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14490/2024/EEMRT-ENE51

CUSTOMER : APTRANSCO

CUSTOMER REF. PO.NO : AS APPLICABLE

SUBSTATION : AS APPLICABLE

EQUIPMENT : 220kV LINE CONTROL AND RELAY PANEL (DISTANCE PROTECTION)

DRAWING REF. : General Arrangement : 1MNS500925-AAAA  
 Bill of Material : 1MNS500925-AAA,AAB  
 Schematic Drawings : 1MNS500925-CAAA

STANDARD BAY REF. : =2KLA, 2RLB

Drawing approval subject to valid vendor registration

Suitable for conventional 220KV SS only

**Chief Engineer/Projects  
 APTRANSCO/VS/Vijayawada.**

STATION AUX. SUPPLY:- 220V DC

Suitable holes shall be made on support structure at field

Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER Control & Relay Panel Title page	Doc. kind.	Circuit diagram		Ref.Des.	=2KLA, 2RLB
		Approved	20.12.2023	GOURISH HEGDE				DCC EFS			
		Project	APTRANSCO STANDARD DRAWING		Hitachi Energy India Limited		Resp. dept.	PG-GAS	Rev. ind.	Language	en
Rev.	Revision note	Date	Name	<b>HITACHI</b>		Doc. no.	1MNS500925-AAAA		Sheet	1	
1MYN691003-102(A3)REV01								No.sheets	146		

Sheet No.		Description		Rev.	Revision note	Sheet	n.sh.	Description 1	Description 2	Rev.	Revision note		
1	2	Control & Relay Panel			Title page	32	33	Control & Relay Panel	DC Distribution Circuit				
2	3	List of contents			1 - 60	33	34	Control & Relay Panel	DC Distribution Circuit				
3	4	List of contents			61 - 117	34	35	Control & Relay Panel	DC Distribution Circuit				
4	11	List of contents			118 - 1026	35	36	Control & Relay Panel	BUS-1 / 2 PT Selection Relay Circuit				
11	12	Control & Relay Panel			Front View	36	37	Control & Relay Panel	Sel. Bus PT / Line CVT Sel. Relay Ckt.				
12	12.1	Control & Relay Panel			Inside view	37	38	Control & Relay Panel	BUS-1 / 2 PT Selection Circuit				
12.1	12.2	Legend list			Legend list	38	39	Control & Relay Panel	Line CVT Distribution Circuit				
12.2	12.3	Legend list			Legend list	39	40	Control & Relay Panel	BUS PT / LINE CVT Selection Circuit				
12.3	12.4	Legend list			Legend list	40	41	Control & Relay Panel	BUS PT / LINE CVT Selection Circuit				
12.4	13	Legend list			Legend list	41	42	Control & Relay Panel	Power supply Circuit to M1 Relay				
13	14	Control & Relay Panel			Side View & Foundation Details	42	43	Control & Relay Panel	CT/PT Input Circuit to M1 Relay				
14	16	Control & Relay Panel			Panel Details & Rear Door Details	43	44	Control & Relay Panel	Binary inputs-M1 Relay				
16	17	Control & Relay Panel			Front view	44	45	Control & Relay Panel	Binary inputs-M1 Relay				
17	18	Control & Relay Panel			Section view incl. location designation	45	46	Control & Relay Panel	Binary inputs-M1 Relay				
18	19	Control & Relay Panel			Hinged frame view	46	47	Control & Relay Panel	Binary outputs-M1 Relay				
19	19.1	Control & Relay Panel			Inside view	47	48	Control & Relay Panel	Carrier Received Signal to M1 Relay				
19.1	19.2	Legend list			Legend list	48	49	Control & Relay Panel	Binary outputs-M1 Relay				
19.2	21	Legend list			Legend list	49	50	Control & Relay Panel	Main-1 Protn. Relay-Master Blocks				
21	22	Control & Relay Panel			List Of Symbols	50	51	Control & Relay Panel	Main-1 Protn. Relay-Master Blocks				
22	23	Control & Relay Panel			Single Line Diagram	51	52	Control & Relay Panel	Main-1 Protn. Relay-Master Blocks				
23	24	Control & Relay Panel			Trip Logics	52	53	Control & Relay Panel	Power supply Circuit to M2 Relay				
24	25	Control & Relay Panel			Interlocking Logics	53	54	Control & Relay Panel	CT/PT Input Circuit to M2 Relay				
25	26	Control & Relay Panel			Interlocking Logics	54	55	Control & Relay Panel	Binary inputs-M2 Relay				
26	27	Control & Relay Panel			PT Selection Logic	55	56	Control & Relay Panel	Binary inputs-M2 Relay				
27	28	Control & Relay Panel			Auto Reclosure Logics	56	57	Control & Relay Panel	Binary inputs-M2 Relay				
28	29	Control & Relay Panel			AC Distribution Circuit	57	58	Control & Relay Panel	Binary outputs-M2 Relay				
29	30	Control & Relay Panel			AC Distribution Circuit	58	59	Control & Relay Panel	Carrier Received Signal to M2 Relay				
30	31	Control & Relay Panel			DC Fail Circuit	59	60	Control & Relay Panel	Spare Binary Output Circuit-M2 Relay				
31	32	Control & Relay Panel			DC Distribution Circuit	60	61	Control & Relay Panel	Main-2 Protn. Relay-Master Blocks				
Based on				Prepared	13.12.2023	VINOD G		Title 220kV LINE FEEDER		Doc. kind.	List of contents	Ref.Des.	=2KLA, 2RLB
				Approved	20.12.2023	GOURISH HEGDE		List of contents		DCC EAB			
				Project	APTRANSCO		List of contents		Resp. dept.	PG-GAS	Rev. ind.	Language	en
						STANDARD DRAWING		HITACHI Hitachi Energy India Limited				Sheet	2
Rev.	Revision note	Date	Name					Doc. no.		1MNS500925-AAAA		n. sheet	3
1MYN691003-102(A3)REV01													

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APTRANSCO/Vs/Vijayawada.**

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Sheet No.		Description		Rev.	Revision note	Sheet	n.sh.	Description 1	Description 2	Rev.	Revision note			
61	62	Control & Relay Panel			Main-2 Protn. Relay-Master Blocks	90	90.1	Control & Relay Panel	3Ph. Gr-B Trip Relay Circuit					
62	63	Control & Relay Panel			BCU-Power supply Circuit	90.1	91	Control & Relay Panel	3Ph Busbar Trip Relay Circuit					
63	64	Control & Relay Panel			BCU-CT & PT Input Circuit	91	92	Control & Relay Panel	1-ph Trip to CB TC-1 Circuit					
64	65	Control & Relay Panel			BCU-Binary Input Ckt.	92	93	Control & Relay Panel	CB TC-1 Circuit					
65	66	Control & Relay Panel			BCU-Binary Input Ckt.	93	94	Control & Relay Panel	1-ph Trip to CB TC-2 Circuit					
66	67	Control & Relay Panel			BCU-Binary Input Ckt.	94	95	Control & Relay Panel	CB TC-2 Circuit					
67	68	Control & Relay Panel			BCU-Binary Input Ckt.	95	96	Control & Relay Panel	CB Closing Circuit					
68	69	Control & Relay Panel			BCU-Binary Input Ckt.	96	97	Control & Relay Panel	Synchronizing Circuit					
69	70	Control & Relay Panel			BCU-Binary Input Ckt.	97	98	Control & Relay Panel	DT Send Ch-1 & 2 Ckt.					
70	71	Control & Relay Panel			BCU-Binary Input Ckt.	98	99	Control & Relay Panel	CB & Isolator multpn Circuit					
71	72	Control & Relay Panel			BCU-Binary Input Ckt.	99	100	Control & Relay Panel	Isolator multpn Circuit					
72	73	Control & Relay Panel			BCU-Binary Input Ckt.	100	101	Control & Relay Panel	Isolator Command Circuit					
73	74	Control & Relay Panel			BCU-Binary Input Ckt.	101	102	Control & Relay Panel	CB Trouble multpn Circuit					
74	75	Control & Relay Panel			BCU-Binary Input Ckt.	102	103	Control & Relay Panel	89A, 89B Isol. Control Circuit					
75	76	Control & Relay Panel			BCU-Binary Input Ckt.	103	104	Control & Relay Panel	89L Isol., 89LE E/Sw. Control Circuit					
76	77	Control & Relay Panel			BCU-Binary Input Ckt.	104	105	Control & Relay Panel	Metering Circuit- TVM					
77	78	Control & Relay Panel			BCU-Binary Input Ckt.	105	106	Control & Relay Panel	Metering Circuit- TVM					
78	79	Control & Relay Panel			BCU-Binary Output Ckt.	106	107	Control & Relay Panel	Metering Circuit- MFM-1					
79	80	Control & Relay Panel			BCU-Binary Output Ckt.	107	108	Control & Relay Panel	Metering Circuit- MFM-2					
80	81	Control & Relay Panel			BCU-Master Blocks	108	109	Control & Relay Panel	Metering Circuit- MFM-3					
81	82	Control & Relay Panel			BCU-Master Blocks	109	110	Control & Relay Panel	Metering Circuit- MFM					
82	83	Control & Relay Panel			BCU-Master Blocks	110	111	Control & Relay Panel	Indication Circuit					
83	84	Control & Relay Panel			BCU-Master Blocks	111	112	Control & Relay Panel	Indication Circuit					
84	85	Control & Relay Panel			BCU-Master Blocks	112	113	Control & Relay Panel	Annunciation Circuit					
85	86	Control & Relay Panel			BCU-Master Blocks	113	114	Control & Relay Panel	Annunciation Circuit					
86	87	Control & Relay Panel			LBB Initiation to BB Panel	114	115	Control & Relay Panel	Annunciation Circuit					
87	88	Control & Relay Panel			Single Phase Tripping-Main-1	115	116	Control & Relay Panel	Annunciation Circuit					
88	89	Control & Relay Panel			Single Phase Tripping-Main-2	116	117	Control & Relay Panel	Annunciation Inscriptions					
89	90	Control & Relay Panel			3Ph. Gr-A Trip Relay Circuit	117	118	Control & Relay Panel	Contact Distribution Circuit					
Based on				Prepared	13.12.2023	VINOD G		Title 220kV LINE FEEDER		Doc. kind.	List of contents	Ref.Des.	=2KLA, 2RLB	
				Approved	20.12.2023	GOURISH HEGDE		List of contents		DCC EAB				
				Project	APTRANSCO		List of contents		Resp. dept.	PG-GAS	Rev. ind.	Language	en	
						STANDARD DRAWING		HITACHI Hitachi Energy India Limited				Sheet	3	
Rev.	Revision note		Date	Name						Doc. no.	1MNS500925-AAAA		n. sheet	4
1MYN691003-102(A3)REV01														

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APTRANSCO/Vs/Vijayawada.**

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8814490/2024/EEMPT-ENE51

Sheet	n.sh.	Description 1	Description 2	Rev.	Revision note
118	118.1	Control & Relay Panel	Contact Distribution Circuit		
118.1	119	Control & Relay Panel	DISTURBANCE RECORDER MAIN-1/2		
119	120	SPARE TERMINALS	SPARE TERMINALS		
120	1001	SPARE TERMINALS	SPARE TERMINALS		
1001	1002	Parts list	=2KR+LA		
1002	1003	Parts list	=2KR+LA		
1003	1004	Parts list	=2KR+LA		
1004	1005	Parts list	=2KR+LA		
1005	1006	Parts list	=2KR+LA		
1006	1007	Parts list	=2KR+LA		
1007	1008	Parts list	=2KR+LA		
1008	1009	Parts list	=2KR+LA		
1009	1010	Parts list	=2KR+LA		
1010	1011	Parts list	=2KR+LA		
1011	1012	Parts list	=2KR+LA		
1012	1013	Parts list	=2KR+LA		
1013	1014	Parts list	=2KR+LA		
1014	1015	Parts list	=2KR+LA		
1015	1016	Parts list	=2KR+LA		
1016	1017	Parts list	=2KR+LA		
1017	1018	Parts list	=2KR+LA		
1018	1019	Parts list	=2KR+LA		
1019	1020	Parts list	=2KR+LA		
1020	1021	Parts list	=2KR+LA		
1021	1022	Parts list	=2KR+LB		
1022	1023	Parts list	=2KR+LB		
1023	1024	Parts list	=2KR+LB		
1024	1025	Parts list	=2KR+LB		
1025	1026	Parts list	=2KR+LB		

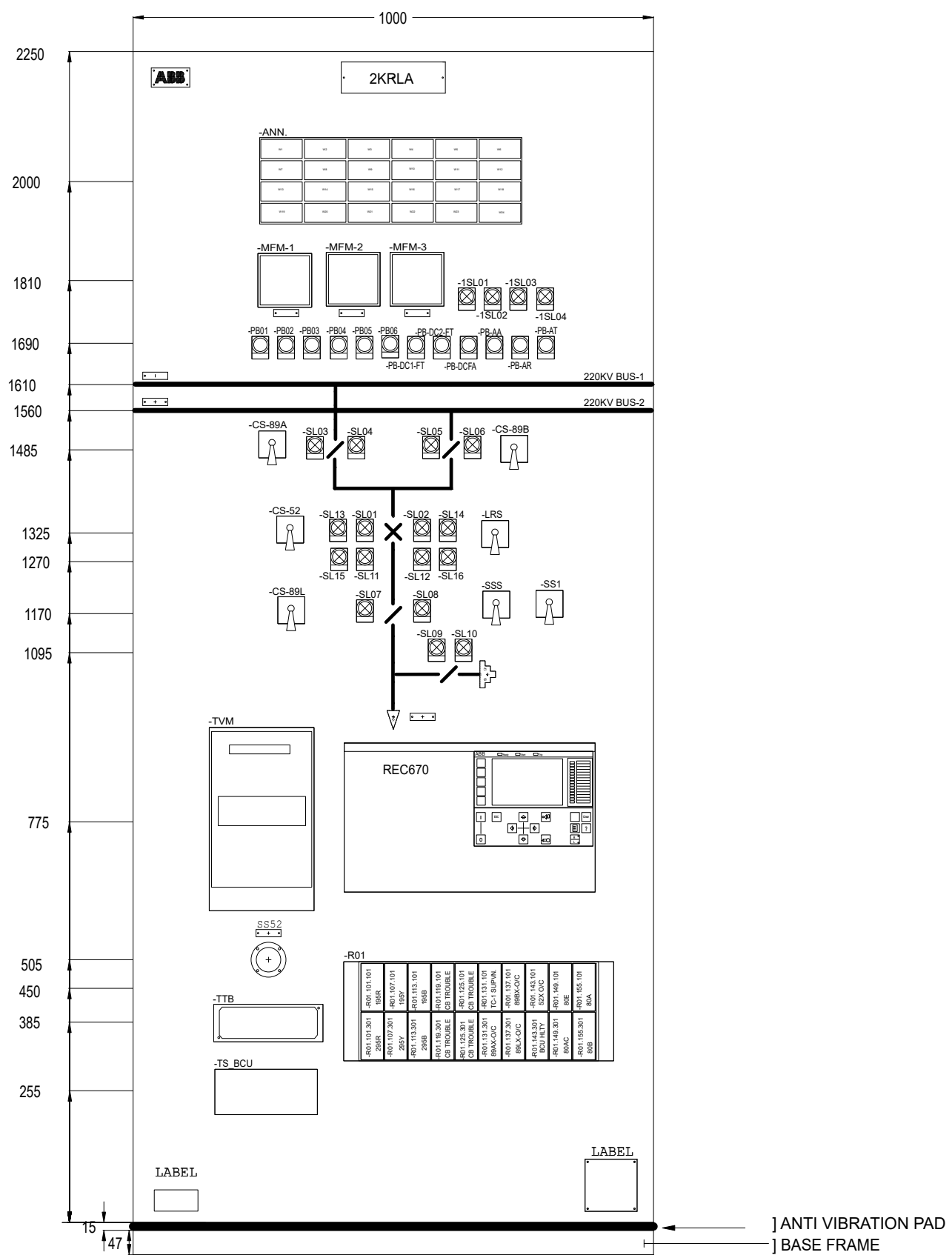
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APTRANSCO/VIS/Vijayawada.**

Based on		Prepared 13.12.2023 VINOD G		Title 220kV LINE FEEDER		Doc. kind. List of contents		Ref.Des. =2KLA, 2RLB	
		Approved 20.12.2023 GOURISH HEGDE		List of contents		DCC EAB			
		Project APTRANSCO STANDARD DRAWING		List of contents		Resp. dept. PG-GAS		Rev. ind.	
				<b>HITACHI</b> Hitachi Energy India Limited		Doc. no. 1MNS500925-AAAA		Language en	
Rev.		Revision note						Sheet 4	
		Date						n. sheet 11	
		Name							

1MYN691003-102(A3)REV01

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PANEL: 2KRLA	
ITEM DESIGNATION	DESCRIPTION
ANN.	ANNUNCIATOR
MFM-1	MULTI FUNCTION METER-1
MFM-2	MULTI FUNCTION METER-2
MFM-3	MULTI FUNCTION METER-3
PB01	BUS PT SET FOR 21M1
PB02	LINE PT SET FOR 21M1
PB03	LINE PT SET FOR 21M2
PB04	BUS PT SET FOR 21M2
PB05	BUS PT SET FOR METERING
PB06	LINE PT SET FOR METERING
PB-DC1-FT	DC-1 SUPPLY TEST
PB-DC2-FT	DC-2 SUPPLY TEST
PB-DCFA	DCF ACCEPT
PB-AA	ALARM ACCEPT
PB-AR	ALARM RESET
PB-AT	ALARM TEST
1SL01	I/C DC SUPPLY FAIL
1SL02	LINE VT R-PH
1SL03	LINE VT Y-PH
1SL04	LINE VT B-PH
CS-89A	89A ISOL. CONTROL SWITCH
CS-89B	89B ISOL. CONTROL SWITCH
CS-52	CB CONTROL SWITCH
CS-89L	89L ISOL. CONTROL SWITCH
LRS	LOCAL / REMOTE SWITCH
SSS	SYNCHRONIZING SELECTOR SWITCH
SL01	52 CB OPEN
SL02	52 CB CLOSE
SL03	89A ISOL. OPEN
SL04	89A ISOL. CLOSE
SL05	89B ISOL. OPEN
SL06	89B ISOL. CLOSE
SL07	89L ISOL. OPEN
SL08	89L ISOL. CLOSE
SL09	89LE ES. OPEN
SL10	89LE ES. CLOSE
SL11	TC-1 HEALTHY
SL12	TC-2 HEALTHY
SL13	CB SPRING CHARGED
SL14	CB TRIPPED ON CTD
SL15	CB CAPACITOR CHARGED
SL16	CB AUTO TRIP
KF1	BAY CONTROL UNIT
TVM	TRI VECTOR METER
SS	SYNCHRONIZING SOCKET
SS1	SYNCHRONIZING ON/OFF SWITCH
TTB	TEST TERMINAL FOR TVM
TS_BCU	TEST SWITCH FOR BCU

PANEL: 2KRLA	
ITEM DESIGNATION	DESCRIPTION
R01.101.101	TC-1 Supvn (195R)
R01.101.301	TC-2 Supvn (295R)
R01.107.101	TC-1 Supvn (195Y)
R01.107.301	TC-2 Supvn (295Y)
R01.113.101	TC-1 Supvn (195B)
R01.113.301	TC-2 Supvn (295B)
R01.119.101	CB POLE DISC. -152E & CB SF6 GAS PR.LOW ALARM-152A
R01.119.301	CB SF6 GAS PR. LOCK OUT-152B & CB TRIPPED ON CTD-152D
R01.125.101	CB AIR PRESSURE LOW-152C & CB TRIPPED ON CTD-152D
R01.125.301	CB SPRING CHARGED & SPARE
R01.131.101	CB TC-1 SUPVN. HEALTHY & CB TC-2 SUPVN. HEALTHY
R01.131.301	89AX-O & 89AX-C
R01.137.101	89BX-O & 89BX-C
R01.137.301	89LX-O & 89LX-C
R01.143.101	AC SUPPLY SUPVN. RELAY
R01.149.101	DC SUPPLY FAIL ACCEPT RELAY
R01.149.301	BCU HEALTHY
R01.149.301	52X O/C
R01.155.101	DC-1 SUPPLY SUPVN.
R01.155.301	DC-2 SUPPLY SUPVN.

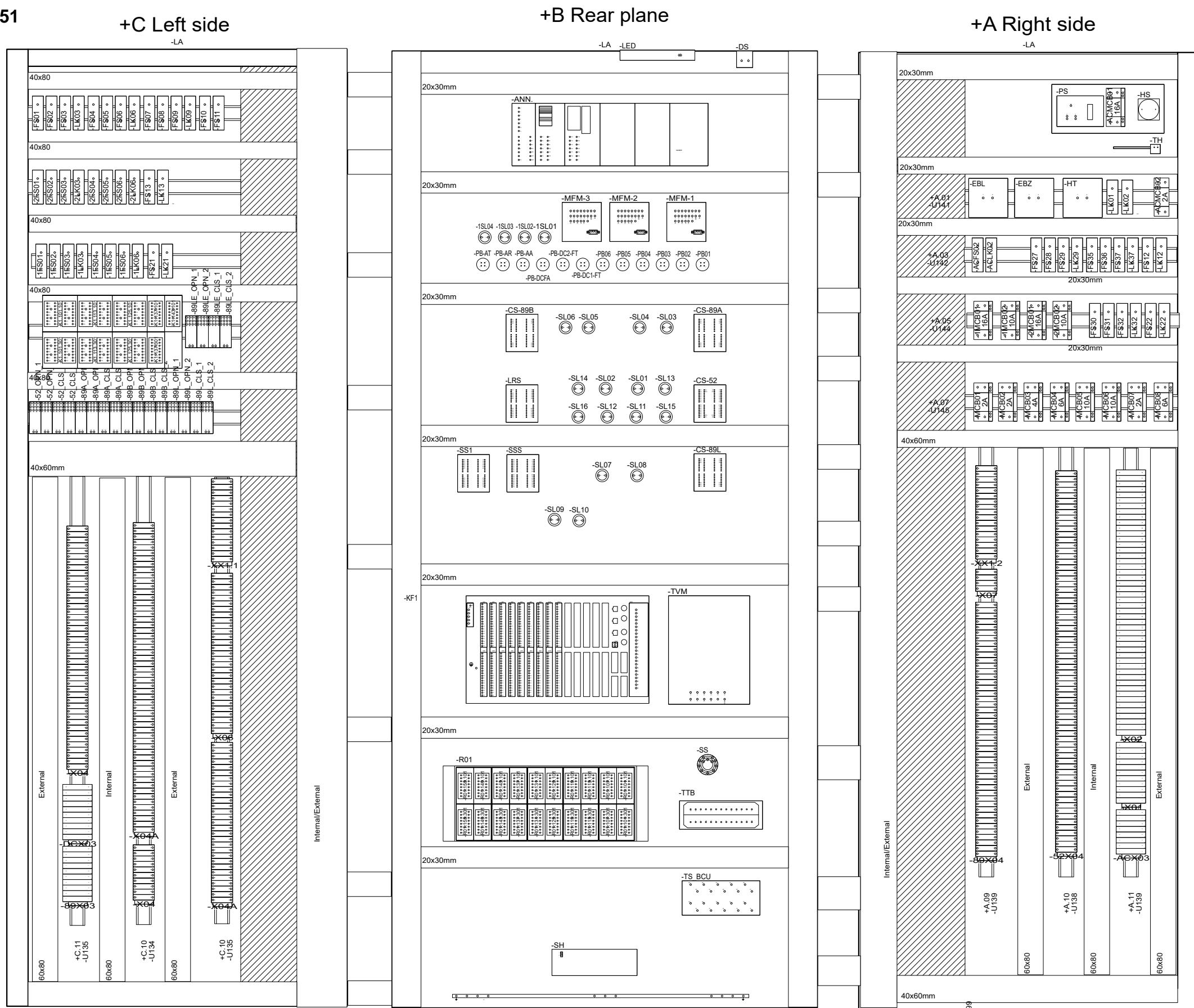
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APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LA
		Project APTRANSCO		Front View	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-AAAA		Sheet 11
1MYN691003-102(A3)REV01						n. sheet 12

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NOTE:  
INTERNAL VIEW IS FOR INFORMATION ONLY.  
(MAY CHANGE DURING MANUFACTURING).

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LA
		Project APTRANSCO		Inside view	PG-GAS	Rev. ind. en
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-AAAA	Sheet 12
1MYN691003-102(A3)REV01						n. sheet 12.1

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**8814490/2024/EEMRT-ENE51**

Plane: A

Device name	Description (1)	Description (2)	Type designation
-1MCB01	DC SOURCE-1 MCB	16A	-
-1MCB02	CB TC-1 CKT	10A	-
-2MCB01	DC SOURCE-2 MCB	16A	-
-2MCB02	CB TC-2 CKT	10A	-
-ACFS02	FUSE FOR BELL CKT.	2A	-
-ACLK02	LINK FOR BELL CKT.	15A	NL
-ACMCB01	AC SOURCE MCB	16A	-
-ACMCB02	ANN CKT	2A	-
-EBL	DC Fail	--	AUH-1122
-EBZ	NON TRIP ALARM	--	Buzzer
-FS12	B-PH SEL. BUS/LINE PT CORE-3	FOR BCU CKT.	-
-FS22	R-PH LINE CVT	FUSE FOR SYNC. CKT	-
-FS27	R-PH SEL. BUS/LINE PT CORE-3	FOR TVM CKT.	-
-FS28	Y-PH SEL. BUS/LINE PT CORE-3	FOR TVM CKT.	-
-FS29	B-PH SEL. BUS/LINE PT CORE-3	FOR TVM CKT.	-
-FS30	R-PH SEL. BUS/LINE PT CORE-3	FOR MFM CKT.	-
-FS31	Y-PH SEL. BUS/LINE PT CORE-3	FOR MFM CKT.	-
-FS32	B-PH SEL. BUS/LINE PT CORE-3	FOR MFM CKT.	-
-FS35	R-PH LINE CVT CORE-3	FOR IND. CKT.	-
-FS36	Y-PH LINE CVT CORE-3	FOR IND. CKT.	-
-FS37	B-PH LINE CVT CORE-3	FOR IND. CKT.	-
-HS	HEATER SWITCH	--	
-HT	TRIP ALARM	--	Hooter

Suitable for conventional 220KV SS only

Device name	Description (1)	Description (2)	Type designation
-LK01	LINK FOR BUZZER	--	NL
-LK02	LINK FOR HOOTER	--	NL
-LK12	--	FOR BCU CKT.	NL
-LK22	NU LINE CVT	FUSE FOR SYNC. CKT	15A
-LK29	NU SEL. BUS/LINE PT CORE-3	FOR TVM CKT.	NL
-LK32	NU SEL. BUS/LINE PT CORE-3	FOR MFM CKT.	NL
-LK37	NU LINE CVT CORE-3	FOR IND. CKT.	NL
-MCB01	ANN CKT	2A	-
-MCB02	MET CKT	2A	-
-MCB03	CONT. MULTI. CKT.	4A	-
-MCB04	BCU CKT.	6A	-
-MCB05	CB CLS CKT	10A	-
-MCB06	ISOL CONTROL CKT	10A	-
-MCB07	INDICATION CKT.	2A	-
-MCB08	ISOL I/L DC	6A	-
-PS	Outlet	--	SW
-TH	Thermostat	--	TH

**Chief Engineer/Projects  
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Plane: B

Device name	Description (1)	Description (2)	Type designation
-1SL01	I/C DC SUPPLY FAIL	--	-
-1SL02	LINE VT R-PH	--	-
-1SL03	LINE VT Y-PH	--	-
-1SL04	LINE VT B-PH	--	-
-ANN.	Annunciator unit	--	SAN 200 - 24 Window
-CS-52	CB CONTROL SWITCH	--	22-4-pos. contacts with 0 position, Pos1:T, Pos2:A/T,Pos3:A/C,Pos4:C

Based on		Prepared 13.12.2023	VINOD G	Title 220KV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR +LA
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	
		Project APTRANSCO		Legend list	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-AAAA	Sheet 12.1
1MYN691003-102(A3)REV01						n. sheet 12.2

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**814490/2024/EEMRT-ENE51**

Device name	Description (1)	Description (2)	Type designation
-CS-89A	89A ISOL. CONTROL SWITCH	--	6-3-pos. contacts with 0 position
-CS-89B	89B ISOL. CONTROL SWITCH	--	6-3-pos. contacts with 0 position
-CS-89L	89L ISOL. CONTROL SWITCH	--	6-3-pos. contacts with 0 position
-KF1	BAY CONTROL UNIT	REC670	REC670
-LED	Lamp	--	LED
-LRS	LOCAL / REMOTE SWITCH	--	12-2-pos. contacts
-MFM-1	MULTI FUNCTION METER	--	Rish Master 3430
-MFM-2	MULTI FUNCTION METER	--	Rish Master 3430
-MFM-3	MULTI FUNCTION METER	--	Rish Master 3430
-PB01	BUS PT SET FOR 21M1	--	-
-PB02	LINE PT SET FOR 21M1	--	-
-PB03	LINE PT SET FOR 21M2	--	-
-PB04	BUS PT SET FOR 21M2	--	-
-PB05	BUS PT SET FOR METERING	--	-
-PB06	LINE PT SET FOR METERING	--	-
-PB-AA	ALARM ACCEPT	--	-
-PB-AR	ALARM RESET	--	-
-PB-AT	ALARM TEST	--	-
-PB-DC1-FT	DC-1 SUPPLY TEST	--	-
-PB-DC2-FT	DC-2 SUPPLY TEST	--	-
-PB-DCFA	DCF ACCEPT	--	-
-R01.101.101	TC-1 Supvn (195R)	195R	TSR-B
-R01.101.301	TC-2 Supvn (295R)	295R	TSR-B
-R01.107.101	TC-1 Supvn (195Y)	195Y	TSR-B
-R01.107.301	TC-2 Supvn (295Y)	295Y	TSR-B

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APTRANSCO/VS/Vijayawada.**

Device name	Description (1)	Description (2)	Type designation
-R01.113.101	TC-1 Supvn (195B)	195B	TSR-B
-R01.113.301	TC-2 Supvn (295B)	295B	TSR-B
-R01.119.101	CB POLE DISCREPANCY-152E CB SF6 GAS PRESSURE LO	RXSF1	RXSF1
-R01.119.301	CB SF6 GAS PRESSURE LOCK OUT-152B CB TRIPPED ON	RXSF1	RXSF1
-R01.125.101	CB AIR PRESSURE LOW-152C  CB SPRING CHARGED	RXSF1	RXSF1
-R01.125.301	CB SPRING CHARGED SPARE	RXSF1	RXSF1
-R01.131.101	CB TC-1 SUPVN. HEALTHY	RXSF1	RXSF1
-R01.131.301	89AX-O	89AX-C	RXMM1
-R01.137.101	89BX-O	89BX-C	RXMM1
-R01.137.301	89LX-O	89LX-C	RXMM1
-R01.143.101	52X CLOSE CMD	52X OPEN CMD	RXMM1
-R01.149.101	DC Supply Fail Accept Relay	80E	RXMA1
-R01.149.301	AC SUPPLY SUPERVISION	80AC	RXMA1
-R01.155.101	DC-1 Supply Supervision	--	TSR-B
-R01.155.301	DC-2 Supply Supervision	--	TSR-B
-SH	Heating	--	SPHT
-SL01	52 CB OPEN	--	-
-SL02	52 CB CLOSE	--	-
-SL03	89A ISOL. OPEN	--	-
-SL04	89A ISOL. CLOSE	--	-
-SL05	89B ISOL. OPEN	--	-
-R01.143.301	BCU HEALTHY	BCU HEALTHY	RXSF1

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	+LA
		Project APTRANSCO		Legend list	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-AAAA	Sheet 12.2
1MYN691003-102(A3)REV01						n. sheet 12.3

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**814490/2024/EEMRT-ENE51**

Device name	Description (1)	Description (2)	Type designation
-SL06	89B ISOL. CLOSE	--	-
-SL07	89L ISOL. OPEN	--	-
-SL08	89L ISOL. CLOSE	--	-
-SL09	89LE ES. OPEN	--	-
-SL10	89LE ES. CLOSE	--	-
-SL11	TC-1 HEALTHY	--	-
-SL12	TC-2 HEALTHY	--	-
-SL13	CB SPRING CHARGED	--	-
-SL14	CB TRIPPED ON CTD	--	-
-SL15	CB CAPACITOR CHARGED	--	-
-SL16	CB AUTO TRIP	--	-
-SS	Synchronizing socket	--	SS Type
-SSS	Synchronizing selector switch	--	8 2-pos. contacts
-TS_BCU	TS_BCU	--	MPG
-TTB	Test Terminal Block for TVM	--	TTB
-TVM	Tri Vector Meter	--	Premier 300

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

**Plane: C**

Device name	Description (1)	Description (2)	Type designation
-1FS01	R-PH BUS-1 PT CORE-1	FOR BUS PT SEL. CKT.	-
-1FS02	Y-PH BUS-1 PT CORE-1	FOR BUS PT SEL. CKT.	-
-1FS03	B-PH BUS-1 PT CORE-1	FOR BUS PT SEL. CKT.	-
-1FS04	R-PH BUS-1 PT CORE-2	FOR BUS PT SEL. CKT.	-
-1FS05	Y-PH BUS-1 PT CORE-2	FOR BUS PT SEL. CKT.	-
-1FS06	B-PH BUS-1 PT CORE-2	FOR BUS PT SEL. CKT.	-
-1LK03	NU BUS-1 PT CORE-1	FOR BUS PT SEL. CKT.	NL
-1LK06	NU BUS-1 PT CORE-2	FOR BUS PT SEL. CKT.	NL

Device name	Description (1)	Description (2)	Type designation
-2FS01	R-PH BUS-2 PT CORE-1	FOR BUS PT SEL. CKT.	-
-2FS02	Y-PH BUS-2 PT CORE-1	FOR BUS PT SEL. CKT.	-
-2FS03	B-PH BUS-2 PT CORE-1	FOR BUS PT SEL. CKT.	-
-2FS04	R-PH BUS-2 PT CORE-2	FOR BUS PT SEL. CKT.	-
-2FS05	Y-PH BUS-2 PT CORE-2	FOR BUS PT SEL. CKT.	-
-2FS06	B-PH BUS-2 PT CORE-2	FOR BUS PT SEL. CKT.	-
-2FS07	R-PH BUS-2 PT CORE-3	FOR BUS PT SEL. CKT.	-
-2FS08	Y-PH BUS-2 PT CORE-3	FOR BUS PT SEL. CKT.	-
-2FS09	B-PH BUS-2 PT CORE-3	FOR BUS PT SEL. CKT.	-
-2LK03	NU BUS-2 PT CORE-1	FOR BUS PT SEL. CKT.	NL
-2LK06	NU BUS-2 PT CORE-2	FOR BUS PT SEL. CKT.	NL
-2LK09	NU BUS-2 PT CORE-3	FOR BUS PT SEL. CKT.	NL
-52_CLS_1	CB POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-52_CLS_2	CB POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-52_OPN_1	CB POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-52_OPN_2	CB POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-89A_CLS_1	89A ISOL. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89A_CLS_2	89A ISOL. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89A_OPN_1	89A ISOL. POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-89A_OPN_2	89A ISOL. POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-89B_CLS_1	89B ISOL. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89B_CLS_2	89B ISOL. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89B_OPN_1	89B ISOL. POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-89B_OPN_2	89B ISOL. POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-89L_CLS_1	89L ISOL. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89L_CLS_2	89L ISOL. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89L_OPN_1	89L ISOL. POS. OPEN	--	REL-IR-BL/L-220DC/4X21

Suitable for conventional 220KV SS only

Based on		Prepared 13.12.2023	VINOD G	Title 220KV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR +LA
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	
		Project APTRANSCO		Legend list	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-AAAA		Sheet 12.3
1MYN691003-102(A3)REV01						n. sheet 12.4

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**8814490/2024/EEMRT-ENE51**

Device name	Description (1)	Description (2)	Type designation
-89L_OPN_2	89L ISOL. POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-89LE_CLS_1	89LE E/SW. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89LE_CLS_2	89LE E/SW. POS. CLOSED	--	REL-IR-BL/L-220DC/4X21
-89LE_OPN_1	89LE E/SW. POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-89LE_OPN_2	89LE E/SW. POS. OPEN	--	REL-IR-BL/L-220DC/4X21
-FS01	R-PH LINE CVT CORE-1	FOR LINE CVT CKT.	-
-FS02	Y-PH LINE CVT CORE-1	FOR LINE CVT CKT.	-
-FS03	B-PH LINE CVT CORE-1	FOR LINE CVT CKT.	-
-FS04	R-PH LINE CVT CORE-2	FOR LINE CVT CKT.	-
-FS05	Y-PH LINE CVT CORE-2	FOR LINE CVT CKT.	-
-FS06	B-PH LINE CVT CORE-2	FOR LINE CVT CKT.	-
-FS07	R-PH LINE CVT CORE-3	FOR LINE CVT CKT.	-
-FS08	Y-PH LINE CVT CORE-3	FOR LINE CVT CKT.	-
-FS09	B-PH LINE CVT CORE-3	FOR LINE CVT CKT.	-
-FS10	R-PH SEL. BUS/LINE PT CORE-3	FOR BCU CKT.	-
-FS11	Y-PH SEL. BUS/LINE PT CORE-3	FOR BCU CKT.	-
-FS13	R-PH SEL. BUS/LINE PT CORE-3	FOR BCU CKT.	-
-FS21	R-PH SEL. BUS PT	FUSE FOR SYNC. CKT	-
-K1.101.101	BUS-1 PT SELECTION RELAY	75A	RXMVF 21
-K1.101.301	BUS-2 PT SELECTION RELAY	75B	RXMVF 21
-K1.113.101	PT SELECTION RELAY-21M1	75C	RXMVF 21
-K1.113.301	PT SELECTION RELAY-21M2	75D	RXMVF 21
-K1.125.101	PT SELECTION RELAY METERING	75E	RXMVF 21
-K1.125.301	DC-1 C/O RELAY	RXMH2	RXMH2

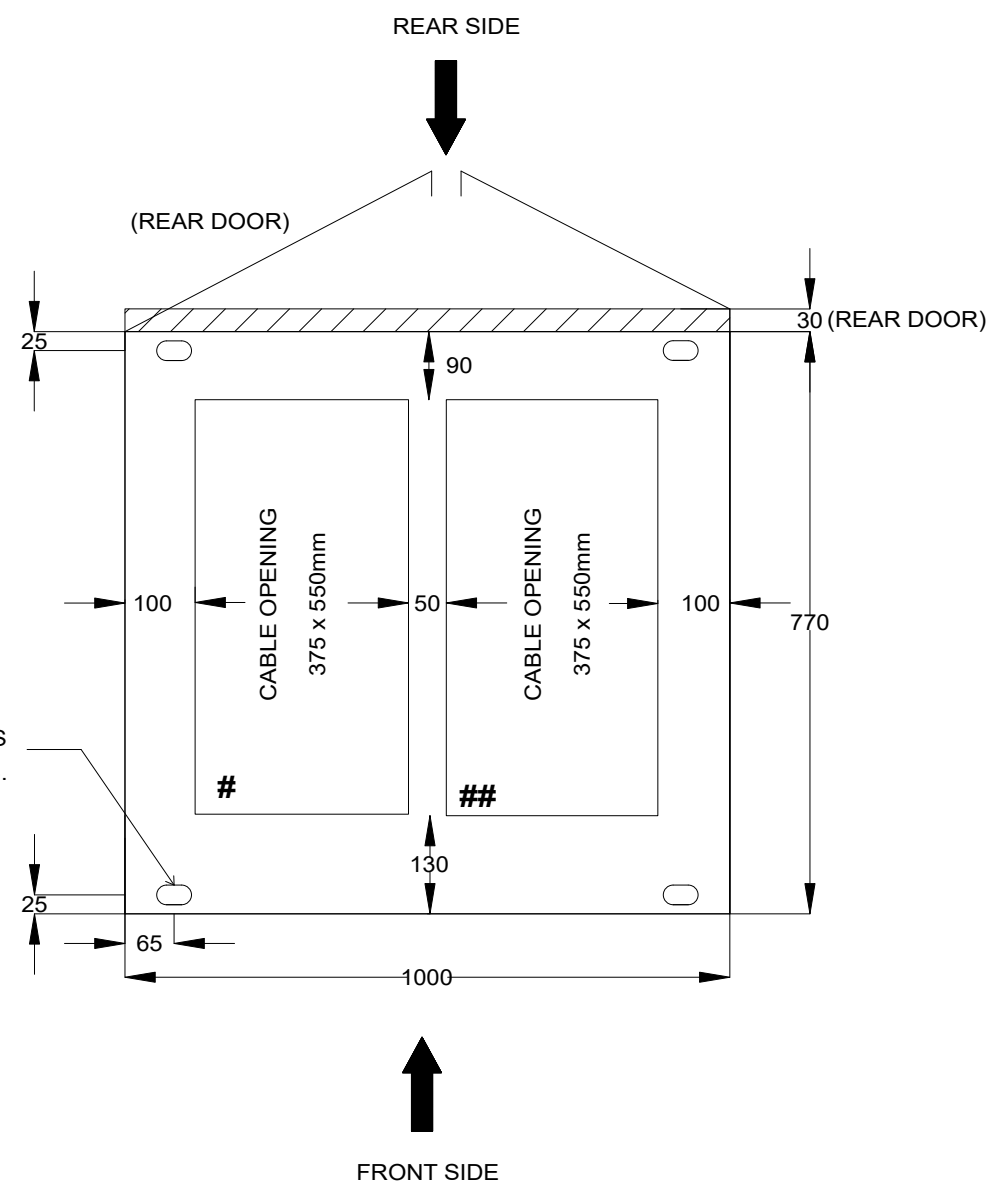
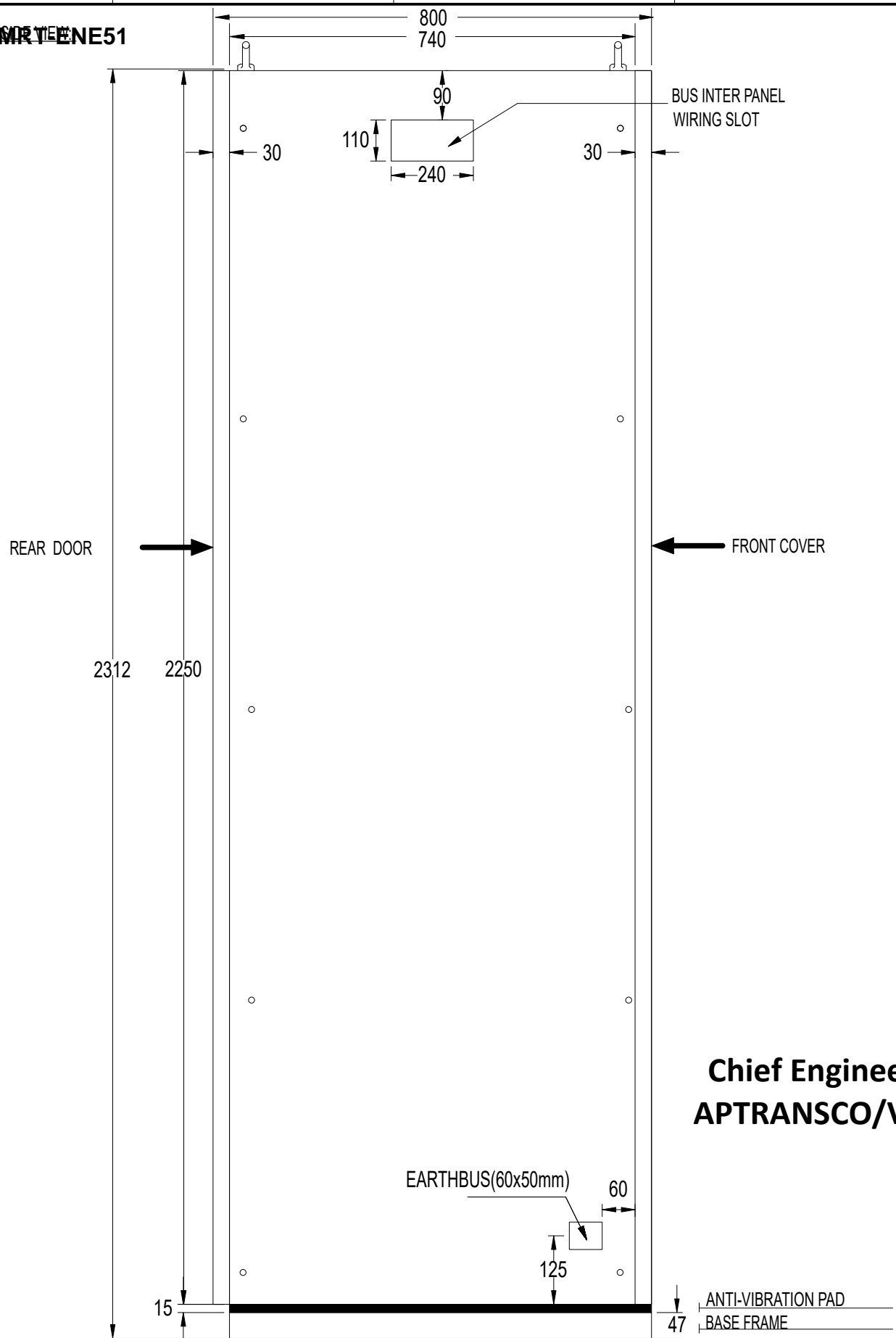
Device name	Description (1)	Description (2)	Type designation
-K1.137.101	CB MANUAL TRIP-1	CB MANUAL TRIP-2	RXMM1
-K1.137.301	CB SF6 GAS PRESSURE LOW ALARM-152A	CB POLE DISCREPANCY -152E	RXSF1
-LK03	--	FOR LINE CVT CKT.	NL
-LK06	--	FOR LINE CVT CKT.	NL
-LK09	--	FOR LINE CVT CKT.	NL
-LK13	--	FOR BCU CKT.	NL
-LK21	NU SEL. BUS PT	FUSE FOR SYNC. CKT	15A

**Chief Engineer/Projects  
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR +LA
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	
		Project APTRANSCO		Legend list	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-AAAA	Sheet 12.4
1MYN691003-102(A3)REV01						n. sheet 13

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FOUNDATION DETAILS:-



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- NOTES:-
1. ALL DIMENSIONS ARE IN mm
  2. COUPLING HOLE, BUS BAR CUT OUT SHALL BE AS PER STANDARD DRAWING.
  3. WIRING : FRLS, MULTI STRANDED COPPER WIRE OF VOLTAGE 1100V
  4. # GLAND PLATE WITH 21 Nos. KNOCKOUT PUNCH HOLES OF 19mm DIA. TO BE PROVIDED.
  5. ## GLAND PLATE WITH 21 Nos. KNOCKOUT PUNCH HOLES OF 25mm DIA. TO BE PROVIDED.

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des.	=2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU		+LA
		Project APTRANSCO		Side View & Foundation Details	PG-GAS	Rev. ind.	Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-AAAA		Sheet 13
Rev.	Revision note	Date	Name			n. sheet	14
1MYN691003-102(A3)REV01							

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814490/2024/EEMRT-ENE51

**PANEL DETAILS:-**

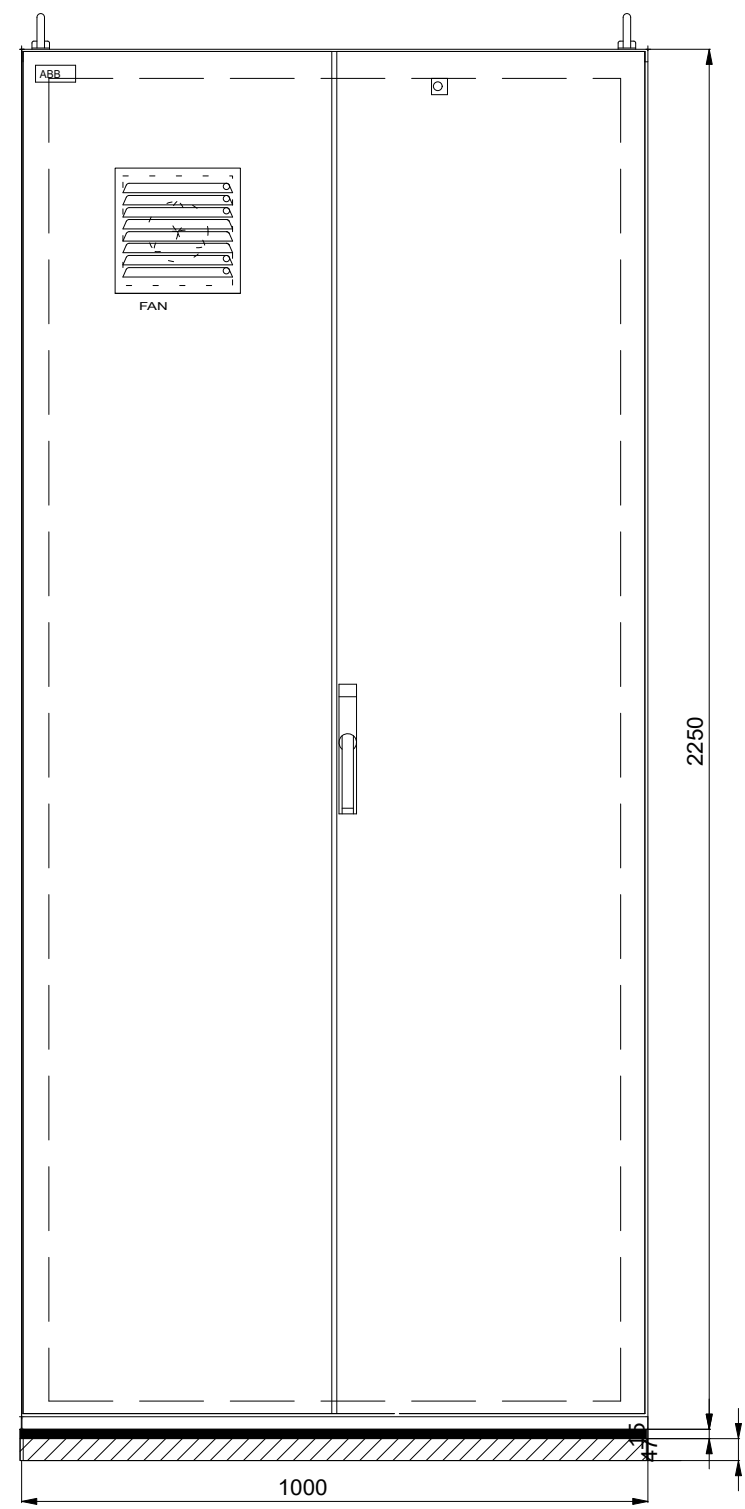
TYPE:- VTG - Simplex Panel, W=1000mm, D=800mm, H=2312mm (2250 + 47 (BF) + 15 (AVP))

Technical data:

Height	2312mm
Width	1000mm
Depth	800mm
Weight	400 kg Approx.
Thickness of material	
: Front Cover (Load Bearing Member)	3mm
: Rear door	2mm (Double leaf door with lock&1no exhaust fan)
: Roof / Bottom plate	2mm
: Gland plate	3mm
: Side covers	2mm
: Base frame	3mm
Mimic color: 220kV:-Light Orange to shade 557 as per IS:5	
Busbar mimic (paint overlaid)	Main busbar - 12mm Aluminium strip Other busbar - 10mm Aluminium strip
Protection class	IP54
Cubicle Illumination	9W LED lamp
Earth Bar	Tinned Copper Strip of 25 x 6mm
Bottom Plate	With Two opening 375mmx550mm
Gland Plate	2 nos of plates - Fixing cable glands 415 x 590mm
Cubicle Colour	
Powder Coating : Exterior	Light Grey to shade 631 of IS:5,Semi glossy finish
: Interior	White Glossy finish
: Base frame	Black Glossy
: Thickness	60-80 microns for powder coating
Wires & Ferrules (FRLS)	1100V Grade PVC Insulation Multi Strand Wires
Wire size for CT Circuits	2.5 Sqmm, Phase : RYB, Neutral : Black
Wire size for PT Circuits	1.5mm <sup>2</sup> , Phase : RYB, Neutral : Black, 2x2.5mm <sup>2</sup> for TVM P
Wire size for DC Circuits	1.5 Sqmm, Grey
Wire size for Aux.AC Circuit	1.5mm <sup>2</sup> , Grey
Wire size for Earthing	2.5mm <sup>2</sup> , Green
Ferrules	
Wire directly connected to TRIP COIL	Red Coloured "T"
All other ferrules	White Sleeve with Nos.marked in Black letters
Terminal blocks ( 20% spare terminal blocks )	PROVIDED
Terminal Make	Elmex
Terminal CT / VT	Disconnecting type (CATD M4)
Terminal AC/DC incoming	Disconnecting type (CATD M4)
Terminal Earthing	Disconnecting type (CATD M4)
Terminal Trip	Non-Disconnecting type (CAT M4)
Terminal Interpanel,General	Disconnecting type, Non-Disconnecting type
LABELS	DIMENSIONS(mm)      LETTER HEIGHT(mm)
1:Main Label(Front)	200 x 60      10
MATERIAL : Lamicoid	TYPE OF INSCRIPTION : Engraving-white letters on black background
2A : Apparatus Label (Inside)	33 x 80      3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION :Engraving-white letters on black background
2B : Apparatus Label (Front)	48 x 14      3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION : Engraving-white letters on black background
3:Item Desgination Stickers(Inside)	20 x 10      5
MATERIAL : Self adhesive yellow stickers	TYPE OF INSCRIPTION : Engraving-white letters on black background
4:Flag Relay Labels	29 x 29      2
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION : Engraving-white letters on black background
5:PB/Lamp Labels	30 x 40      3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION :Engraving-white letters on black background

Drawing approval subject to valid vendor registration

REAR VIEW



**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada**

Suitable for conventional 220KV SS only

REAR VIEW WITH METALLIC DOUBLE DOOR CLOSED

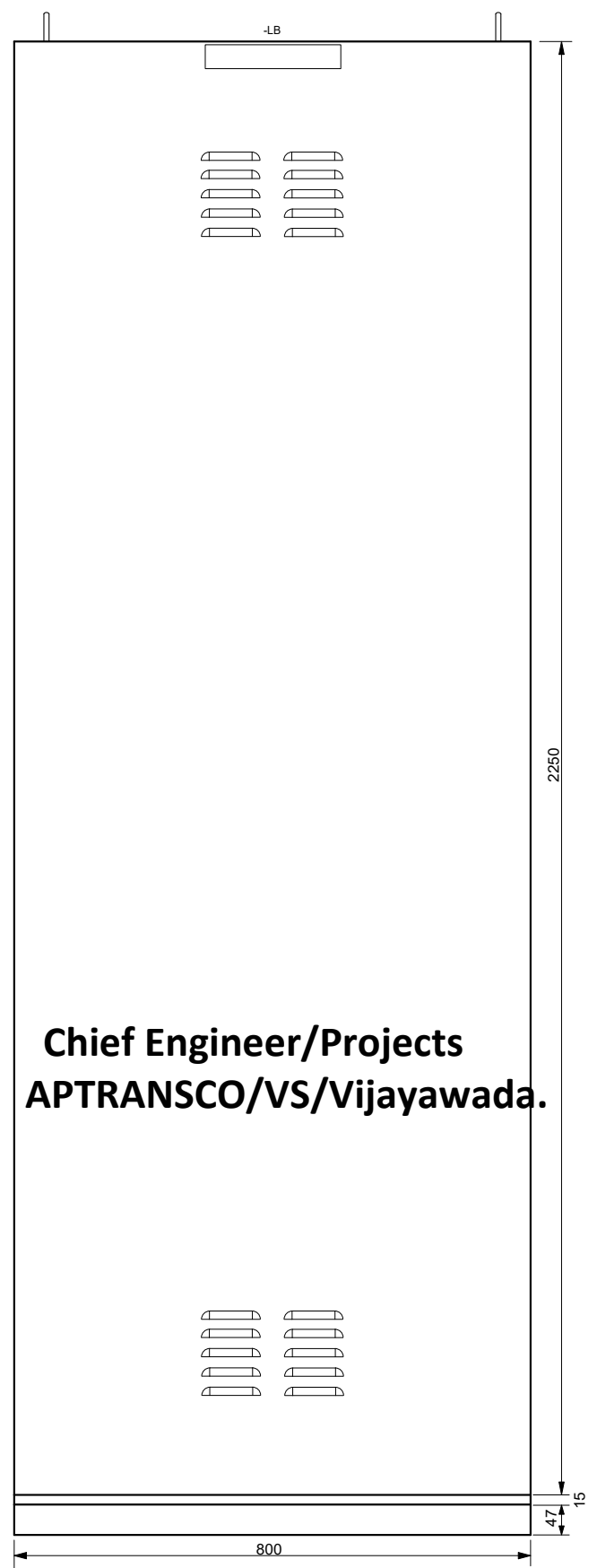
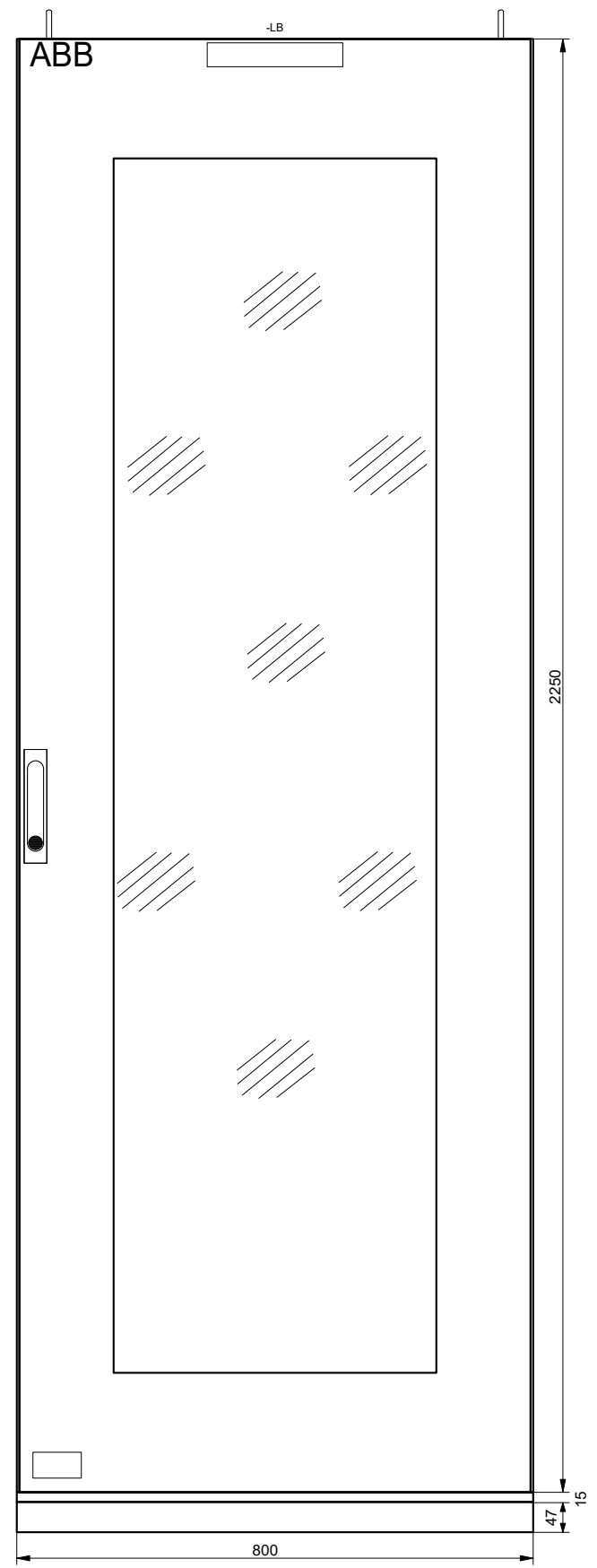
Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LA
		Project APTRANSCO		Panel Details & Rear Door Details	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-AAAA	
Rev.	Revision note	Date	Name			Sheet 14
1MYN691003-102(A3)REV01						n. sheet 16

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Front view with door

Rear View



**Chief Engineer/Projects  
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**CUBICLE SPECIFICATION - RELAY PANEL (SHELL TYPE)**

Height	2312 (2250+15+47mm)	
Width	800mm	
Depth	800mm	
Anti-Vibration Pad	15mm	
Base frame	47mm	
Dimensional Tolerance	As per IS 2102 Part1-Medium	
Weight	400 kg Approx.	
Sheet Thickness Tolerance	As Per IS:16162 Standard	
Thickness of material		
Swing frame Assembly	2mm	
Swing frame Channel	3mm	
Rear cover, Roof plate, Bottom plate	2mm	
Mounting, Blanking plate	2mm	
Side covers	2mm	
Base frame	2mm	
Gland plate	3mm	
Gland plate	3mm	
Protection class	IP54	
Cubicle illumination	9W LED Lamp	
Earth Bar	Tinned Copper Strip of 25mm x 6mm	
Bottom Plate	With 2 openings of 275mm x 550mm	
Gland Plate	2 nos. of plates - Fixing cable glands SIZE-315mm x 590mm	
Gasket Material type	EPDM / Neoprene / XLPE / Polystyrene	
<b>Cubicle Colour</b>		
Power Coating : :Exterior	LIGHT GREY TO SHADE 631 OF IS-5,SEMI GLOSSY FINISH	
:Interior	Glossy white	
:Base frame	Black	
:Thickness	60-80 microns for powder coating	
<b>Wires (FRLS)</b>		
Wire size of CT Circuits	2.5mm <sup>2</sup> , Phase : RYB, Neutral : Black	
Wire size of PT Circuits	1.5mm <sup>2</sup> , Phase : RYB, Neutral : Black, 2x2.5mm <sup>2</sup> for TVM PT	
Wire size of DC Circuits	1.5mm <sup>2</sup> , Grey	
Wire size of Aux.AC Circuit	1.5mm <sup>2</sup> , Grey	
Wire size of Earthing	2.5mm <sup>2</sup> , Green	
<b>Ferrules</b>		
Wire directly connected to TRIP COIL	Red Coloured "T"	
All other ferrules	White Sleeve with Nos.marked in Black letters	
<b>Terminal blocks ( 20% spare terminal blocks )</b>		
Terminal CT / VT	Disconnecting type	
Terminal AC / DC incoming	Disconnecting type	
Terminal Earthing	Disconnecting type	
Terminal Control	Non-Disconnecting type	
Terminal Interpanel, General	Non-Disconnecting & Disconnecting type	
<b>LABELS</b>		
	DIMENSIONS(mm)	LETTER HEIGHT(mm)
1:Main Label (Front)	200 x 60	10
MATERIAL : Acrylic	TYPE OF INSCRIPTION : Engraving-white letters on black background	
2A : Apparatus Label (Inside-MCB and Terminals)	40 x 16 and 40 x 8	3
MATERIAL : Sticker	TYPE OF INSCRIPTION : Printing-Black letters on white background	
2B : Apparatus Label (Inside-Fuses)	29 x 29	3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION : Engraving-white letters on black background	
3 : Apparatus Label (Front)	20 x 12	3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION : Engraving-white letters on black background	
4:Item Designation Stickers (Inside)	20 x 12	5
MATERIAL : Self adhesive yellow stickers	TYPE OF INSCRIPTION : Black letters	
5:Flag Relay Labels	29 x 29	2
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION : Engraving-white letters on black background	
6:PB / Lamp Lables	30 x 40	3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION : Engraving-white letters on black background	

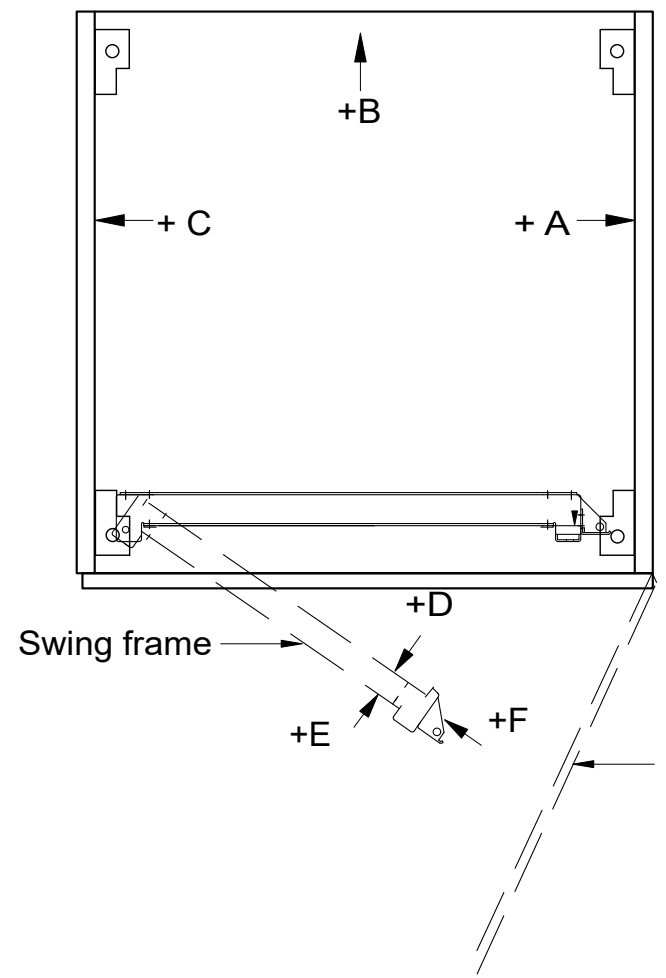
Based on	Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
	Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LB
	Project APTRANSCO		Front view	Resp. dept. PG-GAS	Rev. ind. Language en
					Sheet 16
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-AAAA	n. sheet 17
1MYN691003-102(A3)REV01					

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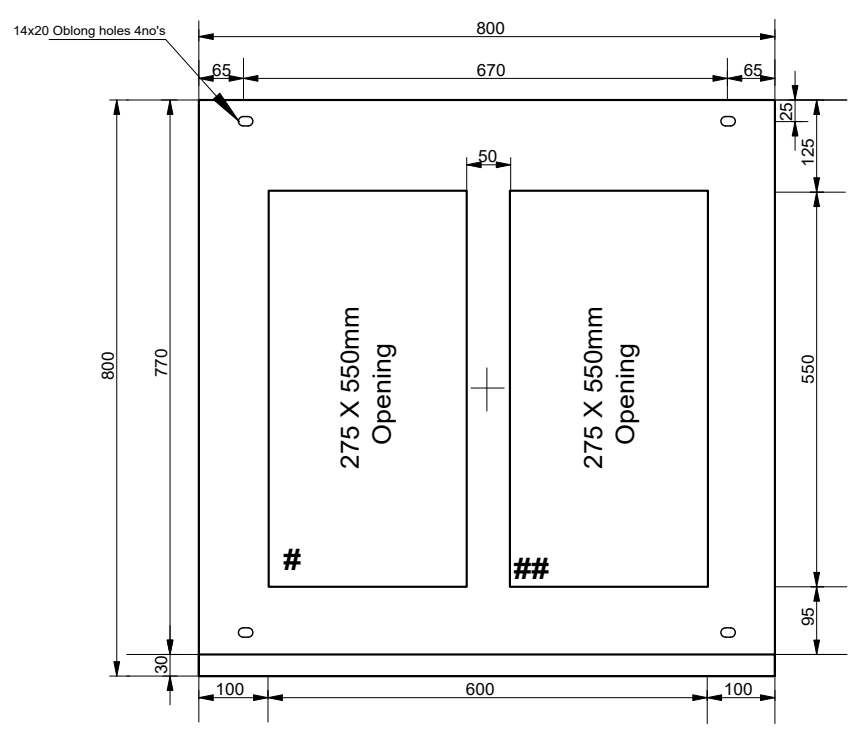
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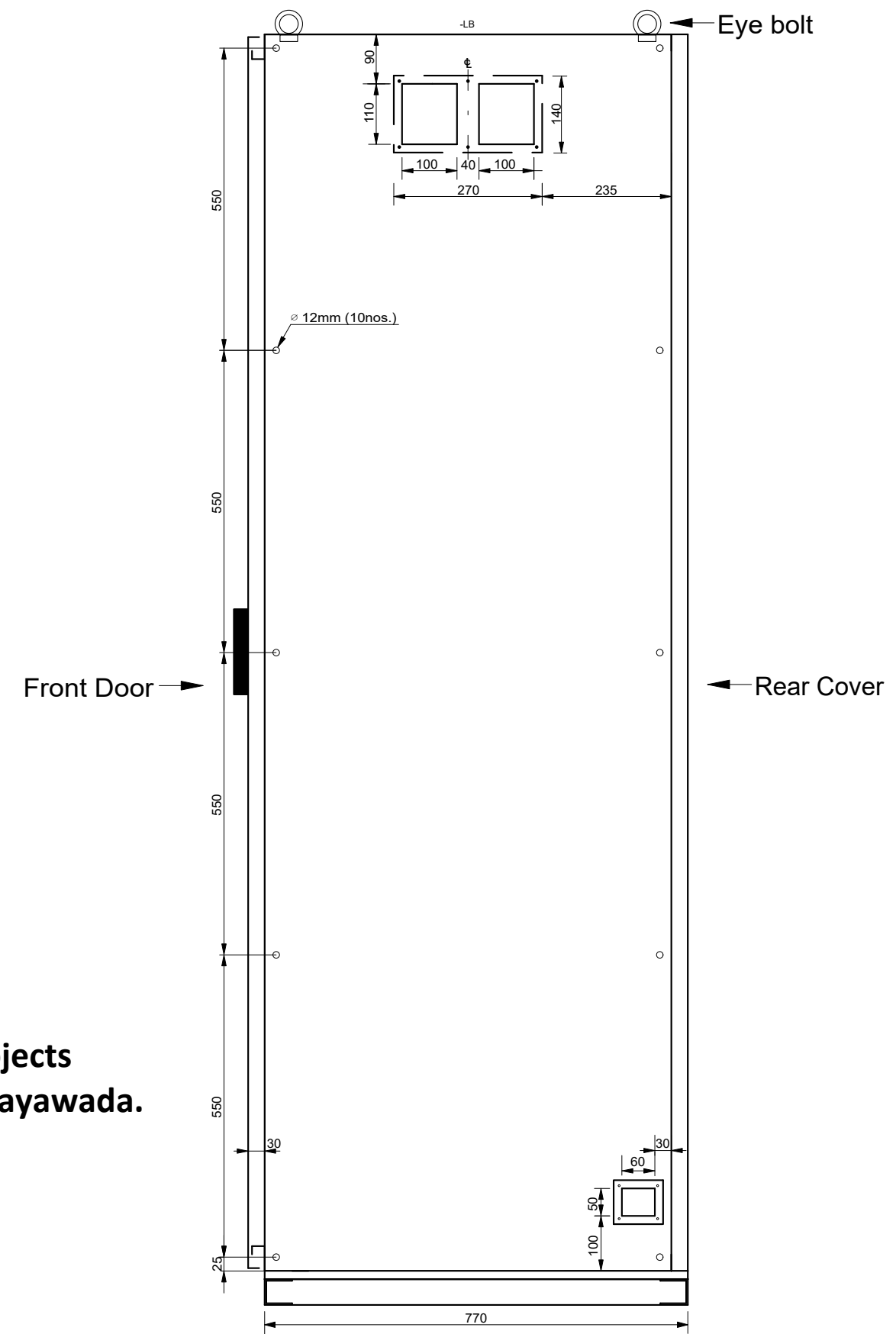
Cross sectional view



Foundation Details



Side view



Suitable for conventional 220KV SS only

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

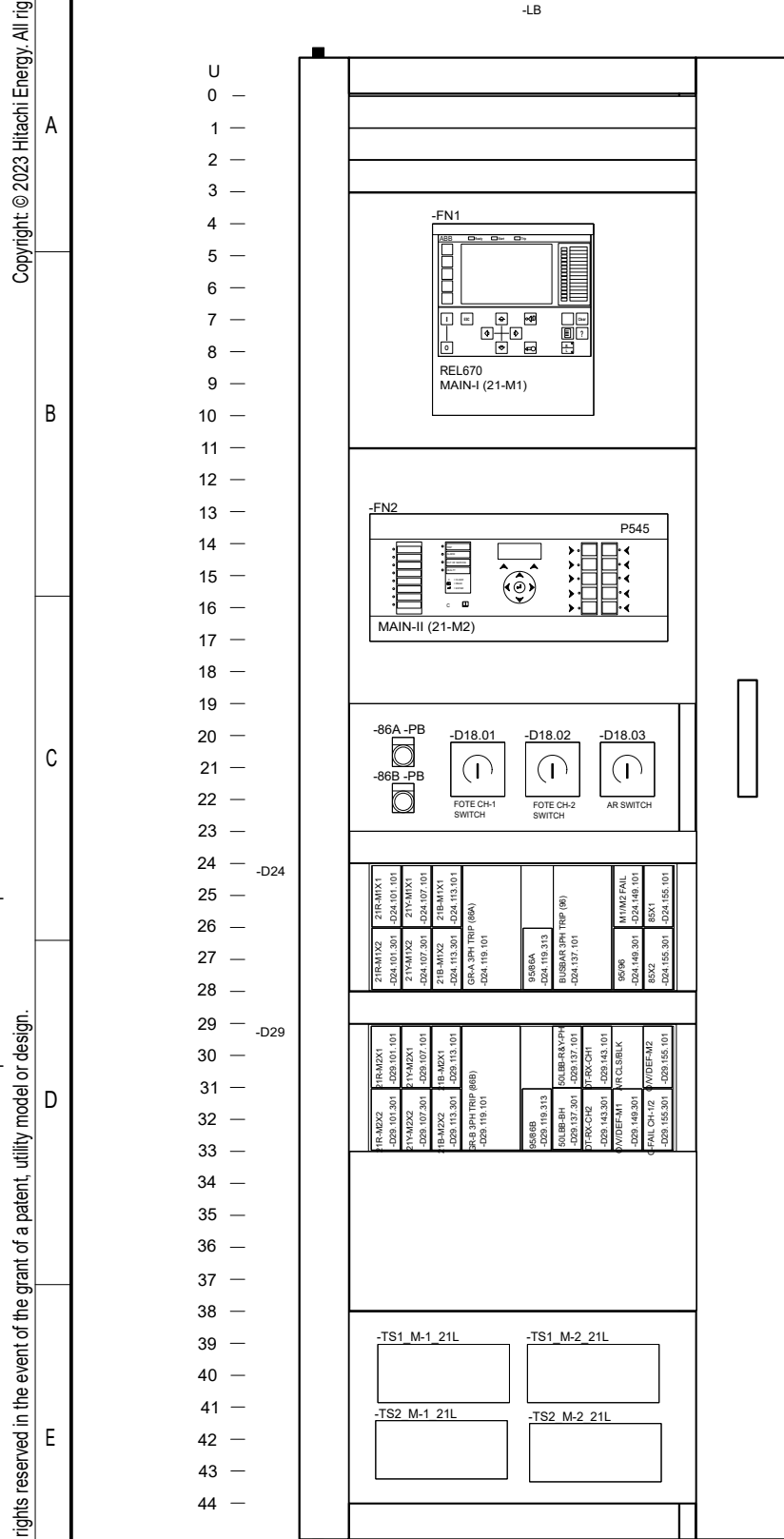
- Note :
- All Dimensions are in mm
  - Base frame Dimension is 800mm(W)x770mm(D)
  - # GLAND PLATE WITH 21 Nos. KNOCKOUT PUNCH HOLES OF 19mm DIA. TO BE PROVIDED.
  - ## GLAND PLATE WITH 21 Nos. KNOCKOUT PUNCH HOLES OF 25mm DIA. TO BE PROVIDED.

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LB
		Project APTRANSCO		Section view incl. location designation	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-AAAA	Sheet 17	n. sheet 18
1MYN691003-102(A3)REV01						

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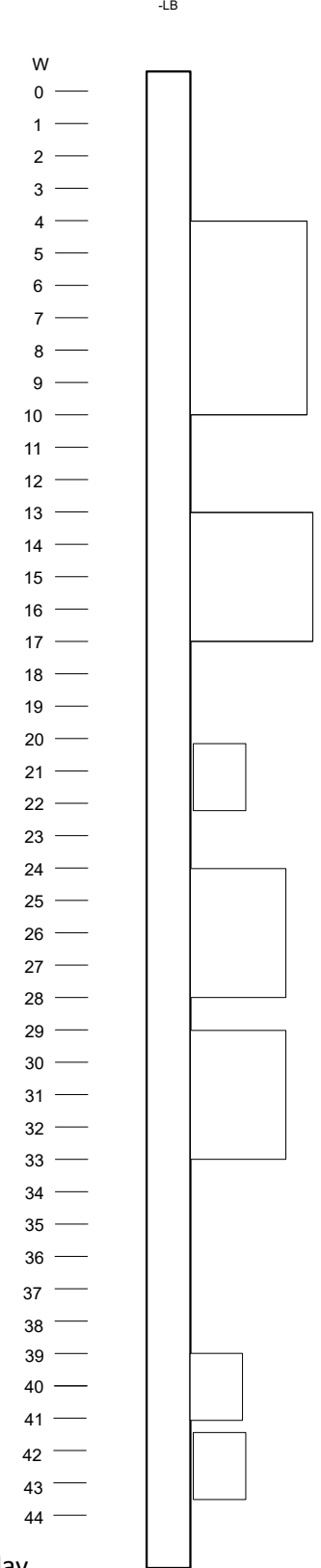


## Chief Engineer/Projects APTRANSCO/VS/Vijayawada.

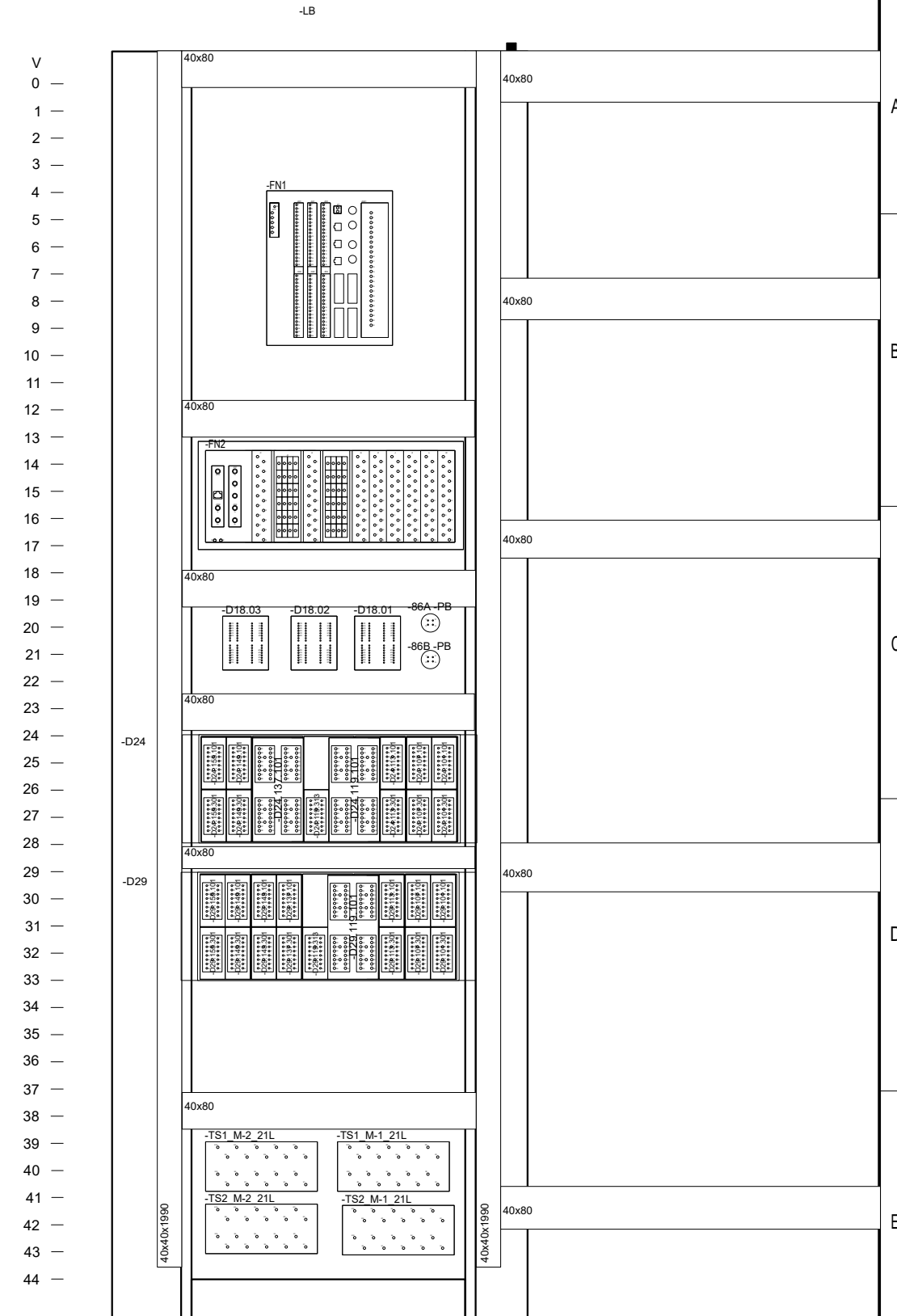
PANEL: 2KRLB	
ITEM DESIGNATION	DESCRIPTION
FN1	DISTANCE PROTECTION M1-RELAY(REL670)
FN2	DISTANCE PROTECTION M2-RELAY (P545)
86A-PB	PUSH BUTTON FOR GROUP-A 86A RESET
86B-PB	PUSH BUTTON FOR GROUP-B 86B RESET
D20.01	CARRIER SELECTOR SWITCH CH-1
D20.02	CARRIER SELECTOR SWITCH CH-2
D20.03	AUTO RECLOSE SELECTOR SWITCH
D24.101.101	1PH TRIP RELAY(R-PH) 21-M1X1
D24.101.301	1PH TRIP RELAY(R-PH) 21-M1X2
D24.107.101	1PH TRIP RELAY(Y-PH) 21-M1X1
D24.107.301	1PH TRIP RELAY(Y-PH) 21-M1X2
D24.113.101	1PH TRIP RELAY(B-PH) 21-M1X1
D24.113.301	1PH TRIP RELAY(B-PH) 21-M1X2
D24.119.101	GROUP-A(86A) TRIP RELAY
D24.119.301	GR-A TRIP RELAY SUPERVISION
D24.137.101	BUSBAR TRIP RELAY
D24.149.101	MAIN-1/MAIN-2 RELAY FAIL
D24.149.301	BUSBAR TRIP RELAY SUPERVISION
D24.155.101	AUX. RELAY FOR CARRIER SEND CH-1
D24.155.301	AUX. RELAY FOR CARRIER SEND CH-2
D29.101.101	1PH TRIP RELAY(R-PH) 21-M2X1
D29.101.301	1PH TRIP RELAY(R-PH) 21-M2X2
D29.107.101	1PH TRIP RELAY(Y-PH) 21-M2X1
D29.107.301	1PH TRIP RELAY(Y-PH) 21-M2X2
D29.113.101	1PH TRIP RELAY(B-PH) 21-M2X1
D29.113.301	1PH TRIP RELAY(B-PH) 21-M2X2
D29.119.101	GROUP-B(86B) TRIP RELAY
D29.119.313	GR-B TRIP RELAY SUPERVISION
D29.143.101	DT RECEIVED CH-1 RELAY
D29.143.301	DT RECEIVED CH-2 RELAY
D29.149.101	AR BLOCK RELAY
D29.149.301	AUX. RELAY OF OV/ DEF-M1
D29.155.101	AUX. RELAY OF OV/ DEF-M2
D29.155.301	AUX. RELAY FOR CARRIER FAIL CH-1/ CH-2
TS1/TS2_M-1_21L	TEST SWITCH FOR M-1 PROTN. RELAY
TS1/2_M-2_21L	TEST SWITCH FOR M-2 PROTN. RELAY
-D29.137.101	LBB RE-TRIP R-PH & Y-PH
-D29.137.301	LBB RE-TRIP B-PH

1No.Spare Trip relay RXMVB4 and 1No spare supervision relay TSR-B shall be supplied as loose and fixed in the panel.

## +F Side view hinged frame



## +D Back view hinged frame



Based on	Prepared 13.12.2023	VINOD G	
	Approved 20.12.2023	GOURISH HEGDE	
	Project APTRANSCO		
	STANDARD DRAWING		
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Doc. kind.	Assembly drawing	Ref.Des.	=2KR
	DCC ELU		+LB
Resp. dept.	PG-GAS	Rev. ind.	Language en
Doc. no.	1MNS500925-AAAA	Sheet	18
		n. sheet	19

**HITACHI** Hitachi Energy India Limited

Title 220kV LINE FEEDER  
Control & Relay Panel  
Hinged frame view

Doc. no.	1MNS500925-AAAA	Sheet	18
		n. sheet	19

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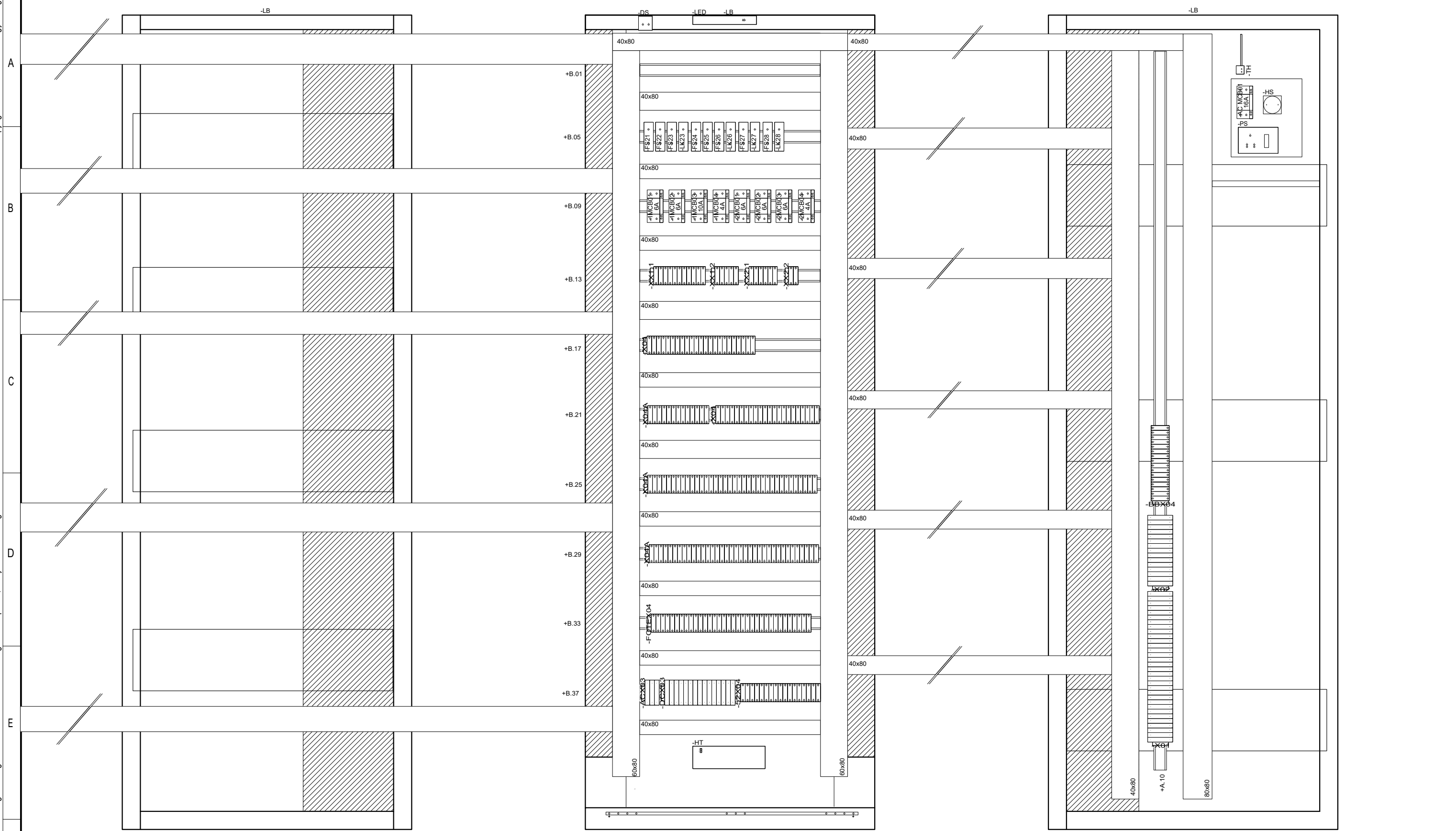
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+C Left side

+B Rear plane

+A Right side



NOTE: INTERNAL VIEW IS FOR INFORMATION ONLY. (MAY CHANGE DURING MANUFACTURING).

Drawing approval subject to valid vendor registration

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LB
		Project APTRANSCO		Inside view	Resp. dept. PG-GAS	Rev. ind. en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-AAAA	
Rev.	Revision note	Date	Name			Sheet 19
1MYN691003-102(A3)REV01						n. sheet 19.1

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Plane: A			
Device name	Description (1)	Description (2)	Type designation
-AC MCB01	AC SOURCE MCB	16A	-
-HS	HEATER SW	--	
-PS	Outlet	--	SW
-TH	Thermostat	--	TH

Plane: B			
Device name	Description (1)	Description (2)	Type designation
-1MCB01	M-1 PROTN CKT	6A	-
-1MCB02	86A TRIP RELAY CKT.	6A	-
-1MCB03	SPARE MCB	10A	-
-1MCB04	ETHERNET SW MCB	4A	-
-2MCB01	M-2 PROTN CKT	6A	-
-2MCB02	86B TRIP RELAY CKT.	6A	-
-2MCB03	SPARE MCB	6A	-
-2MCB04	ETHERNET SW MCB	4A	-
-FS21	R-PH SEL. BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	-
-FS22	Y-PH SEL. BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	-
-FS23	B-PH SEL. BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	-
-FS24	R-PH SEL. BUS PT/LINE CVT	FOR M-2 PROTN. RELAY	-
-FS25	Y-PH SEL. BUS PT/LINE CVT	FOR M-2 PROTN. RELAY	-
-FS26	B-PH SEL. BUS PT/LINE CVT	FOR M-2 PROTN. RELAY	-
-FS27	R-PH SEL. BUS PT/LINE CVT	FOR M-2 PROTN. RELAY	-
-FS28	R-PH SEL. BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	-
-HT	Heating	--	SPHT

Device name	Description (1)	Description (2)	Type designation
-LED	Lamp	--	LED
-LK23	NU SEL. BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	NL
-LK26	NU SEL. BUS PT/LINE CVT	FOR M-2 PROTN. RELAY	NL
-LK27	NU SEL. BUS PT/LINE CVT	FOR M-2 PROTN. RELAY	NL
-LK28	NU SEL. BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	NL

Plane: D			
Device name	Description (1)	Description (2)	Type designation
-86A -PB	PB - 86A	--	-
-86B -PB	PB - 86B	--	-
-D18.01	FOTE SW CH-1	--	12-2-pos. contacts
-D18.02	FOTE SW CH-2	--	12-2-pos. contacts
-D18.03	AR SEL. SW.	--	12-2-pos. contacts
-D24.101.101	1PH TRIP R-PH	21R-M1X1	RXME18
-D24.101.301	1PH TRIP R-PH	21R-M1X2	RXMS1
-D24.107.101	1PH TRIP Y-PH	21Y-M1X1	RXME18
-D24.107.301	1PH TRIP Y-PH	21Y-M1X2	RXMS1
-D24.113.101	1PH TRIP B-PH	21B-M1X1	RXME18
-D24.113.301	1PH TRIP B-PH	21B-M1X2	RXMS1
-D24.119.101	GR-A TRIP RELAY	86A	RXMVB4
-D24.119.313	3-Ph. GR-A Trip relay Supvn.	--	TSR-B
-D24.137.101	BB / LBB TRIP RELAY	--	RXMVB4
-D24.149.101	M1 RELAY HEALTHY	M2 RELAY HEALTHY	RXSF1
-D24.149.301	BB/LBB Trip relay Supvn.	--	TSR-B
-D24.155.101	85X1-CODE-1	85X1-CODE-2	RXSF1

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	+LB
		Project APTRANSCO		Legend list	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-AAAA	Sheet 19.1
1MYN691003-102(A3)REV01						n. sheet 19.2

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**8814490/2024/EEMRT-ENE51**

Device name	Description (1)	Description (2)	Type designation
-D24.155.301	85X2-CODE-1	85X2-CODE-2	RXSF1
-D29.101.101	1PH TRIP R-PH	21R-M2X1	RXME18
-D29.101.301	1PH TRIP R-PH	21R-M2X2	RXMS1
-D29.107.101	1PH TRIP Y-PH	21Y-M2X1	RXME18
-D29.107.301	1PH TRIP Y-PH	21Y-M2X2	RXMS1
-D29.113.101	1PH TRIP B-PH	21B-M2X1	RXME18
-D29.113.301	1PH TRIP B-PH	21B-M2X2	RXMS1
-D29.119.101	GR-B TRIP RELAY	86B	RXMVB4
-D29.119.313	3-Ph. GR-B Trip relay Supvn.	--	TSR-B
-D29.137.101	LBB RE-TRIP RPH	LBB RE-TRIP YPH	RXMM1
-D29.137.301	LBB RE-TRIP BPH	SPARE	RXMM1
-D29.143.101	DT Receive Ch-1	--	RXMS1
-D29.143.301	DT Receive Ch-2	--	RXMS1
-D29.149.101	AUTO RECLOSE CMD	AUTO RECLOSE BLOCK	RXMM1
-D29.149.301	OV_DEF_M1	--	RXMS1
-D29.155.101	OV_DEF_M2	--	RXMS1
-D29.155.301	C-FAIL CH-1	C-FAIL CH-2	RXSF1
-FN1	Main-1 Line Distance Protn.	REL670	REL670
-FN2	M2 Protn relay	--	Micom P545
-TS1_M-1_21L	TS_M-1_21L	--	MPG
-TS1_M-2_21L	TS_M-2_21L	--	MPG
-TS2_M-1_21L	TS_M-1_21L	--	MPG
-TS2_M-2_21L	TS_M-2_21L	--	MPG

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	+LB
		Project APTRANSCO		Legend list	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	<b>HITACHI</b>		Sheet 19.2
1MYN691003-102(A3)REV01						Doc. no. 1MNS500925-AAAA

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**8814490/2024/EEMRT-ENE51**

TERMINAL BLOCK DESIGNATION FOR EXTERNAL WIRING	
AX01, BX01, CX01,DX01	CT CIRCUITS
AX02, BX02, CX02,DX02	CVT/PT CIRCUITS
DCX03, ACX03	DC/AC INCOMING CIRCUITS
X04	CONTROL CIRCUITS
X05	INDICATION CIRCUITS
X06	ANNUNCIATION CIRCUITS
X07	SPARE CONTACTS
X08	SCADA/DAS/EVENT LOGGER CKTS
52*X04	CB CIRCUITS
89*X04	ISOLATOR CIRCUITS
BBX04	BUSBAR CIRCUIT
TRX04	TRANSFORMER TROUBLE/ RTCC/FIRE FIGHTING
PLX04	PLCC CIRCUIT
AXX1.1,AXX1.2, BXX1.1,BXX1.2	DC CIRCUITS FOR LOOPING

TERMINAL BLOCK DESIGNATION FOR INTERPANEL BUS WIRING	
AX11,BX11 CX11,DX11	CT CIRCUITS
AX12,BX12 CX12,DX12	CVT CIRCUITS
DCX13, ACX13	DC/AC INCOMING CIRCUITS
X14	CONTROL CIRCUITS
BBX14	BUSBAR CIRCUIT

TERMINAL BLOCKS	
	NON DISCONNECTING TB
	DIS CONNECTING TB
	CT/CVT JUNCTION BOX TERMINAL
	BREAKER TERMINAL
	ISOLATOR TERMINAL
	MARSHALLING KIOSK TB
	PLCC/FOTE TERMINALS
	ACDB/DCDB TERMINALS

SYMBOL LIST	
	MCB
	FUSE
	LINK
	RELAY COIL
	RELAY REVERSE FLAG
	RELAY MANUAL RESET FLAG
	PUSH BUTTON ON CONTACT
	NO CONTACT
	NC CONTACT
	EARTH
	SWITCH CONTACT
	LED LAMP
	SPACE HEATER
	DIODE
	RESISTOR
	VARISTOR

SYMBOL LIST	
	BINARY I/P
	BINARY O/P
	CHANGE OVER OUTPUT
	CT/PT INPUT
	mA INPUT
	POWER SUPPLY INPUT
	IEC61850 COMM. PORT
	RS232/485 COMM. PORT
	RJ45 COMM. PORT
	CURRENT TRANSFORMER
	CVT
	PT
	CIRCUIT BREAKER
	LIGHTNING ARRESTOR

FERRULE NOMENCLATURE			
FERRULE 'A' : CT CIRCUIT- MAIN PROTECTION	FERRULE 'B' : CT CIRCUIT- BUSBAR PROTECTION	FERRULE 'C' : CT CIRCUIT- BACKUP PROTECTION	
FERRULE 'D' : CT CIRCUIT- METERING	FERRULE 'E' : PT CKTS	FERRULE 'H' : AUXILIARY AC CKTS	
FERRULE 'J' : AUXILIARY DC CKTS	FERRULE 'K' : CONTROL CKTS	FERRULE 'L' : INDICATION CKTS	
FERRULE 'P' : DC CKT- BUSBAR PROTECTION	FERRULE 'U' : SPARE CONTACTS		

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		List Of Symbols	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 21	n. sheet 22
1MYN691003-102(A3)REV01						

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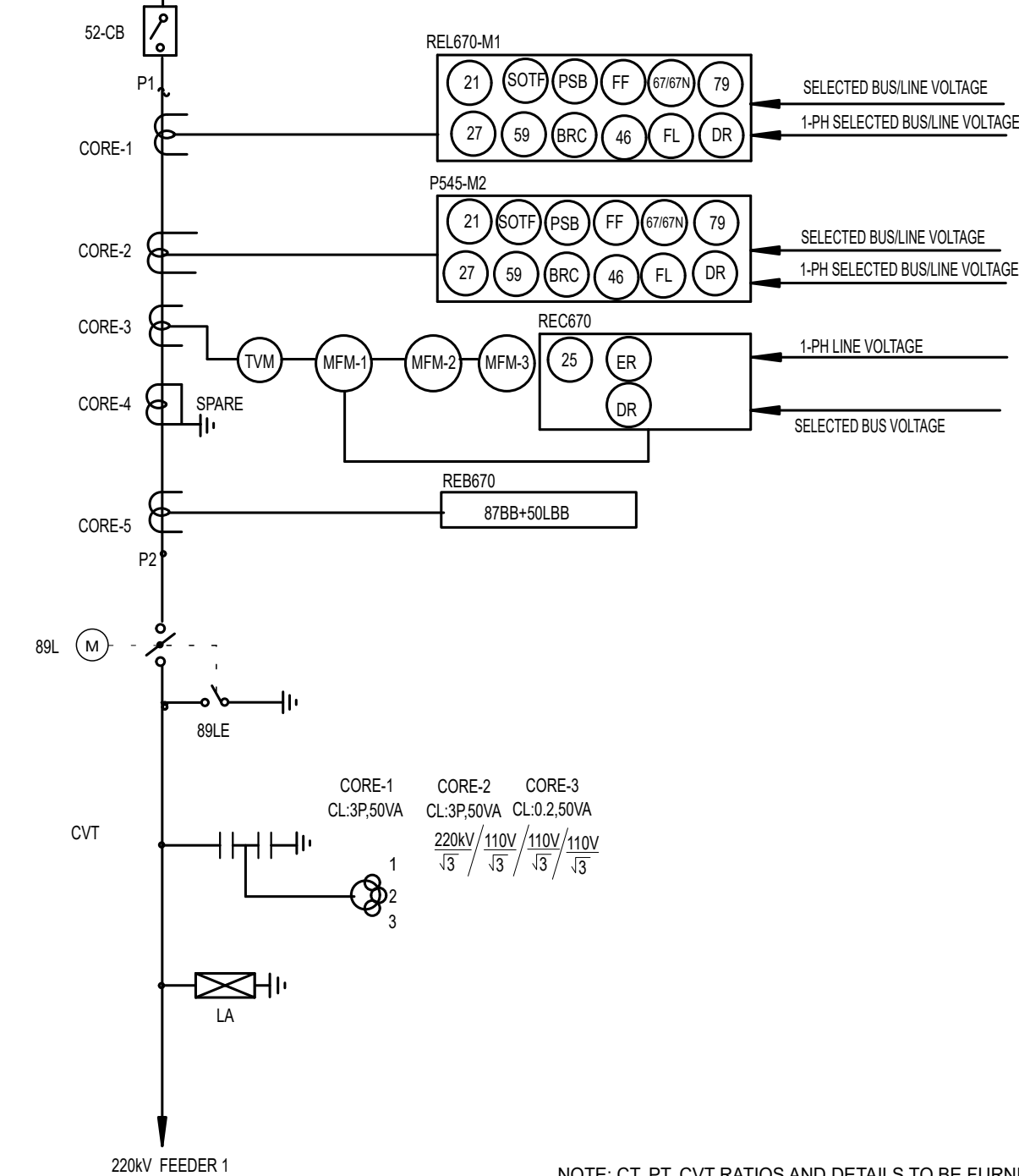
8814490/2024/EMPT-ENE51

220KV,50Hz,40kA/1sec MAIN BUS-II



Drawing approval subject to valid vendor registration

CT  
800-600-400/1A



220KV CT DETAILS FOR LINE FEEDER

APPLICATION	CORE NO.	RATIO	OUTPUT	ACCURACY CLASS	Vk (V)	Iext @ Vk/2 (mA)
PROTECTION	1	800-600-400/1A	-	-	-	-
PROTECTION	2	800-600-400/1A	-	-	-	-
METERING	3	800-600-400/1A	-	-	-	-
SPARE	4	800-600-400/1A	-	-	-	-
BUS DIFF	5	800-600-400/1A	-	-	-	-

- NOTE:
- 21L- DISTANCE PROTN.
  - 25- CHECK SYNCH.
  - 79- AUTORECLOSURE
  - SOTF- SWITCH ON TO FAULT
  - 50LBB- LOCAL BREAKER BACKUP
  - 85- WEAK END INFEEED & CURRENT REVERSAL
  - 67- DIRECTIONAL OVER CURRENT
  - 67N- DIRECTIONAL EARTH FAULT
  - 87BB- BUSBAR DIFFERENTIAL
  - 50/51- IDMT/INST. OVERCURRENT
  - 50N/51N- IDMT/INST. EARTH FAULT
  - 78- POWER SWING BLOCK
  - 27-UNDERTVOLTAGE PROTN
  - 59-OVERTVOLTAGE PROTN
  - BRC-BROKEN CONDUCTOR PROTN
  - DR- DATA RECORDER
  - FL- FAULT LOCATER
  - ER- EVENT RECORDER

Suitable for conventional 220KV SS only

NOTE: CT, PT, CVT RATIOS AND DETAILS TO BE FURNISHED  
ADOPTED CTR TO BE FURNISHED

**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Single Line Diagram	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 22
1MYN691003-102(A3)REV01						n. sheet 23

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PROTECTION FUNCTION	OUTPUT	START AUTO RECLOSE MAIN CB	BLOCK AUTO RECLOSE MAIN CB	3PH MASTER TRIP RELAY GROUP-A, MAIN CB	3PH MASTER TRIP RELAY GROUP-B, MAIN CB	DIREC TRIP SEND CHANNEL-1	DIREC TRIP SEND CHANNEL-2	FOTE CHANNEL-1	FOTE CHANNEL-2	BUSBAR PROTECTION	BREAKER FAIL PROT N MAIN CB	TO CB TRIP COIL-1	TO CB TRIP COIL-2	CLOSE CB	1Ø TRIPPING RELAY M1	1Ø TRIPPING RELAY M2	9Ø TRIPPING RELAY	Remark
DISTANCE PROTECTION TRIP(PDIS,21)-MAIN 1	1 Ph	(IP)						(TP)	(TP)		(IP)				(TP)			BUILT IN MAIN-1 REL670
DISTANCE PROTECTION TRIP(PDIS,21)-MAIN 1	3 Ph		(IP)	(IP)	(IP)													BUILT IN MAIN-1 REL670
DIRECTIONAL EARTH FAULT(PDEF,67N)-MAIN 1	3 Ph			(IP)	(IP)	(TP)	(TP)											BUILT IN MAIN-1 REL670
OVERVOLTAGE PROTECTION TRIP(PTOV,59)-MAIN 1	3 Ph			(IP)	(IP)	(TP)	(TP)											BUILT IN MAIN-1 REL670
CH-1 CARRIER FAIL & CH-2 CARRIER FAIL			(IP)															
DISTANCE PROTECTION TRIP(PDIS,21)-MAIN 2	1 Ph	(IP)						(TP)	(TP)		(IP)					(TP)		BUILT IN MAIN-2 P545
DISTANCE PROTECTION TRIP(PDIS,21)-MAIN 2	3 Ph		(IP)	(IP)	(IP)													BUILT IN MAIN-2 P545
DIRECTIONAL EARTH FAULT(PDEF,67N)-MAIN 2	3 Ph			(IP)	(IP)	(TP)	(TP)											BUILT IN MAIN-2 P545
OVERVOLTAGE PROTECTION TRIP(PTOV,59)-MAIN 2	3 Ph			(IP)	(IP)	(TP)	(TP)											BUILT IN MAIN-2 P545
BREAKER FAIL PROTECTION(RBRF,50BF)MAIN CB	3 Ph									(IP)							(TP)	BUILT IN REB670
BUSBAR PROTECTION (PBDF, 87B)	3 Ph		(IP)			(TP)	(TP)				(IP)	(TP)	(TP)	(RS)			(TP)	BUILT IN REB670
LBB RE-TRIP	3 Ph											(TP)	(TP)					
DIRECT TRIP RECEIVE CHANNEL-1	3 Ph			(IP)	(IP)													BUILT IN RXMS
DIRECT TRIP RECEIVE CHANNEL-2	3 Ph			(IP)	(IP)													BUILT IN RXMS
3PH MASTER TRIP RELAY, GROUP-A, MAIN CB	3 Ph		(IP)								(IP)	(TP)	(TP)	(RS)				
3PH MASTER TRIP RELAY, GROUP-B, MAIN CB	3 Ph		(IP)								(IP)	(TP)	(TP)	(RS)				
AUTO RECLOSE(RREC,79)	1/3 Ph													(IP)				BUILT IN M1/M2 RELAY
CHECK SYNCHRONISING(RSYN, 25)																		BUILT IN REC670 RELAY
BAY CONTROLLER, REC670												(TP)	(TP)	(TP)				BUILT IN REC670 RELAY
CB TROUBLES TO BAY CONTROLLER																		BUILT IN REC670 RELAY
1Ø TRIPPING RELAY M1	1 Ph	(IP)									(IP)	(TP)	(TP)					
1Ø TRIPPING RELAY M2	1 Ph	(IP)									(IP)	(TP)	(TP)					
MANUAL TRIP MAIN CB (BCU/TNC)	3 Ph					(TP)	(TP)					(TP)	(TP)					

NOTE: LBB FUNCTION FIRST ISSUES RE-TRIP COMMAND TO ITS OWN BREAKER AFTER 100ms & THEN BACK-UP TRIP COMMAND IS ISSUED TO TRIP ADJ BREAKER & INITIATE BUS-BAR \*\* SINGLE PHASE TRIPS ONLY FOR ZONE-1, THREE PHASE TRIP FOR ZONE-2, 3.

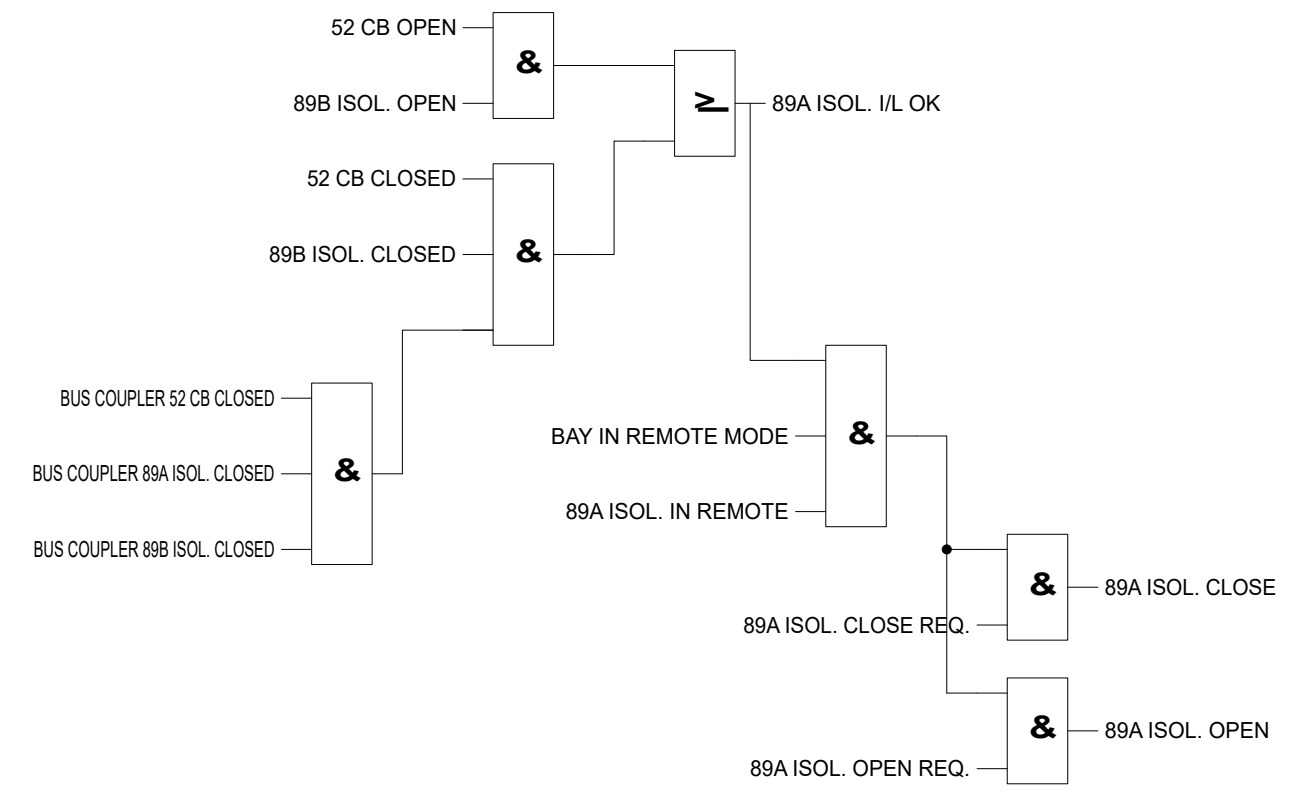
(IP) INDICATES INITIATION FROM PROTECTION FUNCTION (TP) INDICATES TRIP FROM PROTECTION FUNCTION (RS) INDICATES RESET STATUS FOR CB CLOSING

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Trip Logics	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 23
1MYN691003-102(A3)REV01						n. sheet 24

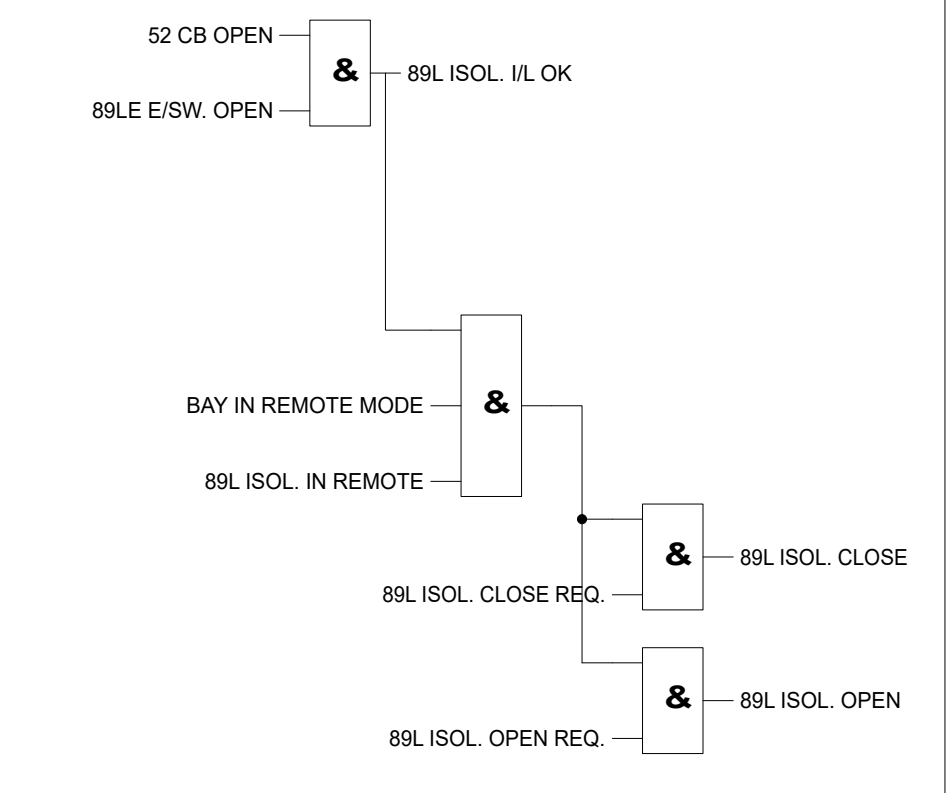
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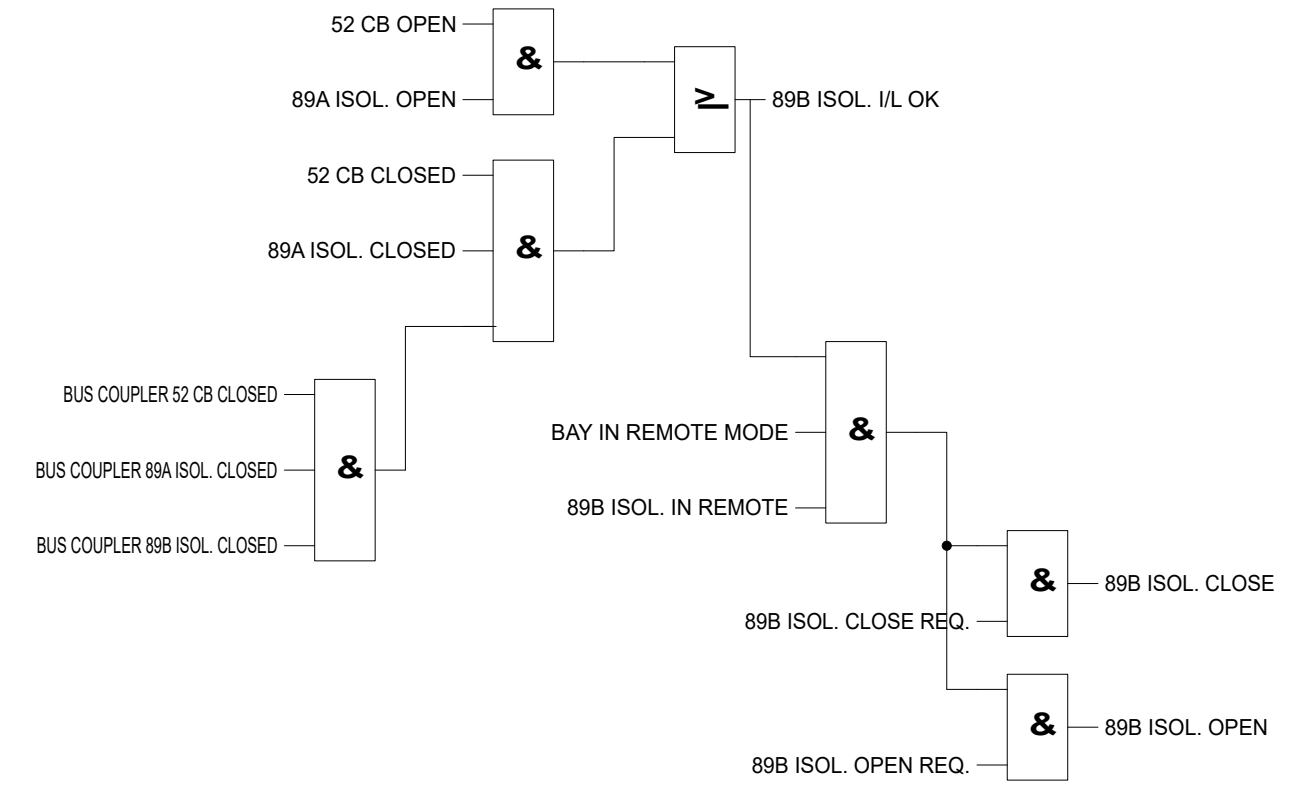
89A ISOL. OPEN/CLOSE INTERLOCK



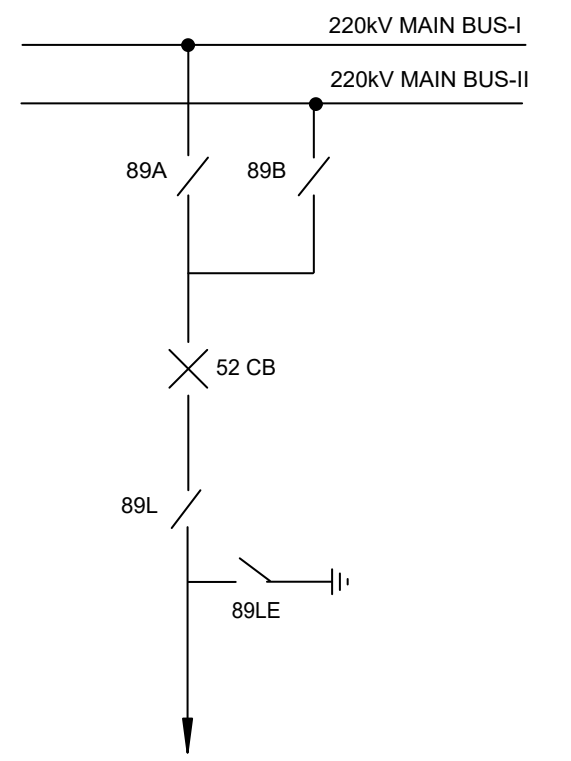
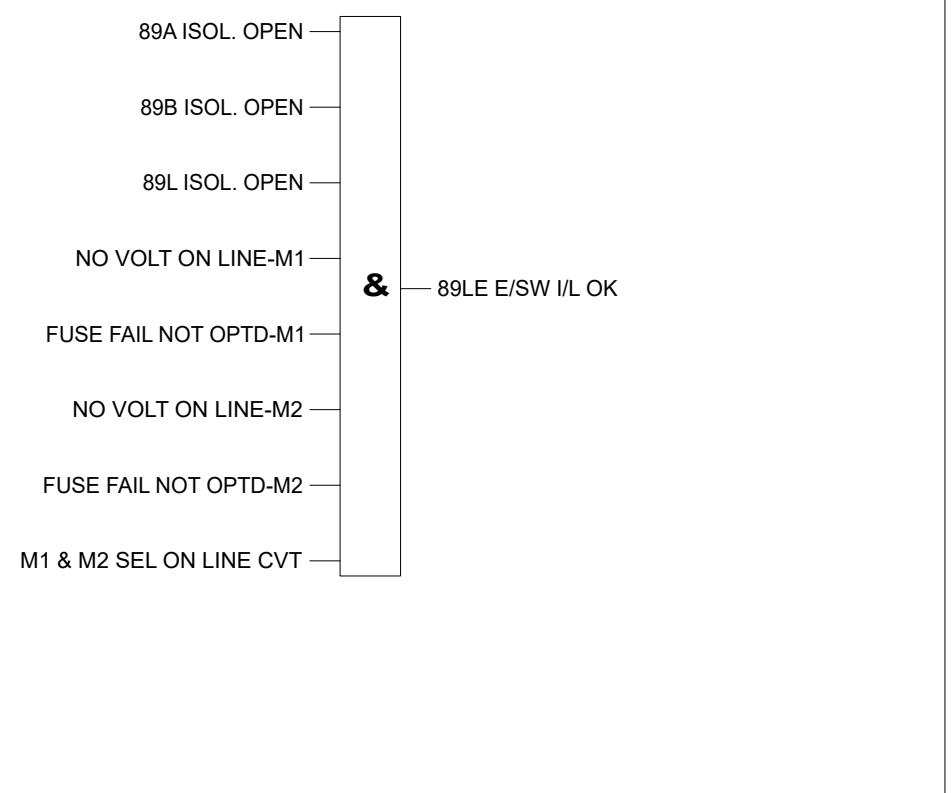
89L ISOL. OPEN/CLOSE INTERLOCK



89B ISOL. OPEN/CLOSE INTERLOCK



89LE E/SW. OPEN/CLOSE INTERLOCK



**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Interlocking Logics	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 24	n. sheet 25
1MYN691003-102(A3)REV01						

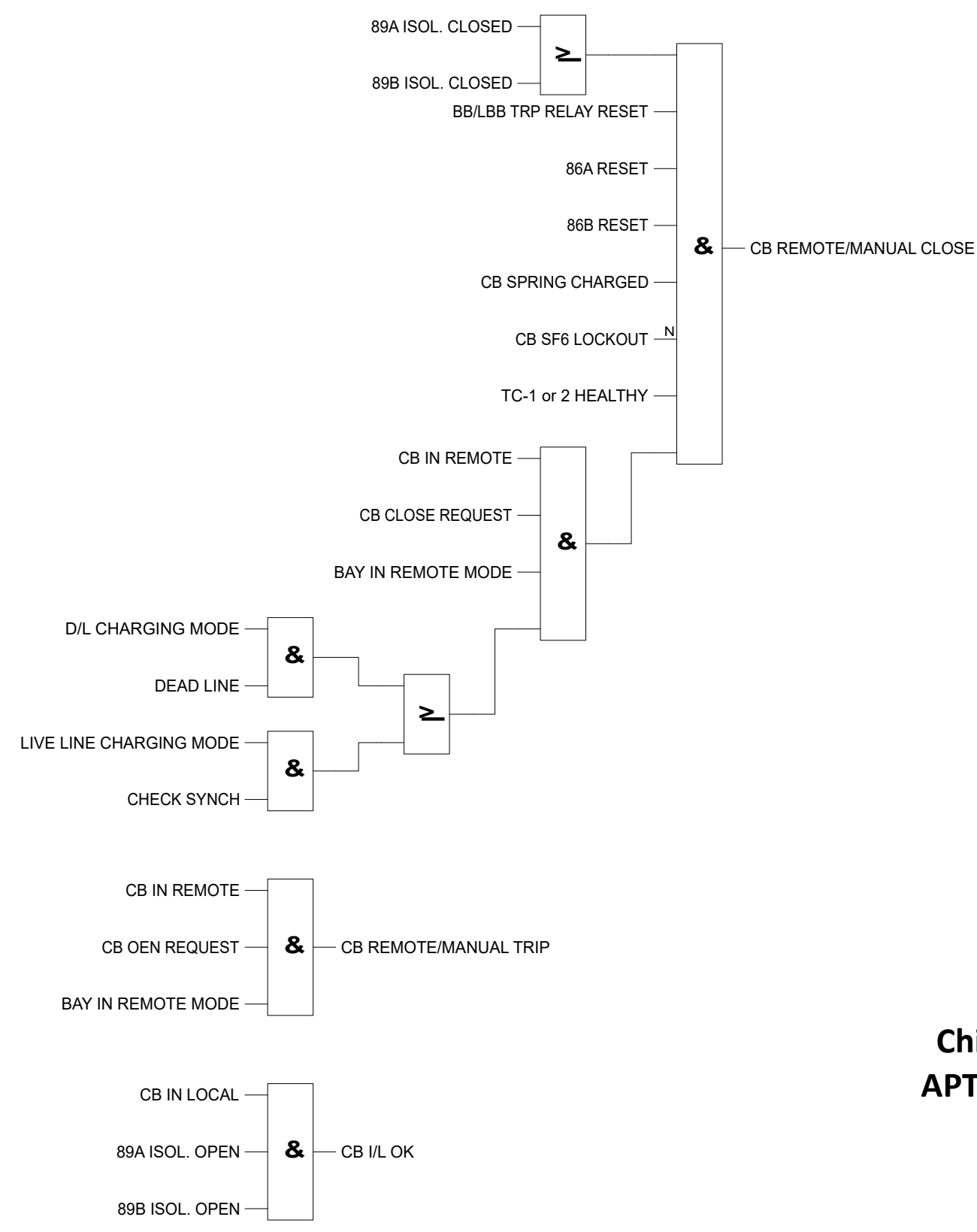
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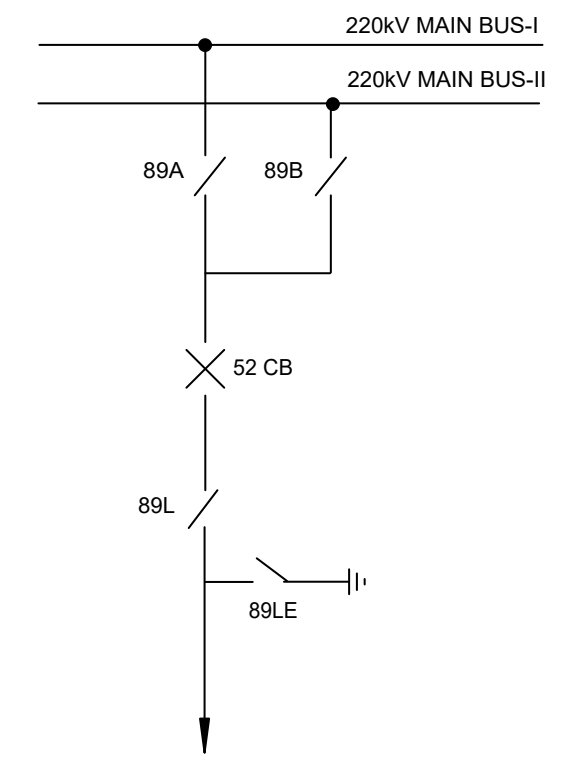
8814490/2024/EEMRT-ENE51

52 CB TRIP/CLOSE INTERLOCK

Suitable for conventional 220KV SS only



**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**



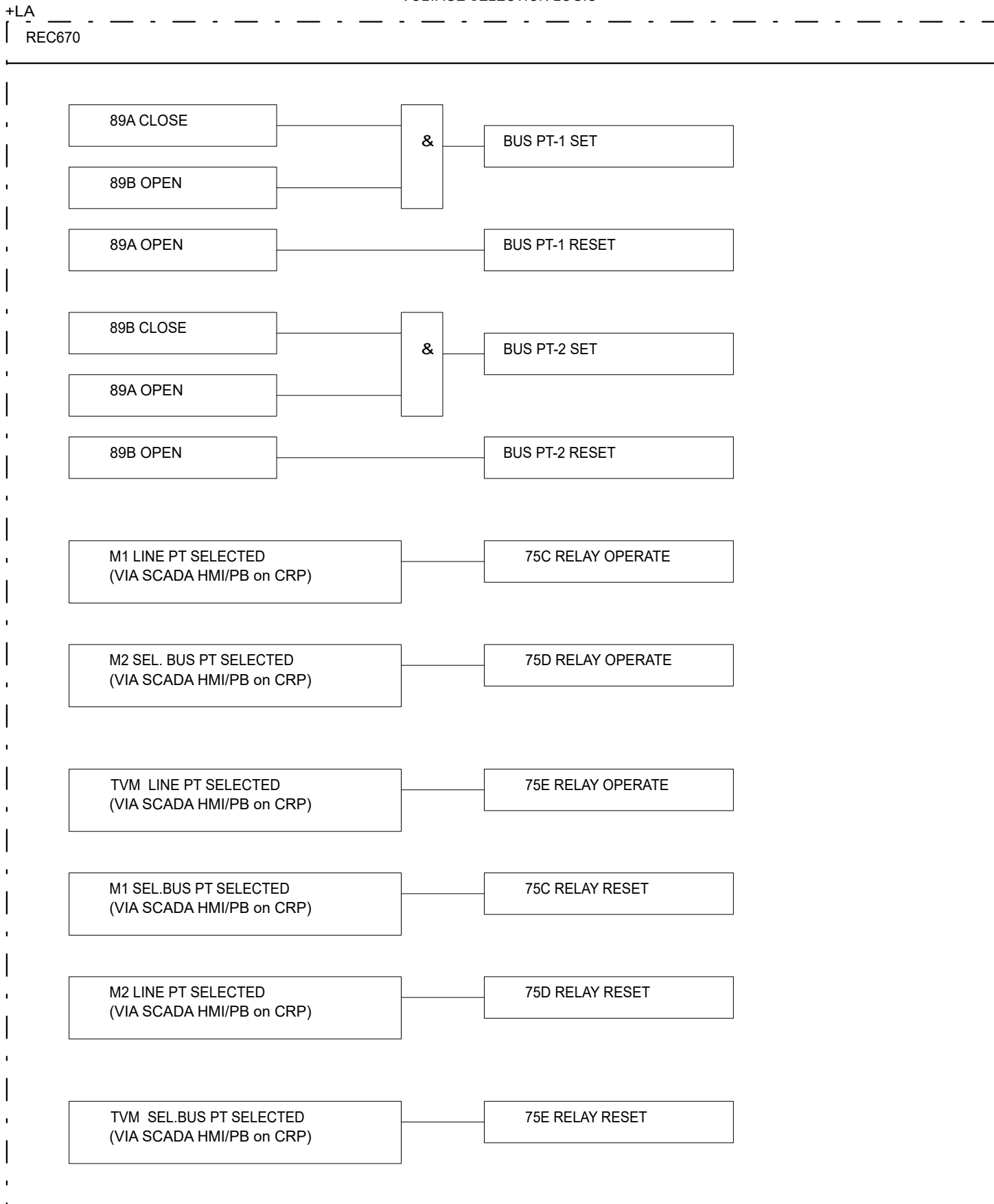
Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Interlocking Logics	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	Sheet 25
1MYN691003-102(A3)REV01						n. sheet 26

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23

VOLTAGE SELECTION LOGIC



Drawing approval subject to valid vendor registration

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

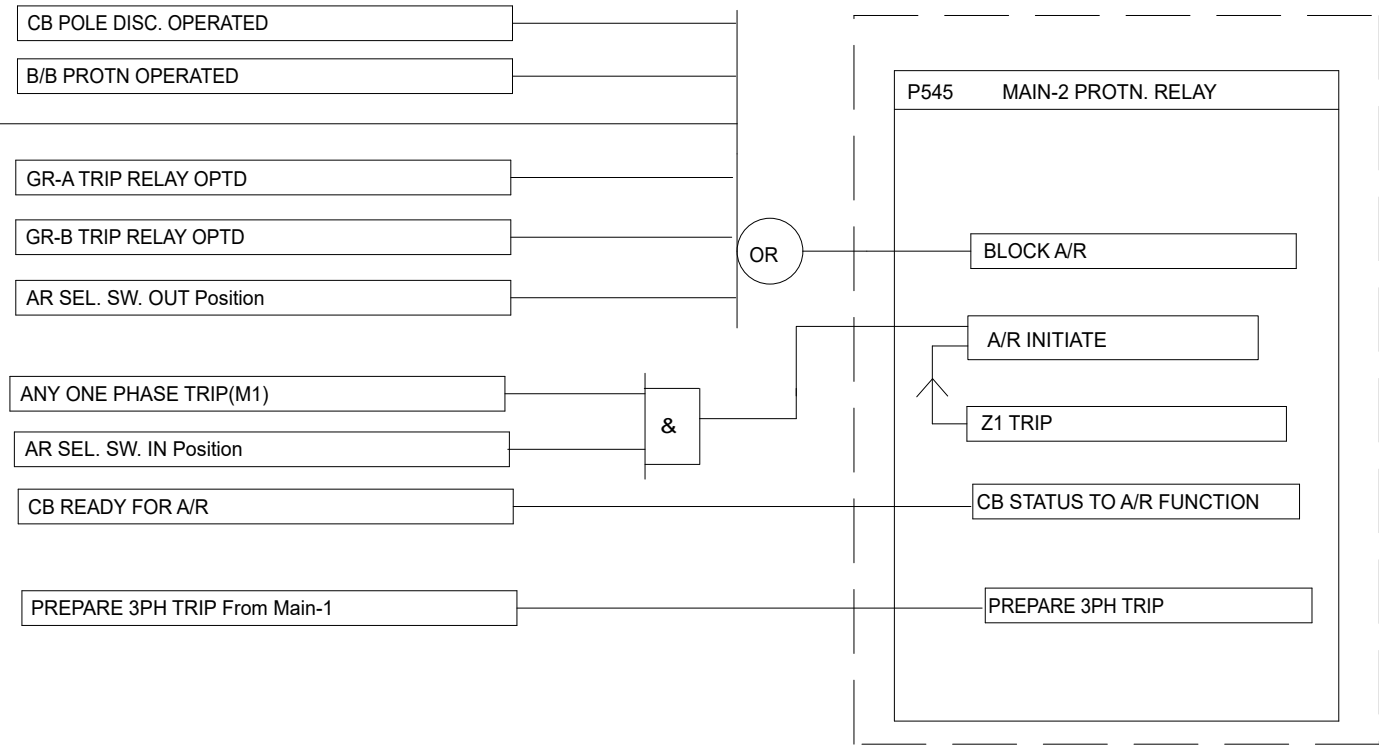
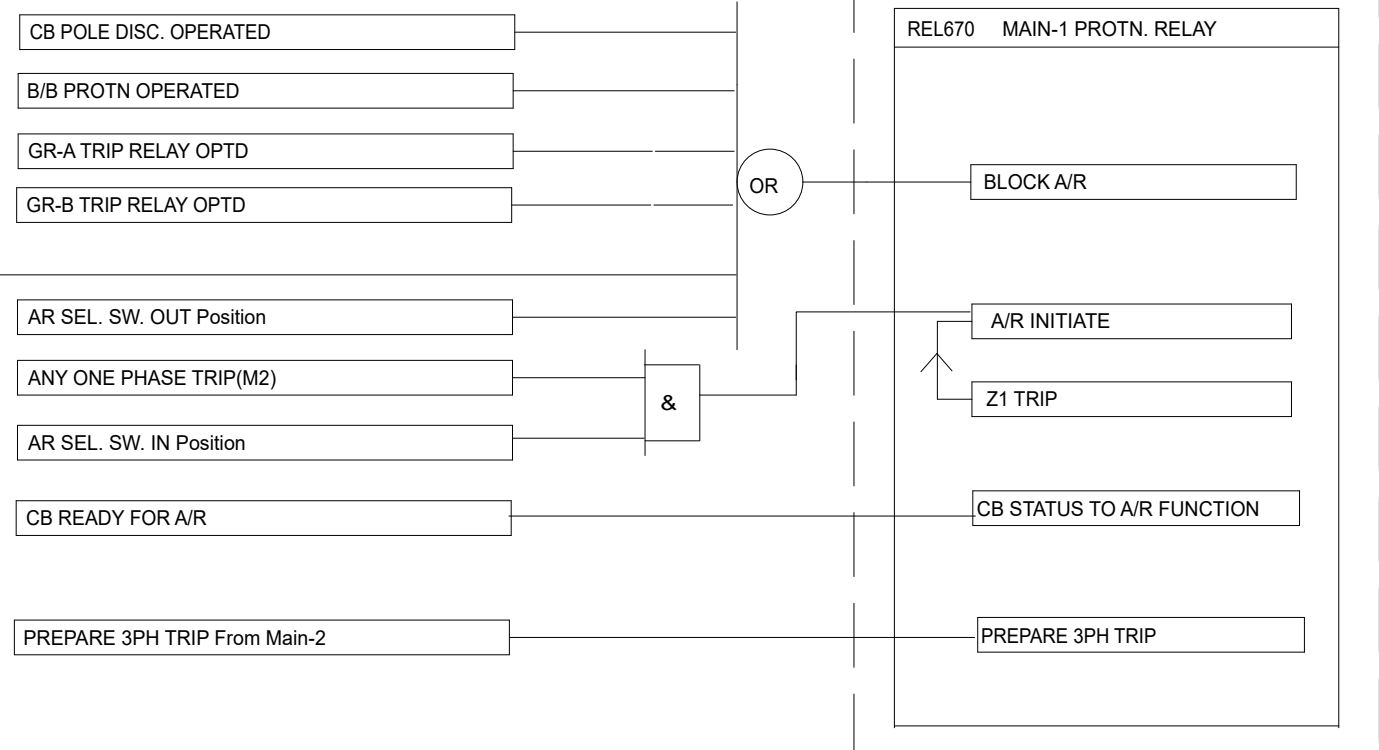
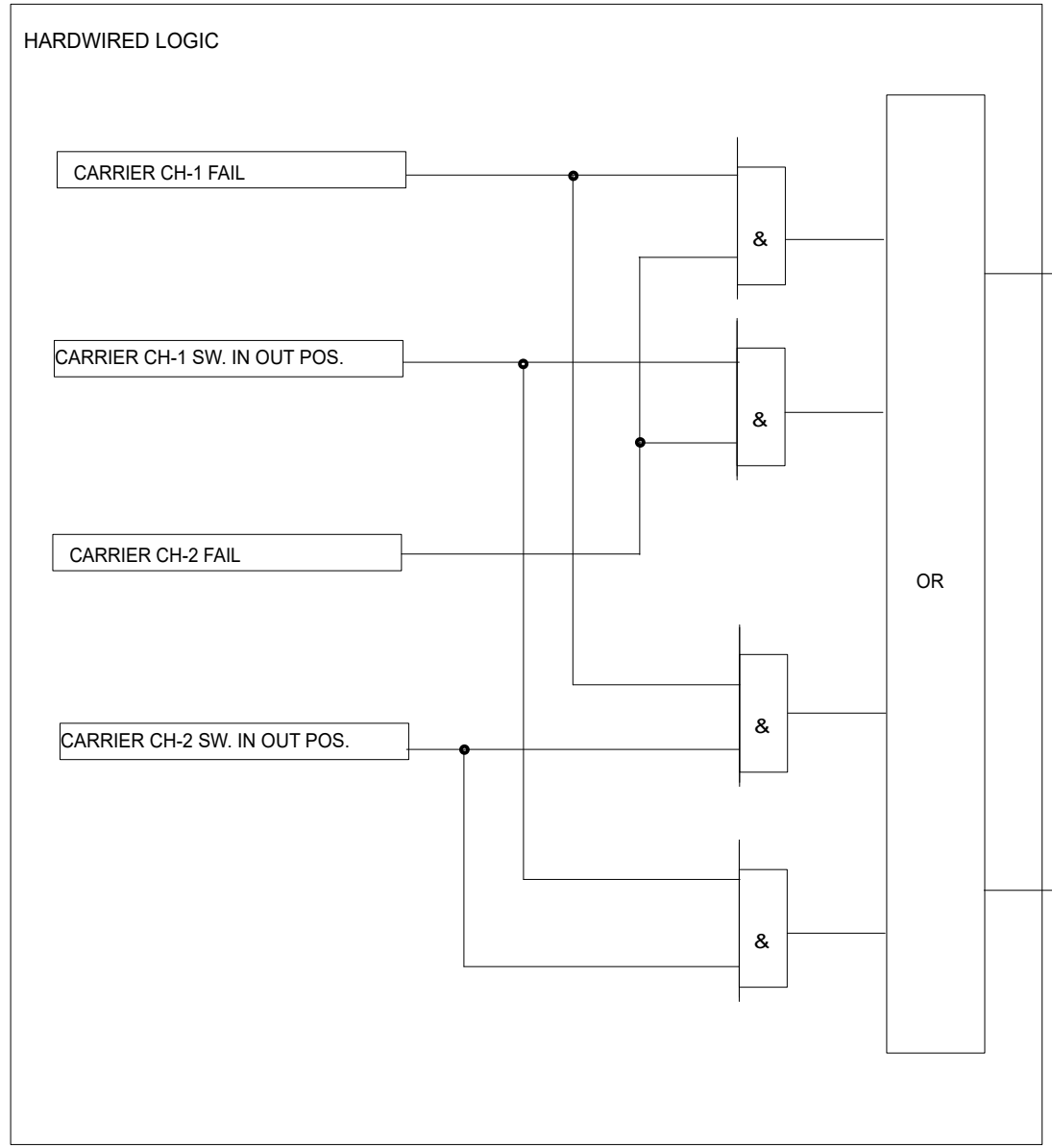
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		Project			APTRANSCO		PG-GAS		Rev. ind.		Language		en	
		STANDARD DRAWING			HITACHI		Hitachi Energy India Limited				Sheet		26	
Rev.	Revision note	Date	Name					Doc. no.		1MNS500925-CAAA		n. sheet		27
1MYN691003-102(A3)REV01														

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NOTE:- BOTH A/R FUNCTION OF MAIN-1 & MAIN-2 SHALL OPERATE PARALLELLY.

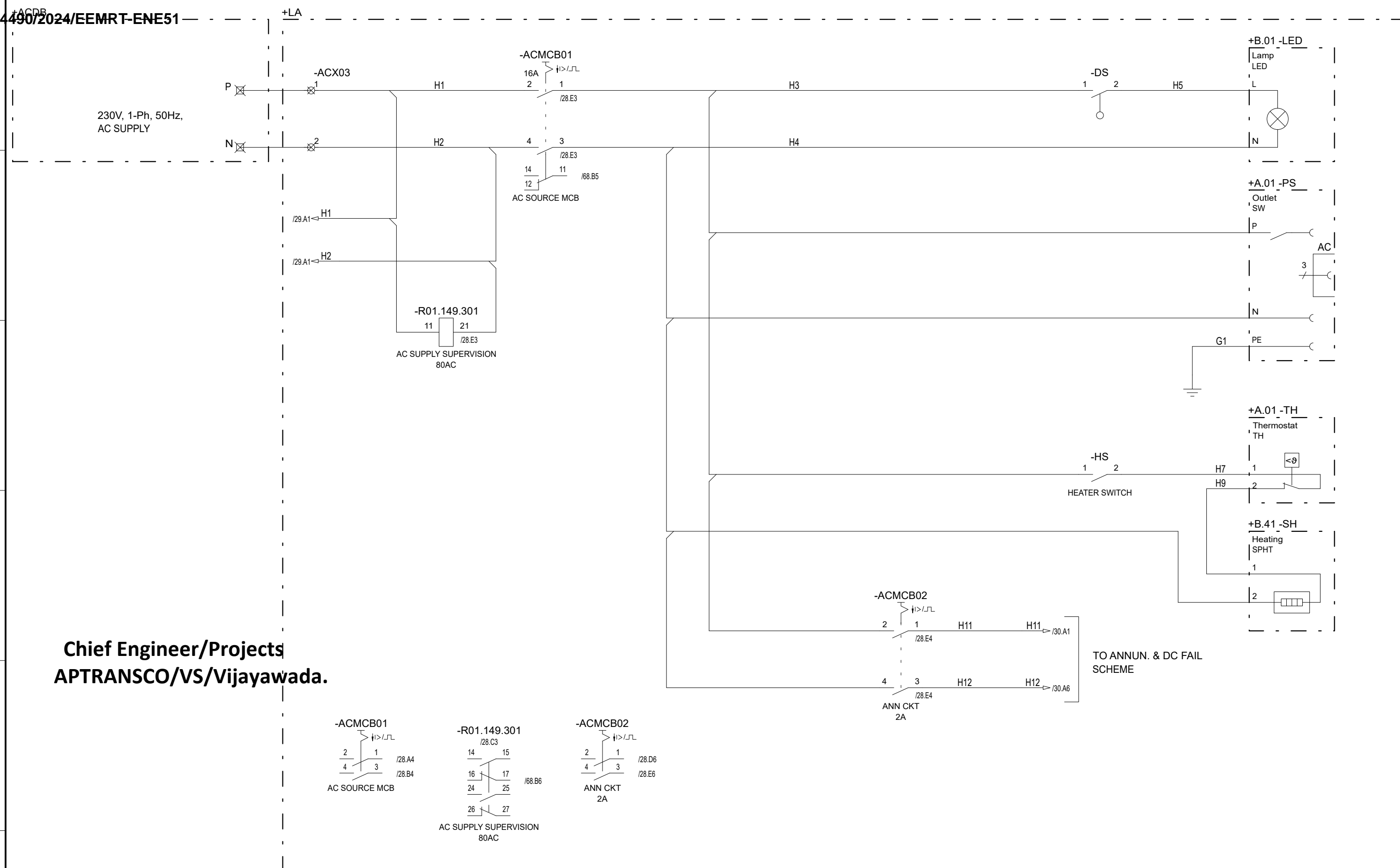
————— HARDWIRED SIGNAL

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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Rev.	Revision note	Date	Name			Sheet 27
1MYN691003-102(A3)REV01						n. sheet 28

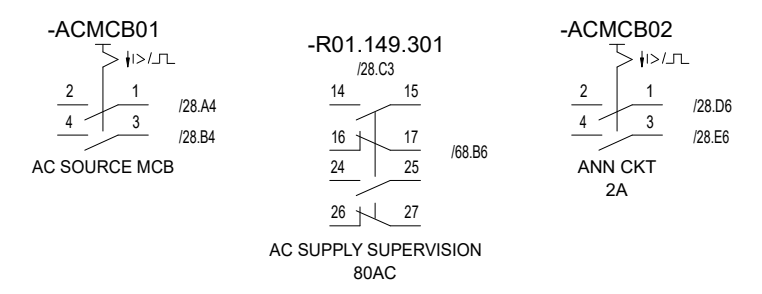
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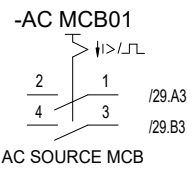
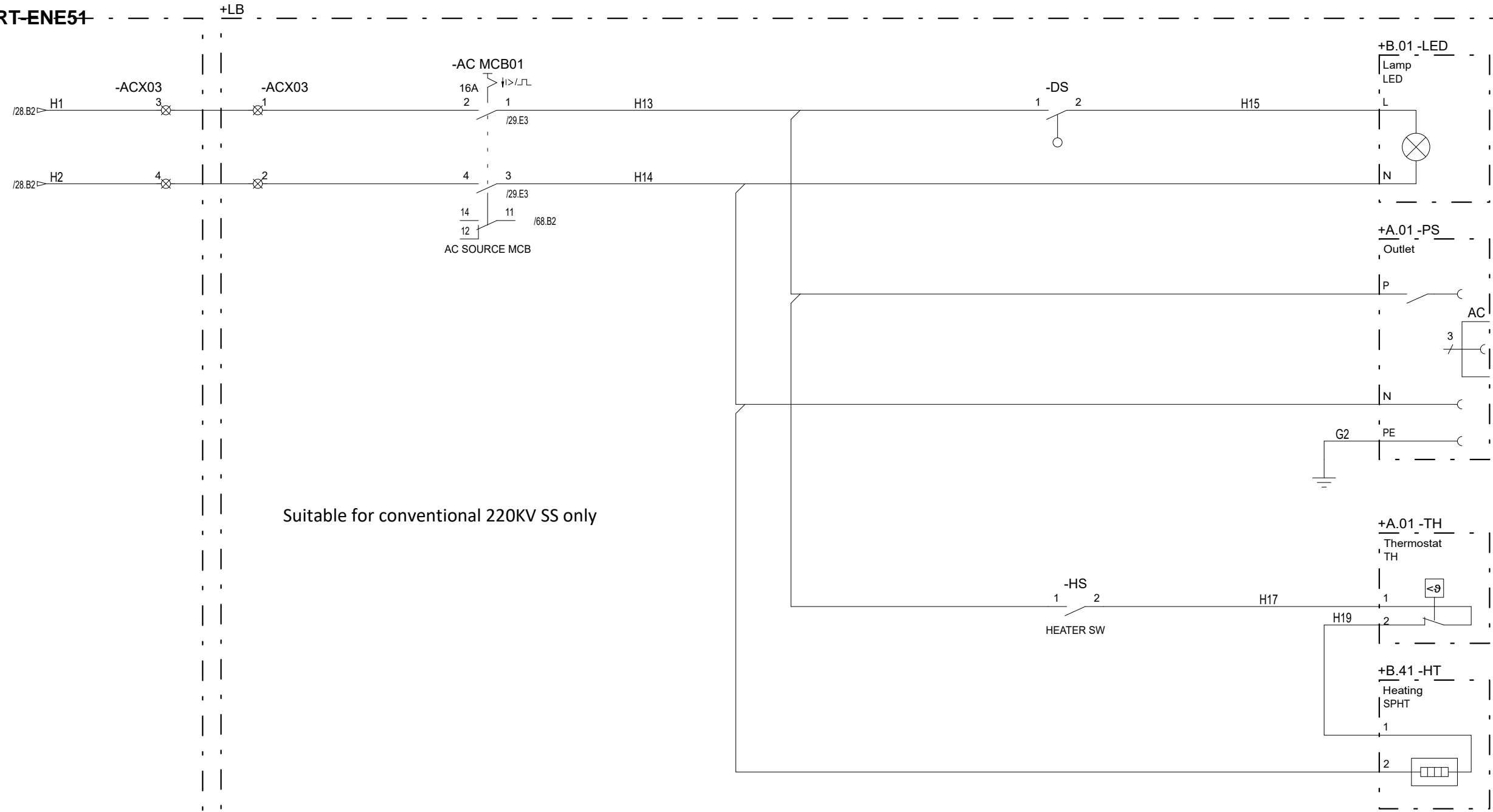
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	Sheet 28
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	n. sheet 29
1MYN691003-102(A3)REV01						

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26

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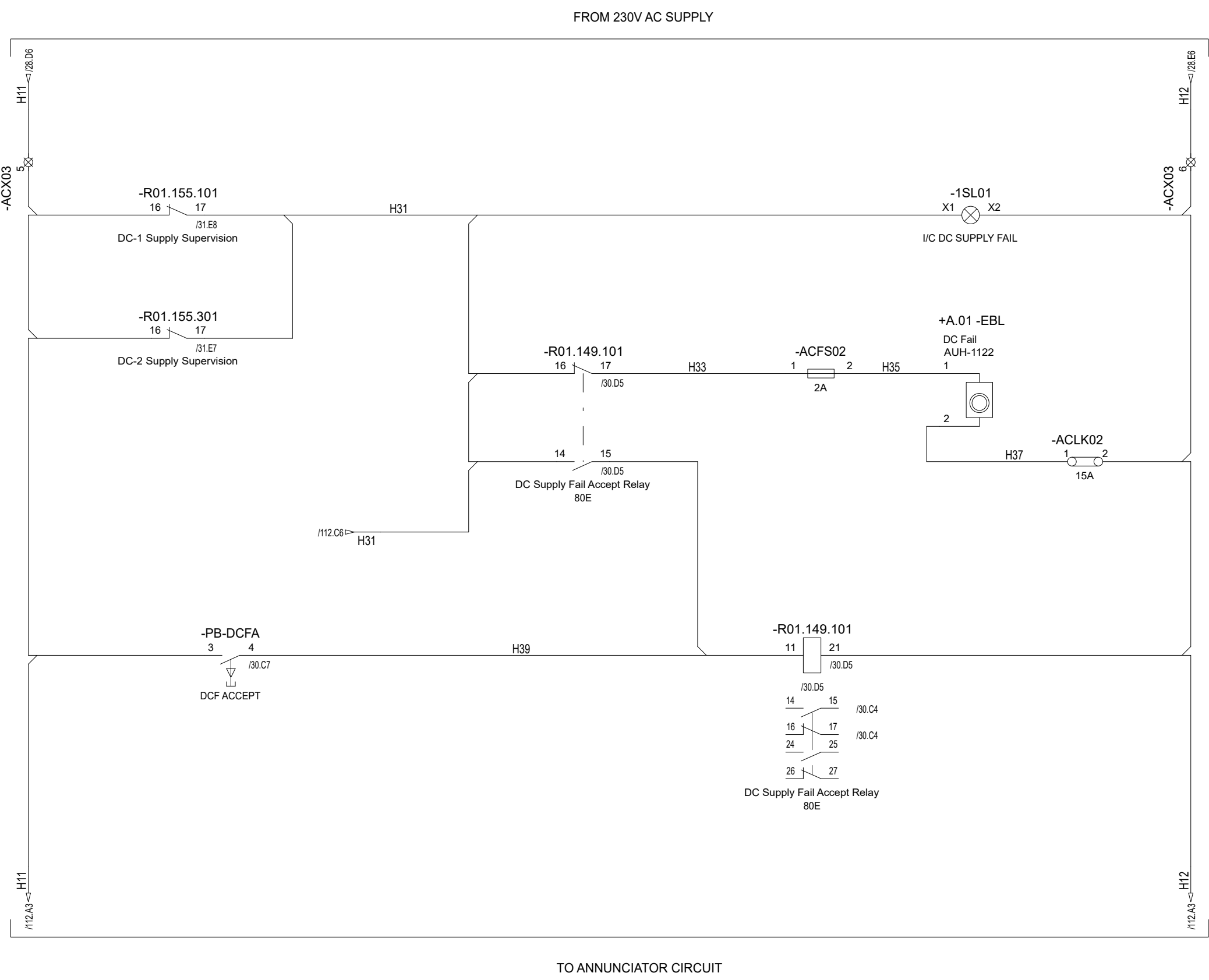
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APTRANSCO/VS/Vijayawada.**

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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 29	n. sheet 30
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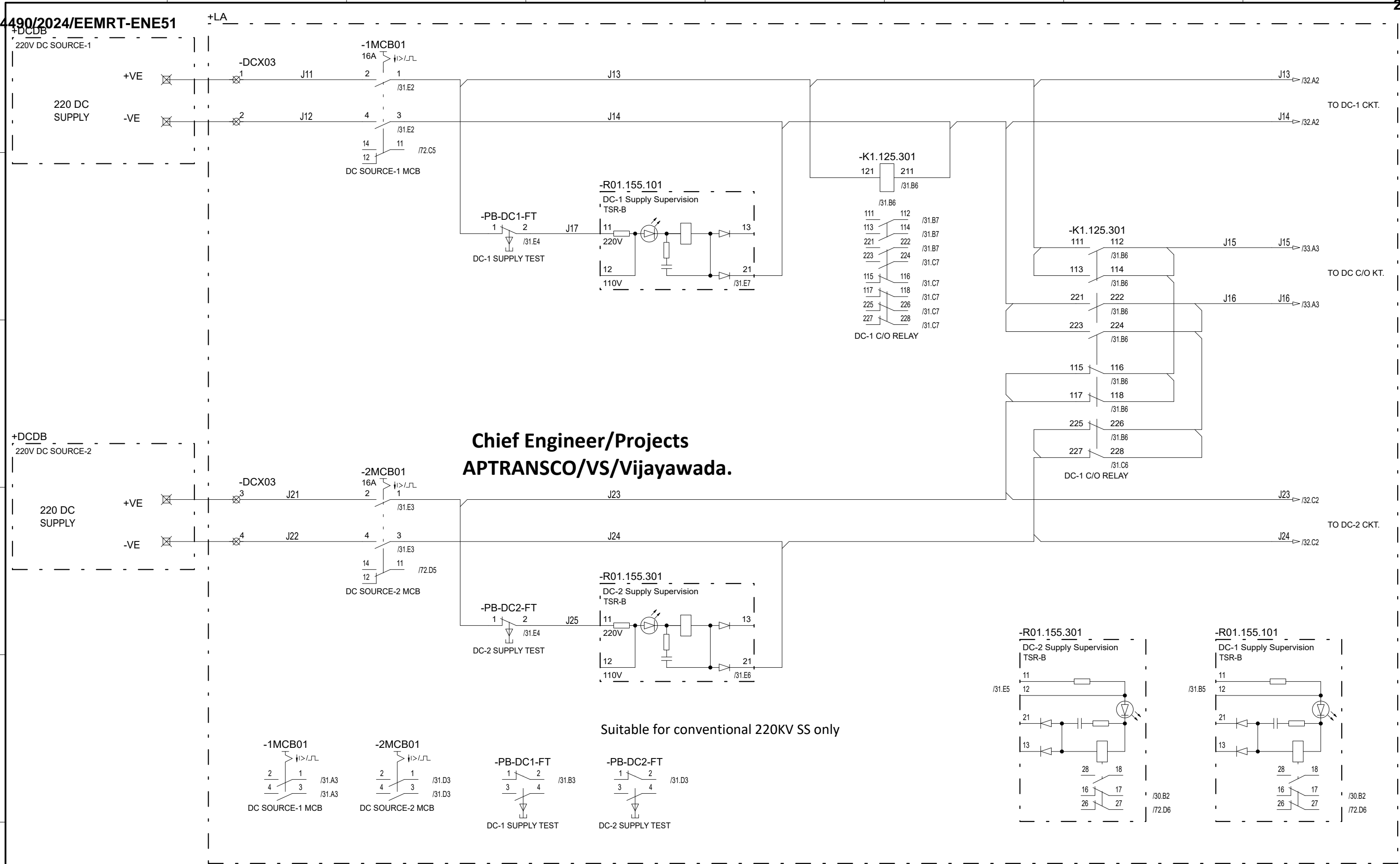
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Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	Sheet 30
1MYN691003-102(A3)REV01						n. sheet 31

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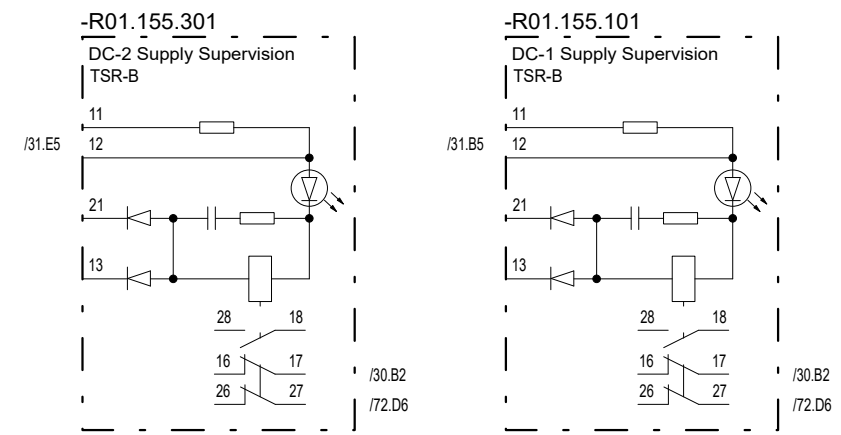
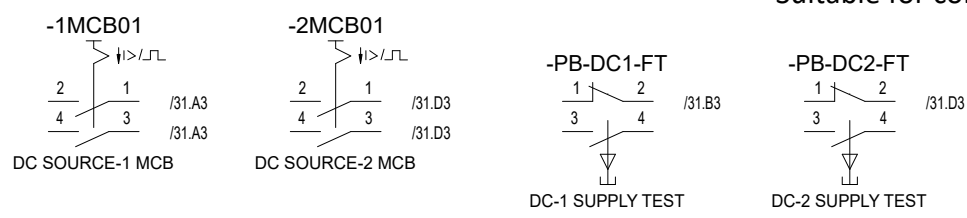
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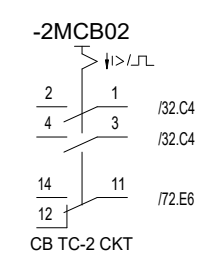
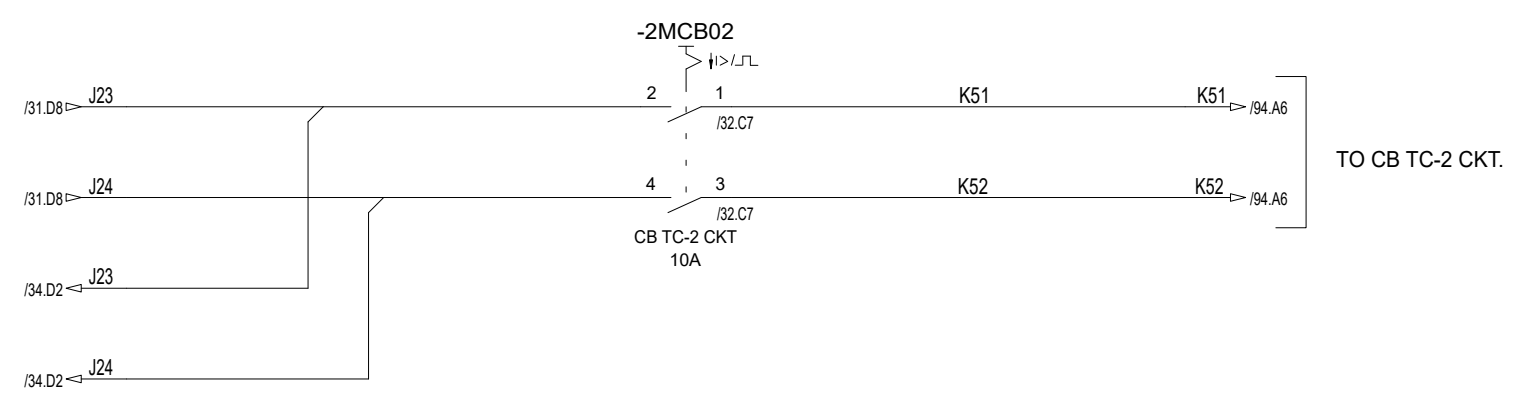
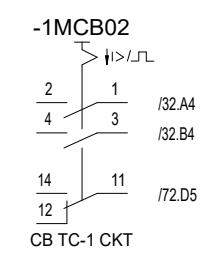
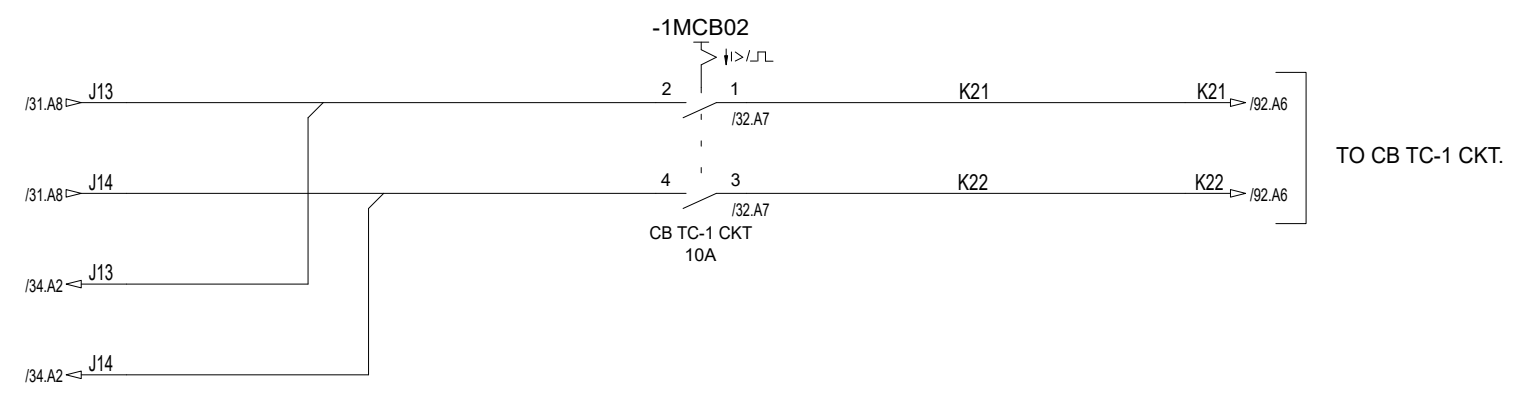
Suitable for conventional 220KV SS only



Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 31
1MYN691003-102(A3)REV01						n. sheet 32

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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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				HITACHI Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	Sheet 32
1MYN691003-102(A3)REV01						n. sheet 33

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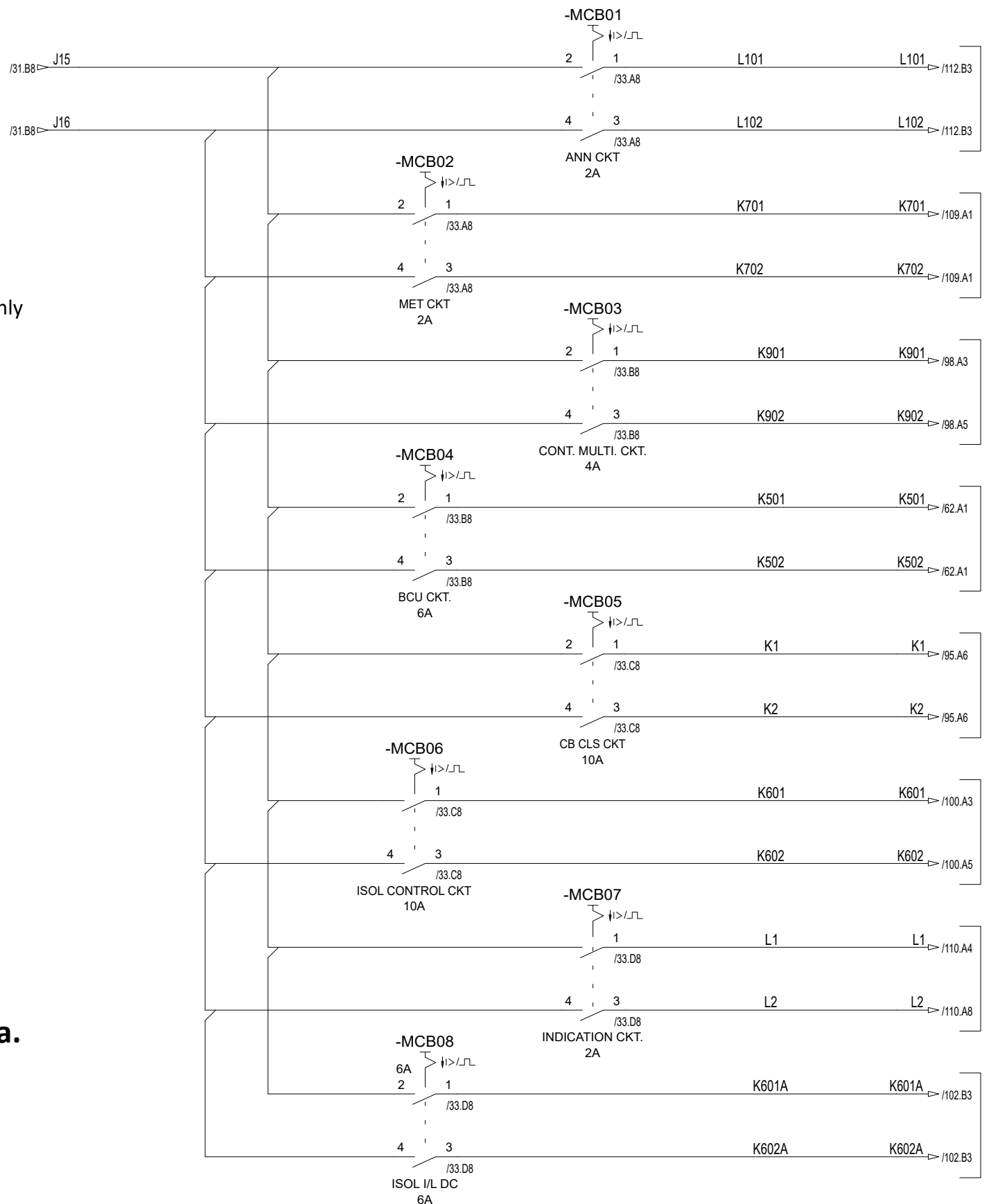
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FROM C/O DC SUPPLY

Suitable for conventional 220KV SS only

**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**



TO ANNUCIATION CKT.

TO METERING CKT.

TO CB, ISO CONT.MULT CKT  
& CB TROUBLE CKT

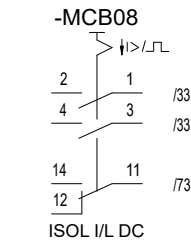
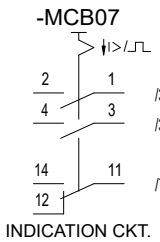
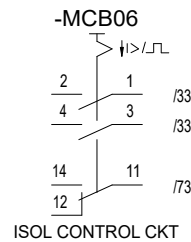
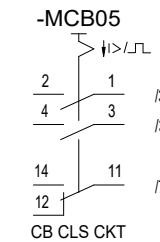
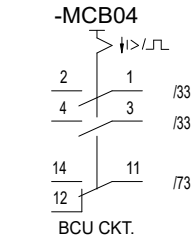
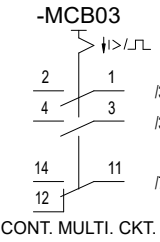
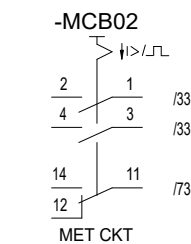
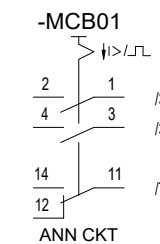
TO BCU CKT.

TO CB CLOSING CKT.

TO ISOLATOR  
CONTROL CKT.

TO INDICATION CKT.

TO ISOLATOR I/L CKT



Based on	Prepared	13.12.2023	VINOD G
	Approved	20.12.2023	GOURISH HEGDE
	Project	APTRANSCO STANDARD DRAWING	
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Title	220kV LINE FEEDER Control & Relay Panel DC Distribution Circuit
<b>HITACHI</b> Hitachi Energy India Limited	

Doc. kind.	Circuit diagram	Ref.Des.	=2KR
	DCC EFS		
Resp. dept.	PG-GAS	Rev. ind.	Language en
Doc. no.	1MNS500925-CAAA		Sheet 33
			n. sheet 34

Doc. no.	1MNS500925-CAAA	Sheet	33
		n. sheet	34

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8814490/2024/EEMRT-ENE51

A

B

C

D

E

F

32

A

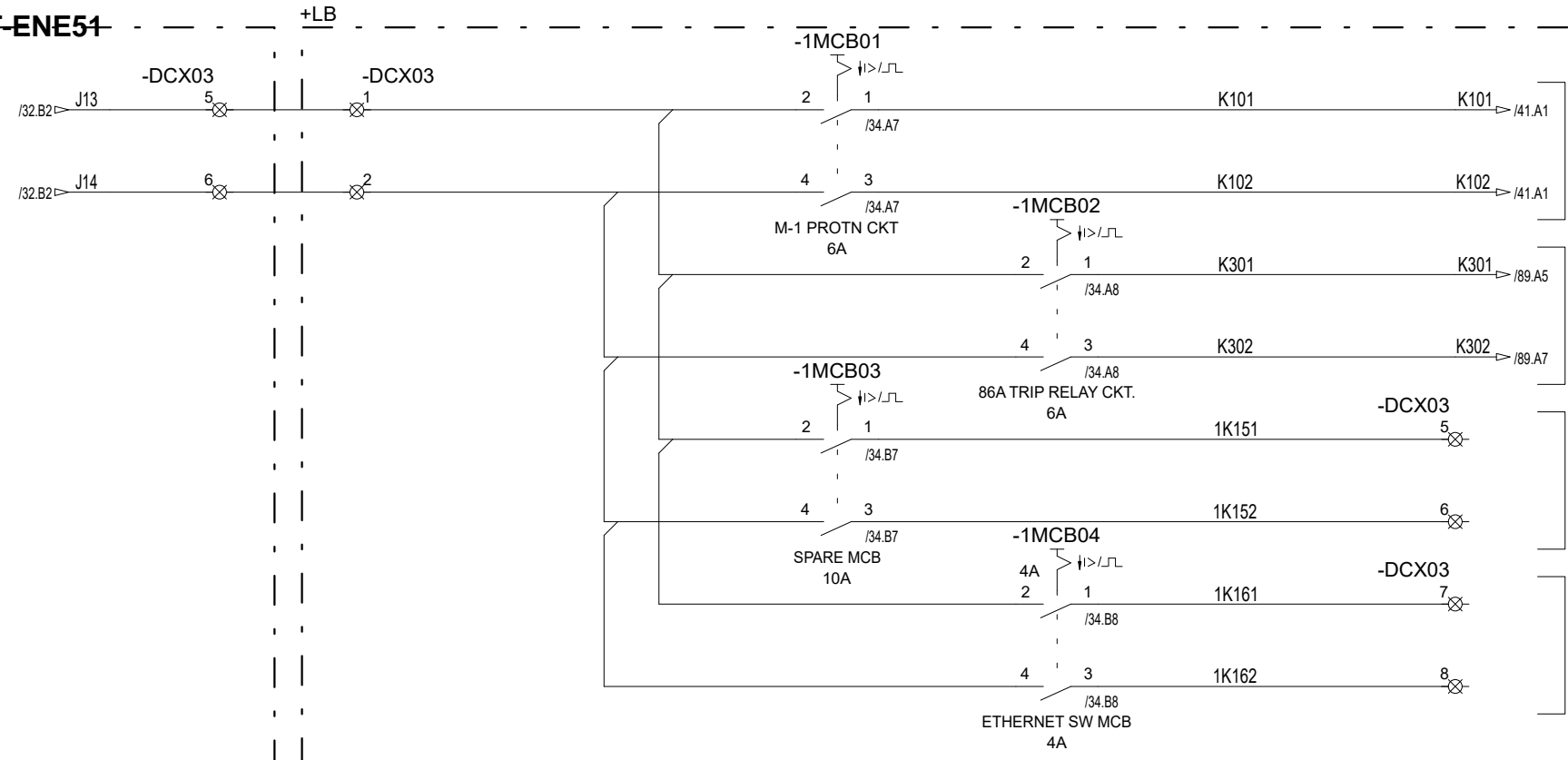
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C

D

E

F



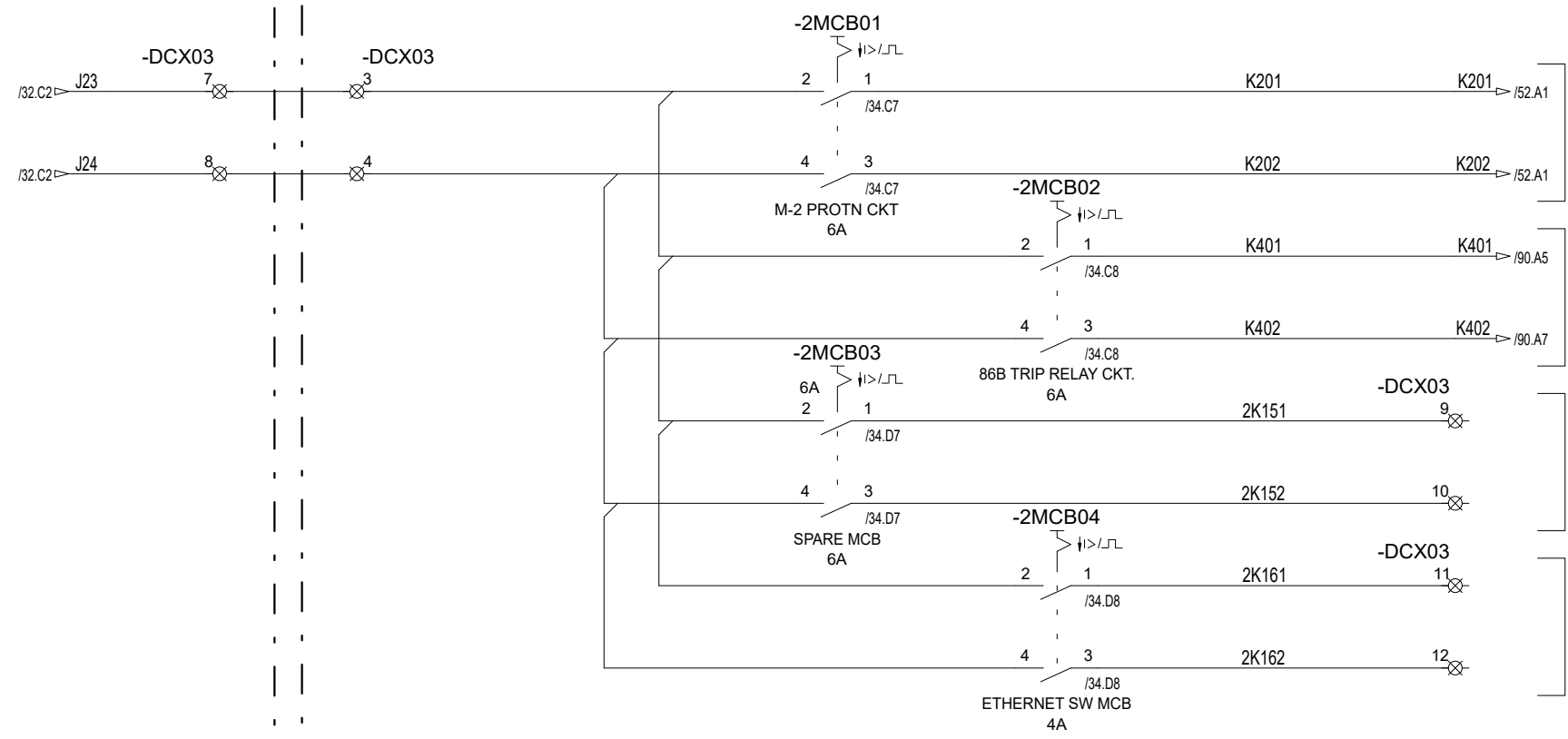
TO M-1 PROT N. CKT.

TO 86A TRIP RELAY CKT.

SPARE MCB

ETHERNET MCB

Drawing approval subject to valid vendor registration

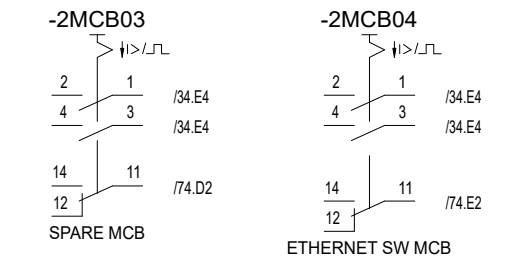
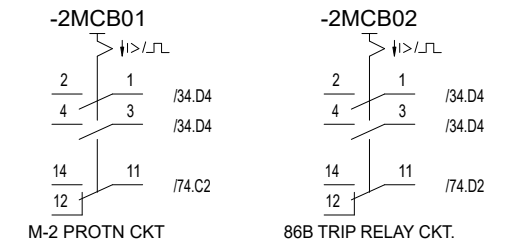
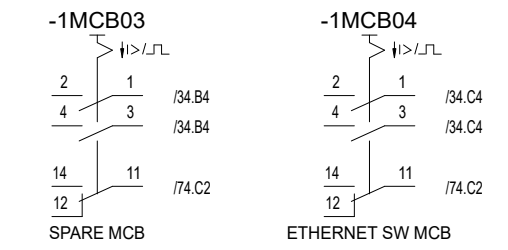
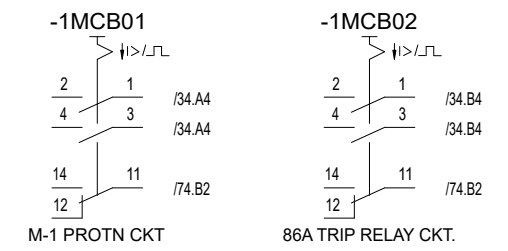


TO M-2 PROT N. CKT.

TO 86B TRIP RELAY CKT.

SPARE MCB

ETHERNET MCB



**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

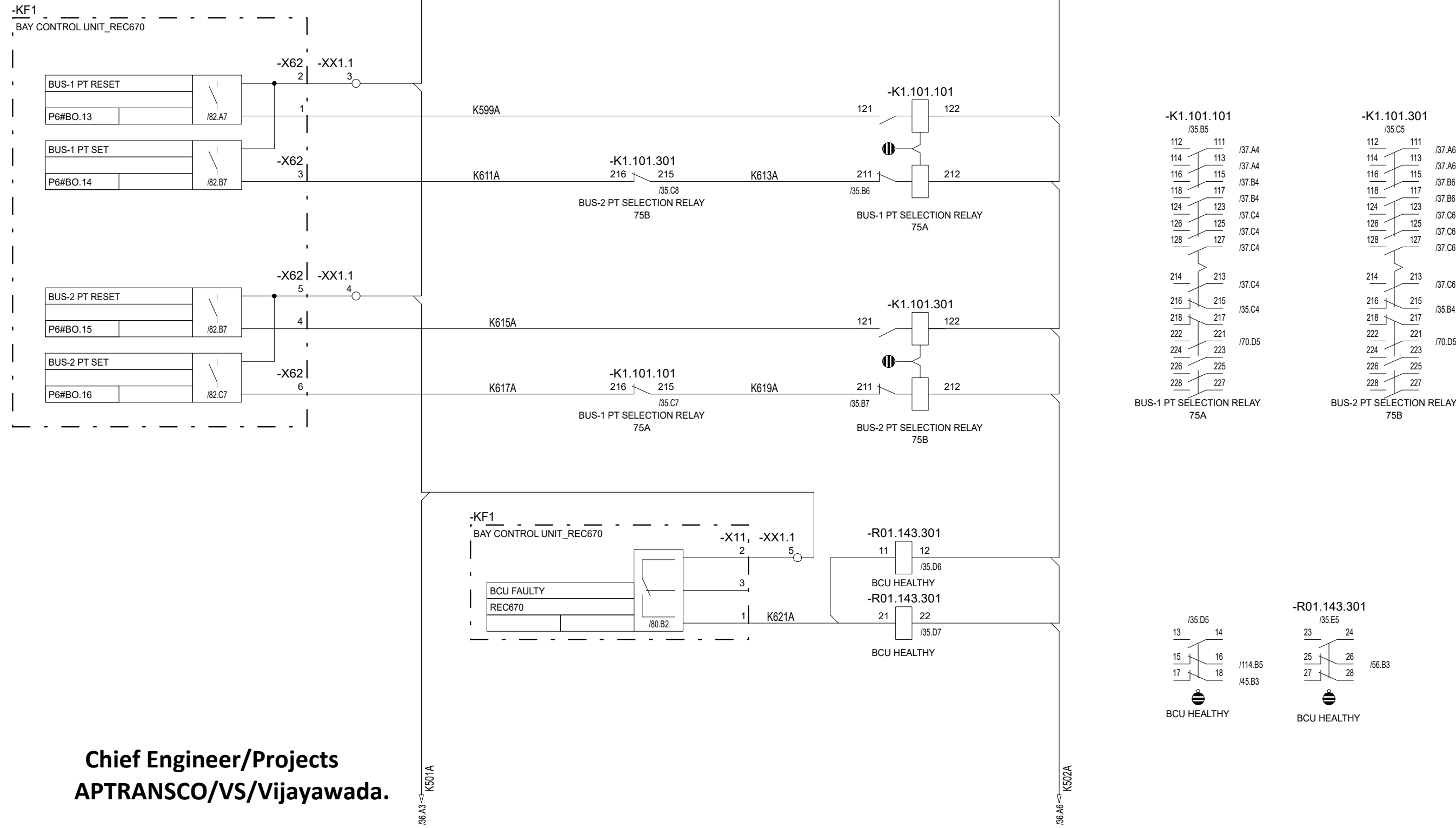
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	
1MYN691003-102(A3)REV01						Sheet 34
						n. sheet 35

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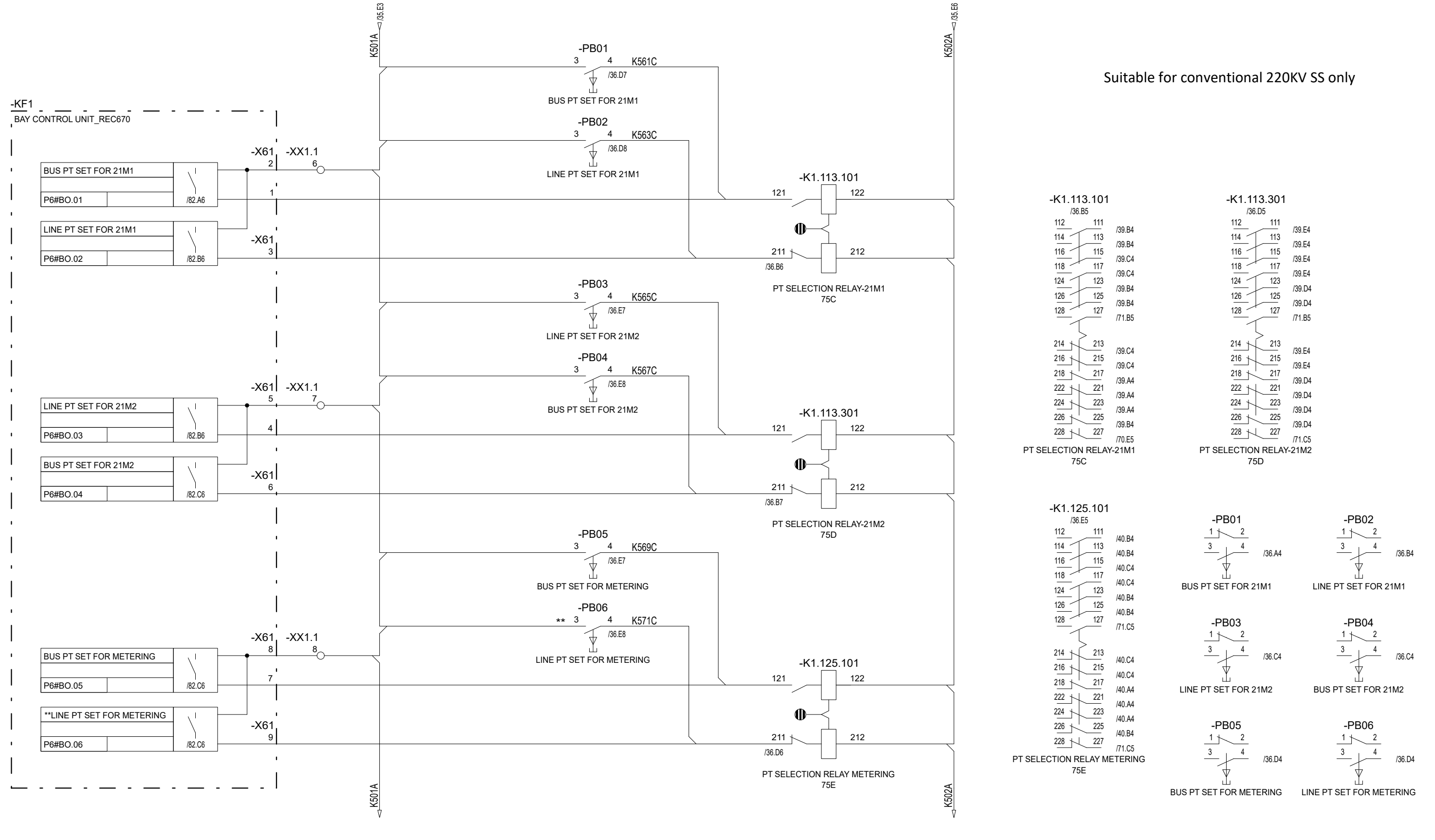


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APTRANSCO/VIS/Vijayawada.**

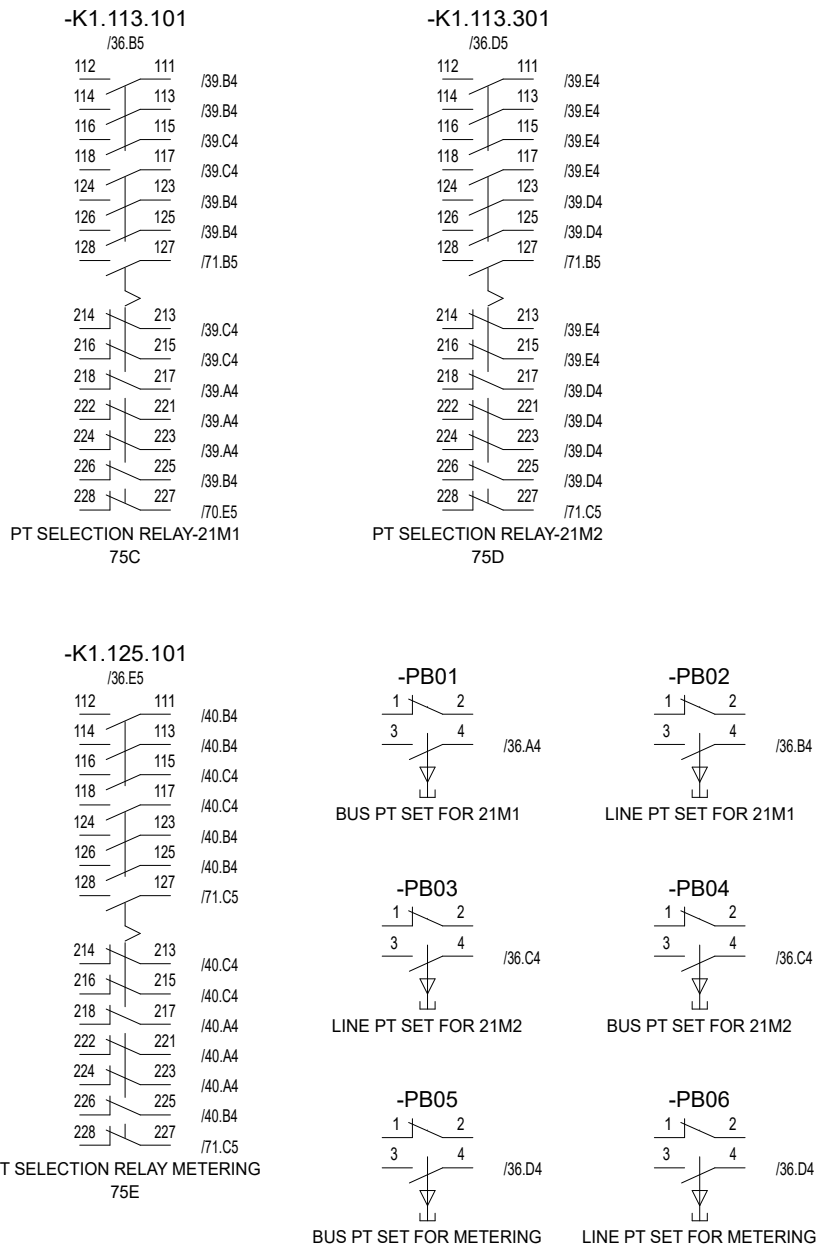
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 35
1MYN691003-102(A3)REV01						n. sheet 36

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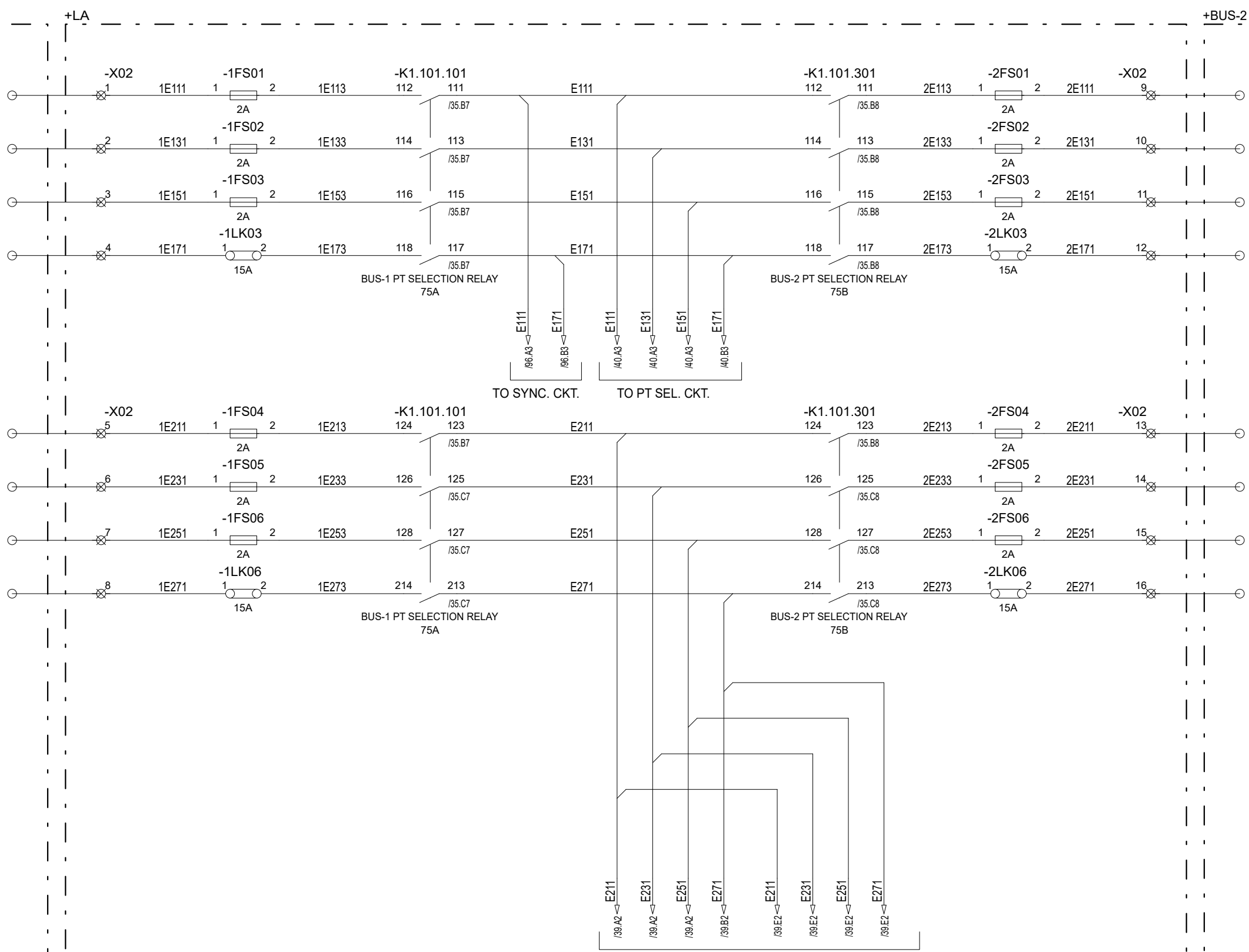


\*\* PRIORITY SHALL BE GIVEN FOR LINE PT. BUS PT SHALL BE SET ONLY IF LINE PT IS UNHEALTHY.

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	
1MYN691003-102(A3)REV01					Sheet 36	n. sheet 37

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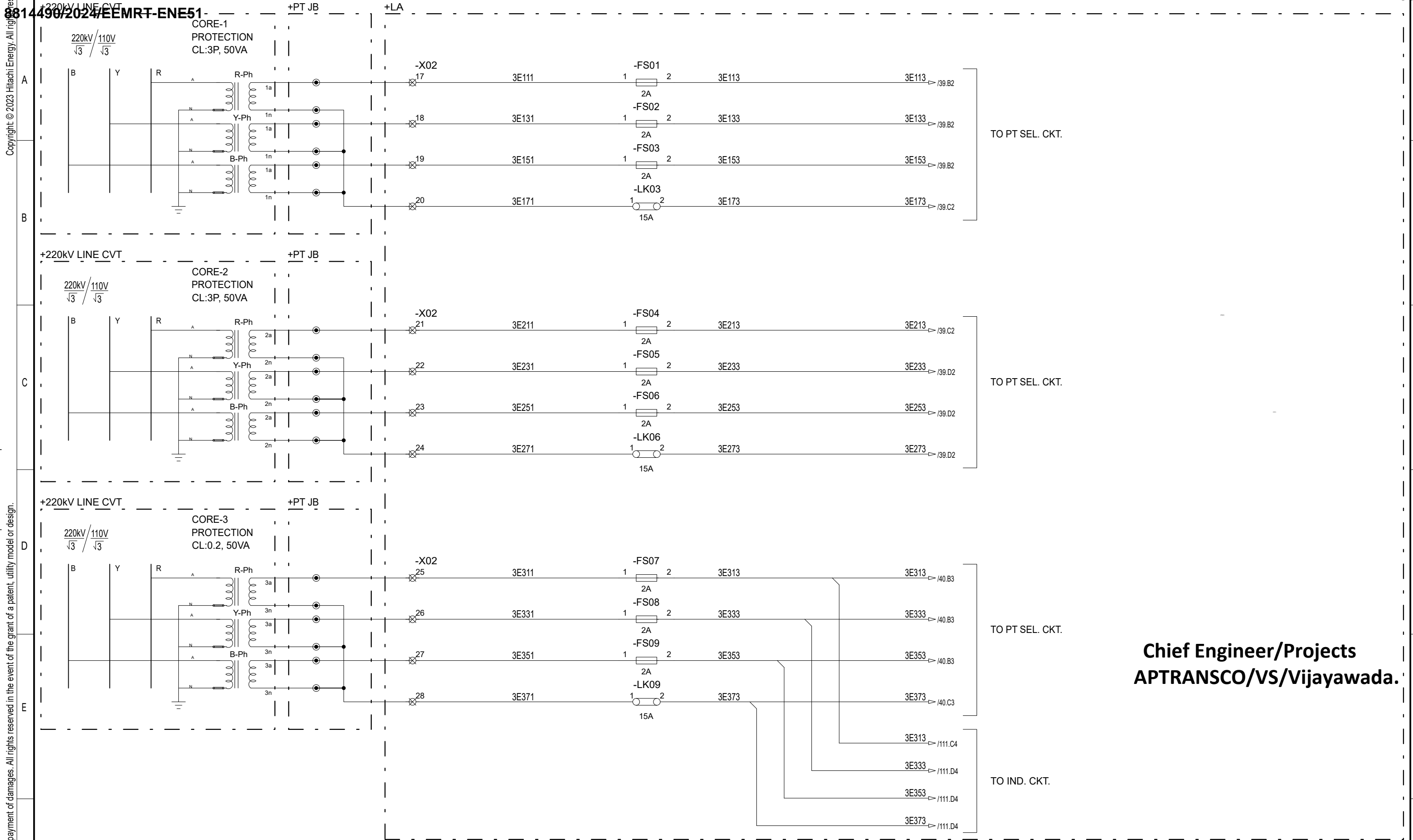


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**APTRANSCO/VS/Vijayawada.**

Drawing approval subject to valid vendor registration

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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 37
1MYN691003-102(A3)REV01						n. sheet 38

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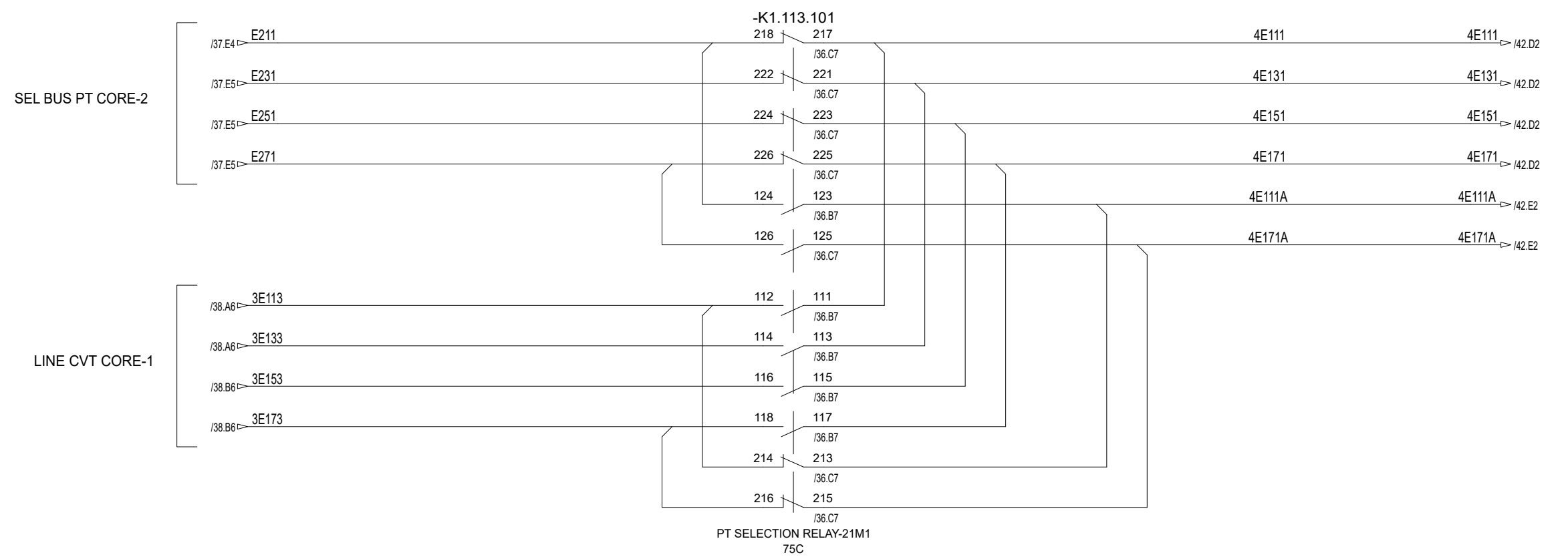


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1MYN691003-102(A3)REV01						n. sheet 39

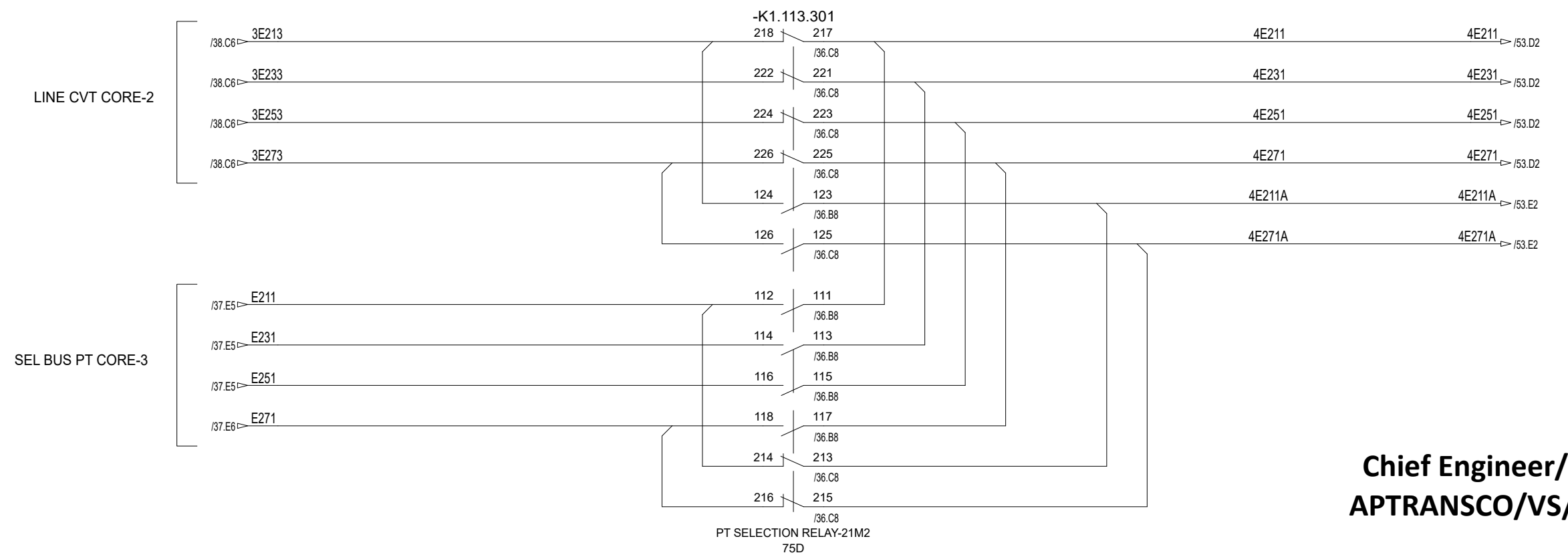
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SEL. BUS PT / LINE CVT  
FOR M-1 PROTN. RELAY.

Suitable for conventional 220KV SS only



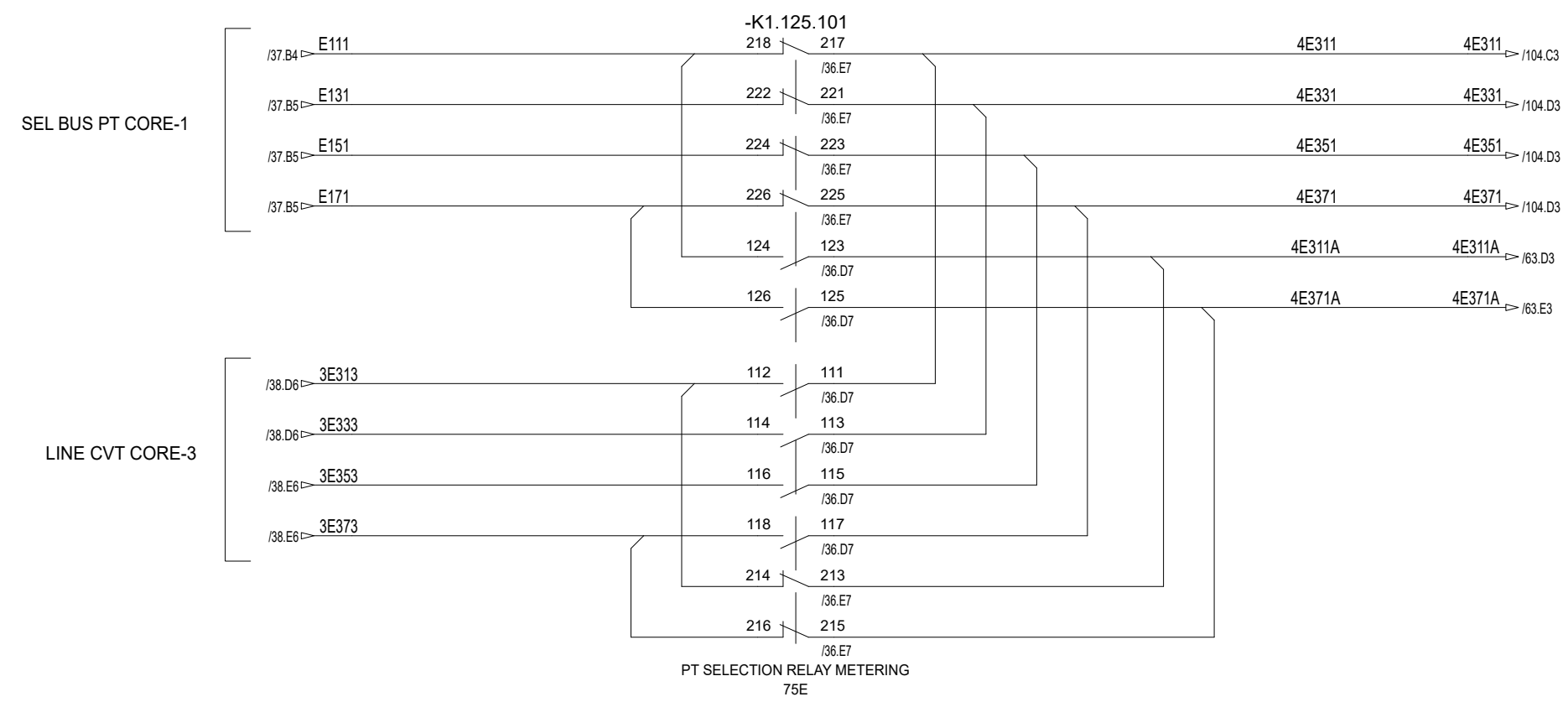
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FOR M-2 PROTN. RELAY.

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Based on		Prepared 13.12.2023	VINOD G	Title 220KV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	Sheet 39
1MYN691003-102(A3)REV01					n. sheet 40	

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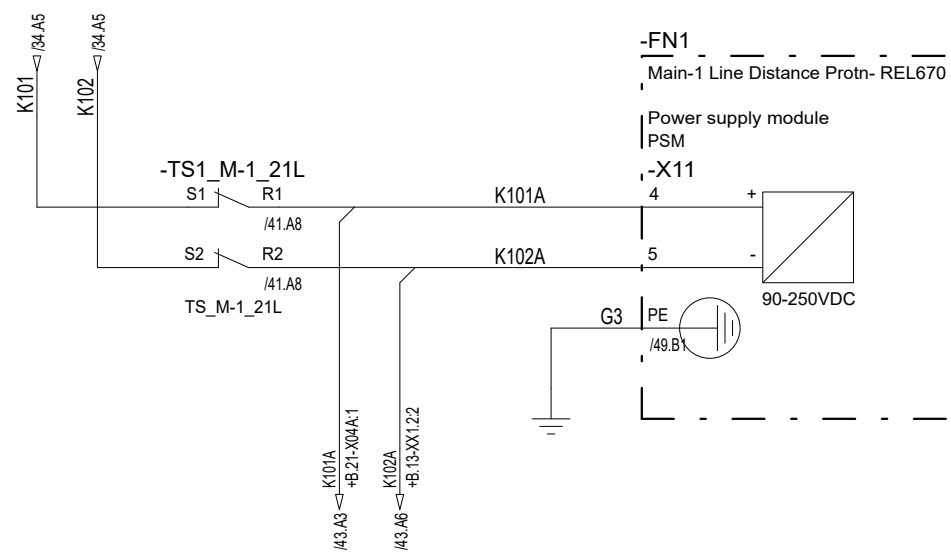
SEL. BUS PT / LINE CVT  
FOR METERING CKT.

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**Chief Engineer/Projects**  
**APTRANSCO/VIS/Vijayawada.**

Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER		Doc. kind.	Circuit diagram		Ref.Des.	=2KR	
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		Project			APTRANSCO			Resp. dept.	PG-GAS		Rev. ind.	Language	en
		STANDARD DRAWING			HITACHI			Hitachi Energy India Limited		Doc. no.		1MNS500925-CAAA	
Rev.	Revision note	Date	Name						Sheet		40		
1MYN691003-102(A3)REV01									n. sheet		41		

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**LIST OF FUNCTIONS AVAILABLE IN RELAY**

- Distance Protection (PDIS,21)
- Autoreclose Protection (79)
- Automatic Switch on to fault(PSOF)
- Residual O/C protection(PDEF,67N)
- Fuse fail supervision(RFUF)
- Scheme Communication(PSCH,78)
- Tripping Logic(PTRC,94)
- Disturbance Recorder(RDRE) upto 200 disturbances
- Fault Locator(RFLO)
- PSB
- Auto Reclose Function
- Event Recorder (RDRE)
- Current Reversal
- Week end Infeed logics
- Local HMI
  - Integrated HMI with 4 line display
  - 15 freely configurable LEDs
  - Settings and disturbance Information
  - Front port for communication with indication

RED - TRIP SIGNALS  
 YELLOW - ALARM SIGNALS  
 GREEN - COMMUNICATION SIGNALS

**RED INDICATION (GR-1)**

Indication HMI LED

- R-PH FAULT
- Y-PH FAULT
- B-PH FAULT
- E/F TRIP
- ZONE-1 TRIP
- ZONE-2 TRIP
- ZONE-3 TRIP
- ZONE-4 TRIP
- ZONE-5 TRIP (REV)
- Z-COM TRIP
- SOTF TRIP
- O/C TRIP
- E/F TRIP
- CARRIER SEND
- DT RECEIVED

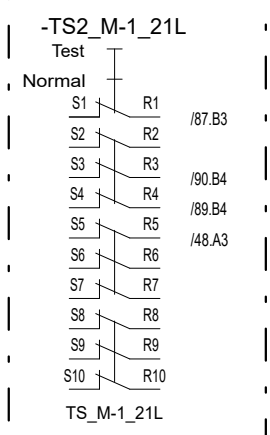
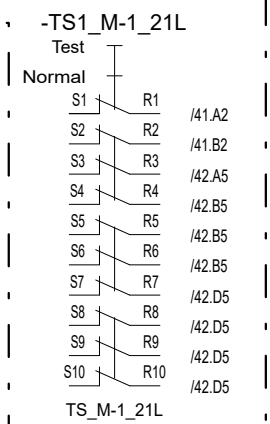
**YELLOW INDICATION (GR-2)**

Indication HMI LED

- PSB/BRC ALARM
- VTFE ALARM
- AR BLOCK
- AR CLOSE
- COMM FAIL

**GREEN INDICATION (GR-3)**

Indication HMI LED



**List of Functional Key Indication**

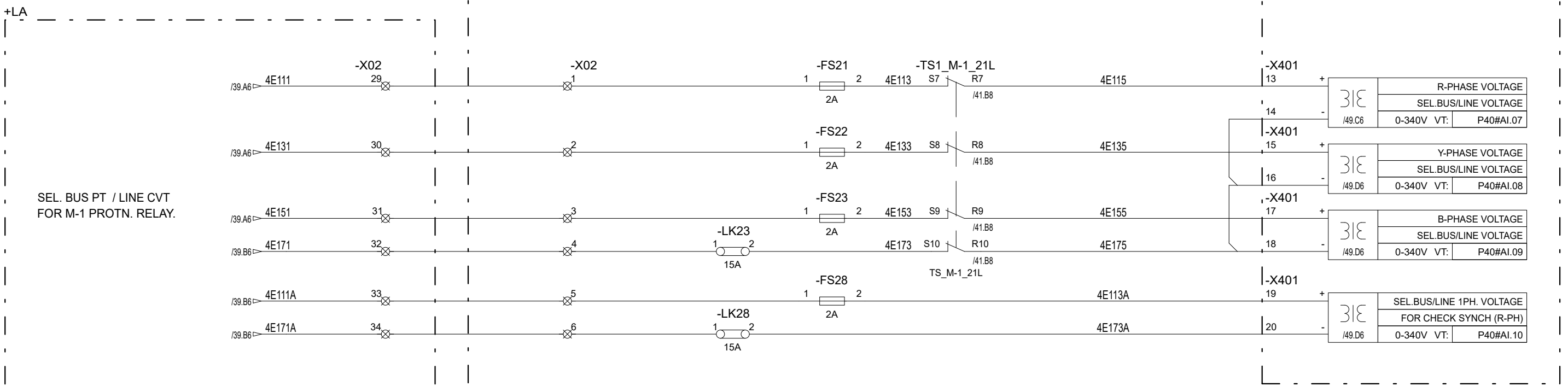
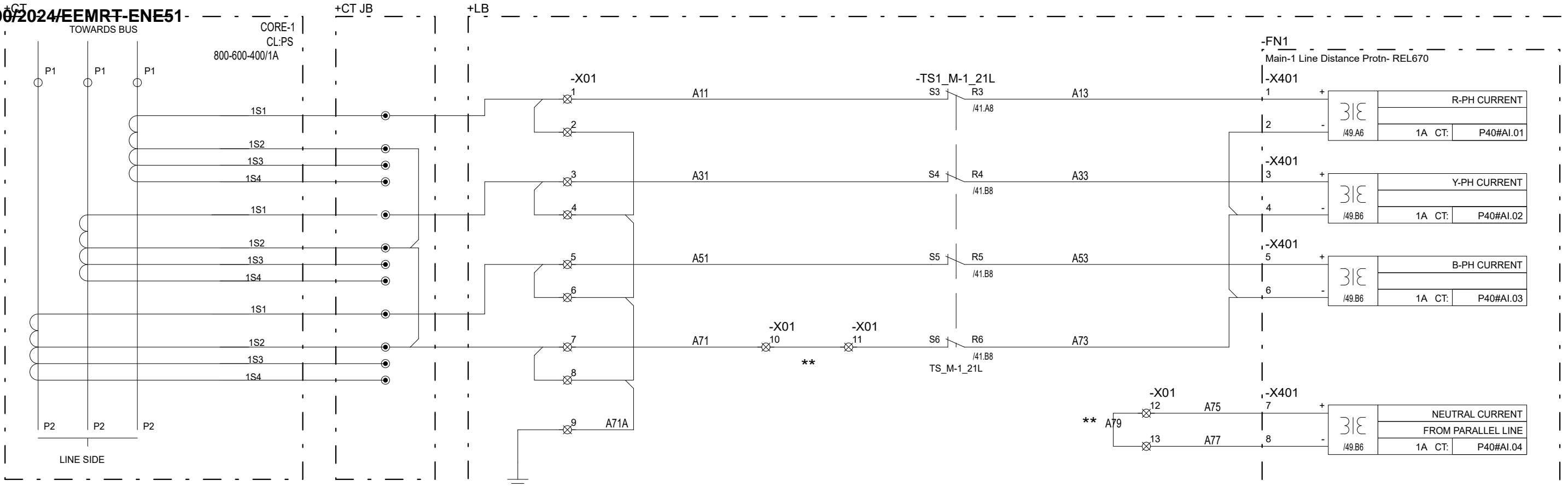
- FK1. SPARE
- FK2. SPARE
- FK3. SPARE
- FK4. SPARE
- FK5. LED RESET

**Chief Engineer/Projects  
 APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Power supply Circuit to M1 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 41	n. sheet 42
1MYN691003-102(A3)REV01						

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8814490/2024/EEMRT-ENE51-



## NOTE:- CT DETAILS TO BE CONFIRMED BY THE CUSTOMER

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\*\*SHORTING TO BE REMOVED WHEN DOUBLE CKT IS COMMISSIONED  
(TO ENABLE MUTUAL COMPENSATION FOR FAULT LOCATOR)

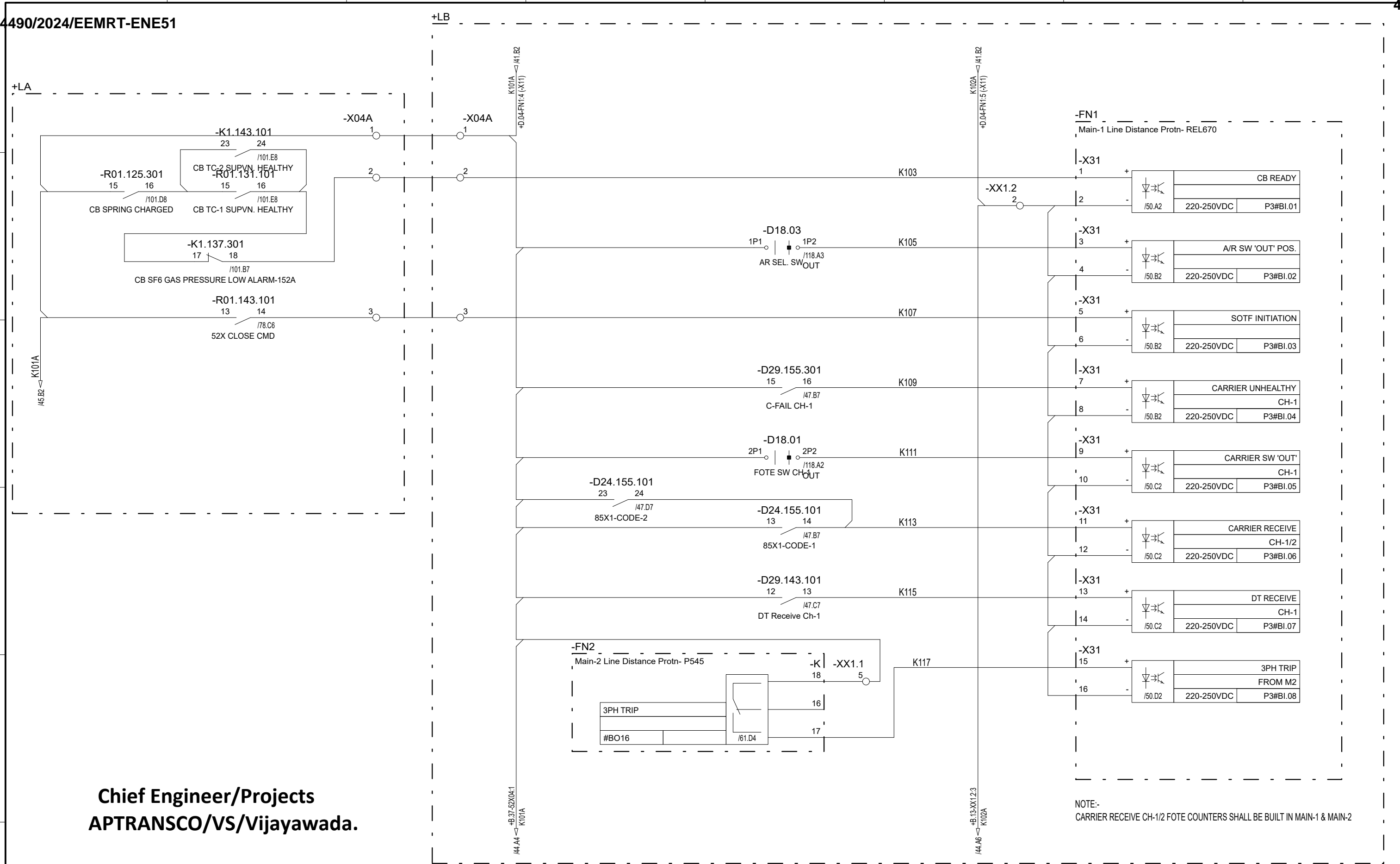
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		Project	APTRANSCO		CT/PT Input Circuit to M1 Relay		Resp. dept.	PG-GAS	Rev. ind.	Language	en
		STANDARD DRAWING			Hitachi Energy India Limited		1MNS500925-CAAA		Sheet	42	
Rev.	Revision note	Date	Name					Doc. no.	n. sheet	43	
1MYN691003-102(A3)REV01											

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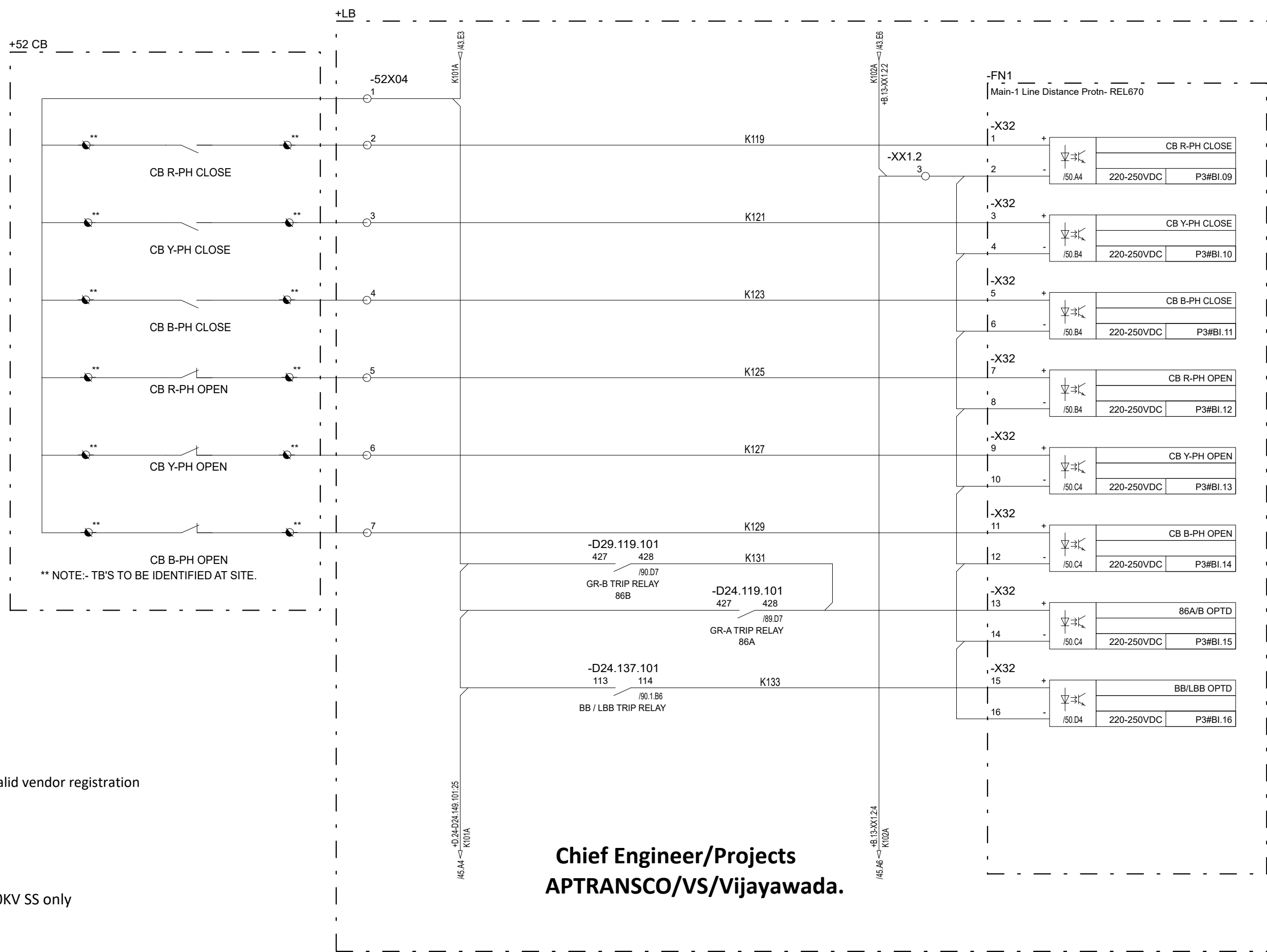
**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

NOTE:- CARRIER RECEIVE CH-1/2 FOTE COUNTERS SHALL BE BUILT IN MAIN-1 & MAIN-2

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M1 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 43
1MYN691003-102(A3)REV01						n. sheet 44

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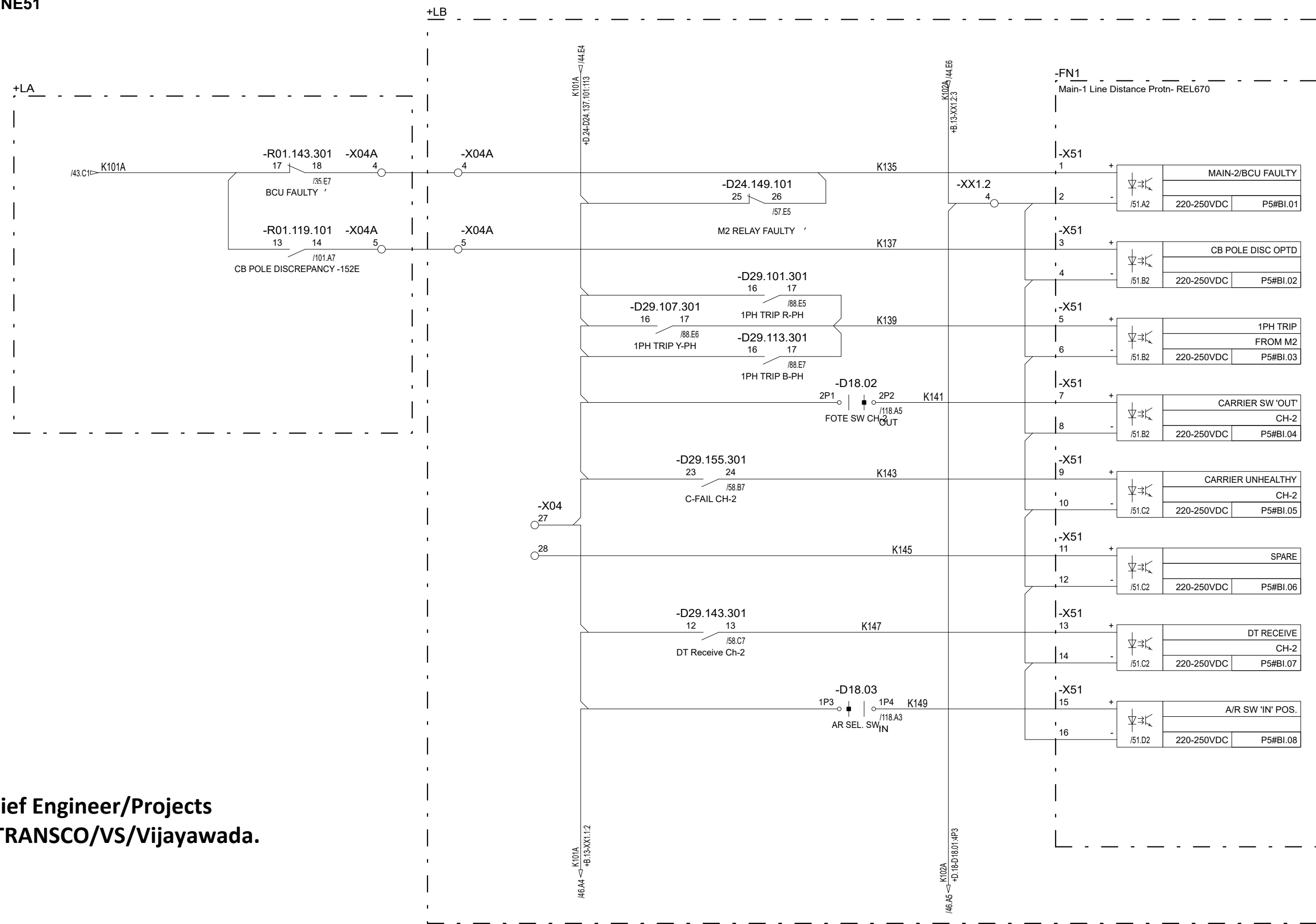
Drawing approval subject to valid vendor registration

Suitable for conventional 220KV SS only

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M1 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 44
1MYN691003-102(A3)REV01						n. sheet 45

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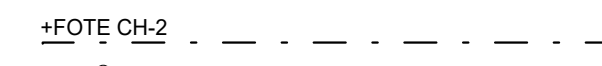
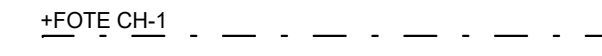
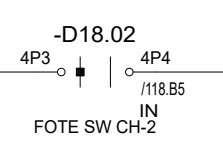
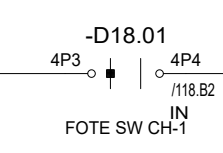
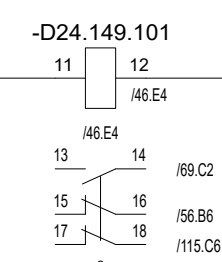
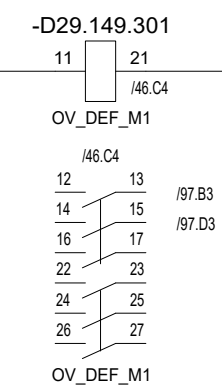
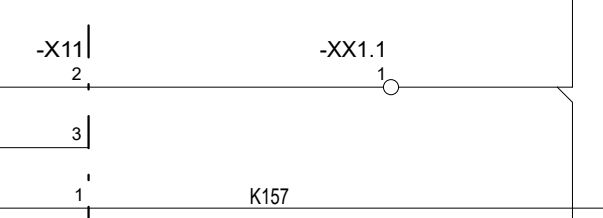
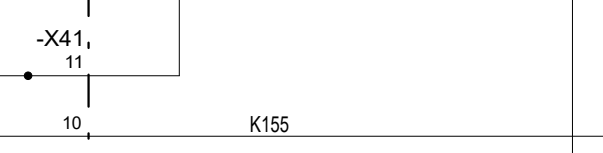
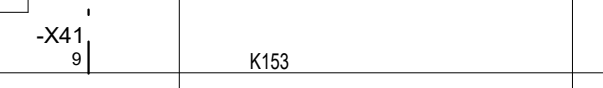
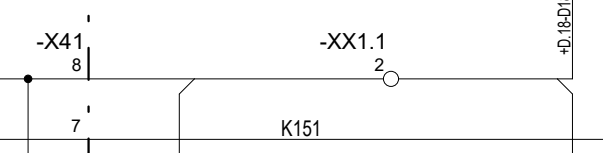
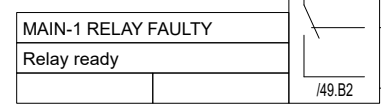
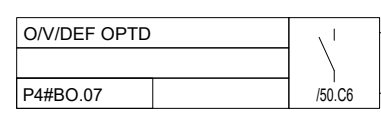
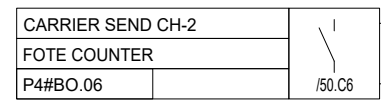
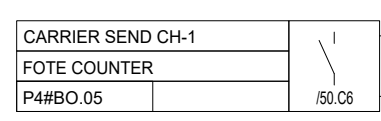
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		Project APTRANSCO		Binary inputs-M1 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 45
1MYN691003-102(A3)REV01						n. sheet 46

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-FN1  
Main-1 Line Distance Protn- REL670



NOTE : TBS SHOULD BE IDENTIFIED AT SITE

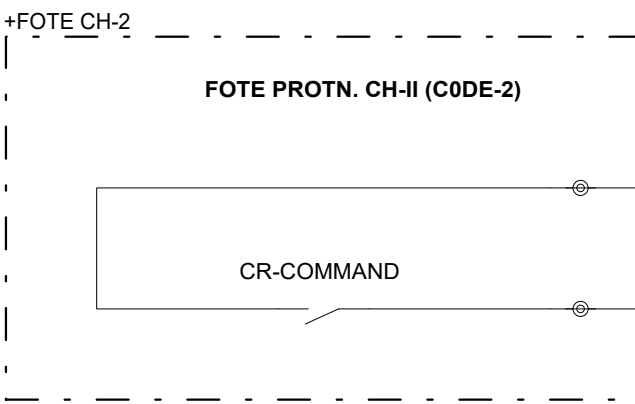
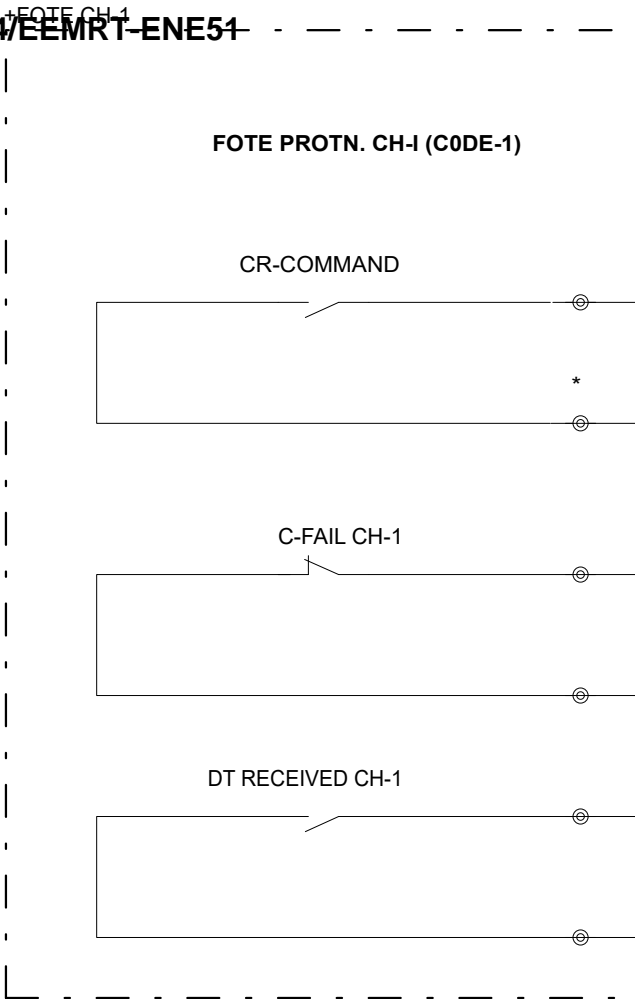
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**APTRANSCO/VS/Vijayawada.**

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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 46
1MYN691003-102(A3)REV01						n. sheet 47

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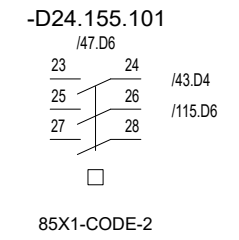
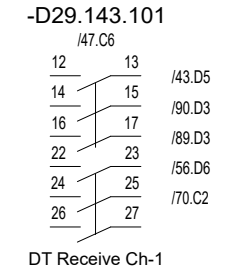
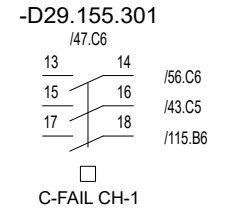
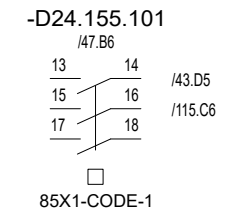
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NOTE : TBS SHOULD BE IDENTIFIED AT SITE

Suitable for conventional 220KV SS only

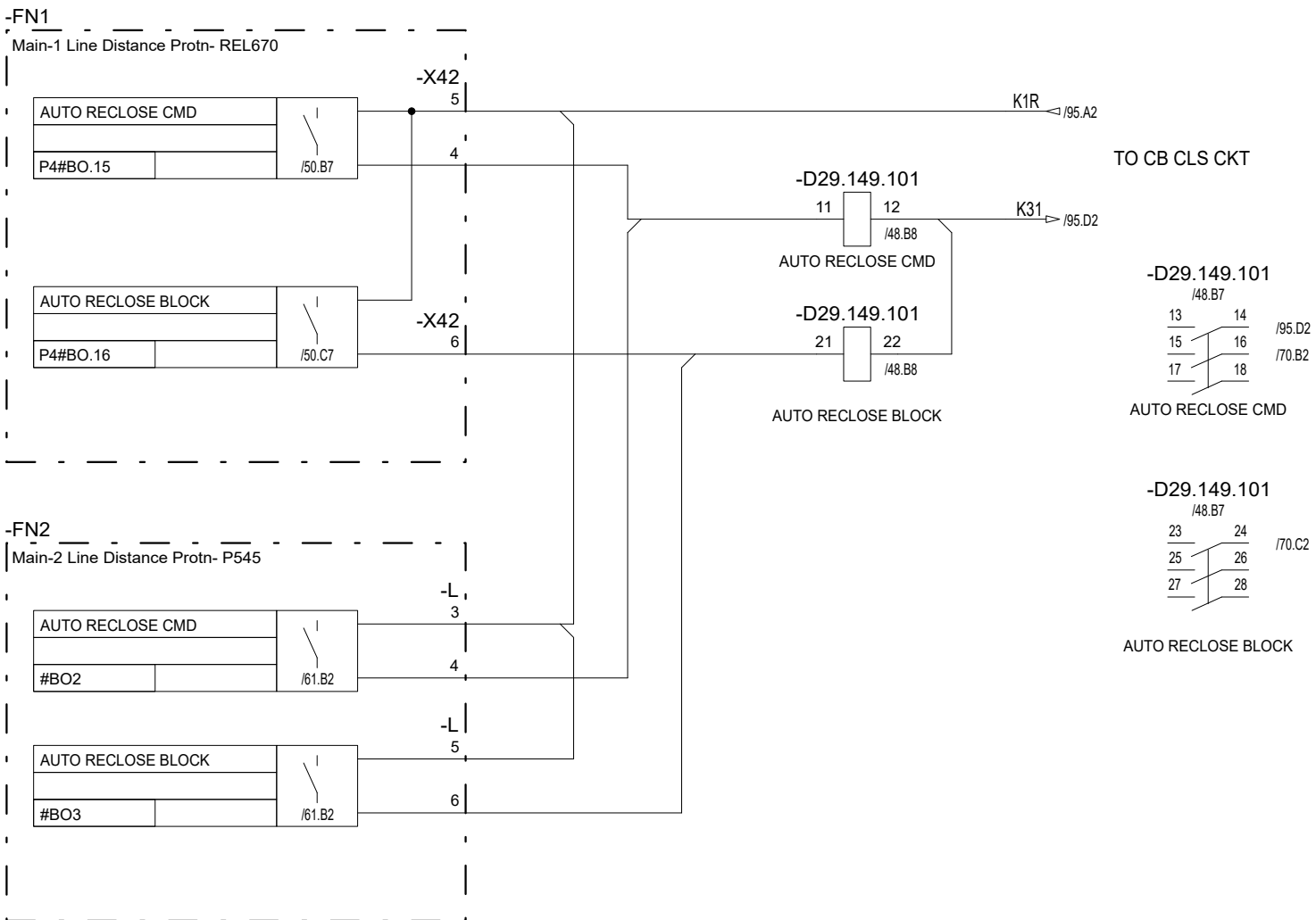
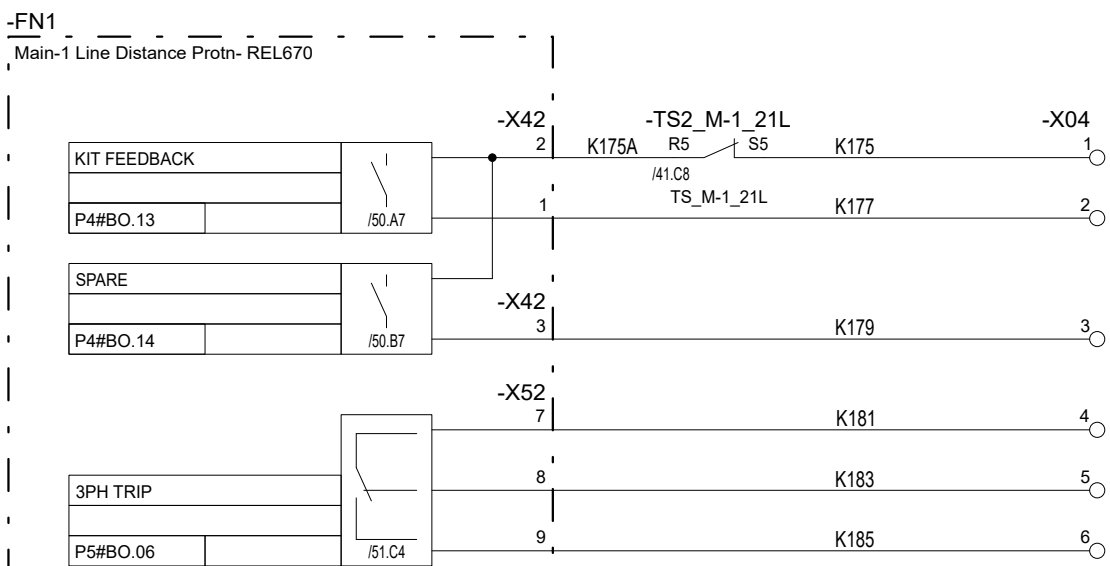
**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**



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Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	
1MYN691003-102(A3)REV01						Sheet 47
						n. sheet 48

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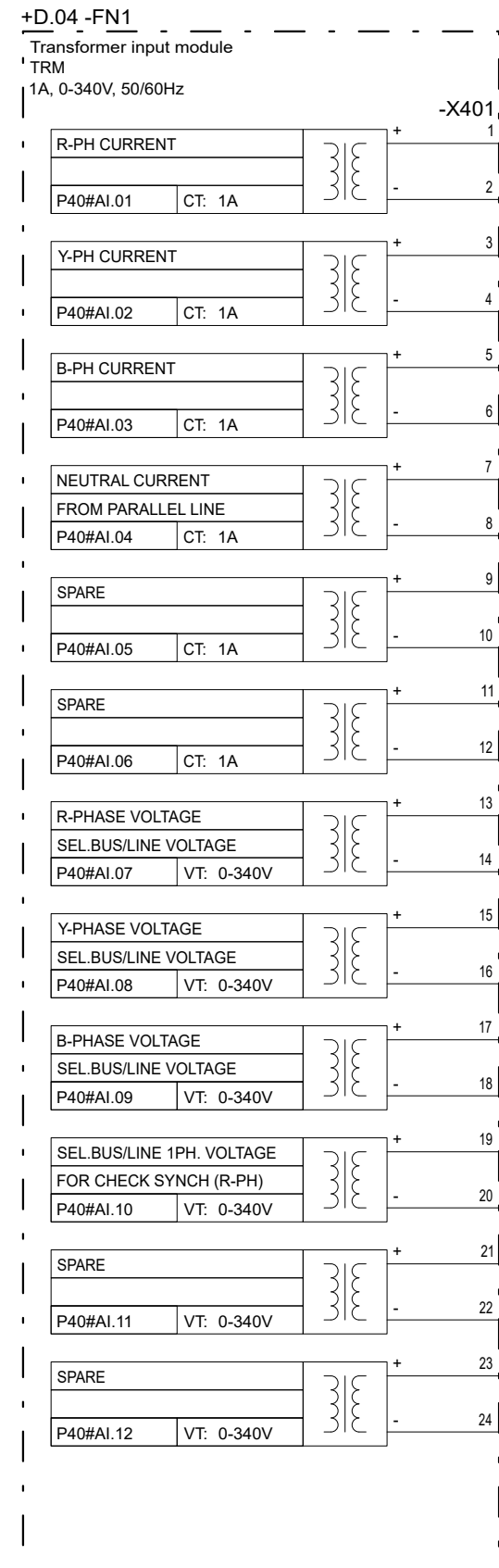
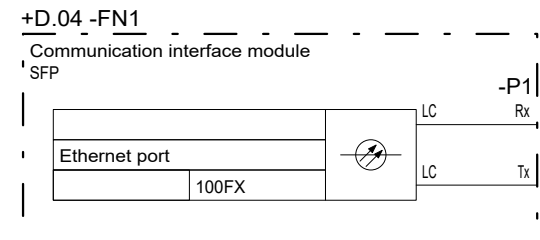
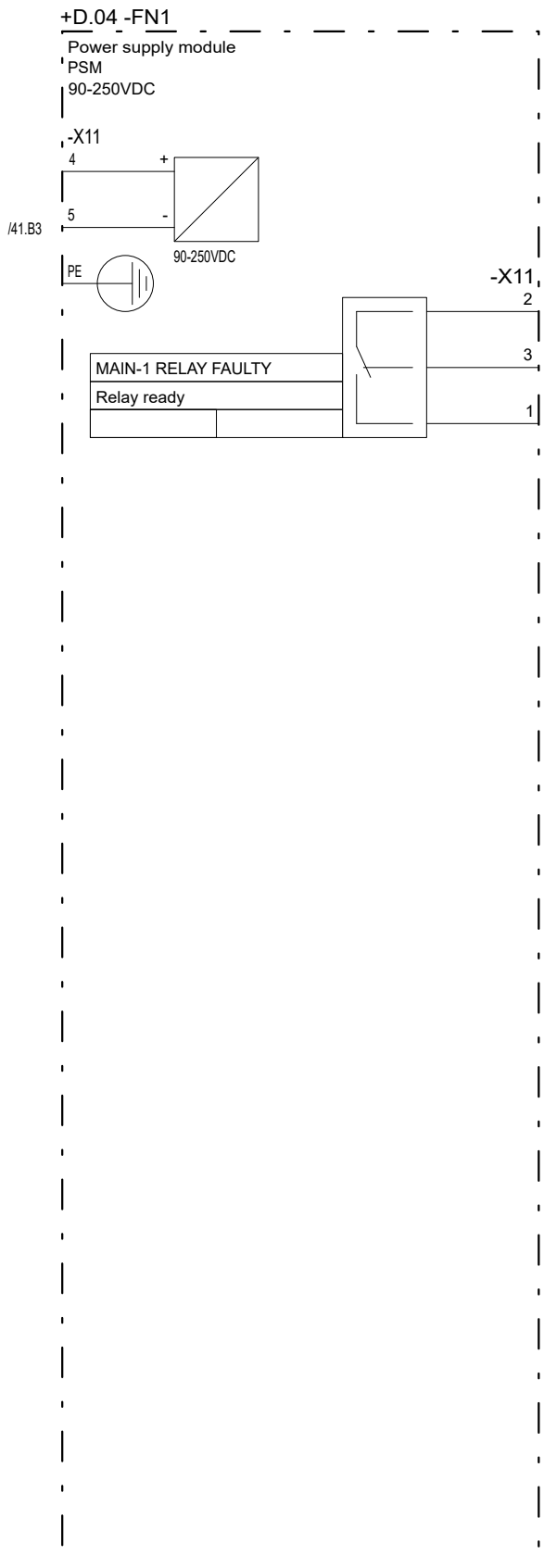
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 48	n. sheet 49
1MYN691003-102(A3)REV01						

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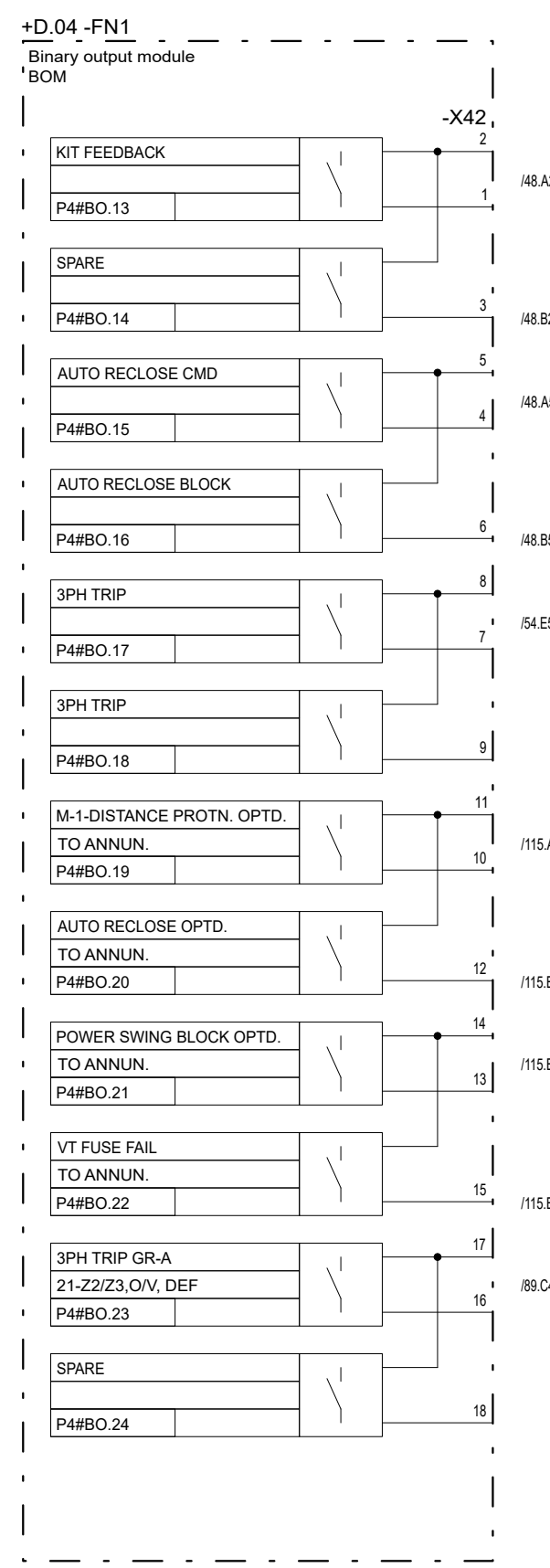
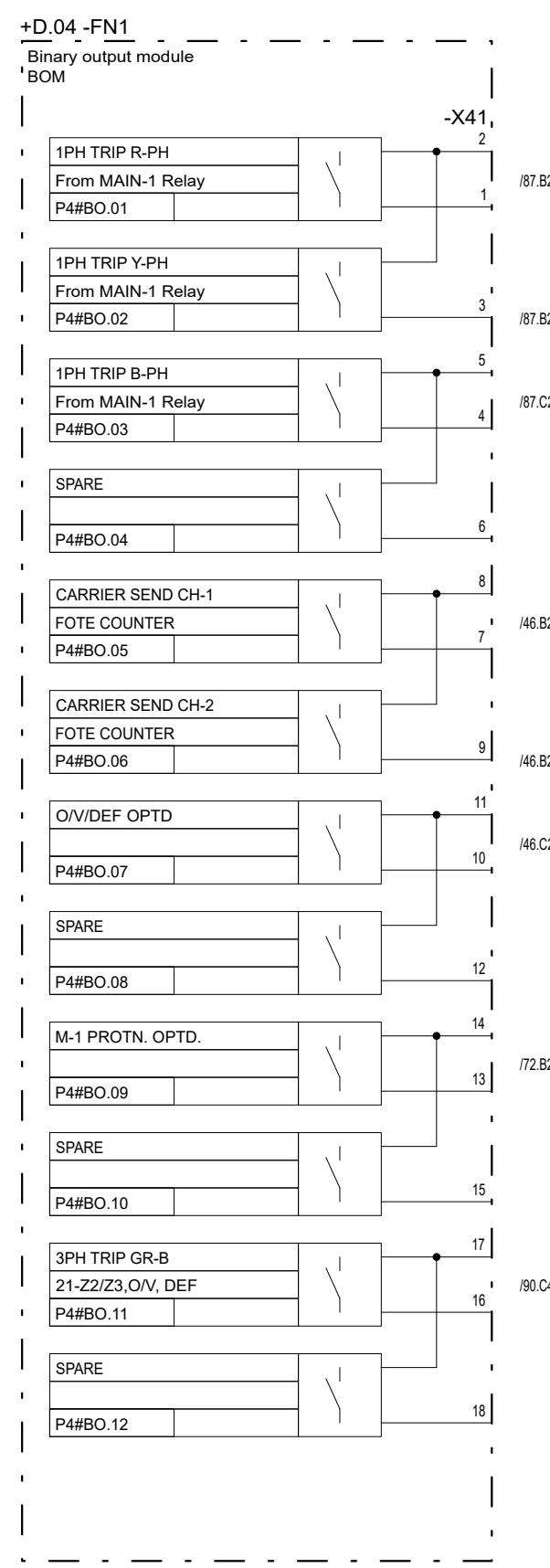
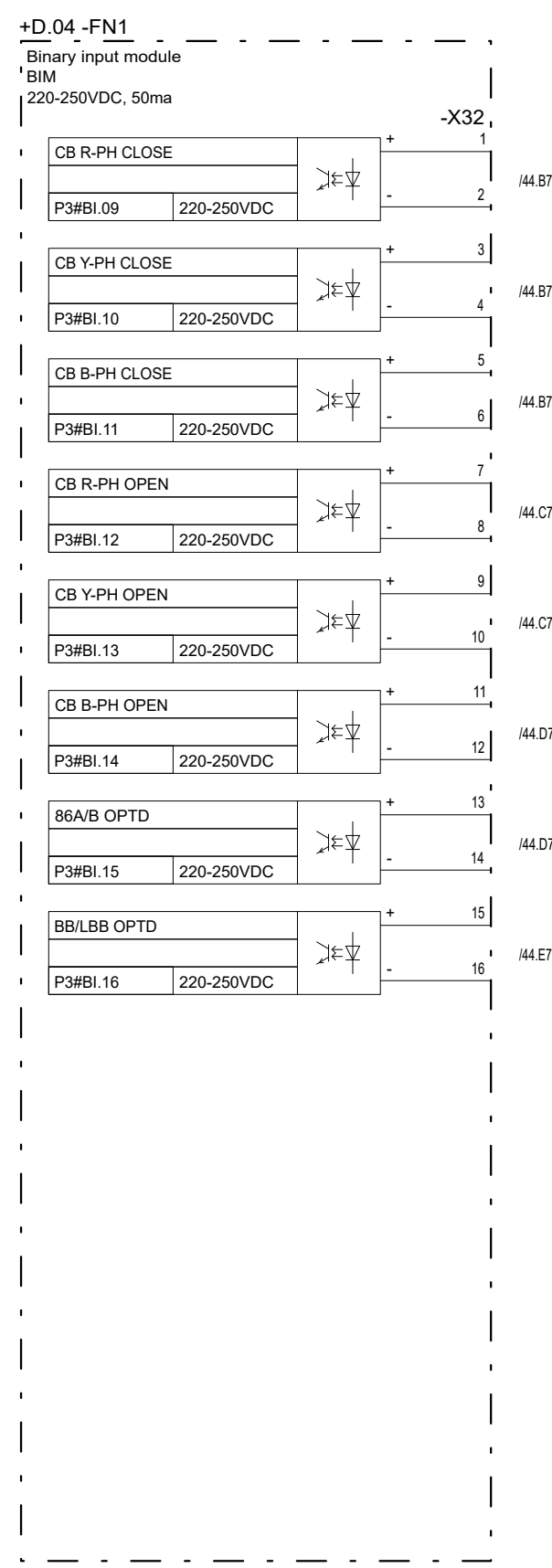
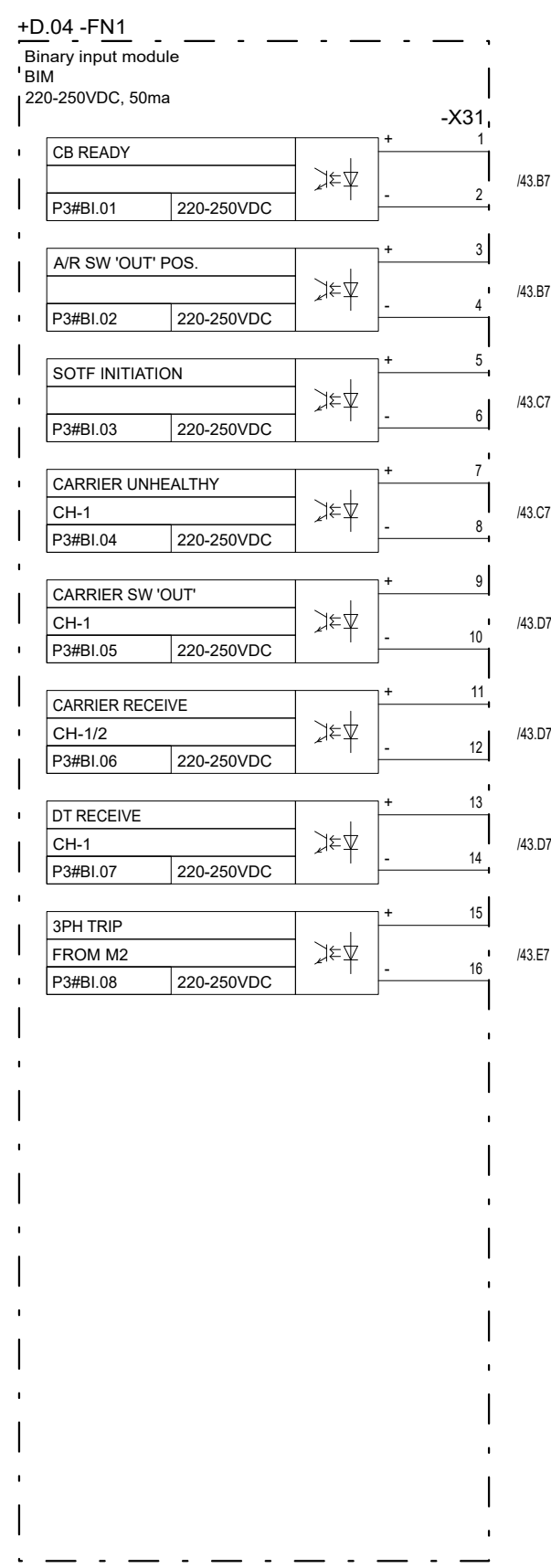
**Chief Engineer/Projects  
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-1 Protn. Relay-Master Blocks	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 49
1MYN691003-102(A3)REV01						n. sheet 50

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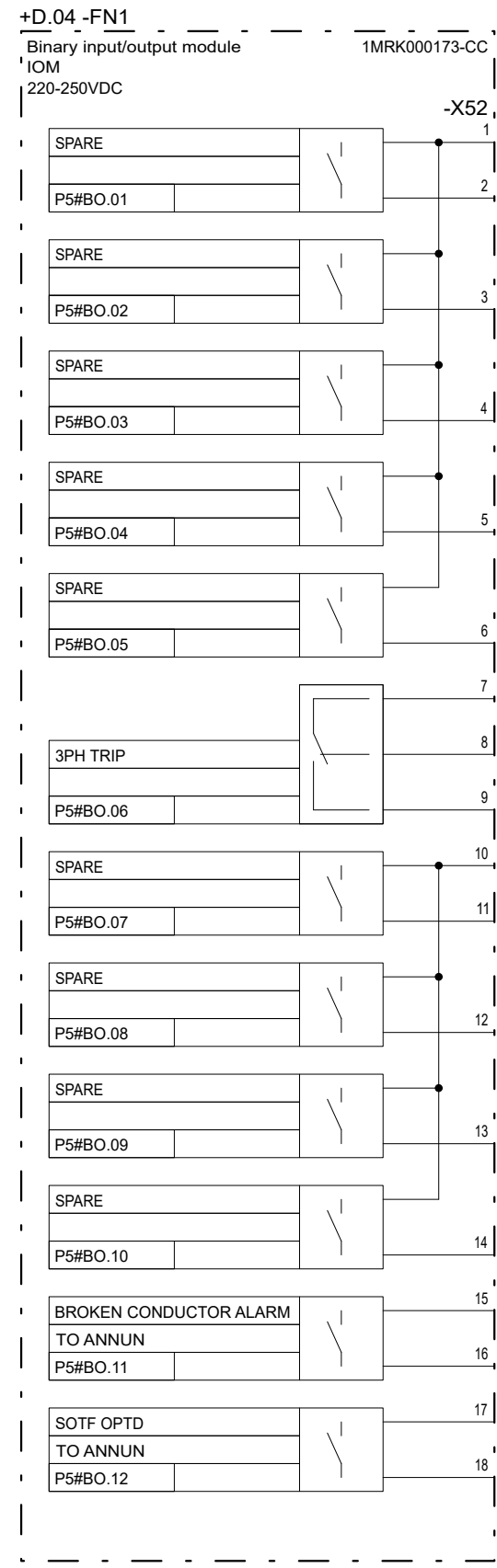
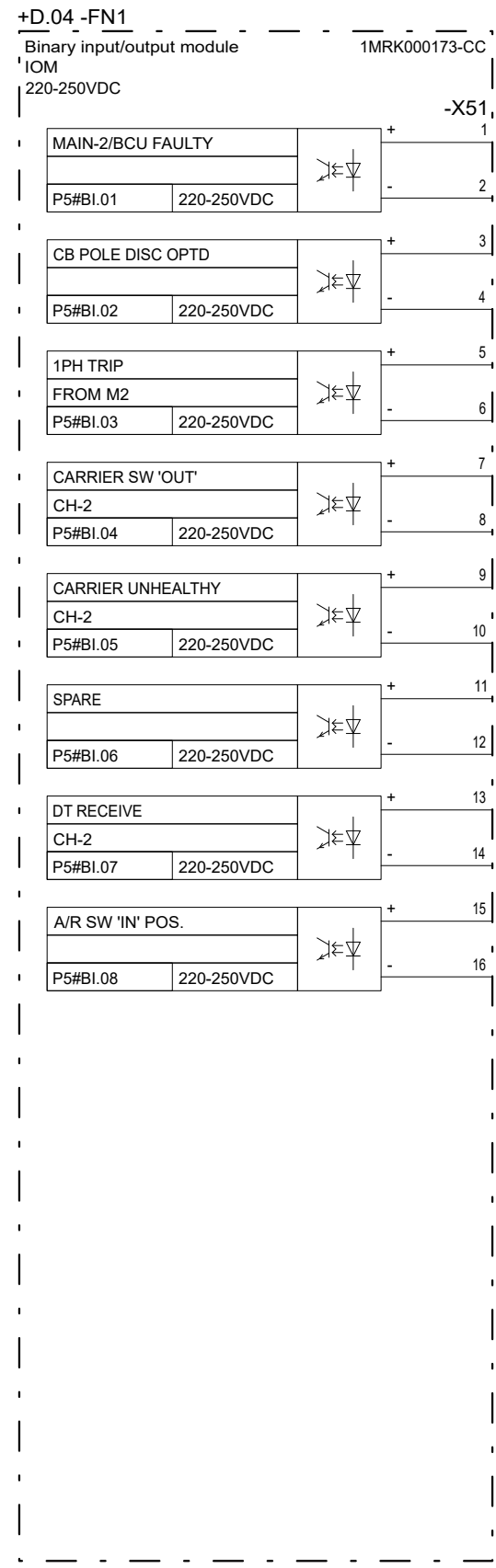


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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	
1MYN691003-102(A3)REV01					Sheet 50	n. sheet 51

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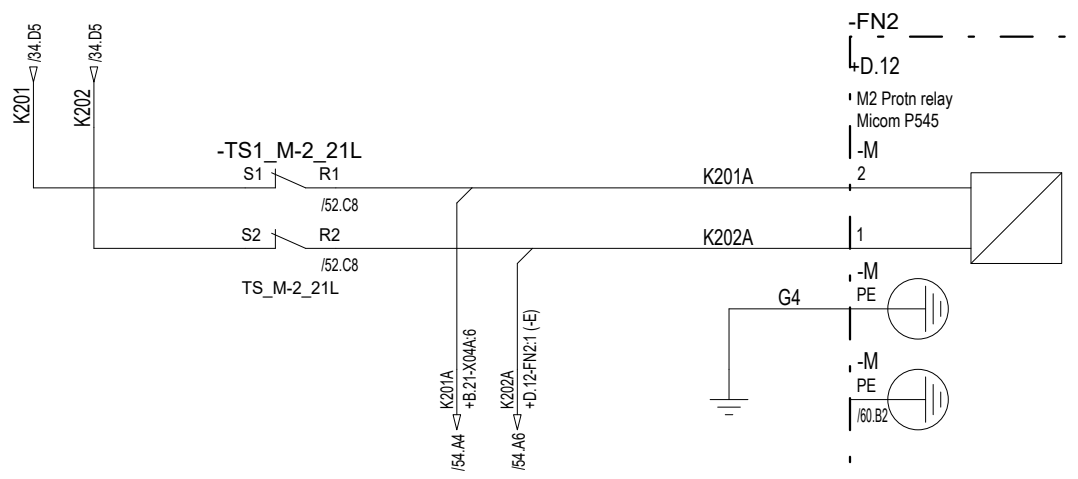
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 51
1MYN691003-102(A3)REV01						n. sheet 52



**LIST OF FUNCTIONS AVAILABLE IN RELAY**

- Distance Protection (PDIS,21)
- Automatic Switch on to fault(PSOF)
- Auto Reclose Function
- Residual O/C protection(PDEF,67N)
- Fuse fail supervision(RFUF)
- Scheme Communication(PSCH,78)
- Tripping Logic(PTRC,94)
- Disturbance Recorder(RDRE)
- Fault Locator(RFLO)
- PSB
- Event Recorder (RDRE)
- Current Reversal
- Weak end Infeed logics
- Local HMI
  - Integrated HMI with 4 line display
  - 18 freely configurable LEDs with 4 fixed LED
  - Settings and disturbance Information
  - Front port for communication with indication

Suitable for conventional 220KV SS only

## NOTE:- BLOCK DIFFERENTIAL FUNCTION

+D.15 -D15.01  
LED indication

**List of LED indication (RED)**

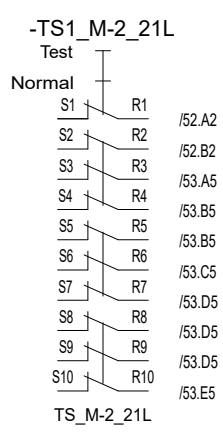
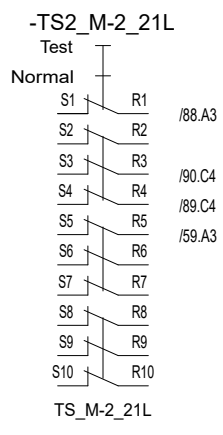
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2. Y-PH FAULT
3. B-PH FAULT
4. OC/DEF TRIP
5. ZONE-1 TRIP
6. ZONE-2 TRIP
7. ZONE-3 TRIP
8. ZONE-4 TRIP

**List of Functional Key Indication**

- FK1. ZONE-5 TRIP (REV)
- FK2. Z-COM TRIP
- FK3. SOTF TRIP
- FK4. BRC ALARM
- FK5. PSB ALARM
- FK6. VTFE ALARM
- FK7. AR BLOCK
- FK8. AR CLOSE
- FK9. OC/EF TRIP
- FK10. LED RESET

**List of LED indication (YELLOW)**

1. DISTANCE PROTN. OPTD.
3. FO CHANNEL-1 FAIL
4. FO CHANNEL-2 FAIL



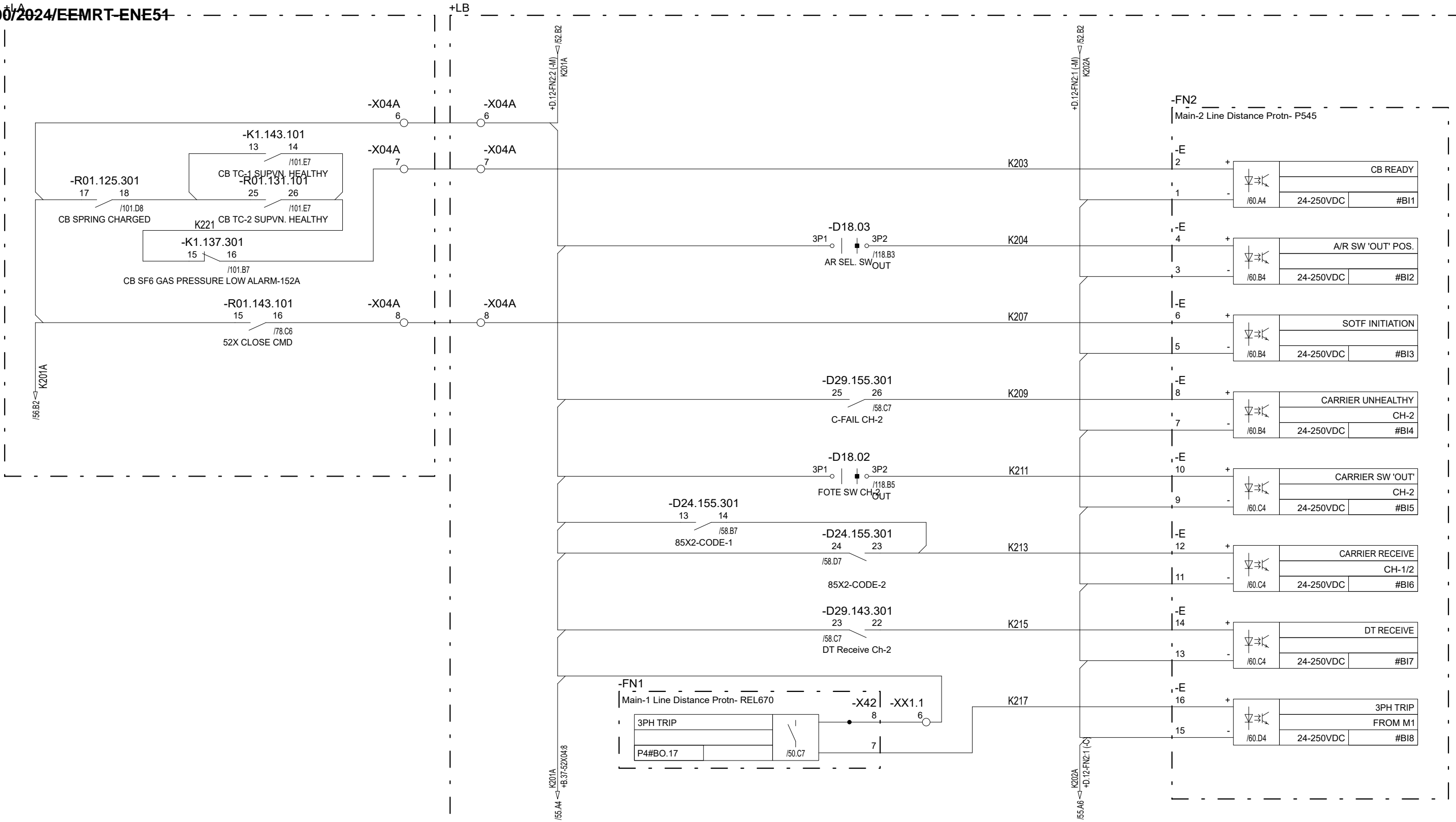
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Power supply Circuit to M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 52
1MYN691003-102(A3)REV01						n. sheet 53



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**APTRANSCO/VS/Vijayawada.**

NOTE:-  
CARRIER RECEIVE CH-1/2 FOTE COUNTERS SHALL BE BUILT IN MAIN-1 & MAIN-2

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 54
1MYN691003-102(A3)REV01						n. sheet 55

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52

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A

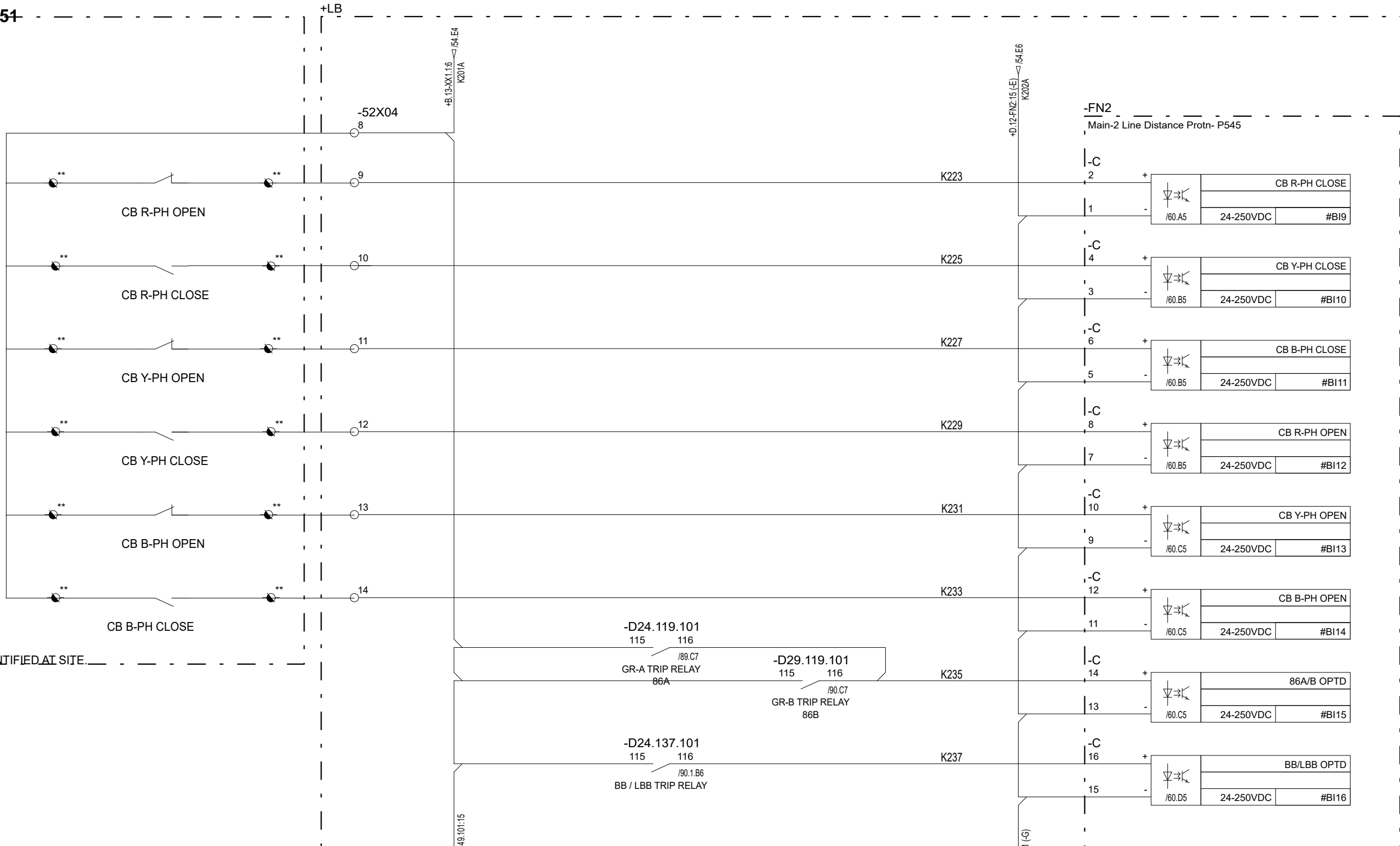
B

C

D

F

F



**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 55
1MYN691003-102(A3)REV01						n. sheet 56

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53

B

C

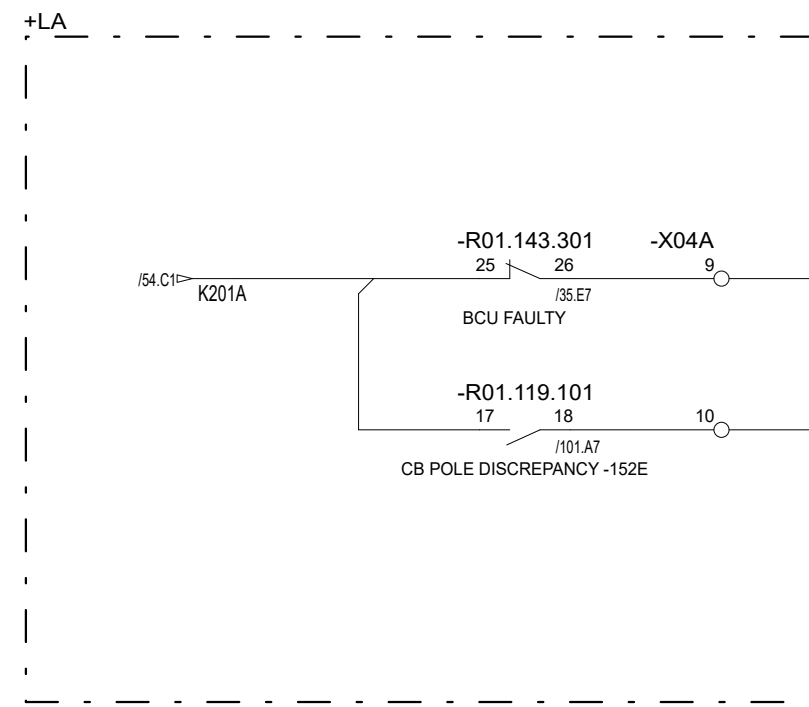
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E

F

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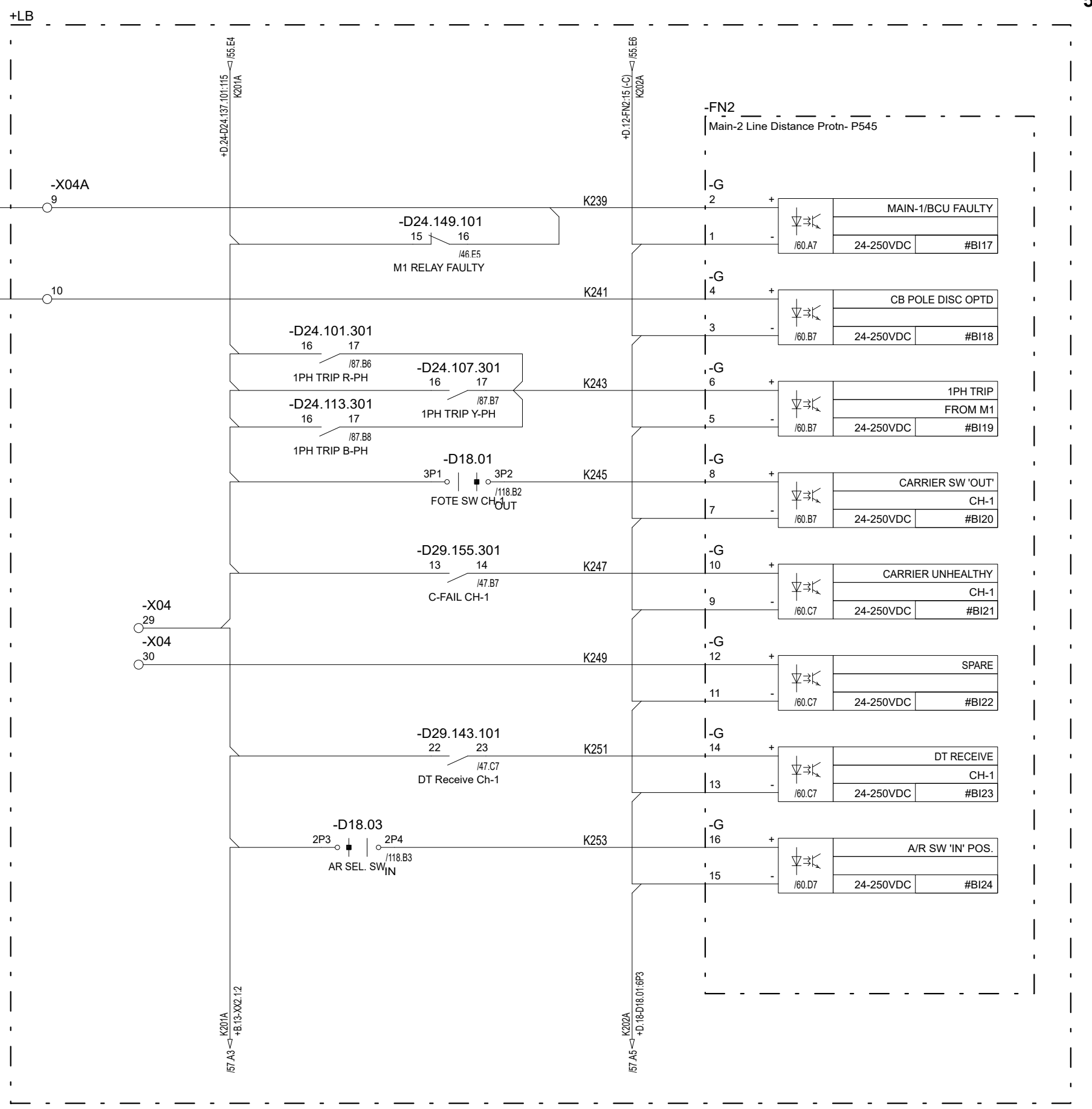
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Suitable for conventional 220KV SS only

**Chief Engineer/Projects  
APTRANSCO/VIS/Vijayawada.**

Drawing approval subject to valid vendor registration

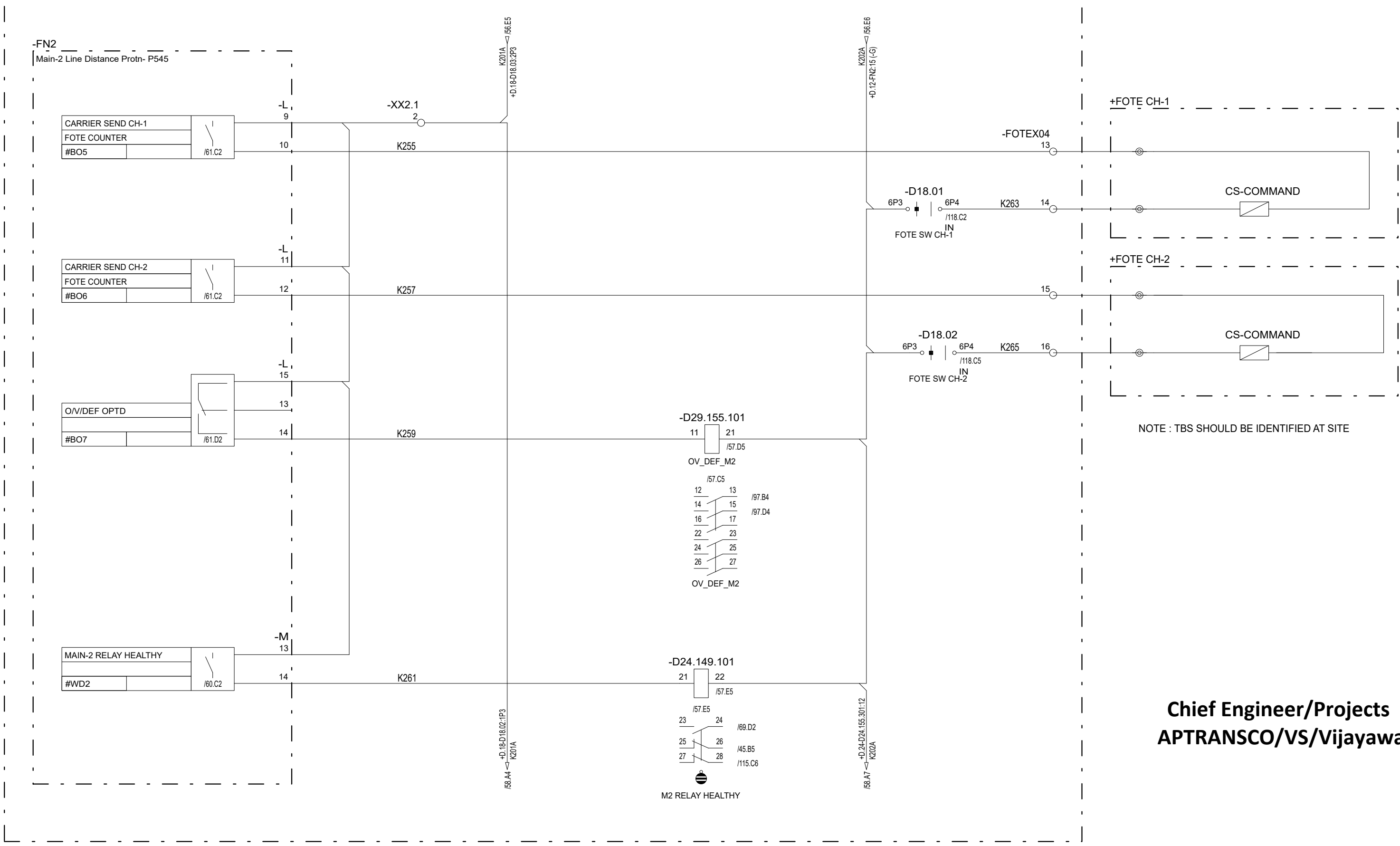


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		Project APTRANSCO		Binary inputs-M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 56
1MYN691003-102(A3)REV01						n. sheet 57

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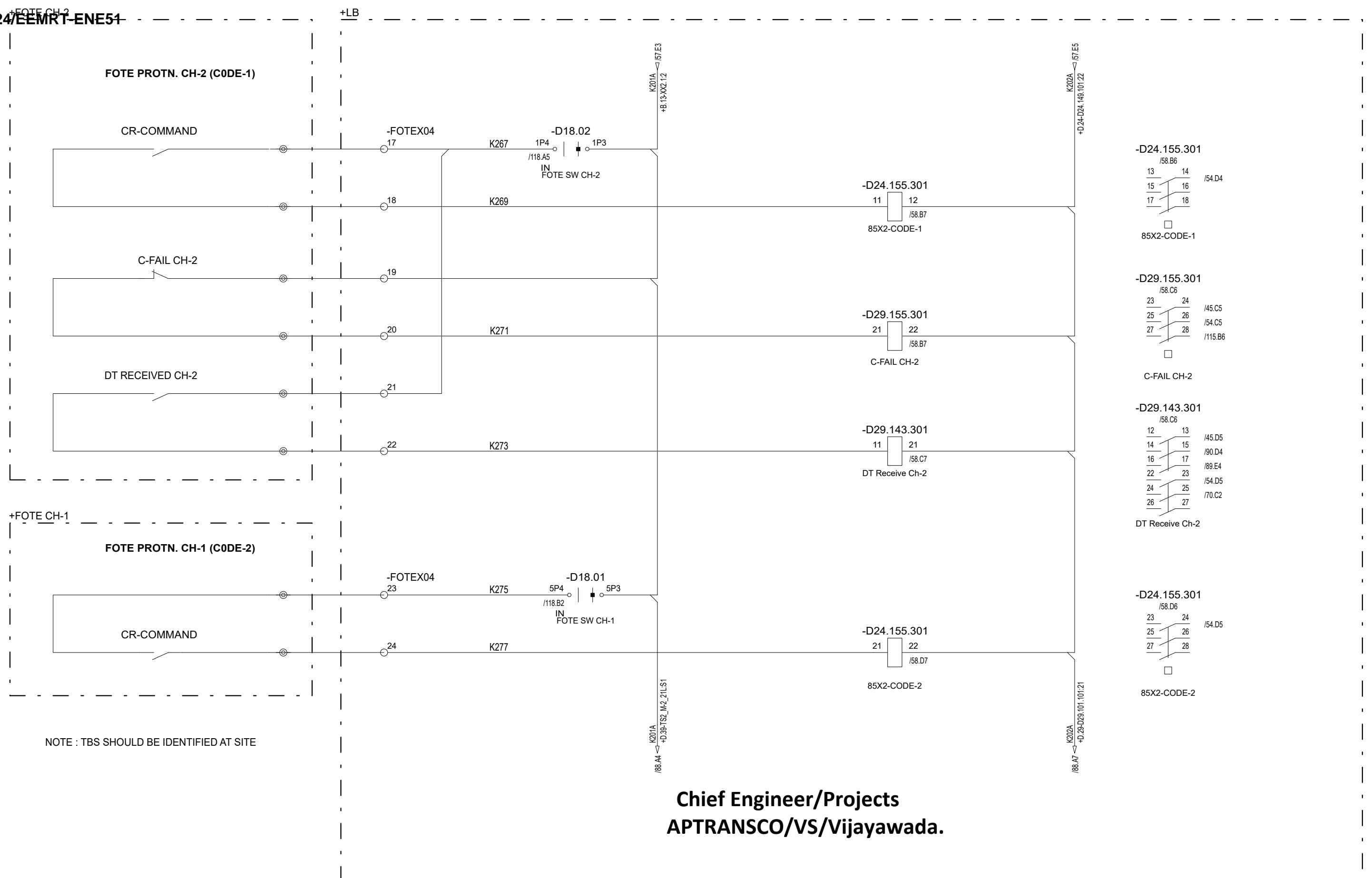


NOTE : TBS SHOULD BE IDENTIFIED AT SITE

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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 57	n. sheet 58
1MYN691003-102(A3)REV01						

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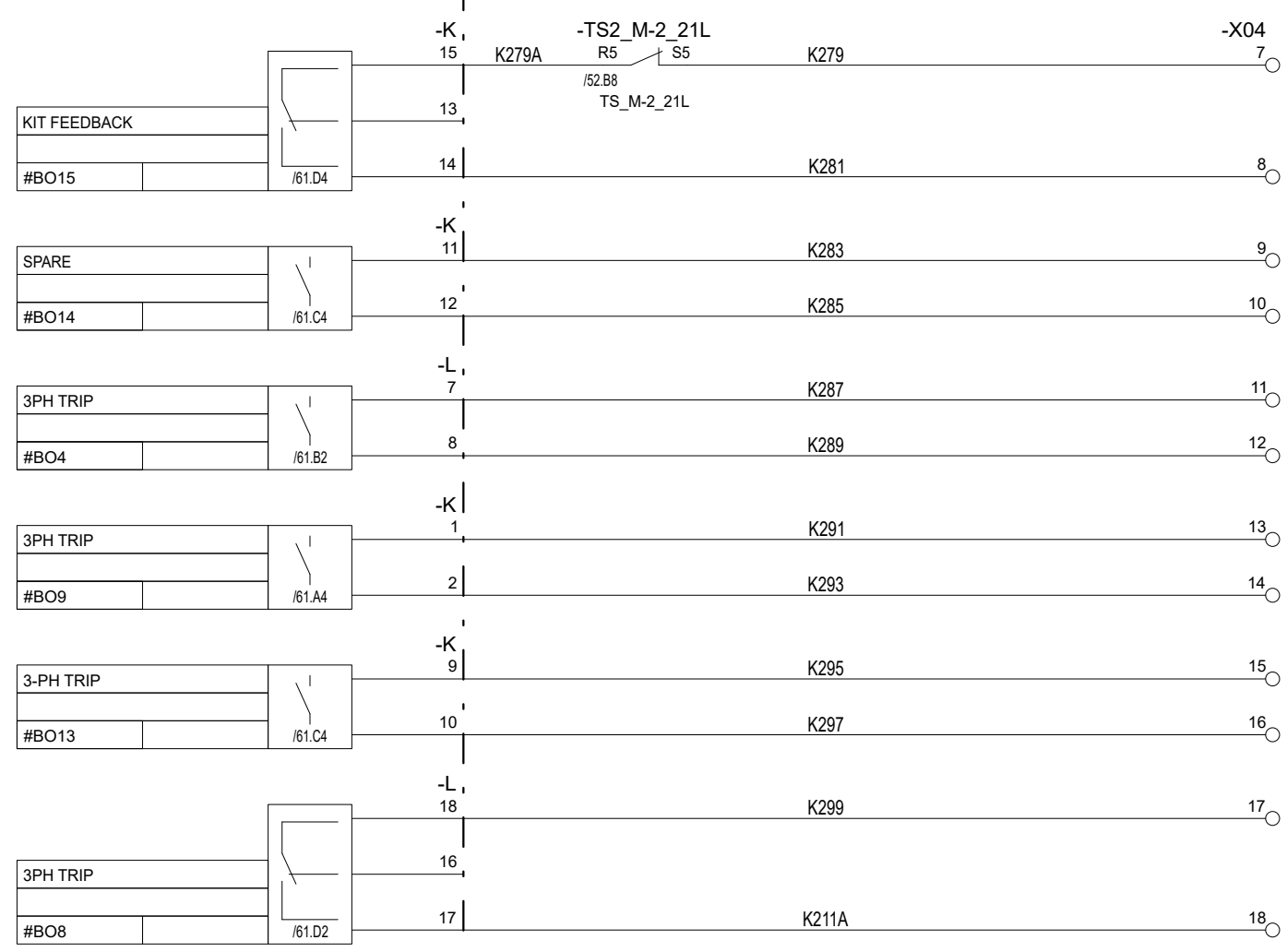
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		Project APTRANSCO		Carrier Received Signal to M2 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 58
1MYN691003-102(A3)REV01						n. sheet 59

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-FN2  
Main-2 Line Distance Protn- P545



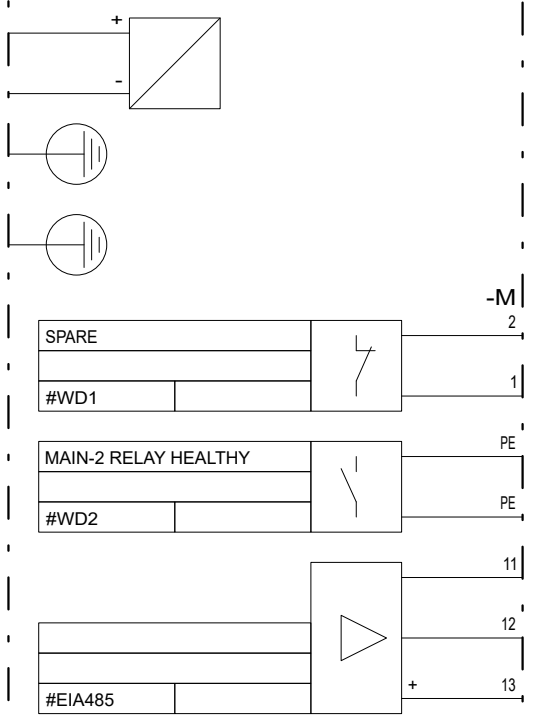
Suitable for conventional 220KV SS only

**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

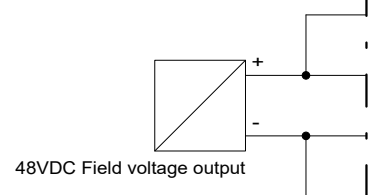
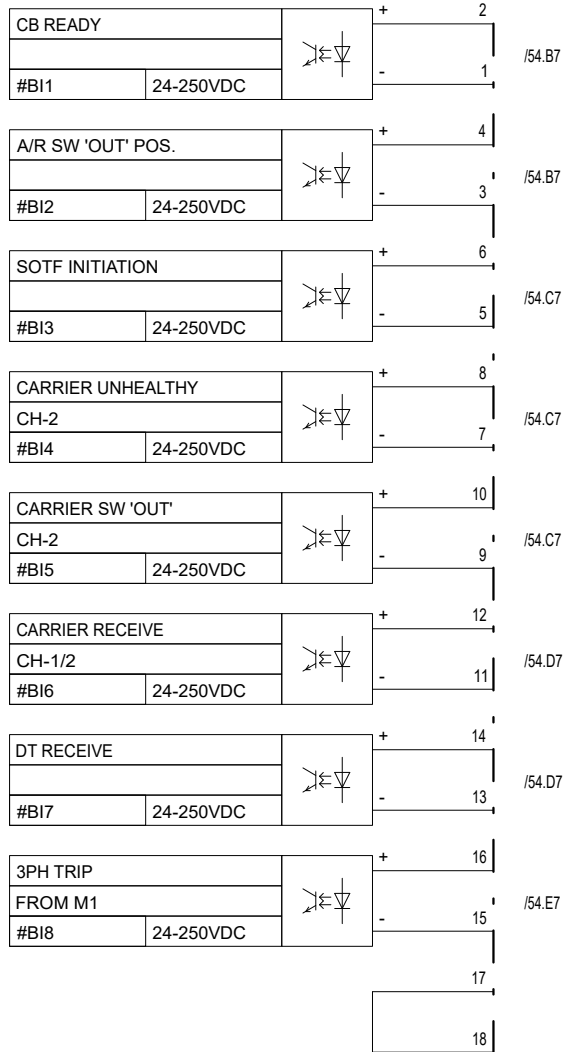
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		Project APTRANSCO		Spare Binary Output Circuit-M2 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 59
1MYN691003-102(A3)REV01						n. sheet 60

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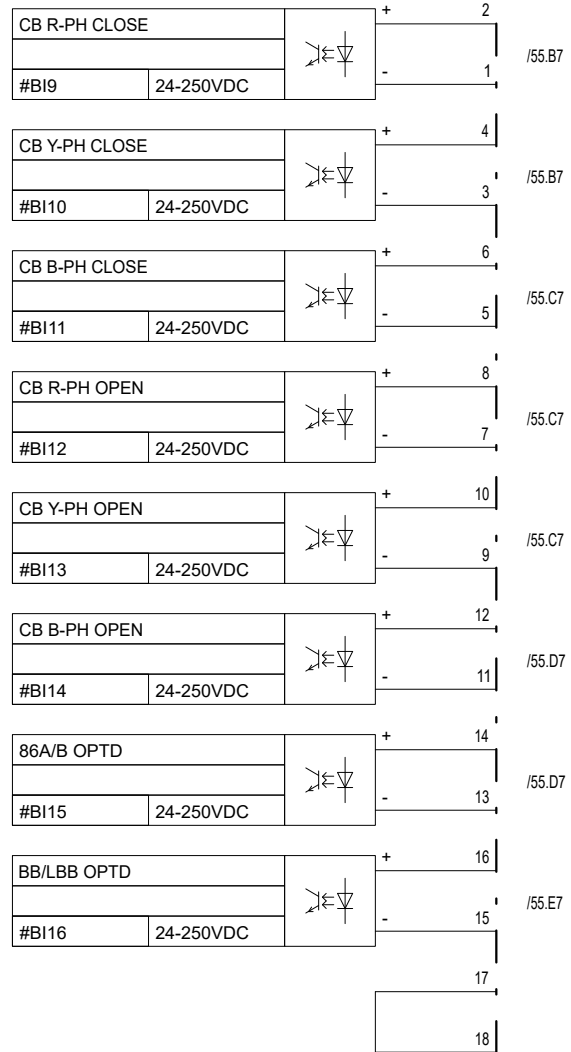
**+D.12 -FN2**  
M2 Protn relay  
Micom P545  
110-250VDC, 100-240VAC



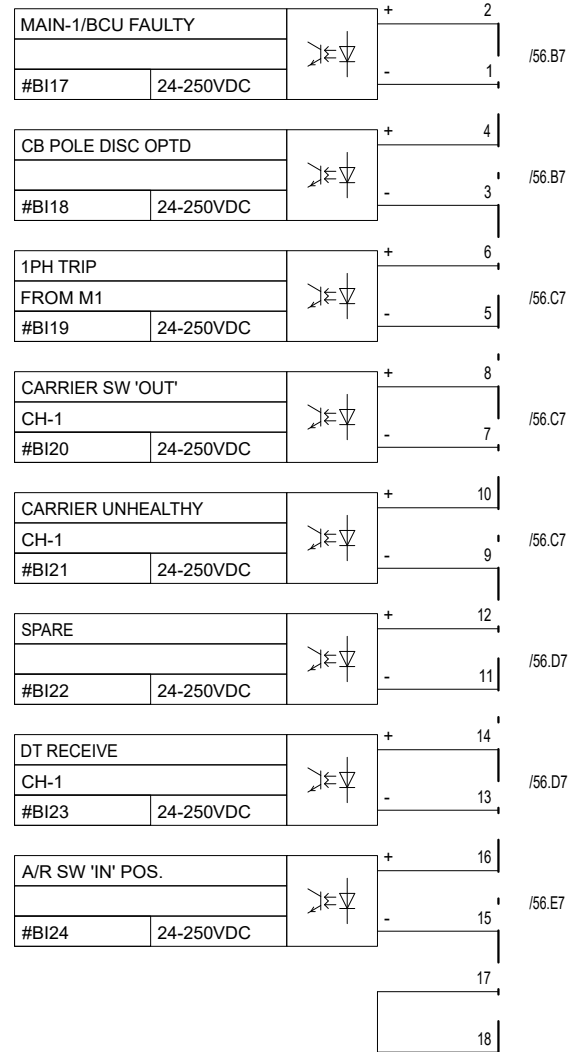
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M2 Protn relay  
Micom P545  
110-250VDC, 100-240VAC



**+D.12 -FN2**  
M2 Protn relay  
Micom P545  
110-250VDC, 100-240VAC



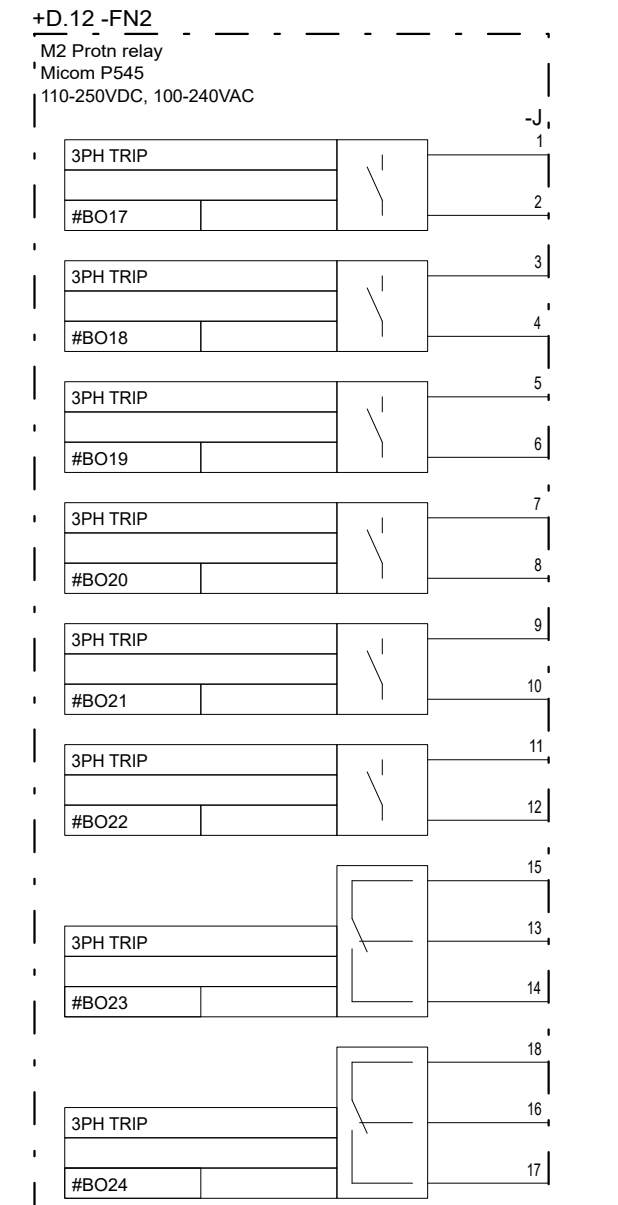
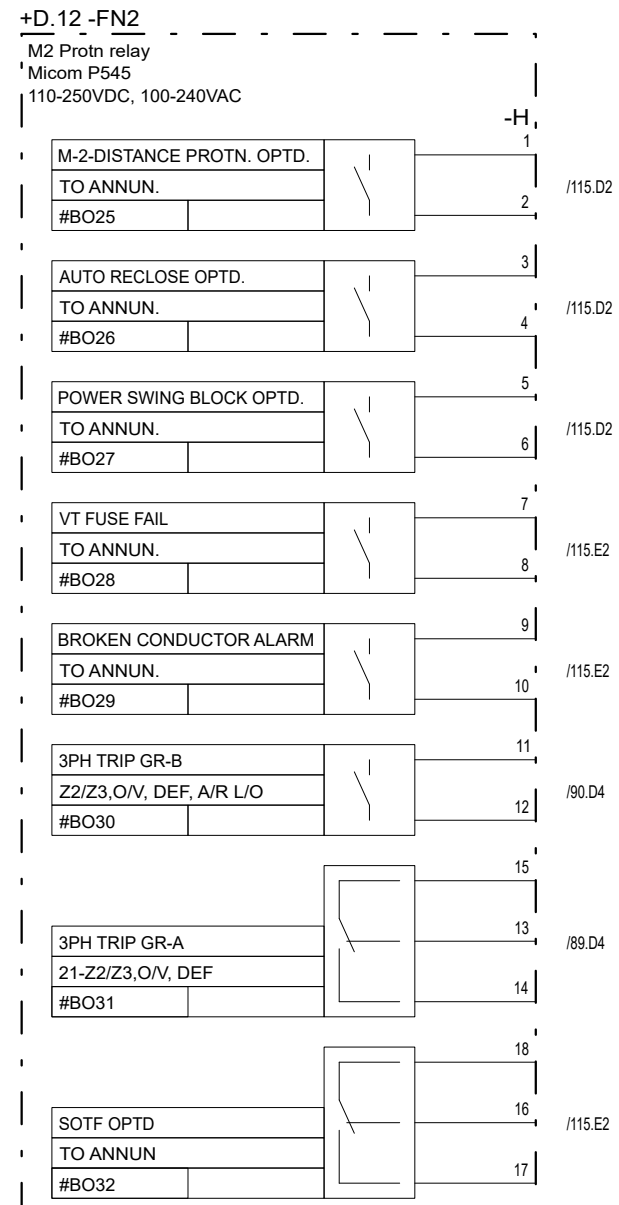
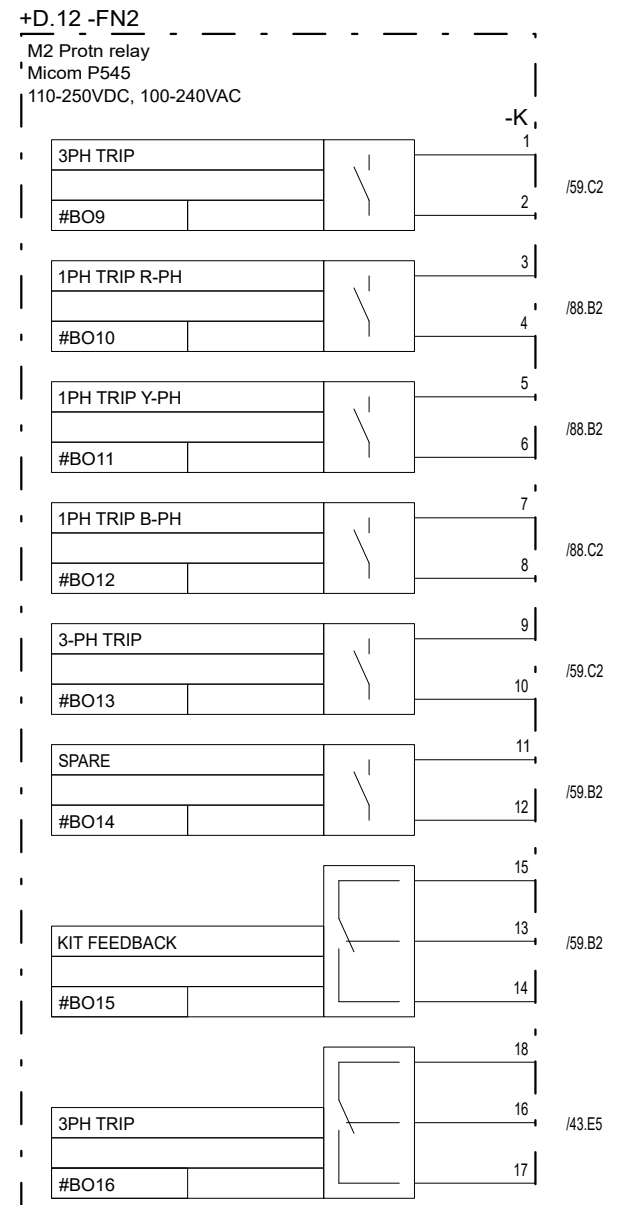
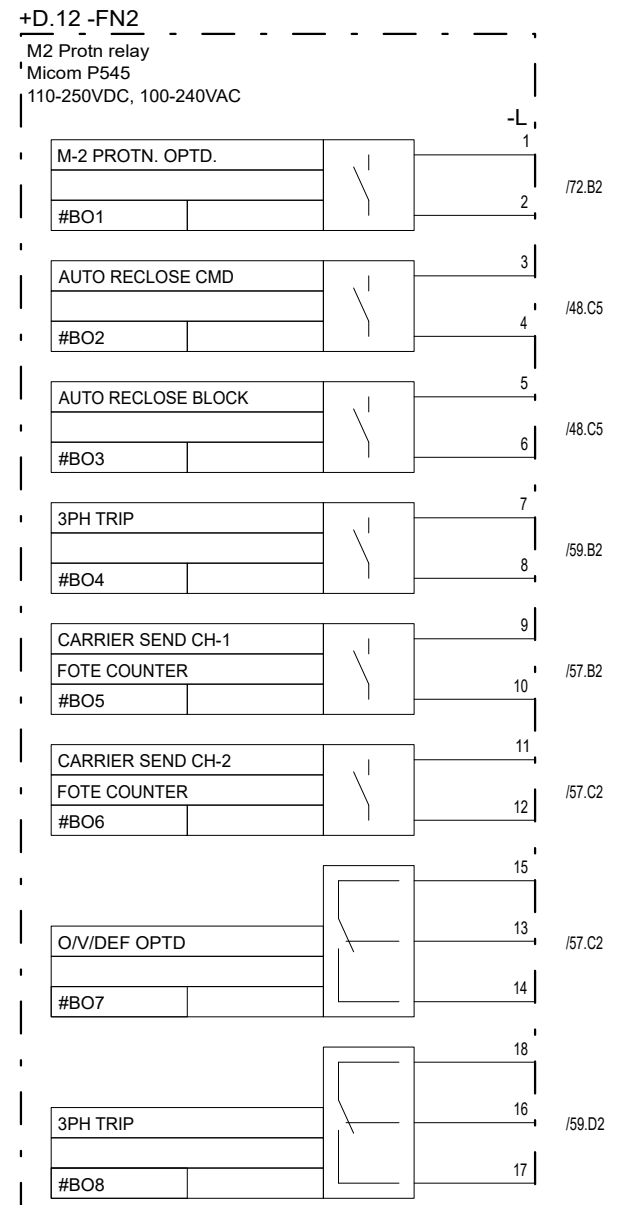
**+D.12 -FN2**  
M2 Protn relay  
Micom P545  
110-250VDC, 100-240VAC



**Chief Engineer/Projects**  
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-2 Protn. Relay-Master Blocks	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 60
1MYN691003-102(A3)REV01						n. sheet 61

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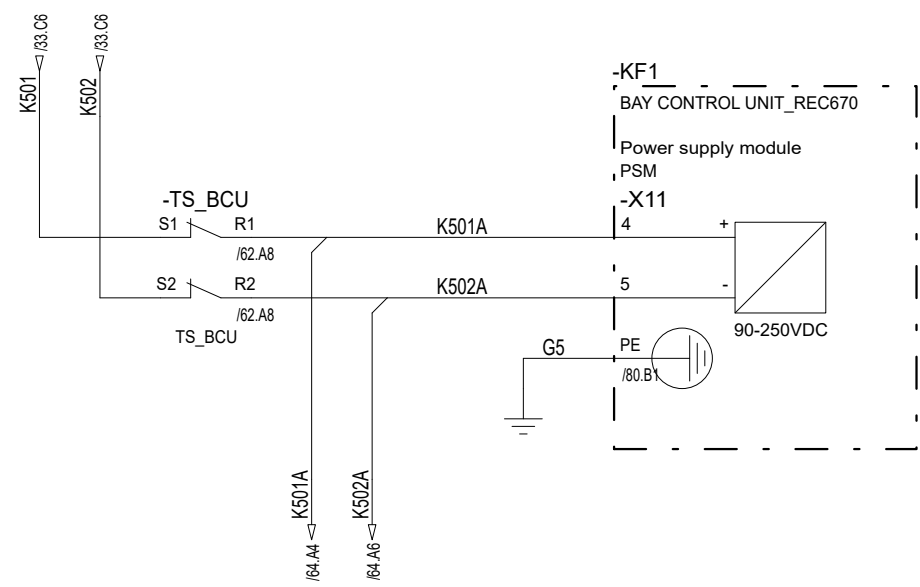
**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-2 Protn. Relay-Master Blocks	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 61
1MYN691003-102(A3)REV01						n. sheet 62

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**LIST OF FUNCTIONS  
AVAILABLE IN RELAY**

- Synchrocheck,25
- Measurements
- Control
- Tripping Logic
- Local HMI
  - Integrated HMI with 4 line display
  - 15 freely configurable LEDs
  - Settings and disturbance Information
  - Front port for communication with indication

RED - TRIP SIGNALS  
YELLOW - ALARM SIGNALS  
GREEN - COMMUNICATION SIGNALS

**+B.25 -KF1**  
Indication HMI  
LED

**RED INDICATION (GR-1)**

- CB CLOSE
- CB OPEN
- CB SPRING CHARGED
- CB SF6 LOW
- CB SF6 L/O
- CB HEALTHY
- 86A OPTD
- 86B OPTD
- 96 OPTD

List of Functional Key Indication

- FK1. SPARE
- FK2. SPARE
- FK3. SPARE
- FK4. SPARE
- FK5. LED RESET

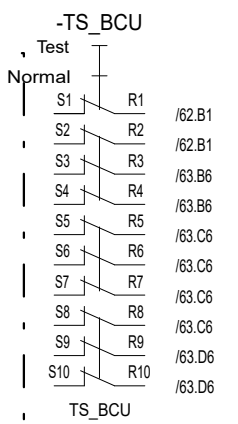
**+B.25 -KF1**  
Indication HMI  
LED

**YELLOW INDICATION (GR-2)**

- 89A OPEN
- 89A CLOSE
- 89B OPEN
- 89B CLOSE
- 89L OPEN
- 89L CLOSE
- 89LE CLOSE
- 89LE OPEN
- CHECK SYN OK
- CB IN REMOTE
- CB IN LOCAL
- 89A IN REMOTE
- 89B IN REMOTE
- 89L IN REMOTE

**+B.25 -KF1**  
Indication HMI  
LED

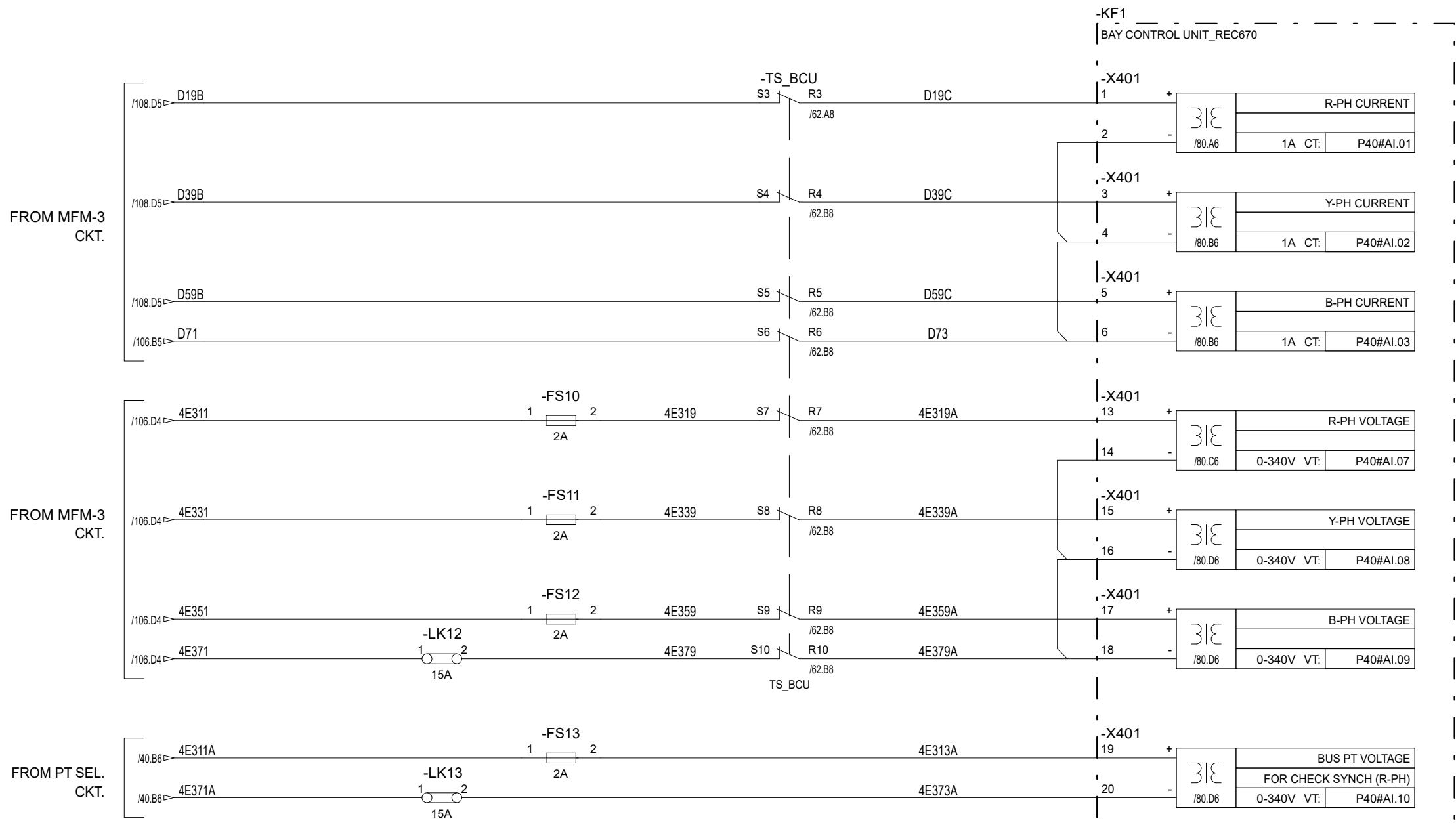
**GREEN INDICATION (GR-3)**



Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		BCU-Power supply Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 62
1MYN691003-102(A3)REV01						n. sheet 63

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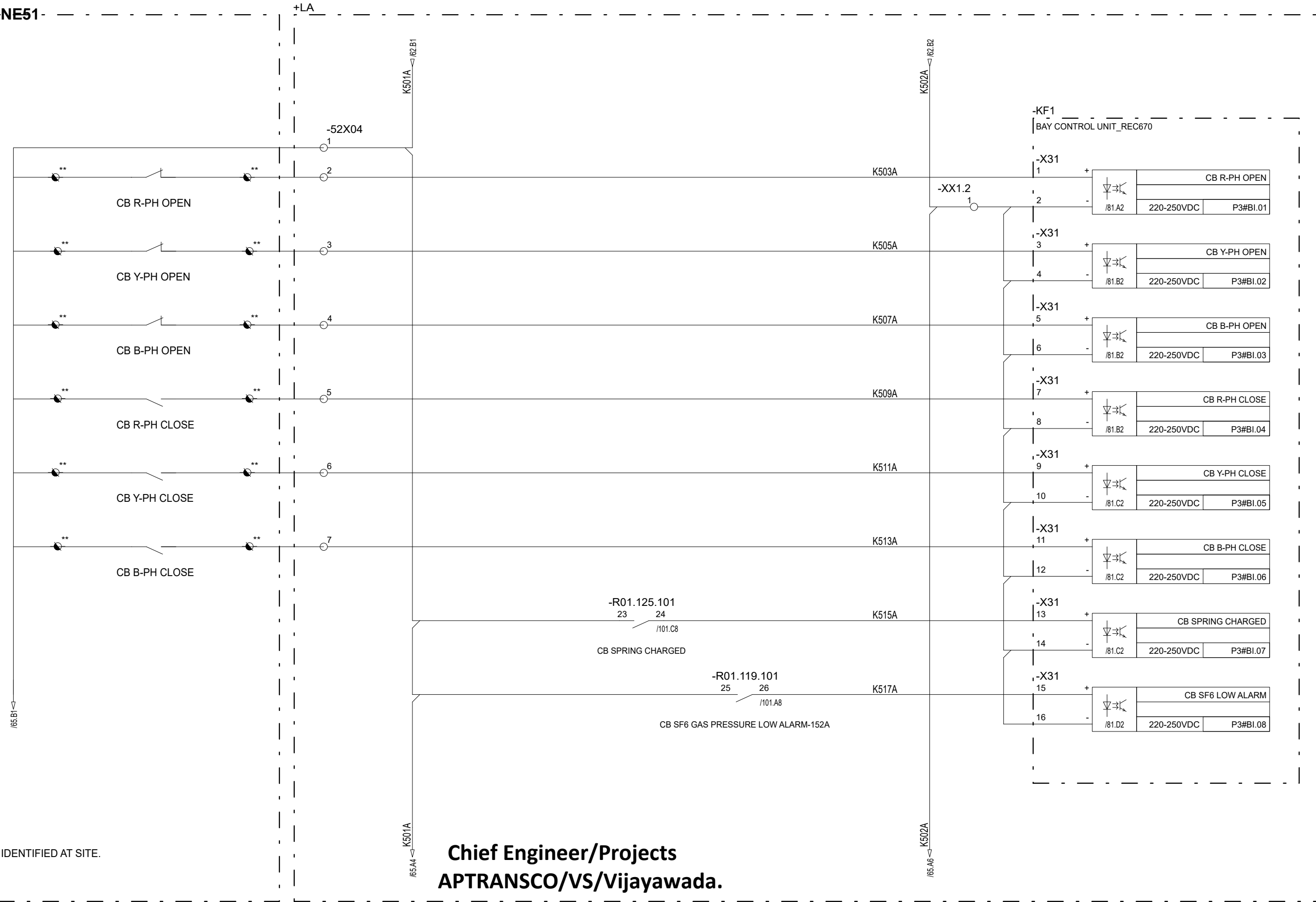
Suitable for conventional 220KV SS only

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		BCU-CT & PT Input Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	
					Sheet 63	n. sheet 64
1MYN691003-102(A3)REV01						

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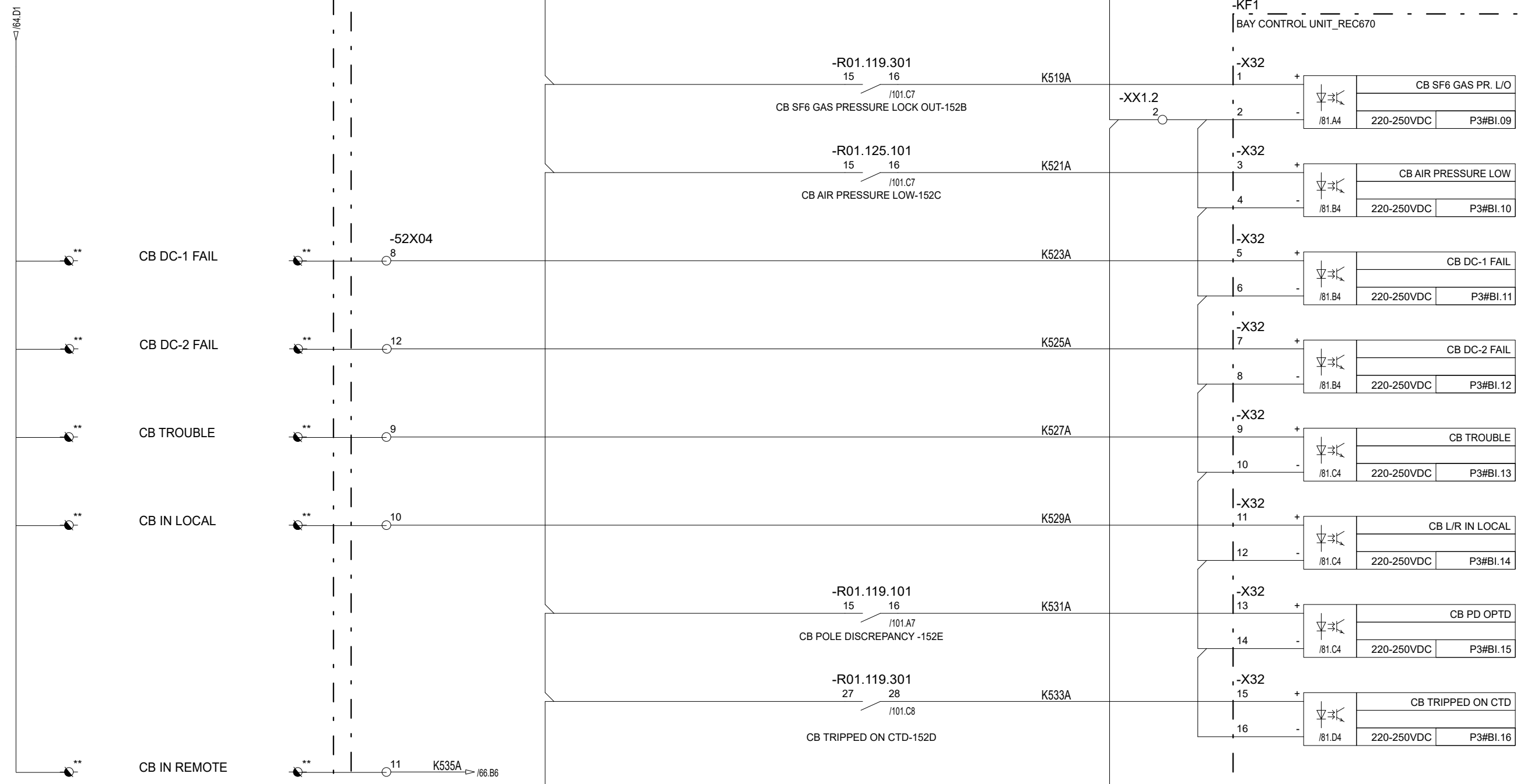
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 64	n. sheet 65
1MYN691003-102(A3)REV01						

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Drawing approval subject to valid vendor registration



Suitable for conventional 220KV SS only

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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		BCU-Binary Input Ckt.	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		Hitachi Energy India Limited	Doc. no. 1MNS500925-CAAA	
Rev.	Revision note	Date	Name			Sheet 65
1MYN691003-102(A3)REV01						n. sheet 66

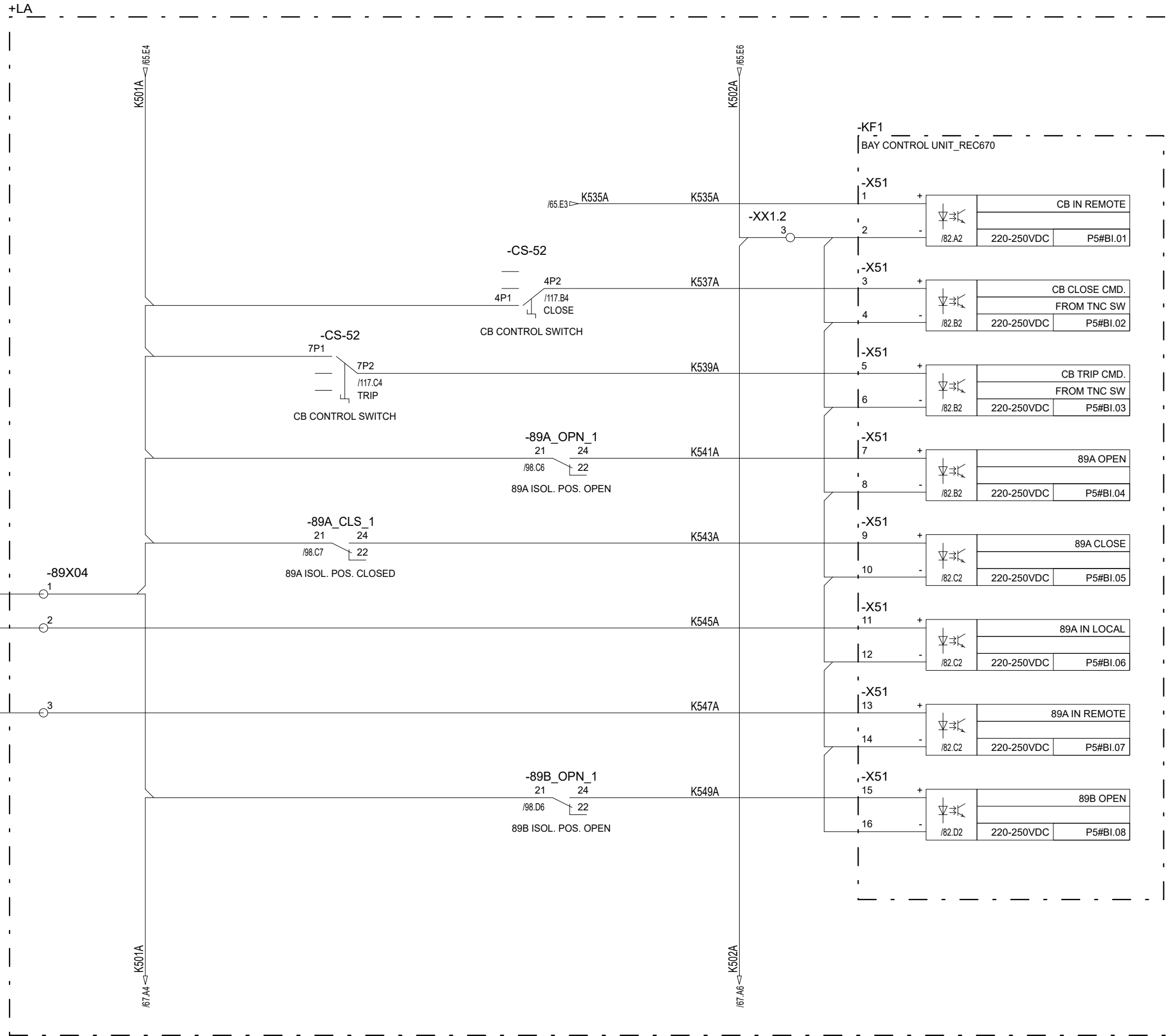
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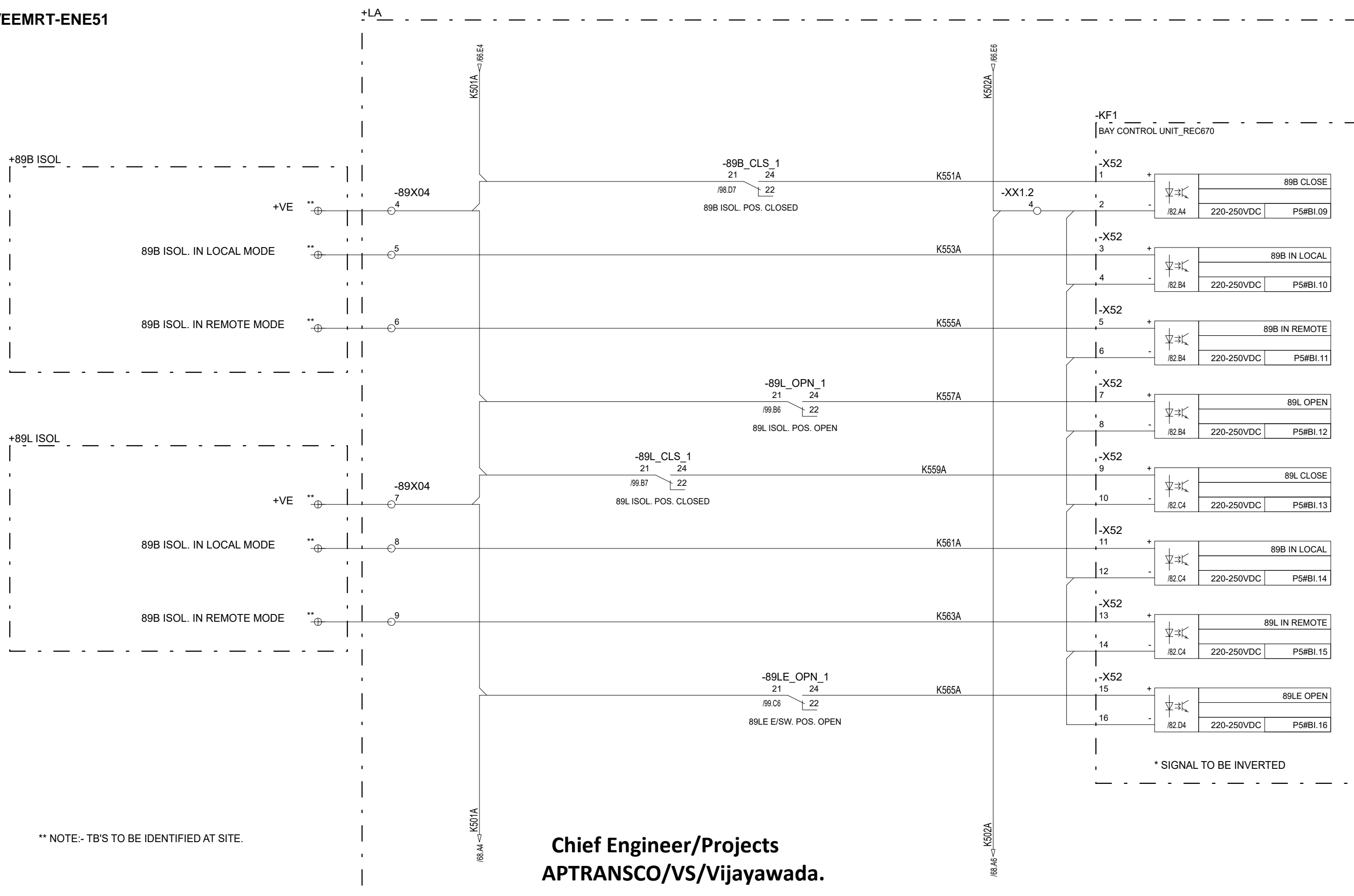
**Chief Engineer/Projects  
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 66
1MYN691003-102(A3)REV01						n. sheet 67

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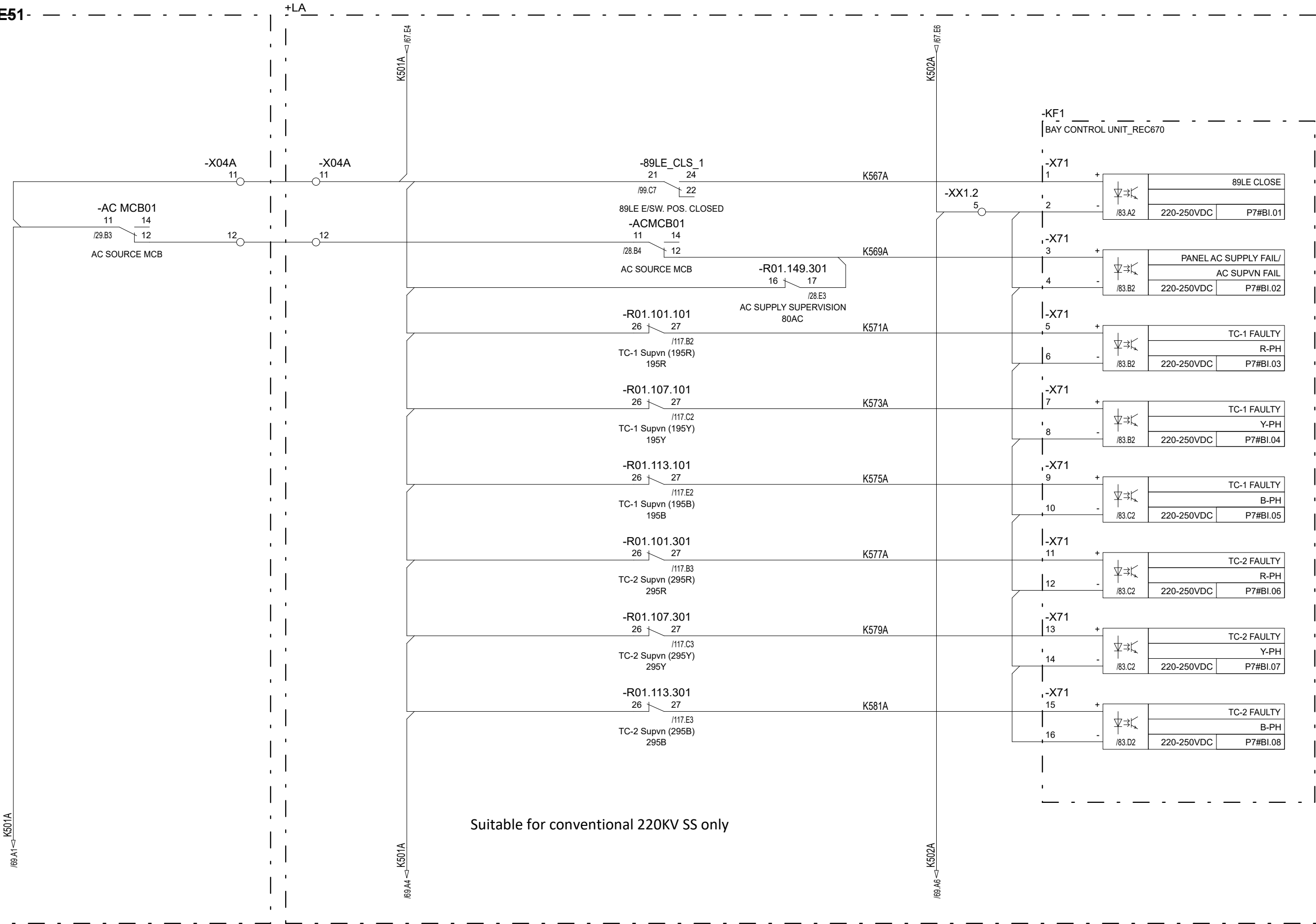
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APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 67	n. sheet 68
1MYN691003-102(A3)REV01						

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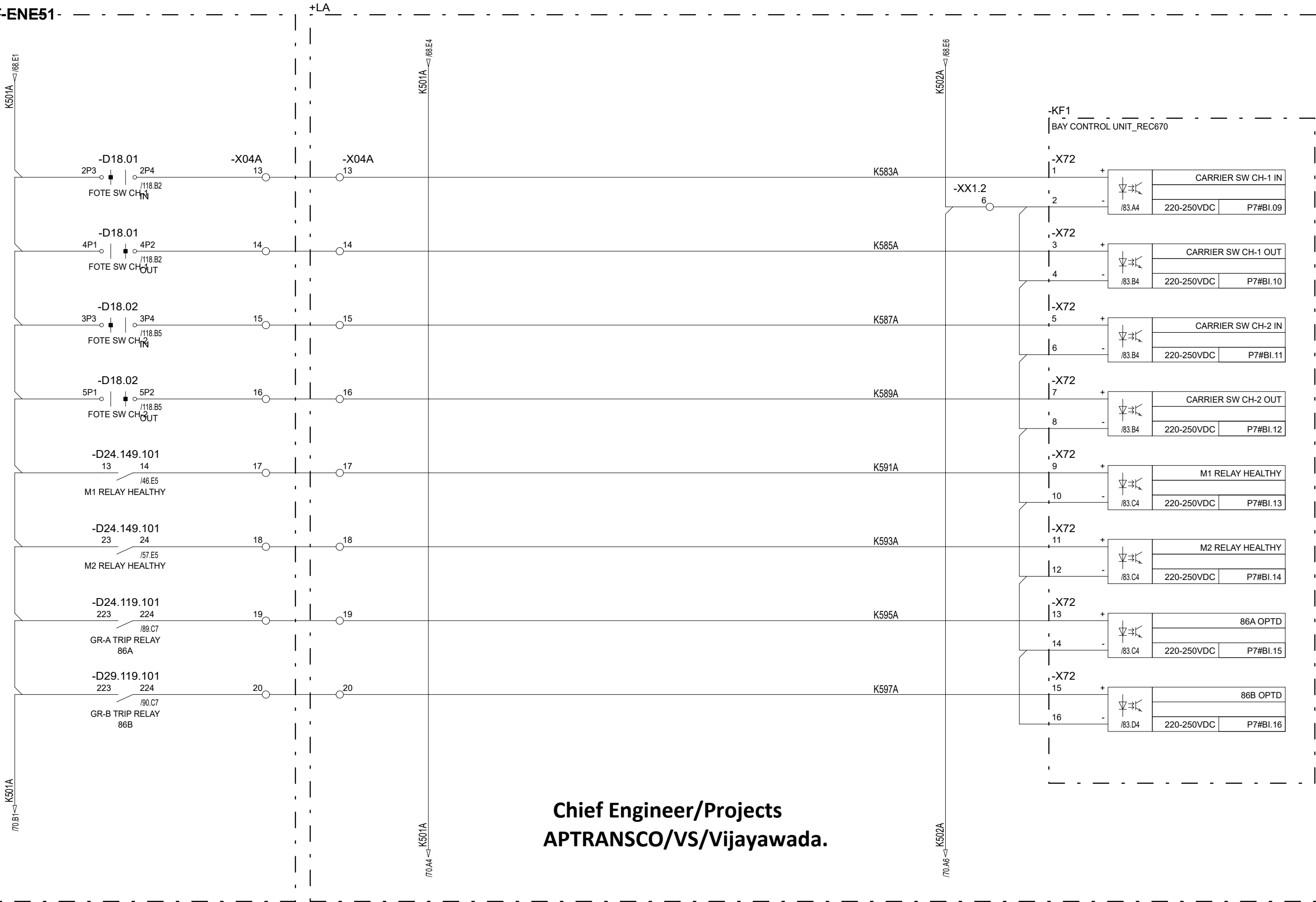
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 68
1MYN691003-102(A3)REV01						n. sheet 69

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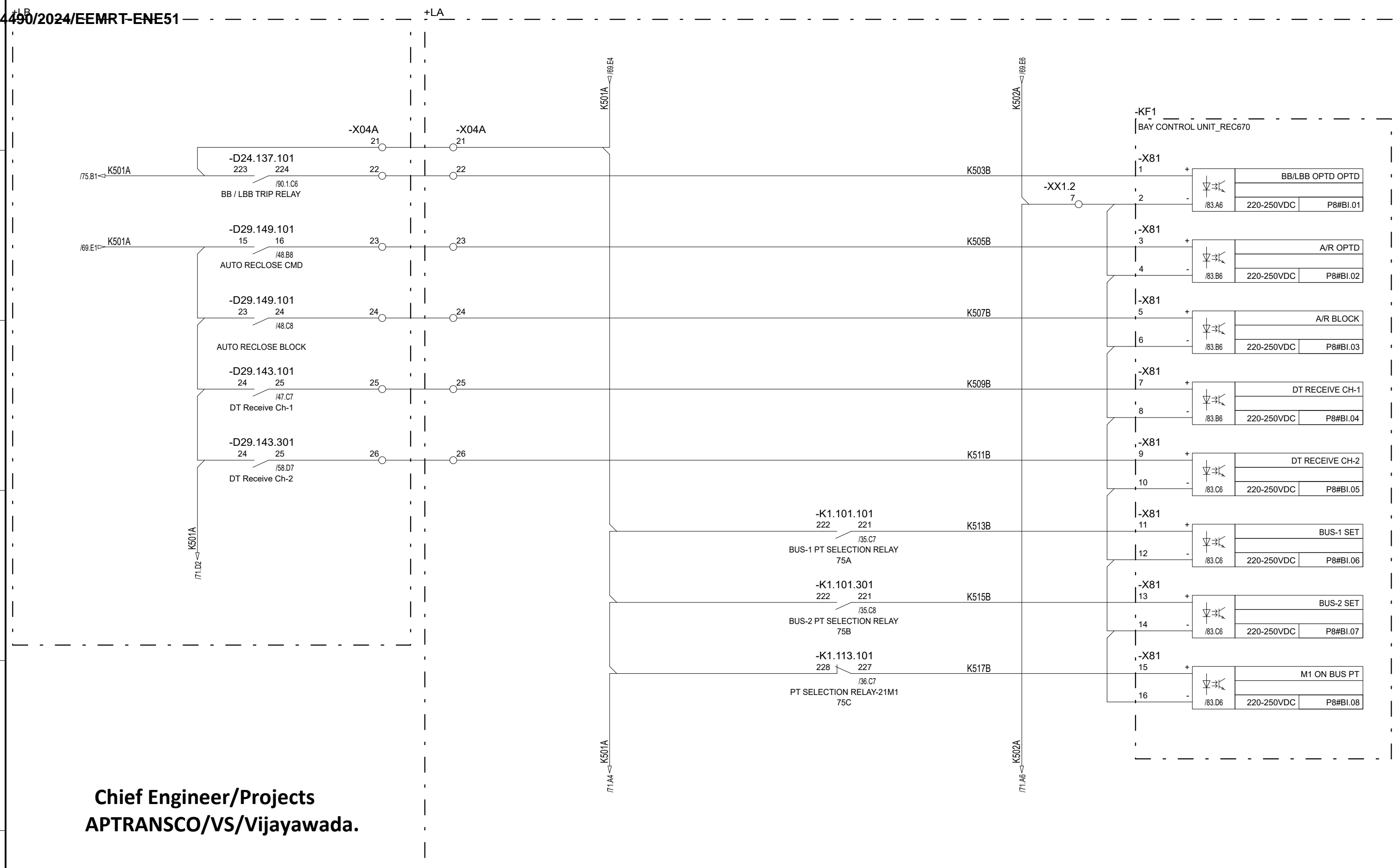
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APTRANSCO/VS/Vijayawada.**

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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 69	n. sheet 70
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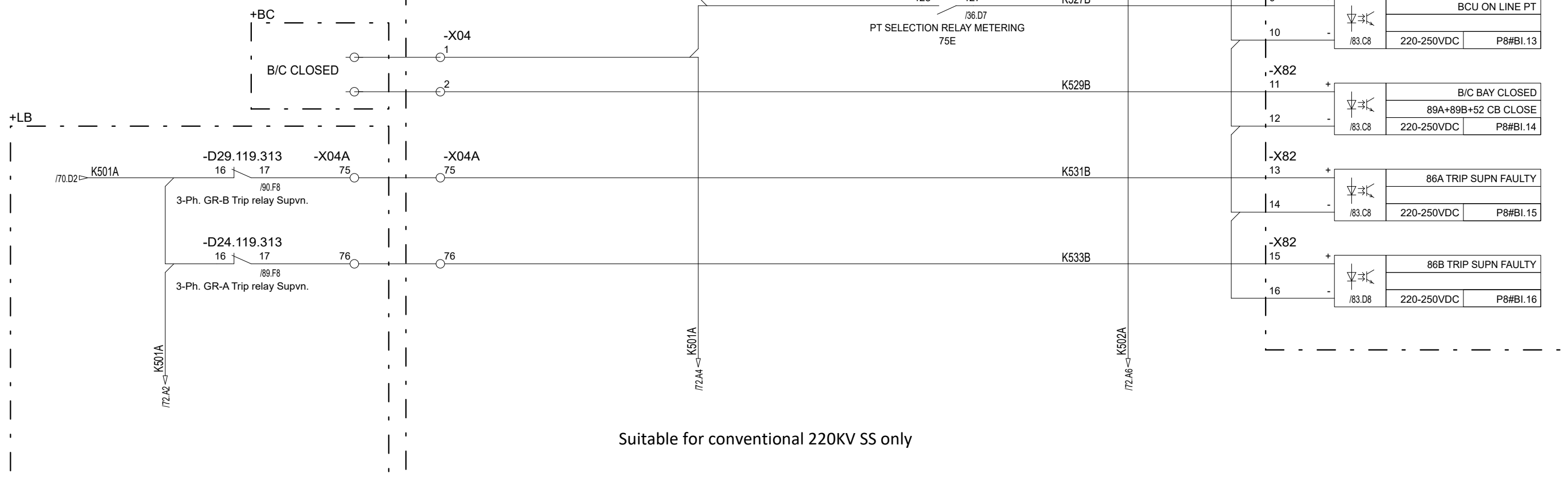
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 70
1MYN691003-102(A3)REV01						n. sheet 71

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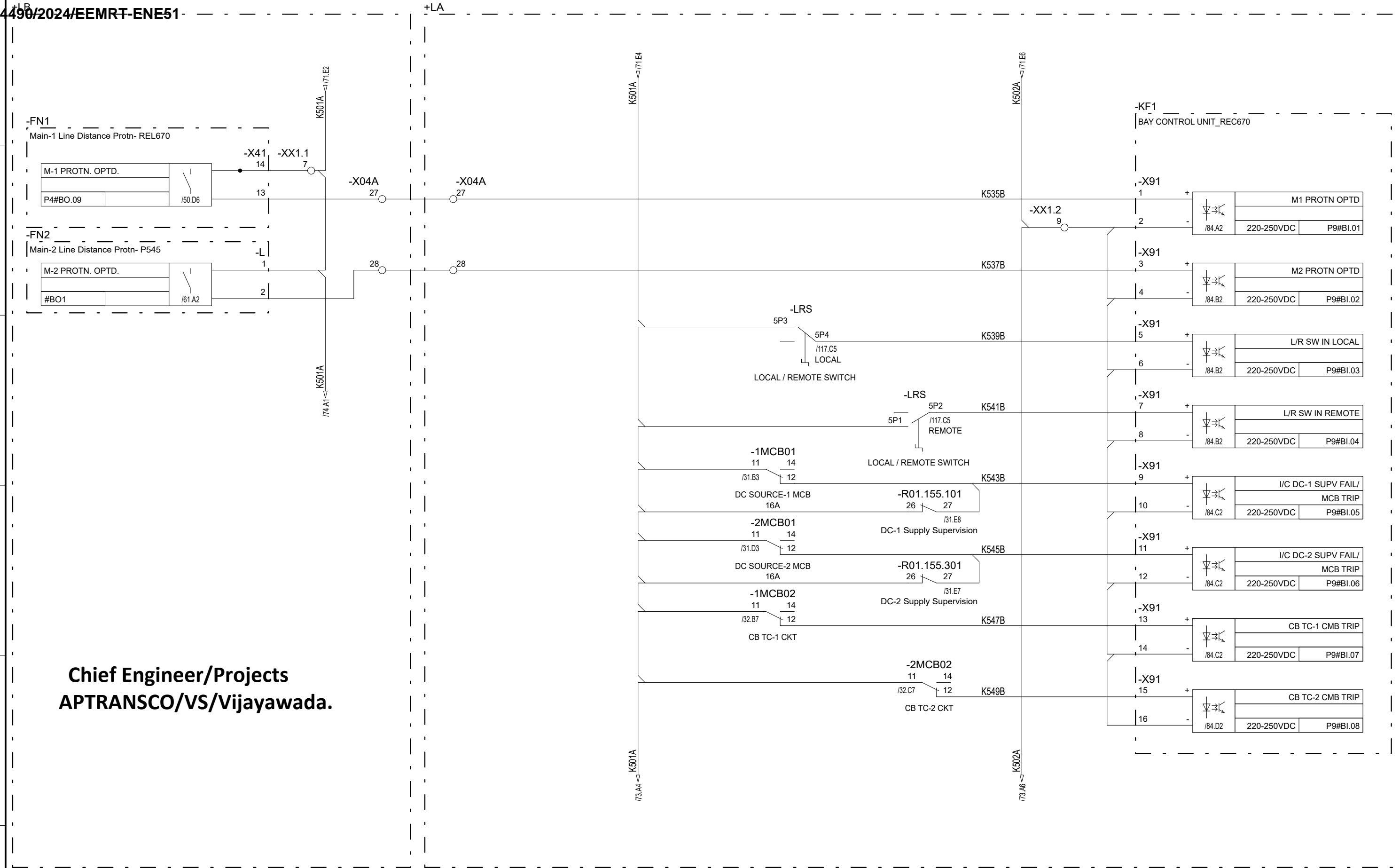
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		Project APTRANSCO STANDARD DRAWING		BCU-Binary Input Ckt.	Resp. dept. PG-GAS	Rev. ind. Language en
				HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CAAA	
Rev.	Revision note	Date	Name			Sheet 71 n. sheet 72
1MYN691003-102(A3)REV01						

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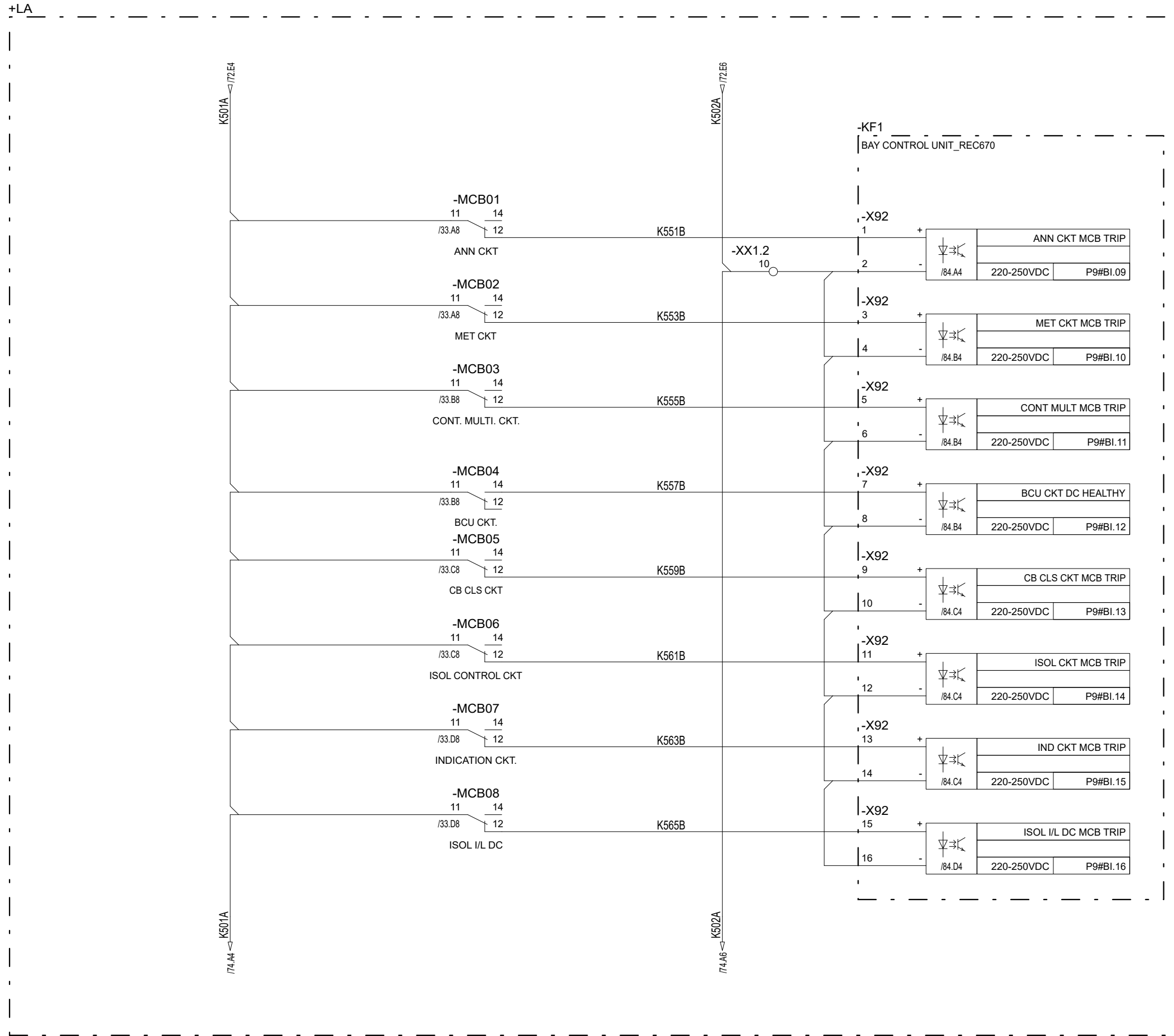


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		Project APTRANSCO		BCU-Binary Input Ckt.	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 72
						n. sheet 73

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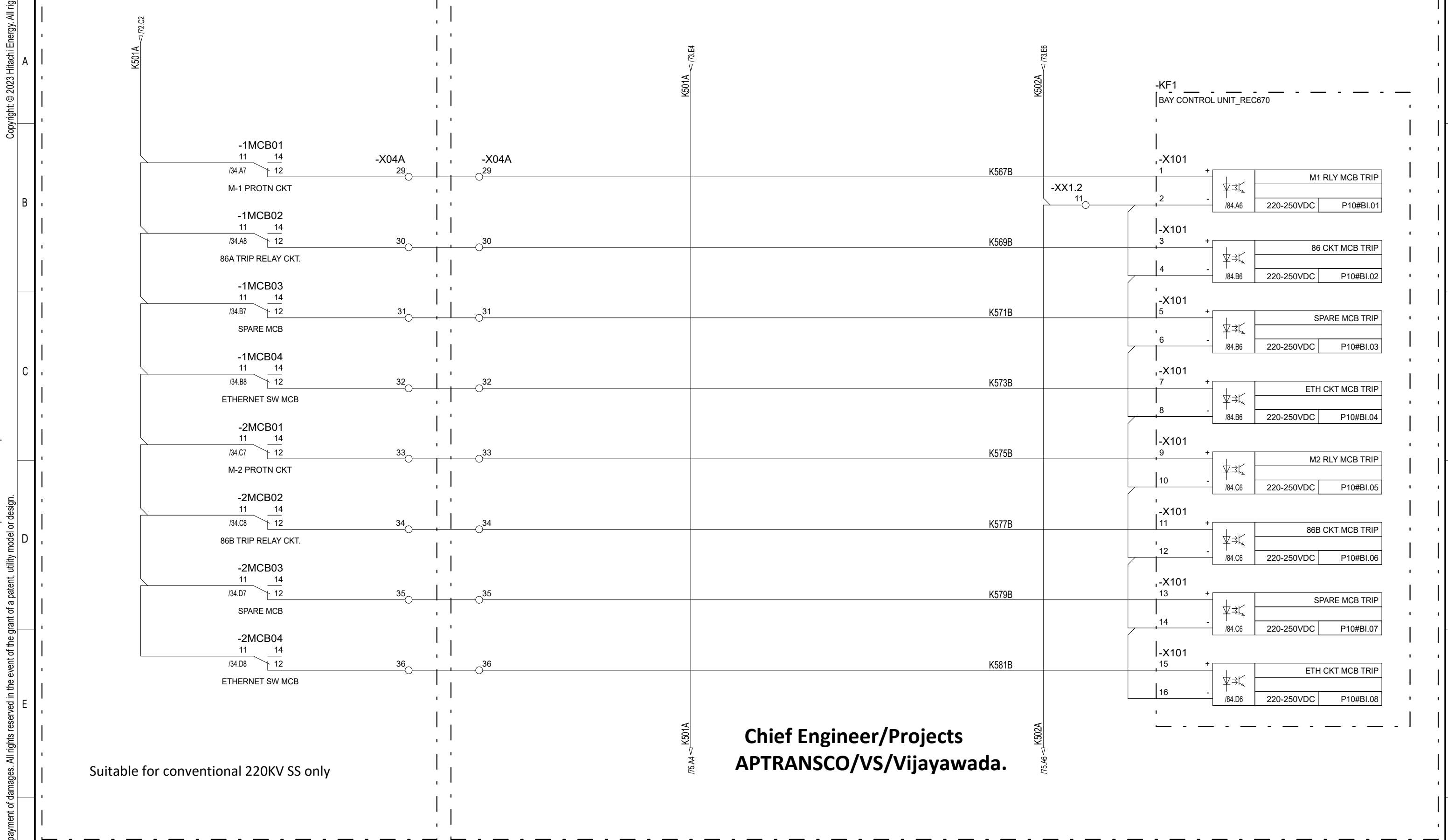
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 73
1MYN691003-102(A3)REV01						n. sheet 74

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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 74	n. sheet 75
1MYN691003-102(A3)REV01						

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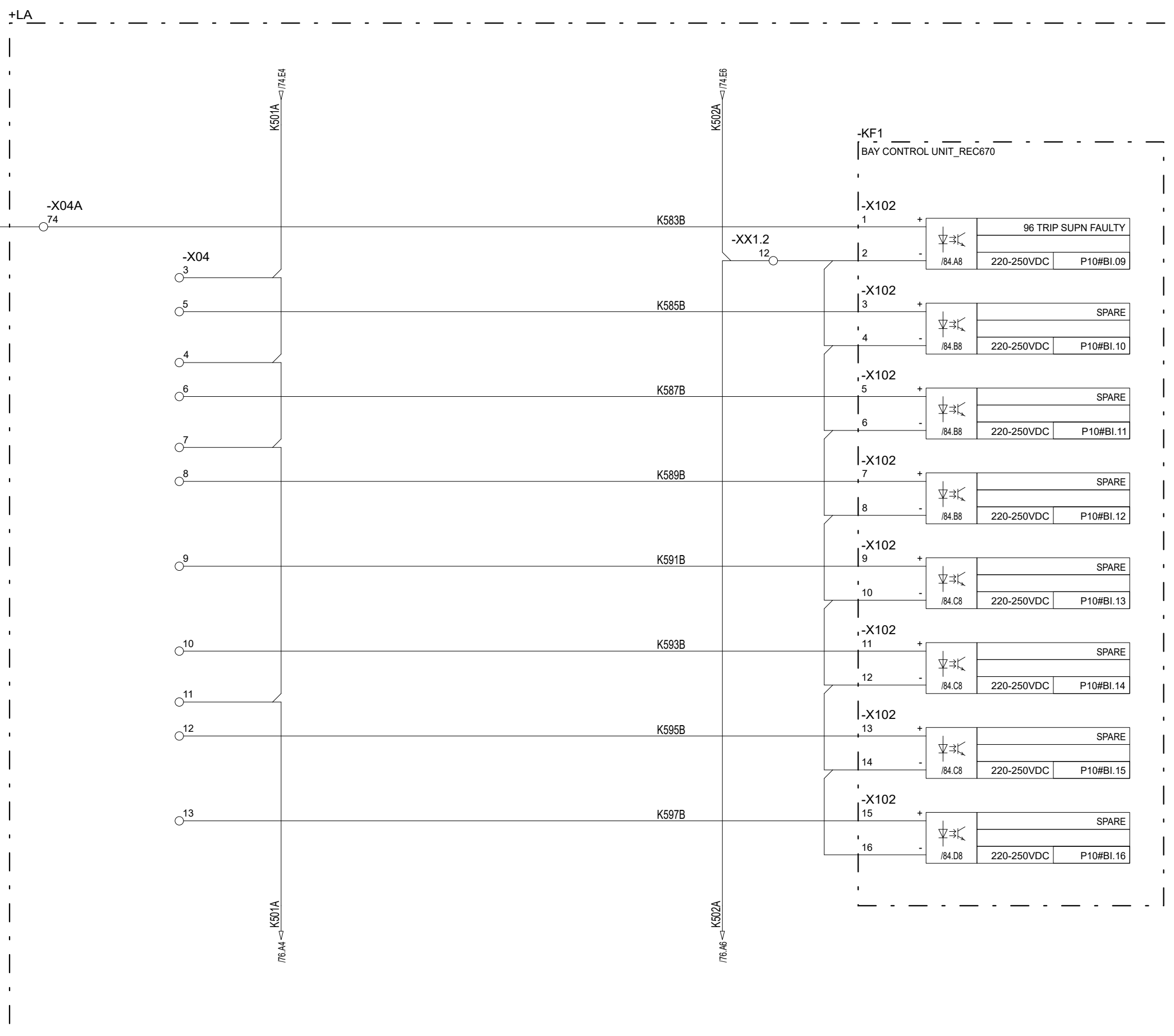
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 75
1MYN691003-102(A3)REV01						n. sheet 76

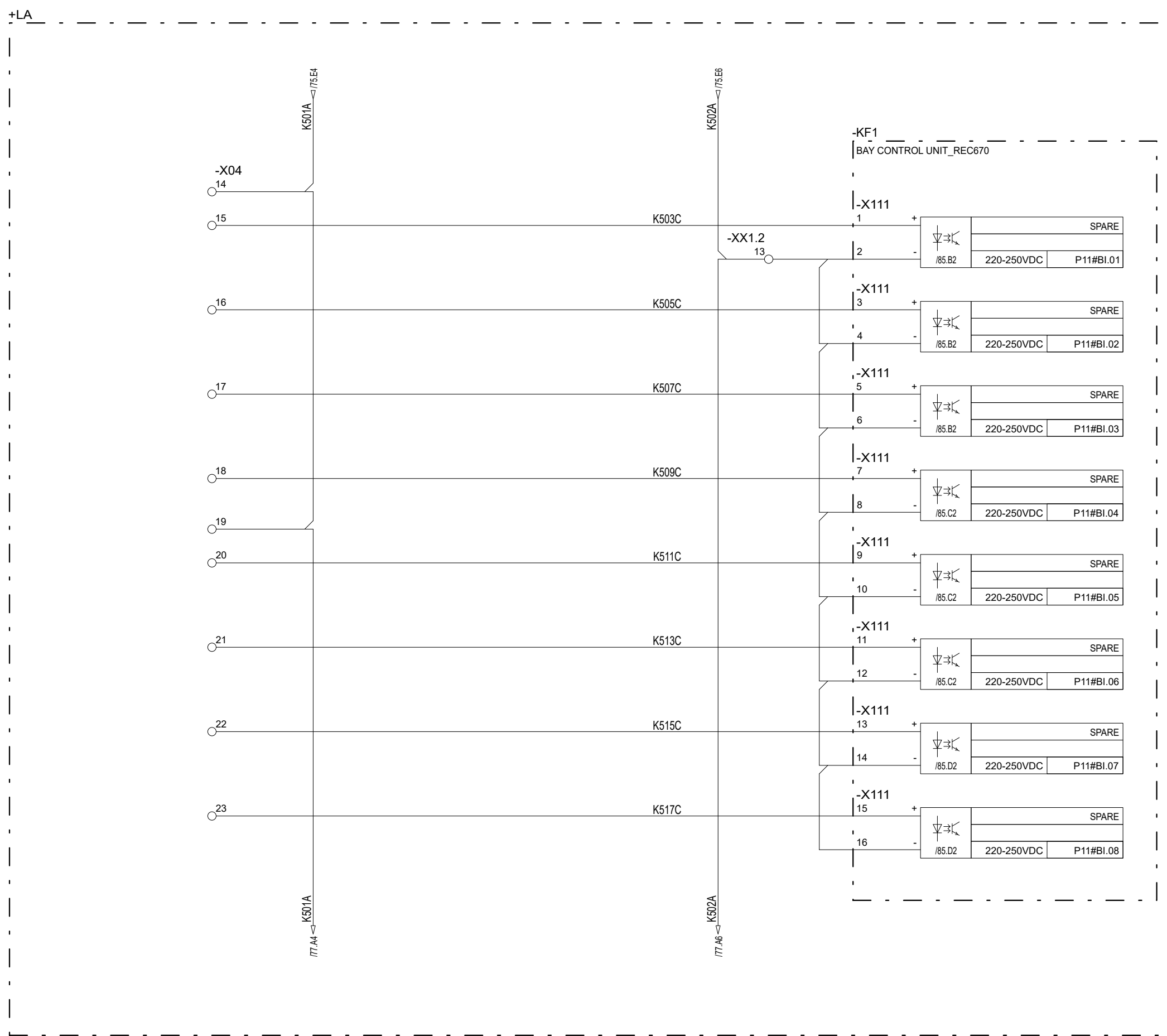
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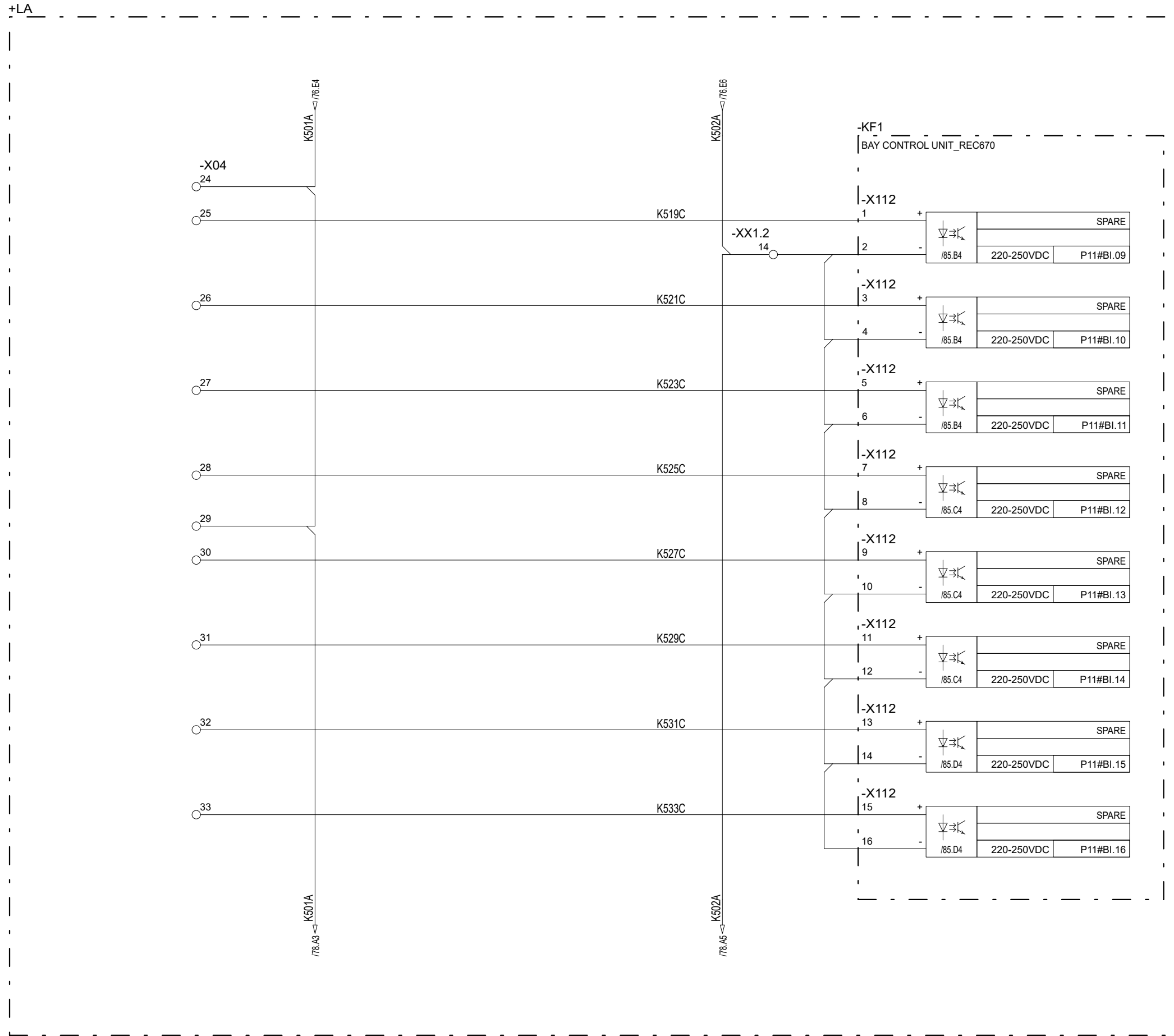


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Rev.	Revision note	Date	Name							n. sheet		77	
1MYN691003-102(A3)REV01													

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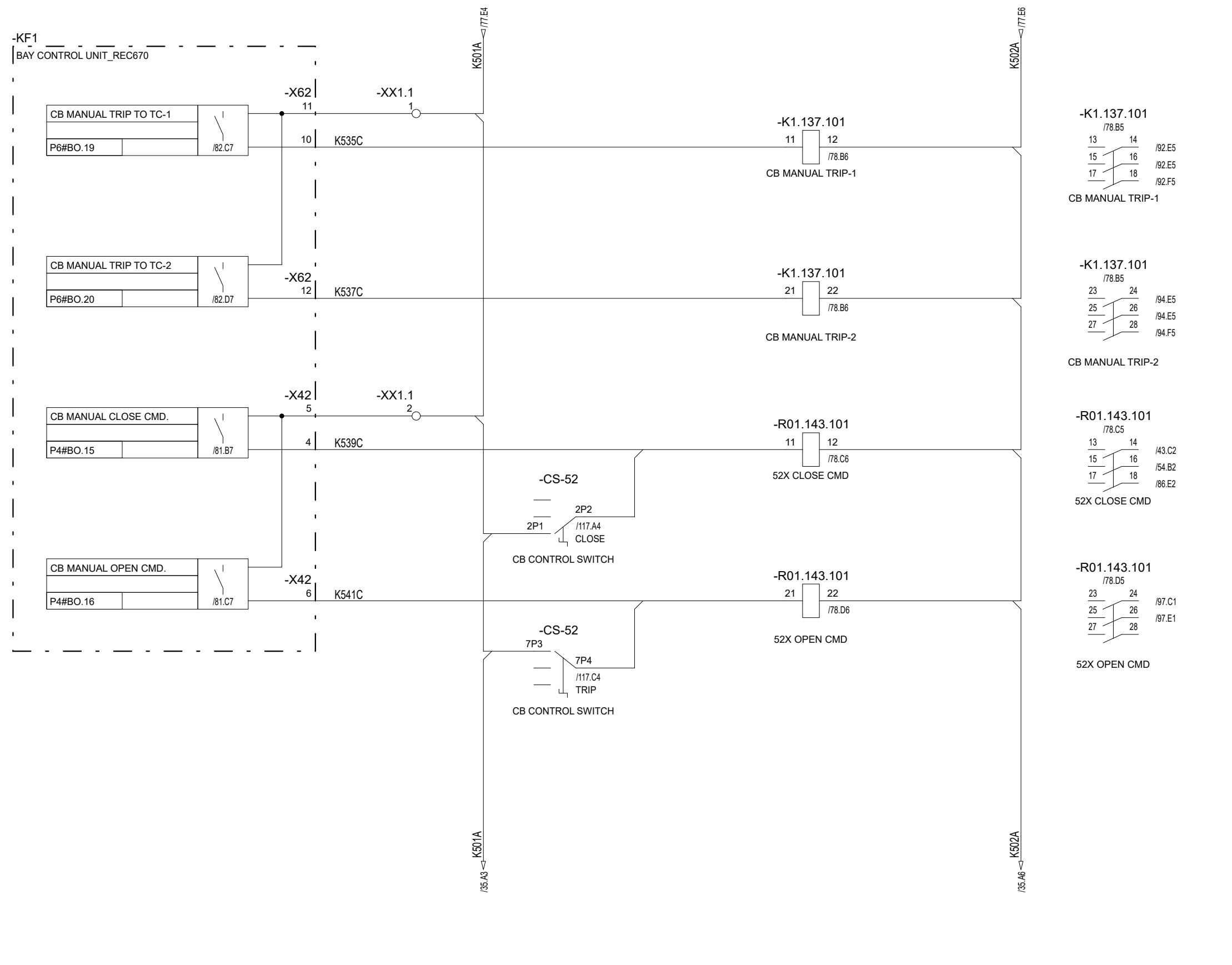
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CAAA	
Rev.	Revision note	Date	Name			Sheet 77
1MYN691003-102(A3)REV01						n. sheet 78

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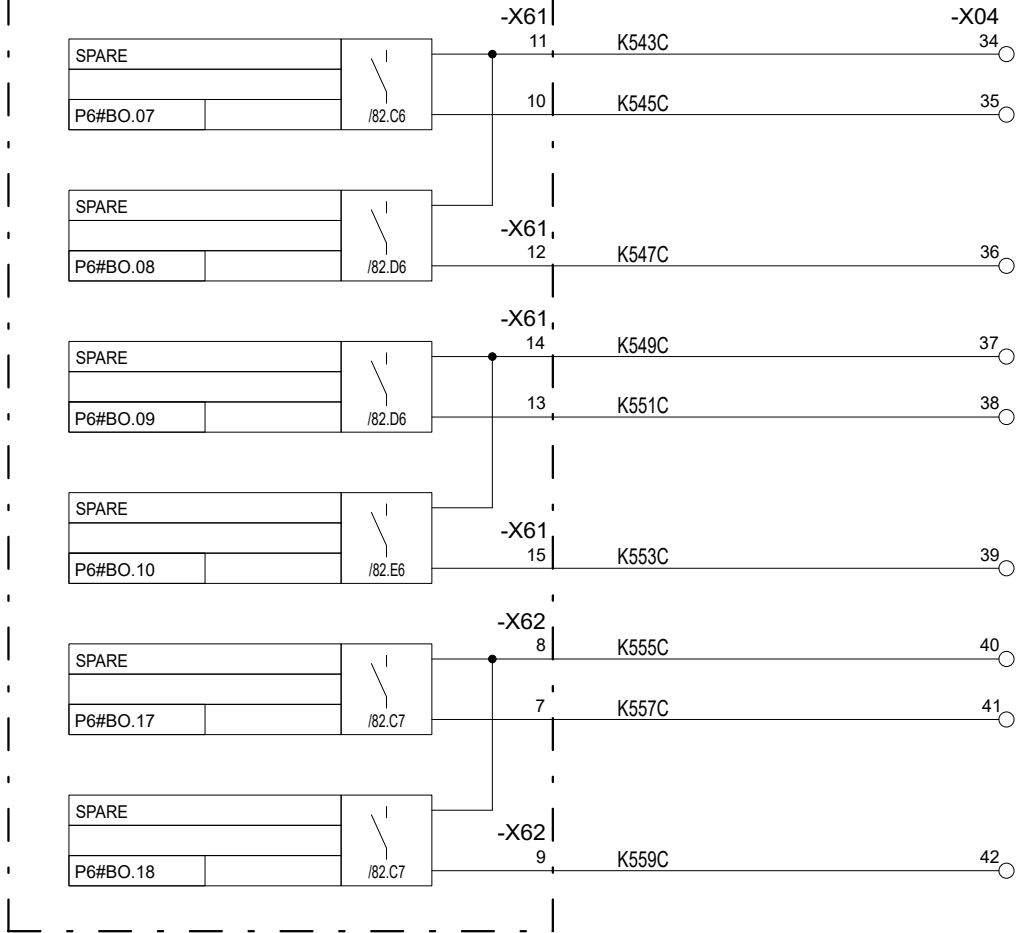
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Rev.	Revision note	Date	Name	<b>HITACHI</b>		Doc. no. 1MNS500925-CAAA		Sheet 78	
1MYN691003-102(A3)REV01								n. sheet 79	

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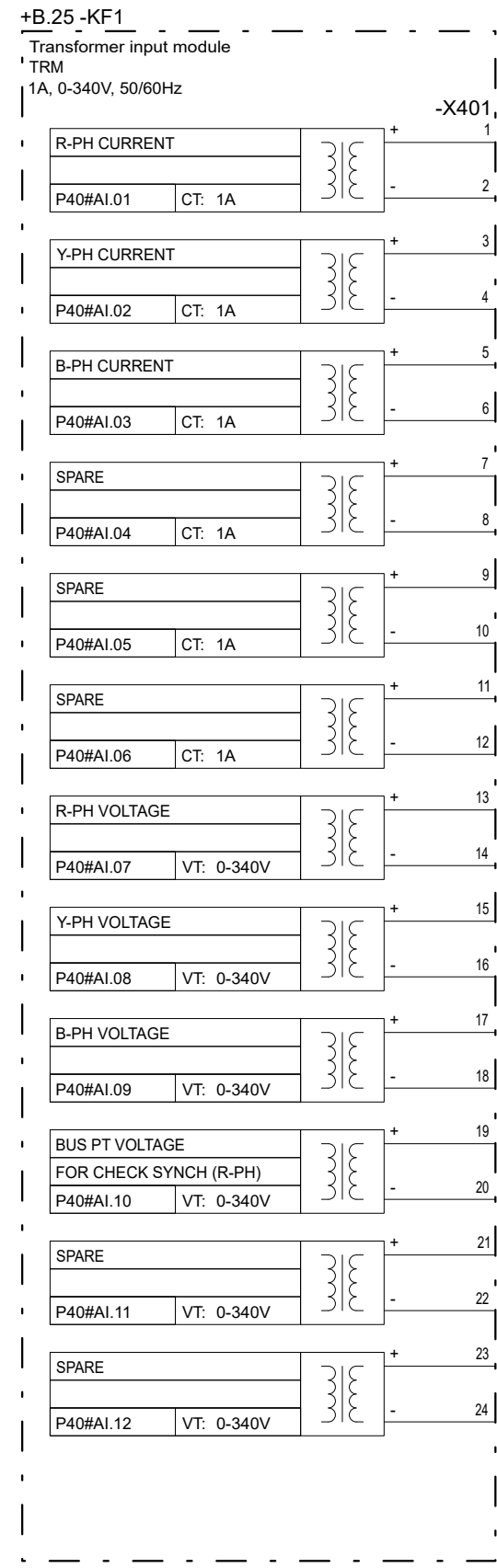
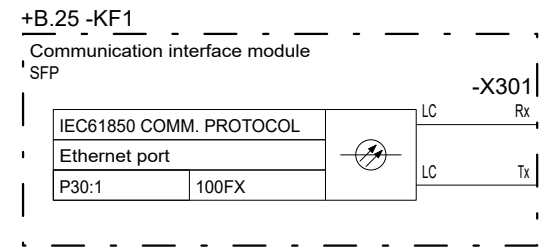
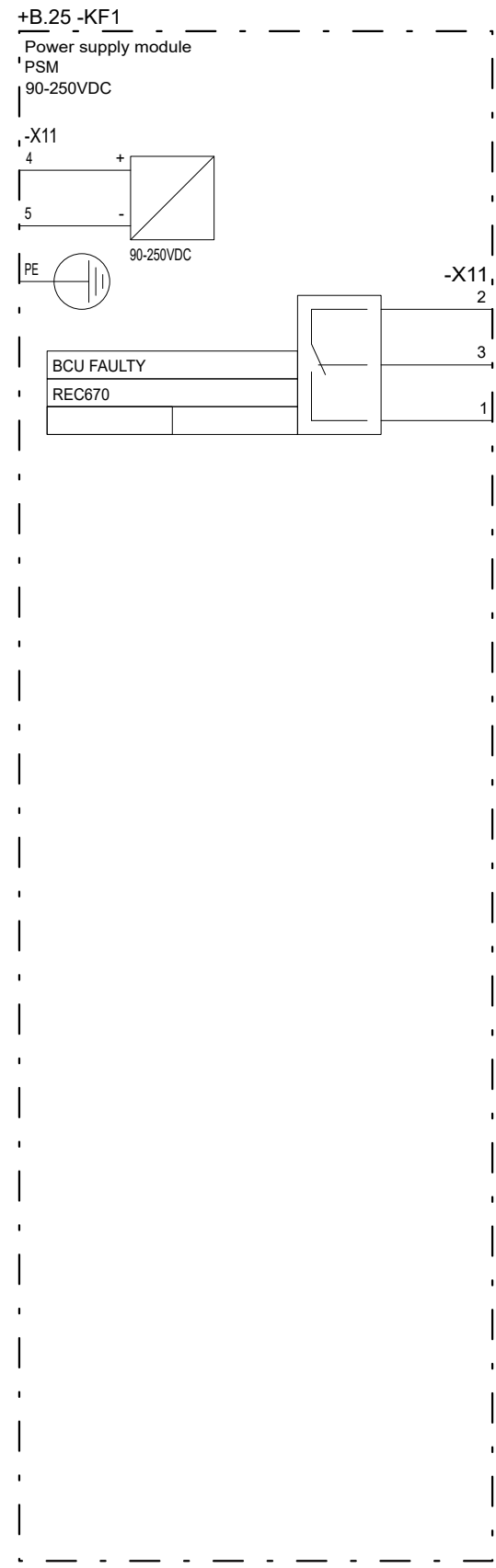
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 79
1MYN691003-102(A3)REV01						n. sheet 80

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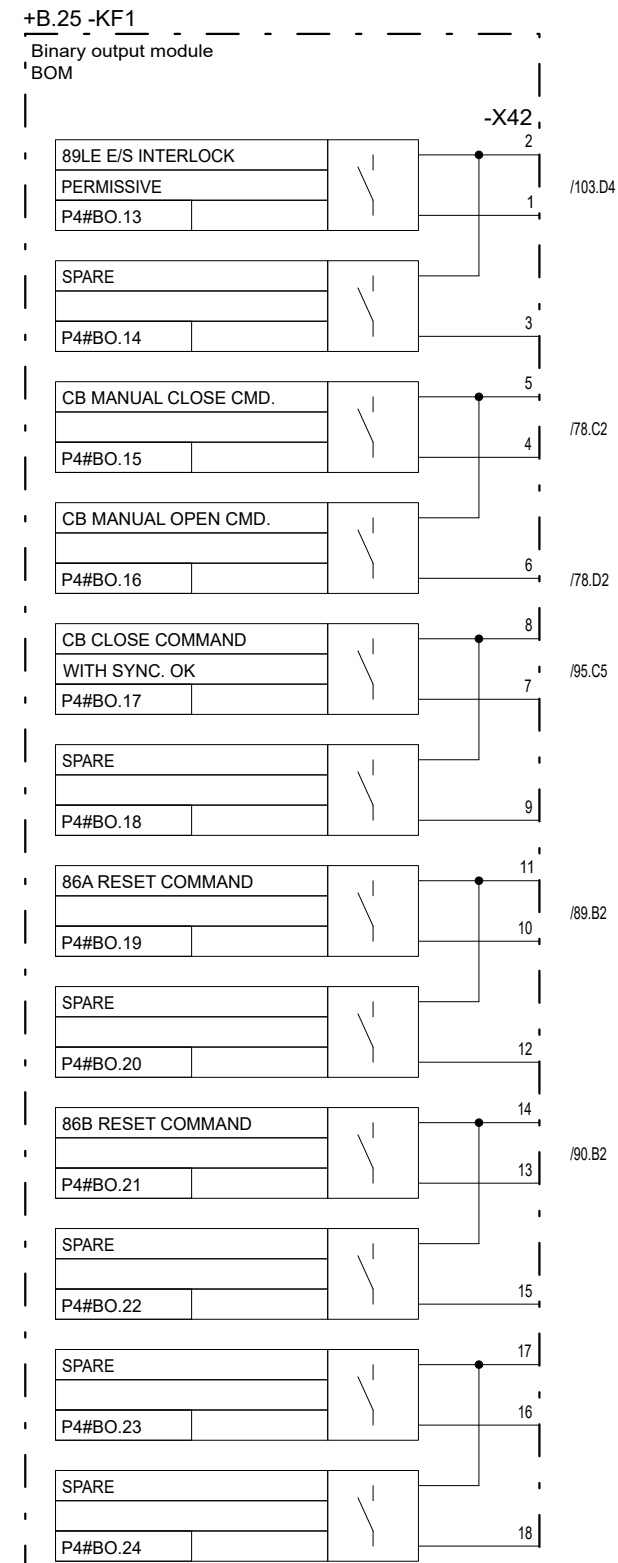
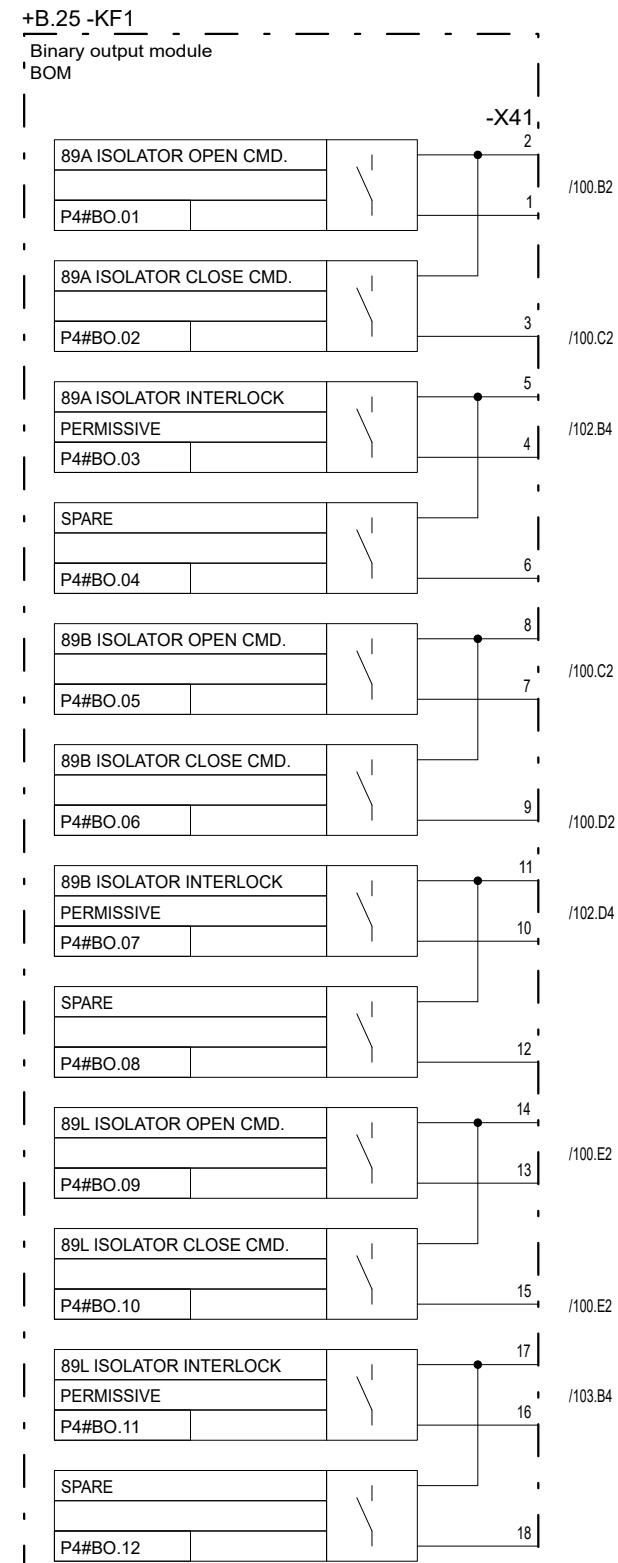
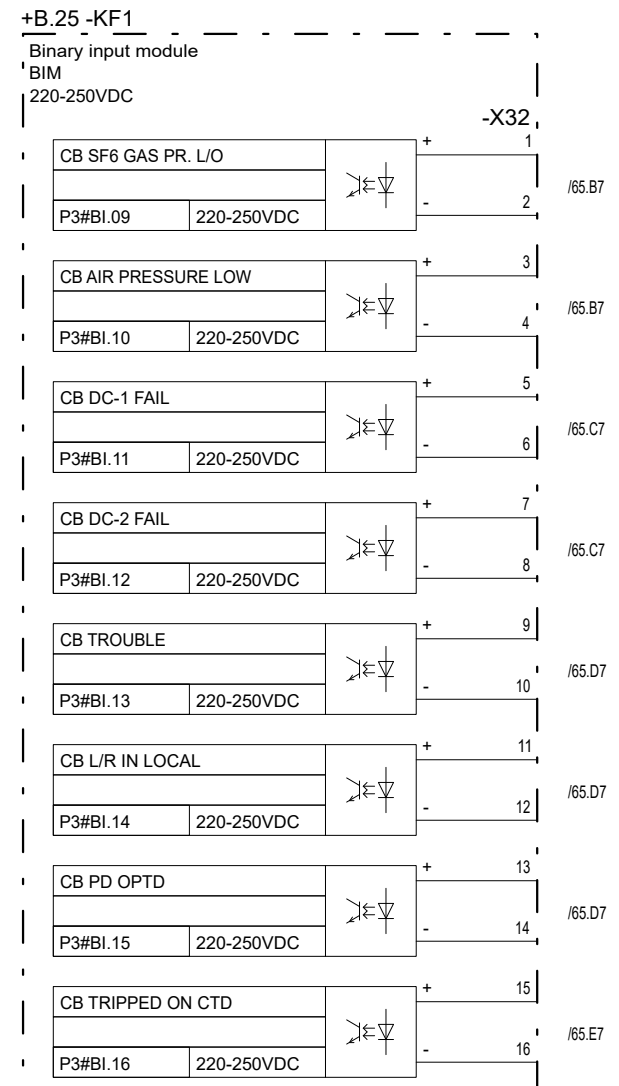
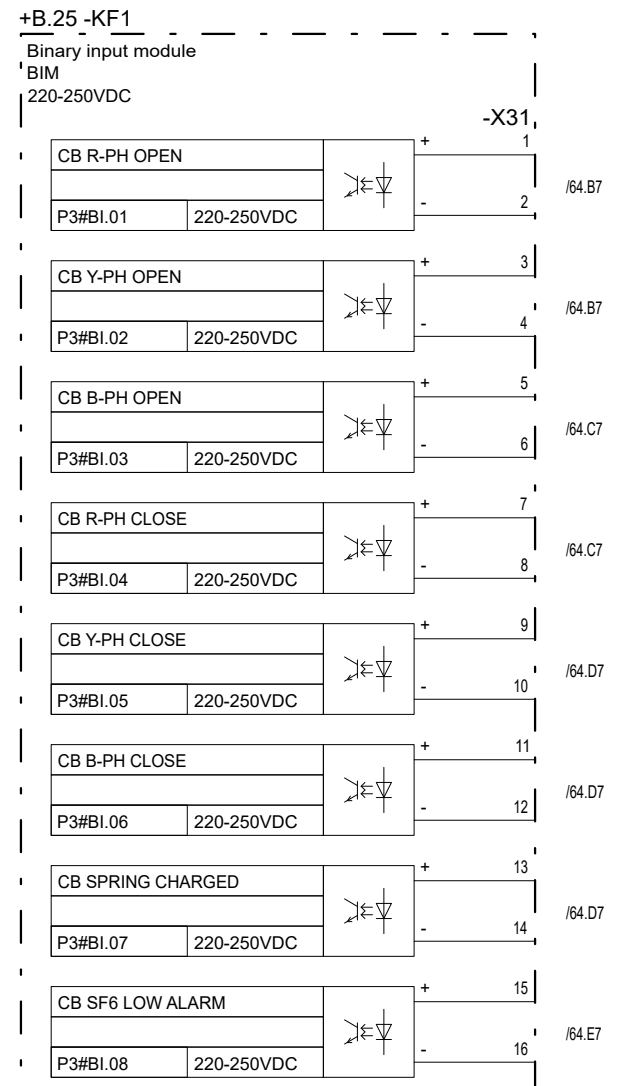
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 80
1MYN691003-102(A3)REV01						n. sheet 81

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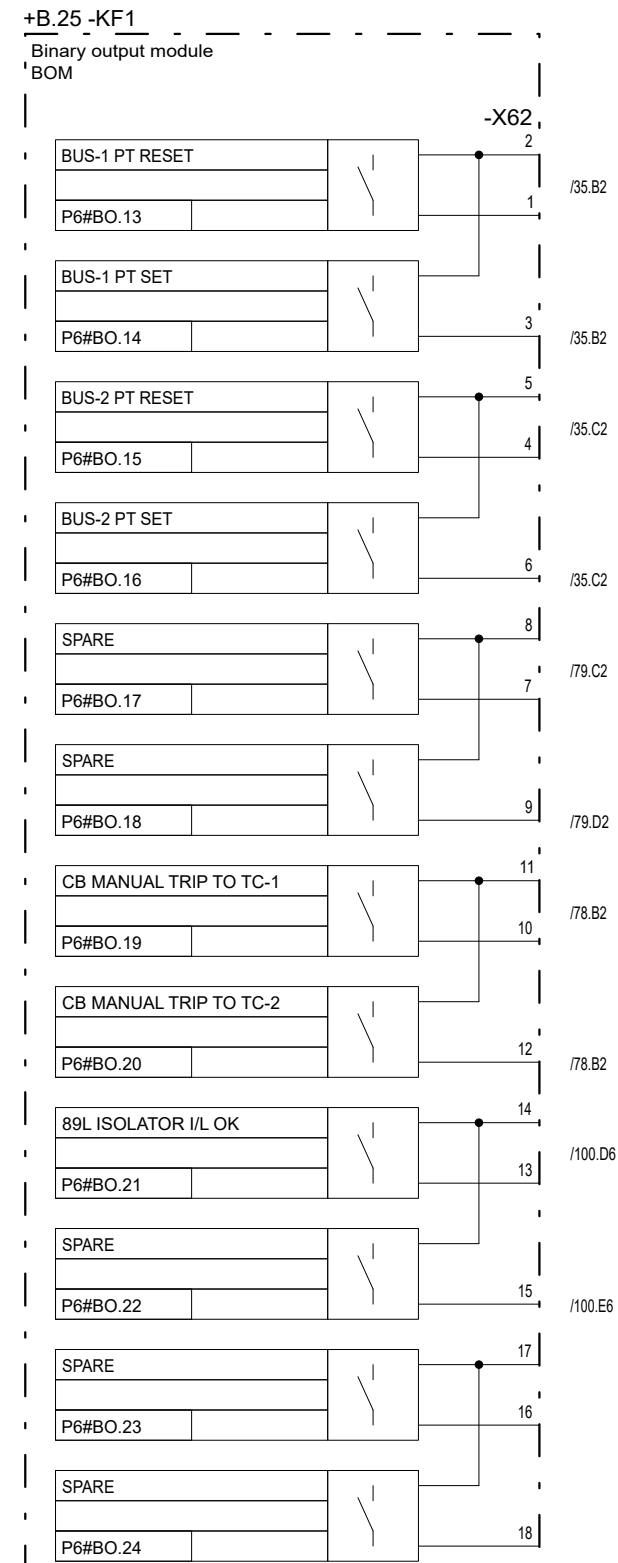
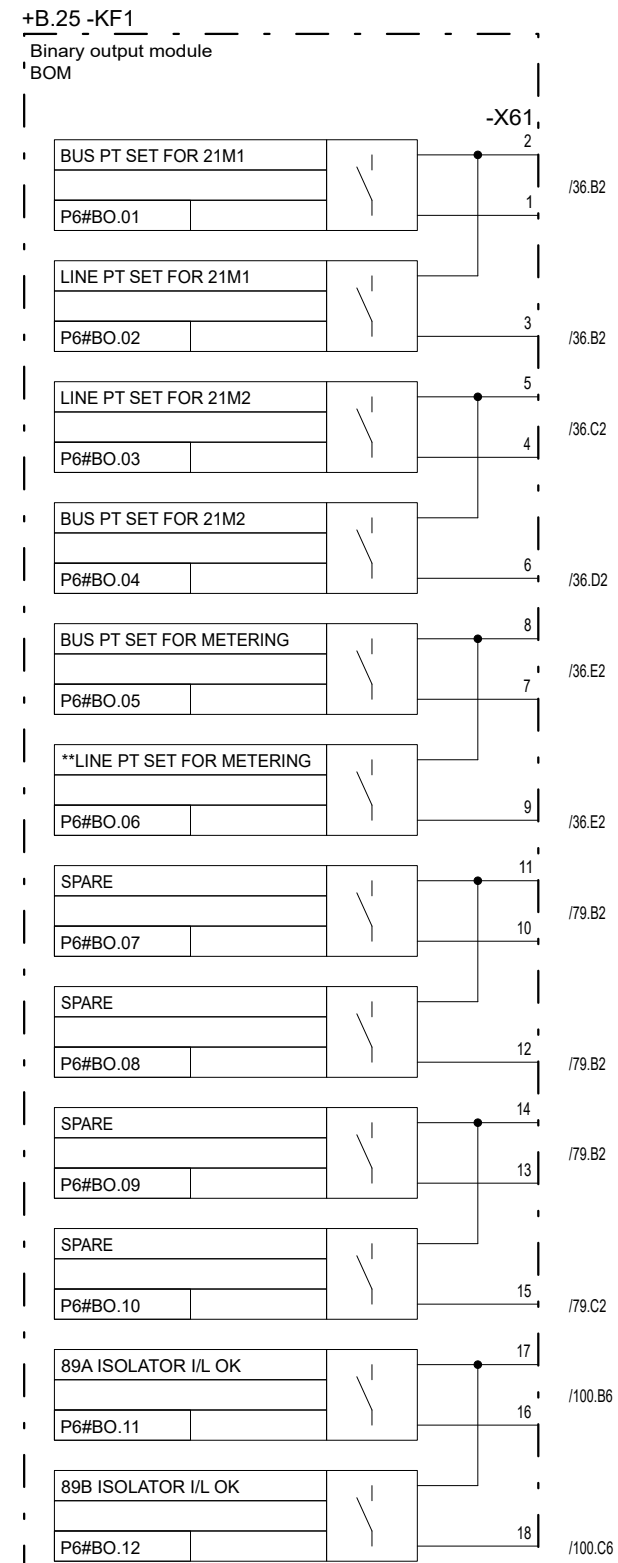
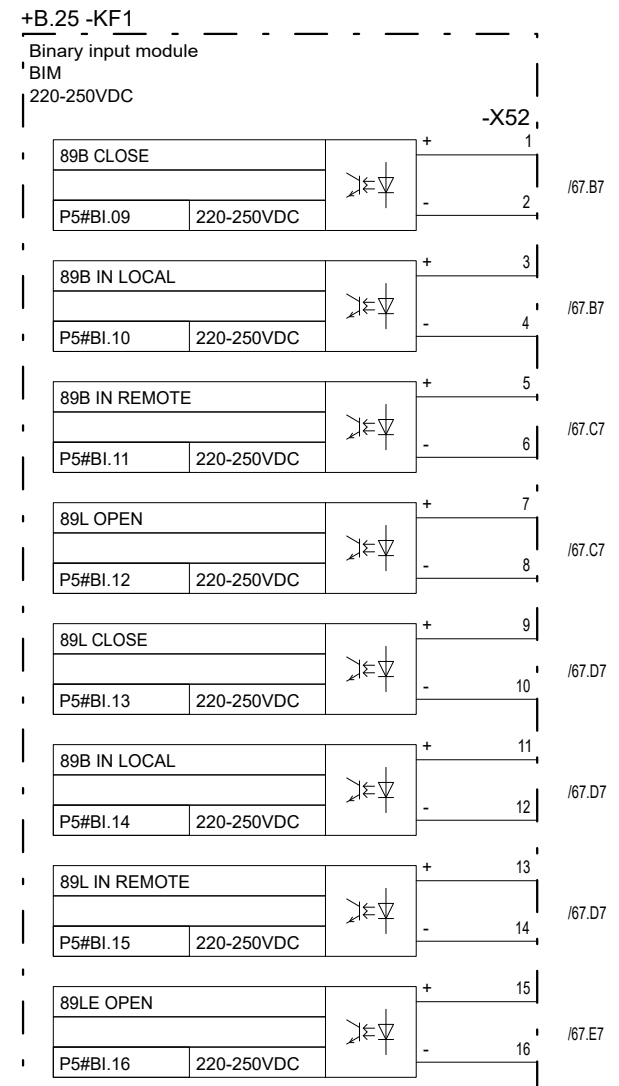
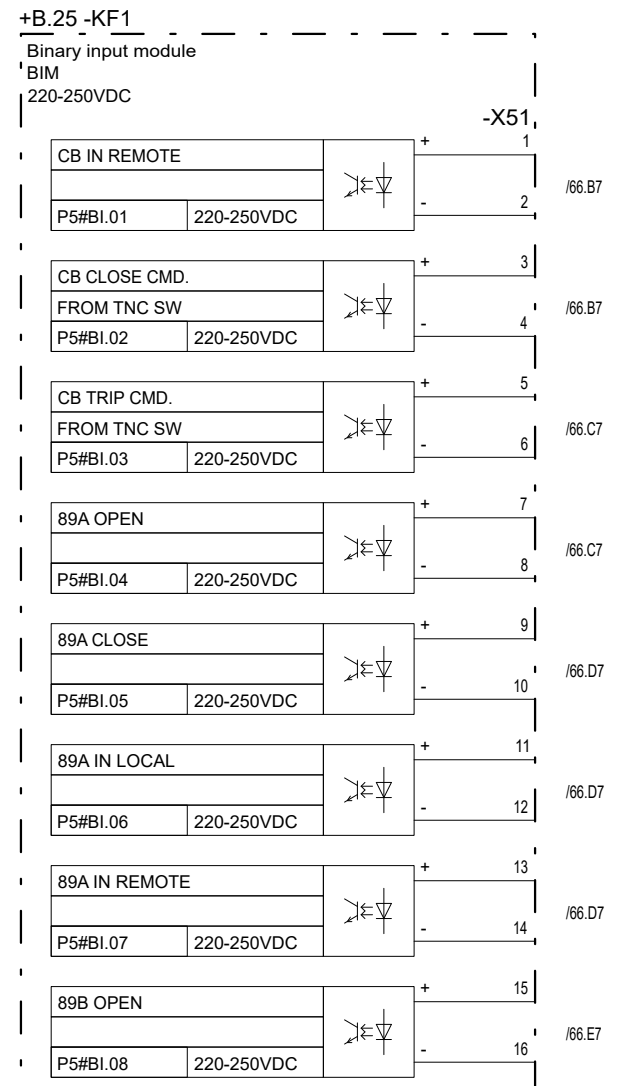
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 81
1MYN691003-102(A3)REV01						n. sheet 82

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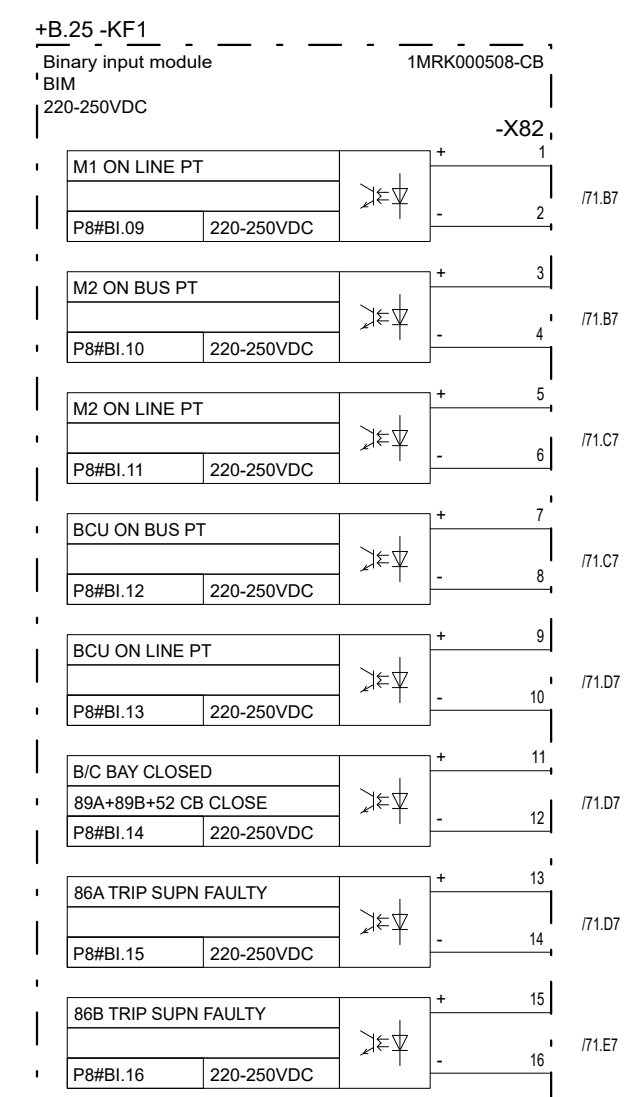
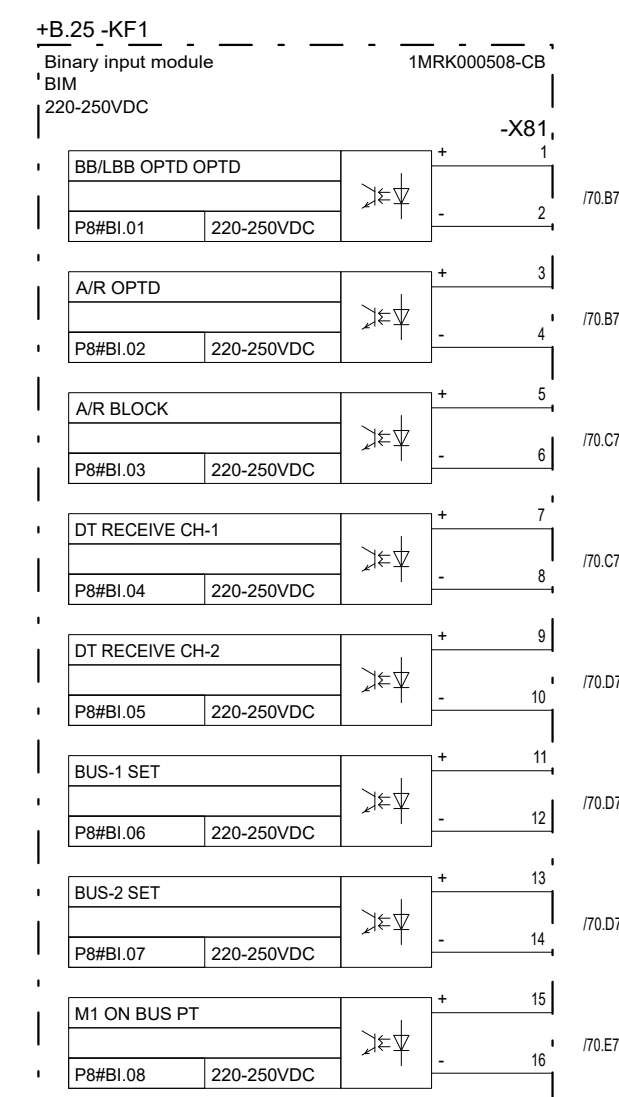
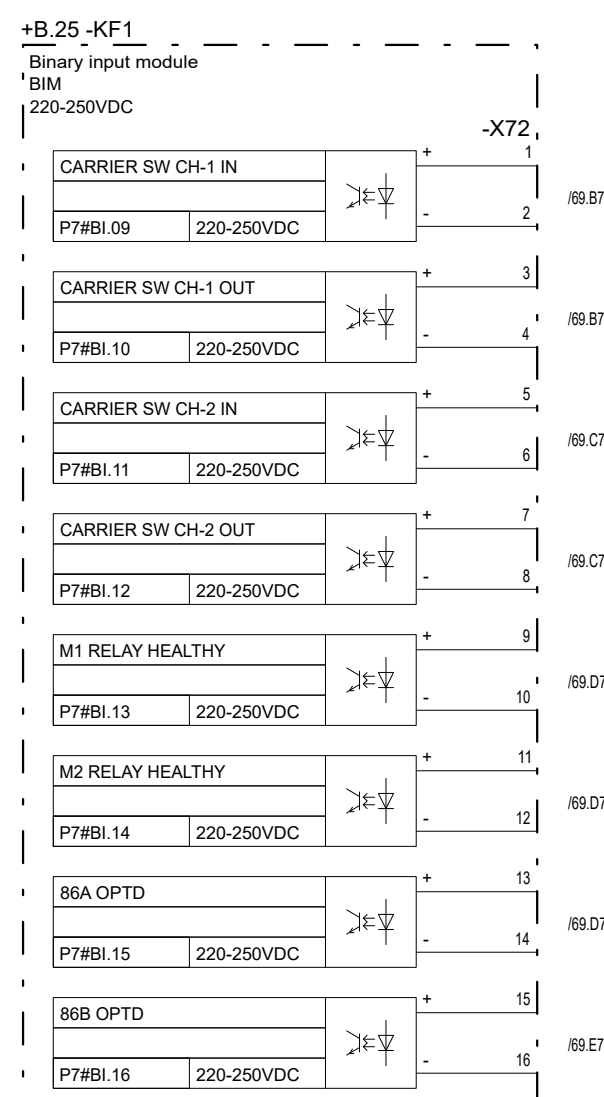
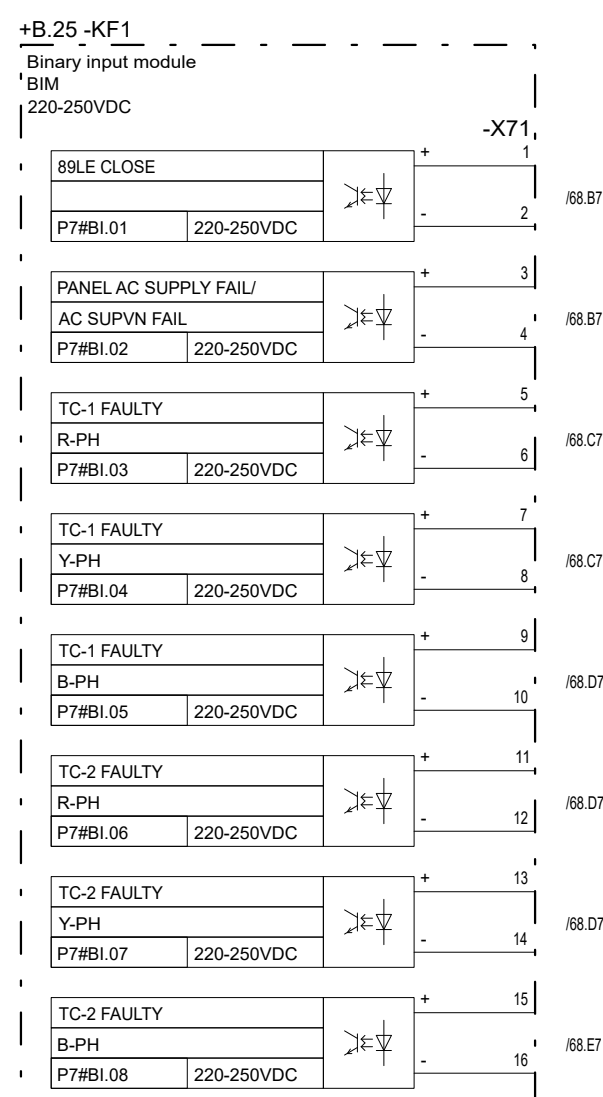


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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 82
1MYN691003-102(A3)REV01						n. sheet 83

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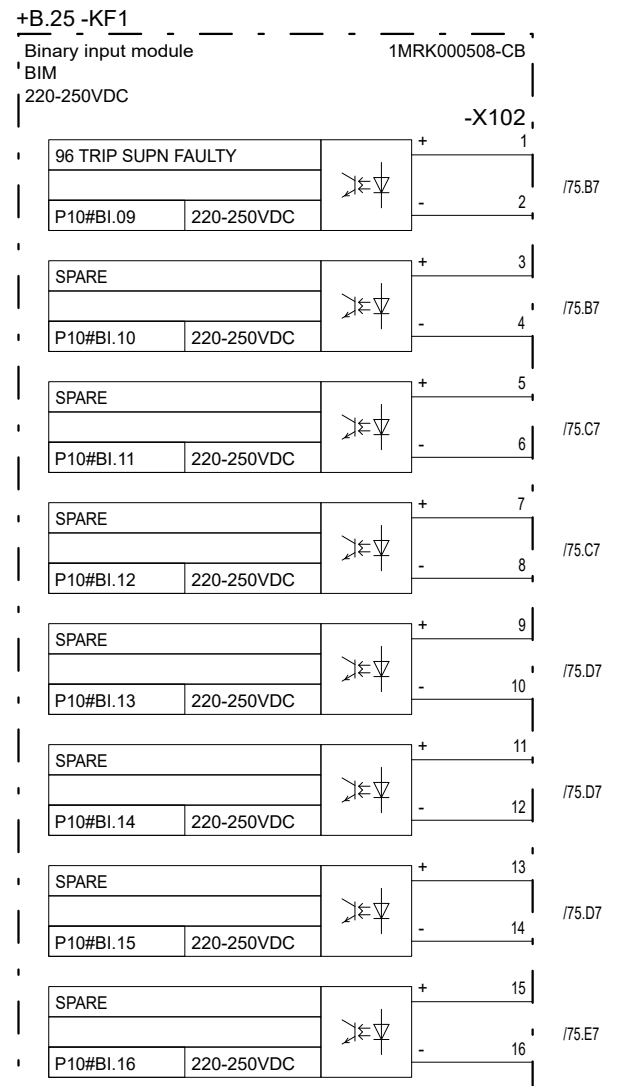
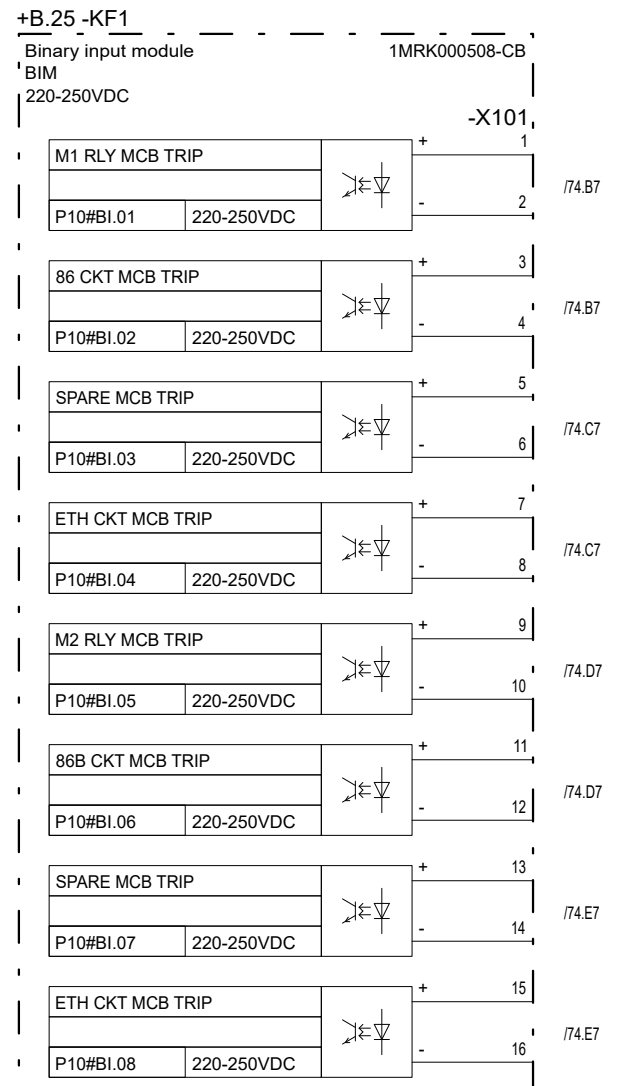
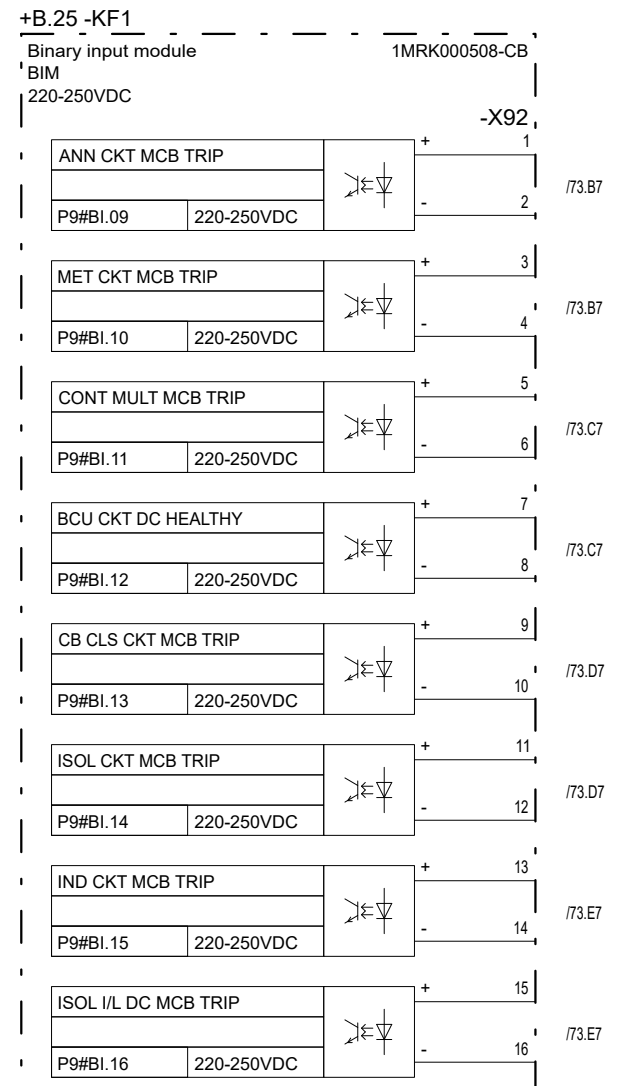
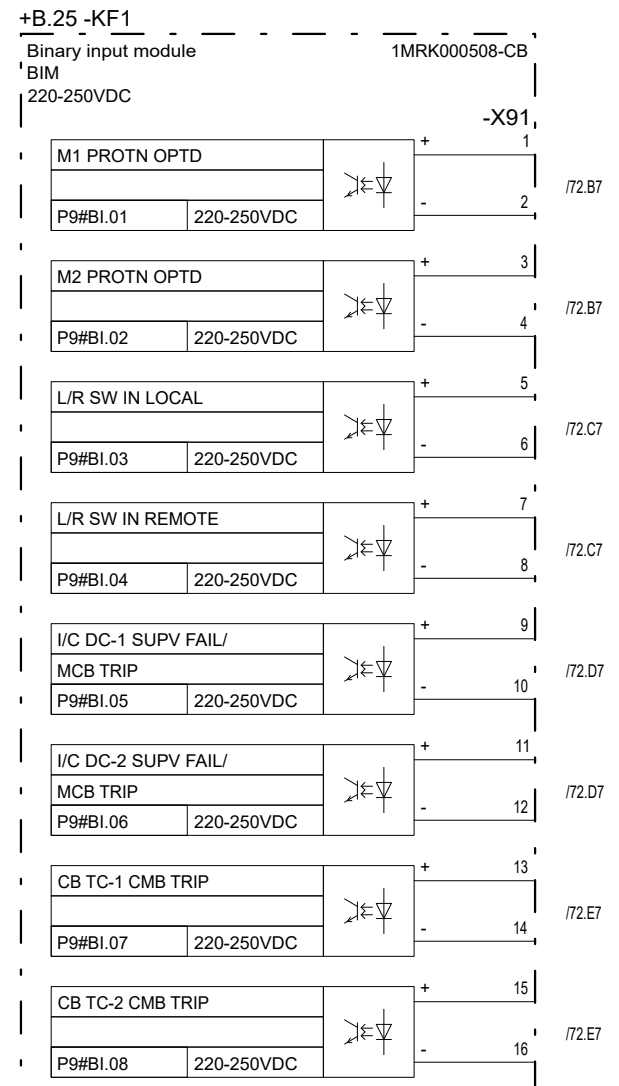
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Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 83
1MYN691003-102(A3)REV01						n. sheet 84

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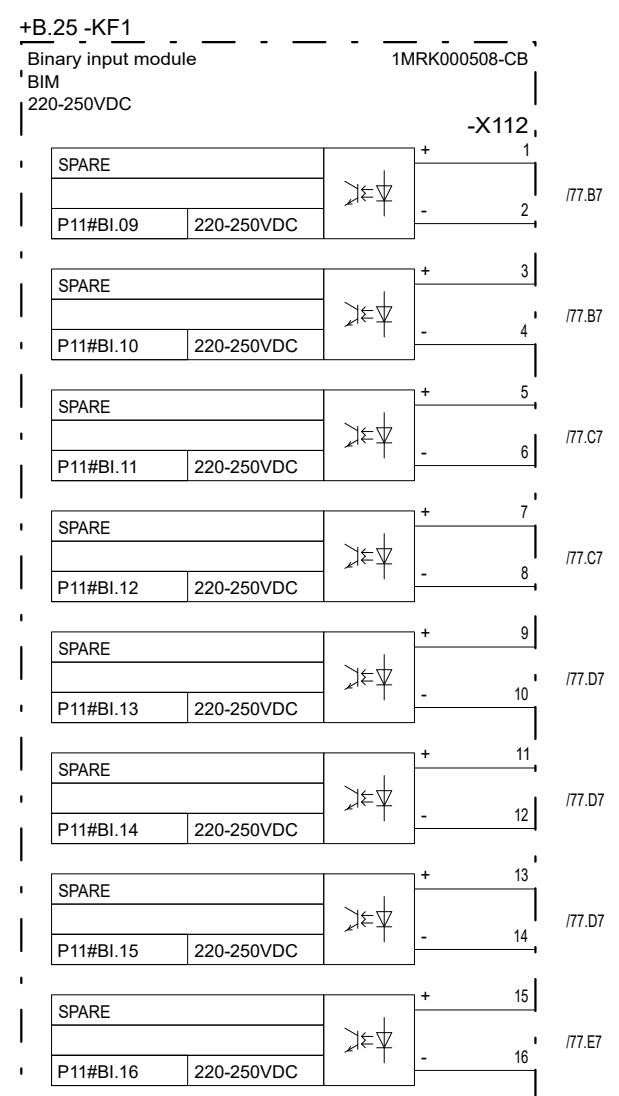
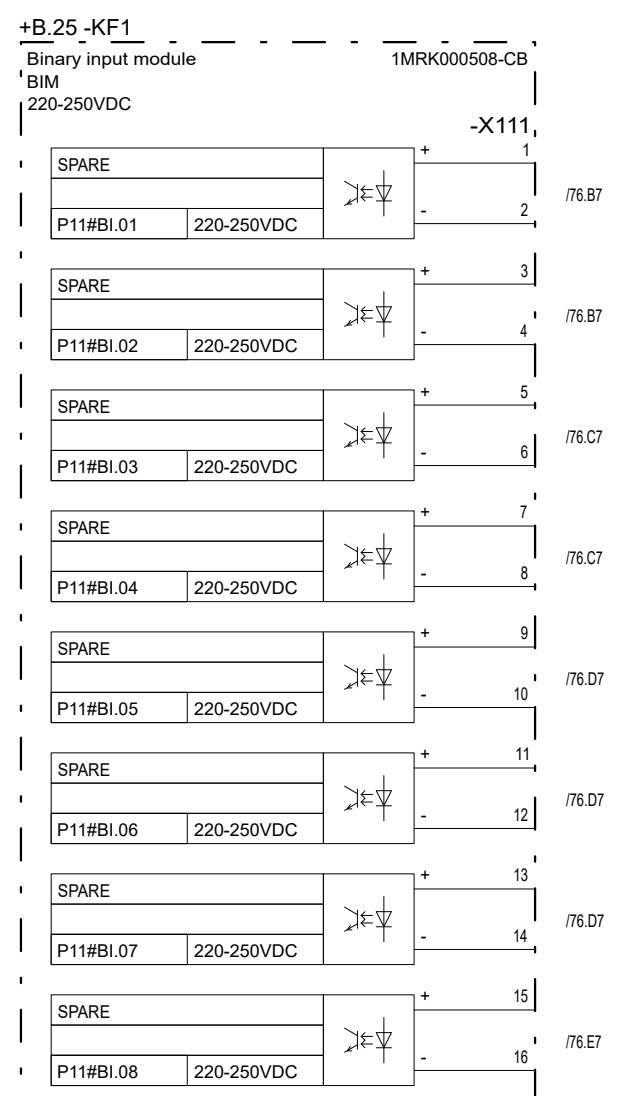
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		STANDARD DRAWING				Hitachi Energy India Limited		Language en		Sheet 84	
Rev.	Revision note	Date	Name			<b>HITACHI</b>		Doc. no. 1MNS500925-CAAA		n. sheet 85	
1MYN691003-102(A3)REV01											

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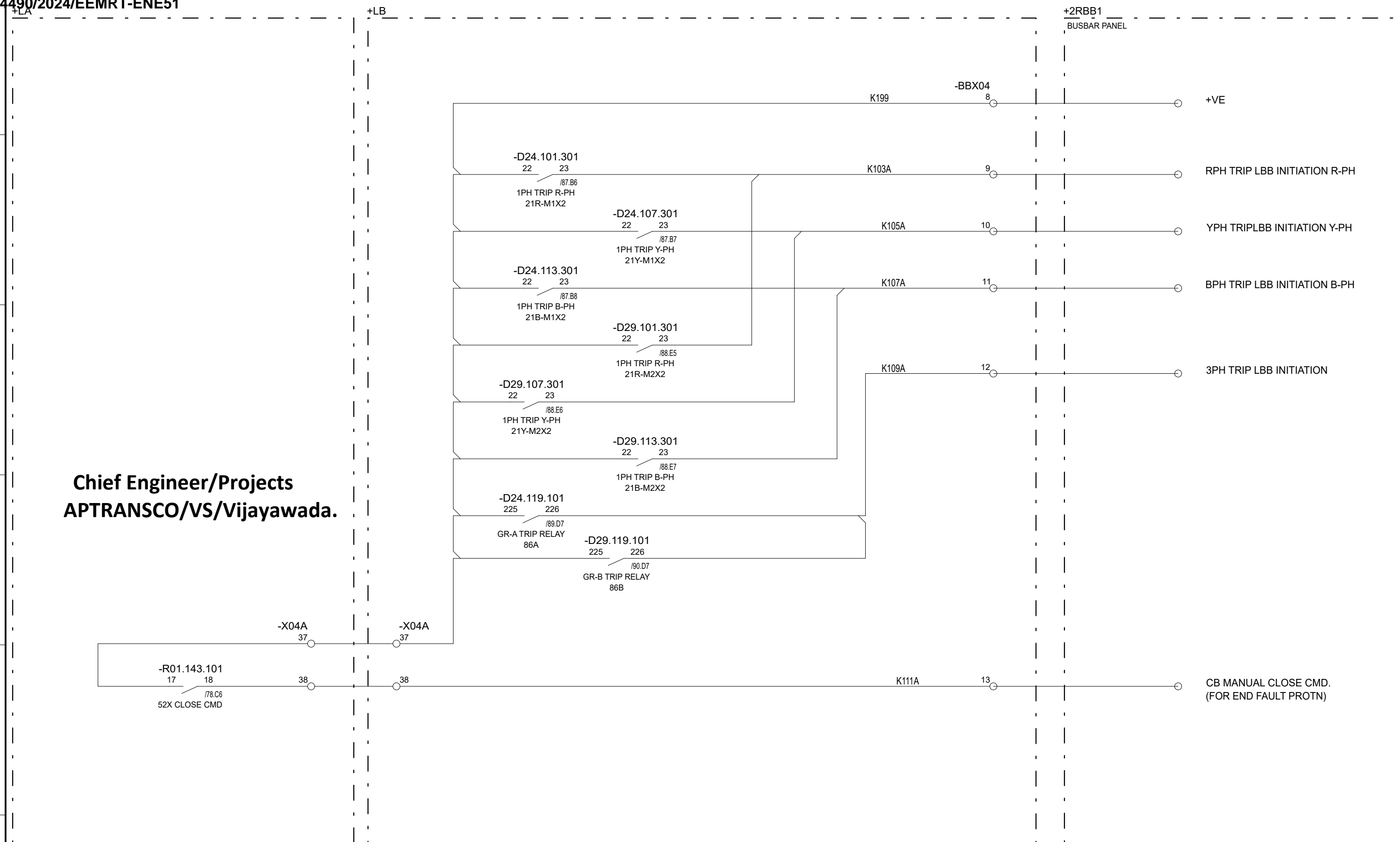
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Rev.	Revision note	Date	Name	<b>HITACHI</b> Hitachi Energy India Limited	Doc. no. 1MNS500925-CAAA	
1MYN691003-102(A3)REV01					Sheet 85	n. sheet 86

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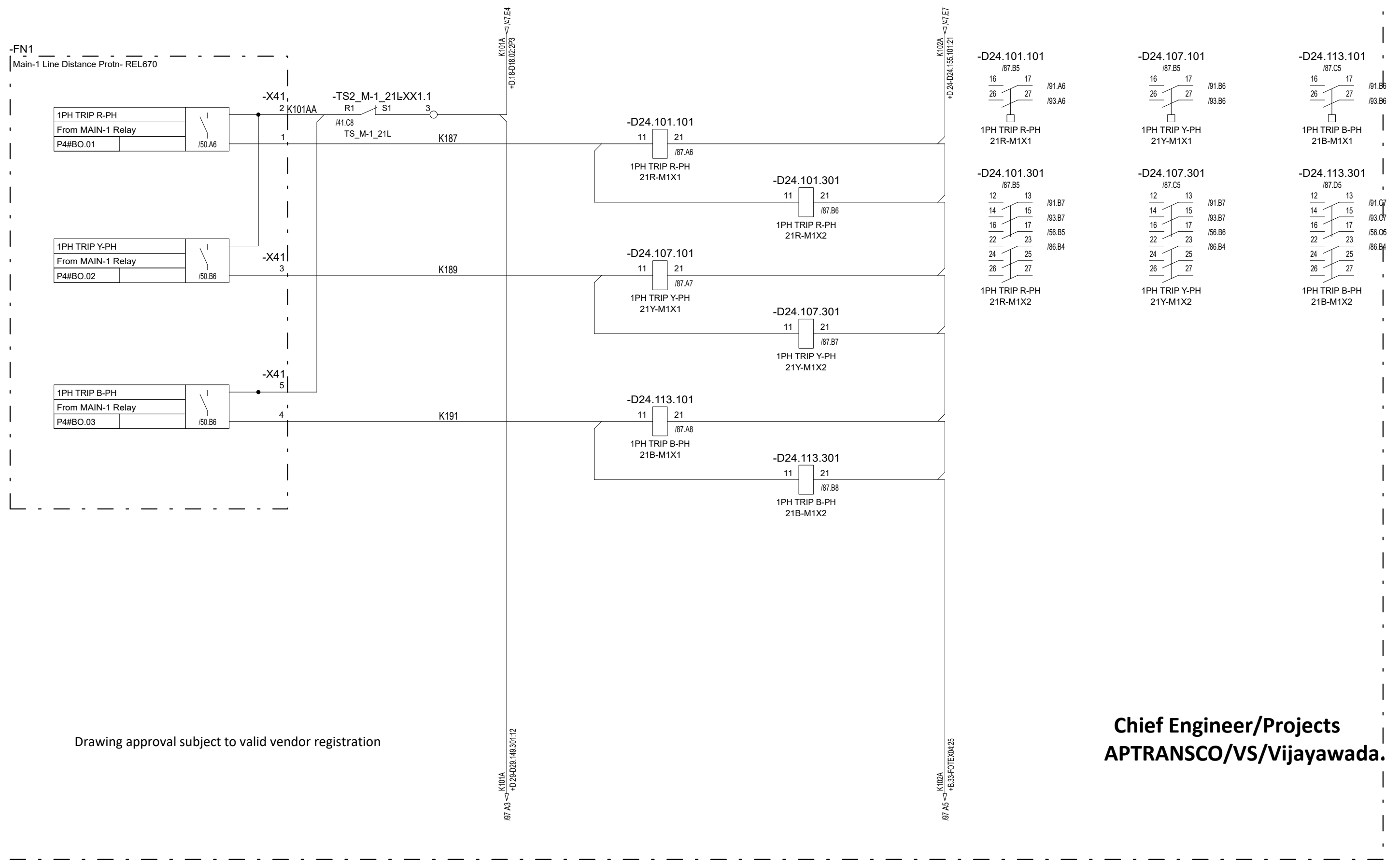
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 86
1MYN691003-102(A3)REV01						n. sheet 87

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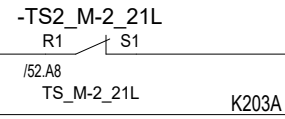
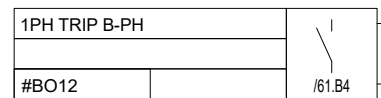
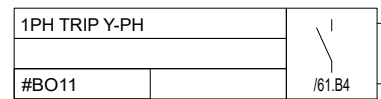
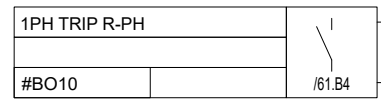
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1MYN691003-102(A3)REV01						n. sheet 88

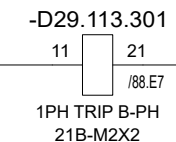
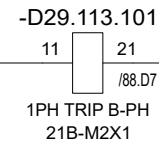
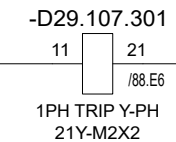
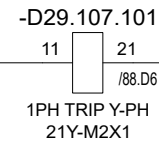
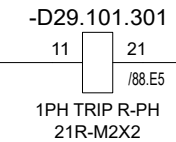
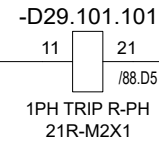
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-FN2  
Main-2 Line Distance Protn- P545



K205A

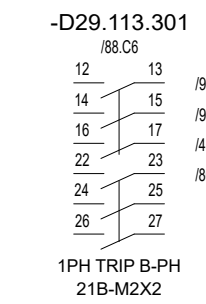
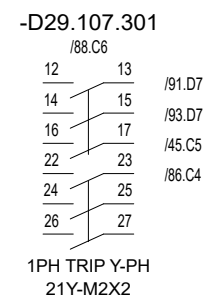
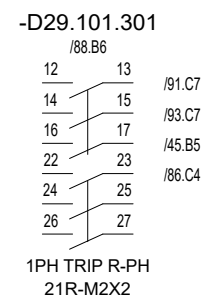
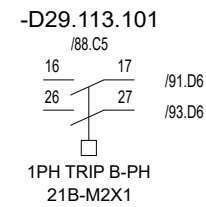
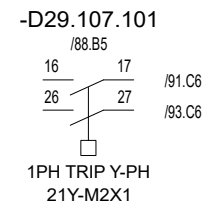
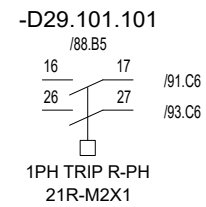
K207A



Suitable for conventional 220KV SS only

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+D.18-D18.01:SP3  
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+D.29-D29.149.301:14

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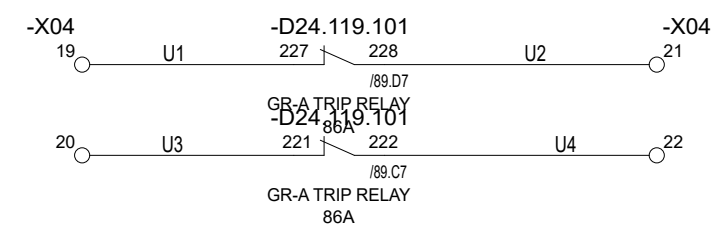
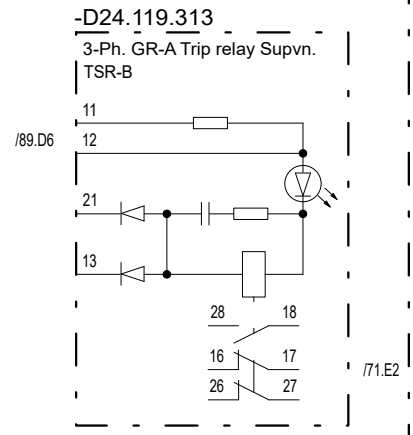
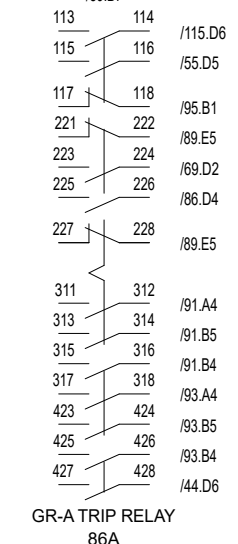
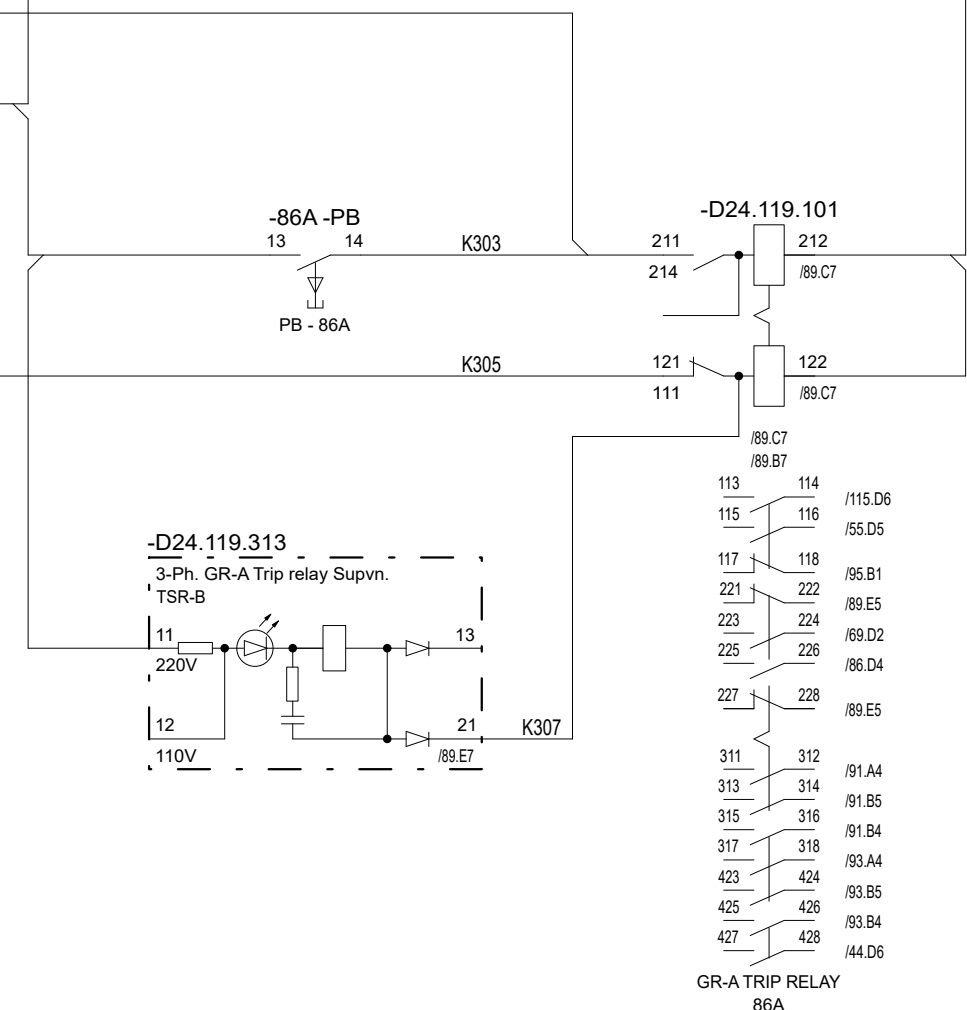
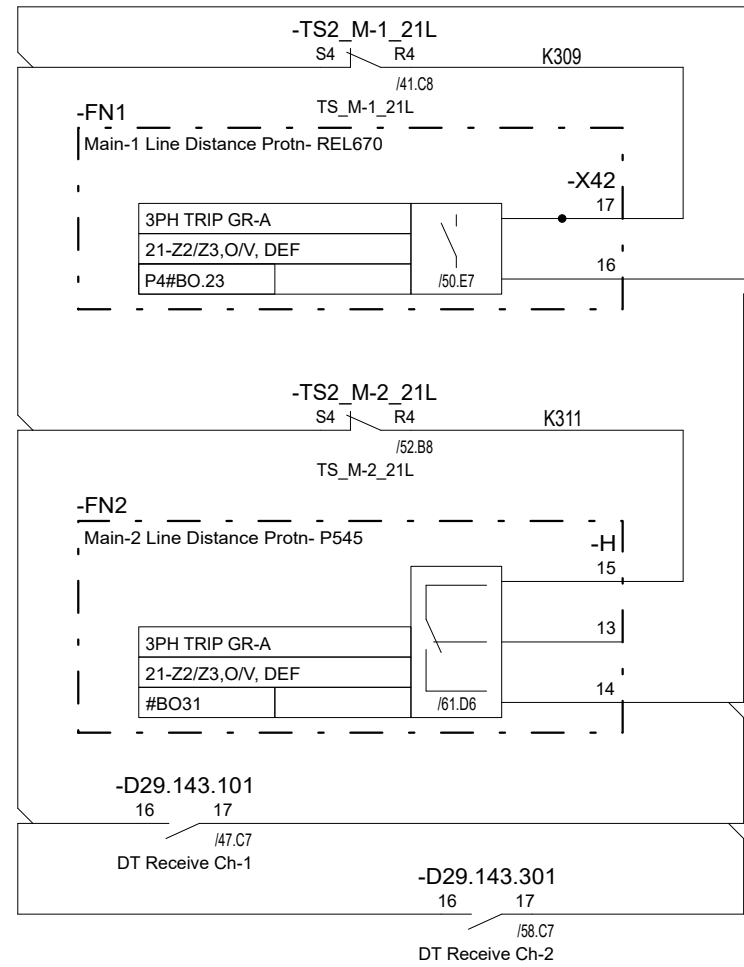
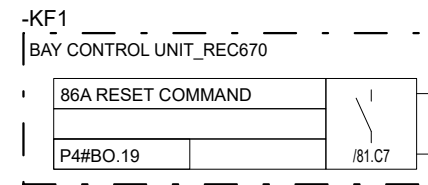
**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220KV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 88
1MYN691003-102(A3)REV01						n. sheet 89

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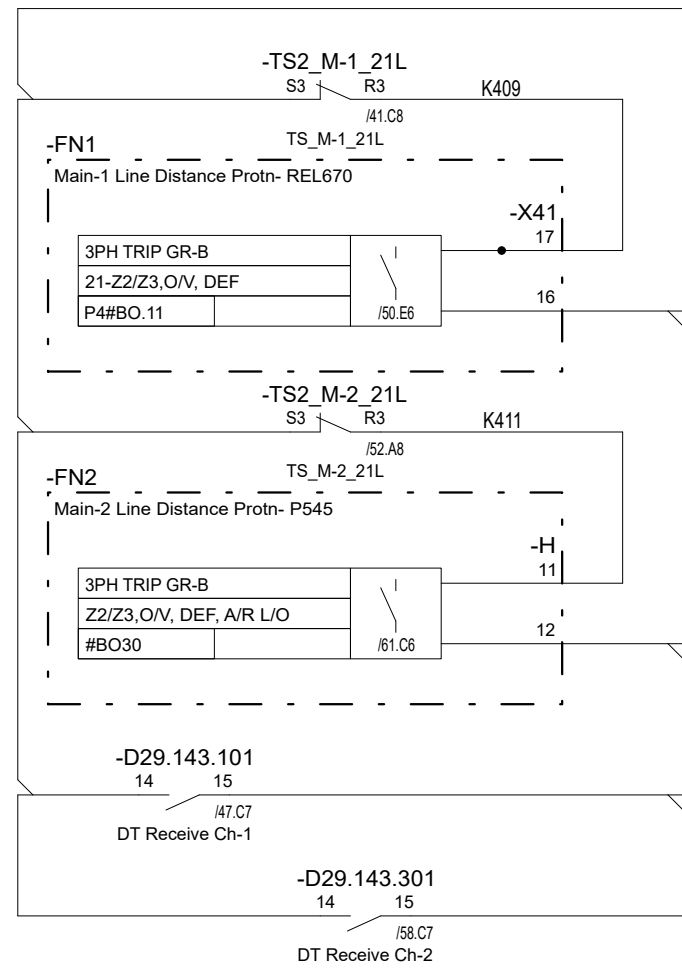
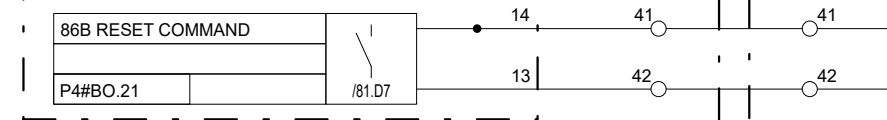
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 89
1MYN691003-102(A3)REV01						n. sheet 90

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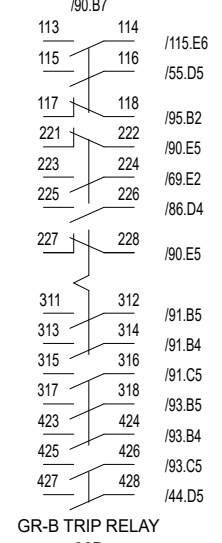
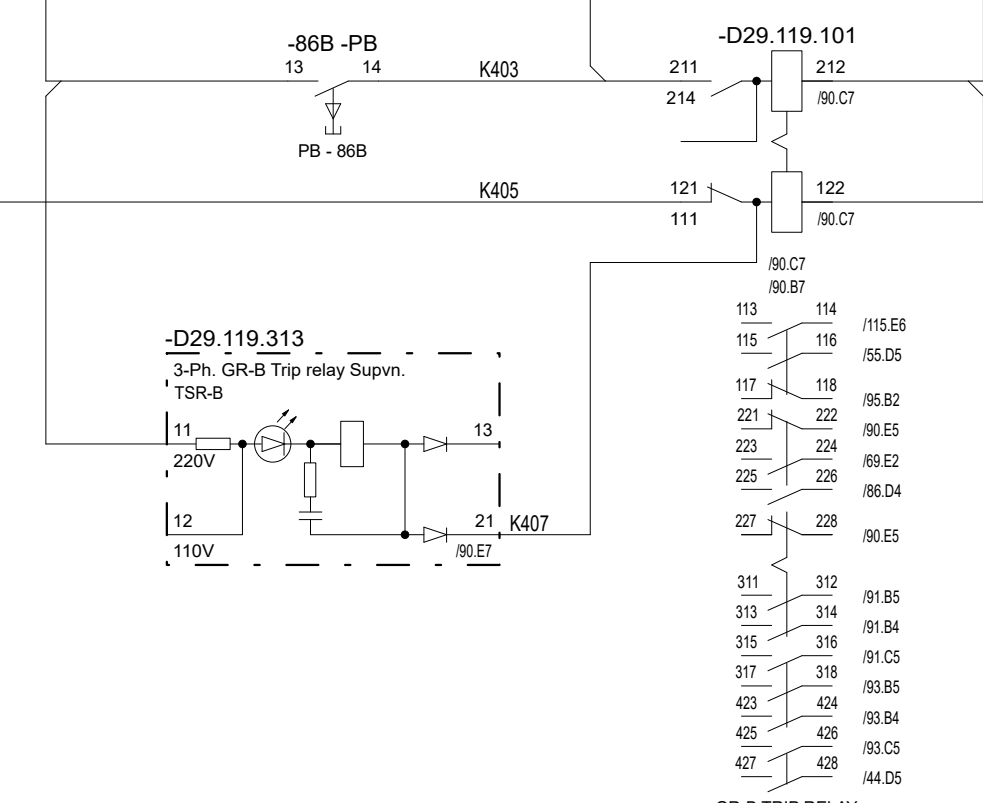
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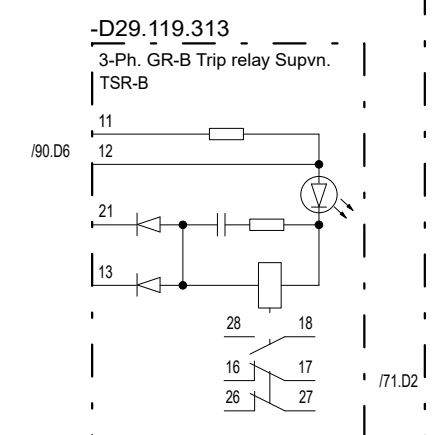
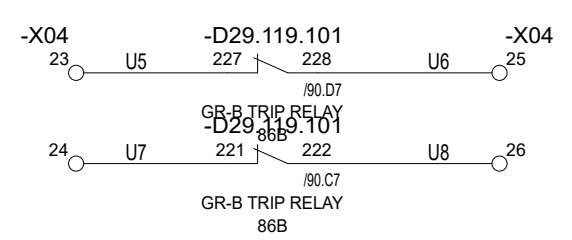
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BAY CONTROL UNIT\_REC670



Suitable for conventional 220KV SS only



**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

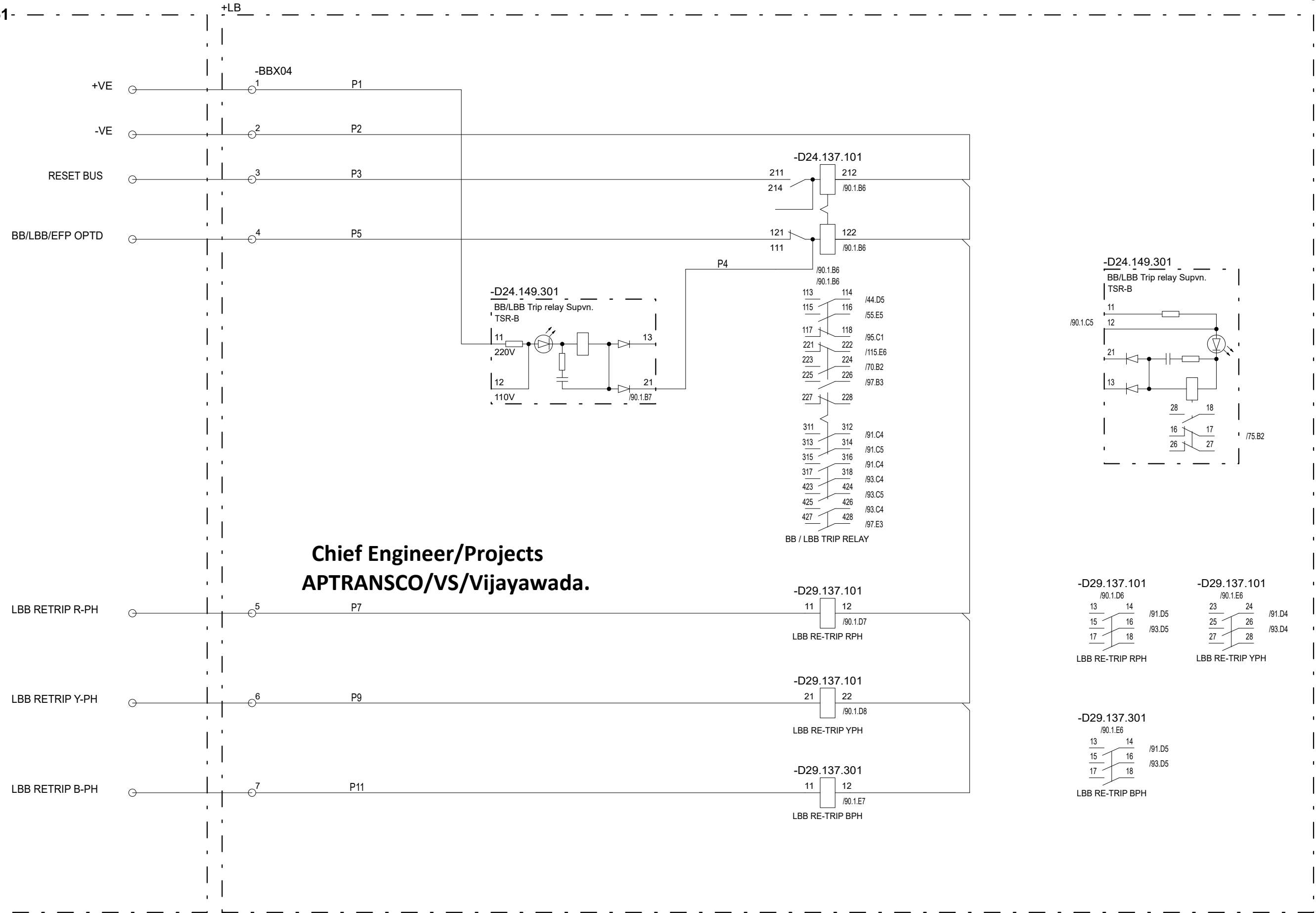


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		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 90
1MYN691003-102(A3)REV01						n. sheet 90.1

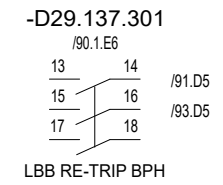
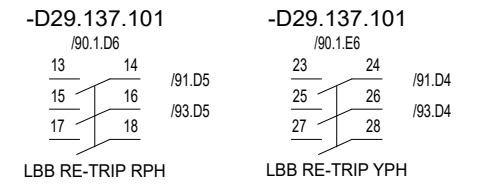
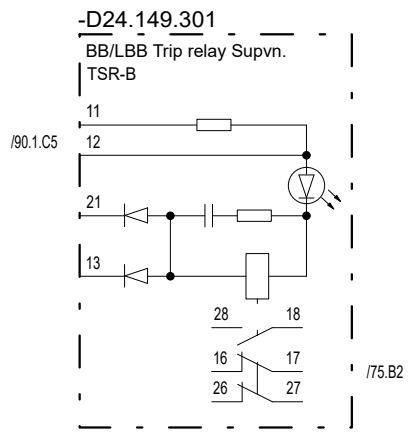
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BUSBAR PANEL



**Chief Engineer/Projects  
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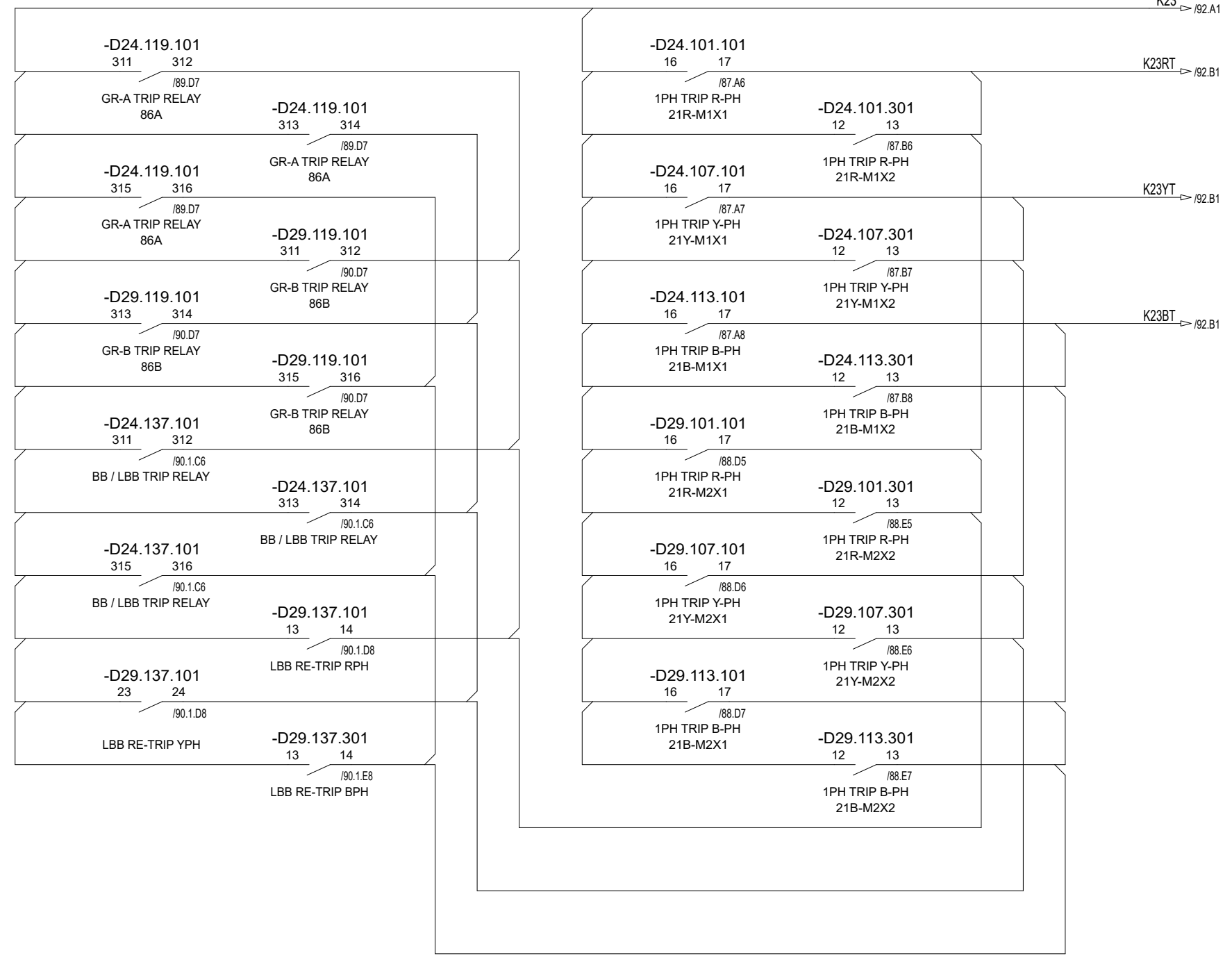
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	Sheet 90.1
1MYN691003-102(A3)REV01						n. sheet 91

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+LB



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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		1-ph Trip to CB TC-1 Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	Sheet 91
1MYN691003-102(A3)REV01						n. sheet 92

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Suitable for conventional 220KV SS only

FROM 220V DC SOURCE

+52 CB  
Line CB

220V DC SUPPLY

+VE

PROTN. TRIP & POST CLOSE SUPERVISION TC-1\_R-PH  
PROTN. TRIP & POST CLOSE SUPERVISION TC-1\_Y-PH  
PROTN. TRIP & POST CLOSE SUPERVISION TC-1\_B-PH

PRE CLOSE SUPERVISION TC-1\_R-PH

PRE CLOSE SUPERVISION TC-1\_Y-PH

PRE CLOSE SUPERVISION TC-1\_B-PH

+VE FOR REMOTE TRIP

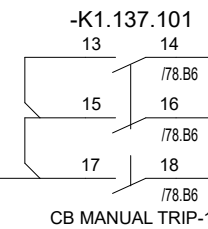
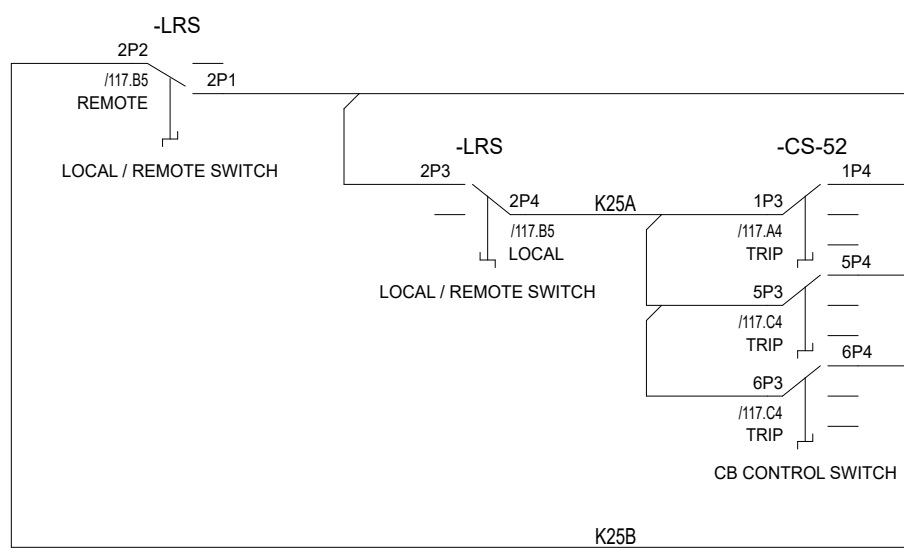
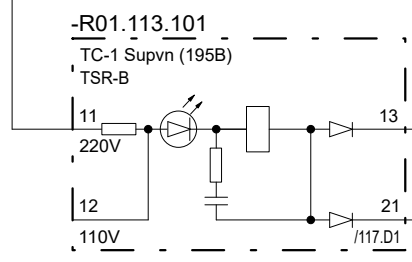
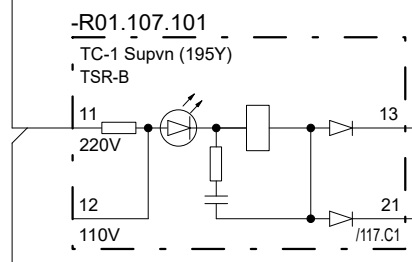
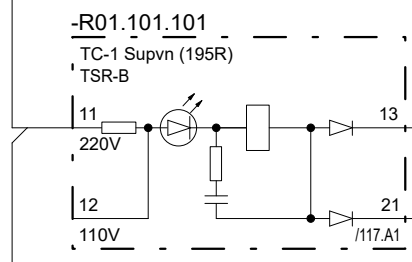
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REMOTE TRIP TC-1\_Y-PH

REMOTE TRIP TC-1\_B-PH

Drawing approval subject to valid vendor registration

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**



Based on	Prepared	13.12.2023	VINOD G
	Approved	20.12.2023	GOURISH HEGDE
	Project	APTRANSCO STANDARD DRAWING	
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Title	220KV LINE FEEDER Control & Relay Panel CB TC-1 Circuit
Hitachi Energy India Limited	

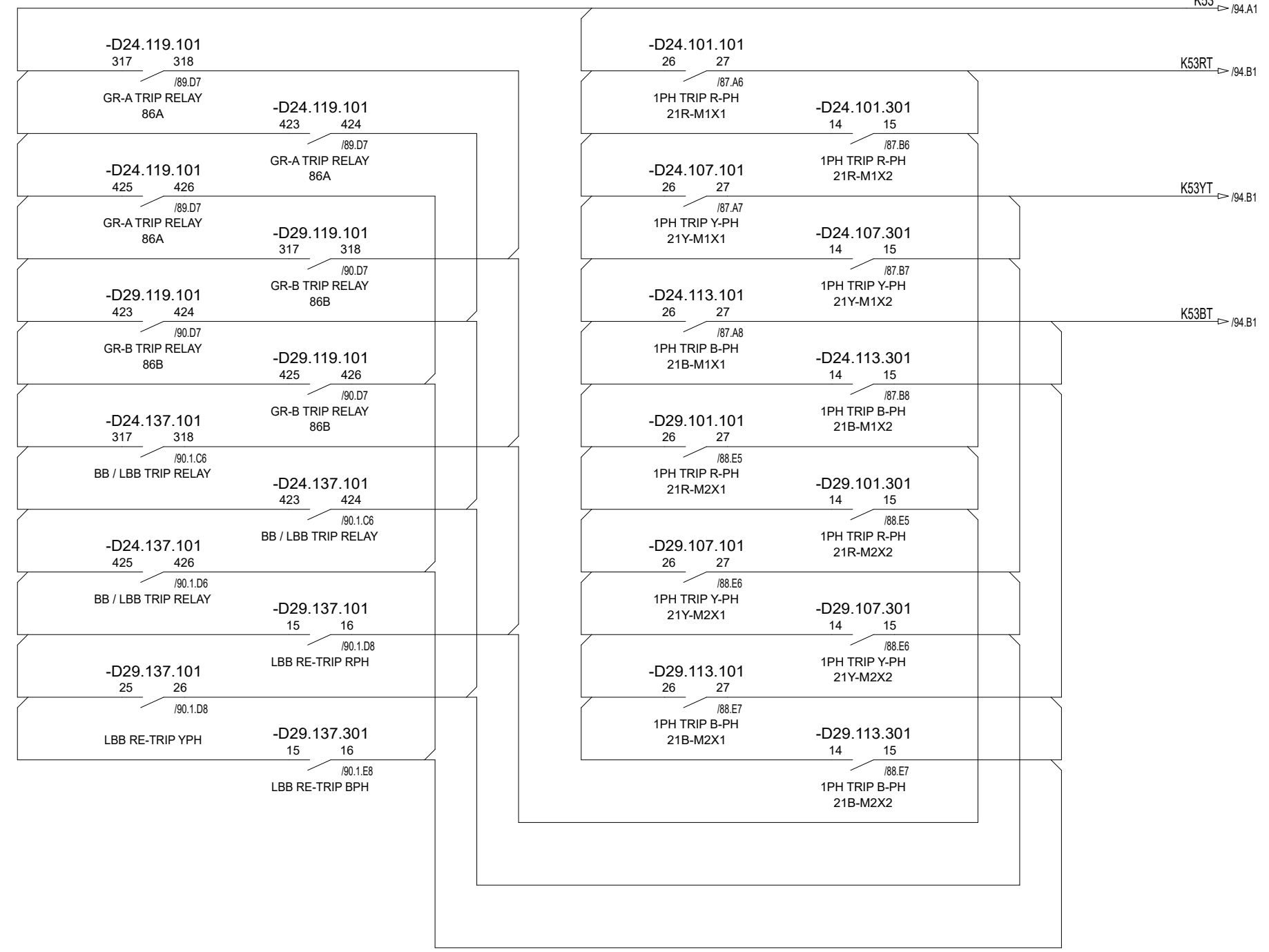
Doc. kind.	Circuit diagram	Ref.Des.	=2KR
	DCC EFS		
Resp. dept.	PG-GAS	Rev. ind.	Language en
Doc. no.	1MNS500925-CAAA		Sheet 92
			n. sheet 93

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+LB



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**APTRANSCO/VS/Vijayawada.**

Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER		Doc. kind.	Circuit diagram		Ref.Des.	=2KR
		Approved	20.12.2023	GOURISH HEGDE	Control & Relay Panel		DCC EFS					
		Project	APTRANSCO STANDARD DRAWING		1-ph Trip to CB TC-2 Circuit		Resp. dept.	PG-GAS		Rev. ind.	Language	en
Rev.	Revision note	Date	Name	<b>HITACHI</b> Hitachi Energy India Limited		Doc. no. <b>1MNS500925-CAAA</b>		Sheet		93		
1MYN691003-102(A3)REV01								n. sheet		94		

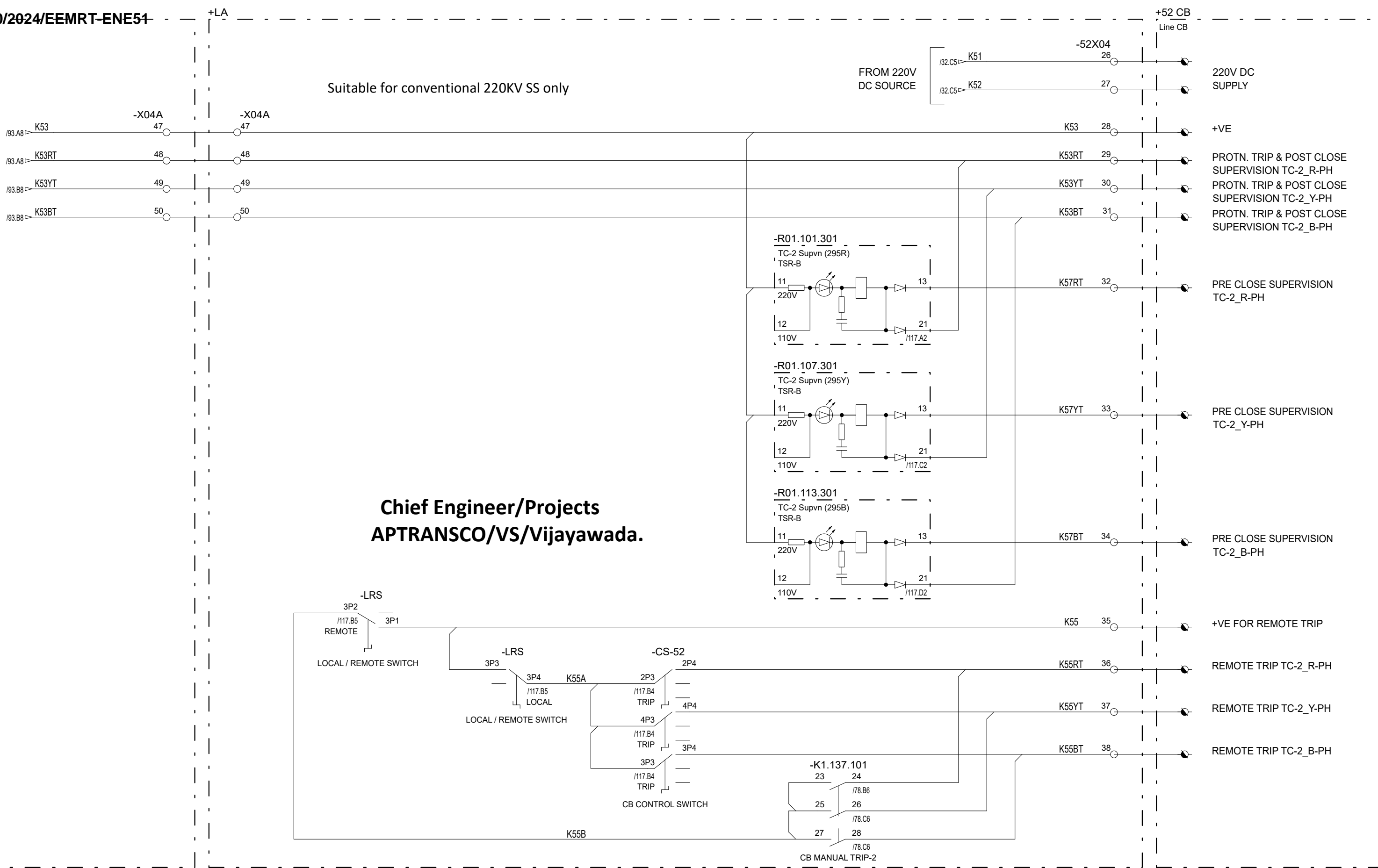
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Suitable for conventional 220KV SS only

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APTRANSCO/VS/Vijayawada.**

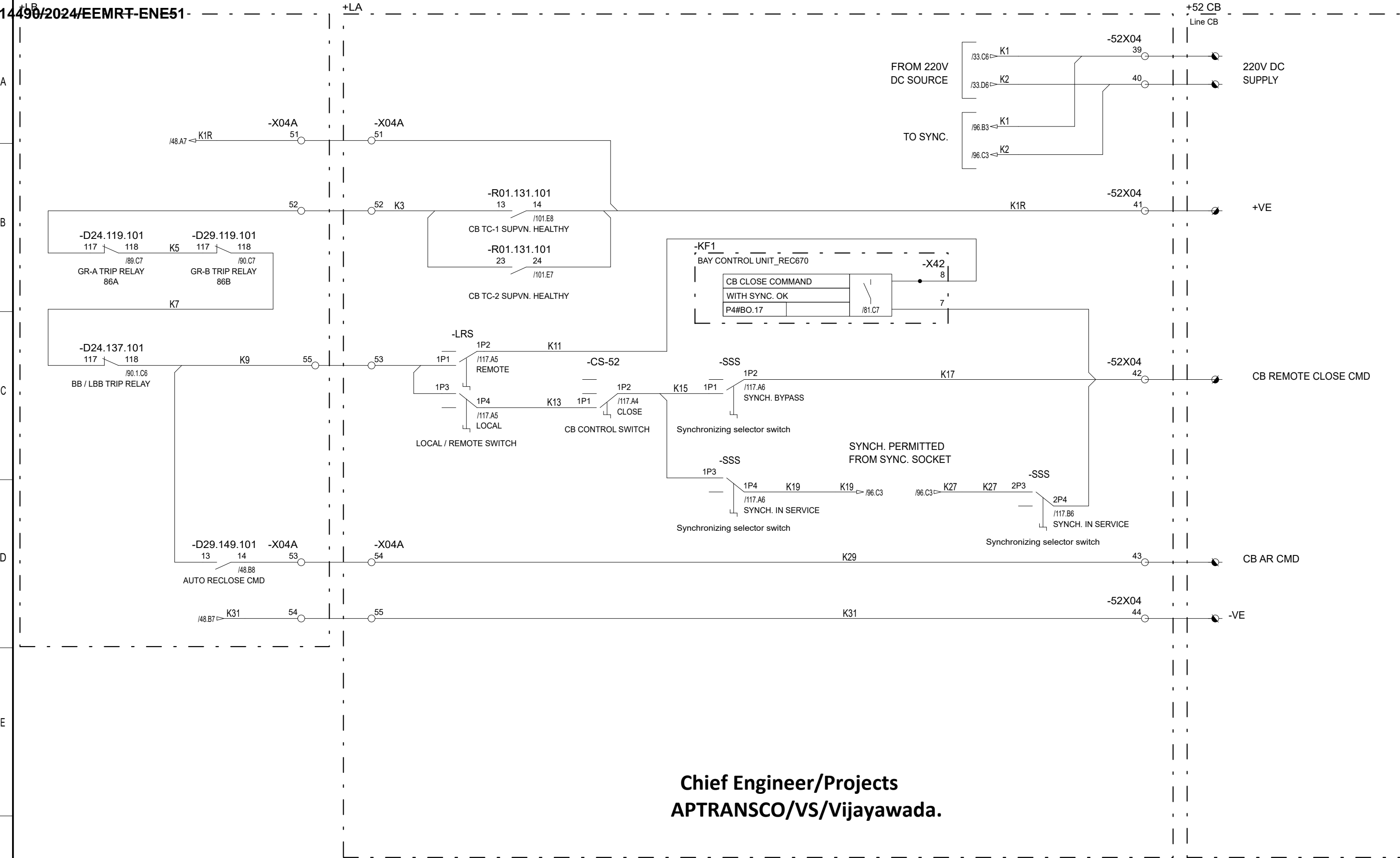


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		Project	APTRANSCO STANDARD DRAWING		Hitachi Energy India Limited		Resp. dept.	PG-GAS	Rev. ind.	Language	en
Rev.	Revision note	Date	Name		<b>HITACHI</b>		Doc. no.	1MNS500925-CAAA		Sheet	94
										n. sheet	95

1MYN691003-102(A3)REV01

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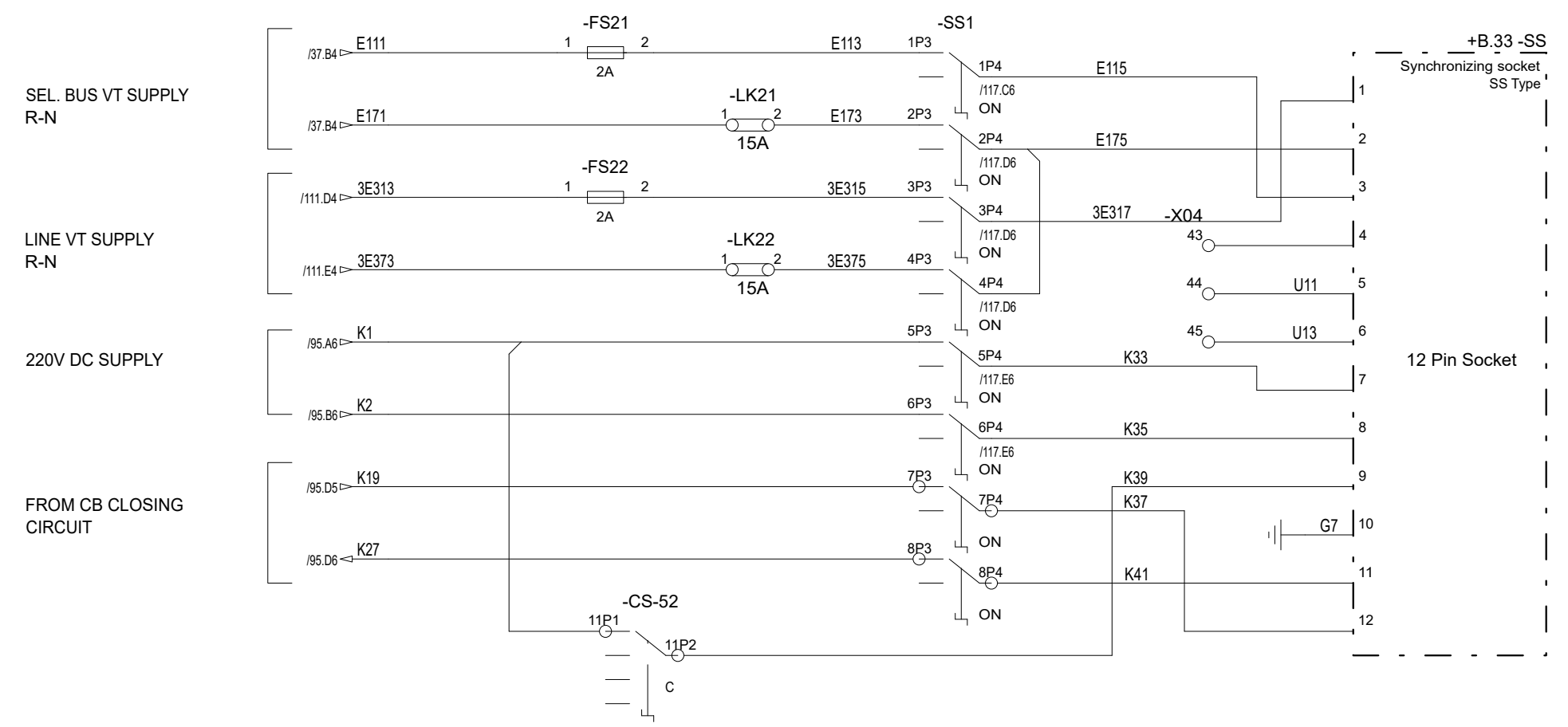


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		Project APTRANSCO		CB Closing Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 95
1MYN691003-102(A3)REV01						n. sheet 96

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Suitable for conventional 220KV SS only

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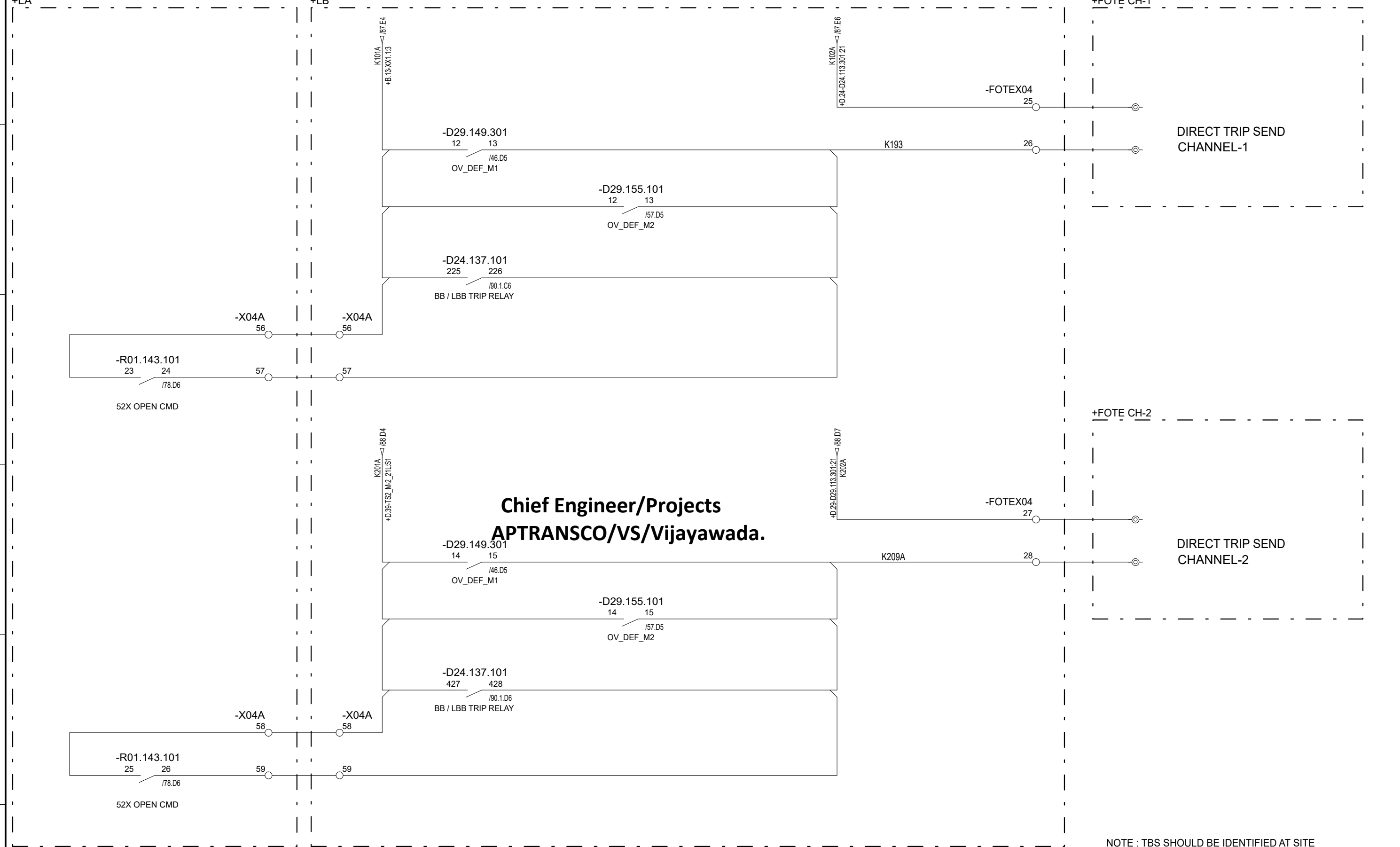
**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

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		Project APTRANSCO		Synchronizing Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 96
1MYN691003-102(A3)REV01						n. sheet 97

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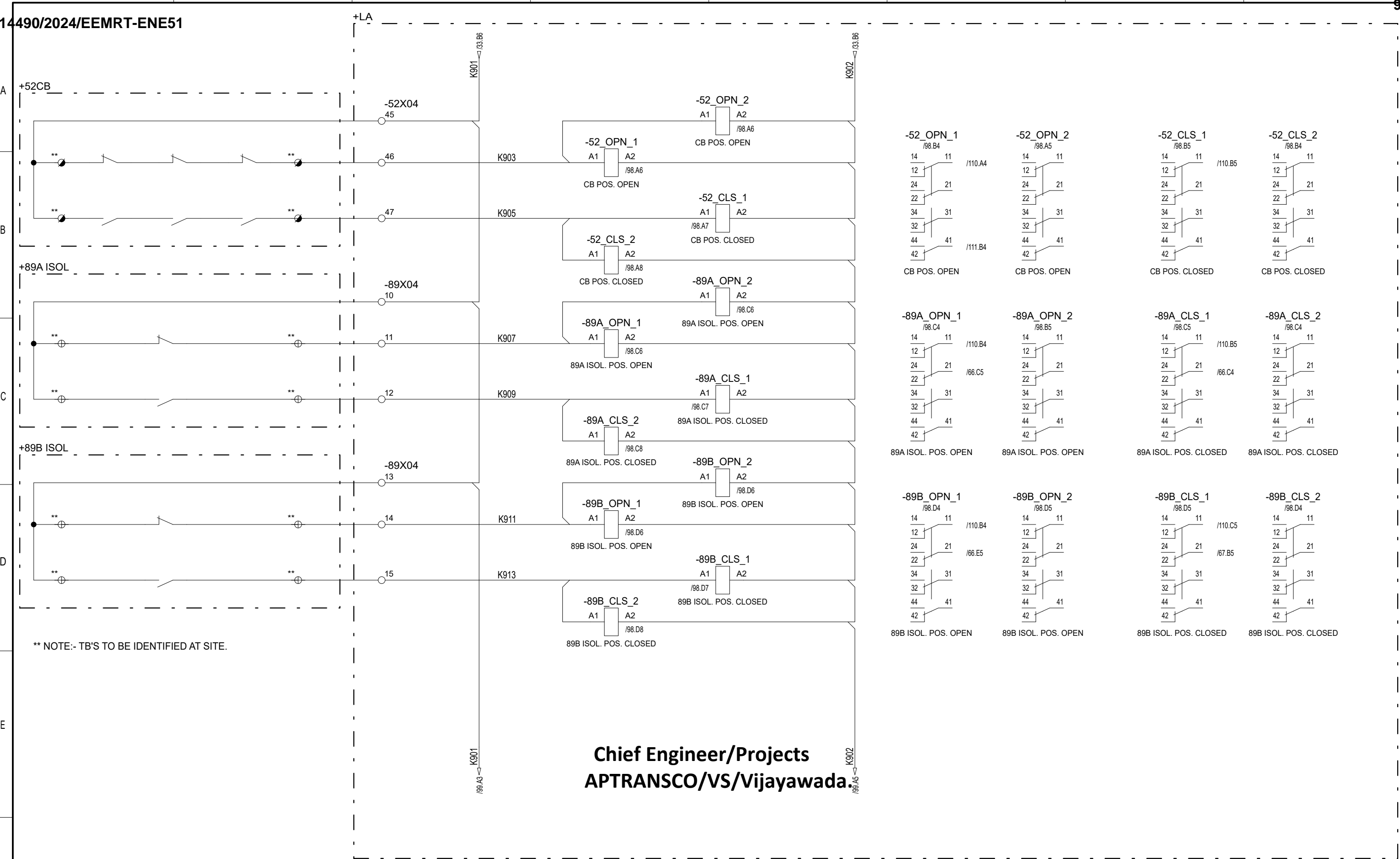
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 97
1MYN691003-102(A3)REV01						n. sheet 98

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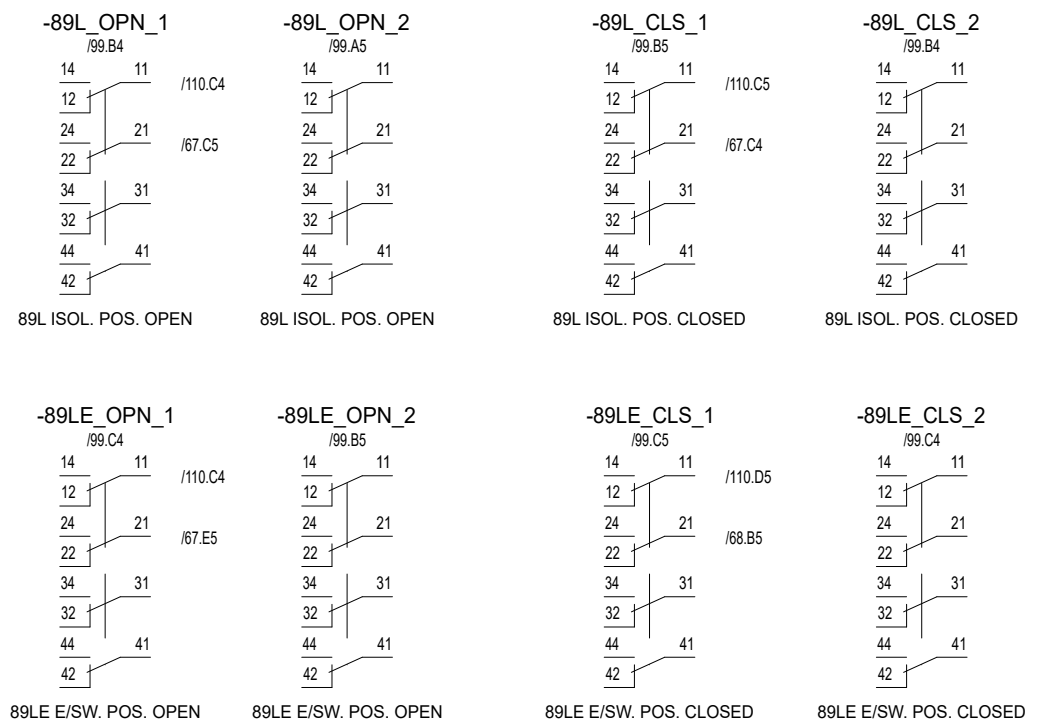
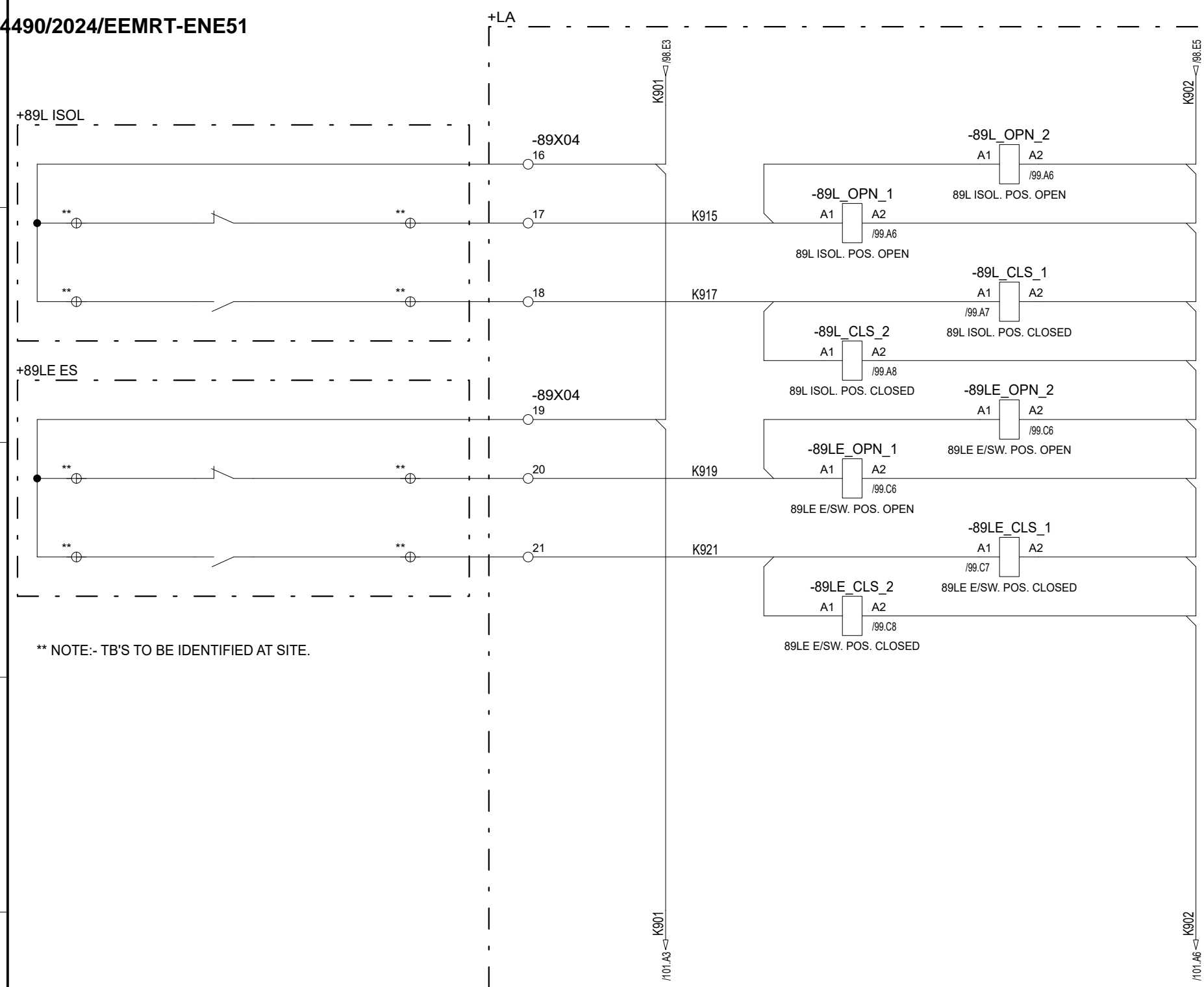


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**APTRANSCO/VS/Vijayawada**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. <b>Circuit diagram</b>	Ref.Des. =2KR
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Rev.	Revision note	Date	Name		Doc. no. <b>1MNS500925-CAAA</b>	Sheet 98
1MYN691003-102(A3)REV01						n. sheet 99

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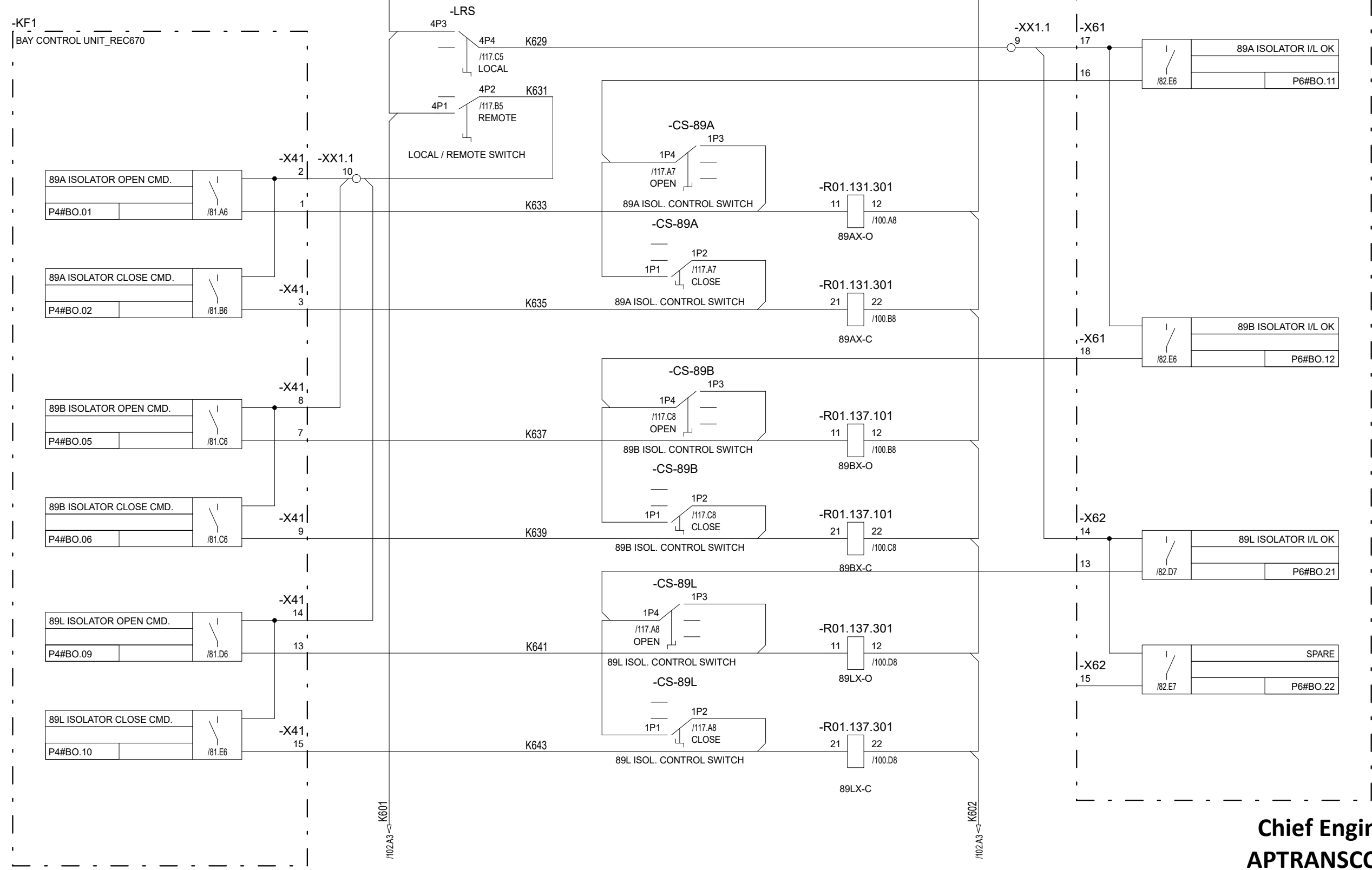
Suitable for conventional 220KV SS only

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APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 99
1MYN691003-102(A3)REV01						n. sheet 100

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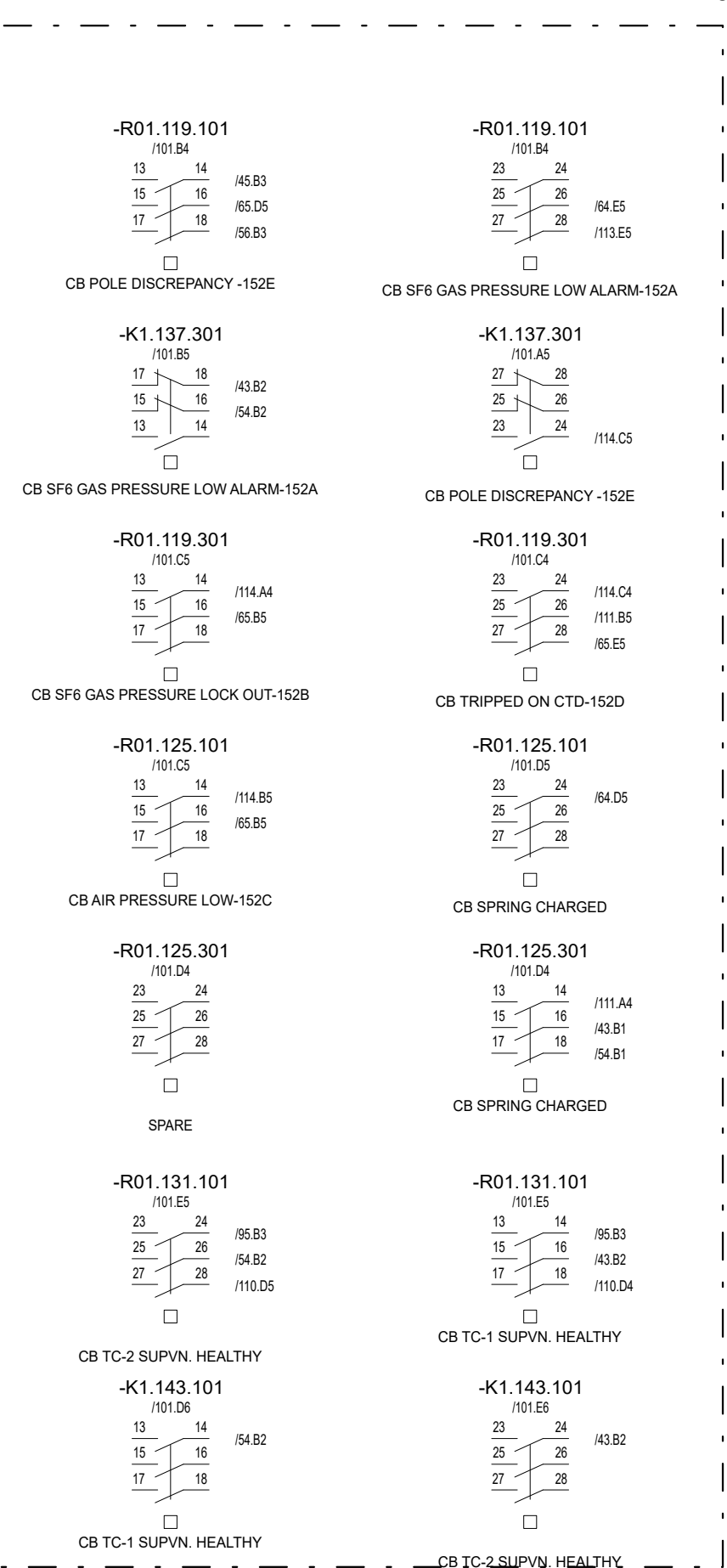
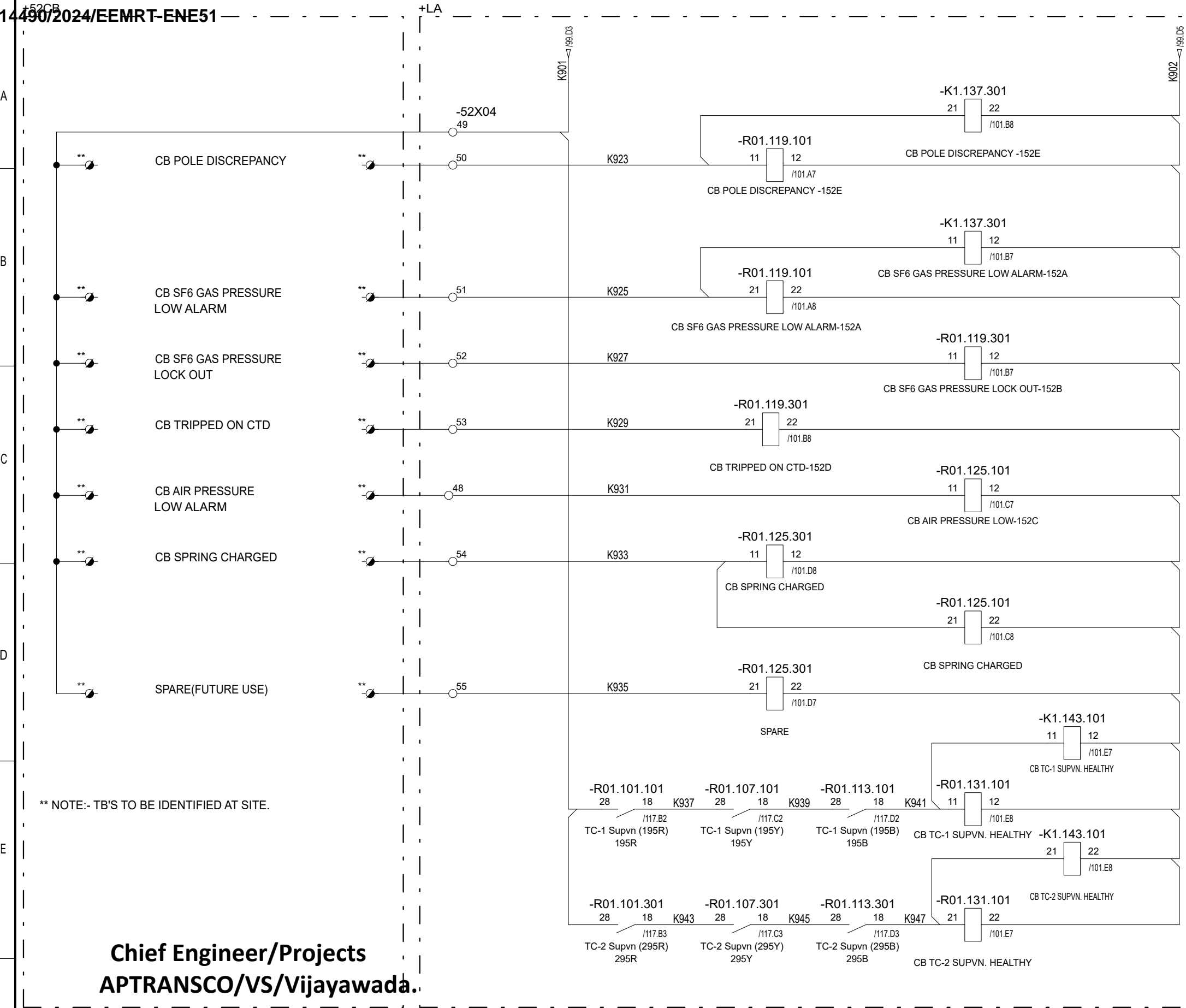
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89LX-O
- R01.137.301 /100.E5  
23 24 /103.B6  
25 26 /103.B6  
27 28  
89LX-C

**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Isolator Command Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	Sheet 100
1MYN691003-102(A3)REV01						n. sheet 101

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\*\* NOTE:- TB'S TO BE IDENTIFIED AT SITE.

**Chief Engineer/Projects**  
**APTRANSCO/Vs/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		CB Trouble multpn Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CAAA	
					Sheet 101	n. sheet 102

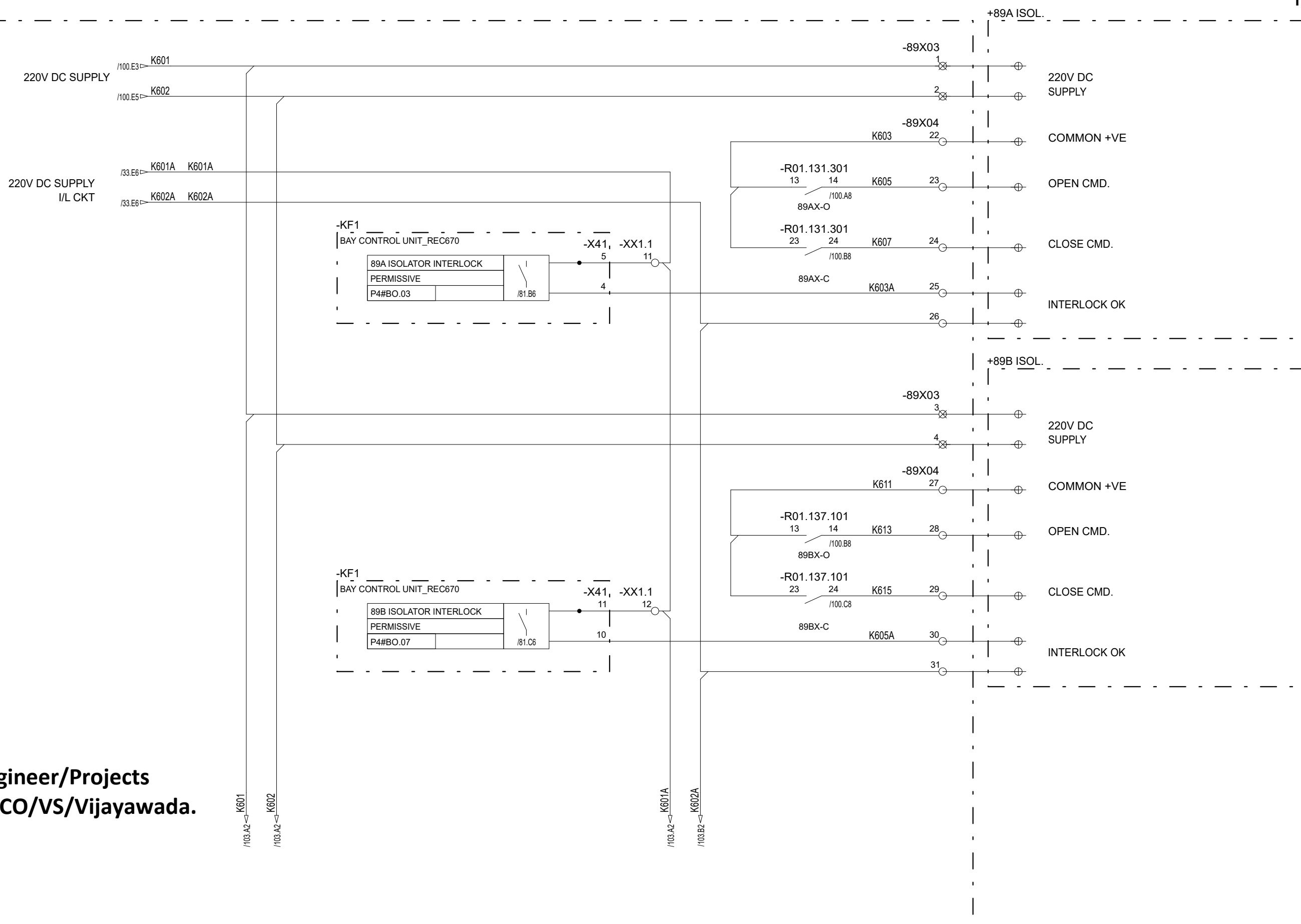
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**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**



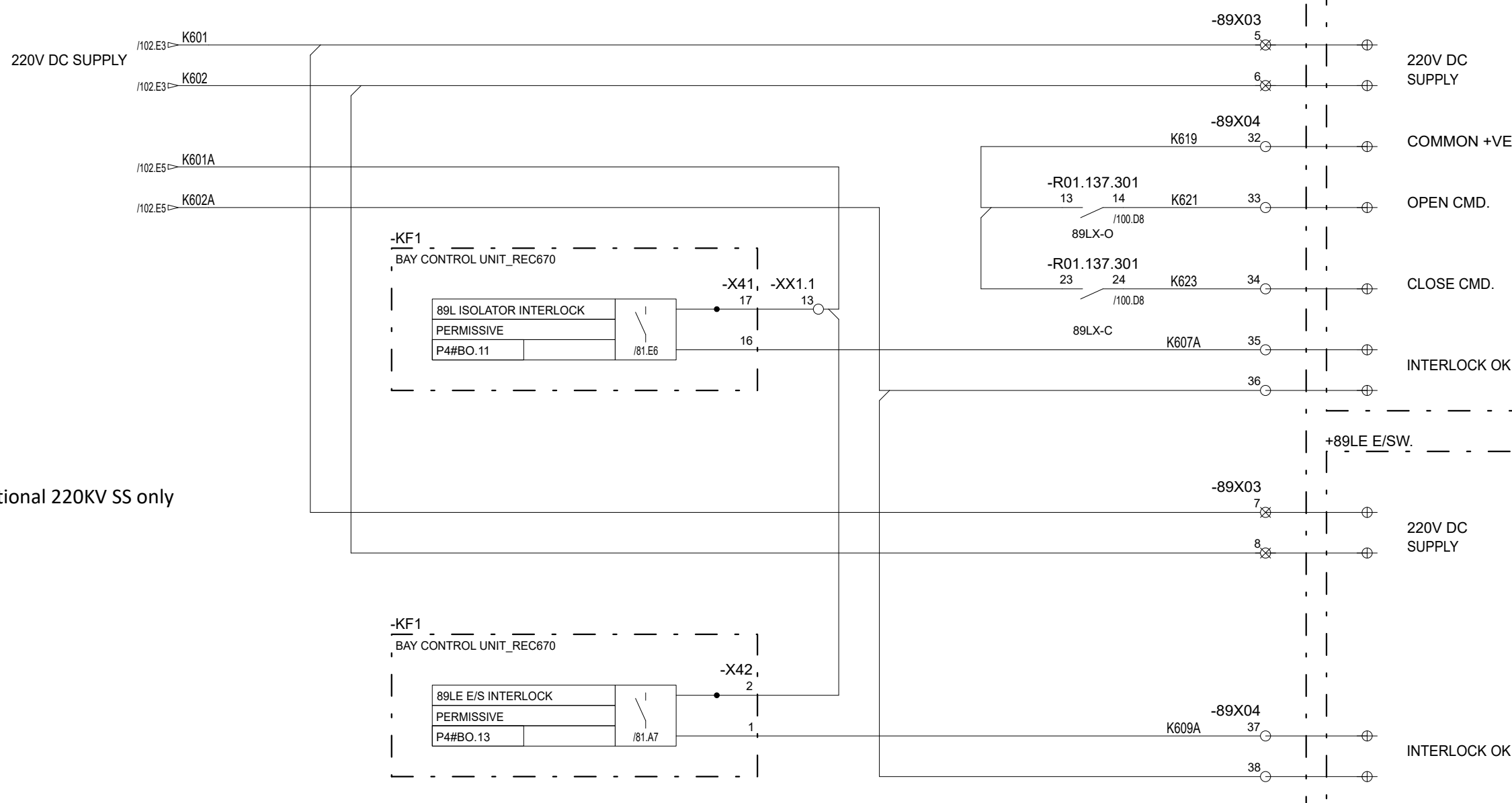
Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER		Doc. kind.	Circuit diagram		Ref.Des.	=2KR	
		Approved	20.12.2023	GOURISH HEGDE	Control & Relay Panel		DCC EFS						
		Project	APTRANSCO STANDARD DRAWING		89A, 89B Isol. Control Circuit		Resp. dept.	PG-GAS		Rev. ind.	Language	en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>		Hitachi Energy India Limited		Doc. no.		1MNS500925-CAAA		Sheet	102
1MYN691003-102(A3)REV01												n. sheet	103

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Suitable for conventional 220KV SS only

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

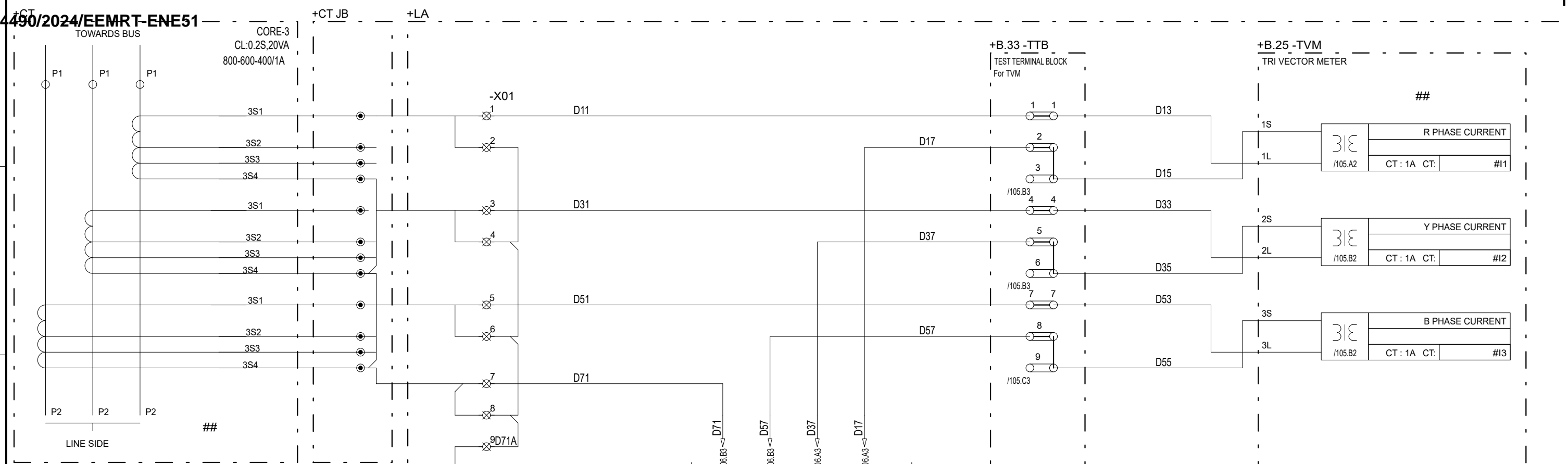


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		89L Isol., 89LE E/Sw. Control Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 103
1MYN691003-102(A3)REV01						n. sheet 104

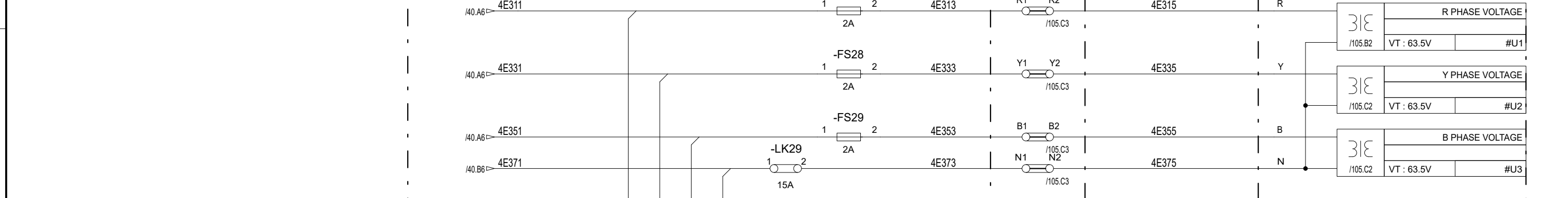
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## NOTE:- CT DETAILS TO BE CONFIRMED BY THE CUSTOMER.



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APTRANSCO/VS/Vijayawada.**

## Note: +ve reading is import & -ve reading is export active/reactive energy.

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Metering Circuit- TVM	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 104
1MYN691003-102(A3)REV01						n. sheet 105

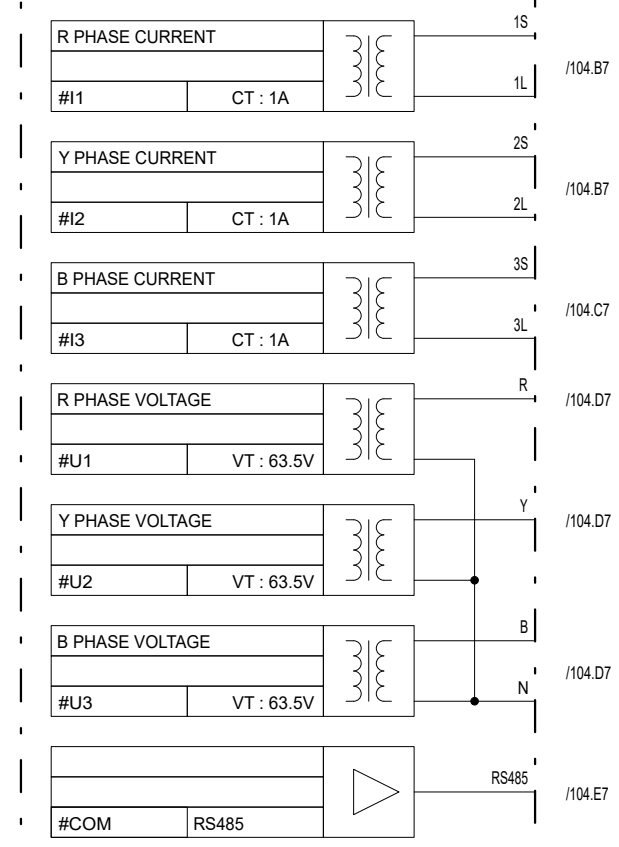
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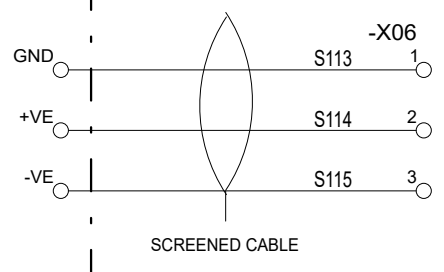
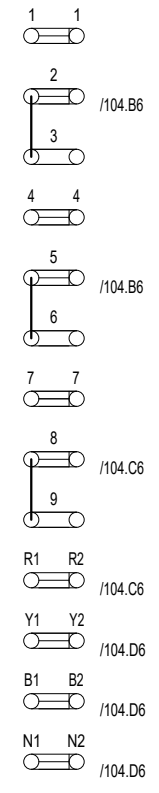
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+B.25 -TVM

Tri Vector Meter With ABT  
Premier 300  
3Ph, 4Wire, 3Element



-TTB



**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Metering Circuit- TVM	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CAAA	
Rev.	Revision note	Date	Name			Sheet 105
1MYN691003-102(A3)REV01						n. sheet 106

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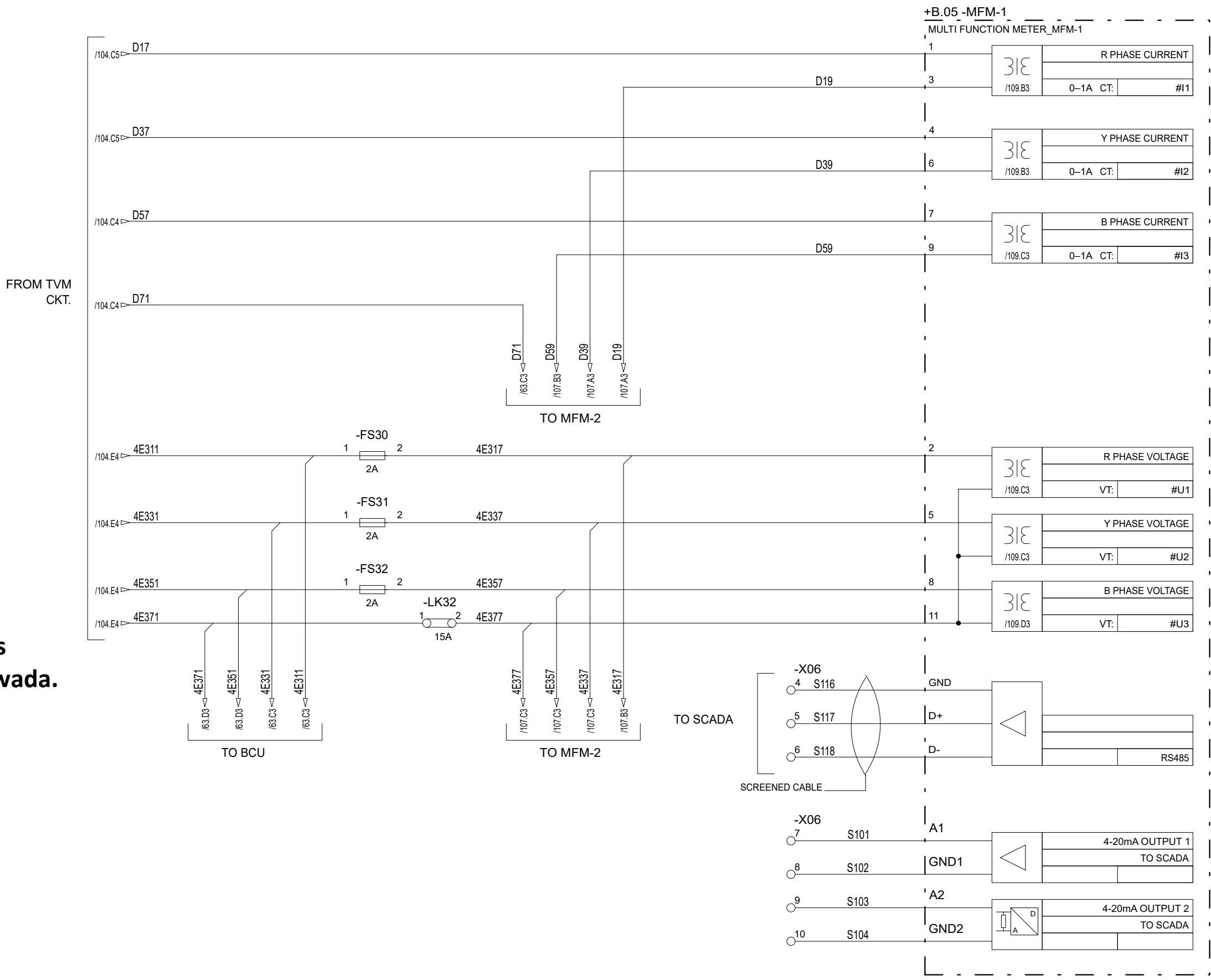
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Suitable for conventional 220KV SS only

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

\*\* DEPENDING ON THE SITE CONDITIONS, EARTHING  
SHALL BE DONE AT ONE POINT.



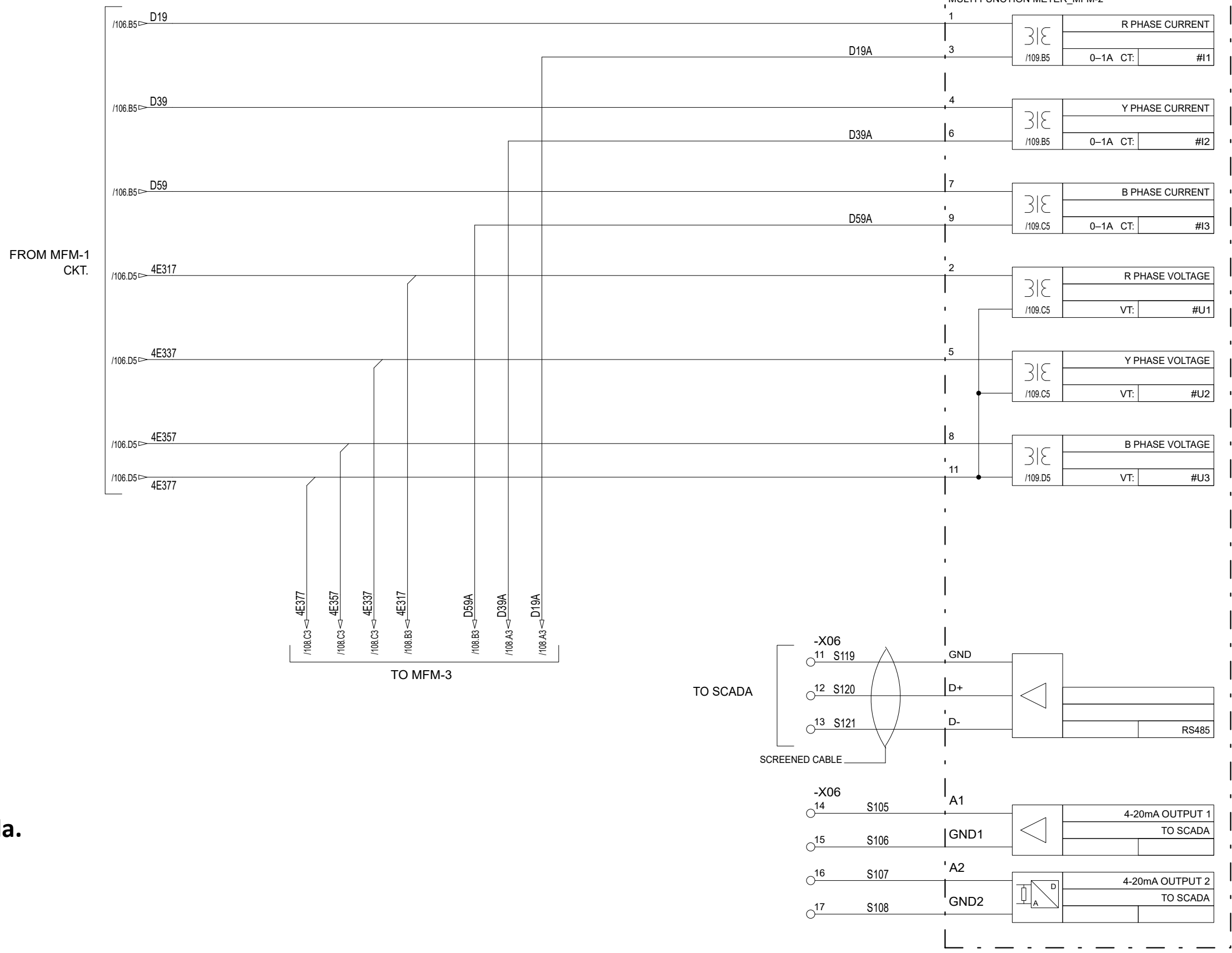
Based on		Prepared 13.12.2023	VINOD G	Title 220KV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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		Project APTRANSCO		Metering Circuit- MFM-1	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 106
1MYN691003-102(A3)REV01						n. sheet 107

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**+B.05 -MFM-2**  
MULTI FUNCTION METER\_MFM-2



**Chief Engineer/Projects**  
**APTRANSCO/VIS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Metering Circuit- MFM-2	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 107
1MYN691003-102(A3)REV01						n. sheet 108

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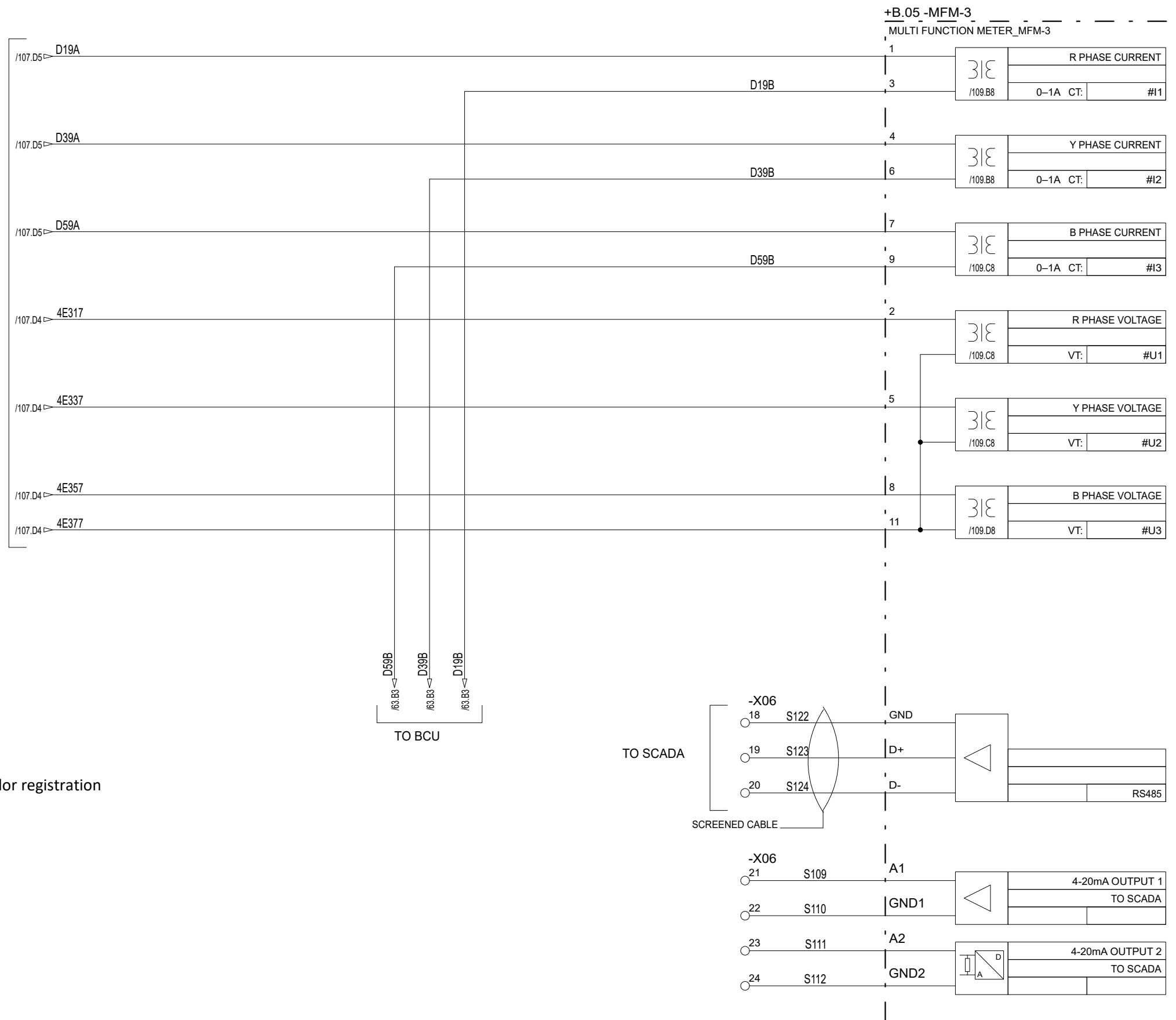
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Suitable for conventional 220KV SS only

FROM MFM-2  
CKT.

**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

Drawing approval subject to valid vendor registration



**+B.05 -MFM-3**  
MULTI FUNCTION METER\_MFM-3

3IE	R PHASE CURRENT
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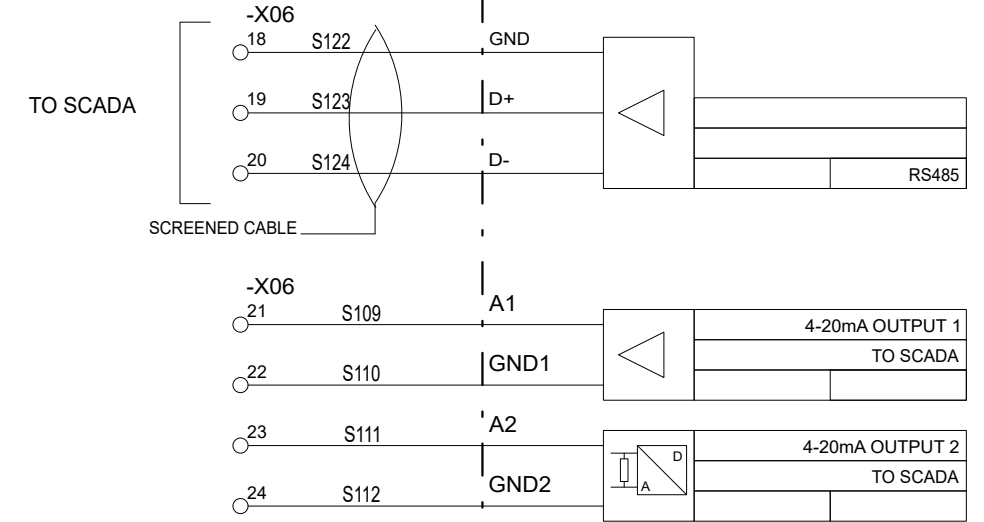
3IE	Y PHASE CURRENT
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3IE	B PHASE CURRENT
/109.C8	0-1A CT: #13

3IE	R PHASE VOLTAGE
/109.C8	VT: #U1

3IE	Y PHASE VOLTAGE
/109.C8	VT: #U2

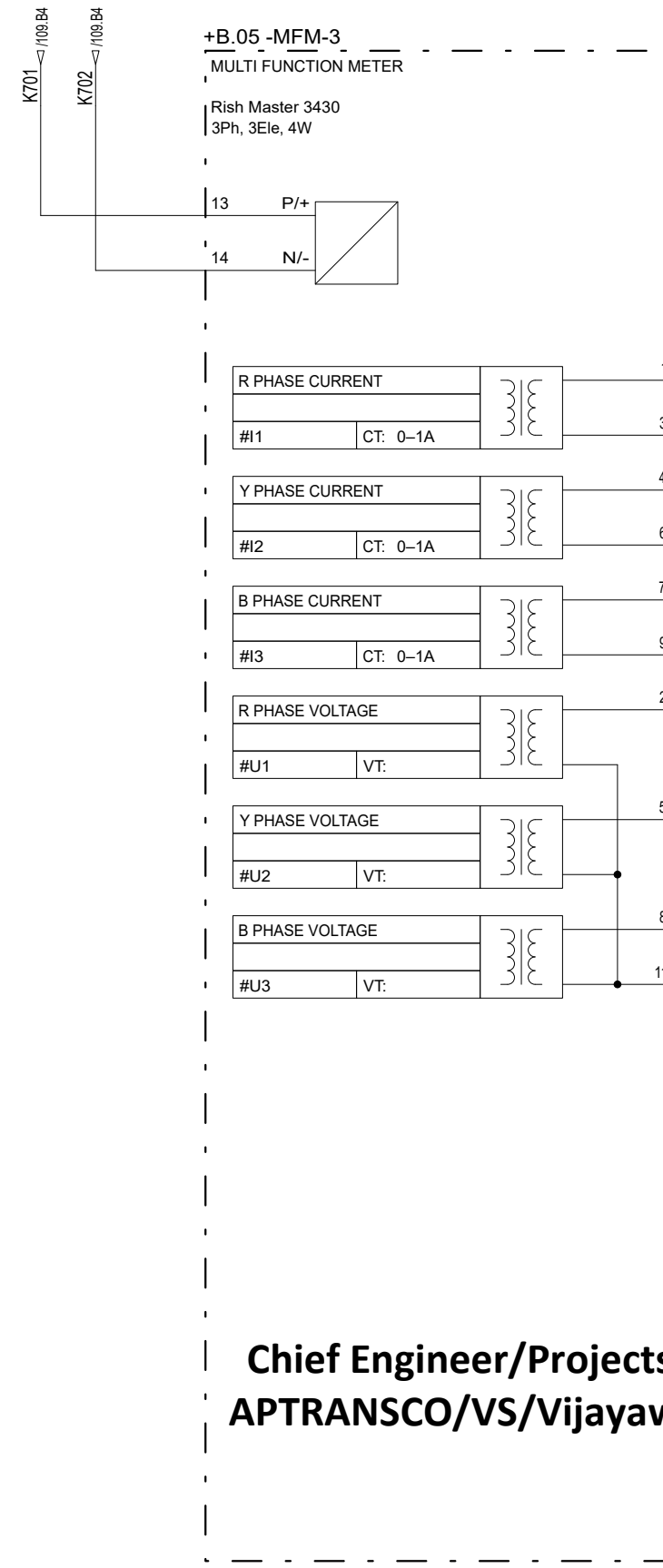
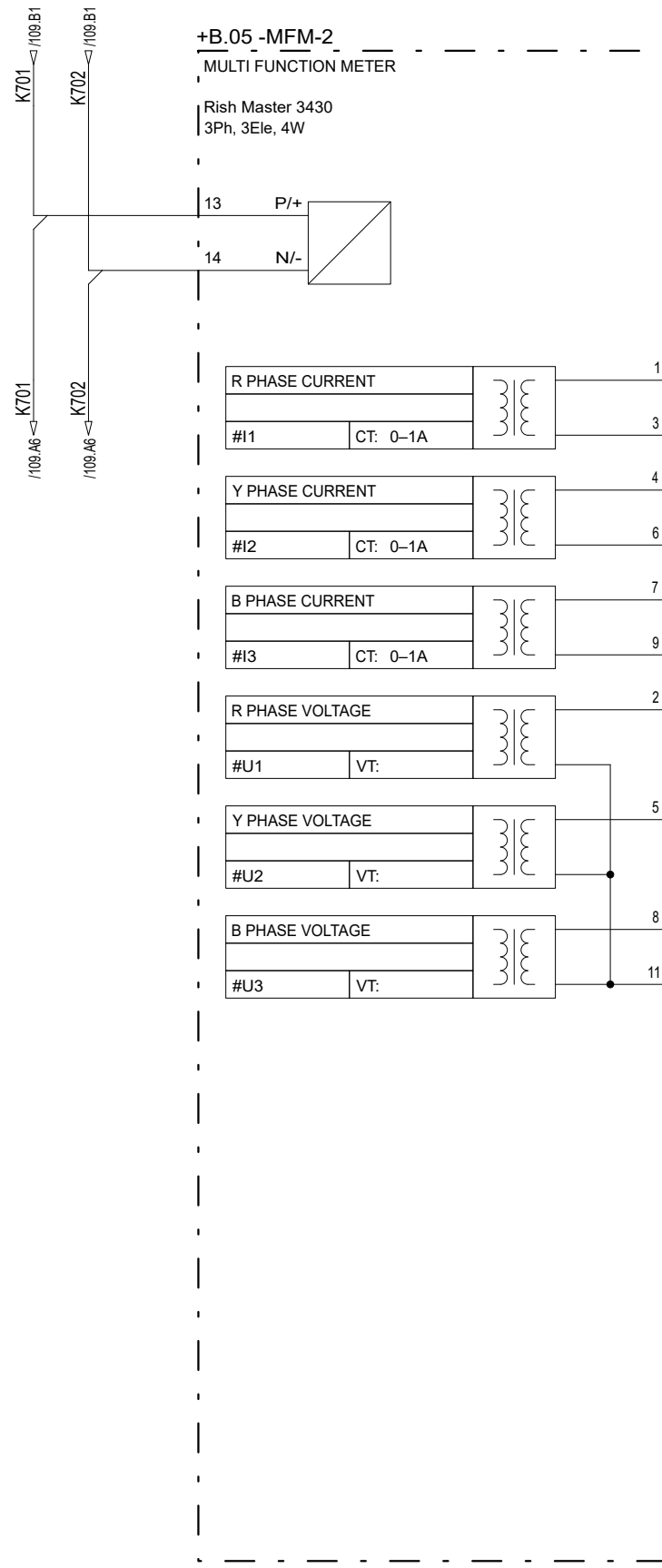
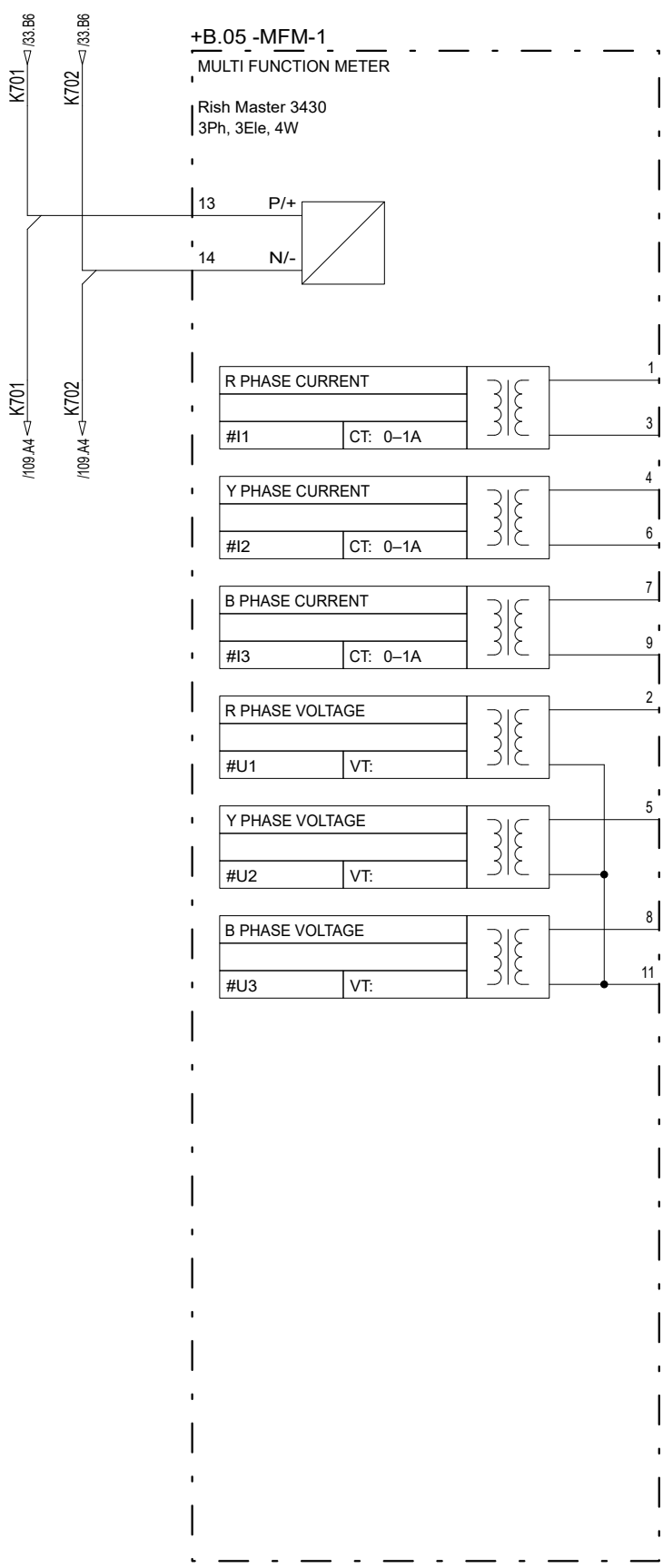
3IE	B PHASE VOLTAGE
/109.D8	VT: #U3



Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Metering Circuit- MFM-3	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA		Sheet 108
1MYN691003-102(A3)REV01						n. sheet 109

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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Metering Circuit- MFM	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 109
1MYN691003-102(A3)REV01						n. sheet 110

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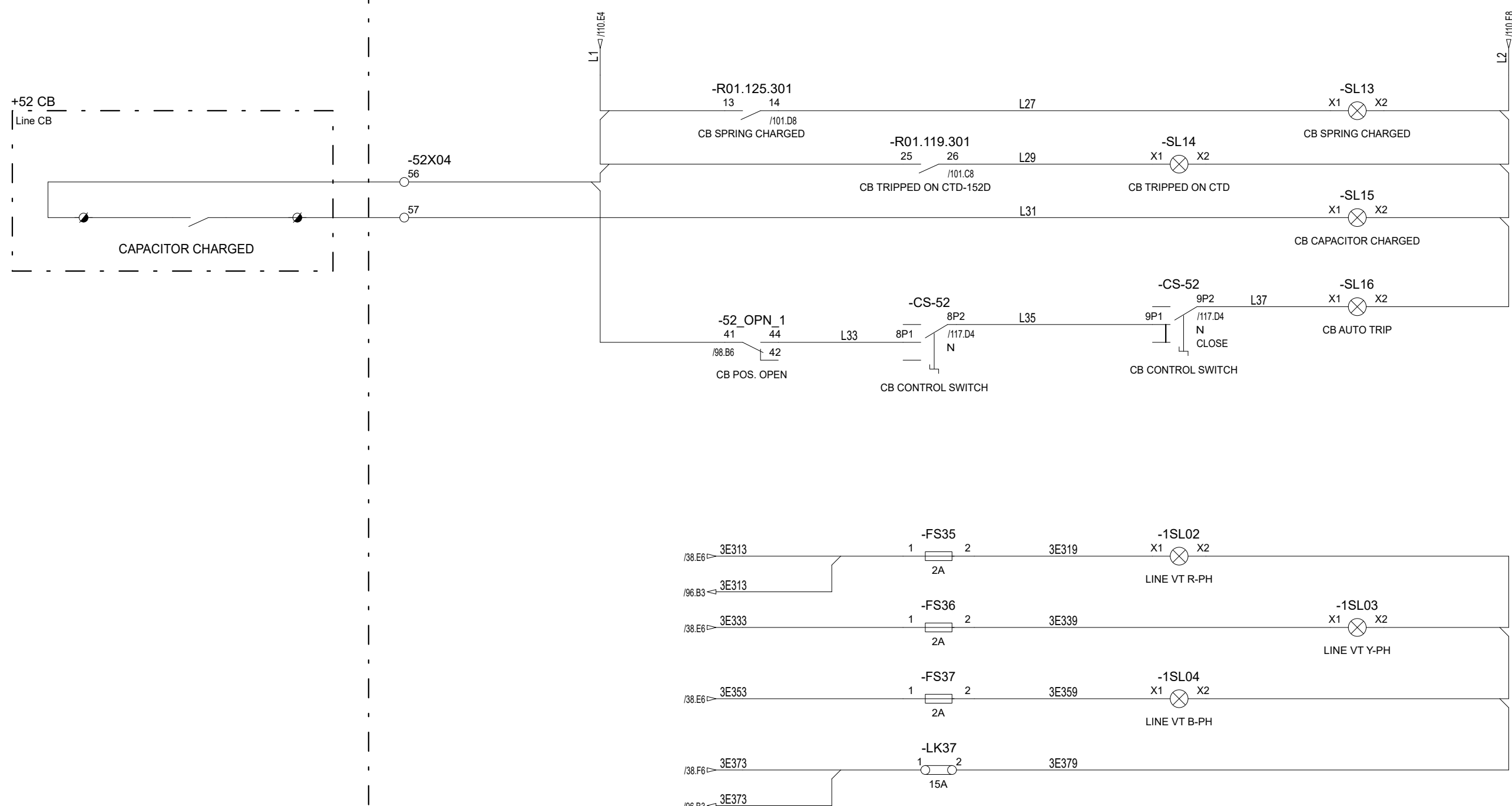
**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada:**

Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER		Doc. kind.	Circuit diagram		Ref.Des.	=2KR
		Approved	20.12.2023	GOURISH HEGDE	Control & Relay Panel		DCC EFS					
		Project	APTRANSCO		Indication Circuit		PG-GAS		Rev. ind.	Language		en
				STANDARD DRAWING							Sheet	110
Rev.	Revision note	Date	Name		<b>HITACHI</b> Hitachi Energy India Limited		Doc. no.		1MNS500925-CAAA		n. sheet	111
1MYN691003-102(A3)REV01												

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+LA



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**APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Indication Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	
1MYN691003-102(A3)REV01					Sheet 111	n. sheet 112

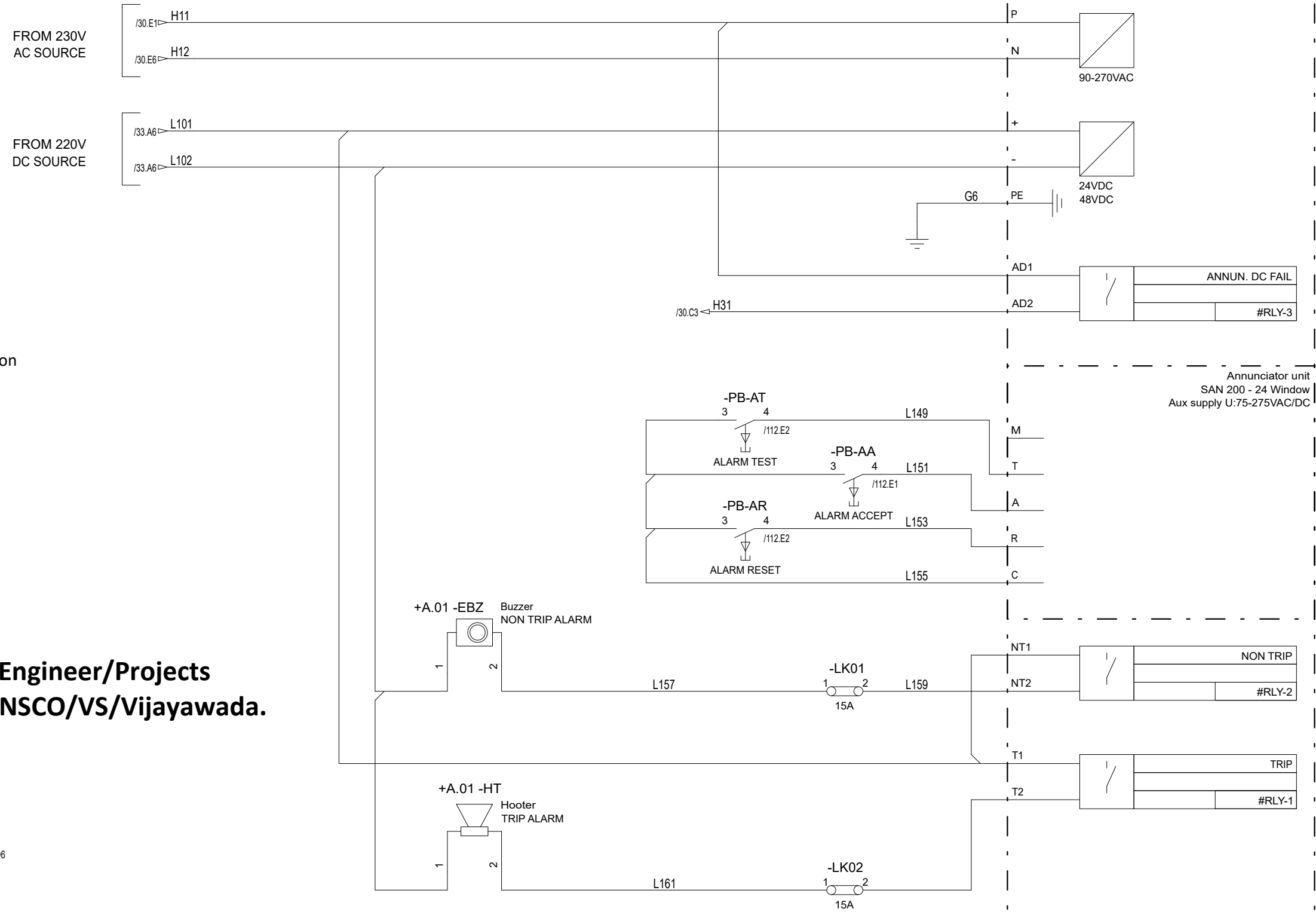
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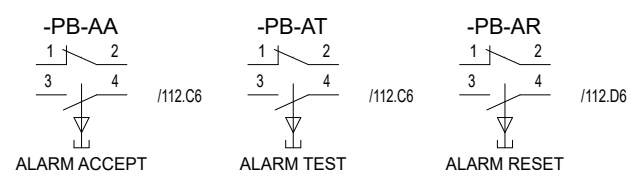
Suitable for conventional 220KV SS only

+B.03 -ANN.  
Annunciator unit  
SAN 200 - 24 Window



Drawing approval subject to valid vendor registration

**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

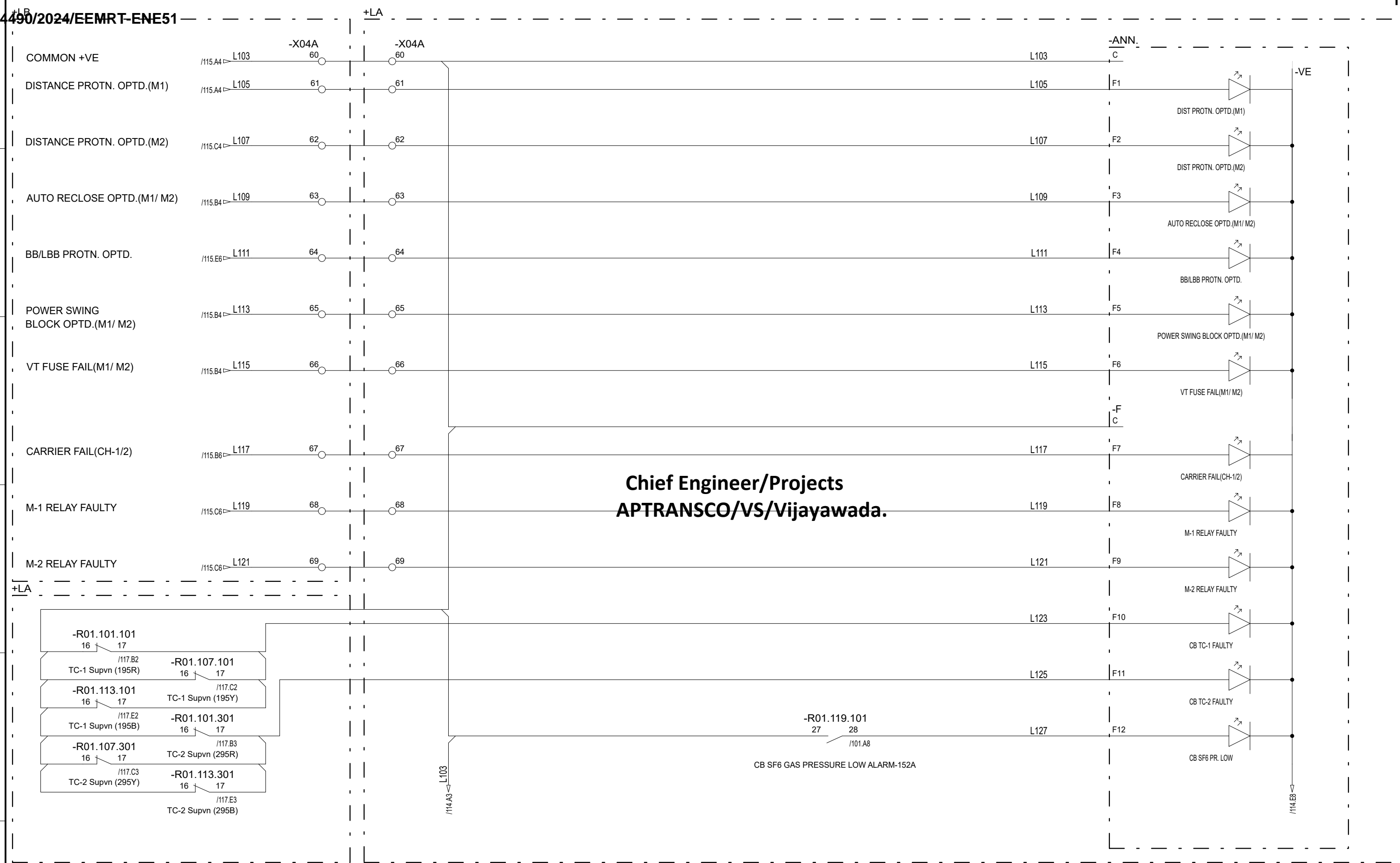


Based on		Prepared 13.12.2023	VINOD G	Title 220KV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
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				<b>HITACHI</b> Hitachi Energy India Limited	Doc. no. 1MNS500925-CAAA	
Rev.	Revision note	Date	Name			Sheet 112 n. sheet 113
1MYN691003-102(A3)REV01						

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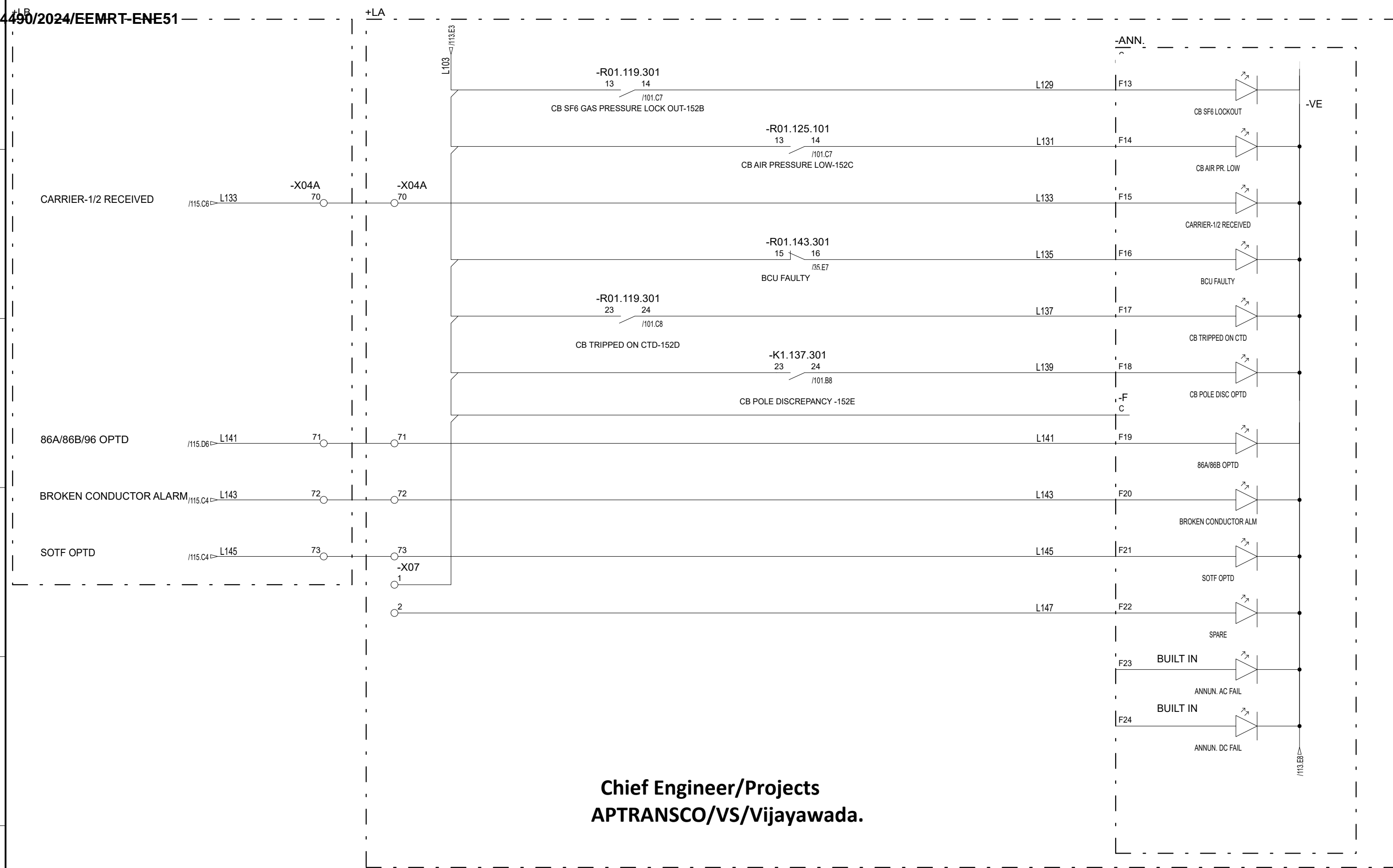
**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 113
1MYN691003-102(A3)REV01						n. sheet 114

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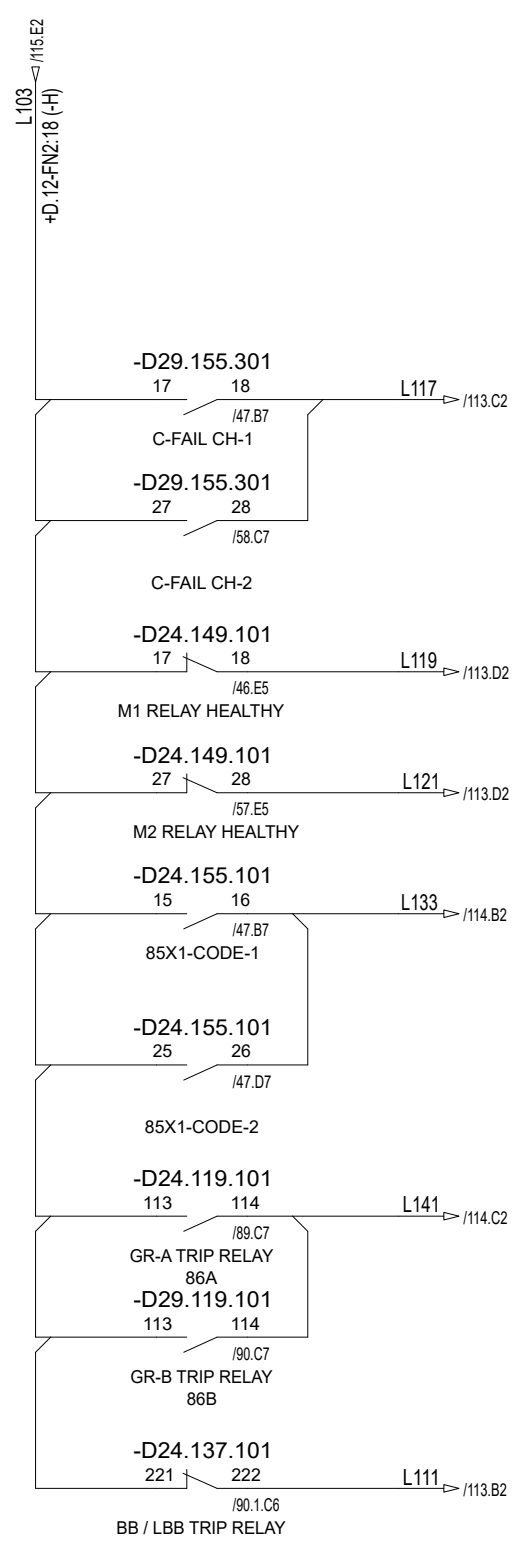
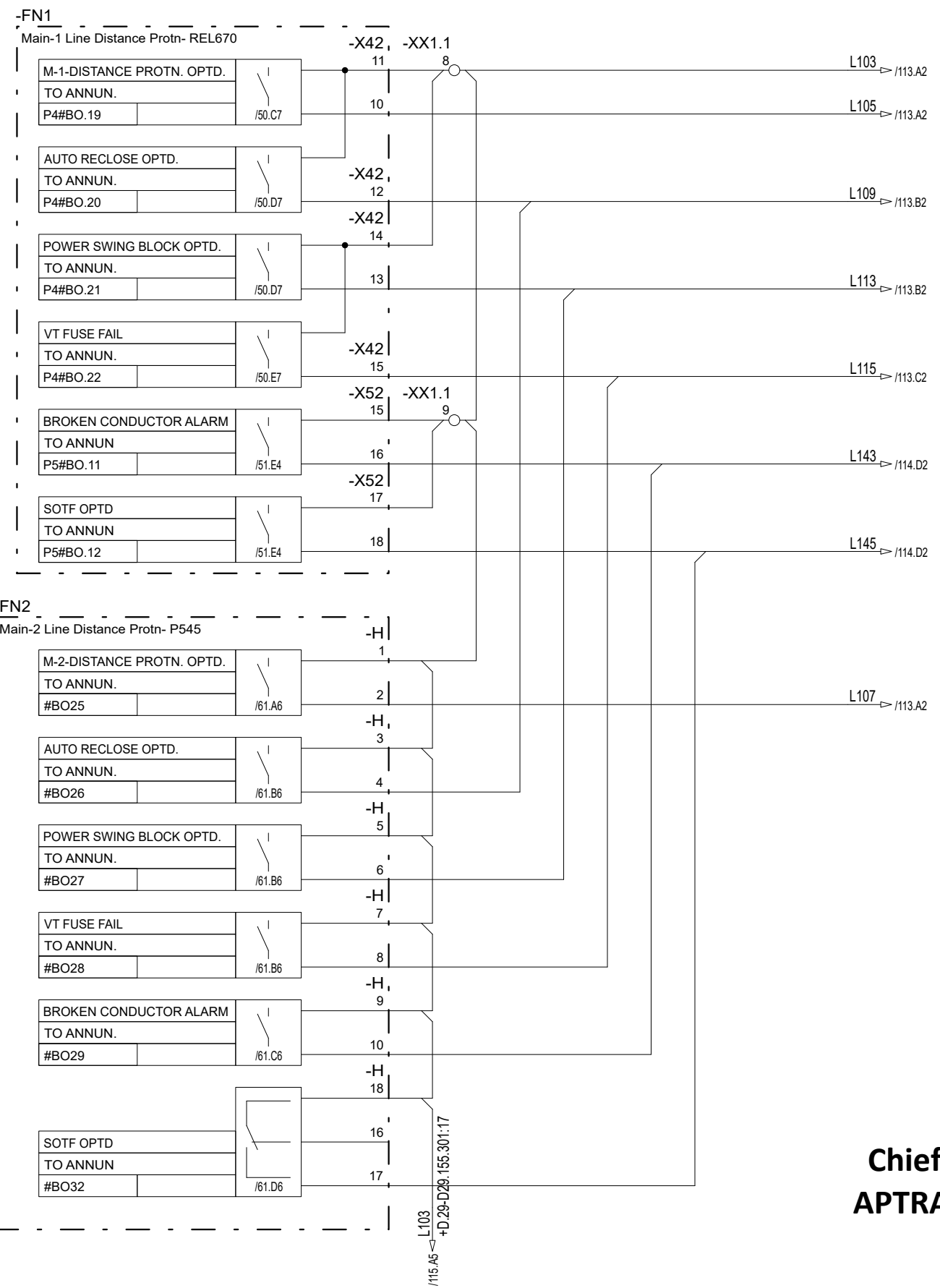
**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 114	n. sheet 115
1MYN691003-102(A3)REV01						

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114



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**APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CAAA	Sheet 115	n. sheet 116
1MYN691003-102(A3)REV01						

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Drawing approval subject to valid vendor registration

ANNUNCIATION INSCRIPTION DETAILS

ANN.

1 DISTANCE PROTN. OPTD.(M1) T	2 DISTANCE PROTN. OPTD.(M2) T	3 AUTO RECLOSE OPTD. (M1/ M2) T	4 BB/LBB PROTN. OPTD. T	5 POWER SWING BLOCK OPTD. (M1/ M2) NT	6 VT FUSE FAIL(M1/ M2) NT
7 CARRIER FAIL(CH-1/2) NT	8 M-1 RELAY FAULTY NT	9 M-2 RELAY FAULTY NT	10 CB TC-1 FAULTY NT	11 CB TC-2 FAULTY NT	12 CB SF6 PR. LOW NT
13 CB SF6 LOCKOUT NT	14 CB AIR PR. LOW NT	15 CARRIER-1/2 RECEIVED T	16 BCU FAULTY NT	17 CB TRIPPED ON CTD T	18 CB POLE DISCREPANCY OPTD T
19 86A/86B OPTD T	20 BROKEN CONDUCTOR CHECK T	21 SOTF OPTD T	22 SPARE NT	23 ANNUN. AC FAIL NT	24 ANNUN. DC FAIL NT

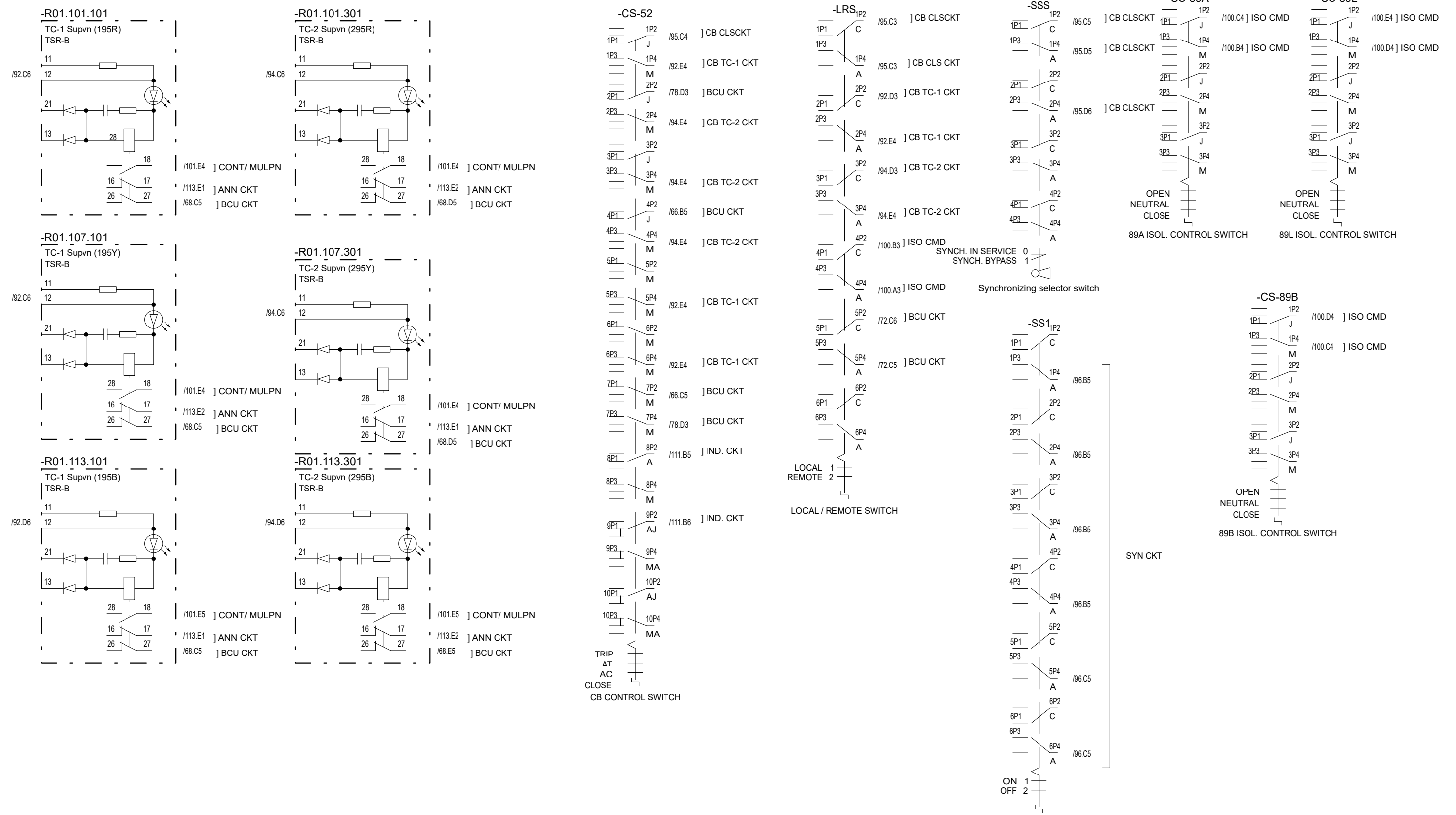
NOTE:-

- 1) NUMBERS FROM 1 TO 24 ARE FOR WINDOW IDENTIFICATION.
- 2) T :- TRIP ALARM WITH RED COLOUR LED WINDOW
- 3) NT :- NON TRIP ALARM WITH WHITE COLOUR LED WINDOW

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO STANDARD DRAWING		Annunciation Incriptions	Resp. dept. PG-GAS	Rev. ind. Language en
				<b>HITACHI</b> Hitachi Energy India Limited	Doc. no. 1MNS500925-CAAA	
Rev.	Revision note	Date	Name			Sheet 116 n. sheet 117
1MYN691003-102(A3)REV01						

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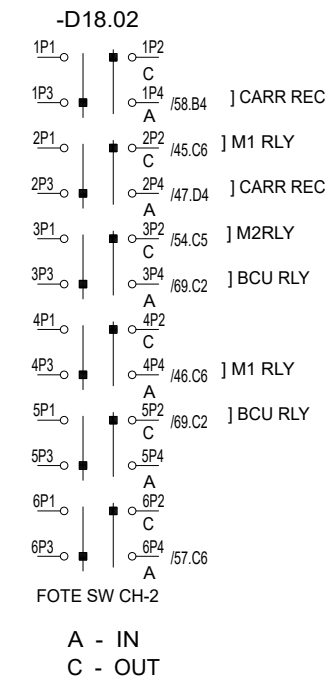
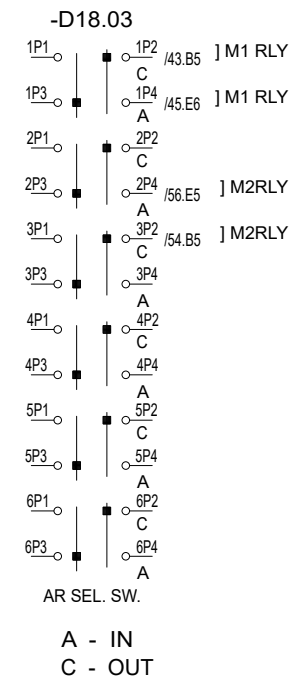
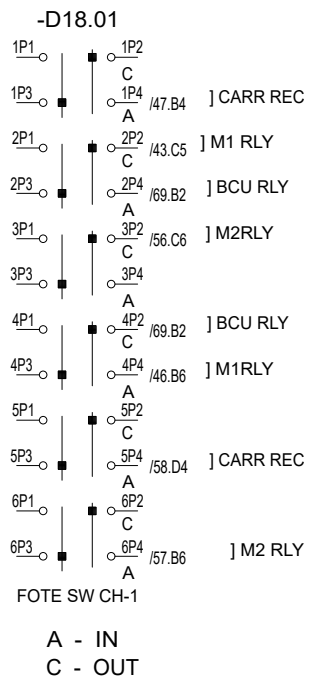
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Contact Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	<b>HITACHI</b>	Doc. no. 1MNS500925-CAAA	Sheet 117
1MYN691003-102(A3)REV01						n. sheet 118

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		Project APTRANSCO		STANDARD DRAWING		Contact Distribution Circuit		PG-GAS		Rev. ind.	
						HITACHI Hitachi Energy India Limited		Language en		Sheet 118	
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-CAAA		n. sheet 118.1	
1MYN691003-102(A3)REV01											



8814490/2024/EEMRT-ENE51

**-X04**

Used: 45  
(20%)Spare: 9  
Total: 54

46 ○ 47 ○ 48 ○ 49 ○ 50 ○ 51 ○ 52 ○  
-X04 -X04  
53 ○ 54 ○

**-DCX03**

Used: 8  
(20%)Spare: 2  
Total: 10

9 ⊗ 10 ⊗

**-XX1.2**

Used: 14  
(20%)Spare: 3  
Total: 17

15 ○ 16 ○ 17 ○

**-X01**

Used: 9  
(20%)Spare: 2  
Total: 11

10 ⊗ 11 ⊗

**-ACX03**

Used: 6  
(20%)Spare: 2  
Total: 8

7 ⊗ 8 ⊗

**-X07**

Used: 2  
(20%)Spare: 2  
Total: 4

3 ○ 4 ○

**-52X04**

Used: 57  
(20%)Spare: 12  
Total: 69

58 ○ 59 ○ 60 ○ 61 ○ 62 ○ 63 ○ 64 ○  
65 ○ 66 ○ 67 ○ 68 ○ 69 ○

**-TVM**

Used: 3  
(20%)Spare: 0  
Total: 3

**-X06**

Used: 24  
(20%)Spare: 5  
Total: 29

25 ○ 26 ○ 27 ○ 28 ○ 29 ○

**-89X04**

Used: 38  
(20%)Spare: 8  
Total: 46

39 ○ 40 ○ 41 ○ 42 ○ 43 ○ 44 ○ 45 ○  
46 ○

**-89X03**

Used: 8  
(20%)Spare: 2  
Total: 10

9 ⊗ 10 ⊗

**-X02**

Used: 40  
(20%)Spare: 8  
Total: 48

41 ⊗ 42 ⊗ 43 ⊗ 44 ⊗ 45 ⊗ 46 ⊗ 47 ⊗  
48 ⊗

**-X04A**

Used: 73  
(20%)Spare: 12  
Total: 85

77 ○ 78 ○ 79 ○ 80 ○  
81 ○ 82 ○ 83 ○ 84 ○ 85 ○

**-XX1.1**

Used: 13  
(20%)Spare: 2  
Total: 15

14 ○ 15 ○

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER		Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	SPARE TERMINALS		DCC ELU	+LA
		Project APTRANSCO		SPARE TERMINALS		Resp. dept. PG-GAS	Rev. ind. en
		STANDARD DRAWING		Hitachi Energy India Limited		Language en	
Rev.	Revision note	Date	Name	<b>HITACHI</b>		Doc. no. 1MNS500925-CAAA	Sheet 119
1MYN691003-102(A3)REV01						n. sheet 120	

-ACX03  
Used: 2  
(20%)Spare: 1  
Total: 3

3

-X02  
Used: 12  
(20%)Spare: 3  
Total: 15

13 14 15

-BBX04  
Used: 13  
(20%)Spare: 3  
Total: 16

14 15 16

-DCX03  
Used: 12  
(20%)Spare: 3  
Total: 15

13 14 15

-XX1.1  
Used: 5  
(20%)Spare: 3  
Total: 8

4 10 11

-X04  
Used: 30  
(20%)Spare: 15  
Total: 45

31 33 36 39 42 44  
32 34 37 40 43 45  
35 38 41

-XX1.2  
Used: 4  
(20%)Spare: 1  
Total: 5

5

-XX2.1  
Used: 5  
(20%)Spare: 1  
Total: 6

6

-FOTEX04  
Used: 28  
(20%)Spare: 6  
Total: 34

29 30 31 32 33 34

-XX2.2  
Used: 1  
(20%)Spare: 1  
Total: 2

2

-52X04  
Used: 14  
(20%)Spare: 3  
Total: 17

15 16 17

-X04A  
Used: 76  
(20%)Spare: 9  
Total: 85

77 78 79 80 81 82  
83 84 85

-X01  
Used: 26  
(20%)Spare: 6  
Total: 32

27 28 29 30 31 32

Suitable for conventional 220KV SS only

**Chief Engineer/Projects  
APTRANSCO/VIS/Vijayawada.**

Based on		Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Circuit diagram		Ref.Des. =2KR	
		Approved 20.12.2023		GOURISH HEGDE		SPARE TERMINALS		DCC EFS		+LB	
		Project APTRANSCO				SPARE TERMINALS		Resp. dept. PG-GAS		Rev. ind. en	
		STANDARD DRAWING				HITACHI Hitachi Energy India Limited		Doc. no. 1MNS500925-CAAA		Language en	
Rev.	Revision note	Date	Name							Sheet 120	
										n. sheet 1001	
1MYN691003-102(A3)REV01											

Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet			
A	+A.01	-ACMCB01	Miniature circuit breaker	-	16A	240VAC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/28			
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/28,68			
B	+A.01	-ACMCB02	Miniature circuit breaker	-	2A	240VAC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/28			
	+A.01	-EBL	Bell for DC Fail Alarm	AUH-1122	80-140V/160-280VAC/DC	Three tone electronic bell	1MYN593002-002	Alan electronic systems pvt.ltd		1	1MNS500925-CAAA/30			
	+A.01	-EBZ	Electronic buzzer for Non-Trip Alarm	Buzzer	160-280V AC/DC	96x96mm	1MYN593002-006	Alan electronic systems pvt.ltd		1	1MNS500925-CAAA/112			
	+A.01	-HS	On/off Switch		1-2 pos on/off switch, 5A, Flush mounting	Wing Type knob	1MYN533014-001	Switron		1	1MNS500925-CAAA/28			
C	+A.01	-HT	Hooter for Trip alarm	Hooter	220VDC		1MYN593002-004	Alan electronic systems pvt.ltd	1MYN593002-004	1	1MNS500925-CAAA/112			
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
	Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/112					
D	+A.01	-LK02	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/112			
	+A.01	-PS	AC Socket with Switch	SW	230VAC, 05-15A	Box type, Indian standard	1MYN538103-001	Anchor		1	1MNS500925-CAAA/28			
	+A.01	-TH	Thermostat	TH	230VAC, 15A, 50 Hz	Range : 30-85°C	IN7635-3001	GIRISH EGO		1	1MNS500925-CAAA/28			
E	+A.03	-ACFS02	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/30			
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
	+A.03	-ACLK02	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/30			
Based on				Prepared	13.12.2023	VINOD G	Title 220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR	
				Approved	20.12.2023	GOURISH HEGDE	Parts list		DCC EPB				+LA	
				Project	APTRANSCO		=2KR+LA		Resp. dept.	PG-GAS		Rev. ind.	Language	en
				STANDARD DRAWING			HITACHI Hitachi Energy India Limited						Sheet	1001
Rev.	Revision note		Date	Name						Doc. no.	1MNS500925-AAA		n. sheet	1002
1MYN691003-102(A3)REV01														

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121

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
13	+A.03	-FS12	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/63
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
14	+A.03	-FS27	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/104
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
15	+A.03	-FS28	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/104
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
16	+A.03	-FS29	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/104
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
17	+A.03	-FS35	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/111
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
18	+A.03	-FS36	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/111
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
19	+A.03	-FS37	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/111
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	

**Chief Engineer/Projects  
APTRANSCO/VS/Vijayawada.**

Based on				Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR +LA	
				Approved	20.12.2023	GOURISH HEGDE	Title		Parts list =2KR+LA		DCC EPB					
				Project			APTRANSCO STANDARD DRAWING			PG-GAS		Rev. ind.		Language en		
							HITACHI			Hitachi Energy India Limited		1MNS500925-AAA		Sheet 1002		
Rev.				Revision note			Date			Name			Doc. no.		n. sheet 1003	
1MYN691003-102(A3)REV01																

1		2		3		4		5		6		7		8																																																																																	
Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																																																				
A	20	+A.03	-LK12	Control Fuse Base	-			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/63	A																																																																																			
										1																																																																																					
B	21	+A.03	-LK29	Control Fuse Base	-			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/104	B																																																																																			
										1																																																																																					
C	22	+A.03	-LK37	Control Fuse Base	-			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/111	C																																																																																			
										1																																																																																					
C	23	+A.05	-1MCB01	Miniature circuit breaker	-		220VDC, 2P, C-curve, Icn-10kA	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/31	C																																																																																			
				Auxiliary contact block	-					1		1MNS500925-CAAA/31,72																																																																																			
D	24	+A.05	-1MCB02	Miniature circuit breaker	-		220VDC, 2P, C-curve, Icn-10kA	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/32	D																																																																																			
				Auxiliary contact block	-					1		1MNS500925-CAAA/32,72																																																																																			
D	25	+A.05	-2MCB01	Miniature circuit breaker	-		220VDC, 2P, C-curve, Icn-10kA	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/31	D																																																																																			
				Auxiliary contact block	-					1		1MNS500925-CAAA/31,72																																																																																			
E	26	+A.05	-2MCB02	Miniature circuit breaker	-		220VDC, 2P, C-curve, Icn-10kA	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/32	E																																																																																			
				Auxiliary contact block	-					1		1MNS500925-CAAA/32,72																																																																																			
E	27	+A.05	-FS22	Fuse	-			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/96	E																																																																																			
				Control Fuse Base	-					1																																																																																					
<table border="1"> <tr> <td colspan="4">Based on</td> <td colspan="2">Prepared 13.12.2023</td> <td colspan="2">VINOD G</td> <td colspan="2">Title 220kV LINE FEEDER</td> <td colspan="2">Doc. kind. Parts list</td> <td colspan="2">Ref.Des. =2KR +LA</td> <td colspan="2"></td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Approved 20.12.2023</td> <td colspan="2">GOURISH HEGDE</td> <td colspan="2">Parts list =2KR+LA</td> <td colspan="2">DCC EPB</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Project APTRANSCO</td> <td colspan="2">STANDARD DRAWING</td> <td colspan="2">Hitachi Energy India Limited</td> <td colspan="2">PG-GAS</td> <td colspan="2">Rev. ind.</td> <td colspan="2">Language en</td> </tr> <tr> <td colspan="4">Rev. Revision note</td> <td colspan="2">Date</td> <td colspan="2">Name</td> <td colspan="2"><b>HITACHI</b></td> <td colspan="2">Doc. no. 1MNS500925-AAA</td> <td colspan="2">Sheet 1003</td> <td colspan="2">n. sheet 1004</td> </tr> <tr> <td colspan="16">1MYN691003-102(A3)REV01</td> </tr> </table>																Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA								Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB										Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited		PG-GAS		Rev. ind.		Language en		Rev. Revision note				Date		Name		<b>HITACHI</b>		Doc. no. 1MNS500925-AAA		Sheet 1003		n. sheet 1004		1MYN691003-102(A3)REV01															
Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA																																																																																			
				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB																																																																																					
				Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited		PG-GAS		Rev. ind.		Language en																																																																																	
Rev. Revision note				Date		Name		<b>HITACHI</b>		Doc. no. 1MNS500925-AAA		Sheet 1003		n. sheet 1004																																																																																	
1MYN691003-102(A3)REV01																																																																																															

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123

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
28	+A.05	-FS30	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/106
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
29	+A.05	-FS31	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/106
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
30	+A.05	-FS32	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/106
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
31	+A.05	-LK22	Control Fuse Base	-	32A	<b>Chief Engineer/Projects APTRANSCO/VS/Vijayawada.</b>		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	15A	15A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/96
32	+A.05	-LK32	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	NL	15A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/106	
33	+A.07	-MCB01	Miniature circuit breaker	-	2A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CAAA/33
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CAAA/33,73
34	+A.07	-MCB02	Miniature circuit breaker	-	2A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CAAA/33
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CAAA/33,73
35	+A.07	-MCB03	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CAAA/33
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CAAA/33,73

Based on				Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR +LA	
				Approved	20.12.2023	GOURISH HEGDE	Title		Parts list =2KR+LA		DCC EPB					
				Project	APTRANSCO STANDARD DRAWING		Hitachi Energy India Limited		HITACHI		Resp. dept.	PG-GAS		Rev. ind.	Language en	
Rev.	Revision note			Date	Name						Doc. no.	1MNS500925-AAA		Sheet	1004	
1MYN691003-102(A3)REV01														n. sheet	1005	

8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	125						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	+A.07	-MCB04	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33				
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33,73				
B	+A.07	-MCB05	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33				
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33,73				
C	+A.07	-MCB06	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33				
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33,73				
C	+A.07	-MCB07	Miniature circuit breaker	-	2A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33				
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33,73				
C	+A.07	-MCB08	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33				
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/33,73				
D	+A.09	-89X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		46	1MNS500925-CAAA/66,67,98,99,102,103,119				
	+A.09	-X07	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		4	1MNS500925-CAAA/114,119				
	+A.09	-XX1.2	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		17	1MNS500925-CAAA/64,65,66,67,68,69,70,71,72,73,74,75,76,77,119				
	+A.10	-52X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		69	1MNS500925-CAAA/64,65,92,94,95,98,101,111,119				
E	+A.11	-ACX03	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm <sup>2</sup>	1MYN266003-002	Elmex		8	1MNS500925-CAAA/28,29,30,119				
	+A.11	-X01	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm <sup>2</sup>	1MYN266003-002	Elmex		11	1MNS500925-CAAA/104,119				
	+A.11	-X02	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm <sup>2</sup>	1MYN266003-002	Elmex		48	1MNS500925-CAAA/37,38,42,53,119				
F	+B.01	-DS	Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	1MNS500925-CAAA/28				
Based on				Prepared	13.12.2023	VINOD G	Title 220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR		
				Approved	20.12.2023	GOURISH HEGDE	Parts list		DCC EPB				+LA		
				Project	APTRANSCO		=2KR+LA		Resp. dept.	PG-GAS		Rev. ind.	Language	en	
				STANDARD DRAWING			HITACHI Hitachi Energy India Limited						Sheet	1005	
Rev.	Revision note		Date	Name						Doc. no.		1MNS500925-AAA		n. sheet	1006
1	2	3	4	5	6	7	8								
1MYN691003-102(A3)REV01															

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8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	126																																																														
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																												
A	49	+B.01	-LED	LED Lamp	LED	240VAC, 9.08W		SPECTRUM TECHVISION (P) LTD		1	1MNS500925-CAAA/28																																																												
	50	+B.03	-ANN.	Annunciator unit	SAN 200 - 24 Window	Aux supply U:75-275VAC/DC	without multi tone, Size:34x74mm, 6N case	Seco	1MYN900017-723	1	1MNS500925-CAAA/ 112,113,114																																																												
B	51	+B.05	-MFM-1	MULTI FUNCTION METER_MFM-1	Rish Master 3430	3Ph, 3Ele, 4W; 4-20mA Output-2nos	CTR: TO BE DEFINED; ADOPTED CTR:TO BE DEFINED, PTR: 220kV/110V;CL:0.2 RS485 PORT	Rishab	1MNS500925-MAAA	1	1MNS500925-CAAA/106,109																																																												
	52	+B.05	-MFM-2	MULTI FUNCTION METER_MFM-2	Rish Master 3430	3Ph, 3Ele, 4W; 4-20mA Output-2nos	CTR: TO BE DEFINED; ADOPTED CTR:TO BE DEFINED, PTR: 220kV/110V;CL:0.2 RS485 PORT	Rishab	1MNS500925-MAAA	1	1MNS500925-CAAA/107,109																																																												
C	53	+B.05	-MFM-3	MULTI FUNCTION METER_MFM-3	Rish Master 3430	3Ph, 3Ele, 4W; 4-20mA Output-2nos	CTR: TO BE DEFINED; ADOPTED CTR:TO BE DEFINED, PTR: 220kV/110V;CL:0.2 RS485 PORT	Rishab	1MNS500925-MAAA	1	1MNS500925-CAAA/108,109																																																												
	54	+B.09	-1SL01	Indicator light	-	230V AC, 7mA	WHITE	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/30																																																												
D	55	+B.09	-1SL02	Indicator light	-	60VDC/60VAC, 7mA	RED	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/111																																																												
	56	+B.09	-1SL03	Indicator light	-	60VDC/60VAC, 7mA	YELLOW	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/111																																																												
	57	+B.09	-1SL04	Indicator light	-	60VDC/60VAC, 7mA	BLUE	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/111																																																												
E	58	+B.09	-PB01	Push button	-	1NO, 1NC	Black, Compact, momentary	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/36																																																												
	59	+B.09	-PB02	Push button	-	1NO, 1NC	Black, Compact, momentary	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/36																																																												
	60	+B.09	-PB03	Push button	-	1NO, 1NC	Black, Compact, momentary	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/36																																																												
	61	+B.09	-PB04	Push button	-	1NO, 1NC	Black, Compact, momentary	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/36																																																												
<table border="1"> <tr> <td colspan="3">Based on</td> <td colspan="2">Prepared 13.12.2023</td> <td colspan="2">VINOD G</td> <td colspan="2">Title 220kV LINE FEEDER</td> <td colspan="2">Doc. kind. Parts list</td> <td colspan="1">Ref.Des. =2KR +LA</td> </tr> <tr> <td colspan="3"></td> <td colspan="2">Approved 20.12.2023</td> <td colspan="2">GOURISH HEGDE</td> <td colspan="2">Parts list =2KR+LA</td> <td colspan="2">DCC EPB</td> <td colspan="1"></td> </tr> <tr> <td colspan="3"></td> <td colspan="2">Project APTRANSCO</td> <td colspan="2">STANDARD DRAWING</td> <td colspan="2">Hitachi Energy India Limited</td> <td colspan="2">PG-GAS</td> <td colspan="1">Rev. ind. Language en</td> </tr> <tr> <td colspan="3">Rev. Revision note</td> <td colspan="1">Date</td> <td colspan="1">Name</td> <td colspan="2"></td> <td colspan="2"><b>HITACHI</b></td> <td colspan="2">Doc. no. 1MNS500925-AAA</td> <td colspan="1">Sheet 1006</td> </tr> <tr> <td colspan="3">1MYN691003-102(A3)REV01</td> <td colspan="1"></td> <td colspan="1"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="1">n. sheet 1007</td> </tr> </table>												Based on			Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB						Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited		PG-GAS		Rev. ind. Language en	Rev. Revision note			Date	Name			<b>HITACHI</b>		Doc. no. 1MNS500925-AAA		Sheet 1006	1MYN691003-102(A3)REV01											n. sheet 1007
Based on			Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA																																																												
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Rev. Revision note			Date	Name			<b>HITACHI</b>		Doc. no. 1MNS500925-AAA		Sheet 1006																																																												
1MYN691003-102(A3)REV01											n. sheet 1007																																																												

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet		
62	+B.09	-PB05	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/36		
63	+B.09	-PB06	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/36		
64	+B.09	-PB-AA	Push button	-	1NO, 1NC	Red, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/112		
65	+B.09	-PB-AR	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/112		
66	+B.09	-PB-AT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/112		
67	+B.09	-PB-DC1-FT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/31		
68	+B.09	-PB-DC2-FT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/31		
69	+B.09	-PB-DCFA	Push button	-	1NO, 1NC	Red, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/30		
70	+B.13	-CS-89A	Rotary Switch	6-3-pos. contacts with 0 position	32A, 660V	Spring return with Pistol grip handle 45 degree Switching	1MYN910008-AAAA	Switron	1MYN910008-AAAA	1	1MNS500925-CAAA/100,117		
71	+B.13	-CS-89B	Rotary Switch	6-3-pos. contacts with 0 position	32A, 660V	Spring return with Pistol grip handle 45 degree Switching	1MYN910008-AAAA	Switron	1MYN910008-AAAA	1	1MNS500925-CAAA/100,117		
72	+B.13	-SL03	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110		
73	+B.13	-SL04	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110		
74	+B.13	-SL05	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110		
75	+B.13	-SL06	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110		
76	+B.17	-CS-52	CB Control Switch	22-4-pos. contacts with 0 position, Pos1:T, Pos2:A/T, Pos3:A/C, Pos4:C	32A, 660V	Spring return & lost motion device with Pistol grip handle 45 degree Switching	1MNS500925-NAAA	Switron	1MNS500925-NAAA	1	1MNS500925-CAAA/66,78,92,94,95,111,117		
Based on				Prepared	13.12.2023	VINOD G	Title 220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR
				Approved	20.12.2023	GOURISH HEGDE	Parts list =2KR+LA		DCC EPB				+LA
				Project	APTRANSCO STANDARD DRAWING		Hitachi Energy India Limited		Resp. dept.	PG-GAS	Rev. ind.	Language	en
Rev.	Revision note		Date	Name	<b>HITACHI</b>			Doc. no.		1MNS500925-AAA		Sheet	1007
1MYN691003-102(A3)REV01											n. sheet	1008	

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127

8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	128																																																																																						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																																																				
A	77	+B.17	-LRS	Cam Switch	12-2-pos. contacts	32A, 660V	Stay put with Pistol grip handle,lockable and key removable in both pos.with 90D Switching angle	1MYN910009-AAAG	Switron	1MYN910009-AAAG	1	1MNS500925-CAAA/72,92,94,95,100,117	A																																																																																		
B	78	+B.17	-SL01	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110	B																																																																																		
	79	+B.17	-SL02	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110																																																																																			
	80	+B.17	-SL11	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110																																																																																			
	81	+B.17	-SL12	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110																																																																																			
	82	+B.17	-SL13	Indicator light	-	220VDC, 7mA	BLUE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/111																																																																																			
C	83	+B.17	-SL14	Indicator light	-	220VDC, 7mA	AMBER	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/111	C																																																																																		
	84	+B.17	-SL15	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/111																																																																																			
	85	+B.17	-SL16	Indicator light	-	220VDC	AMBER	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/111																																																																																			
D	86	+B.19	-CS-89L	Rotary Switch	6-3-pos. contacts with 0 position	32A, 660V	Spring return with Pistol grip handle 45 degree Switching	1MYN910008-AAAA	Switron	1MYN910008-AAAA	1	1MNS500925-CAAA/100,117	D																																																																																		
	87	+B.19	-SL07	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110																																																																																			
	88	+B.19	-SL08	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110																																																																																			
E	89	+B.19	-SL09	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110	E																																																																																		
	90	+B.19	-SL10	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/110																																																																																			
	91	+B.19	-SS1	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MNS500925-NAAB	Switron	1MNS500925-NAAB	1	1MNS500925-CAAA/96,117																																																																																			
<table border="1"> <tr> <td colspan="4">Based on</td> <td colspan="2">Prepared 13.12.2023</td> <td colspan="2">VINOD G</td> <td colspan="2">Title 220kV LINE FEEDER</td> <td colspan="2">Doc. kind. Parts list</td> <td colspan="2">Ref.Des. =2KR +LA</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Approved 20.12.2023</td> <td colspan="2">GOURISH HEGDE</td> <td colspan="2">Parts list =2KR+LA</td> <td colspan="2">DCC EPB</td> <td colspan="2"></td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Project APTRANSCO</td> <td colspan="2"></td> <td colspan="2">=2KR+LA</td> <td colspan="2">PG-GAS</td> <td colspan="2">Rev. ind.</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">STANDARD DRAWING</td> <td colspan="2"></td> <td colspan="2">Hitachi Energy India Limited</td> <td colspan="2">Resp. dept.</td> <td colspan="2">Language en</td> </tr> <tr> <td colspan="4">Rev.</td> <td colspan="2">Revision note</td> <td colspan="2">Date</td> <td colspan="2">Name</td> <td colspan="2">Doc. no. 1MNS500925-AAA</td> <td colspan="2">Sheet 1008</td> </tr> <tr> <td colspan="4">1MYN691003-102(A3)REV01</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">n. sheet 1009</td> </tr> </table>												Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA						Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB								Project APTRANSCO				=2KR+LA		PG-GAS		Rev. ind.						STANDARD DRAWING				Hitachi Energy India Limited		Resp. dept.		Language en		Rev.				Revision note		Date		Name		Doc. no. 1MNS500925-AAA		Sheet 1008		1MYN691003-102(A3)REV01												n. sheet 1009	
Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA																																																																																			
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1MYN691003-102(A3)REV01												n. sheet 1009																																																																																			
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8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	130						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	95	+B.33	-R01	Terminal base	RX4	4U12C	Rack mounting	ABB	5619499-A	5	1MNS500925-CAAA/ 68,92,101,113,117				
			-R01.101.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1			
			-R01.101.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1			
			-R01.107.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1			
			-R01.107.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1			
			-R01.113.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1			
			-R01.113.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1			
			-R01.119.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK271-018-AS		1			
			-R01.119.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK271-018-AS		1			
			-R01.125.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK271-018-AS		1			
			-R01.125.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS		1			
			-R01.131.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS		1			
			-R01.131.301	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS		1			
			-R01.137.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS		1			
-R01.137.301	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1							
-R01.143.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1							
-R01.149.101	Auxiliary relay	RXMA1	230VAC, 50-60Hz	2NO, 2NC	RK 211052-BS	ABB	RK 211052-BS	1							
-R01.149.301	Auxiliary relay	RXMA1	230VAC, 50-60Hz	2NO, 2NC	RK 211052-BS	ABB	RK 211052-BS	1							
-R01.155.101	DC-1 Supervision Relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1							
-R01.155.301	DC-2 Supervision Relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1							
96	+B.33	-SS	Synchronizing socket	SS Type	500VAC/DC	Panel mounting socket	IN 5381 3001-1	BCH Electric limited		1	1MNS500925-CAAA/96				
97	+B.33	-TS_BCU	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CAAA/62,63				
98	+B.33	-TTB	Test Terminal Block for TVM	TTB	1100V, 50A	Compact, Flush mounting	1MYN266015-003	Deepl		1	1MNS500925-CAAA/104,105				
99	+B.41	-SH	Heating	SPHT	230V AC, 50W		IN6677-3001-2	KWK RESISTORS / TGS		1	1MNS500925-CAAA/28				
100	+C.01	-FS01	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/38				
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1					
Based on			Prepared 13.12.2023			VINOD G			Title 220kV LINE FEEDER			Doc. kind. Parts list		Ref.Des. =2KR	
			Approved 20.12.2023			GOURISH HEGDE			Parts list =2KR+LA			DCC EPB		+LA	
			Project APTRANSCO			STANDARD DRAWING			Hitachi Energy India Limited			Resp. dept. PG-GAS		Rev. ind. Language en	
Rev. Revision note			Date			Name			HITACHI			Doc. no. 1MNS500925-AAA		Sheet 1010	
1MYN691003-102(A3)REV01												n. sheet 1011			

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
108	+C.01	-FS09	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
109	+C.01	-FS10	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/63
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
110	+C.01	-FS11	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/63
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
111	+C.01	-LK03	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/38
112	+C.01	-LK06	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/38
113	+C.01	-LK09	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/38
114	+C.03	-2FS01	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/37
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	

Based on				Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR +LA	
				Approved	20.12.2023	GOURISH HEGDE	Title		Parts list =2KR+LA		DCC EPB					
				Project	APTRANSCO STANDARD DRAWING		Hitachi Energy India Limited		HITACHI		Resp. dept.	PG-GAS		Rev. ind.	Language en	
Rev.	Revision note			Date	Name						Doc. no.	1MNS500925-AAA		Sheet	1012	
1MYN691003-102(A3)REV01														n. sheet	1013	



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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
122	+C.03	-FS13	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/63
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
123	+C.03	-LK13	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/63
124	+C.05	-1FS01	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/37
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
125	+C.05	-1FS02	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/37
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
126	+C.05	-1FS03	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/37
			Control Fuse Base	-	32A	<b>Chief Engineer/Projects APTRANSCO/VS/Vijayawada.</b>	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
127	+C.05	-1FS04	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/37
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
128	+C.05	-1FS05	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/37
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	

Based on				Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER		Doc. kind. Parts list	Ref.Des. =2KR +LA	
				Approved 20.12.2023	GOURISH HEGDE	Parts list =2KR+LA		DCC EPB		
				Project APTRANSCO		Hitachi Energy India Limited		PG-GAS	Rev. ind.	Language en
				STANDARD DRAWING		<b>HITACHI</b>		1MNS500925-AAA		Sheet 1014
Rev.	Revision note	Date	Name					Doc. no.	n. sheet 1015	



8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	136						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	135	+C.07	-52_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
B	136	+C.07	-52_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/98,110,111				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
C	137	+C.07	-52_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
D	138	+C.07	-89A_CLS_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/66,98,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
E	139	+C.07	-89A_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
Based on			Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR +LA	
			Approved	20.12.2023	GOURISH HEGDE	Title		Parts list =2KR+LA		DCC EPB					
			Project	APTRANSCO STANDARD DRAWING		Title		=2KR+LA		PG-GAS		Rev. ind.		Language en	
						HITACHI		Hitachi Energy India Limited		Doc. no.		1MNS500925-AAA		Sheet 1016	
Rev.	Revision note		Date	Name								n. sheet		1017	
1MYN691003-102(A3)REV01															
1	2	3	4	5	6	7	8								

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8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	137						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	140	+C.07	-89A_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/66,98,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
B	141	+C.07	-89A_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
C	142	+C.07	-89B_CLS_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/67,98,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
D	143	+C.07	-89B_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
E	144	+C.07	-89B_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/66,98,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
Based on				Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER	Doc. kind.	Parts list	Ref.Des.	=2KR		
				Approved	20.12.2023	GOURISH HEGDE	Parts list			DCC	EPB		+LA		
				Project	APTRANSCO		=2KR+LA		Resp. dept.	PG-GAS		Rev. ind.	Language	en	
				STANDARD DRAWING			HITACHI		Hitachi Energy India Limited		Doc. no.		1MNS500925-AAA	Sheet	1017
Rev.	Revision note		Date	Name								n. sheet	1018		
1MYN691003-102(A3)REV01															

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8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	138																																																																																						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																																																				
A	145	+C.07	-89B_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/98																																																																																				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1																																																																																					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1																																																																																						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1																																																																																					
B	146	+C.07	-89L_CLS_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/67,99,110																																																																																				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1																																																																																					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1																																																																																						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1																																																																																					
C	147	+C.07	-89L_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/99																																																																																				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1																																																																																					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1																																																																																						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1																																																																																					
D	148	+C.07	-89L_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/67,99,110																																																																																				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1																																																																																					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1																																																																																						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1																																																																																					
E	149	+C.07	-89L_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/99																																																																																				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1																																																																																					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1																																																																																						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1																																																																																					
<table border="1"> <tr> <td colspan="4">Based on</td> <td colspan="2">Prepared 13.12.2023</td> <td colspan="2">VINOD G</td> <td colspan="2">Title 220kV LINE FEEDER</td> <td colspan="2">Doc. kind. Parts list</td> <td colspan="2">Ref.Des. =2KR +LA</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Approved 20.12.2023</td> <td colspan="2">GOURISH HEGDE</td> <td colspan="2">Parts list =2KR+LA</td> <td colspan="2">DCC EPB</td> <td colspan="2"></td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Project APTRANSCO</td> <td colspan="2"></td> <td colspan="2">=2KR+LA</td> <td colspan="2">PG-GAS</td> <td colspan="2">Rev. ind. en</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">STANDARD DRAWING</td> <td colspan="2"></td> <td colspan="2">HITACHI Hitachi Energy India Limited</td> <td colspan="2">Resp. dept.</td> <td colspan="2">Language en</td> </tr> <tr> <td colspan="4">Rev. Revision note</td> <td colspan="2">Date</td> <td colspan="2">Name</td> <td colspan="2">Doc. no. 1MNS500925-AAA</td> <td colspan="2">Sheet 1018</td> <td colspan="2">n. sheet 1019</td> </tr> <tr> <td colspan="4">1MYN691003-102(A3)REV01</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> </table>												Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA						Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB								Project APTRANSCO				=2KR+LA		PG-GAS		Rev. ind. en						STANDARD DRAWING				HITACHI Hitachi Energy India Limited		Resp. dept.		Language en		Rev. Revision note				Date		Name		Doc. no. 1MNS500925-AAA		Sheet 1018		n. sheet 1019		1MYN691003-102(A3)REV01													
Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA																																																																																			
				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB																																																																																					
				Project APTRANSCO				=2KR+LA		PG-GAS		Rev. ind. en																																																																																			
				STANDARD DRAWING				HITACHI Hitachi Energy India Limited		Resp. dept.		Language en																																																																																			
Rev. Revision note				Date		Name		Doc. no. 1MNS500925-AAA		Sheet 1018		n. sheet 1019																																																																																			
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8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	139						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	150	+C.07	-89LE_CLS_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/68,99,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
B	151	+C.07	-89LE_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/99				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
C	152	+C.07	-89LE_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/67,99,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
D	153	+C.07	-89LE_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CAAA/99				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
E	154	+C.07	-K1 -K1.101.101 -K1.101.301 -K1.113.101  -K1.113.301 -K1.125.101 -K1.125.301 -K1.137.101 -K1.137.301  -K1.143.101	Terminal base	RXZ 4	4U12C	Rail mounting	ABB	1MRK000893-D	1MRK000893-D	4				
				Bistable relay	RXMFV 21	220VDC	12NO, 2NC	ABB	1MRK030405-AS	1MRK030405-AS	1	1MNS500925-CAAA/35,37,70			
				Bistable relay	RXMFV 21	220VDC	12NO, 2NC	ABB	1MRK030405-AS	1MRK030405-AS	1	1MNS500925-CAAA/35,37,70			
				Bistable relay	RXMFV 21	220VDC	7NO, 7NC	ABB	1MRK030401-AS	1MRK030401-AS	1	1MNS500925-CAAA/36,39,70,71			
				Bistable relay	RXMFV 21	220VDC	7NO, 7NC	ABB	1MRK030401-AS	1MRK030401-AS	1	1MNS500925-CAAA/36,39,71			
				Bistable relay	RXMFV 21	220VDC	7NO, 7NC	ABB	1MRK030401-AS	1MRK030401-AS	1	1MNS500925-CAAA/36,40,71			
				Auxiliary relay	RXMH2	220VDC	4NO, 4NC, without flag	ABB	RK 223069-AS	RK 223069-AS	1	1MNS500925-CAAA/31			
				Auxiliary relay	RXMM1	220-250VDC	6NO	ABB	RK214-003-AS	RK214-003-AS	1	1MNS500925-CAAA/78,92,94			
				Auxiliary relay	RXSF1	220-250VDC	4NC, 2NO	ABB	RK271-009-AS	RK271-009-AS	1	1MNS500925-CAAA/43,54,101,114			
				Auxiliary relay	RXSF1	220-250VDC	6NO	ABB	RK271-018-AS	RK 271018-AS	1	1MNS500925-CAAA/43,54,101			
Based on				Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER	Doc. kind.	Parts list	Ref.Des.	=2KR		
				Approved	20.12.2023	GOURISH HEGDE	Parts list		=2KR+LA		DCC EPB		+LA		
				Project	APTRANSCO		=2KR+LA			Resp. dept.	PG-GAS	Rev. ind.	Language	en	
				STANDARD DRAWING		HITACHI		Hitachi Energy India Limited		Doc. no.		1MNS500925-AAA		Sheet	1019
Rev.	Revision note		Date	Name								n. sheet		1020	
1MYN691003-102(A3)REV01															

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet			
A	1	+A.01	-AC MCB01	Miniature circuit breaker	-	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/29			
				Auxiliary contact block	-	1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/29,68			
B	2	+A.01	-HS	On/off Switch		1-2 pos on/off switch, 5A, Flush mounting	1MYN533014-001	Switron		1	1MNS500925-CAAA/29			
	3	+A.01	-PS	AC Socket with Switch	SW	230VAC, 05-15A	1MYN538103-001	Anchor		1	1MNS500925-CAAA/29			
	4	+A.01	-TH	Thermostat	TH	250VAC, 15A, 50 Hz	IN7635-3001	GIRISH EGO		1	1MNS500925-CAAA/29			
	5	+A.10	-BBX04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		16	1MNS500925-CAAA/86,90.1,120		
	6	+A.10	-X01	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm <sup>2</sup>	1MYN266003-002	Elmex		32	1MNS500925-CAAA/42,53,120		
C	7	+A.10	-X02	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm <sup>2</sup>	1MYN266003-002	Elmex		15	1MNS500925-CAAA/42,53,120		
	8	+B.01	-DS	Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	1MNS500925-CAAA/29		
	9	+B.01	-LED	LED Lamp	LED	240VAC, 9.08W		SPECTRUM TECHVISION (P) LTD		1	1MNS500925-CAAA/29			
D	10	+B.05	-FS21	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/42			
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
	11	+B.05	-FS22	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/42			
E	12	+B.05	-FS23	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/42			
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
F	13	+B.05	-FS24	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/53			
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
Based on				Prepared	13.12.2023	VINOD G	Title 220kV LINE FEEDER		Doc. kind.	Parts list		Ref.Des.	=2KR	
				Approved	20.12.2023	GOURISH HEGDE	Parts list		DCC EPB				=LB	
				Project	APTRANSCO		=2KR+LB		Resp. dept.	PG-GAS		Rev. ind.	Language	en
				STANDARD DRAWING			HITACHI Hitachi Energy India Limited				Rev. ind.	Language	en	
Rev.	Revision note		Date	Name						Doc. no.	1MNS500925-AAB		Sheet	1021
1MYN691003-102(A3)REV01												n. sheet	1022	

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141



Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
21	+B.05	-LK28	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	NL	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CAAA/42	
22	+B.09	-1MCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
23	+B.09	-1MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
24	+B.09	-1MCB03	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
25	+B.09	-1MCB04	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
26	+B.09	-2MCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
27	+B.09	-2MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
28	+B.09	-2MCB03	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
29	+B.09	-2MCB04	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, lcn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CAAA/34,74
30	+B.13	-XX1.1	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		11	1MNS500925-CAAA/43,46,54,72,87,115,120

Based on				Prepared 13.12.2023 VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR	
				Approved 20.12.2023 GOURISH HEGDE		Parts list =2KR+LB		DCC EPB		+LB	
				Project APTRANSCO		Hitachi Energy India Limited		Resp. dept. PG-GAS		Rev. ind.	
				STANDARD DRAWING		<b>HITACHI</b>				Language en	
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-AAB		Sheet 1023	
1MYN691003-102(A3)REV01										n. sheet 1024	

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143

1	2	3	4	5	6	7	8																																																																												
Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																																								
31	+B.13	-XX1.2	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		5	1MNS500925-CAAA/ 43,44,45,120																																																																								
32	+B.13	-XX2.1	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		6	1MNS500925-CAAA/57,120																																																																								
33	+B.13	-XX2.2	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		2	1MNS500925-CAAA/120																																																																								
34	+B.17	-X04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		45	1MNS500925-CAAA/ 45,48,56,59,89,90,120																																																																								
35	+B.21	-X04A	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		85	1MNS500925-CAAA/ 43,45,54,56,68,69,70, 71,72,74,75,86,89,90, 92,94,95,97,113,114, 120																																																																								
36	+B.33	-FOTEX04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		34	1MNS500925-CAAA/ 46,47,57,58,97,120																																																																								
37	+B.37	-52X04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm <sup>2</sup> , grey	IN2662-3001-3	Elmex		17	1MNS500925-CAAA/44,55,120																																																																								
38	+B.37	-ACX03	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm <sup>2</sup>	1MYN266003-002	Elmex		3	1MNS500925-CAAA/29,120																																																																								
39	+B.37	-DCX03	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm <sup>2</sup>	1MYN266003-002	Elmex		15	1MNS500925-CAAA/34,120																																																																								
40	+B.41	-HT	Heating	SPHT	240V AC, 50W		IN6677-3001-2	KWK RESISTORS / TGS		1	1MNS500925-CAAA/29																																																																								
41	+D.04	-FN1	Numerical line distance protection IED Power supply module Binary input module Binary output module  Binary input/output module Ethernet module Transformer input module Rack casing 15 LED indication module	REL670  PSM BIM BOM  IOM  SFP  TRM  1/2x19" REX670 rack casing LED	  90-250VDC 220-250VDC, 50ma  220-250VDC  100Base-FX, LC connectors  1A, 0-340V, 50/60Hz  3xI/O, 1xTRM	  50/60Hz 16 inputs 24 output relays  8 inputs, 12 outputs  Version 2.2  6I+6U  1/2x19", Version 2.2 Normal size, Rex670 V2.2	1MNS500925-XLAA  . - -  - - - - - .	ABB  ABB ABB ABB  ABB  ABB  ABB ABB	1MNS500925-XLAA  . - -  - - - - - .	1  1 1  1 1 1 1 3	  1MNS500925-CAAA/41,46,49 1MNS500925-CAAA/43,44,50 1MNS500925-CAAA/ 46,48,50,54,72,87,89, 90,115  1MNS500925-CAAA/ 45,48,51,115  1MNS500925-CAAA/49  1MNS500925-CAAA/42,49  1MNS500925-CAAA/41																																																																								
42	+D.12	-FN2	M2 Protn relay	Micom P545	110-250VDC, 100-240VAC	With fiber optic converter	P54531QB6M0K58M	Schneider / GE	1MNS500925-XLAB	1	1MNS500925-CAAA/ 43,48,52,53,54,55,56, 57,59,60,61,72,88,89, 90,115																																																																								
43	+D.18	-86A -PB	Push button	-	1NO, 1NC	Green, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CAAA/89																																																																								
<table border="1"> <tr> <td colspan="3">Based on</td> <td colspan="2">Prepared 13.12.2023</td> <td colspan="2">VINOD G</td> <td colspan="2">Title 220kV LINE FEEDER</td> <td colspan="2">Doc. kind. Parts list</td> <td colspan="1">Ref.Des. =2KR</td> </tr> <tr> <td colspan="3"></td> <td colspan="2">Approved 20.12.2023</td> <td colspan="2">GOURISH HEGDE</td> <td colspan="2">Parts list =2KR+LB</td> <td colspan="2">DCC EPB</td> <td colspan="1">+LB</td> </tr> <tr> <td colspan="3"></td> <td colspan="2">Project APTRANSCO</td> <td colspan="2">STANDARD DRAWING</td> <td colspan="2">Hitachi Energy India Limited</td> <td colspan="2">PG-GAS</td> <td colspan="1">Rev. ind.</td> </tr> <tr> <td colspan="3"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"><b>HITACHI</b></td> <td colspan="2">Rev. ind.</td> <td colspan="1">Language en</td> </tr> <tr> <td colspan="3">Rev. Revision note</td> <td colspan="2">Date</td> <td colspan="2">Name</td> <td colspan="2"></td> <td colspan="2">Doc. no. 1MNS500925-AAB</td> <td colspan="1">Sheet 1024</td> </tr> <tr> <td colspan="3"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="1">n. sheet 1025</td> </tr> </table>												Based on			Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LB		DCC EPB		+LB				Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited		PG-GAS		Rev. ind.								<b>HITACHI</b>		Rev. ind.		Language en	Rev. Revision note			Date		Name				Doc. no. 1MNS500925-AAB		Sheet 1024												n. sheet 1025
Based on			Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR																																																																								
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144

8814490/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	145					
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet			
A	44	+D.18	-86B -PB	Push button	-	1NO, 1NC	Green, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CAAA/90	A	
	45	+D.18	-D18.01	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	1MNS500925-CAAA/43,46,47,56,57,58,69,118		
B	46	+D.18	-D18.02	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	1MNS500925-CAAA/45,46,47,54,57,58,69,118	B	
	47	+D.18	-D18.03	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	1MNS500925-CAAA/43,45,54,56,118		
C	48	+D.24	-D24 -D24.101.101 -D24.101.301	Terminal base Auxiliary relay High speed trip relay	RX4 RXME18 RXMS1	4U12C 220-250VDC 220VDC	Rack mounting 2NO 6NO, Variant B	5619499-A RK221-825-AS RK 216063-AS	ABB ABB ABB	5619499-A RK221-825-AS RK 216063-AS	5 1 1	1MNS500925-CAAA/87,91,93 1MNS500925-CAAA/56,86,87,91,93	C	
			-D24.107.101 -D24.107.301	Auxiliary relay High speed trip relay	RXME18 RXMS1	220-250VDC 220VDC	2NO 6NO, Variant B	RK221-825-AS RK 216063-AS	ABB ABB	RK221-825-AS RK 216063-AS	1 1	1MNS500925-CAAA/87,91,93 1MNS500925-CAAA/56,86,87,91,93		
			-D24.113.101 -D24.113.301	Auxiliary relay High speed trip relay	RXME18 RXMS1	220-250VDC 220VDC	2NO 6NO, Variant B	RK221-825-AS RK 216063-AS	ABB ABB	RK221-825-AS RK 216063-AS	1 1	1MNS500925-CAAA/87,91,93 1MNS500925-CAAA/56,86,87,91,93		
			-D24.119.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	1MNS500925-CAAA/44,55,69,86,89,91,93,95,115		
D			-D24.119.313	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	1MNS500925-CAAA/71,89	D	
			-D24.137.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	1MNS500925-CAAA/44,55,70,90.1,91,93,95,97,115		
			-D24.149.101	Auxiliary relay	RXSF1	220-250VDC	2NO, 4NC	RK271-019-AS	ABB	RK271-019-AS	1	1MNS500925-CAAA/45,46,56,57,69,115		
			-D24.149.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	1MNS500925-CAAA/75,90.1		
E			-D24.155.101 -D24.155.301	Auxiliary relay Auxiliary relay	RXSF1 RXSF1	220-250VDC 220-250VDC	6NO 6NO	RK271-018-AS RK271-018-AS	ABB ABB	RK 271018-AS RK 271018-AS	1 1	1MNS500925-CAAA/43,47,115 1MNS500925-CAAA/54,58	E	
<b>Chief Engineer/Projects APTRANSCO/VS/Vijayawada.</b>														
Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER			Doc. kind. Parts list		Ref.Des. =2KR	
				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LB			DCC EPB		+LB	
				Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited			Resp. dept. PG-GAS		Rev. ind. Language en	
Rev. Revision note				Date		Name		<b>HITACHI</b>			Doc. no. 1MNS500925-AAB		Sheet 1025	
1MYN691003-102(A3)REV01													n. sheet 1026	

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
A	+D.29	-D29	Terminal base	RX4	4U12C	Rack mounting	5619499-A	ABB	5619499-A	5	1MNS500925-CAAA/88,91,93 1MNS500925-CAAA/ 45,86,88,91,93
		-D29.101.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	
		-D29.101.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1	
		-D29.107.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	
		-D29.107.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1	
		-D29.113.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	
		-D29.113.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1	
		-D29.119.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	
		-D29.119.313	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	
		-D29.137.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	
-D29.137.301	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1			
-D29.143.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1			
-D29.143.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1			
-D29.149.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1			
-D29.149.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1			
-D29.155.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1			
-D29.155.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1			
50	+D.39	-TS1_M-1_21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CAAA/41,42
51	+D.39	-TS1_M-2_21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CAAA/52,53
52	+D.39	-TS2_M-1_21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CAAA/ 41,48,87,89,90
53	+D.39	-TS2_M-2_21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CAAA/ 52,59,88,89,90

Drawing approval subject to valid vendor registration

1No.Spare Trip relay RXMVB4 and 1No spare supervision relay  
TSR-B shall be supplied as loose and fixed in the panel.

**Chief Engineer/Projects**  
**APTRANSCO/VS/Vijayawada.**

Suitable for conventional 220KV SS only

Based on		Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR	
		Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LB		DCC EPB		+LB	
		Project APTRANSCO						Resp. dept. PG-GAS		Rev. ind. Language en	
		STANDARD DRAWING				HITACHI Hitachi Energy India Limited				Sheet 1026	
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-AAB		n. sheet	
1MYN691003-102(A3)REV01											