		Description		400-SFM-60AA			
		Title : Guaranteed Technical Particulars		Doc.No.: S3GTP-400SP			
		Equipment : SF6 Gas Circuit Breaker		Spring-Spring Type:400-SFM-60AA			
1		**GENERAL**	**Unit**	**Without PIR**			
	a)	Name of the Manufacturer		CG Power and Industrial Solutions Limited			
	b)	Country of Manufacture		India			
	c)	Type of Circuit Breaker		SF6 Gas Insulated			
	d)	Manufacturer's type designation		400-SFM-60AA			
	e)	Standard applicable		IEC-62271-100			
	f)	Rated Voltage	kV (rms)	420			
	g)	Rated Current					
	i.	under normal condition at 40 degree C ambient	A	Upto 4000			
	ii.	under site condition at 50 degree C ambient	A	Upto 4000			
	h)	Rated Frequency	Hz	50			
	i)	Number of poles	No.	3			
	j)	Whether gang operated					
	i.	Electrically		Yes			
	ii.	Mechanically		No			
	k)	Whether dead tank or live tank		Live tank			
	l)	Type of installation		Outdoor			
	m)	Number of breaks per pole	No	2			
	n)	Latching current	kAp	125			
2		**GUARANTEED RATINGS**					
	a)	Rated short circuit breaking currents					
	i.	Symmetrical component at rated voltage	kA	63			
	ii.	DC component	%	51.34%			
	iii.	Asymmetrical breaking current at rated voltage	kA	77.9			
	b)	Rated short circuit making current OR Short circuit peak withstand current					
	i.	at higher rated voltage	kA (peak)	125			
	ii.	at lower rated voltage	kA (peak)	125			
	c)	Break time					
	i.	Rated Break time	ms	</=40			
	d)	Rated Closing time	ms	</=90			
	e)	Rated Opening time	ms	</=25			
	f)	Rated Arcing time	ms	</=20			
	g)	First pole to clear factor		1.3			
	h)	Rated Close open time	ms	</=60 ms			
	i)	Rated Short-time withstand current					
	i.	1 second	kA	63			
	ii.	3 second	kA	63			
	j)	Rated operating duty		O-0.3s-CO-3min-CO			
	k)	Maximum breaking capacity under kilometric faults and rated TRV characterstics		L90 & L75 As per IEC-62271-100			
	l)	Rated Out of Phase Current					
	i)	Rated out-of-phase breaking current OR Rated breaking capacity under asynchronous condition	kA	15.75			
	ii)	Rated out-of-phase Making current	kA	1.1 kA			
	m)	Rated line charging breaking current	A	600			
	n)	Rated cable charging breaking current	A	600			
	o)	Rated single capacitor bank breaking current	A	600			
		Rated inductive current	A				
	p)	Corresponding over voltage during breaking capacitive current	p.u.	< 2.3			
	q)	Rated shunt reactor breaking current	A	315			
	r)	Maximum arc duration and corresponding breaking current under lockout pressure	ms, kA	20, 50			
	s)	Rated Small fault current breaking capacity	kA	5			
	t)	Maximum temperature rise for main contacts over an ambient temperature of 50 degree C	^{O}C	< 55 degree C			
	u)	Rated supply voltage and pick up range for					
	i.	Trip coil	V DC	220,(70 to 110%)			
	ii.	Close coil	V DC	220, (85 to 110%)			
	v)	Normal power consumption at rated supply voltage of					
	i.	Trip Coil	W	3 x 400 W at 220 VDC			
	ii.	Close Coil	W	3 x 400 W at 220 VDC			
	w)	Rated pressure and limits of operation for extinguishing medium at 20 deg.C					
	i.	for operating mechanism	(kg/cm^2)	NA			
	ii.	for extinguishing medium	(kg/cm^2) - gauge	7; 6 to 7			
	x)	Minimum dead time for					
	i.	Three phase reclosing	ms	300			
	ii.	Single phase reclosing	ms	300			
	y)	Data on Restriking voltage					
	i.	Rated Breaking currents	%	100%	60%	30%	10%
	ii.	TRV Peak	kV (peak)	624	669	687	787
	iii.	Amplitude factor		1.4	1.5	1.54	1.53
	iv.	First pole to clear factor		1.3	1.3	1.3	1.5

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1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breaker 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 manufacturer mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

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	v.	Rate of rise of restriking voltage	kV/μS	2	3	5	7
	z)	No. of breaker operations before maintenance					
	i.	at rated interrupting capacity		10			
	ii.	at 50% of rated interrupting capacity		40			
	iii.	at rated normal current		1500			
	iv.	at 50% of rated normal current		6000			
	aa)	Maximum pole descrepancy during					
	i.	Opening	ms	</=3.3			
	ii.	Closing	ms	</=5			
	iii.	Within pole	ms	</=2.5			
	bb)	Minimum time interval between each make / break operations	ms	Suitable for Operating seq.		O-0.3sec-CO-3min-CO	
	cc)	Pre-Insertion Resistor					
	i.	Value per pole	Ohms	400			
	ii.	Insertion time	ms	8 - 12			
	iii.	Thermal Rating for the duty C-1m-O-CO-2m-C-1m-O-CO for terminal fault with maximum time setting		Adequate			
	iv.	Thermal Rating for the same duty as in (iii) above for reclosing against trapped charges		Adequate			
	dd)	Grading Capacitor		Not required			
	i.	Capacitance value					
	ii.	Overvoltage withstand capacity					
		Continuous	kV	145			
		10 minutes	kV	220			
		1 minute	kV	400			
		5 seconds	kV	440			
3		**DIELECTRIC WITHSTANDS OF COMPLETE BREAKER**					
	a)	One minute dry and wet power withstand voltage					
	i.	Between live terminal	kV (rms)	520			
	ii.	Between terminal with breaker contacts open & ground	kV (rms)	610 with breaker contacts open and 520 to ground			
	b)	1.2/50 micro second impulse withstand voltage					
	i.	Between live terminal	kV (peak)	+/-1425			
	ii.	Between terminal with breaker contacts open & ground	kV (peak)	+/-1425 impulse on one terminal and 240kV(peak) power frequency voltage on other terminal			
	c)	250/2500 micro second switching impulse withstand voltage					
	i.	Between live terminals and ground	kV (peak)	+/-1050			
	ii.	Between terminals with breaker contacts open	kV (peak)	+/-900 switching impulse on one terminal and 345 kVp P.F. voltage on other terminal			
	c)	Creepage distance					
	i.	To earth	mm	31 mm/kv			
	ii.	Across interruptor	mm	31 mm/kv			
	d)	Maximum radio interference voltage at 1.1 Ur /root 3	μV	</=1000 @ 267 kV			
	e)	Visible Corona discharge voltage	kV (rms)	346 kV rms min			
4		**OPERATING MECHANISM**					
	4.1	**SPRING CHARGNING MECHANISM**					
	a)	Type of operating mechanism		Motorised Spring charged mechanism			
	i.	Closing		Spring			
	ii.	Opening		Spring			
	b)	Type Designation		SOM 2-5			
	c)	No. of operations possible with stored energy		O-C-O			
	4.2	**DETAILS OF SPRING CHARGING MOTOR**					
	a)	Type of Motor		Universal			
	b)	Type of Mounting		Neck Mounted			
	c)	Direction of rotation as viewed from non-driving end		Clockwise			
	d)	Rated supply voltage and operating range	V AC	1 Ph, 240, 85-110%			
	e)	Motor Wattage	W	750w input 360w output			
	f)	Rated speed at rated voltage and frequency on no load	rpm	775			
	g)	Full load current at rated voltage and frequency	A	6A at 240V, 50Hz AC			
	h)	Efficiency of motor at rated voltage and frequency	%	50			
	'i)	Starting current		< 600% at full load current			
	j)	Stator winding insulation class		B			
	k)	Weight	kg	5.5 approx.			
	l)	Maximum time for charging the spring	sec.	15			
	m)	Whether indication of spring charged condition provided in control cabinet		Yes			
	n)	Make of Motor		KPT/MEIWA/FAL/RALLYWF			
5		**DATA ON SF6 GAS**					
	a)	Quantity of SF6 per pole	kg	27			
	b)	Guaranteed maximum leakage rate	%/annum	Less than 1% per annum			
	c)	Rated pressure of SF6 gas in operating chamber at 20°C	kg/cm² gauge	7			
	d)	Operating pressure range	kg/cm² gauge	6.0 - 7.0			

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	e)	Filling ratio		0.75	
	f)	Capacity of SF6 gas cylinder	kg	50	
	g)	Spare gas provided		20%	
	h)	Whether breakers are dispatched filled with gas		Partially filled to 0.5 to 1 kg/cm^2 dispatched filled with gas for transportation & storage to be topped at site	
	i)	Parameters of SF6 gas		As per IEC-60376	
	j)	Gas pressure settings at 20^{O}C)			
	i.	Low pressure alarm at	kg/cm^2 gauge	6.5 $^{+/- 0.3}$	
	ii.	Lockout pressure for			
		a) Opening	kg/cm^2 gauge	6 $^{+/- 0.3}$	
		b) Closing	kg/cm^2 gauge	6 $^{+/- 0.3}$	
6		**GENERAL DIMENSIONS**			
	a)	Over all Dimensions			
	i.	Length	mm	15600	
	ii.	Width	mm	5300	
	iii.	Height	mm	7400	
	b)	Weight of complete breaker for foundation design	kg	9800	
	c)	Weight of each pole	kg	3267	
	d)	Weight of Mechanism + Housing	kg	1000	
	e)	Weight of the heaviest part of the breaker	kg	2200 (Pole)	
	f)	Impact loading for foundation design			
	i.	Downwords	kg	8000	
	ii.	Upwords	kg	5000	
	g)	Terminal Load			
	i.	Cantilver strength - Horizontal	kg	100	
	ii.	Cantilver strength - Vertical	kg	125	
	h)	Seismic level	g	0.3	
	i)	Minimum clearance in air			
	i.	Between live parts (without PIR)	mm	as per GA	
	i.	Between live parts (with PIR)	mm	as per GA	
	ii.	Between phases (Centre to Centre)	mm	as per GA	
	iii.	Live parts to earth	mm	as per GA	
	iv.	Live parts to ground level including plinth of 300 mm	mm	as per GA	
	j)	Noise level distance of			
	i.	0M from the breaker	db	< 140	
	ii.	50 M from the breaker	db	< 140	
	iii.	100M from the breaker	db	< 140	
	iv.	150M from the breaker	db	< 140	
	k)	Packing Dimensions			
	i.	Interrupter Assy (Total 3 nos)	mm		
	ii.	Support Assy (Total 3 nos)	mm		
	iii.	Mechanism Housing Assy. (Total 3 nos)	mm		
	iv.	Marshalling box (Total 1 no)	mm		
7		**CONSTRUCTIONAL DETAILS**			
	a)	Weight of absorbant per pole	gm	1000	
	b)	Whether arcing contacts are provided		Yes	
	c)	Type and material of arcing contacts		Tulip, Copper-Tungsten	
	d)	Type and Material of main contacts		Multifinger crown, Copper-Ag alloy	
	e)	Whether main contacts are silver plated / Silver plating thickness		Yes / 15 microns	
	f)	Contact pressure on main contacts	kg/mm2	0.3	
	g)	Length of contact separation	mm	2 x 113	
	h)	Length of contact travel		2 x 140	
	i)	Rate of contact travel			
	j)	Main contact resistance	μΩ	< 100	
	k)	Wheather the making & breaking contacts are hermatically sealed		Yes	
	l)	No. of spare auxiliary contacts provided for Owner's use			
	i.	Normally Open when breaker is open		10/11/12	
	ii.	Normally Closed when breaker is open		10/11/12	
	m)	Rated voltage of auxiliary contacts	V DC	220	
	n)	Type of auxiliary contacts		Rotary	
	o)	Continuous Current Carrying Capacity	A	20 for contact in series with coil and 10A for all other and spare contacts	
	p)	DC breaking current with 20 ms time constant	A	7.5 A at 264 VDC for contact in series with coil and 2A for all other and spare contacts	
	q)	Whether auxiliary contacts are sliver plated		Yes	
	r)	Finish of exposed ferrous parts		Hardware are HDG/SS/DACRO	
	s)	Finish paint		As per customer requirement	
	i.	Offered to Domestic Customer's		Shade 631 of IS 5	
	ii.	Offered to International Customer's			
	t)	Finish for Support Structure OR Columns		Hot Dip Galvanised	
	u)	Make of support porcelains China insulate not accepted		ARGILON-GERMANY/LIAONING SHUANGLING/FUSHUN H[redacted] INSULATORS/PRATHAMESH CERAMICS/IEC/ MODERN/ABIL	

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1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
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LIST OF DOCUMENTS:

SR.NO.	LIST OF DRAWINGS	DRAWING NO.	TOTAL SHEET
1	LIST OF DRAWINGS	CG-420CSD-31MM-LIST	1
2	GENERAL ARRANGEMENT	CG-420CSD-31MM-GA	3
3	SEQUENCE DIAGRAM	CG-420CSD-31MM-SCH	6
4	BILL OF MATERIAL	CG-420CSD-31MM-BOM	3
5	RATING PLATE	CG-420CSD-31MM-RP	1
6	MECHANISM HOUSING DETAILS	CG-420CSD-31MM-MH	1
7	MARSHALLING BOX DETAILS	CG-420CSD-31MM-MB	1
8	SUPPORT STRUCTURE DETAILS	CG-420CSD-31MM-SS	1
9	WIRING DIAGRAM	CG-420CSD-31MM-WIR	6

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DRN RSB | CHD NSR | APPD GNP | SCALE: N.T.S. | DATE: 23.03.24

NAME | CUSTOMER: APTRANSCO
STD APPROVAL 31MM/KV CREEPAGE WITH CSD

TITLE: LIST OF DRAWINGS
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA

ALL DIMENSIONS ARE IN mm

THIRD ANGLE PROJECTION

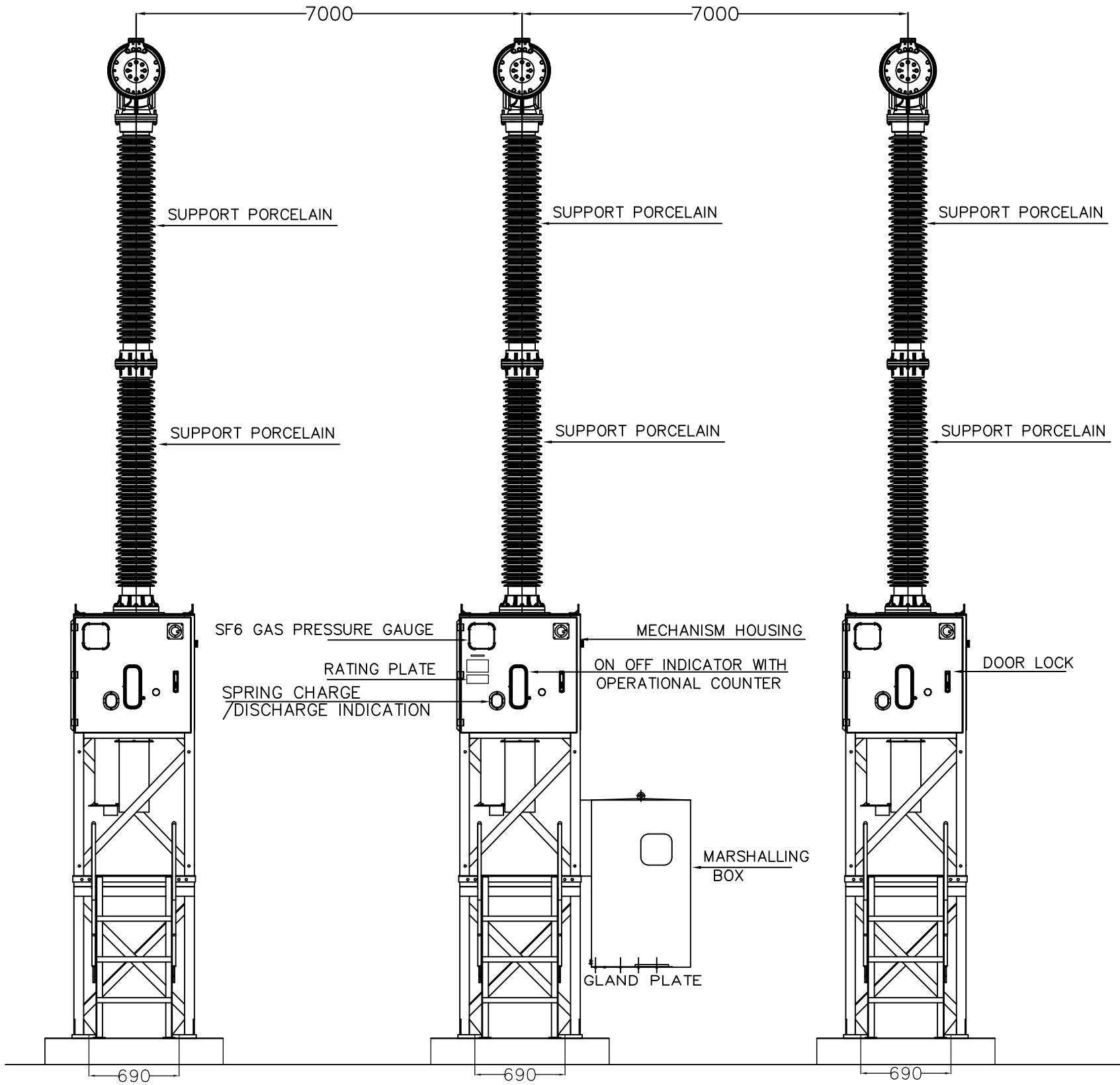
CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-LIST 1 /1 R0

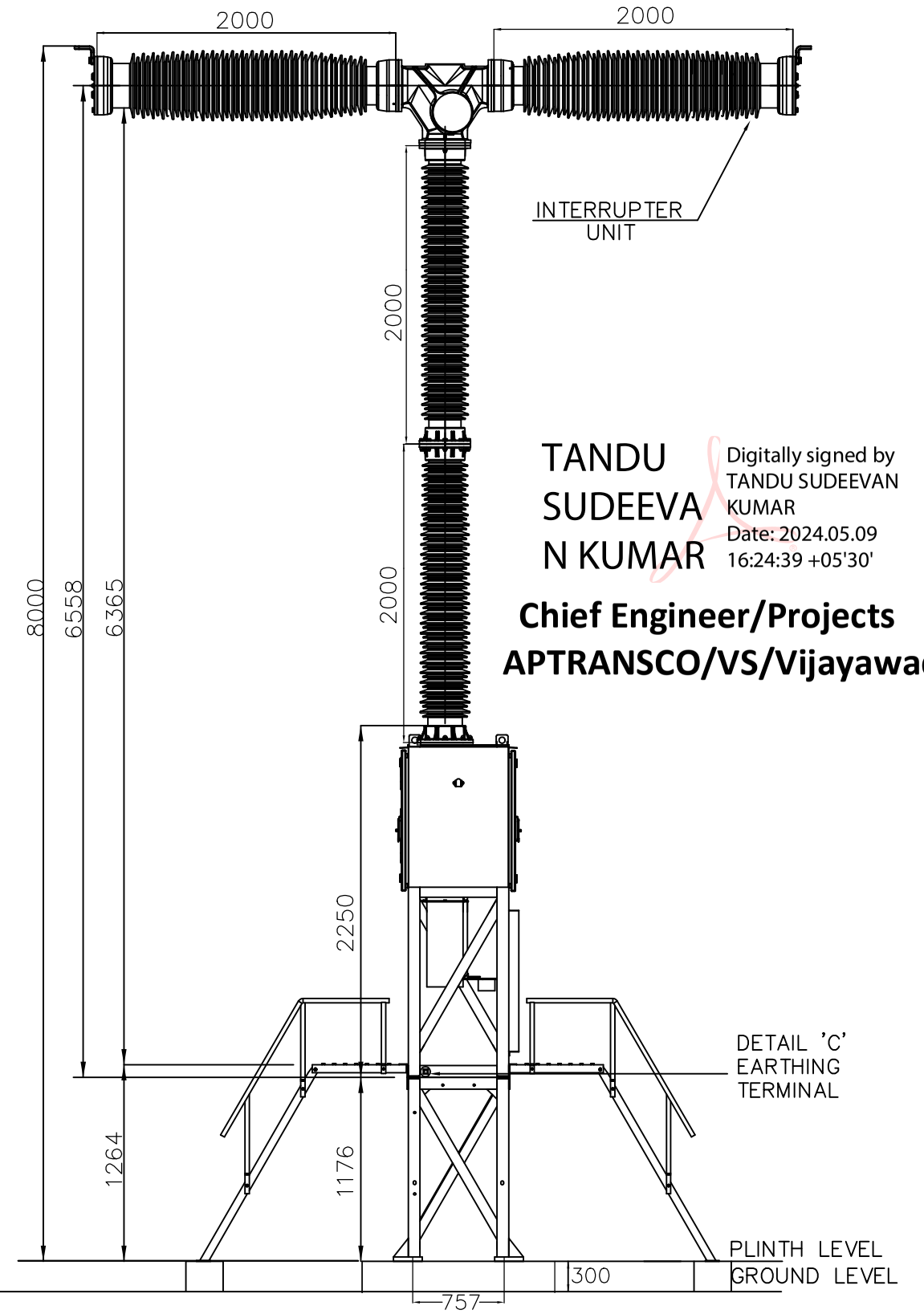
92

DRG.NO.:CG-420CSD-31MM-GA | 1 /3 | R0

IF IN DOUBT ASK!



FRONT VIEW



SIDE VIEW

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	NAME	CUSTOMER: APTRANSCO	TITLE: GENERAL ARRANGEMENT
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD	
CHD	NSR		FOR: 420KV, 63 KA, SP SPR
APPD	GNP		GCB TYPE: 400-SFM-60AA
SCALE: N.T.S.			
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-31MM-GA

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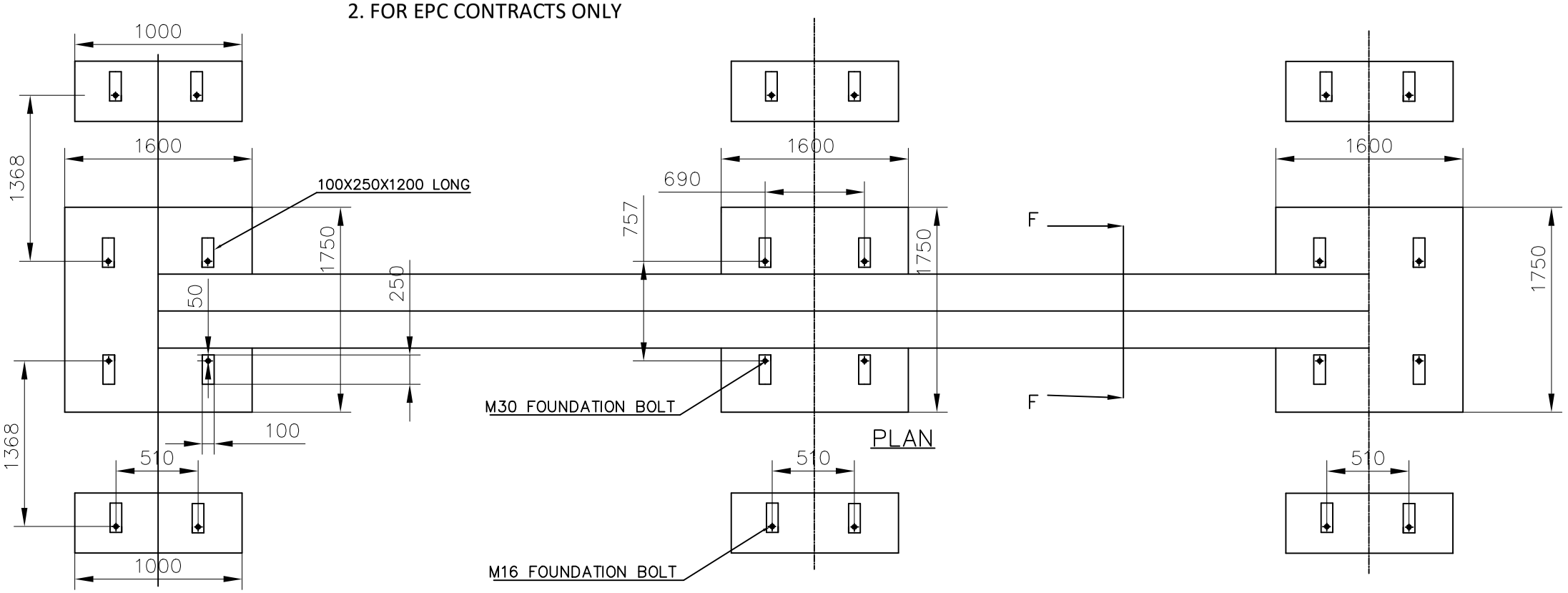
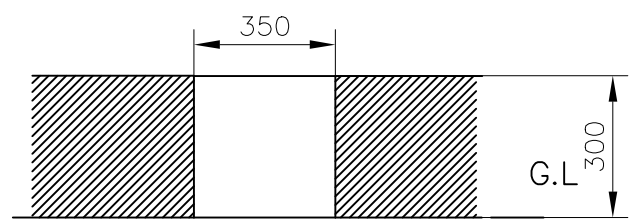


SUGGESTED CABLE TRENCH DETAILS



SECTION F-F

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
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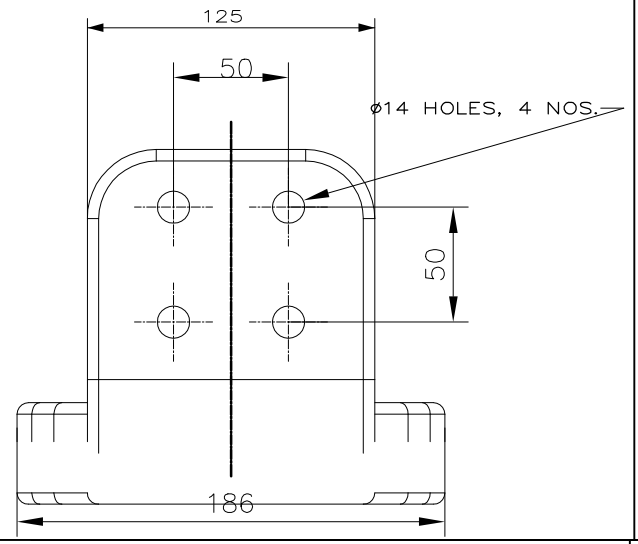
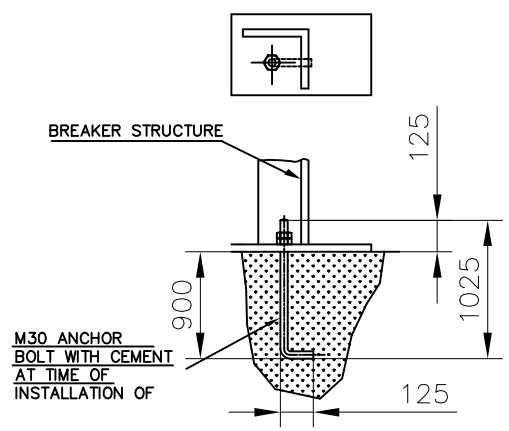
DETAILS OF TERMINAL PAD.

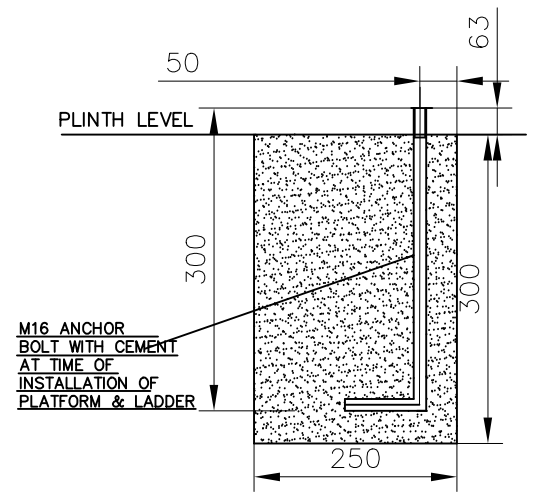
MATERIAL :- ALUMINIUM
THICKNESS :- 22mm



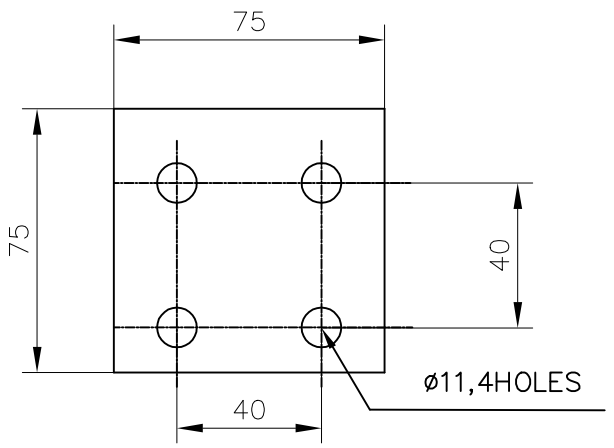
FOUNDATION BOLT FOR BREAKER



FOUNDATION BOLT FOR LADDER



EARTHING PAD DETAILS 'C'



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	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

TITLE: GENERAL ARRANGEMENT
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-GA | 2 /3 | RO

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NOTE:-

1. WEIGHT MECH.HOUSING =530kg/HSG (APPROX)
2. TOTAL WEIGHT (3 PH) EXCLUDING SUPPORT STRUCTURE = 5600 kg (APPROX)
3. SF6 GAS WEIGHT (3 PH) = 50 kg

4a. OPERATING LOAD FOR FOUNDATION DESIGN PER PHASE
3200 Kg/PHASE DOWNWARD, 1200Kg/PHASE UPWARD

4b. OPERATING LOAD FOR FOUNDATION DESIGN PER PHASE INCLUDING DEAD WEIGHT
8000 Kg/PHASE DOWNWARD, 5000Kg/PHASE UPWARD

5. ALL EXPOSED FERROUS HARDWARES ARE HOT DIP GALVANISED OR S.STEEL
6. INTER PHASE CABLE FROM EACH PHASE TO MARSHALLING BOX IS IN CGPISL SCOPE
7. CREEPAGE DISTANCE TO GROUND IS 13020mm.
CREEPAGE DISTANCE ACROSS INTERRUPTER IS 13020mm.
8. TYPE OF BREAKER: 400-SFM-60AA.
9. STD APPLICATION : IEC-62271-100.
10. RATED VOLTAGE = 420 kV rms.
11. RATED CURRENT = UPTO 4000 A
12. RATED OPERATING DUTY = 0-0.3 SEC-CO-3MIN-CO.
13. RATED SF6 GAS PRESSURE = 6.5kg/cm² (g) AT 20°.
14. HOUSING AND MB ARE PAINTED/POWDER COATED WITH 631 OF IS:5 EXT & INT.
15. CABLE GLANDS & ANCHOR BOLTS ARE IN CGPISL SCOPE OF SUPPLY.
16. PORCELAIN MAKE: MODERN/ABIL/IEC
17. SUPPORT STRUCTURE IS HOT DIP GALVANISED WITH THICKNESS 127 MICRON

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CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
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THIRD ANGLE PROJECTION

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SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-GA | 3 /3 | RO

TERMINALS AND CONTACTS OF MECHANISM BOX ARE SHOWN IN DOTTED RECTANGLE.

Drawing approval subject to valid vendor registration

ANTIPUMPING CKT

SPRING CHARGE MON CIRCUIT

SUPPLY 220 VDC VOLTAGE

EXTERNAL INTERLOCK

TANDU SUDEEVAN KUMAR

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Date: 2024.05.09 16:25:12 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IVT/LA/Breakers 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 manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

5					NAME	CUSTOMER: APTRANSCO	TITLE: SCHEMATIC DIAGRAM WITH CSD	THIRD ANGLE PROJECTION
4				DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD		CG Power and Industrial Solutions Limited SWITCHGEAR DIVISION S3,AMBAD, NASHIK.
3				CHD	NSR		FOR: 420KV, 63 KA, SP SPR	
2				APPD	GNP		GCB TYPE: 400-SFM-60AA	
1				SCALE: N.T.S.				
NO	REVISION	NAME	DATE	DATE: 23.03.24		ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-31MM-SCH	1 /7 R0

[redacted]

TANDU SUDEEVAN KUMAR

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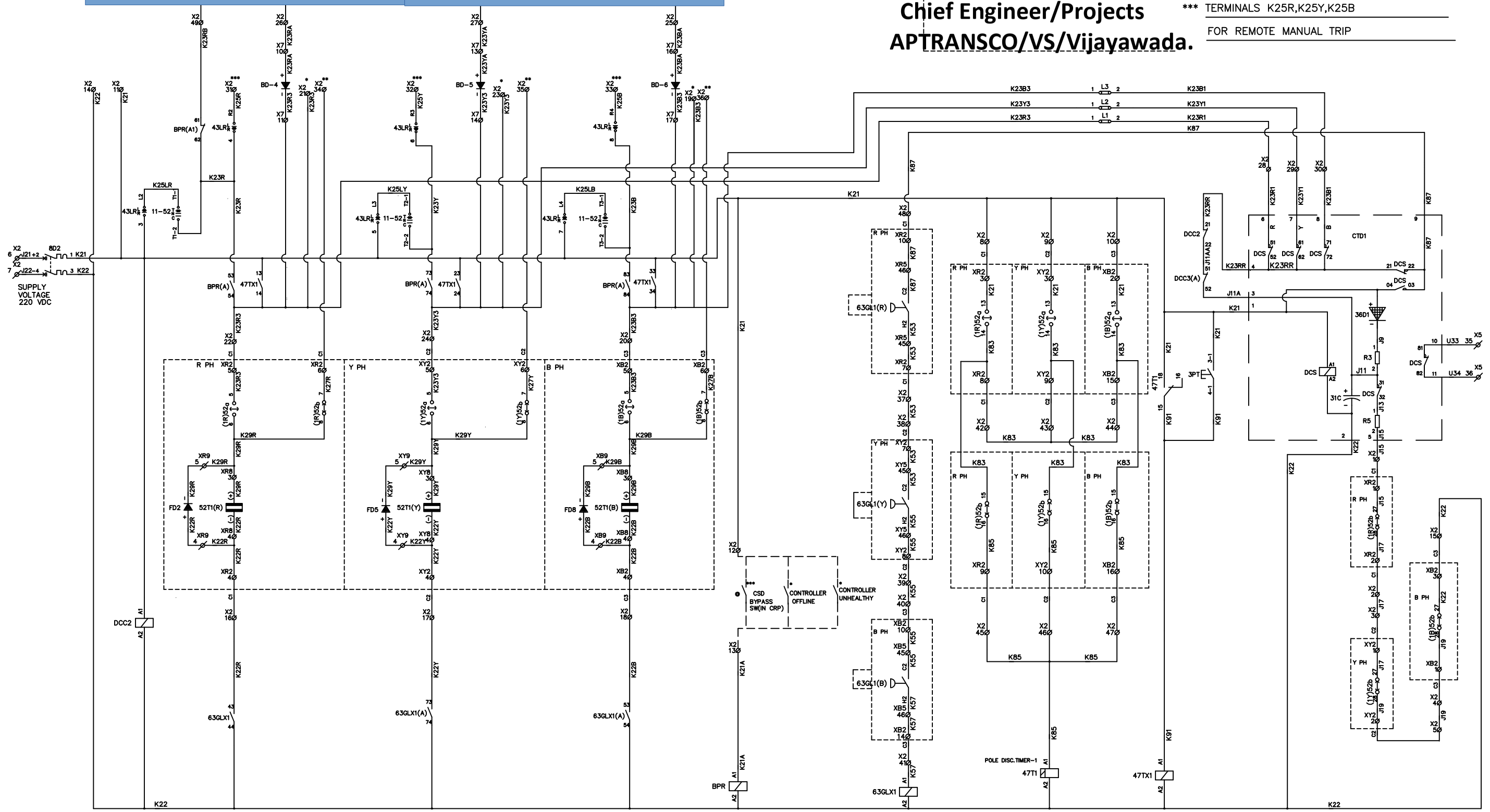
Date: 2024.05.09 16:25:26 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

NOTE:–
* TERMINALS K23R,K23Y,K23B FOR PROTECTION TRIP & TRIP SUPERVISION RELAY (POST CLOSING)
** TERMINALS K27R,K27Y,K27B FOR PRECLOSING TRIP CIRCUIT SUPERVISION.
*** TERMINALS K25R,K25Y,K25B FOR REMOTE MANUAL TRIP



@ CSD BYPASS SWITCH (4POLE 440VAC/DC 25A) IN LOCATED IN CRP AND NOT IN CGPISL SCOPE OF SUPPLY
* CONTACTS OF MULTIPLICATION RELAY(CO AND CF CONTACTOR) REFER SHEET EH5-6388-08-01 FOR MORE DETAILS

NO	REVISION	NAME	DATE			
5					NAME	CUSTOMER: APTRANSCO
4				DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
3				CHD	NSR	
2				APPD	GNP	
1				SCALE: N.T.S.		
				DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

TITLE: SCHEMATIC DIAGRAM WITH CSD
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-SCH 2 /7 R0

DRG.NO.:CG-420CSD-31MM-SCH 3 /7 R0

IF IN DOUBT ASK!

[redacted]

TANDU SUDEEVAN KUMAR

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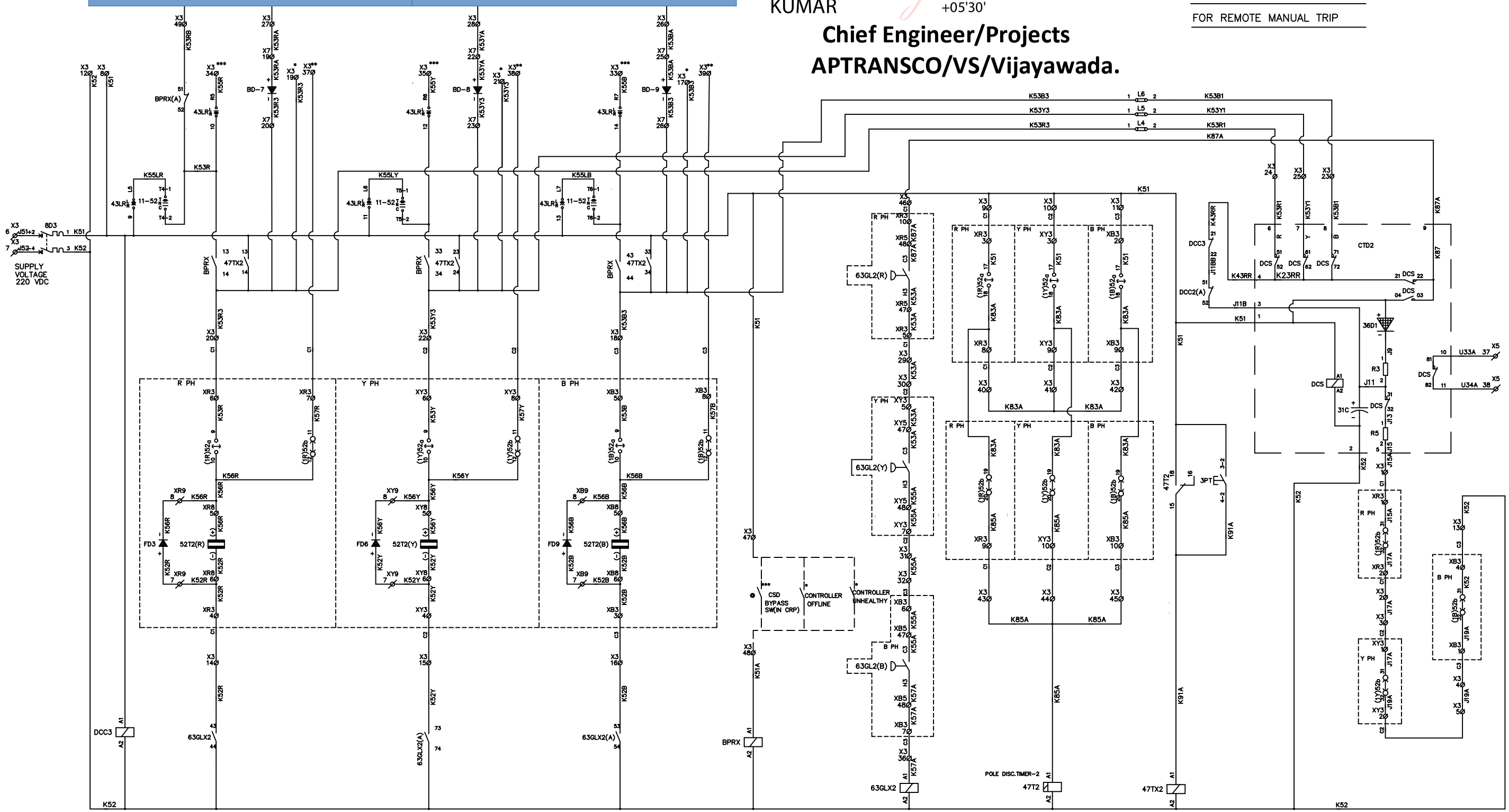
Date: 2024.05.09 16:25:37 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

NOTE:-
* TERMINALS K53R,K53Y,K53B FOR PROTECTION TRIP & TRIP SUPERVISION RELAY (POST CLOSING)
** TERMINALS K57R,K57Y,K57B FOR PRECLOSING TRIP CIRCUIT SUPERVISION.
*** TERMINALS K55R,K55Y,K55B FOR REMOTE MANUAL TRIP



@ CSD BYPASS SWITCH (4POLE 440VAC/DC 25A) IN LOCATED IN CRP AND NOT IN CGPISL SCOPE OF SUPPLY
* CONTACTS OF MULTIPLICATION RELAY(CO AND CF CONTACTOR) REFER SHEET EH5-6388-08-01 FOR MORE DETAILS

NO	REVISION	NAME	DATE
5			
4			
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1			

	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

TITLE: SCHEMATIC DIAGRAM WITH CSD
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-SCH 3 /7 R0

DRG.NO.:CG-420CSD-31MM-SCH 4 /7 R0

IF IN DOUBT ASK!

SUPPLY VOLTAGE 220 VDC

K71 K72

R PH Y PH B PH

88M1(R)-A 88M1(Y)-A 88M1(B)-A

CON(R) CON(Y) CON(B)

RL GL BL

DCC4

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS

2. FOR EPC CONTRACTS ONLY

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GAS PRESSURE LOW ALARM

63GA(R) 63GA(Y) 63GA(B)

43LR CONTACTS

CB HEALTHY IND

88M1(R) 88M1(Y) 88M1(B) 63GLX1(A) 63GLX2(A)

FEEDBACK TO CONTROLLER

(CONNECT +220VDC CHANGEOVER DC SUPPLY FROM CRP TO X5-162)

GAS PRESSURE LOCKOUT-1	GAS PRESSURE LOCKOUT-2	TC-1 DC SU. MONITOR IND	TC-2 DC SU. MONITOR IND	CLOSE DC SU. MONITOR IND	INDICATION DC SUP.MONITOR IND	AC SUPPLY MONITOR IND.	88M(SPRING CHARGED IND.)	47T1 CONTACT	47T2 CONTACT	43LR CONTACT	CB UNHEALTHY IND	PHASE FAILURE INDICATION	TRIP-N-CLOSE SW CONTACT
63GLX1	63GLX2	DCC2	DCC3	DCC1	DCC4	ACF	88M1(R)-A 88M1(Y)-A 88M1(B)-A	47T1	47T2	43LR	88M1(R) 88M1(Y) 88M1(B) 63GLX1 63GLX2		C7-1 11-52 C7-2 T7-1 11-52 T7-2

NO	REVISION	NAME	DATE
5			
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3			
2			
1			

	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

TITLE: SCHEMATIC DIAGRAM WITH CSD
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA

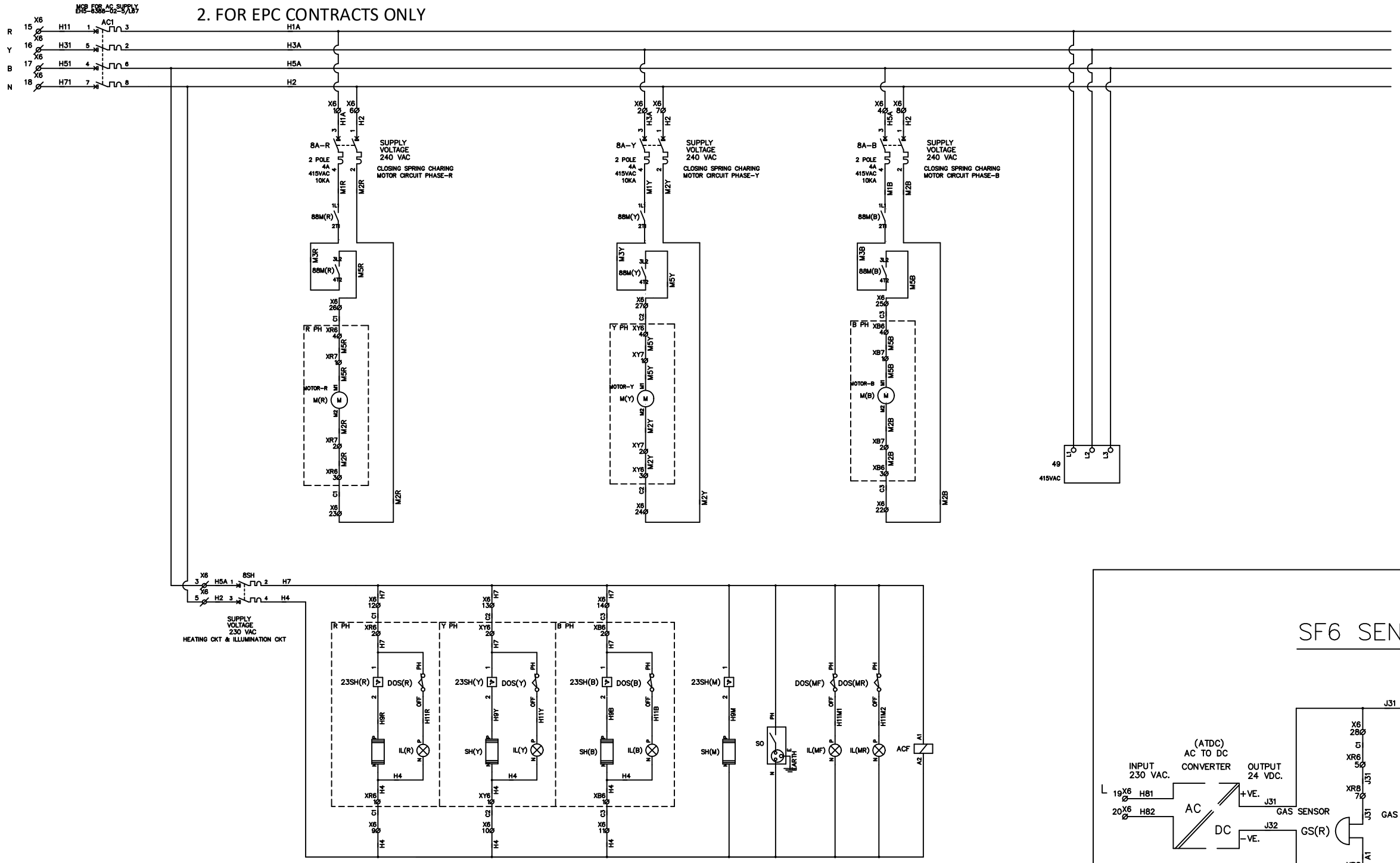
THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-SCH 4 /7 R0

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

Drawing approval subject to valid vendor registration



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TANDU SUDEEVAN KUMAR

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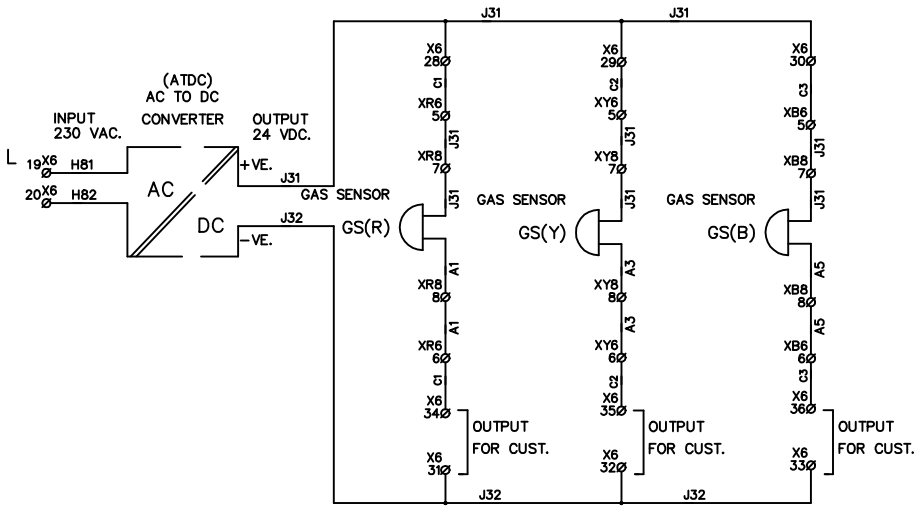
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

SF6 SENSOR CIRCUIT



NO	REVISION	NAME	DATE
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NAME	CUSTOMER: APTRANSCO	TITLE: SCHEMATIC DIAGRAM WITH CSD
DRN RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD	FOR: 420KV, 63 KA, SP SPR
CHD NSR		GCB TYPE: 400-SFM-60AA
APPD GNP		
SCALE: N.T.S.		
DATE: 23.03.24	ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-31MM-SCH 5 /7 R0

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO.:CG-420CSD-31MM-SCH 5 /7 R0

IF IN DOUBT ASK!

100

SPARE AUX. SWITCH (10NO+10NC)

PH-R

PH-Y

PH-B

CB ON

CB OFF

SEM ON

SEM OFF

MAIN-1/DIFFERENTIAL RELAY

MAIN-1/DIFFERENTIAL RELAY

MAIN-2/BACKUP RELAY

MAIN-2/BACKUP RELAY

BCU

BCU

BUS BAR RELAY

BUS BAR RELAY

89A I/L

89A I/L

89B I/L

89B I/L

89L I/L

89L I/L

SPARE

SPARE

TANDU SUDEEVAN KUMAR

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Chief Engineer/Projects

APTRANSCO/VS/Vijayawada.

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NO	REVISION	NAME	DATE
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NAME	CUSTOMER: APTRANSCO
DRN	RSB
CHD	NSR
APPD	GNP
SCALE:	N.T.S.
DATE:	23.03.24

TITLE: SCHEMATIC DIAGRAM WITH CSD

STD APPROVAL 31MM/KV CREEPAGE WITH CSD

FOR: 420KV, 63 KA, SP SPR

GCB TYPE: 400-SFM-60AA

ALL DIMENSIONS ARE IN mm

DRG.NO:CG-420CSD-31MM-SCH 6 /7 R0

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO.:CG-420CSD-31MM-SCH 6 /7 R0

IF IN DOUBT ASK!

TAG : 52Y(R)
A1 — A2
13 — 14 EH5-6388-02-1/C4
43 — 44 SPARE
21 — 22 SPARE
31/41 — 32/42 EH5-6388-02-1/D2

TAG : 52Y(Y)
A1 — A2
13 — 14 EH5-6388-02-1/C5
43 — 44 SPARE
21 — 22 SPARE
31/41 — 32/42 EH5-6388-02-1/D2

TAG : 52Y(B)
A1 — A2
13 — 14 EH5-6388-02-1/C5
43 — 44 SPARE
21 — 22 SPARE
31/41 — 32/42 EH5-6388-02-1/2

TAG : 88M(R)
A1 — A2
1L1 — 2T1 EH5-6388-02-5/E3
3L2 — 4T2 EH5-6388-02-5/E3
5L3 — 6T3 SPARE
13 — 14 SPARE
21 — 22 SPARE

TAG : 88M(Y)
A1 — A2
1L1 — 2T1 EH5-6388-02-5/E4
3L2 — 4T2 EH5-6388-02-5/E4
5L3 — 6T3 SPARE
13 — 14 SPARE
21 — 22 SPARE

TAG : 88M(B)
A1 — A2
1L1 — 2T1 EH5-6388-02-5/E5
3L2 — 4T2 EH5-6388-02-5/E5
5L3 — 6T3 SPARE
13 — 14 SPARE
21 — 22 SPARE

TAG : 88M1(R)
A1 — A2
13 — 14 EH5-6388-02-1/D2
33 — 34 EH5-6388-02-1/D2
43 — 44 EH5-6388-02-4/C6
21 — 22 EH5-6388-02-4/B7

TAG : 88M1(R)-A
53 — 54 EH5-6388-02-4/B4
63 — 64 EH5-6388-02-4/F4

TAG : 88M1(Y)
A1 — A2
13 — 14 EH5-6388-02-1/D3
33 — 34 EH5-6388-02-1/D3
43 — 44 EH5-6388-02-4/C7
21 — 22 EH5-6388-02-4/B7

TAG : 88M1(Y)-A
53 — 54 EH5-6388-02-4/B4
63 — 64 EH5-6388-02-4/E4

TAG : 88M1(B)
A1 — A2
13 — 14 EH5-6388-02-1/D3
33 — 34 EH5-6388-02-1/D3
43 — 44 EH5-6388-02-4/C7
21 — 22 EH5-6388-02-4/B7

TAG : 88M1(B)-A
53 — 54 EH5-6388-02-4/B5
63 — 64 EH5-6388-02-4/D4

TAG : DCC1
A1 — A2
13 — 14 SPARE
43 — 44 SPARE
21 — 22 SPARE
31/41 — 32/42 EH5-6388-02-4/B3

TAG : DCC2
A1 — A2
13 — 14 SPARE
43 — 44 SPARE
21 — 22 EH5-6388-02-2/D7
31/41 — 32/42 EH5-6388-02-4/B2

TAG : DCC2(A)
51 — 52 EH5-6388-02-3/D7
61 — 62 SPARE

TAG : 63GLX1
A1 — A2
13 — 14 EH5-6388-02-1/B2
43 — 44 EH5-6388-02-2/B2
21 — 22 EH5-6388-02-4/B7
31/41 — 32/42 EH5-6388-02-4/B1

TAG : 63GLX1(A)
53 — 54 EH5-6388-02-2/B4
63 — 64 EH5-6388-02-4/C7
73 — 74 EH5-6388-02-2/B3
83 — 84 EH5-6388-02-1/B3

TAG : 63GLX1(A1)
53 — 54 EH5-6388-02-1/B3

TAG : 47TX1
A1 — A2
13 — 14 EH5-6388-02-2/D2
23 — 24 EH5-6388-02-2/D3
33 — 34 EH5-6388-02-2/D4
43 — 44 SPARE

TAG : 47T1
TIMER EH5-6388-02-2/E89
18 — 15 EH5-6388-02-2/D7
16
28 — 25 EH5-6388-02-4/B5
26

TAG : BPRX
A1 — A2
13 — 14 EH5-6388-02-3/D2
33 — 34 EH5-6388-02-3/D3
43 — 44 EH5-6388-02-3/D4
21 — 22 EH5-6388-02-4/F8

TAG : BPR
A1 — A2
13 — 14 EH5-6388-02-1/E2
33 — 34 EH5-6388-02-1/E3
43 — 44 EH5-6388-02-1/E3
21 — 22 EH5-6388-02-4/F8

TAG : BPR(A)
53 — 54 EH5-6388-02-2/D2
73 — 74 EH5-6388-02-2/D3
83 — 84 EH5-6388-02-2/D4
61 — 62 SPARE

TAG : DCC3
A1 — A2
13 — 14 SPARE
43 — 44 SPARE
21 — 22 EH5-6388-02-3/D7
31/41 — 32/42 EH5-6388-02-4/B2

TAG : DCC3(A)
51 — 52 EH5-6388-02-2/D7
61 — 62 SPARE

TAG : 63GLX2
A1 — A2
13 — 14 EH5-6388-02-1/B2
43 — 44 EH5-6388-02-3/B2
21 — 22 EH5-6388-02-4/B7
31/41 — 32/42 EH5-6388-02-4/B2

TAG : 63GLX2(A)
53 — 54 EH5-6388-02-3/B4
63 — 64 EH5-6388-02-4/C7
73 — 74 EH5-6388-02-3/B3
83 — 84 EH5-6388-02-1/B3

TAG : 63GLX2(A1)
53 — 54 EH5-6388-02-1/B3

TAG : 47T2
TIMER EH5-6388-02-3/C84
18 — 15 EH5-6388-02-3/C7
16
28 — 25 EH5-6388-02-4/B5
26

TAG : 47TX2
A1 — A2
13 — 14 EH5-6388-02-3/D3
23 — 24 EH5-6388-02-3/D4
33 — 34 EH5-6388-02-3/D5
43 — 44 SPARE

TAG : DCC4
A1 — A2
13 — 14 SPARE
43 — 44 SPARE
21 — 22 SPARE
31/41 — 32/42 EH5-6388-02-4/B3

TAG : ACF
A1 — A2
13 — 14 SPARE
43 — 44 SPARE
21 — 22 EH5-6388-02-4/B4
31/41 — 32/42 SPARE

TAG : 49
L1
L2
L3
EH5-6388-02-5/D8
15 — 18 EH5-6388-02-4/B8
16

TAG : 43LR
L1 — 1 EH5-6388-02-1/F2
R1 — 2 EH5-6388-02-1/F2
L2 — 3 EH5-6388-02-2/E2
R2 — 4 EH5-6388-02-2/E2
L3 — 5 EH5-6388-02-2/E3
R3 — 6 EH5-6388-02-2/E3
L4 — 7 EH5-6388-02-2/E4
R4 — 8 EH5-6388-02-2/E4
L5 — 9 EH5-6388-02-3/E2
R5 — 10 EH5-6388-02-3/E2
L6 — 11 EH5-6388-02-3/E3
R6 — 12 EH5-6388-02-3/E3
L7 — 13 EH5-6388-02-3/E4
R7 — 14 EH5-6388-02-3/E4
L8 — 15 EH5-6388-02-4/B8
R8 — 16 EH5-6388-02-4/B8
L9 — 17 EH5-6388-02-4/E8
R9 — 18 EH5-6388-02-4/E8

TAG : 11-52
TRC
C1-1 — C1-2 EH5-6388-02-1/E2
T1-1 — T1-2 EH5-6388-02-2/D2
C2-1 — C2-2 EH5-6388-02-1/E3
T2-1 — T2-2 EH5-6388-02-2/D3
C3-1 — C3-2 SPARE
T3-1 — T3-2 EH5-6388-02-2/D4
C4-1 — C4-2 SPARE
T4-1 — T4-2 EH5-6388-02-3/E2
C5-1 — C5-2 SPARE
T5-1 — T5-2 EH5-6388-02-3/D3
C6-1 — C6-2 SPARE
T6-1 — T6-2 EH5-6388-02-3/E4
C7-1 — C7-2 EH5-6388-02-4/B8
T7-1 — T7-2 EH5-6388-02-4/B8

TAG : 8D1
3 — 4
1 — 2 EH5-6388-02-1/E2

TAG : 8D2
3 — 4
1 — 2 EH5-6388-02-2/D1

TAG : 8D3
3 — 4
1 — 2 EH5-6388-02-3/D1

TAG : AC1
1 — 3
5 — 2
4 — 6
7 — 8 EH5-6388-02-5/F2

TAG : 8A-R
3 — 4
1 — 2 EH5-6388-02-5/E3

TAG : 8A-Y
3 — 4
1 — 2 EH5-6388-02-5/E4

TAG : 8A-B
3 — 4
1 — 2 EH5-6388-02-5/E5

TAG : 8SH
1 — 3
3 — 4 EH5-6388-02-5/C2

TAG : ACF
A1 — A2
13 — 14 SPARE
43 — 44 SPARE
21 — 22 EH5-6388-02-4/B4
31/41 — 32/42 SPARE

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

TANDU SUDEEVAN KUMAR
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Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

NO	REVISION	NAME	DATE
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DRN	NAME	RSB
CHD		NSR
APPD		GNP
SCALE: N.T.S.		
DATE: 23.03.24		

CUSTOMER: APTRANSCO
STD APPROVAL 31MM/KV CREEPAGE WITH CSD
ALL DIMENSIONS ARE IN mm

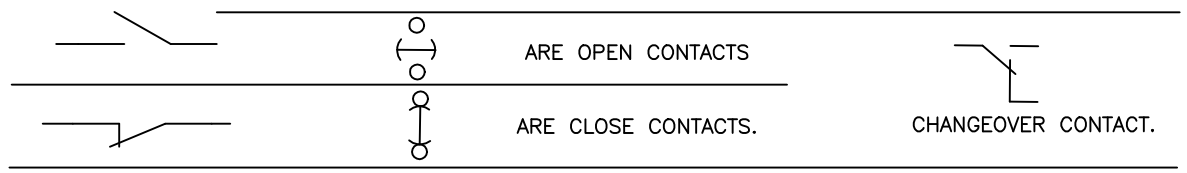
TITLE: SCHEMATIC DIAGRAM WITH CSD
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA
DRG.NO:CG-420CSD-31MM-SCH 7 /7 R0

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

TAGNAME	CATDESC	VISDESC	QUANT	RATING1	RATING2	MFG
3PT	PUSH BUTTON (RED) (2NO)	3 PHASE TRIP PUSH BUTTON	1	250VDC	10A	TEKNIC/CRAFTECH/DSQUARE
8A-B	MINIATURE CIRUIT BREAKER(MCB),C CURVE	MCB FOR MOTOR	1	2 POLE	4A	SCHNEIDER/SIEMENS/EATON
8A-R	MINIATURE CIRUIT BREAKER(MCB),C CURVE	MCB FOR MOTOR	1	2 POLE	4A	SCHNEIDER/SIEMENS/EATON
8A-Y	MINIATURE CIRUIT BREAKER(MCB),C CURVE	MCB FOR MOTOR	1	2 POLE	4A	SCHNEIDER/SIEMENS/EATON
8D1	MINIATURE CIRUIT BREAKER(DC MCB),C CURVE	MCB FOR CLOSING CIRCUIT	1	2 POLE	16A	SCHNEIDER/SIEMENS/EATON
8D2	MINIATURE CIRUIT BREAKER(DC MCB),C CURVE	MCB FOR TRIP-1 CIRCUIT	1	2 POLE	16A	SCHNEIDER/SIEMENS/EATON
8D3	MINIATURE CIRUIT BREAKER(DC MCB),C CURVE	MCB FOR TRIP-2 CIRCUIT	1	2 POLE	16A	SCHNEIDER/SIEMENS/EATON
8D4	MINIATURE CIRUIT BREAKER(DC MCB),C CURVE	MCB FOR INDICATION CIRCUIT	1	2 POLE	16A	SCHNEIDER/SIEMENS/EATON
8SH	MINIATURE CIRUIT BREAKER(MCB),C CURVE	MCB FOR HEATER CIRCUIT	1	2 POLE	16A	SCHNEIDER/SIEMENS/EATON
11-52	TRIP-NEUTRAL-CLOSE SW. 7 POLE,(7T+7C) 3 POSITION, 45deg ANGLE, SPRING RETURN.	TRIP-N-CLOSE SWITCH	1	660V AC/DC	32A	SWITRON/SHIRKE
23SH(B)	THERMOSTAT FOR HEATER CONTROL	THERMOSTAT	1	230 VAC		APT/VELICO/ELEXPERC
23SH(M)	THERMOSTAT FOR HEATER CONTROL	THERMOSTAT	1	230 VAC		APT/VELICO/ELEXPERC
23SH(R)	THERMOSTAT FOR HEATER CONTROL	THERMOSTAT	1	230 VAC		APT/VELICO/ELEXPERC
23SH(Y)	THERMOSTAT FOR HEATER CONTROL	THERMOSTAT	1	230 VAC		APT/VELICO/ELEXPERC
43LR	LOCAL-REMOTE SWITCH (9L+9R), 2 POSITION, 90deg, STAY PUT TYPE	LOCAL REMOTE SWITCH	1	660V AC/DC	32A	SWITRON/SHIRKE
47T1	POLE DISCREPANCY TIMER	POLE DISCREPANCY TIMER-1	1	24V-240V DC/AC	0.1sec-1200h	OMRON/SELEC
47T2	POLE DISCREPANCY TIMER	POLE DISCREPANCY TIMER-2	1	24V-240V DC/AC	0.1sec-1200h	OMRON/SELEC
47TX1	AUXILIARY CONTACTOR 4NO	CONTACTOR FOR 47T1	1	220VDC		SCHNEIDER/SIEMENS/EATON
47TX2	AUXILIARY CONTACTOR 4NO	CONTACTOR FOR 47T2	1	220VDC		SCHNEIDER/SIEMENS/EATON
49	PHASE FAILURE RELAY	RELAY FOR MOTOR PHASE FAILURE	1	415VAC		SCHNEIDER/SIEMENS/EATON
52C(B)	CLOSE COIL FOR 400kV SP SPR/245KV SP GO	CLOSING COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52C(R)	CLOSE COIL FOR 400kV SP SPR/245KV SP GO	CLOSING COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52C(Y)	CLOSE COIL FOR 400kV SP SPR/245KV SP GO	CLOSING COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52T1(B)	TRIP COIL(1)	TRIP COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52T1(R)	TRIP COIL(1)	TRIP COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52T1(Y)	TRIP COIL(1)	TRIP COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52T2(B)	TRIP COIL(2)	TRIP COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52T2(R)	TRIP COIL(2)	TRIP COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52T2(Y)	TRIP COIL(2)	TRIP COIL	1	220 VDC	121 ohm +/- 5%	POWERINST/ECS/SUN ENGG
52Y(B)	AUXILIARY CONTACTOR 2NO+2NC	ANTIPUMPING RELAY	1	220VDC		SCHNEIDER/SIEMENS/EATON
52Y(R)	AUXILIARY CONTACTOR 2NO+2NC	ANTIPUMPING RELAY	1	220VDC		SCHNEIDER/SIEMENS/EATON
52Y(Y)	AUXILIARY CONTACTOR 2NO+2NC	ANTIPUMPING RELAY	1	220VDC		SCHNEIDER/SIEMENS/EATON
63GA(B)	GAS DENSITY SWITCH ALARM (NC): ON-6.0 kg/sq.cm,OFF-6.5 kg/sq.cm at 20oC	LOW GAS PRESSURE ALARM	1			REGENCY ELECTRIC/TRAFAG
63GA(R)	GAS DENSITY SWITCH ALARM (NC): ON-6.0 kg/sq.cm,OFF-6.5 kg/sq.cm at 20oC	LOW GAS PRESSURE ALARM	1			REGENCY ELECTRIC/TRAFAG
63GA(Y)	GAS DENSITY SWITCH ALARM (NC): ON-6.0 kg/sq.cm,OFF-6.5 kg/sq.cm at 20oC	LOW GAS PRESSURE ALARM	1			REGENCY ELECTRIC/TRAFAG
63GL1(B)	GAS DENSITY SWITCH LOCKOUT (NO): OFF-5.5 kg/sq.cm,ON-6.0 kg/sq.cm at 20oC	LOW GAS PRESSURE L/O-1	1			REGENCY ELECTRIC/TRAFAG
63GL1(R)	GAS DENSITY SWITCH LOCKOUT (NO): OFF-5.5 kg/sq.cm,ON-6.0 kg/sq.cm at 20oC	LOW GAS PRESSURE L/O-1	1			REGENCY ELECTRIC/TRAFAG
63GL1(Y)	GAS DENSITY SWITCH LOCKOUT (NO): OFF-5.5 kg/sq.cm,ON-6.0 kg/sq.cm at 20oC	LOW GAS PRESSURE L/O-1	1			REGENCY ELECTRIC/TRAFAG
63GL2(B)	GAS DENSITY SWITCH LOCKOUT (NO): OFF-5.5 kg/sq.cm,ON-6.0 kg/sq.cm at 20oC	LOW GAS PRESSURE L/O-2	1			REGENCY ELECTRIC/TRAFAG
63GL2(R)	GAS DENSITY SWITCH LOCKOUT (NO): OFF-5.5 kg/sq.cm,ON-6.0 kg/sq.cm at 20oC	LOW GAS PRESSURE L/O-2	1			REGENCY ELECTRIC/TRAFAG
63GL2(Y)	GAS DENSITY SWITCH LOCKOUT (NO): OFF-5.5 kg/sq.cm,ON-6.0 kg/sq.cm at 20oC	LOW GAS PRESSURE L/O-2	1			REGENCY ELECTRIC/TRAFAG
63GLX1	AUXILIARY CONTACTOR 2NO+2NC	CONTACTOR FOR 63GL1	1	220VDC		SCHNEIDER/SIEMENS/EATON
63GLX1(A)	ADD ON BLOCK (4NO)		1			SCHNEIDER/SIEMENS/EATON
63GLX2	AUXILIARY CONTACTOR 2NO+2NC	CONTACTOR FOR 63GL2	1	220VDC		SCHNEIDER/SIEMENS/EATON
63GLX2(A)	ADD ON BLOCK (4NO)		1			SCHNEIDER/SIEMENS/EATON

NOTES:-

1) AUXILIARY SWITCHES ARE SHOWN FOR OPEN BREAKER.
2) AUXILIARY CONTACTORS CONTACTS ARE SHOWN IN DE-ENERGISED POSITION.
3) GAS PRESSURE SWITCH IS SHOWN FOR NO GAS PRESSURE.
4) LOCAL REMOTE CHANGEOVER SWITCH IS SHOWN IN REMOTE POSITION.
5) 

6) SIZE OF WIRE =1.5 sq.mm. MULTI STRANDED COPPER(FLEXIBLE) CONDUCTOR PVC INSULATED.
7) COLOUR OF WIRE FOR AC CIRCUIT-R,Y,B & BLACK, FOR DC CIRCUIT & SPARE CONTACTS-GRAY & FOR EARTHING-GREEN.
8) STUD TYPE TERMINAL BLOCKS ARE PROVIDED .
9) CONTINUOUS CURRENT CARRYING CAPACITY OF TRIP COIL IS 50mA TO CATER FOR TRIP COIL SUPERVISION.
10) 52a CONTACTS ARE OPEN WHEN BREAKER IS OPEN.
11) 52b CONTACTS ARE CLOSE WHEN BREAKER IS OPEN.
12) "ø" TERMINAL ARE WIRED UPTO TERMINAL BLOCKS FOR REMOTE CONTROL PANEL OF CIRCUIT BREAKER.
13) THE COMPONENTS IN THIS BILL OF MATERIAL ARE MANUFACTURED BY DIFFERENT OEM's & MAY HAVE DIFFERENT RATINGS MENTIONED ON COMPONENTS. HOWEVER, CG STANDS FOR THE GUARANTEE FOR THE GUARANTEE FOR ITS PERFORMANCE & SUITABILITY AS PER THE REQUIREMENTS.

TANDU SUDEEVAN KUMAR
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Date: 2024.05.09 16:26:55 +05'30'
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada

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NAME	CUSTOMER: APTRANSCO	TITLE: BILL OF MATERIAL	THIRD ANGLE PROJECTION
DRN RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD		CG Power and Industrial Solutions Limited, SWITCHGEAR DIVISION S3,AMBAD, NASHIK.
CHD NSR		FOR: 420KV, 63 KA, SP SPR	
APPD GNP		GCB TYPE: 400-SFM-60AA	
SCALE: N.T.S.			
DATE: 23.03.24	ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-31MM-BOM	1 /3 R0

Drawing approval subject to valid vendor registration

TAGNAME	CATDESC	VISDESC	QUANT	RATING1	RATING2	MFG
88M1(B)	AUXILIARY CONTACTOR 3NO+1NC	CONTACTOR FOR MOTOR	1	220VDC		SCHNEIDER/SIEMENS/EATON
88M1(B)-A	ADD ON BLOCK (2NO)		1			SCHNEIDER/SIEMENS/EATON
88M1(R)	AUXILIARY CONTACTOR 3NO+1NC	CONTACTOR FOR MOTOR	1	220VDC		SCHNEIDER/SIEMENS/EATON
88M1(R)-A	ADD ON BLOCK (2NO)		1			SCHNEIDER/SIEMENS/EATON
88M1(Y)	AUXILIARY CONTACTOR 3NO+1NC	CONTACTOR FOR MOTOR	1	220VDC		SCHNEIDER/SIEMENS/EATON
88M1(Y)-A	ADD ON BLOCK (2NO)		1			SCHNEIDER/SIEMENS/EATON
88M(B)	POWER CONTACTOR (3NO+1NC)	CONTACTOR FOR MOTOR	1	220VDC		SCHNEIDER/SIEMENS/EATON
88M(R)	POWER CONTACTOR (3NO+1NC)	CONTACTOR FOR MOTOR	1	220VDC		SCHNEIDER/SIEMENS/EATON
88M(Y)	POWER CONTACTOR (3NO+1NC)	CONTACTOR FOR MOTOR	1	220VDC		SCHNEIDER/SIEMENS/EATON
DOS(B)	DOOR OPERATED SWTICH	SWITCH FOR ILLUMINATION LAMP	1	230 VAC	5A	BRISK/SURAJ
DOS(R)	DOOR OPERATED SWTICH	SWITCH FOR ILLUMINATION LAMP	1	230 VAC	5A	BRISK/SURAJ
DOS(Y)	DOOR OPERATED SWTICH	SWITCH FOR ILLUMINATION LAMP	1	230 VAC	5A	BRISK/SURAJ
(1B)52	BREAKER AUXILIARY SWITCH (20NO+20NC)	AUXILIARY SWITCH	1			IMAX/SHIRKE/H.K INDUSTRIES
(1R)52	BREAKER AUXILIARY SWITCH (20NO+20NC)	AUXILIARY SWITCH	1			IMAX/SHIRKE/H.K INDUSTRIES
(1Y)52	BREAKER AUXILIARY SWITCH (20NO+20NC)	AUXILIARY SWITCH	1			IMAX/SHIRKE/H.K INDUSTRIES
AC1	MINIATURE CIRUIT BREAKER(MCB), C CURVE	MCB FOR AC SUPPLY	1	4 POLE	6A	SCHNEIDER/SIEMENS/EATON
ACF	AUXILIARY CONTACTOR 2NO+2NC	AC SUPERVISION CONTACTOR	1	230VAC		SCHNEIDER/SIEMENS/EATON
BD-1	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-2	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-3	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-4	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-5	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-6	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-7	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-8	BLOCKING DIODE		1	600V	30A	ONSEMI
BD-9	BLOCKING DIODE		1	600V	30A	ONSEMI
BL	LED BLUE	SPRING CHARGING INDICATION	1	24V-240V AC/DC		TEKNIC/CRAFTECH/DSQUARE
BPR	AUXILIARY CONTACTOR 3NO+1NC		1	220VDC		SCHNEIDER/SIEMENS/EATON
BPRX	AUXILIARY CONTACTOR 3NO+1NC		1	220VDC		SCHNEIDER/SIEMENS/EATON
BPR(A)	ADD ON BLOCK (3NO+1NC)		1			SCHNEIDER/SIEMENS/EATON
CON(R),CON(Y),CON(B)	4 DIGIT DIGIALCOUNTER	COUNTER	3	90-270V DC/AC	4-9999	SELEC/OMRON
CTD1	CTD(220VDC)	CAP TRIP DEVICE-1	1			CGPISL/PARAM/BHARAT/SUN
CTD2	CTD(220VDC)	CAP TRIP DEVICE-2	1			CGPISL/PARAM/BHARAT/SUN
DCC1	AUXILIARY CONTACTOR 2NO+2NC	CLOSING CKT SUPERV CONT	1	220VDC		SCHNEIDER/SIEMENS/EATON
DCC2	AUXILIARY CONTACTOR 2NO+2NC	TRIP-1 CKT SUPERV CONT	1	220VDC		SCHNEIDER/SIEMENS/EATON
DCC2(A)	ADD ON BLOCK (2NC)		1			SCHNEIDER/SIEMENS/EATON
DCC3	AUXILIARY CONTACTOR 2NO+2NC	TRIP-2 CKT SUPERV CONT	1	220VDC		SCHNEIDER/SIEMENS/EATON
DCC3(A)	ADD ON BLOCK (2NC)		1			SCHNEIDER/SIEMENS/EATON
DCC4	AUXILIARY CONTACTOR 2NO+2NC	INDICATION CKT SUPERV CON	1	220VDC		SCHNEIDER/SIEMENS/EATON
DOS(MF)	DOOR OPERATED SWTICH	SWITCH FOR ILLUMINATION LAMP	1	230 VAC	5A	BRISK/SURAJ
DOS(MR)	DOOR OPERATED SWTICH	SWITCH FOR ILLUMINATION LAMP	1	230 VAC	5A	BRISK/SURAJ
FD1	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD2	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD3	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD4	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD5	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD6	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD7	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD8	FREEWHEELING DIODE		1	600V	30A	ONSEMI
FD9	FREEWHEELING DIODE		1	600V	30A	ONSEMI
GL	LED GREEN	BREAKER OFF INDICATION	1	24V-240V AC/DC		TEKNIC/CRAFTECH/DSQUARE
GS(B)	SF6 GAS PRESSURE SENSOR	GAS SENSOR	1		4-20mA	HUBA/ACT/PRIGNITIZ
GS(R)	SF6 GAS PRESSURE SENSOR	GAS SENSOR	1		4-20mA	HUBA/ACT/PRIGNITIZ
GS(Y)	SF6 GAS PRESSURE SENSOR	GAS SENSOR	1		4-20mA	HUBA/ACT/PRIGNITIZ
IL(B)	ILLUMINATION LAMP (LED)	ILLUMINATION LAMP	1	230 VAC	6W	TEKNIC/CRAFTECH/DSQUARE

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

TANDU SUDEEVAN KUMAR
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Date: 2024.05.09 16:27:09 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

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NAME	CUSTOMER: APTRANSCO	TITLE: BILL OF MATERIAL
DRN RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD	
CHD NSR		FOR: 420KV, 63 KA, SP SPR
APPD GNP		GCB TYPE: 400-SFM-60AA
SCALE: N.T.S.		
DATE: 23.03.24	ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-31MM-BOM 2 /3 R0

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO.:CG-420CSD-31MM-BOM 2 /3 R0

IF IN DOUBT ASK!

Drawing approval subject to valid vendor registration

TAGNAME	CATDESC	VISDESC	QUANT	RATING1	RATING2	MFG
IL(MF)	ILLUMINATION LAMP (LED)	ILLUMINATION LAMP	1	230 VAC	6W	CRAFTECH/DSQUARE
IL(MR)	ILLUMINATION LAMP (LED)	ILLUMINATION LAMP	1	230 VAC	6W	CRAFTECH/DSQUARE
IL(R)	ILLUMINATION LAMP (LED)	ILLUMINATION LAMP	1	230 VAC	6W	CRAFTECH/DSQUARE
IL(Y)	ILLUMINATION LAMP (LED)	ILLUMINATION LAMP	1	230 VAC	6W	CRAFTECH/DSQUARE
L1	FUSE LINK	FUSE LINK	1	16A		EATON/BUSSMAN/ISHWARI/CGPISL/SIEMENS
L2	FUSE LINK	FUSE LINK	1	16A		EATON/BUSSMAN/ISHWARI/CGPISL/SIEMENS
L3	FUSE LINK	FUSE LINK	1	16A		EATON/BUSSMAN/ISHWARI/CGPISL/SIEMENS
L4	FUSE LINK	FUSE LINK	1	16A		EATON/BUSSMAN/ISHWARI/CGPISL/SIEMENS
L5	FUSE LINK	FUSE LINK	1	16A		EATON/BUSSMAN/ISHWARI/CGPISL/SIEMENS
L6	FUSE LINK	FUSE LINK	1	16A		EATON/BUSSMAN/ISHWARI/CGPISL/SIEMENS
LS(B)	LIMIT SWITCH (1C/O)	LIMIT SWITCH	1			OMRON/SHEFALI
LS(R)	LIMIT SWITCH (1C/O)	LIMIT SWITCH	1			OMRON/SHEFALI
LS(Y)	LIMIT SWITCH (1C/O)	LIMIT SWITCH	1			OMRON/SHEFALI
M(B)	UNIVERSAL MOTOR FOR SPRING CHARGING	MOTOR-B	1	230 VDC/AC	I/P750W-O/P360W	KPT/YIFAN
M(R)	UNIVERSAL MOTOR FOR SPRING CHARGING	MOTOR-R	1	230 VDC/AC	I/P750W-O/P360W	KPT/YIFAN
M(Y)	UNIVERSAL MOTOR FOR SPRING CHARGING	MOTOR-Y	1	230 VDC/AC	I/P750W-O/P360W	KPT/YIFAN
RL	LED RED	BREAKER ON INDICATION	1	24V-240V AC/DC		TEKNIC/CRAFTECH/DSQUARE
SH(B)	ANTICONDENSATION HEATER	HEATER	1	230V AC	100W	APT/VELICO/ELEXPERC
SH(M)	ANTICONDENSATION HEATER	HEATER	1	230V AC	100W	APT/VELICO/ELEXPERC
SH(R)	ANTICONDENSATION HEATER	HEATER	1	230V AC	100W	APT/VELICO/ELEXPERC
SH(Y)	ANTICONDENSATION HEATER	HEATER	1	230V AC	100W	APT/VELICO/ELEXPERC
SO	SWITCH SOCKET UNIT	SWITCH SOCKET UNIT	1	230 VAC	10/20A	ANCHOR
X1	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		32			CONNECTWELL/ELMEX/VINPAR
X2	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		48			CONNECTWELL/ELMEX/VINPAR
X3	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		46			CONNECTWELL/ELMEX/VINPAR
X4	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		20			CONNECTWELL/ELMEX/VINPAR
X5	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		184			CONNECTWELL/ELMEX/VINPAR
X6	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		36			CONNECTWELL/ELMEX/VINPAR
X7	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		18			CONNECTWELL/ELMEX/VINPAR
XB1	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		7			CONNECTWELL/ELMEX/VINPAR
XB2	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		16			CONNECTWELL/ELMEX/VINPAR
XB3	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		10			CONNECTWELL/ELMEX/VINPAR
XB4	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		6			CONNECTWELL/ELMEX/VINPAR
XB5	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		52			CONNECTWELL/ELMEX/VINPAR
XB6	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3	TERMINAL BLOCK ROW	6			CONNECTWELL/ELMEX/VINPAR
XB7	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4	TB ROW FOR MOTOR	2			CONNECTWELL/ELMEX/VINPAR
XB8	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		8			CONNECTWELL/ELMEX/VINPAR
XB9	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		4			CONNECTWELL/ELMEX/VINPAR
XR1	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		7			CONNECTWELL/ELMEX/VINPAR
XR2	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		10			CONNECTWELL/ELMEX/VINPAR
XR3	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		10			CONNECTWELL/ELMEX/VINPAR
XR4	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		6			CONNECTWELL/ELMEX/VINPAR
XR5	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		52			CONNECTWELL/ELMEX/VINPAR
XR6	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3	TERMINAL BLOCK ROW	6			CONNECTWELL/ELMEX/VINPAR
XR7	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4	TB ROW FOR MOTOR	2			CONNECTWELL/ELMEX/VINPAR
XR8	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		8			CONNECTWELL/ELMEX/VINPAR
XR9	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		4			CONNECTWELL/ELMEX/VINPAR
XY1	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		7			CONNECTWELL/ELMEX/VINPAR
XY2	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		10			CONNECTWELL/ELMEX/VINPAR
XY3	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		10			CONNECTWELL/ELMEX/VINPAR
XY4	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3		6			CONNECTWELL/ELMEX/VINPAR
XY5	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		52			CONNECTWELL/ELMEX/VINPAR
XY6	STUD TYPE TERMINAL BLOCK-CSTSB3/CATM3/VTS-M3	TERMINAL BLOCK ROW	6			CONNECTWELL/ELMEX/VINPAR
XY7	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4	TB ROW FOR MOTOR	2			CONNECTWELL/ELMEX/VINPAR
XY8	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		8			CONNECTWELL/ELMEX/VINPAR
XY9	TERMINAL BLOCK -CMT4/KUT2.5/VUT-4		4			CONNECTWELL/ELMEX/VINPAR
ATDC	AC TO DC CONVERTER		1	230VAC-24VDC		GIC/WEIDMULLER/SHAVISON

TANDU SUDEEVAN KUMAR

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Date: 2024.05.09 16:27:21 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

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NAME	CUSTOMER: APTRANSCO
DRN RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD NSR	
APPD GNP	
SCALE: N.T.S.	
DATE: 23.03.24	ALL DIMENSIONS ARE IN mm

TITLE: BILL OF MATERIAL
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-BOM 3 /3 R0

IF IN DOUBT ASK!

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CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

MADE IN INDIA

GAS CIRCUIT BREAKER

TYPE: 400–SFM–60AA		STD. IEC62271–100	CLASS: C2–M2
RATED VOLTAGE	420 kV	RATED LIGHTNING IMPULSE WITHSTAND VOLTAGE	1425kVp
RATED FREQUENCY	50 Hz		
RATED NORMAL CURRENT	4000A	RATED SHORT CIRCUIT BREAKING CURRENT	63kA
FIRST POLE TO CLEAR FACTOR	1.3		
RATED SF6 GAS PRESSURE	6.5kg/cm^2–g(AT 20°C)	RAT.OPR.SEQ. O–0.3SEC–CO–3MIN–CO	
TOTAL WT. 5600 kg	GAS WT 50 kg	RATED SWITCHING IMPULSE WITHSTAND VOLTAGE	31mm [redacted]
RATED DURATION OF SHORT CIRCUIT CURRENT	63kA 3 SECs.	RATED POWER FREQUENCY WITHSTAND VOLTAGE	520 kVrms
SF6 GAS MAXIMUM WORKING PRESSURE	6.5kg/cm^2–g(AT 20°C)	SF6 GAS ALARM PRESSURE	6.0kg/cm^2–g(AT 20°C)
SF6 GAS LOCKOUT PRESSURE	5.5kg/cm^2–g(AT 20°C)	MINIMUM CREEPAGE DISTANCE:	31mm [redacted] mm.

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SCAN QR CODE FOR PRODUCT MANUAL

RATED COIL VOLTAGE –TRIPPING	220V DC	RATED COIL VOLTAGE –CLOSING	220V DC
MOTOR VOLTAGE	230V AC	AUX CIRCUIT VOLTAGE	1ø,230V AC,50Hz.

YEAR: **

CUSTOMER: APTRANSCO

STD APPROVAL 31MM/KV CREEPAGE WITH CSD

SR. NO. : *

MATERIAL: S.S AISI 2mm THK

DEPTH OF LETTER 0.5THK

* SR. NO: _____ QTY.: _____NOS

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:27:34 +05'30'

Chief Engineer/Projects

APTRANSCO/VS/Vijayawada.

** CURRENT YEAR OF MANUFACTURING

NO	REVISION	NAME	DATE
5			
4			
3			
2			
1			

	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

TITLE: RATING PLATE

FOR: 420KV, 63 KA, SP SPR

GCB TYPE: 400–SFM–60AA

THIRD ANGLE PROJECTION

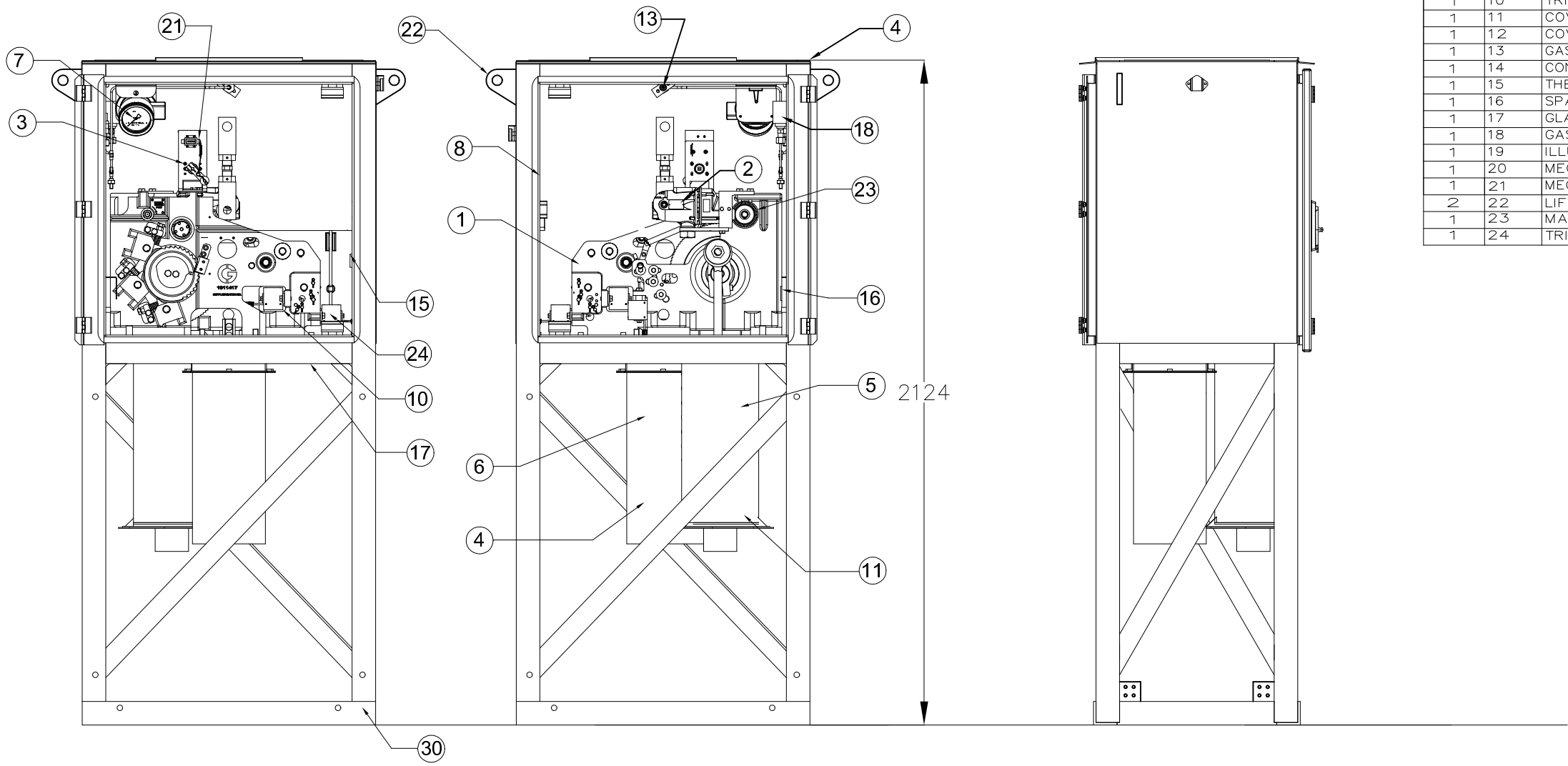
CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG–420CSD–31MM–RP 1 /1 R0

106

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

Drawing approval subject to valid vendor registration



QTY.	ITEM	DESCRIPTION
1	1	MECHANISM ASSEMBLY
1	2	MOTOR
1	3	AUX.SWITCHES ASSEMBLY
1	4	MECHANISM HOUSING ASSEMBLY
1	5	CLOSING SPRING ASSEMBLY
1	6	TRIP.SPRING ASSEMBLY WITH SHOCK ABSORBER
1	7	GAS PRESSURE GAUGE* / GAS PRESSURE SWITCH & GUAGE**
1	8	TERMINAL BLOCKS
1	9	CLOSING COIL ASSEMBLY
1	10	TRIP COIL-1 COIL ASSEMBLY
1	11	COVER FOR CLOSING SPRING
1	12	COVER FOR TRIPPING SPRING
1	13	GAS PRESSURE PORT
1	14	CONTROL PANEL
1	15	THERMOSTAT
1	16	SPACE HEATER
1	17	GLAND PLATE
1	18	GAS PRESSURE SWITCH*
1	19	ILLUMINATION LAMP
1	20	MECH.ON/OFF INDICATOR
1	21	MECH.OPERATING COUNTER
2	22	LIFTING HOOK
1	23	MANUAL SPRING CHARGING PORT
1	24	TRIP COIL-2 COIL ASSEMBLY

FRONT VIEW

REAR VIEW

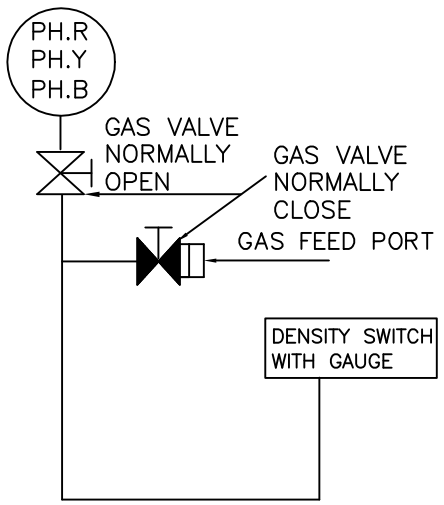
SIDE VIEW

NOTE:
1. TOLERANCE ON OVERALL DIM± 2 %
2. THIS DRAWING IS INDICATIVE .THE POSITION OF COMPONENT MAY CHANGE IN MANUFACTURING STAGE.
3. IN CASE OF GAS DENSITY SWITCH:
* FOR SAGINOMIYA MAKE GAUGE AND SWITCH ARE SEPARATE/
** FOR REGENCY ELECTRIC GAUGE AND SWITCH ARE COMBINE
4) INGRESS OF PROTECTION IP 55
5) GAS PRESSURE GAUGE IS PROVIDED WITH RED, GREEN AND YELLOW COLOUR ZONE
6) MATERIAL : M.S. SHEET 3.0 mm THK

TANDU SUDEEVAN KUMAR
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:27:47 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

GAS SINGLE LINE DIAGRAM



NO	REVISION	NAME	DATE
5			
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2			
1			

	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

TITLE: MECHANISM HOUSING
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA
DRG.NO:CG-420CSD-31MM-MH
1 /1 R0

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO.:CG-420CSD-31MM-MH 1 /1 R0

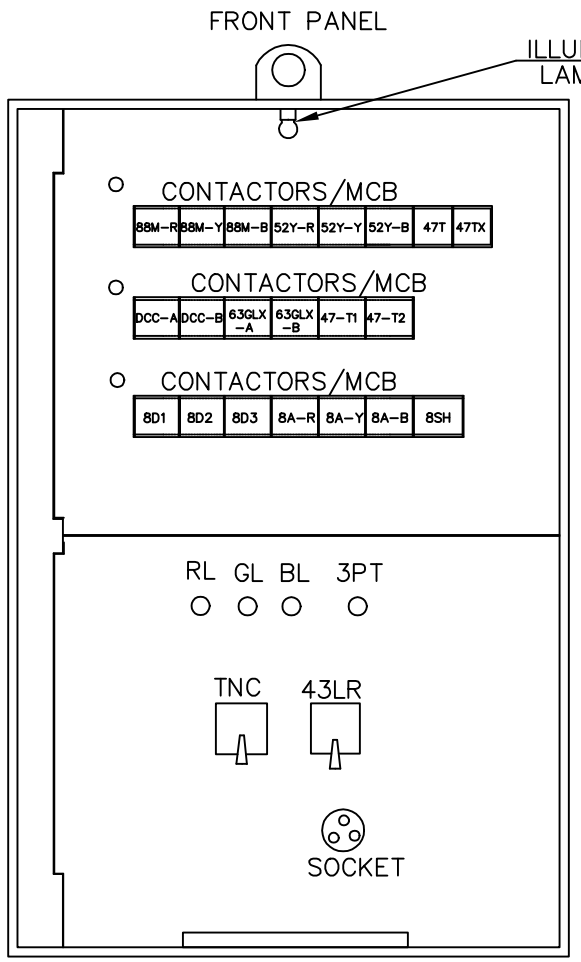
IF IN DOUBT ASK!

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

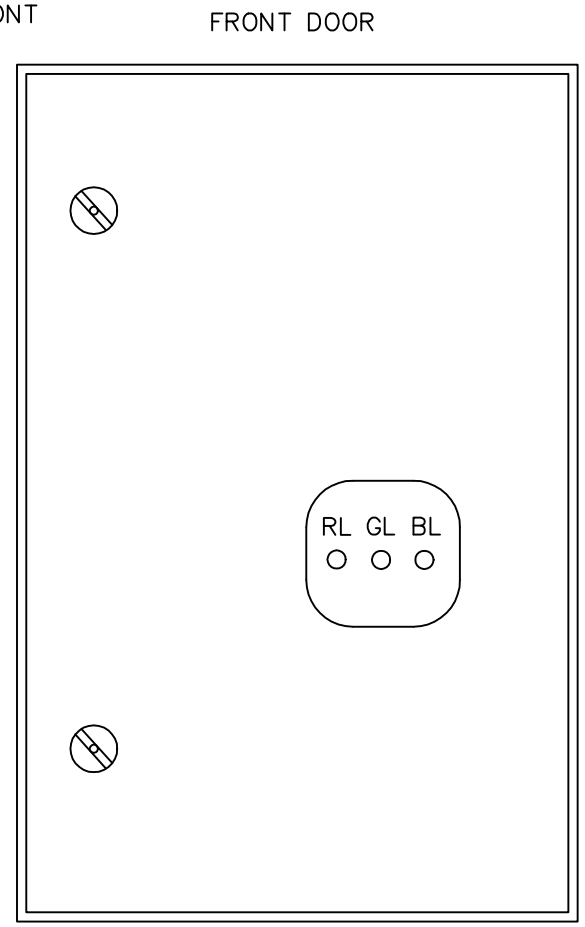
1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor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

NOTES:

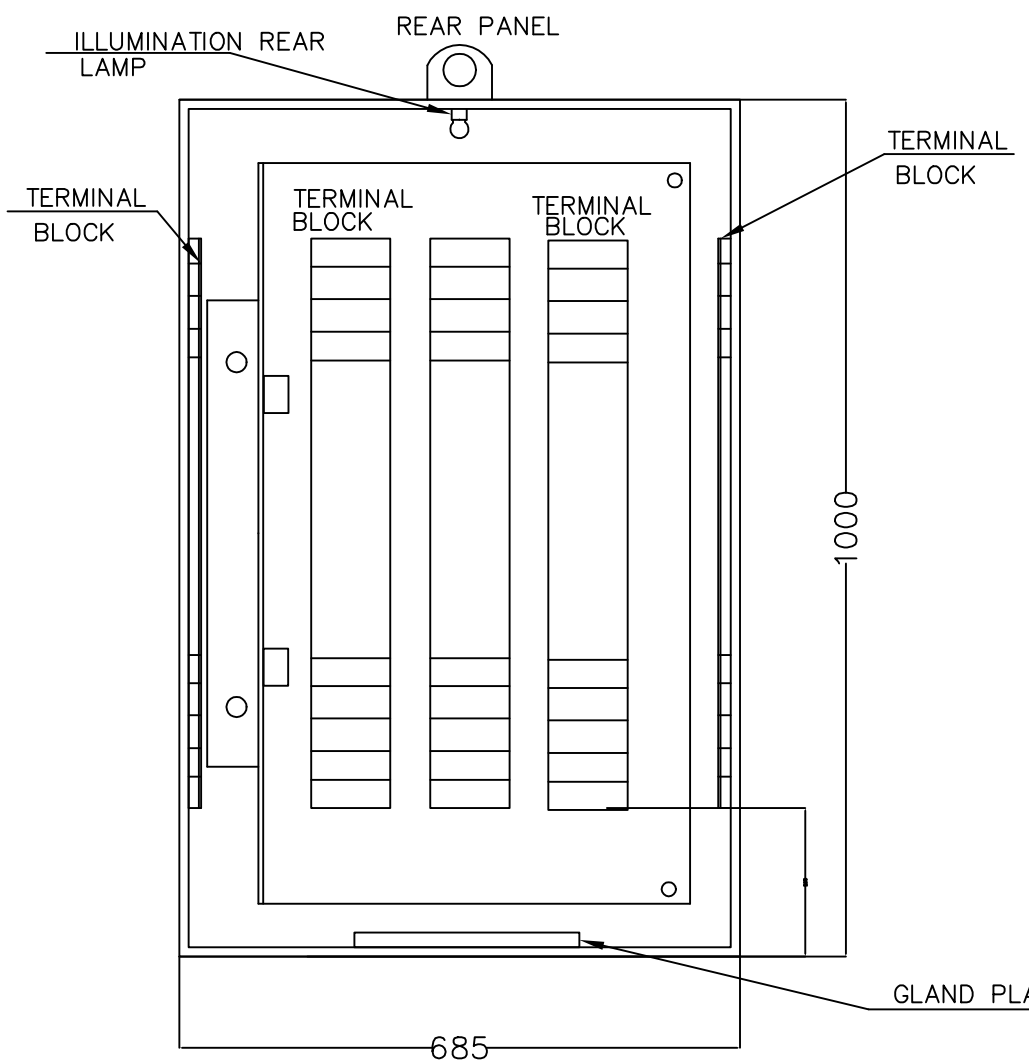
1. DEGREE OF PROTECTION OF IP.55
2. FINISH :– PAINTED/POWDER COATED AS PER 631 OF IS:5.
3. TOLERANCE ON OVERALL DIM ± 2 %
4. THIS DRAWING IS INDICATIVE .THE POSITION OF COMPONENT MAY CHANGE IN MANUFACTURING STAGE.



DOOR OPEN FRONT VIEW



FRONT DOOR CLOSED VIEW



DOOR OPEN REAR VIEW

Drawing approval subject to valid vendor registration

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:28:00 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

NO	REVISION	NAME	DATE
5			
4			
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	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

TITLE: MARSHALLING BOX DETAILS
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400–SFM–60AA

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG–420CSD–31MM–MB 1 /1 R0

IF IN DOUBT ASK!

107

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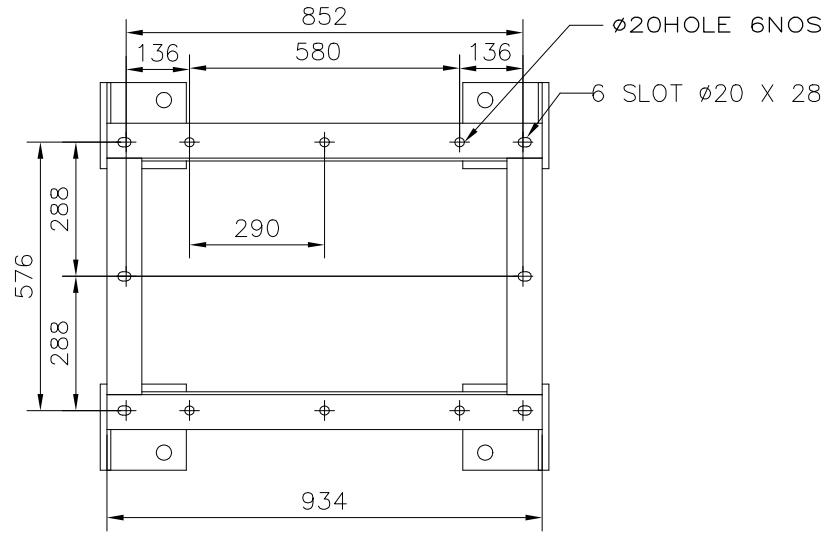
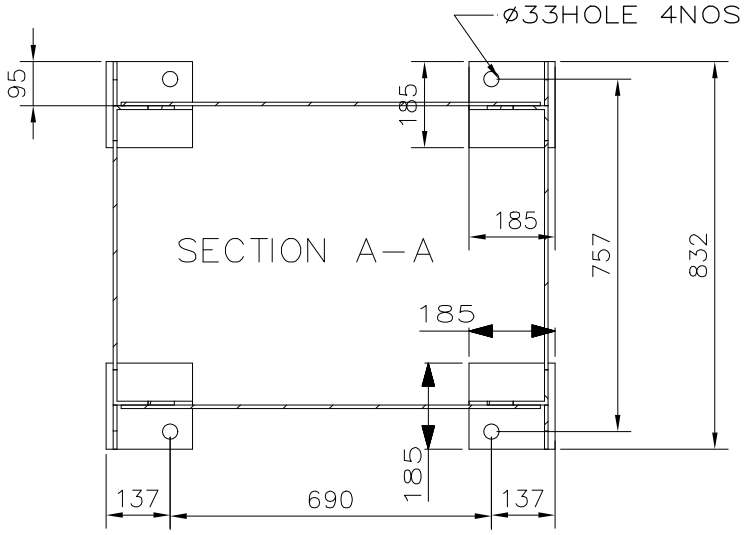
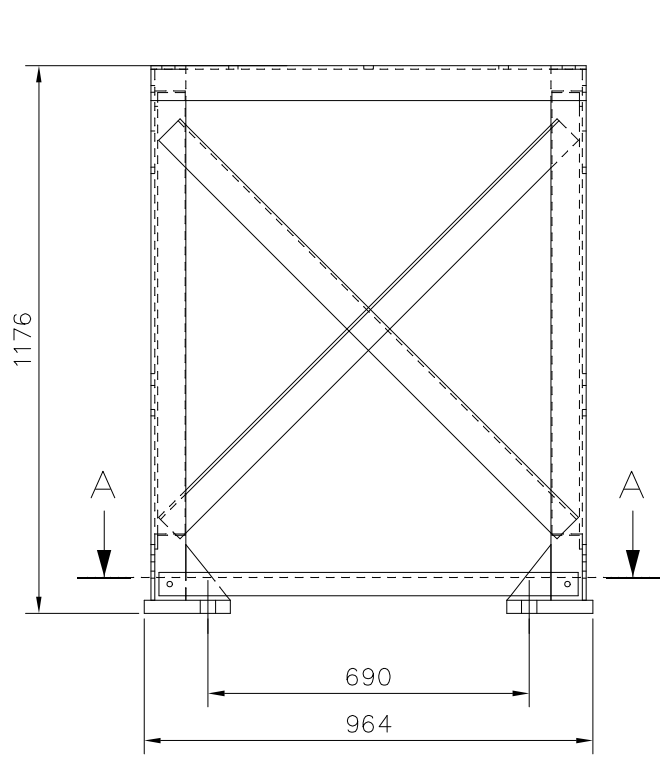
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST
REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY

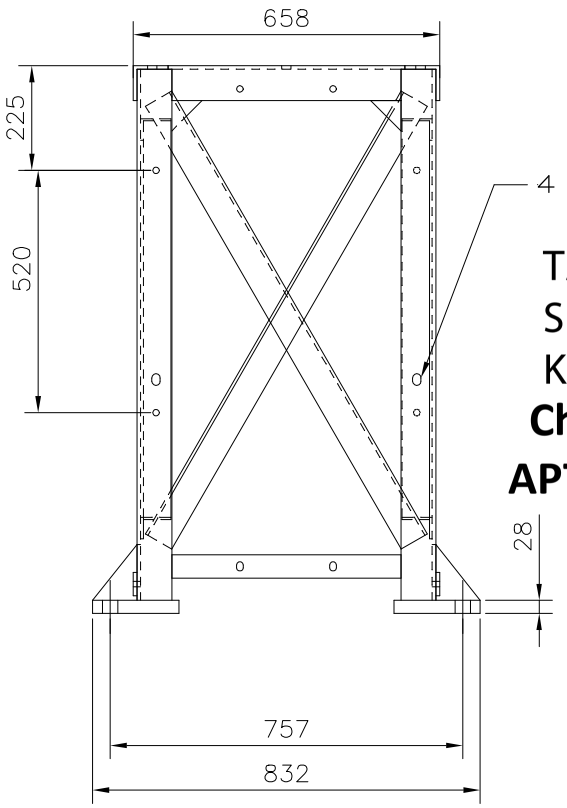
SR NO	DESCRIPTION	SIZE	QTY
1	TOP FRONT AND REAR ANGLE	8THKX75X75	2
2	TOP SIDE ANGLE	8THKX75X75	2
3	VERTICAL LEG	8THKX75X75	1
4	VERTICAL LEG	8THKX75X75	1
5	VERTICAL LEG	8THKX75X75	1
6	BASE PLATE	28THKX185X185	4
7	BOTTOM GUSSET	8THKX95X120	8
8	FRONT REAR CROSS BRACING	6THKX65X65	2
9	SIDE CROSS BRACING	6THKX65X65	2
10	TOP GUSSET	8THKX65X65	2
11	CABLE TRAY SUPPORT	8THKX50	2
12	VERTICAL LEG	8THKX75X75	1
13	SUPPORT PLATE	8THKX50	2



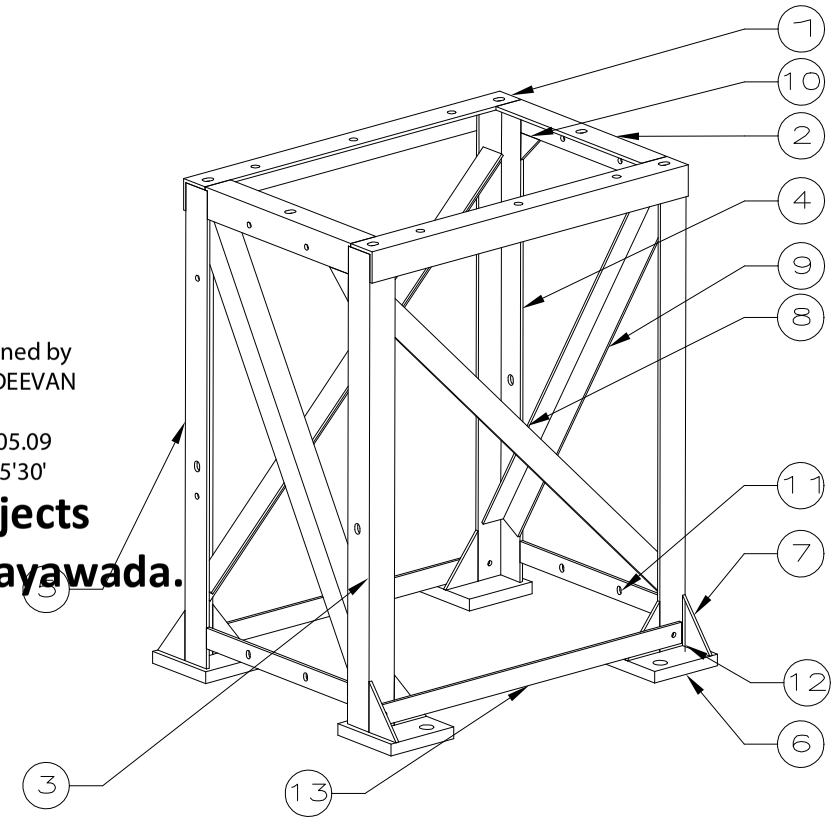




FRONT



TANDU SUDEEVAN KUMAR
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:28:15 +05'30'
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.



1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers 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 manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

Drawing approval subject to valid vendor registration

DIMENSIONS IN BRACKETS ARE FOR REFERANCE ONLY

UNSPECIFIED TOLERANCE MACHINE CUT		
NOMINAL SIZE	MEDIUM	COARSE
1 TO 4	±0.1	±0.3
OVER 4 TO 16	±0.2	±0.5
OVER 16 TO 63	±0.3	±0.7
OVER 63 TO 250	±0.5	±1.2
OVER 250 TO 1000	±0.8	±2.0
OVER 1000 TO 2000	±1.2	±3.0
OVER 2000 TO 4000	±1.8	±4.5

NOTE : 1) MINIMUM WEIGHT OF ZINC COATING 900 gm/sq.m OR
MINIMUM THICKNESS OF COATING 127 MICRON FOR MEMBERS THICKER THAN 6MM
FOR MEMBERS LOWER THAN 6MM THK MINIMIUM THICKNESS OF COATING IS 86 MICRON MIN
2) ALL DIMENSIONS ARE IN mm
3) DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY

NO	REVISION	NAME	DATE
5			
4			
3			
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1			

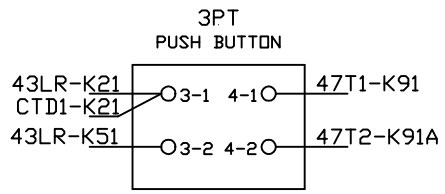
	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

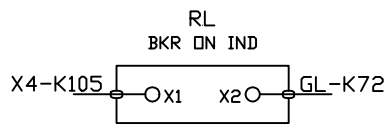
TITLE: SUPPORT STRUCTURE DETAILS
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400–SFM–60AA
DRG.NO:CG–420CSD–31MM–SS 1 /1 R0

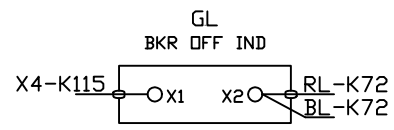
THIRD ANGLE PROJECTION

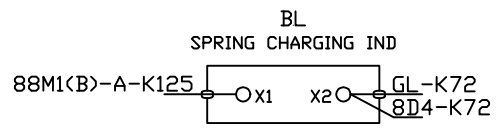
CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

COMPONENTS ON HINGED MOUNTING PLATE LOWER SIDE





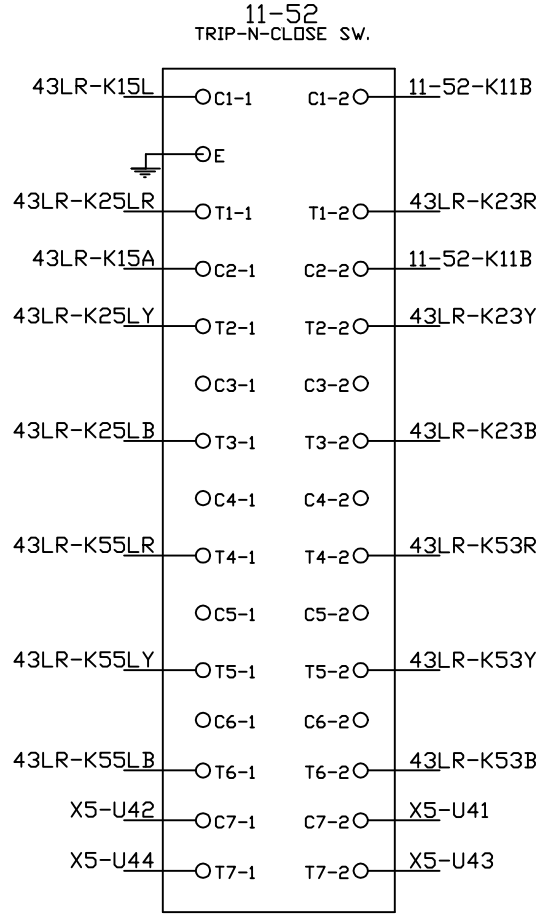


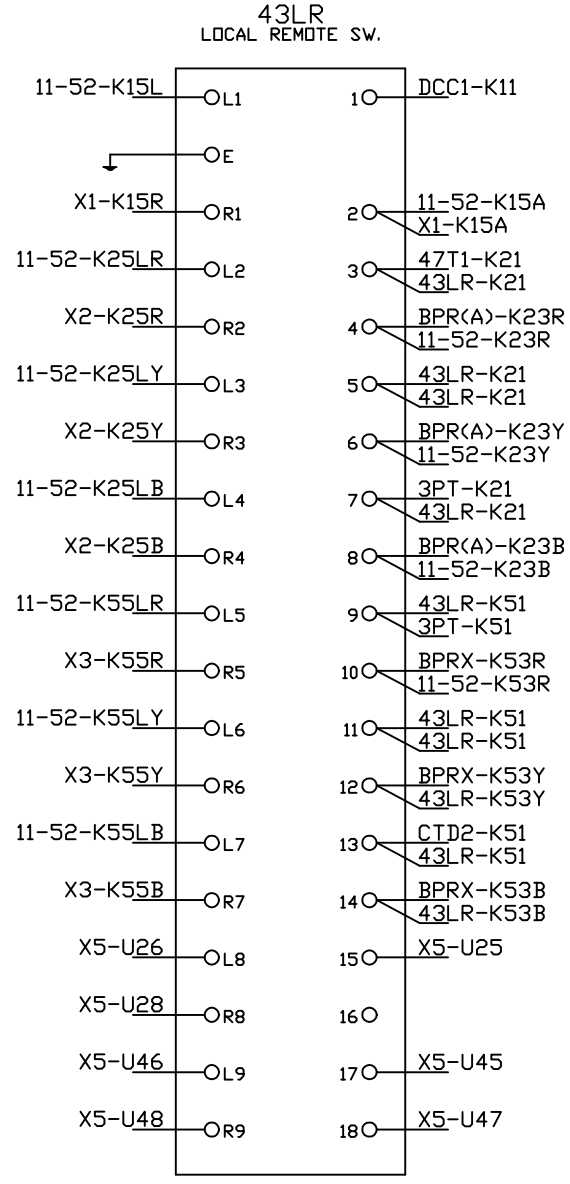


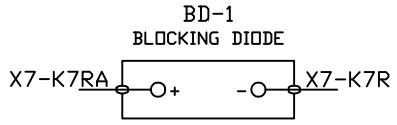
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY

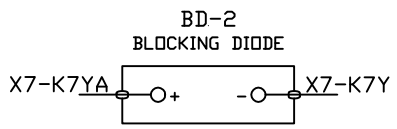
1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor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

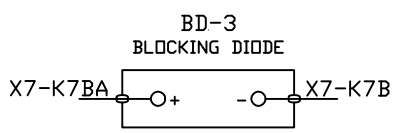
Drawing approval subject to valid vendor registration

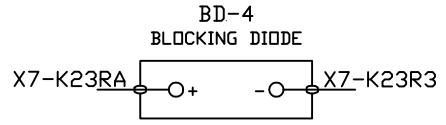


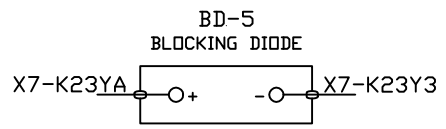


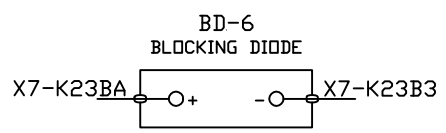


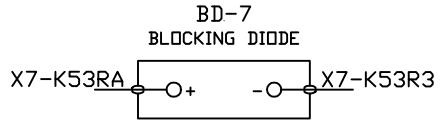


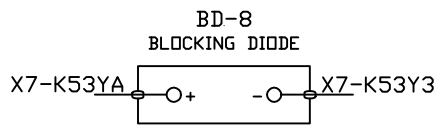


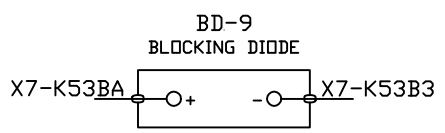


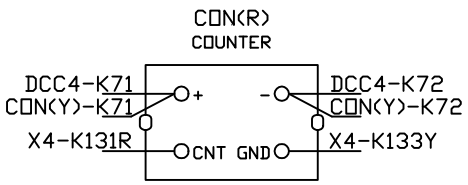


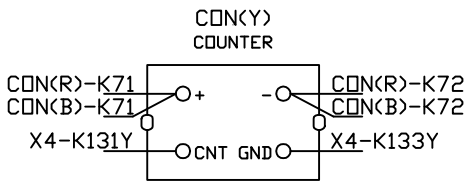


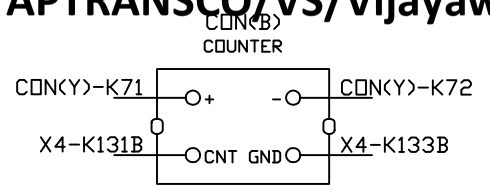


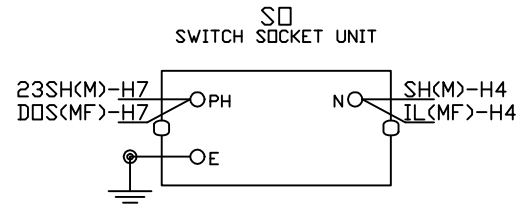












TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:28:30 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

TOTAL CONNECTIONS
M.BOX+R+Y+B-1676

NO	REVISION	NAME	DATE
5			
4			
3			
2			
1			

NAME	CUSTOMER: APTRANSCO
DRN	RSB
CHD	NSR
APPD	GNP
SCALE: N.T.S.	
DATE: 23.03.24	ALL DIMENSIONS ARE IN mm

TITLE: WIRING DIAGRAM FOR M BOX MTG PLATE
STD APPROVAL 31MM/KV CREEPAGE WITH CSD
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA
DRG.NO:CG-420CSD-31MM-WIR

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

1 /6 R0

110

IF IN DOUBT ASK!

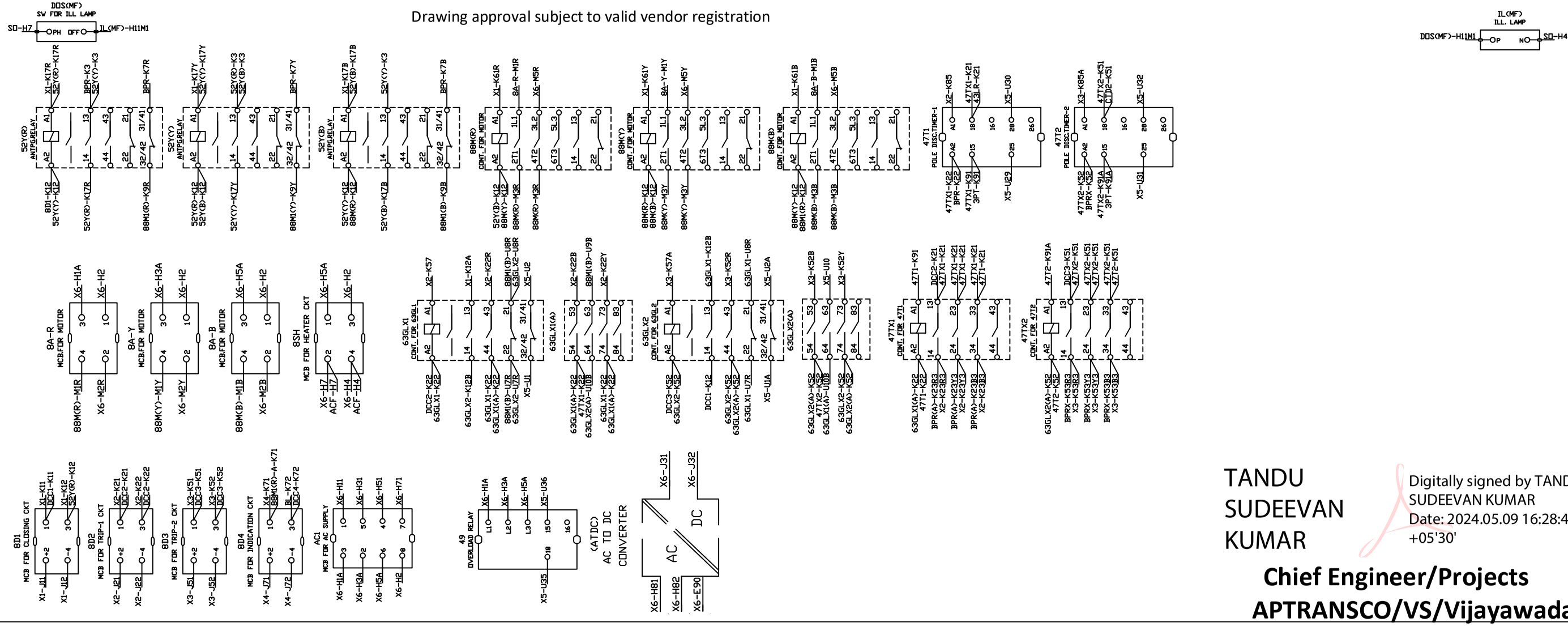
DRG.NO.:CG-420CSD-31MM-WIR

2 /6

R0

COMP. ON HINGED MOUNTING PALTE UPPER SIDE

Drawing approval subject to valid vendor registration

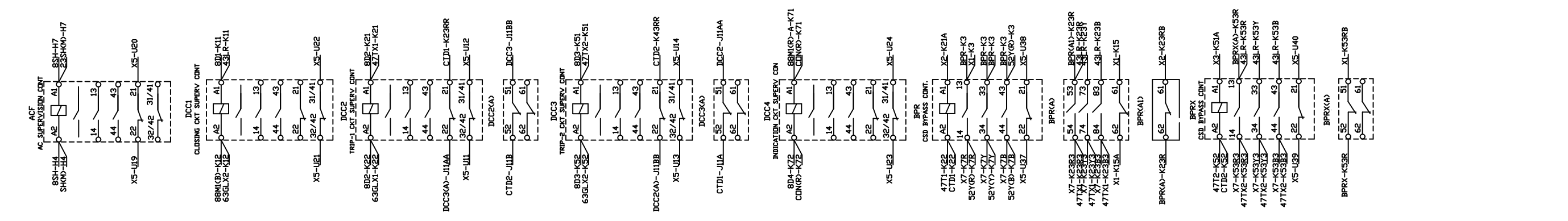


TANDU SUDEEVAN KUMAR

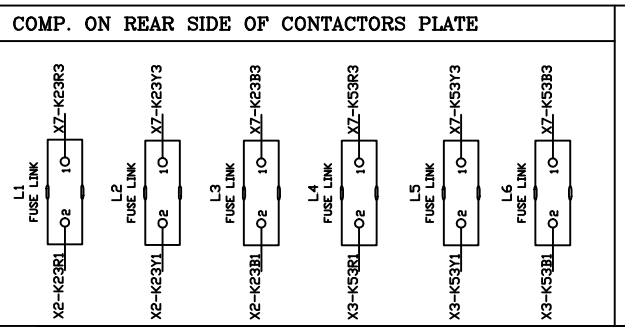
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:28:45 +05'30'

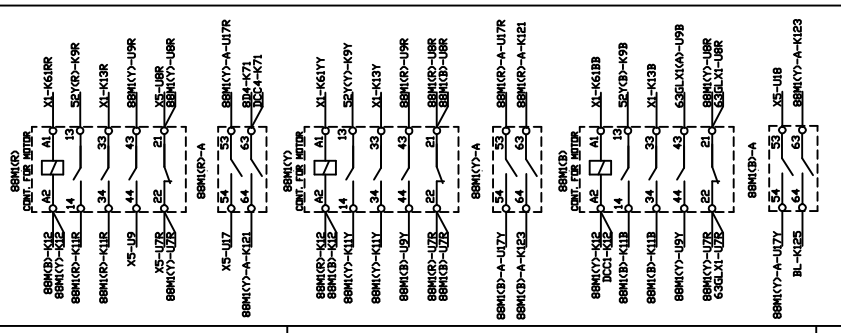
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

COMP. ON REAR SIDE OF CONTACTORS PLATE

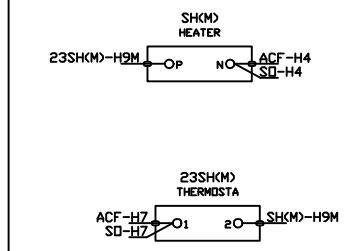


COMP. ON REAR SIDE OF CONTACTORS PLATE





COMP. ON R.H SIDE OF M.BOX



NO	REVISION	NAME	DATE
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NAME	CUSTOMER: APTRANSCO	TITLE: WIRING DIAGRAM FOR M BOX CONTACTOR PLATE
DRN RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD	FOR: 420KV, 63 KA, SP SPR
CHD NSR		GCB TYPE: 400-SFM-60AA
APPD GNP		
SCALE: N.T.S.		
DATE: 23.03.24	ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-31MM-WIR 2 /6 R0

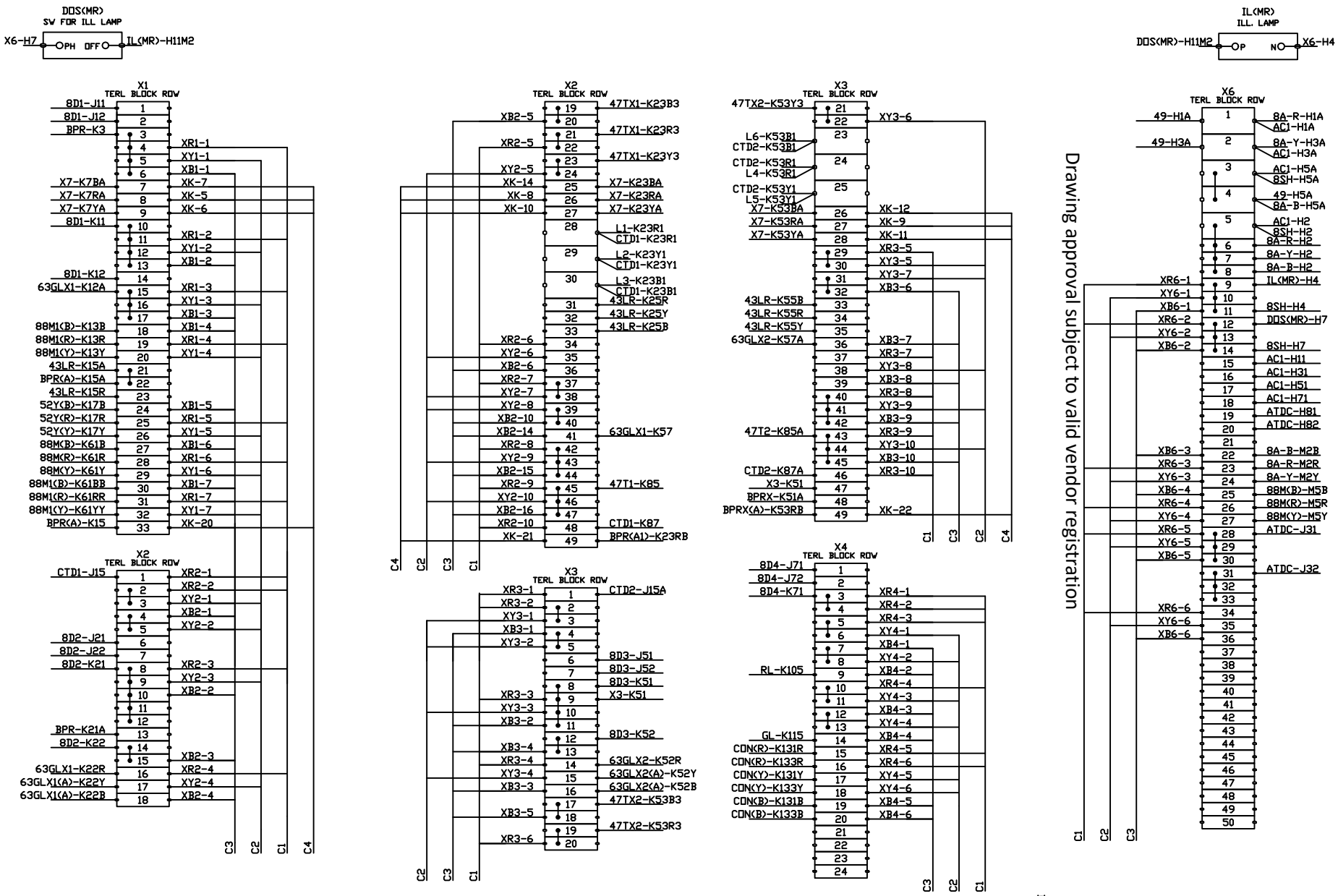
THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

IF IN DOUBT ASK!

DRG.NO.:CG-420CSD-31MM-WIR | 3 /6 | R0

COMP. ON REAR SIDE OF CONTROL PANEL



COMP. ON FRONT SIDE OF CONTROL PANEL

Drawing approval subject to valid vendor registration

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:28:59 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

NO	REVISION	NAME	DATE
1			
2			
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DRN	RSB
CHD	NSR
APPD	GNP
SCALE: N.T.S.	
DATE:23.03.24	

CUSTOMER: APTRANSCO

STD APPROVAL 31MM/KV CREEPAGE WITH CSD

TITLE: WIRING DIAGRAM FOR M BOX TERL BLOCK PLATE

FOR: 420KV, 63 KA, SP SPR

GCB TYPE: 400-SFM-60AA

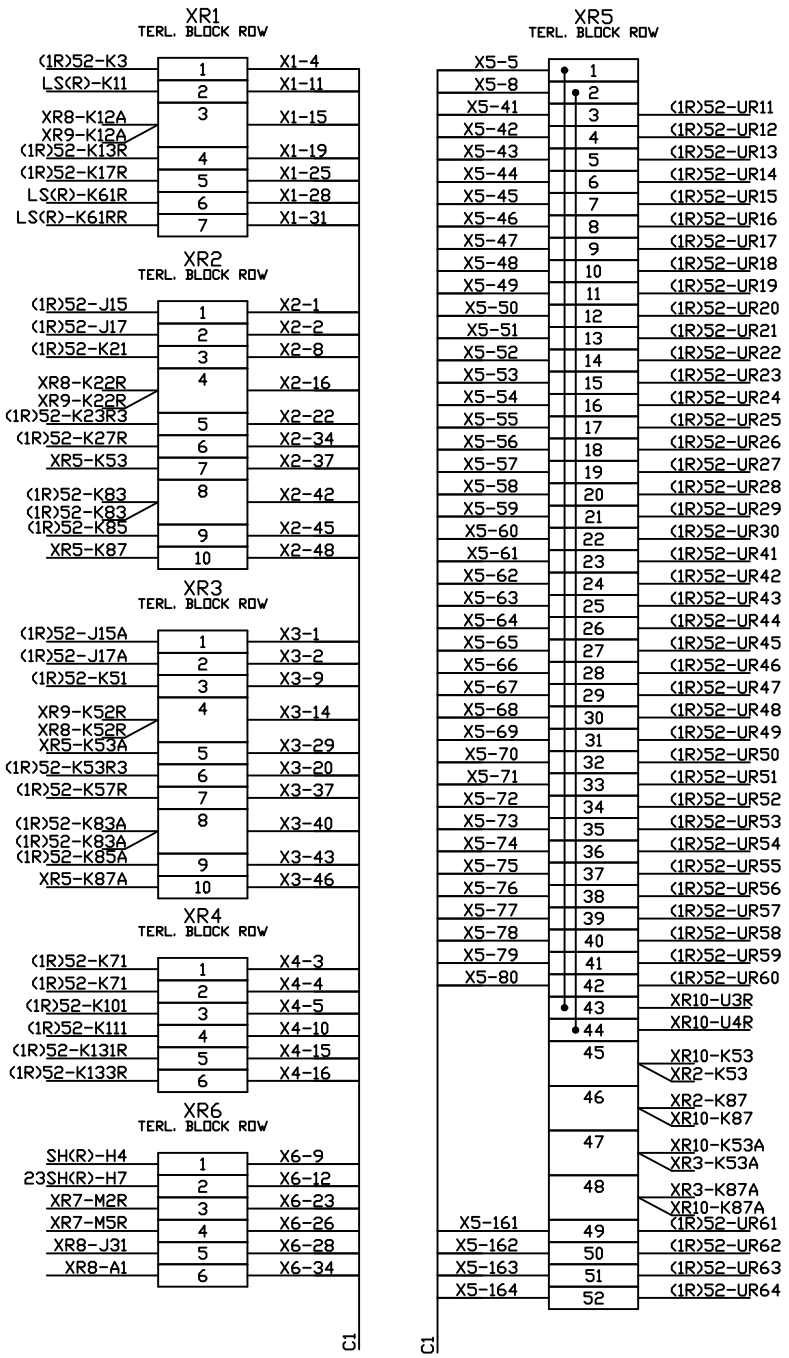
ALL DIMENSIONS ARE IN mm

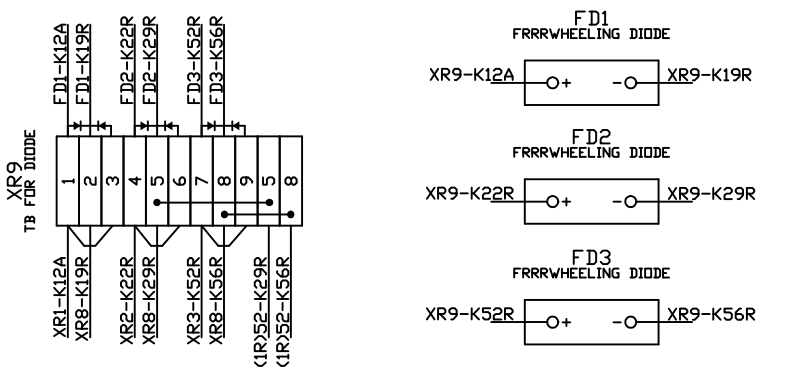
THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG-420CSD-31MM-WIR | 3 /6 | R0

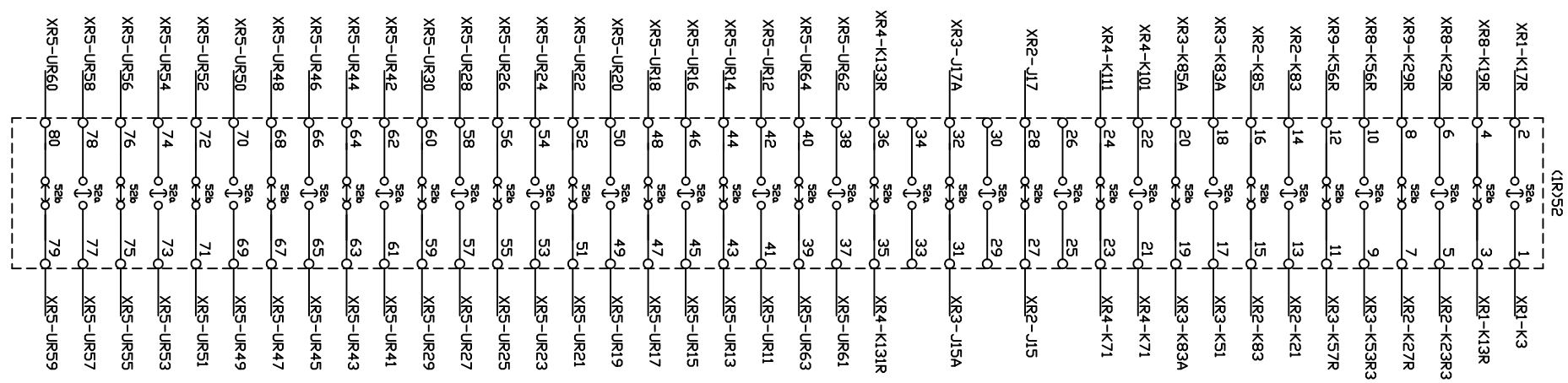
COMPONENTS MECH. HOUSING REAR OF HSG





COMPONENTS ON AUX SW MTG PLATE

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

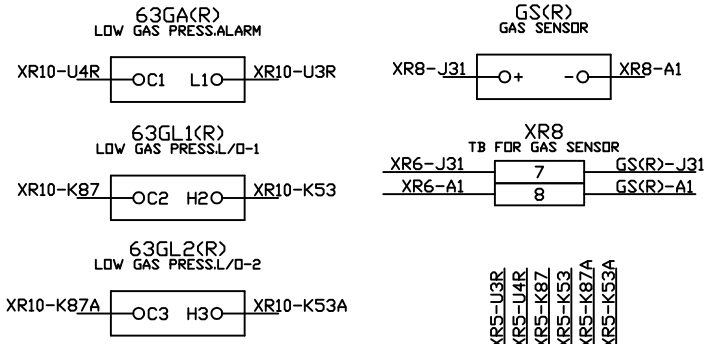


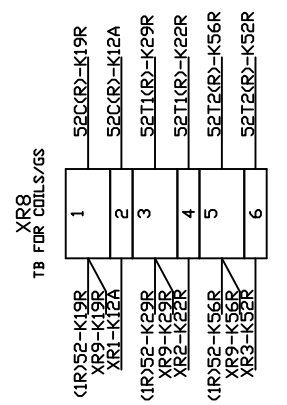
Drawing approval subject to valid vendor registration

TANDU SUDEEVAN KUMAR
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:29:14 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

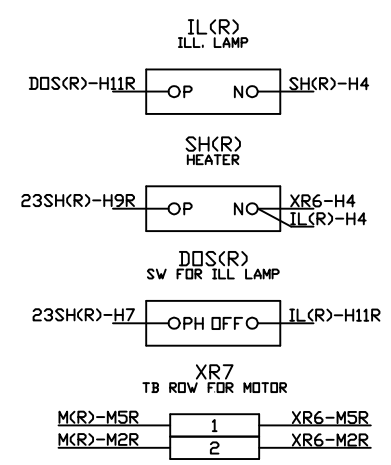
COMP. ON PR. SW. MTG. PLATE



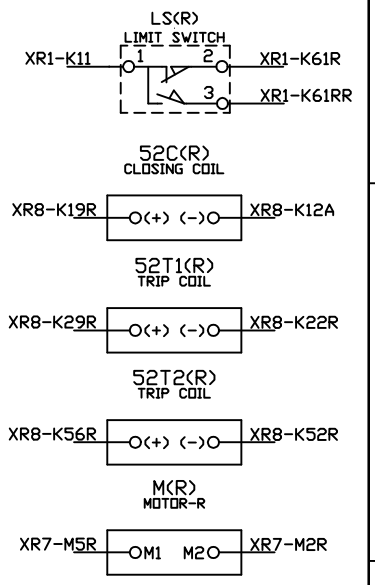


COMP. ON HSG.

COMPONENTS ON MECH HSG



COMP. ON MECH FRAME



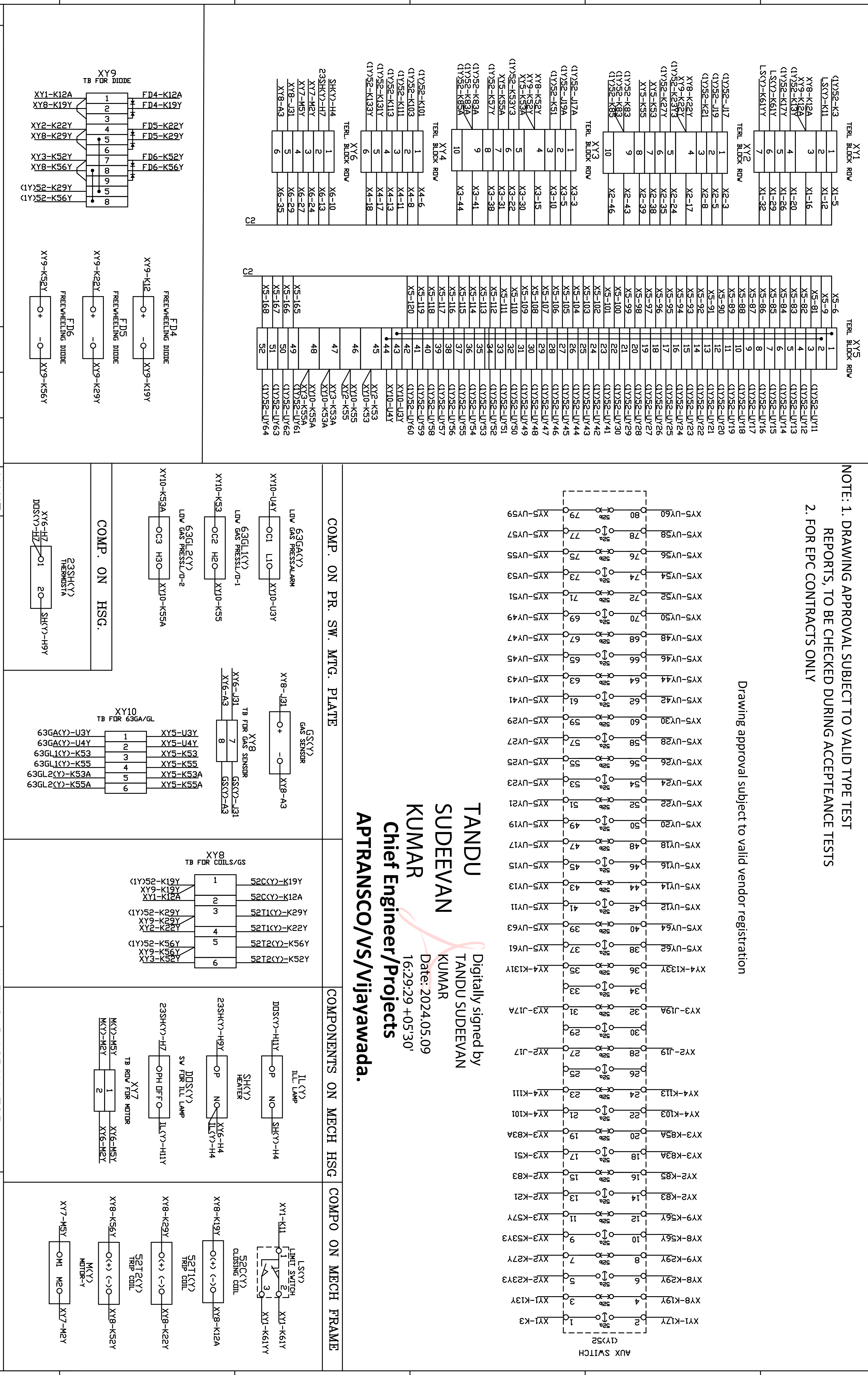
NO	REVISION	NAME	DATE				
5					NAME	CUSTOMER: APTRANSCO	TITLE: WIRING DIAGRAM FOR MECH HSG PHASE-R
4				DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD	
3				CHD	NSR		FOR: 420KV, 63 KA, SP SPR
2				APPD	GNP		GCB TYPE: 400-SFM-60AA
1				SCALE: N.T.S.			
				DATE: 23.03.24		ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-31MM-WIR 4 /6 R0

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

IF IN DOUBT ASK!

DRG.NO.:CG-420CSD-31MM-WIR | 5 /6 | R0



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

Drawing approval subject to valid vendor registration

TANDU SUDEEVAN KUMAR
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:29:29 +05'30'

NO	REVISION	NAME	DATE
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	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE:23.03.24		ALL DIMENSIONS ARE IN mm

TITLE:WIRING DIAGRAM FOR MECH HSG PHASE-Y
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA
DRG.NO:CG-420CSD-31MM-WIR | 5 /6 | R0

THIRD ANGLE PROJECTION

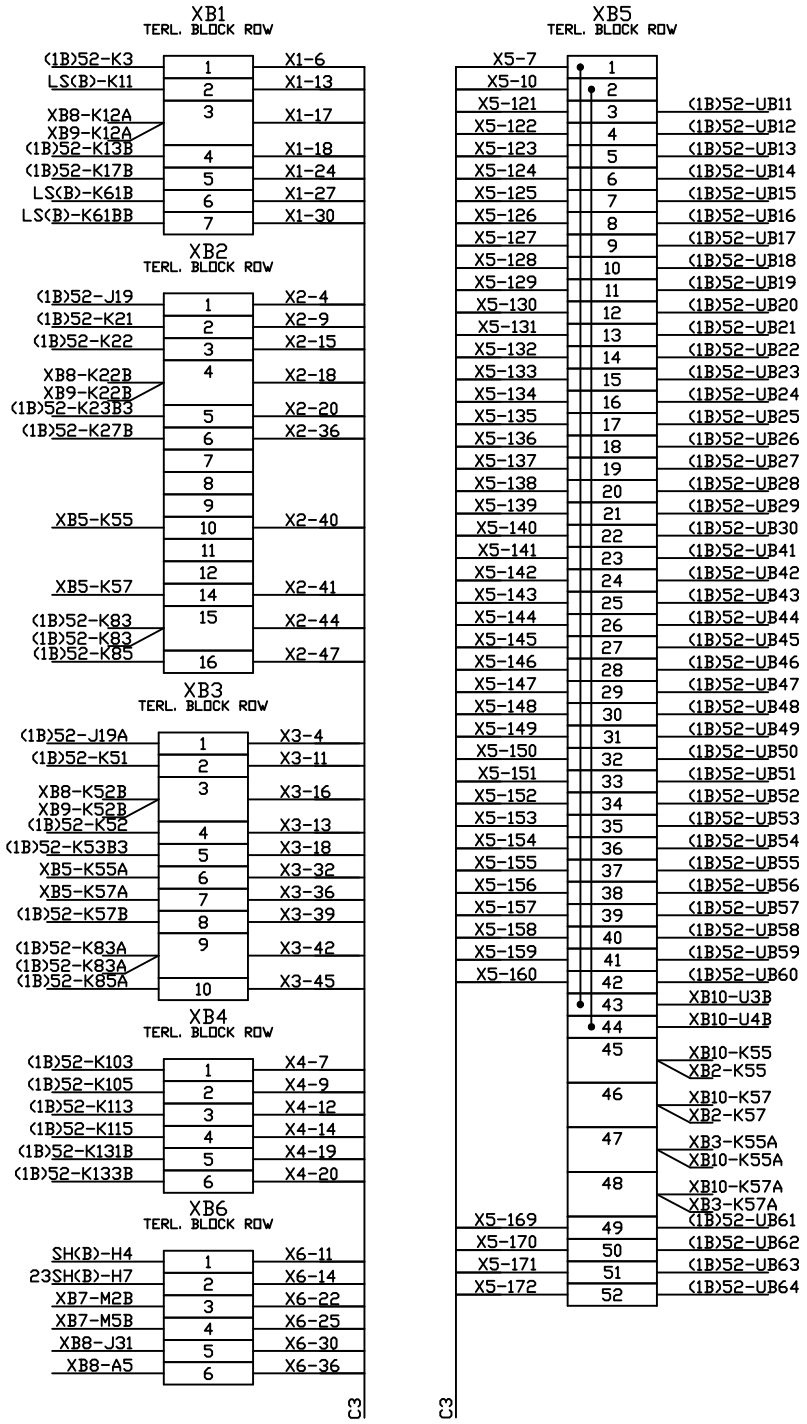
CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

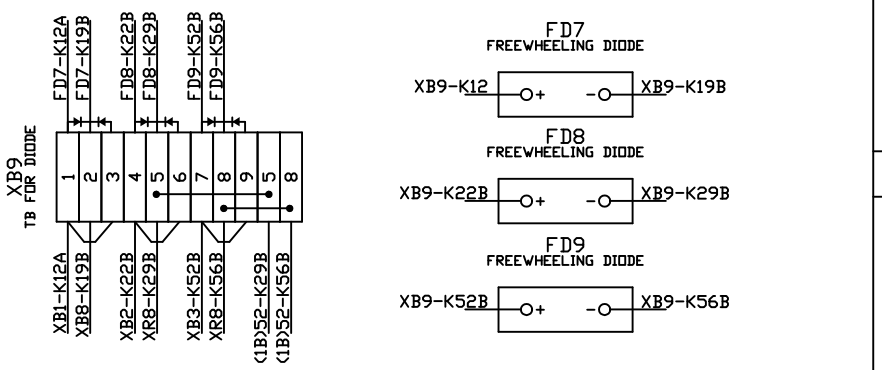
114

DRG.NO.:CG-420CSD-31MM-WIR 6 /6 R0

IF IN DOUBT ASK!

COMPONENTS MECH. HOUSING REAR OF HSG



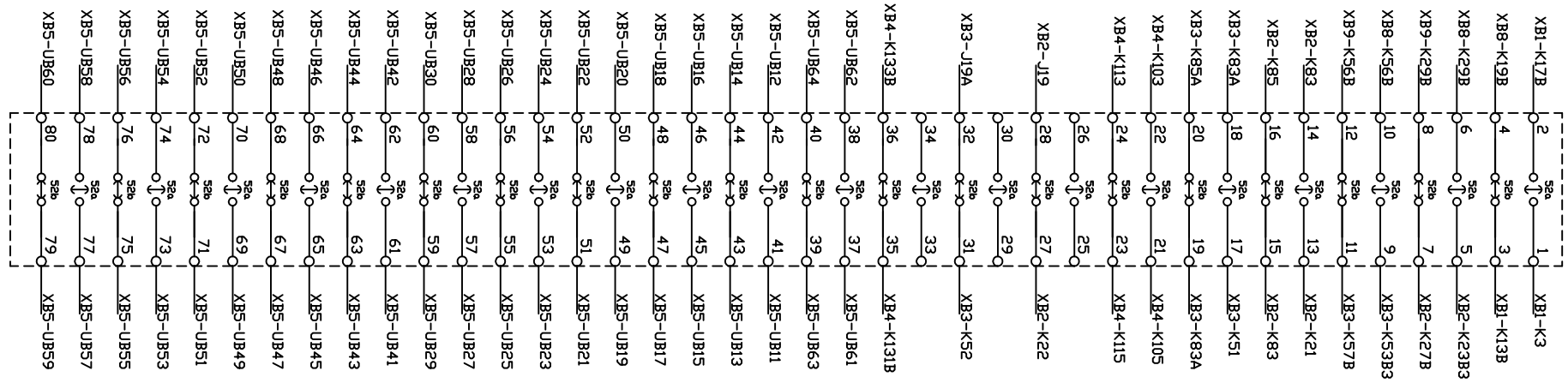


COMPONENTS ON AUX SW MTG PLATE

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 CT/PT/CVT/Isolators/IV/LA/Breakers 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 manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

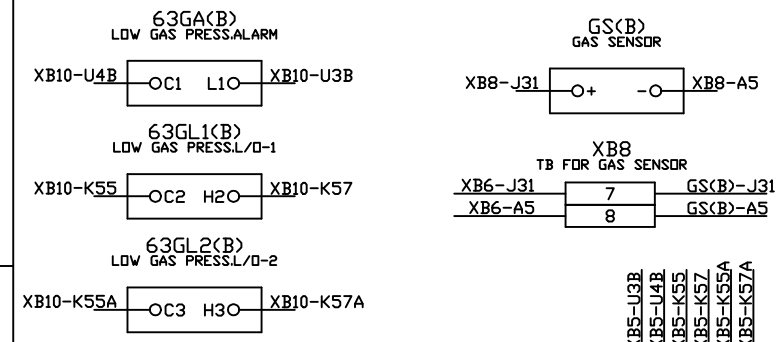


TANDU SUDEEVAN KUMAR

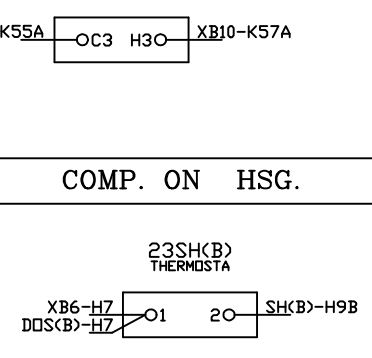
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:29:49 +05'30'

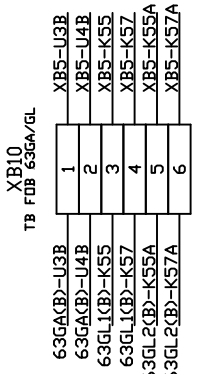
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

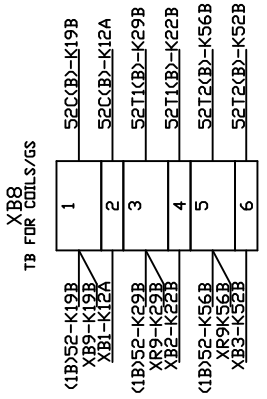
COMP. ON PR. SW. MTG. PLATE



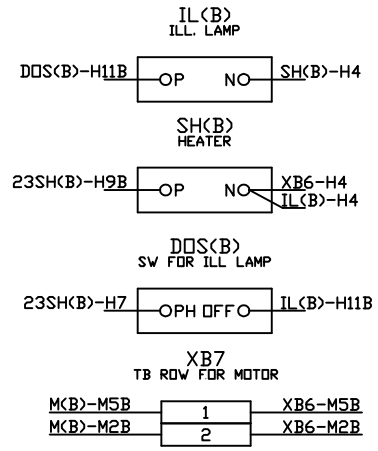
COMP. ON HSG.



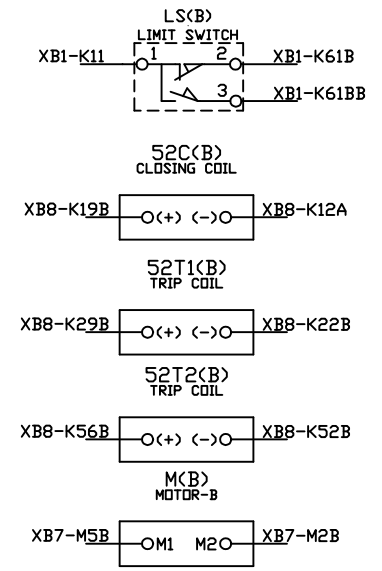




COMPONENTS ON MECH HSG



COMPO ON MECH FRAME



NO	REVISION	NAME	DATE
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	NAME	CUSTOMER: APTRANSCO
DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
CHD	NSR	
APPD	GNP	
SCALE: N.T.S.		
DATE: 23.03.24		ALL DIMENSIONS ARE IN mm

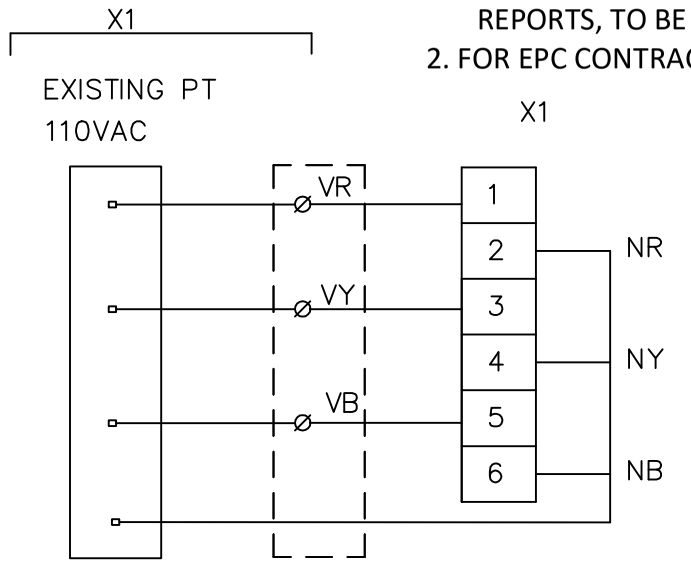
TITLE: WIRING DIAGRAM FOR MECH HSG PHASE-B
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400-SFM-60AA
DRG.NO:CG-420CSD-31MM-WIR 6 /6 R0

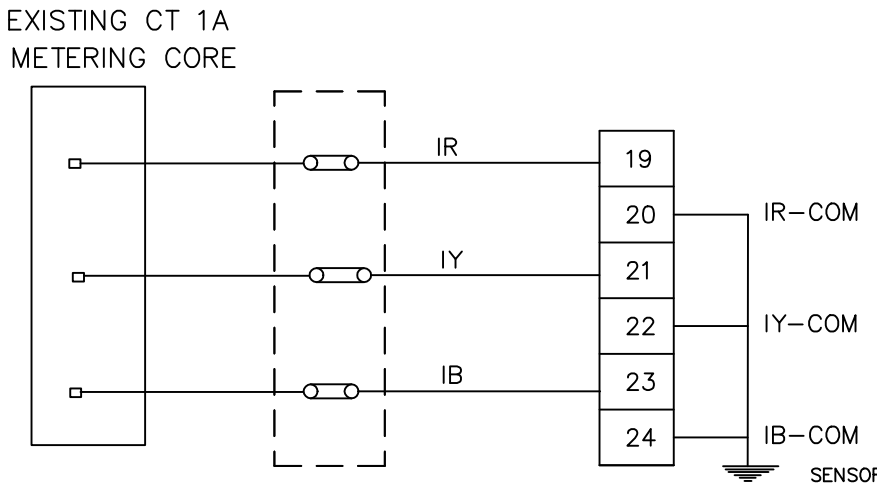
THIRD ANGLE PROJECTION

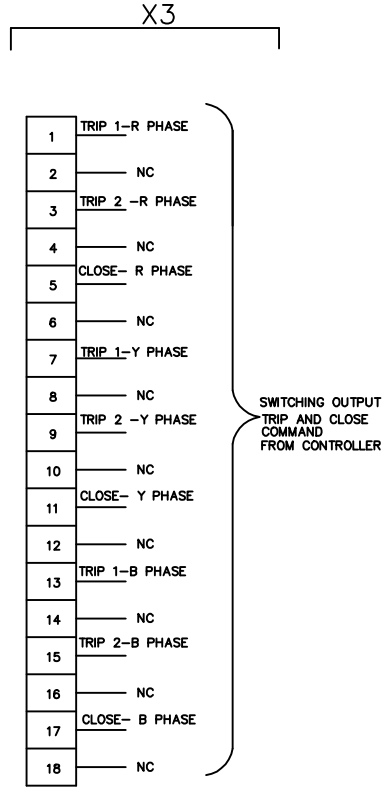
CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

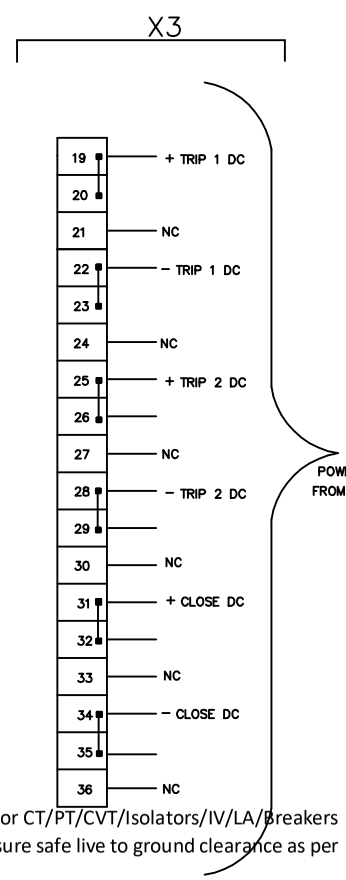
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY

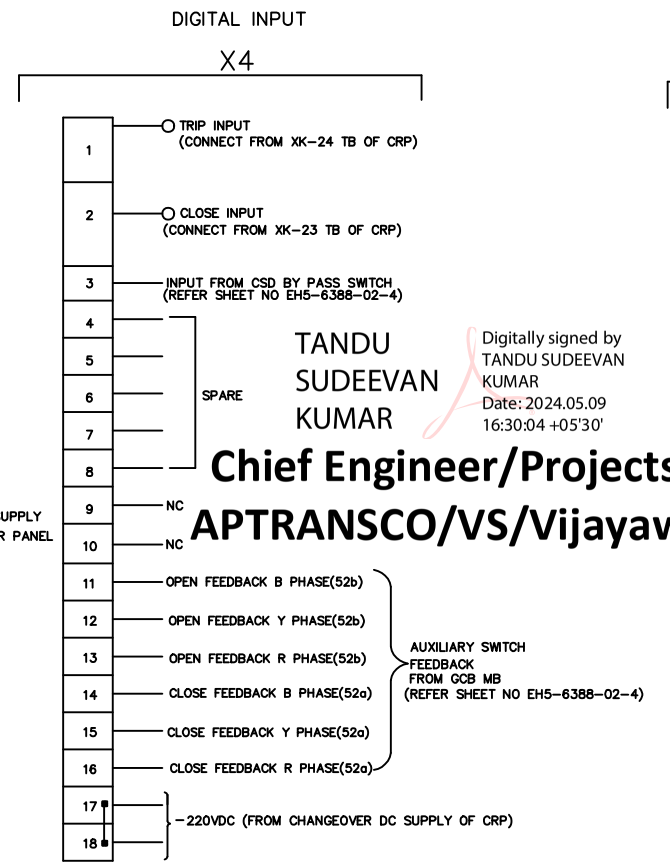
Drawing approval subject to valid vendor registration

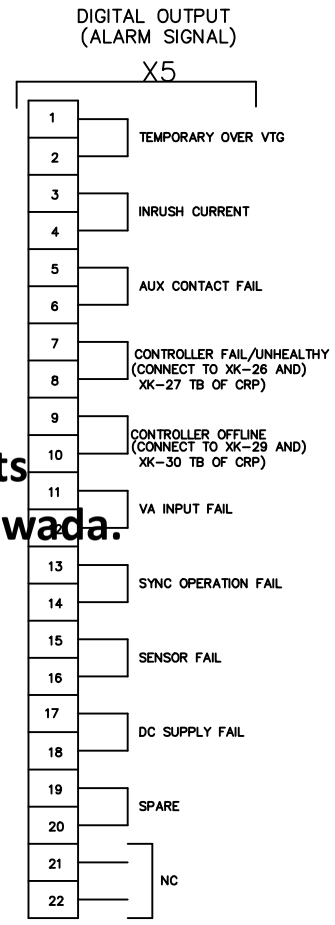










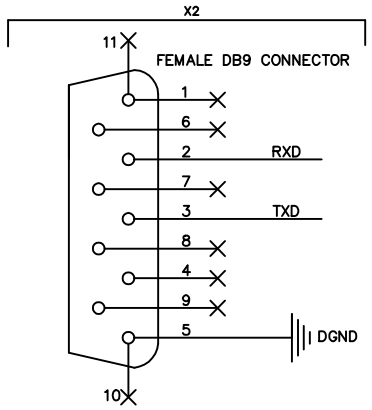


TANDU SUDEEVAN KUMAR
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:30:04 +05'30'

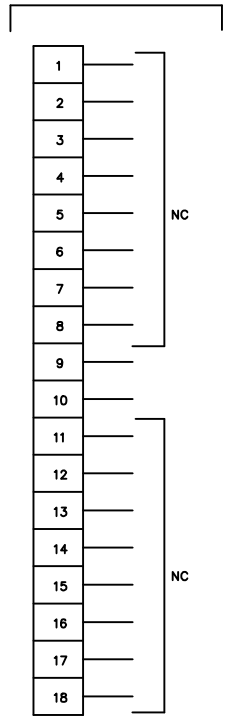
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

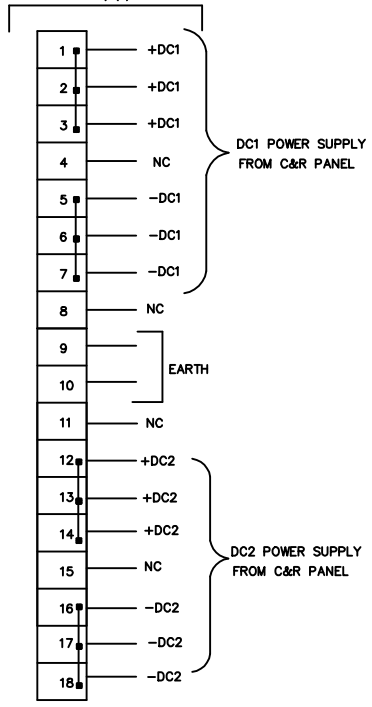
1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor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

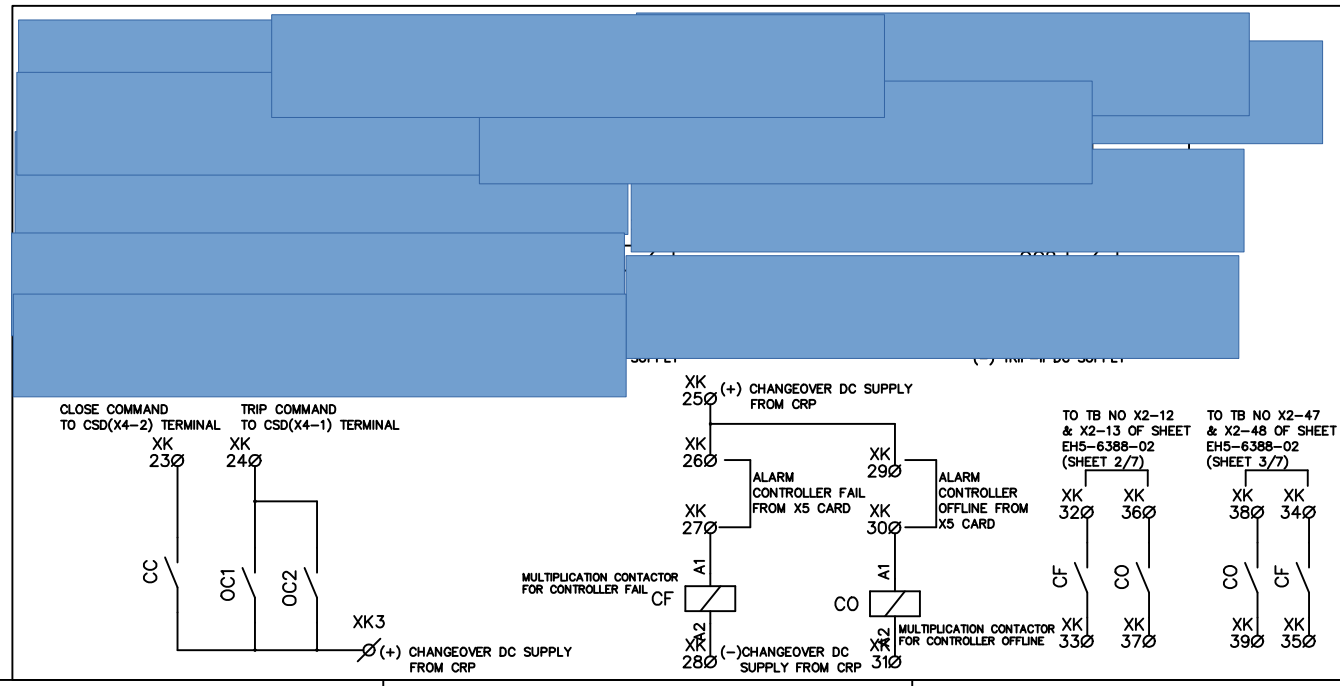
NOTE :
1)ACCURACY OF THE OPERATING TIME ESTIMATION FOR CONTROLLER SHALL BE BETTER THAN +/–0.5ms
2)CSD SHALL HAVE TIME SETTING RESOLUTION OF 0.1ms OR BETTER
3)PROVISION FOR BYPASSING CSD SHALL BE PROVIDED THROUGH BCU AND SCADA BOTH
4)INCASE OF NON OPERATION OF CSD AFTER RECEIVING CLOSE/TRIP COMMAND , AFTER PREDETERMINE TIME DELAY CSD WILL GET BYPASS , NEXT TRIP AND CLOSE COMMAND GET EXTENDED TO TRIP AND CLOSE COIL THROUGH SCHEMATIC BY PASS LOGIC
5)CSD WILL SWITCH TO OFFLINE MODE IN CASE OF DC SUPPLY–I FAILURE OR DC SUPPLY–II FAILURE
6)CSD WILL SWITCH TO UNHEALTHY MODE IN CASE CARD COMMUNICATION FAILURE WITH CPC CARD



* NC – NO CONNECTION







NO	REVISION	NAME	DATE			
5					NAME	CUSTOMER: APTRANSCO
4				DRN	RSB	STD APPROVAL 31MM/KV CREEPAGE WITH CSD
3				CHD	NSR	
2				APPD	GNP	
1				SCALE: N.T.S.		
				DATE: 13.03.24		ALL DIMENSIONS ARE IN mm

TITLE: CSD GA AND TERMINAL DIAGRAM
FOR: 420KV, 63 KA, SP SPR
GCB TYPE: 400–SFM–60AA

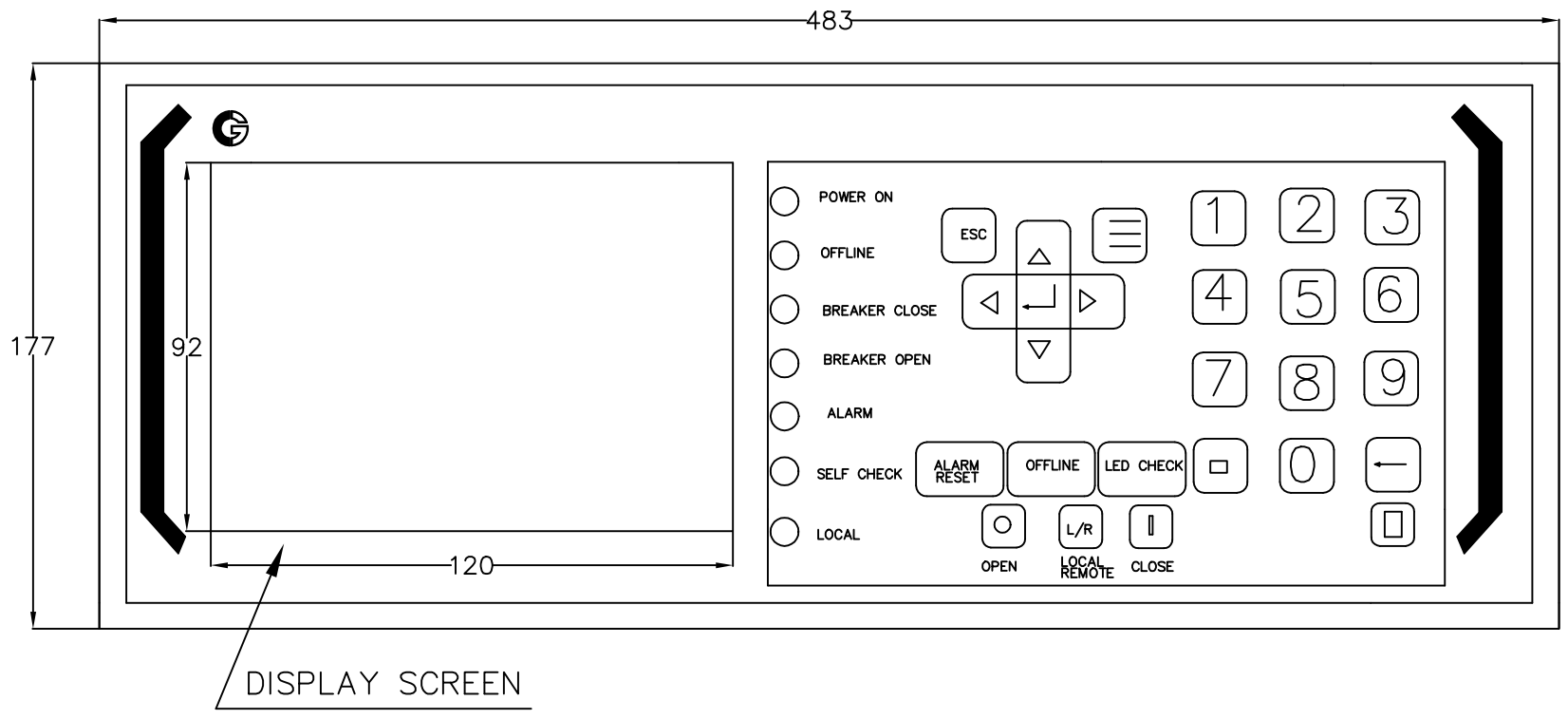
THIRD ANGLE PROJECTION

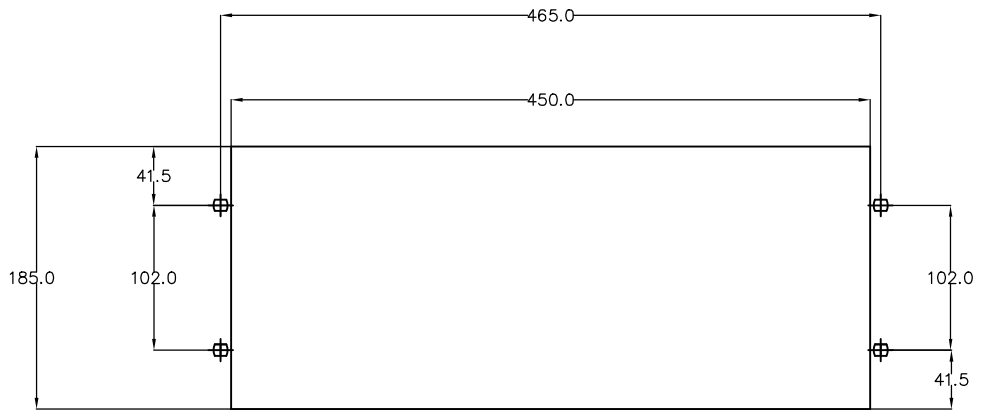
CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO:CG–420CSD–31MM–CSD 1 /2 R0

Drawing approval subject to valid vendor registration

SYNC INTELLECT FRONT VIEW



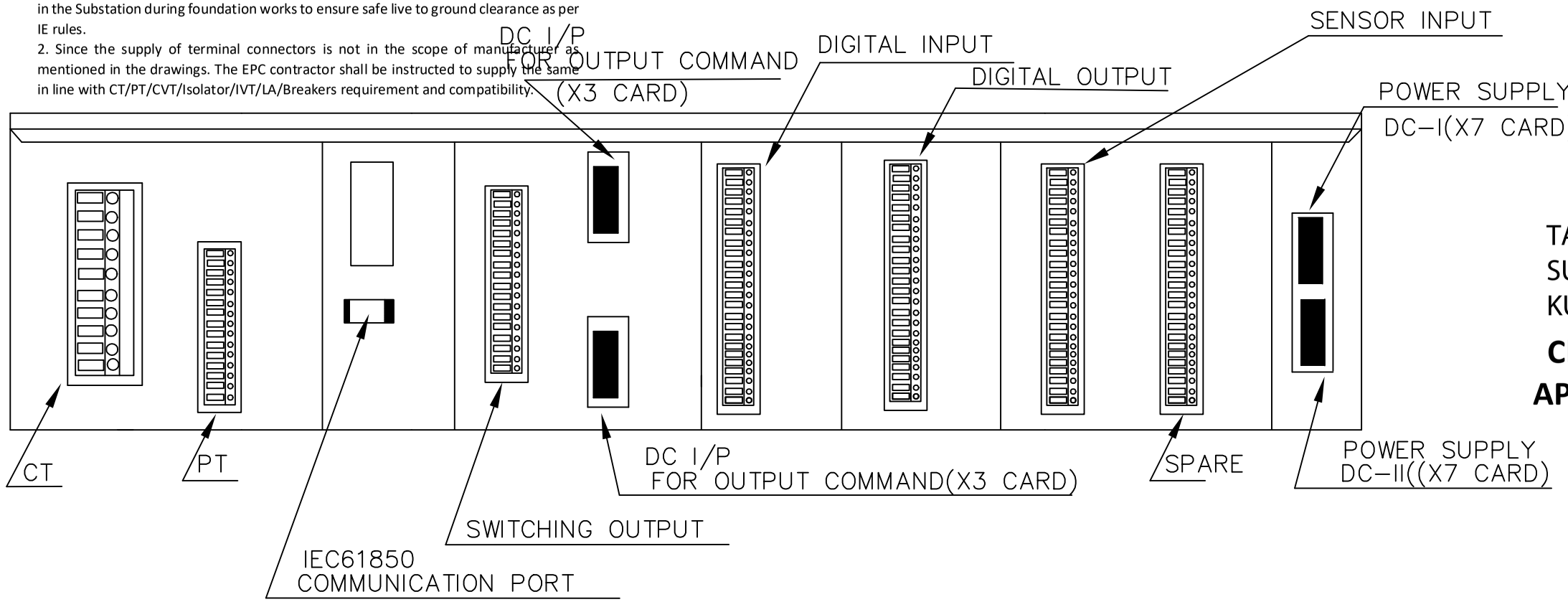


MOUNTING DIMENSIONS

TECHNICAL DETAILS ARE MENTIONED IN USER MANUAL
MOUNTING : 19 INCH RACK MOUNTED

SYNC INTELLECT REAR VIEW

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers 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 manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.



TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.05.09 16:30:22 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

NO	REVISION	NAME	DATE
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2			
1			

NAME	CUSTOMER: APTRANSCO	TITLE: CSD GA AND TERMINAL DIAGRAM
DRN RSB	STD APPROVAL 25MM/KV CREEPAGE WITH CSD	FOR: 420KV, 63 KA, SP SPR
CHD NSR		GCB TYPE: 400-SFM-60AA
APPD GNP		
SCALE: N.T.S.		
DATE: 13.03.24	ALL DIMENSIONS ARE IN mm	DRG.NO:CG-420CSD-25MM-CSD 2 /2 R0

THIRD ANGLE PROJECTION

CG Power and Industrial Solutions Limited
SWITCHGEAR DIVISION S3,AMBAD, NASHIK.

DRG.NO.:CG-420CSD-25MM-CSD 2 /2 R0

IF IN DOUBT ASK!