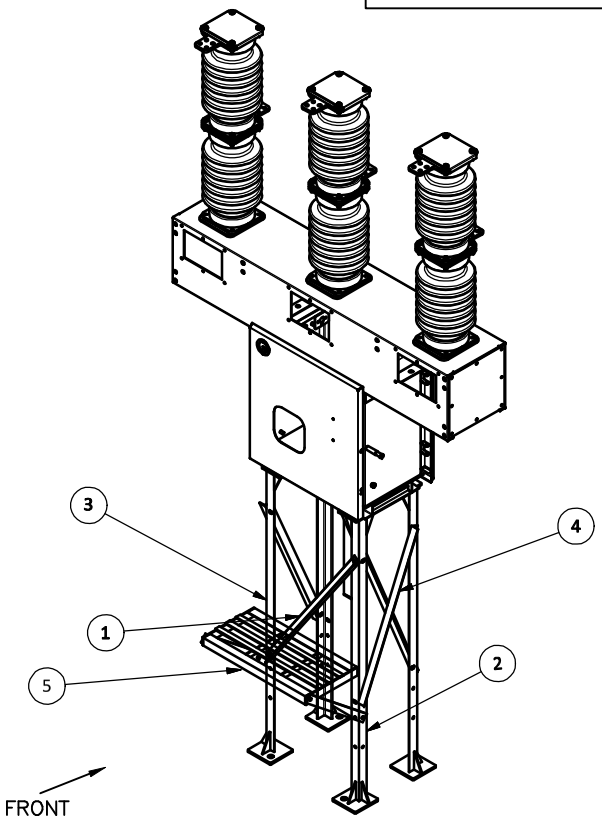


FRONT VIEW



SIDE VIEW

33KV PCVCB WITH STRUCTURE



ISOMETRIC VIEW

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ITEM	QTY	DESCRIPTION
5	1	STEEL PLATFORM -CHECKER PLATE
4	2	SIDE BRACING ANGLE
3	2	VERTICAL ANGLE (R.H.) W.A.
2	2	VERTICAL ANGLE (L.H.) W.A.
1	2	FRONT BRACING ANGLE

PARTS LIST

No	REVISION	DATE	DRAWN
5			
4			
3			
2			
1			

CUSTOMER : APTRANSCO

TITLE: GENERAL ARRANGEMENT FOR BREAKER SUPPORT & STRUCTURE

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 1 OF 0
THIRD ANGLE PROJECTION
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Ambad, Nashik, India

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FILE NAME: DRG. NO. GP2078Q11 | REV 0

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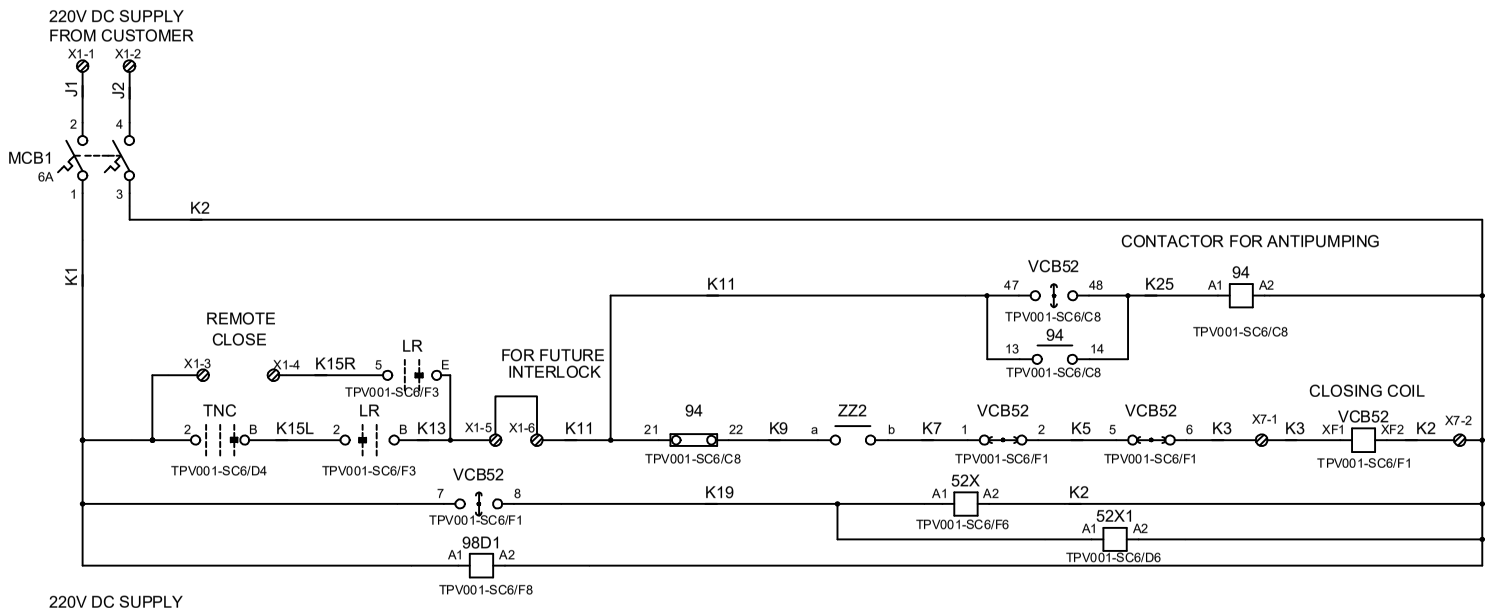

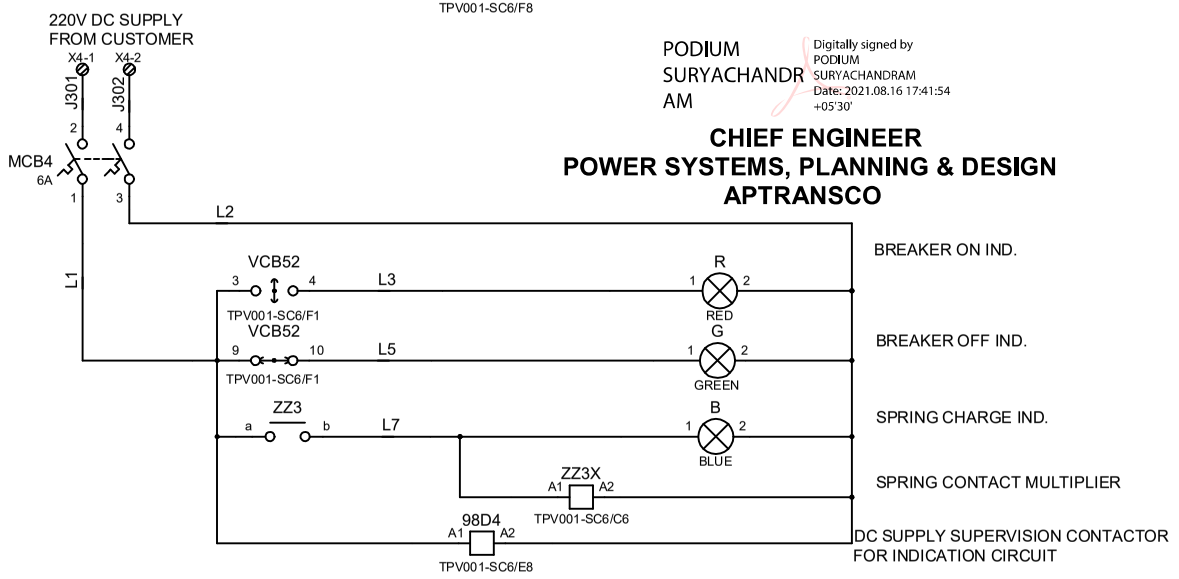

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NOTE :-

1) BOTH TRIP COIL HAVE THEIR INDIVIDUAL PLUNGERS .

2) ALL TERMINAL BLOCKS WILL BE OF STH4 (CONNECTWELL) / KBTM4 (ELMAX) .

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DRG. NO.
REV 0

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No	REVISION	DATE	DRAWN
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4			
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2			
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CUSTOMER : APTRANSCO

TITLE: SCHEMATIC DIAGRAM FOR O/D PCVCB 220V DC, CLOSING AND INDICATION CIRCUIT

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 1 OF 6
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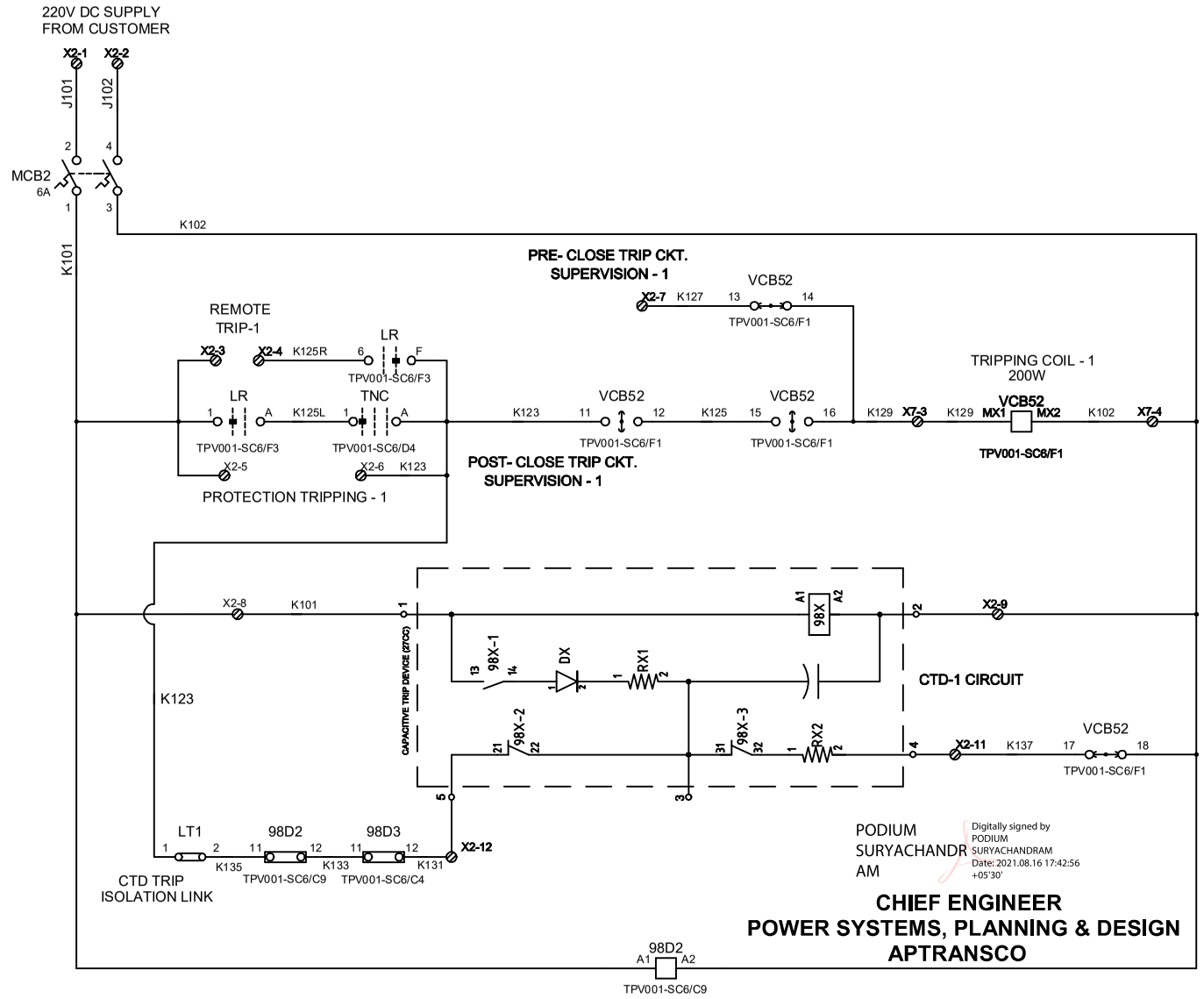
Ambad, Nashik, India

SCALE- NTS | DRG. NO. TPV001-SC | REV 0



Drawing approval subject to valid vendor registration

FILE NAME: TPV001-SC
DRG. NO.
REV 0

IF IN DOUBT, ASK

No	REVISION	DATE	DRAWN
5			
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2			
1			

CUSTOMER : APTRANSCO

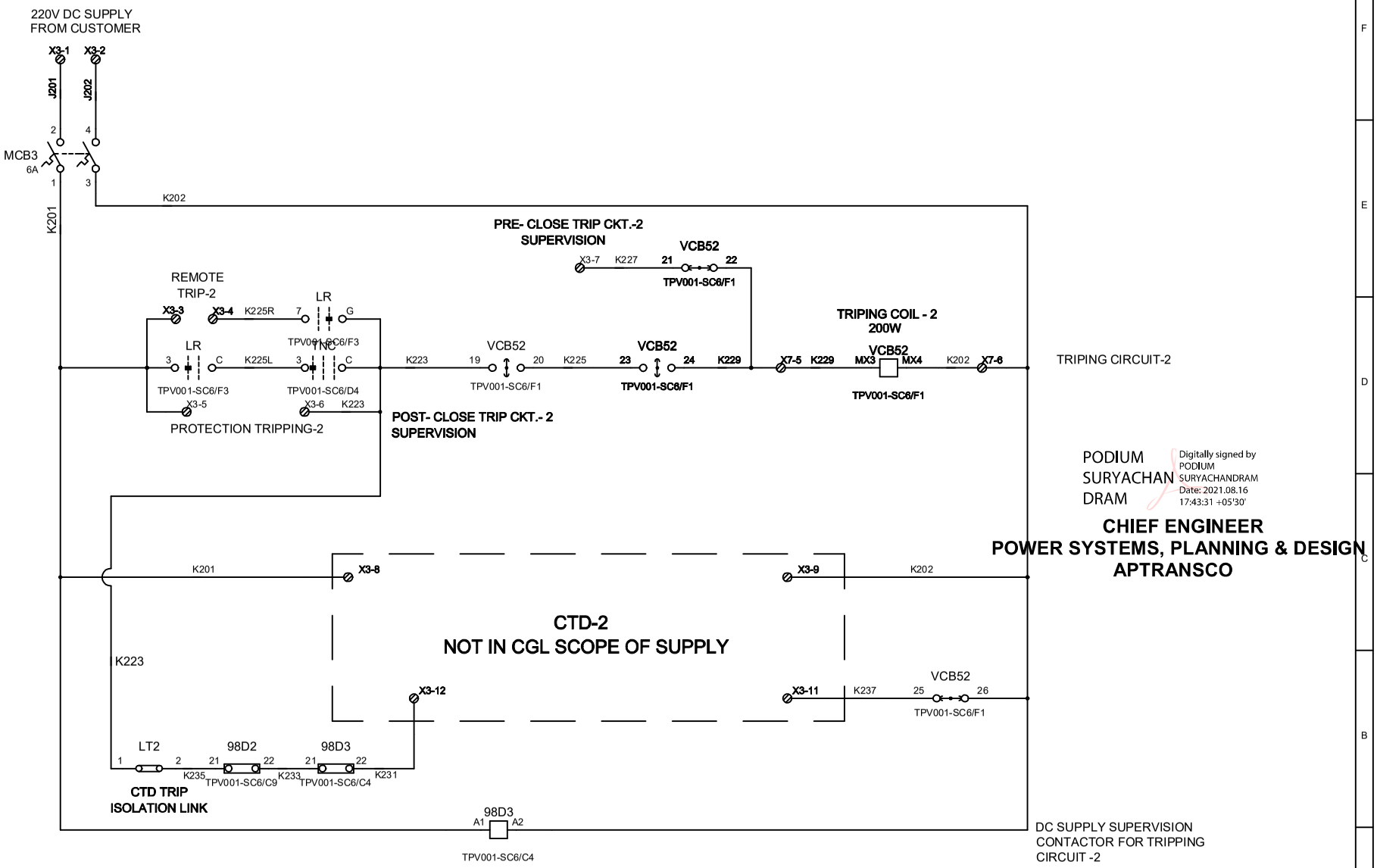
TITLE: SCHEMATIC DIAGRAM FOR O/D PCVCB 220V DC, TRIP CIRCUIT -1

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 2 OF 6
THIRD ANGLE PROJECTION
ALL DIMENSIONS ARE IN mm
SCALE- NTS
DRG. NO. TPV001-SC
REV 0

W.O.NO. TPV001

CG Power and Industrial Solutions Limited
MV Switchgear Division
Ambad, Nashik, India



Drawing approval subject to valid vendor registration

FILE NAME:
DRG. NO. TPV001-SC
REV 0

IF IN DOUBT, ASK

No	REVISION	DATE	DRAWN
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CUSTOMER : APTRANSCO

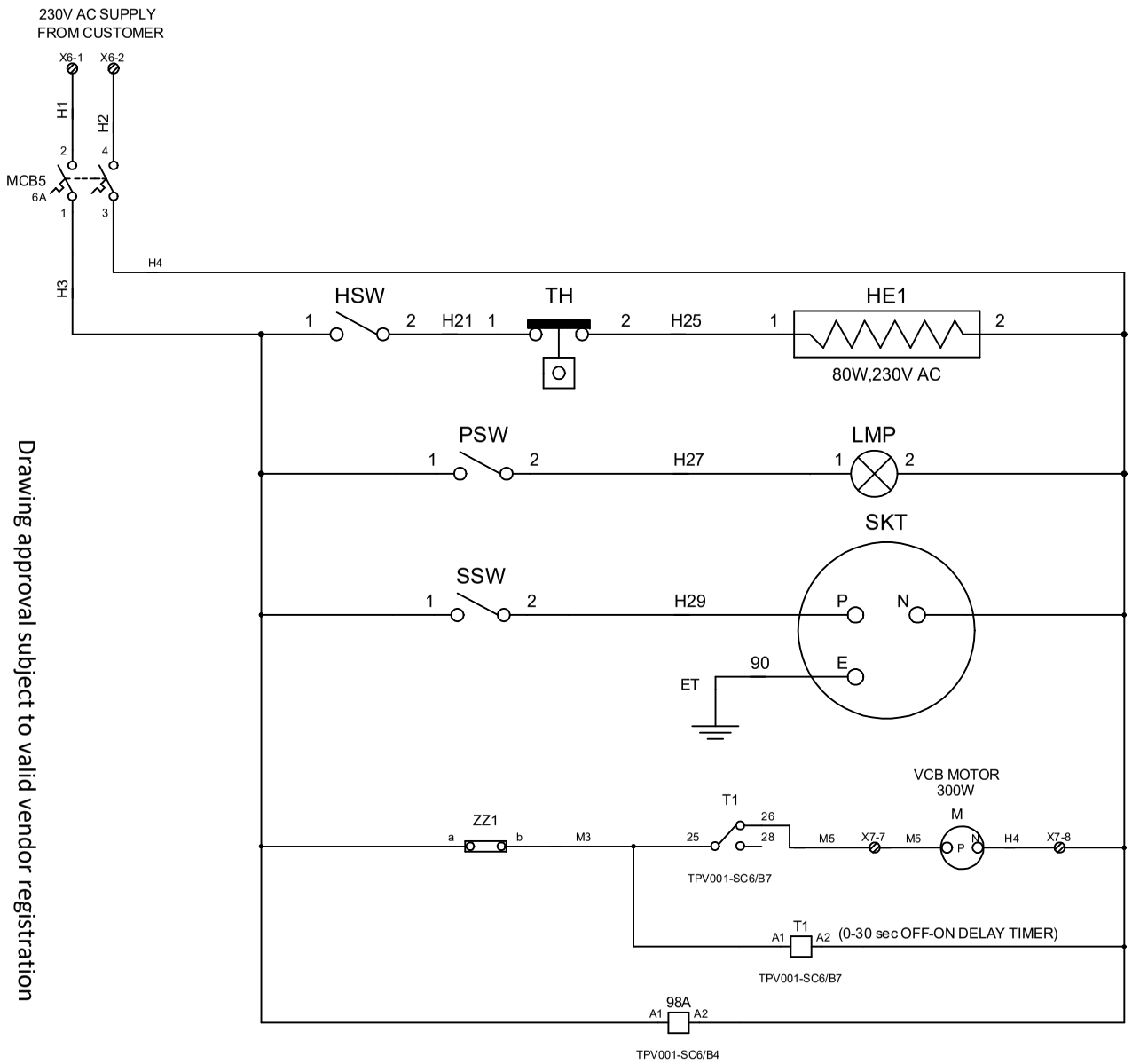
TITLE: SCHEMATIC DIAGRAM FOR O/D PCVCB 220V DC, TRIP CIRCUIT -2

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 3 OF 6
THIRD ANGLE PROJECTION
ALL DIMENSIONS ARE IN mm
SCALE- NTS
DRG. NO. TPV001-SC
REV 0

W.O.NO. TPV001

CG Power and Industrial Solutions Limited
MV Switchgear Division
Ambad, Nashik, India



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Date: 2021.08.16 17:44:24 +05'30'

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FILE NAME:
DRG. NO. TPV001-SC
REV 0

IF IN DOUBT, ASK

No	REVISION	DATE	DRAWN
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CUSTOMER : APTRANSCO

TITLE: SCHEMATIC DIAGRAM FOR O/D PCVCB AC CIRCUIT

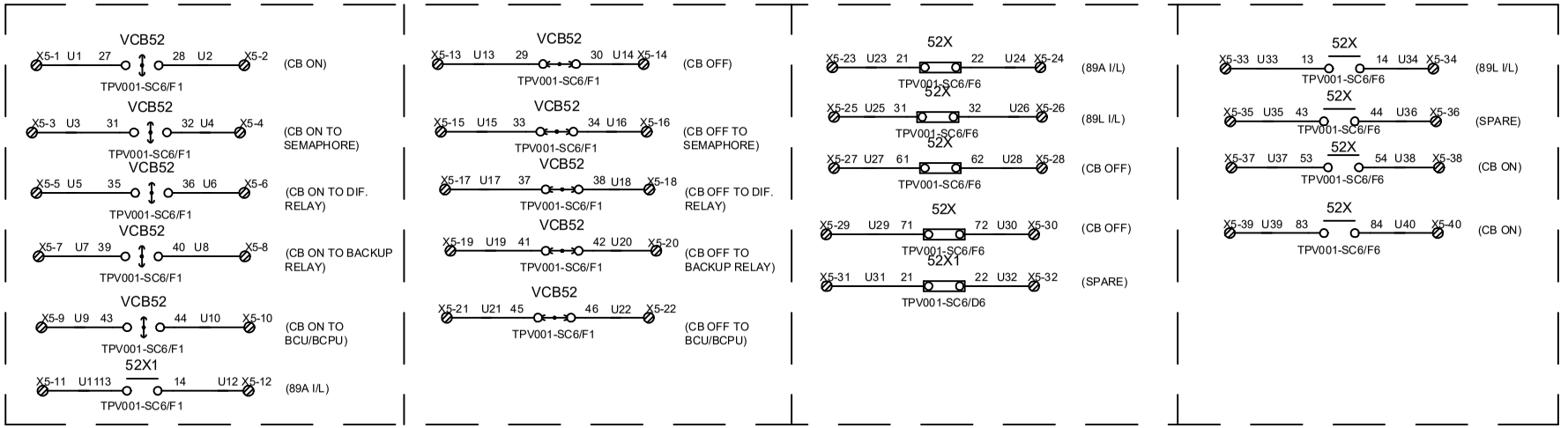
	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 4 OF 6
THIRD ANGLE PROJECTION
ALL DIMENSIONS ARE IN mm
SCALE- NTS
DRG. NO. TPV001-SC
REV 0

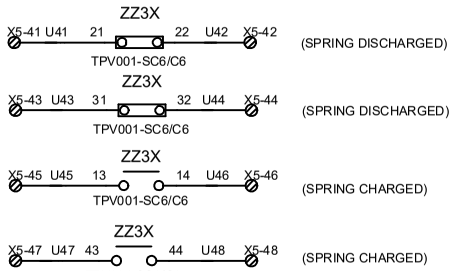
W.O.NO. TPV001

CG Power and Industrial Solutions Limited
MV Switchgear Division
Ambad, Nashik, India

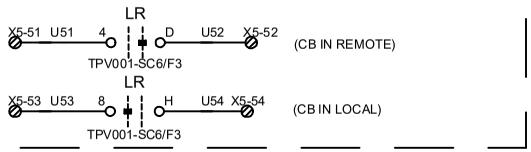
10 NO + 10 NC SPARE CONTACT FOR BREAKER



SPRING CHARGE SPARE CONTACTS



SPARE CONTACT OF LR SWITCH



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Date: 2021.08.16 17:45:05 +05'30'

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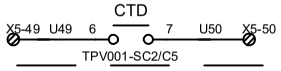
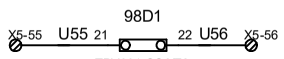
CTD HEALTHY SPARE CONTACT

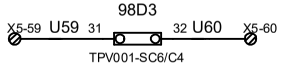


DC SUPPLY FAIL FOR CLOSING CIRCUIT

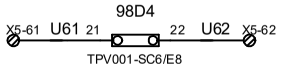


DC SUPPLY FAIL FOR TRIP CIRCUIT-1

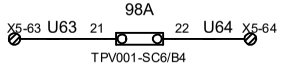
DC SUPPLY FAIL FOR TRIP CIRCUIT-2



DC SUPPLY FAIL FOR INDICATION CIRCUIT



AC SUPPLY FAIL



FILE NAME: DRG. NO. TPV001-SC REV 0

No	REVISION	DATE	DRAWN
5			
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CUSTOMER : APTRANSCO

TITLE: SPARE CONTACTS OF O/D PCVCB

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 5 OF 6
THIRD ANGLE PROJECTION
ALL DIMENSIONS ARE IN mm

W.O.NO. TPV001

CG Power and Industrial Solutions Limited
MV Switchgear Division
Ambad, Nashik, India

SCALE- NTS DRG. NO. TPV001-SC REV 0

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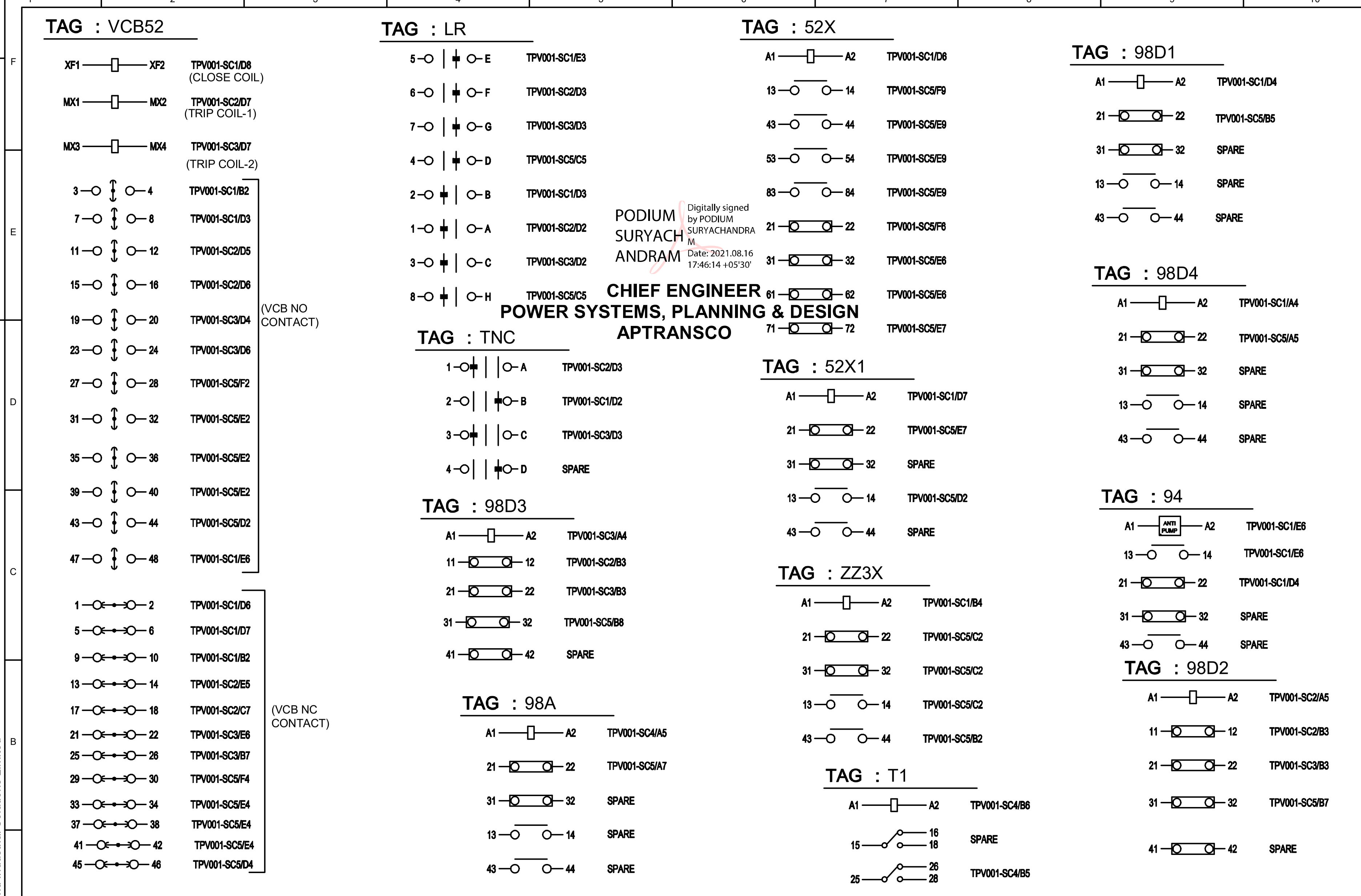
TAG : VCB52
XF1 XF2 TPV001-SC1/D8 (CLOSE COIL)
MX1 MX2 TPV001-SC2/D7 (TRIP COIL-1)
MX3 MX4 TPV001-SC3/D7 (TRIP COIL-2)
3 4 TPV001-SC1/B2
7 8 TPV001-SC1/D3
11 12 TPV001-SC2/D5
15 16 TPV001-SC2/D6
19 20 TPV001-SC3/D4
23 24 TPV001-SC3/D6
27 28 TPV001-SC5/F2
31 32 TPV001-SC5/E2
35 36 TPV001-SC5/E2
39 40 TPV001-SC5/E2
43 44 TPV001-SC5/D2
47 48 TPV001-SC1/E6
(VCB NO CONTACT)
1 2 TPV001-SC1/D6
5 6 TPV001-SC1/D7
9 10 TPV001-SC1/B2
13 14 TPV001-SC2/E5
17 18 TPV001-SC2/C7
21 22 TPV001-SC3/E6
25 26 TPV001-SC3/B7
29 30 TPV001-SC5/F4
33 34 TPV001-SC5/E4
37 38 TPV001-SC5/E4
41 42 TPV001-SC5/E4
45 46 TPV001-SC5/D4
(VCB NC CONTACT)
TAG : LR
5 E TPV001-SC1/E3
6 F TPV001-SC2/D3
7 G TPV001-SC3/D3
4 D TPV001-SC5/C5
2 B TPV001-SC1/D3
1 A TPV001-SC2/D2
3 C TPV001-SC3/D2
8 H TPV001-SC5/C5
TAG : TNC
1 A TPV001-SC2/D3
2 B TPV001-SC1/D2
3 C TPV001-SC3/D3
4 D SPARE
TAG : 98D3
A1 A2 TPV001-SC3/A4
11 12 TPV001-SC2/B3
21 22 TPV001-SC3/B3
31 32 TPV001-SC5/B8
41 42 SPARE
TAG : 98A
A1 A2 TPV001-SC4/A5
21 22 TPV001-SC5/A7
31 32 SPARE
13 14 SPARE
43 44 SPARE
TAG : 52X
A1 A2 TPV001-SC1/D6
13 14 TPV001-SC5/F9
43 44 TPV001-SC5/E9
53 54 TPV001-SC5/E9
83 84 TPV001-SC5/E9
21 22 TPV001-SC5/F6
31 32 TPV001-SC5/E6
61 62 TPV001-SC5/E6
71 72 TPV001-SC5/E7
TAG : 52X1
A1 A2 TPV001-SC1/D7
21 22 TPV001-SC5/E7
31 32 SPARE
13 14 TPV001-SC5/D2
43 44 SPARE
TAG : ZZ3X
A1 A2 TPV001-SC1/B4
21 22 TPV001-SC5/C2
31 32 TPV001-SC5/C2
13 14 TPV001-SC5/C2
43 44 TPV001-SC5/B2
TAG : T1
A1 A2 TPV001-SC4/B6
15 16 18 SPARE
25 26 28 TPV001-SC4/B5
TAG : 98D1
A1 A2 TPV001-SC1/D4
21 22 TPV001-SC5/B5
31 32 SPARE
13 14 SPARE
43 44 SPARE
TAG : 98D4
A1 A2 TPV001-SC1/A4
21 22 TPV001-SC5/A5
31 32 SPARE
13 14 SPARE
43 44 SPARE
TAG : 94
A1 ANTI PUMP A2 TPV001-SC1/E6
13 14 TPV001-SC1/E6
21 22 TPV001-SC1/D4
31 32 SPARE
43 44 SPARE
TAG : 98D2
A1 A2 TPV001-SC2/A5
11 12 TPV001-SC2/B3
21 22 TPV001-SC3/B3
31 32 TPV001-SC5/B7
41 42 SPARE

PODIUM SURYACHANDRAM Digitally signed by PODIUM SURYACHANDRA M Date: 2021.08.16 17:46:14 +05'30'

CHIEF ENGINEER POWER SYSTEMS, PLANNING & DESIGN APTRANSCO

FILE NAME:
DRG. NO. TPV001-SC
REV 0

IF IN DOUBT, ASK

No	REVISION	DATE	DRAWN
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CUSTOMER : APTRANSCO

TITLE: CROSS - REFERNCE

	NAME	DATE
DRN.	SRR	26.07.21
APPD.	VAC	

SHEET 6 OF 6
THIRD ANGLE PROJECTION
ALL DIMENSIONS ARE IN mm
SCALE- NTS

W.O.NO. TPV001

CG Power and Industrial Solutions Limited
MV Switchgear Division
Ambad, Nashik, India

DRG. NO. TPV001-SC REV 0

FILE NAME: PV6512Q
DRG. NO. PV6512Q
REV 0

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ANSI CODE, TAG, SYMBOL DESCRIPTIONS

ANSI CODE	PROTECTIVE FUNCTIONS	SYMBOL	DESCRIPTION	TAG	TAG DESCRIPTION	TAG	TAG DESCRIPTION	TAG	TAG DESCRIPTION
21	DISTANCE PROTECTION RELAY		TERMINAL ON BREAKER	(III)	INDICATIONS	(VI)	METERS	(X)	FUSES & MCB
25	CHECK SYNCHRONIZING RELAY		TERMINAL ON C.R. PANEL	R	BREAKER ON INDICATION(RED)	AM	ANALOG/DIGITAL AMMETER	FR,FY,FB	PT SECONDARY(Y SIDE) FUSES
27	UNDER VOLTAGE RELAY		HRC FUSE	G	BREAKER OFF INDICATION(GREEN)	VM	ANALOG/DIGITAL VOLTMETER	F1,F2	PT SECONDARY(V SIDE) FUSES
32	DIRECTIONAL POWER RELAY		LINK	A	AUTO TRIP INDICATION(AMBER)	HZ	FREQUENCY METER	FC1,FC2	CLOSING CIRCUIT FUSES
37	UNDER CURRENT/POWER RELAY		PLUG AND SOCKET	W	TRIP CKT HEALTHY INDICATION(WHITE)	KW	WATT METER	FT1,FT2	TRIPPING CIRCUIT FUSES
46	NEGATIVE SEQUENCE VOLTAGE RELAY		NORMALLY OPEN CONTACT	B	SPRING CHARGED INDICATION (BLUE)	KVAR	REACTIVE VOLT AMP METER	FI1,FI2	INDICATION CIRCUIT FUSES
47	NEGATIVE SEQUENCE CURRENT RELAY		NORMALLY CLOSED CONTACT	DF	DC FAIL INDICATION(CLEAR)	KVA	VOLT AMP METER	FAN1,FAN2	ANNUNCIATION CIRCUIT FUSES
49	THERMAL RELAY		HAND RESET CONTACT	AF	AC FAIL INDICATION(CLEAR)	PF	POWER FACTOR METER	FCA1,FCA2	COMMON ALARM CIRCUIT FUSES
50	HIGHSET OPERATED OC/EF RELAY		AUDIBLE ALARM	DH	DC HEALTHY INDICATION(GREEN)	KWH	WATTHOUR METER	FAX1,FAX2	AUXILLARY RELAY CKT FUSES
50N	SENSITIVE EF RELAY		NORMALLY OPEN PUSH BUTTON	AH	AC HEALTHY INDICATION(GREEN)	TVM	TRIVECTOR METER	FM/LKM	FUSE/LINK FOR MOTOR CIRCUIT
51	IDMTL OPERATED OC/EF RELAY		NORMALLY CLOSED PUSH BUTTON	RP,YP, BP	R/Y/B PHASE ON INDICATION	MDC	MAXIMUM DEMAND CONTROLLER	FH/LKH	FUSE/LINK FOR HEATER CIRCUIT
51N	DEFINITE TIME EF RELAY		MOTOR	BF	BREAKER FAIL INDICATION(RED)	LM	LOAD MANAGER	FS/LKS	FUSE/LINK FOR SOCKET CIRCUIT
51G	IDMTL EF RELAY		CURRENT TRANSFORMER	SMI	SEMAPHORE INDICATOR	MFM	MULTIFUNCTION METER	FV1-4	FUSES FOR VOLT SEL SCHEME
55	POWER FACTOR RELAY		VOLTAGE TRANSFORMER	(IV)	PUSH BUTTONS	RH	RUN HOUR METER	MCB	MINIATURE CIRCUIT BREAKER
59	OVER VOLTAGE RELAY		THERMOSTAT	PB	TRIP CKT HEALTHY TEST PUSH BUTTON	(VII)	TEST TERMINAL BLOCKS	(XI)	AUXILLARY CONTACTOR
59N	VOLTAGE BALANCE RELAY (NDR)		BUZZER/HOOTER	DA	DC FAIL ACCEPT PUSH BUTTON	MTTB	METERING TEST TERMINAL BLOCK	52X	AUX CONTACTOR FOR VCBCONTACT MULT.
61	CURRENT BALANCE RELAY (NDR)		LAMP	AA	AC FAIL ACCEPT PUSH BUTTON	RTTB	RELAY TEST TERMINAL BLOCK	C1,C2...	AUX CONTACTOR
63R	TRANSFORMER FAULT RELAY		SWITCH(TNC,LR,AUTO MANUAL)	EPB	EMERGENCY PUSH BUTTON	(VIII)	DEVICES & ADDITIONAL RELAYS	(XI)	TRANSDUCERS
64R	REF RELAY		TOGGLE SWITCH	PA/PR	ACCEPT/RESET PUSH BUTTON	ADF	AC DC FAIL RELAY (WITH ALARM LOGIC)	CTX	CURRENT TRANSDUCER
64N	GROUND FAULT RELAY		COIL	PM/PT	MUTE/TEST PUSH BUTTON	DCF	DC FAIL RELAY (WITH ALARM LOGIC)	VTX	VOLTAGE TRANSDUCER
67	AC DIRECTIONAL CURRENT RELAY	CC	CURRENT COIL OF METER	(V)	CONTROL SWITCHES	CAR	COMMON ALARM SCHEME	KWX	KW TRANSDUCER
79	AUTO RECLOSING RELAY	PC	PRESSURE COIL OF METER	ZZ1	OPENS WHEN SPRINGS ARE CHARGED	VSS	VOLTAGE SELECTION SCHEME	KVARX	KVAR TRANSDUCER
80	DC SUPPLY SUPERVISION RELAY		(52a)VCB OPERATED NO CONTACT	ZZ2,ZZ3	CLOSES WHEN SPRINGS ARE CHARGED	(IX)	ACCESSORIES	TEMX	TEMPERATURE TRANSDUCER
81U	UNDER FREQUENCY RELAY		(52b)VCB OPERATED NC CONTACT	LS	CLOSES WHEN VCB IS MECH.FREE TO CLOSE	ANN	ANNUNCIATOR		
81O	OVER FREQUENCY RELAY		3PIN SOCKET	TNC	BREAKER CONTROL SWITCH	HCA	HOOTER FOR COMMON ALARM		
85	PILOT WIRE RECEIVER RELAY	TAG NAME	DESCRIPTION	LR	LOCAL REMOTE SWITCH	HAN	HOOTER FOR ANNUNCIATOR		
86	MASTER TRIP(LOCK OUT) RELAY	(I)	CIRCUIT BREAKER	SS	SYNCHRONIZING SELECT SWITCH	HAF	HOOTER FOR AC FAIL ALARM		
87B	BUS BAR DIFFERENTIAL RELAY	52	CIRCUIT BREAKER	AS/VS	AMMETER/VOLTMETER SELECTOR SWITCH	HDF	HOOTER FOR DC FAIL ALARM		
87M	MOTOR DIFFERENTIAL RELAY	52C	CLOSE COIL	TSS	TRIP SEL SWITCH(USED IN SYNCHRO.CKT)	HNTA	HOOTER FOR NON TRIP ALARM		
87T	TRANSFORMER DIFFERENTIAL RELAY	52T	SHUNT TRIP COIL	BSS	CB SEL SWITCH(USED IN SYNCHRO. CKT)	PP	POWERPACK		
94	ANTI PUMPING RELAY	52S	SERIES TRIP COIL	ACS	AC SOURCE SEL SWITCH	HE	SPACE HEATER		
95	TRIP CKT. SUPERVISION RELAY			DSS	DC SOURCE SEL SWITCH	TH	THERMOSTAT		
96	FUSE FAILURE RELAY	(II)	INSTRUMENT TRANSFORMERS	HSW / PSW	TOGGLE SWITCH FOR HEATER/ PANEL LAMP	T1,T2...	TIMER		
98	CONTACTOR	CT	CURRENT TRANSFORMER	SSW	TOGGLE SWITCH FOR SOCKET	R1,R2...	RESISTOR		
99	MOTOR PROTECTION RELAY	VT	VOLTAGE TRANSFORMER	DS	DOOR SWITCH				
		ICT	INTERPOSING CURRENT TRANSFORMER	AMS	AUTO MANUAL SELECTOR SWITCH				

NOTES

1. THESE ARE THE FREQUENTLY USED ABBREVIATIONS AS PER CGL STANDARD DRAWINGS
2. REFERENCES: IEV-440 , IS-5578, IEC-60050

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APTRANSCO

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CUSTOMER : APTRANSCO

TITLE: LEGENDS / SYMBOLS / DEVICE NUMBERS

	NAME	DATE
DRN.	SRR	14.06.21
APPD.	VAC	14.06.21

SHEET 1 OF 1
THIRD ANGLE PROJECTION
ALL DIMENSIONS ARE IN mm

W.O.NO. TPV001

CG Power and Industrial Solutions Limited
MV Switchgear Division
Ambad, Nashik, India

SCALE- NTS | DRG. NO. PV6512Q | REV 0

4854585/2021/EEMRT-ENE51

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			B-SHEET NO.	TPB001	REV'0'
			W.O.NO.:	TPV001	
			CUSTOMER :	APTRANSCO	
			BOARD NO. :	33kV O/D PCVCB	
			QTY. :	6	
			PREPARED BY :	SRR	
			APPROVED BY :	VAC	
			DATE :	14.06.21	
IT	TAG	MAKE	DESCRIPTION	QTY/VCB	TOTAL
1		CGPISL	BASIC UNIT	1	6
			33kV/2000A 25kA,		
			SP.CH.MOTOR:230VAC,AUX. SUPPLY:220V DC		
2	TNC	KAYCEE/SHIRKE/REPUTED	TNC SWITCH W/O BELL ALARM CONTACT	1	6
			TYPE : NON-LOCKABLE		
			CONTACTS:2N/O IN EACH POSITION		
			RATING:-25A(CONT)		
3	LR	KAYCEE/SHIRKE/REPUTED	LOCAL/REMOTE SELECTOR SWITCH	1	6
			TYPE : NON-LOCKABLE		
			CONTACTS:4N/O IN EACH POSITION		
			RATING:-25A(CONT)		
4	SWITCH	APT/VALICO/REPUTED	HEATER/SOCKET ON-OFF TOGGLE SWITCH	2	12
			RATING:-6A,230V AC		
5	DOOR SWITCH	HPL/SURAJ/REUTED	DOOR OPERATED SWITCH	1	6
			RATING : 0.25A,250V AC		
6		APT/VALICO/REPUTED	SPACE HEATER	1	6
			RATING : 80W,230VAC		
7	SO	MAKE : ANCHOR/SCHNEIDER/HPL	3PIN SOCKET	1	6
8	PL	CGPISL/REPUTED	PANEL LAMP LED	1	6
			RATING : 5W,230VAC		
9		APT/VALICO/REPUTED	THERMOSTAT-RIGID PROBE TYPE	1	6
			SETTING/RATING : 30-90DEG.CENT./230VAC		
10	MCB	MAKE : SIEMENS/INDOKOPP/EQ.	MCB-2POLE		
			MAKE : SIEMENS/INDOKOPP/EQ.		
			a) 2 POLE - 6A,230VAC - FOR AC SUPPLY	1	6
			b) 2 POLE - 6A,220 V DC - FOR DC SUPPLY	4	24
11	CTD-1	CGPISL/REPUTED	CAPACITOR TRIP DEVICE		
			AUX. VOLTAGE: 220V DC	1	6
12	M		MOTOR FOR SPRING CHARGING	1	6
			AUX. SUPPLY: 230V AC		
			RATING :300W		
13		MAKE : BINAY/VENSON/ ALTOS/D-SQUARE/EQ.	INDICATING LAMPS		
	R		a)'RED' – VCB ON – 220V DC	1	6
	G		b) 'GREEN' – VCB OFF – 220V DC	1	6
	B		c) 'BLUE' – SPRING CHARGE– 220V DC	1	6
14	T	MAKE : SELECTRON/EAPL/KAYCEE/EQ.	TIMER FOR SP.CH. MOTOR SUPPLY CUT-OFF	1	6
			RANGE : 0-30 SEC (ON-OFF DELAY)		
			AUX.SUPPLY : 230V AC		
15	52C		CLOSING COIL	1	6
			AUX SUPPLY : 220VDC		
			RATING : 200W		
16	52T1,T2		TRIPPING COIL (SET OF 2)	1	6
			AUX SUPPLY : 220VDC		
			RATING :200W		

PODIUM SURYACHAND RAM

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		MAKE:			
	94,98D1,98D2		CONTACTS : 2NO + 2NC	6	36
	98D3,98D4		CONTACTS : 4NC	2	12
			AUX VOLTAGE :220V DC		
18	98A	MAKE: SEIMENS/SCHNEIDER/EQ.	AUXILIARY CONTACTOR	1	6
			CONTACTS : 2NO + 2NC		
			AUX. VOLTAGE : 230V AC		
19	VCB52		AUXILLARY SWITCH	1	6
			CONTACTS: 12 N/O + 12N/C		

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST
REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY

1) Minimum 300mm plinth shall be maintained for Circuit Breakers in the substation during foundation works to ensure safe live to ground clearances as per IE rules.
2) Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings, the EPC contractors shall be instructed to supply the same in line with breaker requirement and compatibility.

Drawing approval subject to valid vendor registration

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