

CUSTOMER : APTRANSCO Drawing approval subject to valid vendor registration

CUSTOMER REF. PO.NO : AS APPLICABLE Suitable for conventional 220KV SS only

SUBSTATION : AS APPLICABLE

EQUIPMENT : 220kV LINE CONTROL AND RELAY PANEL (DIFF. PROTN. SINGLE BUS)

DRAWING REF. : General Arrangement : 1MNS500925-ABBA
 Bill of Material : 1MNS500925-BBA, BBB
 Schematic Drawings : 1MNS500925-CBBA

STANDARD BAY REF. : =2KLA, 2RLB

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

STATION AUX. SUPPLY:- 220V DC

NOTE:- 89LE EARTH SWITCH AND RELATED EQUIPMENTS
 ARE APPLICABLE ONLY FOR BR PALLI STATION.

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KLA, 2RLB
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Title page	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-ABBA	
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						No.sheets 146

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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									
Rev. Revision note				Date Name				Doc. no. 1MNS500925-ABBA						Sheet 2		n. sheet 3	
1MYN691003-102(A3)REV01																	

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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	
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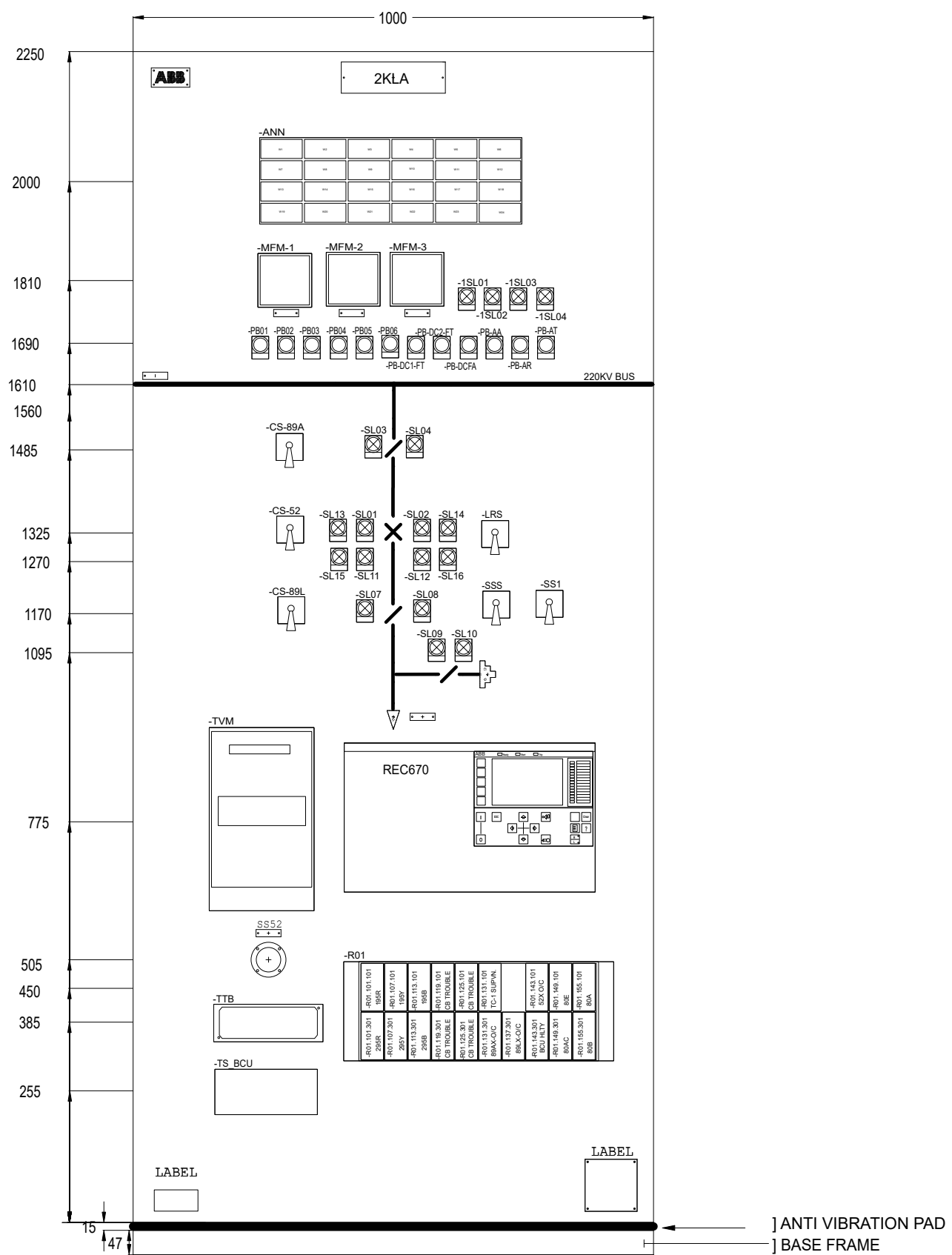
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1002	1003	Parts list	=2KR+LA		
1003	1004	Parts list	=2KR+LA		
1004	1005	Parts list	=2KR+LA		
1005	1006	Parts list	=2KR+LA		
1006	1007	Parts list	=2KR+LA		
1007	1008	Parts list	=2KR+LA		
1008	1009	Parts list	=2KR+LA		
1009	1010	Parts list	=2KR+LA		
1010	1011	Parts list	=2KR+LA		
1011	1012	Parts list	=2KR+LA		
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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	1021	Parts list	=2KR+LA		
1021	1022	Parts list	=2KR+LB		
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1026	1027	Parts list	=2KR+LB		

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.	Language en	
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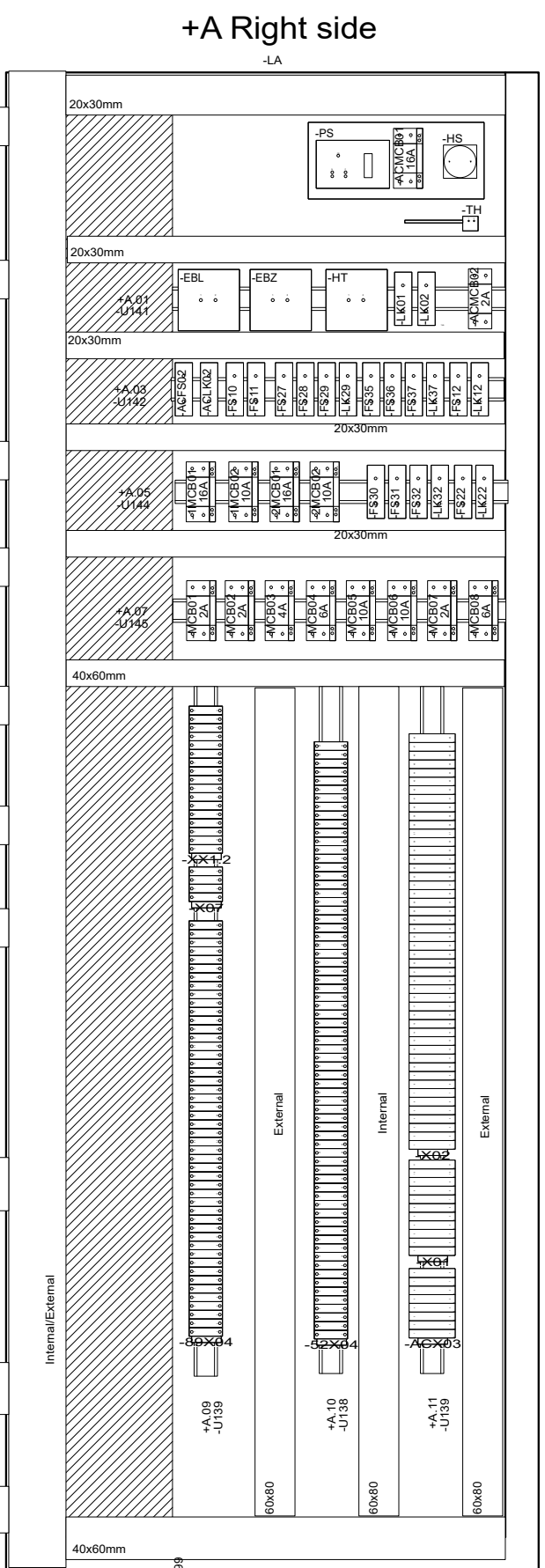
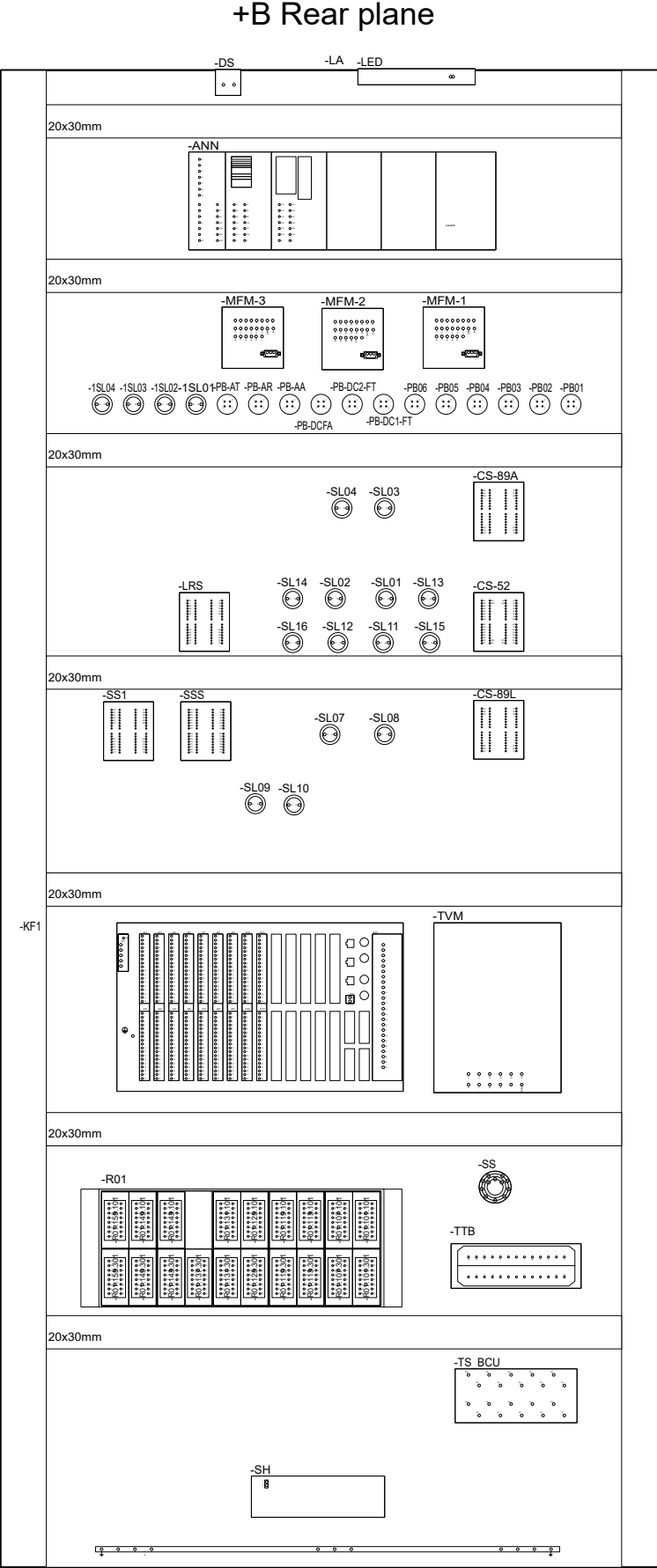
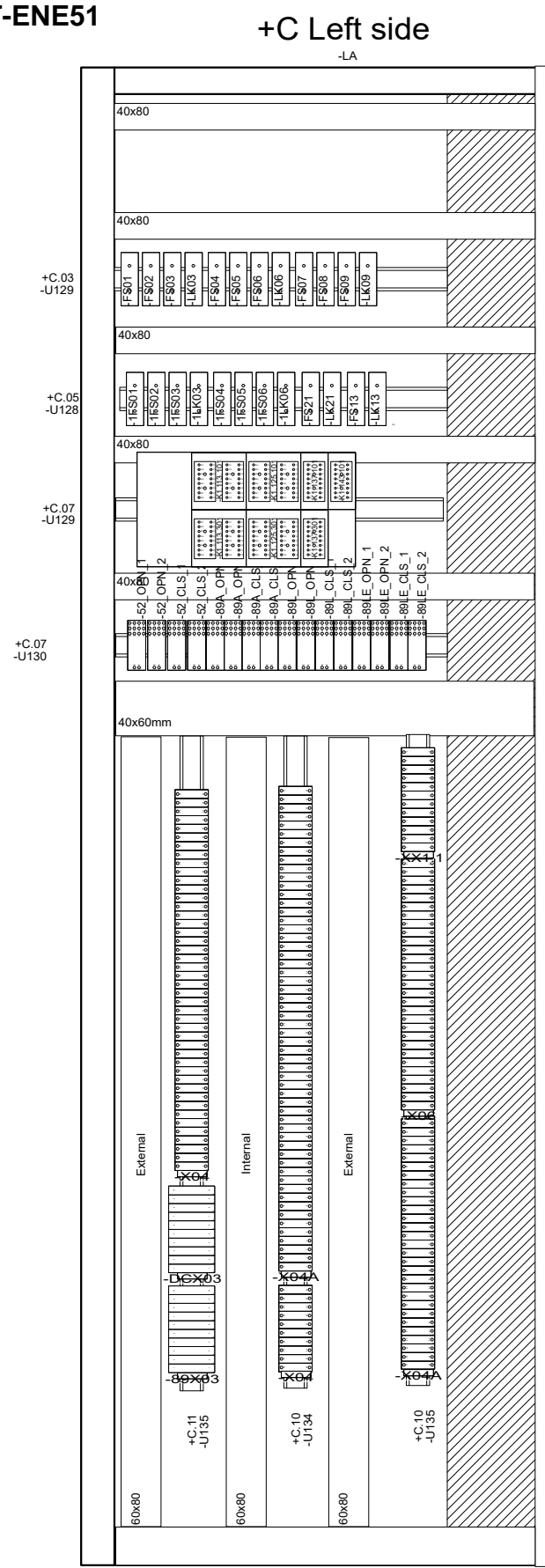


PANEL: 2KRLA	
ITEM DESIGNATION	DESCRIPTION
ANN.	ANNUNCIATOR
MFM-1	MULTI FUNCTION METER-1
MFM-2	MULTI FUNCTION METER-2
MFM-3	MULTI FUNCTION METER-3
PB01	BUS PT SET FOR 21M1
PB02	LINE PT SET FOR 21M1
PB03	LINE PT SET FOR 21M2
PB04	BUS PT SET FOR 21M2
PB05	BUS PT SET FOR METERING
PB06	LINE PT SET FOR METERING
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-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
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
R01.137.301	89LX-O & 89LX-C
R01.143.101	AC SUPPLY SUPVN. RELAY
R01.149.101	DC SUPPLY FAILACCEPT 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.

**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	Control & Relay Panel	DCU ELU	+LA
		Project APTRANSCO		Front View	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
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NOTE:
INTERNAL VIEW IS FOR INFORMATION ONLY.
(MAY CHANGE DURING MANUFACTURING).

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 +LA
	DCC ELU	Rev. ind.	
Resp. dept.	PG-GAS	Language	en
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		n. sheet	12.1

Title	220kV LINE FEEDER Control & Relay Panel Inside view
	Hitachi Energy India Limited
HITACHI	

Doc. no.	1MNS500925-ABBA
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8814630/2024/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

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

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/

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	HITACHI	Doc. no. 1MNS500925-ABBA	Sheet 12.1
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Device name	Description (1)	Description (2)	Type designation
-CS-89A	89A 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
-R01.113.101	TC-1 Supvn (195B)	195B	TSR-B
-R01.113.301	TC-2 Supvn (295B)	295B	TSR-B

Device name	Description (1)	Description (2)	Type designation
-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
-R01.137.301	89LX-O	89LX-C	RXMM1
-R01.143.101	52X CLOSE CMD	52X OPEN CMD	RXMM1
-R01.143.301	BCU HEALTHY	BCU HEALTHY	RXSF1
-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	--	-
-SL07	89L ISOL. OPEN	--	-
-SL08	89L ISOL. CLOSE	--	-
-SL09	89LE ES. OPEN	--	-

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	HITACHI	Doc. no. 1MNS500925-ABBA	Sheet 12.2
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Device name	Description (1)	Description (2)	Type designation
-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
-SS1	SYN ON/OFF	--	16-2-pos. contacts

Device name	Description (1)	Description (2)	Type designation
-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
-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
-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 BUS PT	FUSE FOR SYNC. CKT	-

Plane: C

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

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	HITACHI	Doc. no. 1MNS500925-ABBA	Sheet 12.3
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A

B

C

D

E

F

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Device name	Description (1)	Description (2)	Type designation
-K1.113.101	PT SELECTION RELAY-21M1	75C	RXMFV 21
-K1.113.301	PT SELECTION RELAY-21M2	75D	RXMFV 21
-K1.125.101	PT SELECTION RELAY METERING	75E	RXMFV 21
-K1.125.301	DC-1 C/O RELAY	RXMH2	RXMH2
-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
-K1.143.101	CB TC-1 SUPVN. HEALTHY	CB TC-2 SUPVN. HEALTHY	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 BUS PT	FUSE FOR SYNC. CKT	15A

Drawing approval subject to valid vendor registration

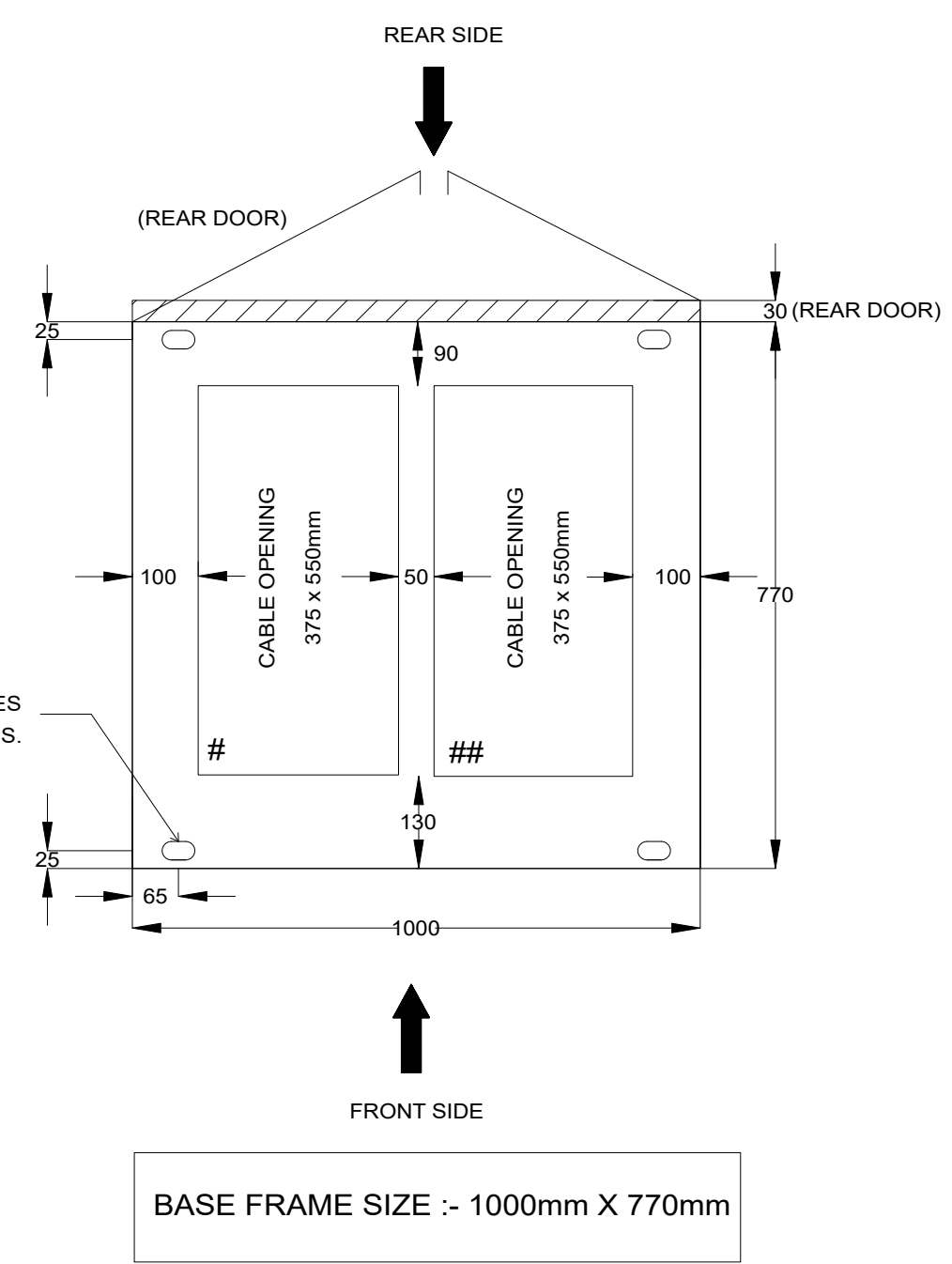
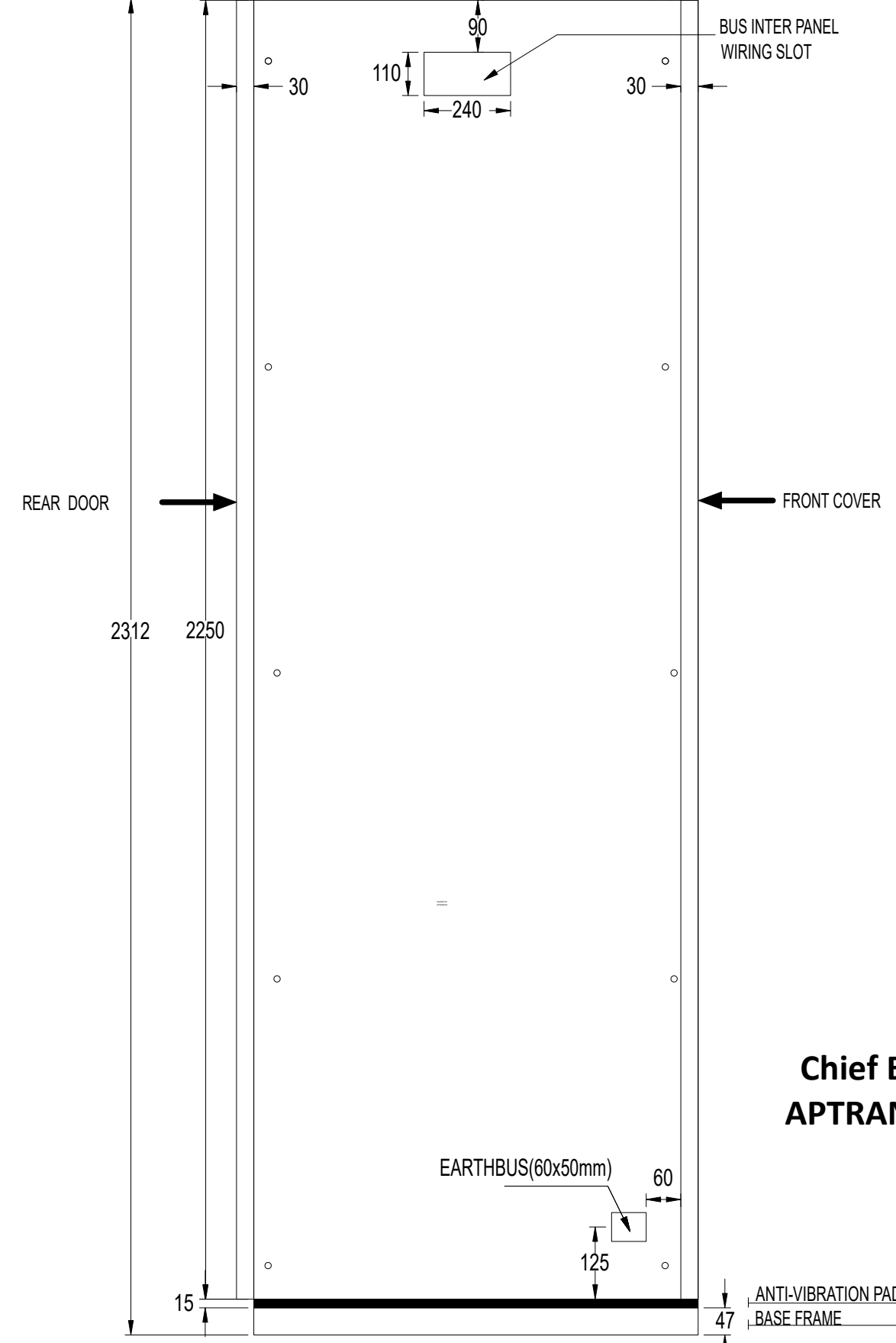
**Chief Engineer/Projects
APTRANSCO/VIS/Vijayawada.**

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
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	+LA
		Project APTRANSCO		Legend list	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-ABBA	
Rev.	Revision note	Date	Name			Sheet 12.4
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FOUNDATION DETAILS:-



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

- 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-ABBA		Sheet 13
Rev.	Revision note	Date	Name			n. sheet	14
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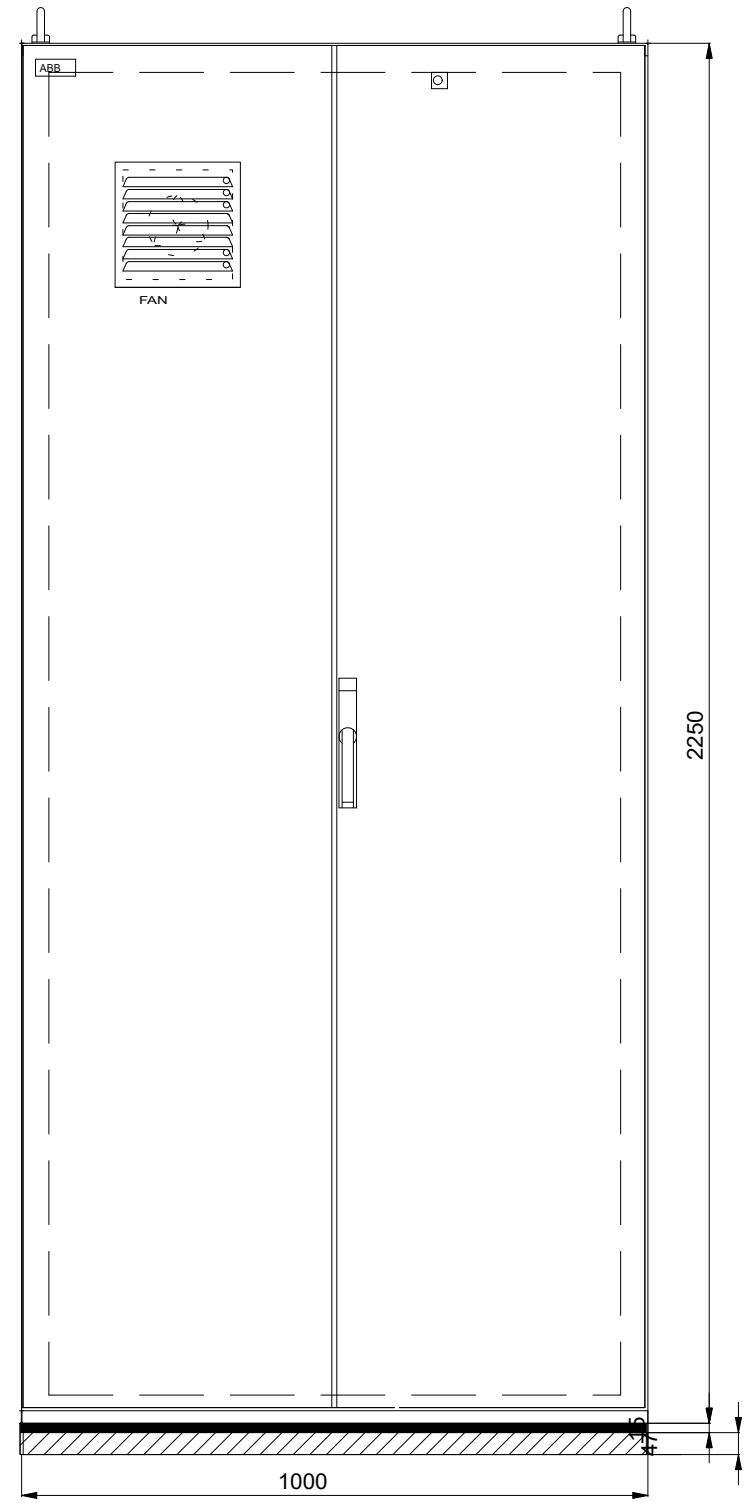
PANEL DETAILS:-

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 ² , Phase : RYB, Neutral : Black, 2x2.5mm ² for TVM P		
Wire size for DC Circuits	1.5 Sqmm, Grey		
Wire size for Aux.AC Circuit	1.5mm ² , Grey		
Wire size for Earthing	2.5mm ² , 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		

REAR VIEW



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. en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-ABBA	
Rev.	Revision note	Date	Name			Sheet 14
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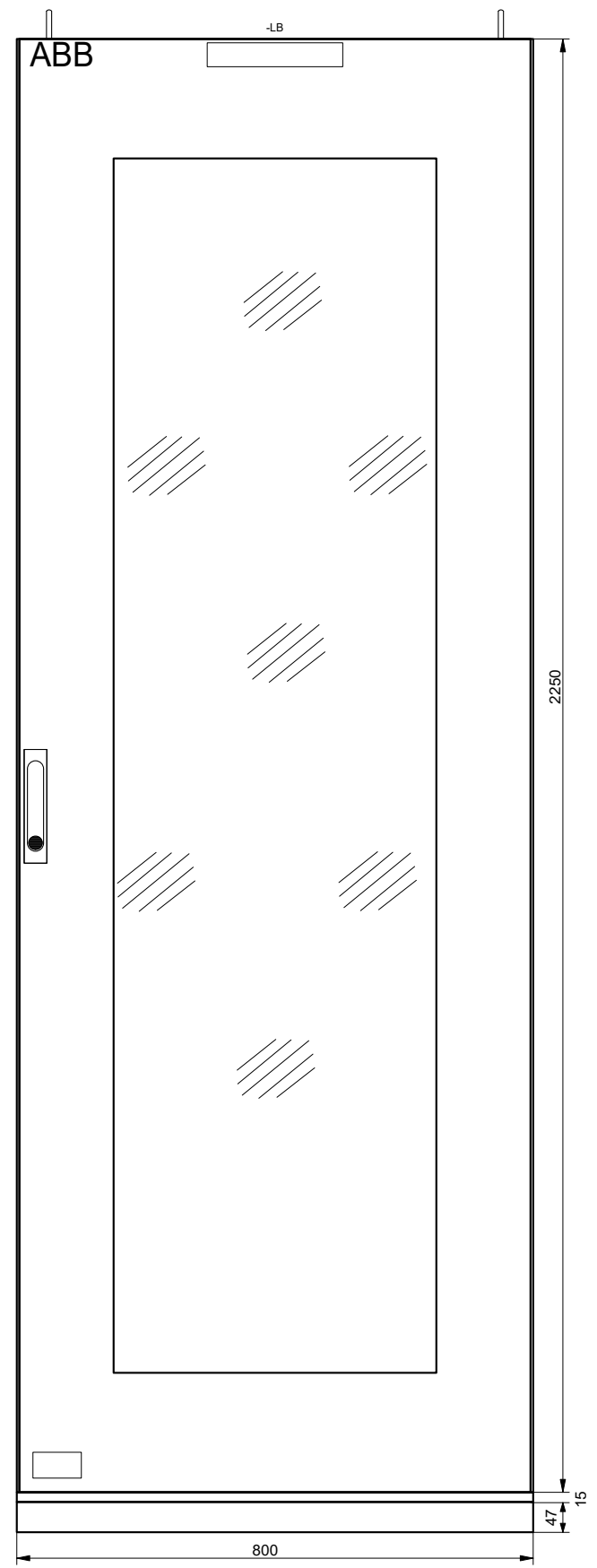
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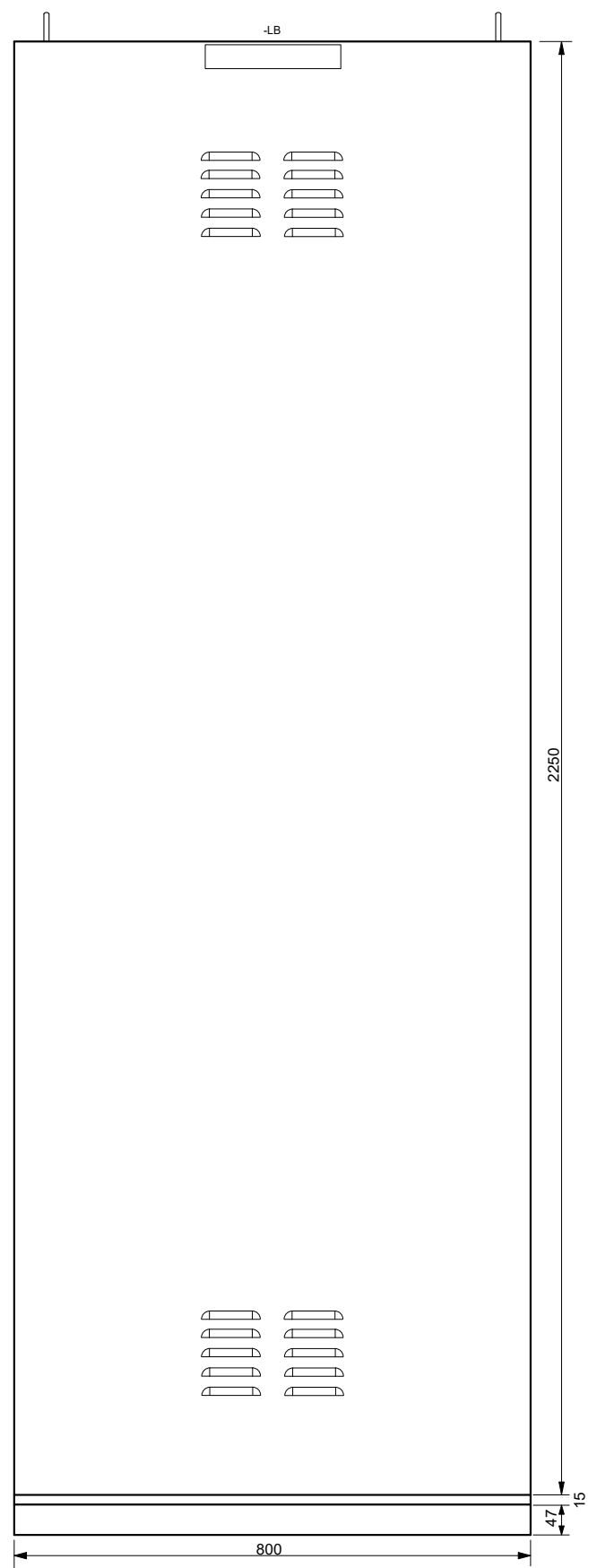
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Front view with door



Rear View



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	
Cubicle Colour		
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	
Wires (FRLS)		
Wire size of CT Circuits	2.5mm ² , Phase : RYB, Neutral : Black	
Wire size of PT Circuits	1.5mm ² , Phase : RYB, Neutral : Black, 2x2.5mm ² for TVM PT	
Wire size of DC Circuits	1.5mm ² , Grey	
Wire size of Aux.AC Circuit	1.5mm ² , Grey	
Wire size of Earthing	2.5mm ² , 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)		
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	
LABELS		
	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	

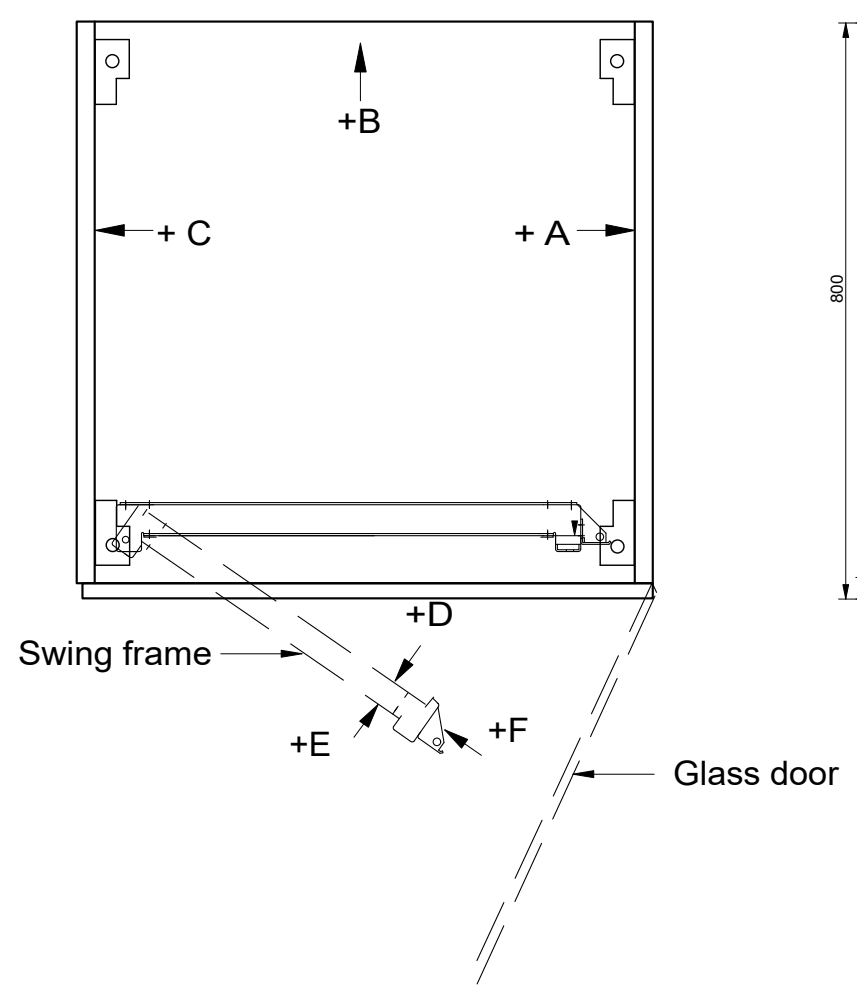
Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LB
		Project APTRANSCO		Front view	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-ABBA	
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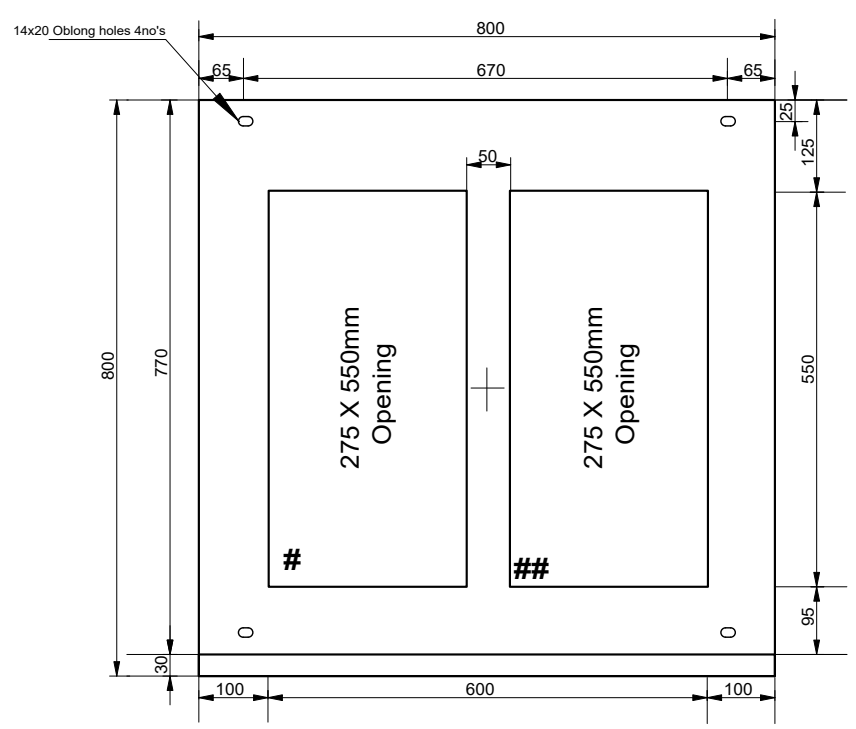
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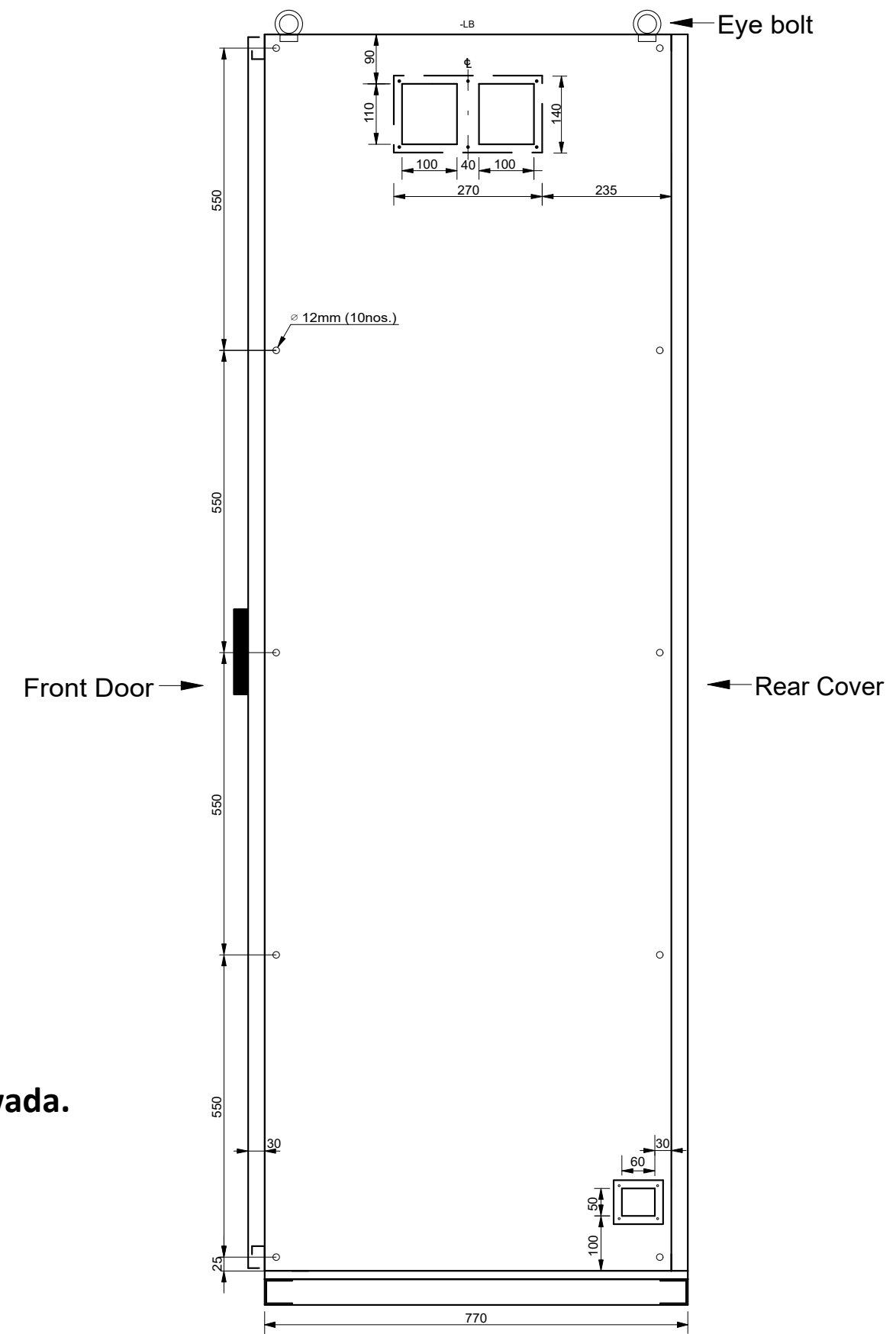
Cross sectional view



Foundation Details



Side view



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

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

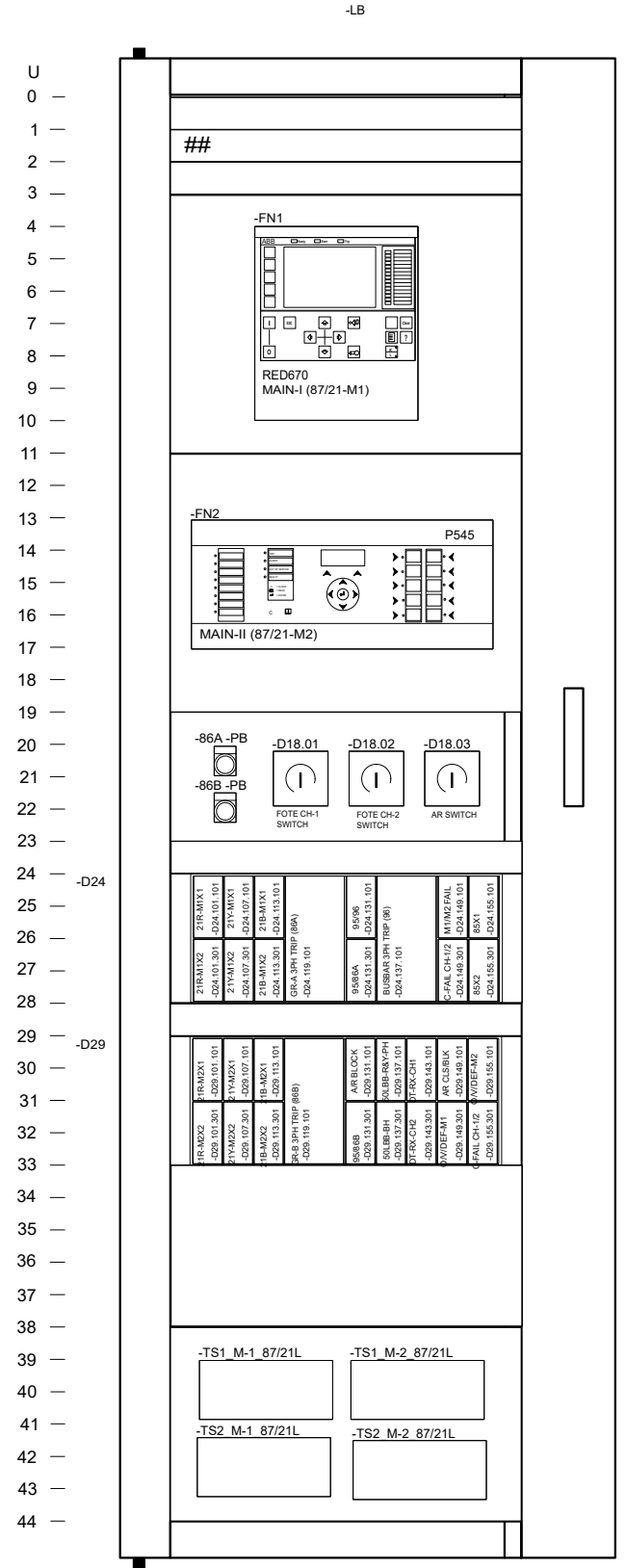
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC ELU	+LB
		Project APTRANSCO		Section view incl. location designation	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-ABBA	Sheet 17	n. sheet 18
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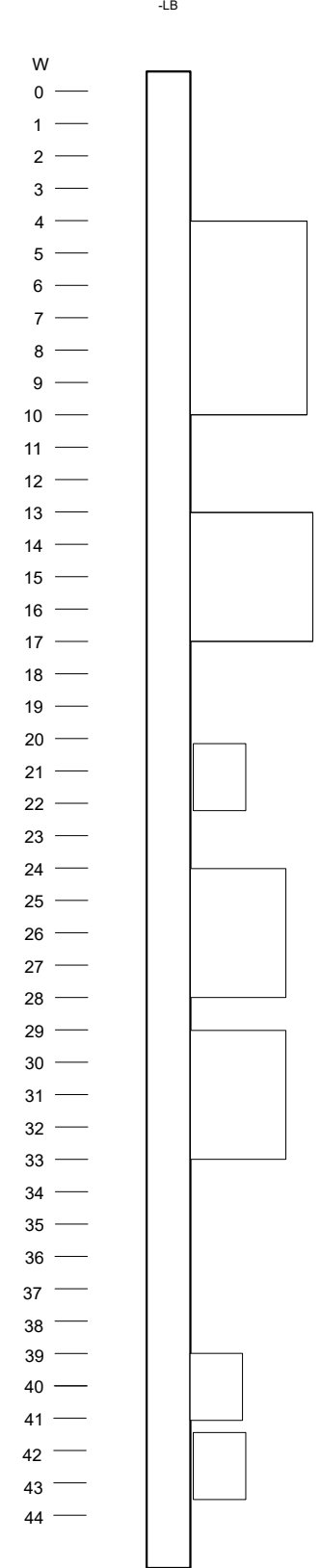
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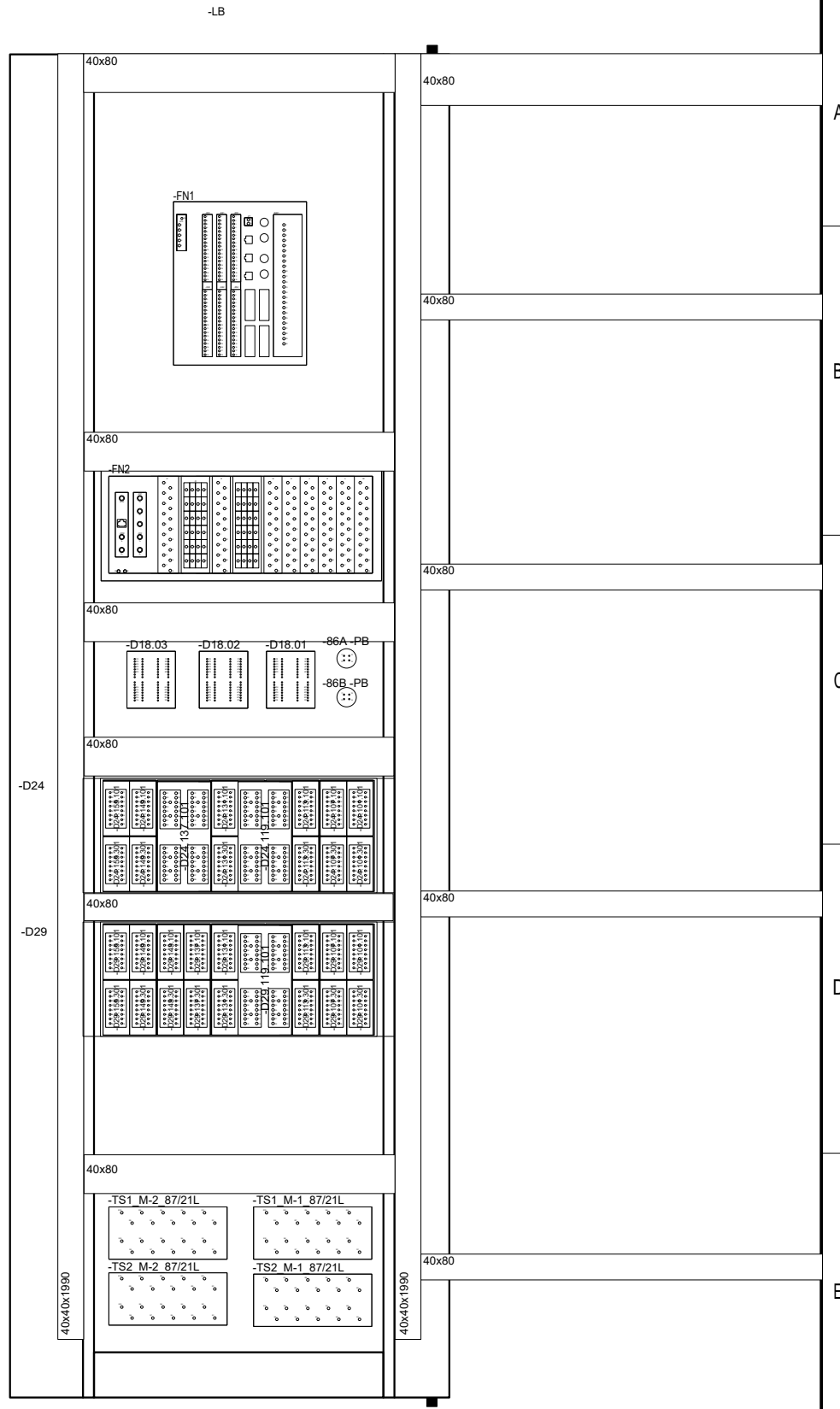
+F Front view hinged frame



+F Side view hinged frame



+D Back view hinged frame



NOTE:- PROVISION FOR ETHERNET SWITCH PROVIDED.

ITEM DESIGNATION	DESCRIPTION
FN1	DIFF/DIST PROTECTION M1-RELAY(REDD670)
FN2	DIFF/DIST 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
D24.131.101	BUSBAR TRIP RELAY SUPERVISION
D24.131.301	GR-A TRIP RELAY SUPERVISION
D24.137.101	BUSBAR TRIP RELAY
D24.149.101	AUX. RELAY FOR M1/2 RELAY FAIL
D24.149.301	AUX. RELAY FOR CARRIER SEND CH-1
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
D29.131.101	A/R BLOCK
D29.131.301	GR-B TRIP RELAY SUPERVISION
D29.137.101	LBB RE-TRIP R-PH & Y-PH
D29.137.301	LBB RE-TRIP B-PH
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_87/21L	TEST SWITCH FOR M-1 PROTN. RELAY
TS1/2_M-2_87/21L	TEST SWITCH FOR M-2 PROTN. RELAY

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

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		Hinged frame view	PG-GAS	Rev. ind. en
		STANDARD DRAWING		Hitachi Energy India Limited	Doc. no. 1MNS500925-ABBA	Language en
Rev.	Revision note	Date	Name			Sheet 18
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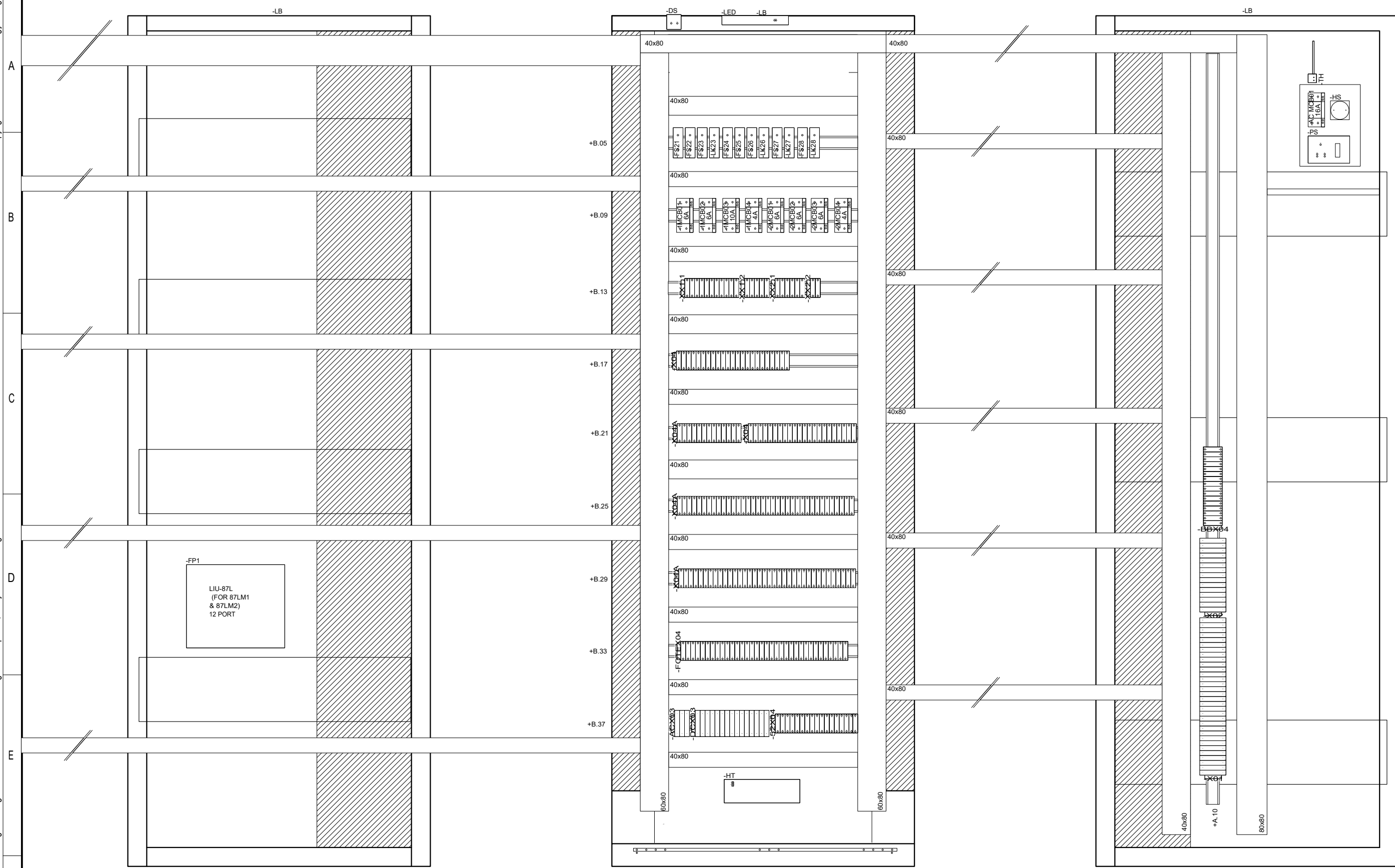
14630/2024/EEMRT-ENE51

+C Left side

+B Rear plane

+A Right side

454



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	+LB
		Project APTRANSCO		Inside view	PG-GAS	Rev. ind. en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-ABBA	
Rev.	Revision note	Date	Name			Sheet 19
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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 BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	-
-FS22	Y-PH BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	-
-FS23	B-PH 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 BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	-
-HT	Heating	--	SPHT
-LED	Lamp	--	LED
-LK23	NU BUS PT/LINE CVT	FOR M-1 PROTN. RELAY	NL

Device name	Description (1)	Description (2)	Type designation
-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 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
-D24.131.101	BB/LBB Trip relay Supvn.	--	TSR-B
-D24.131.301	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	C-FAIL CH-1	C-FAIL CH-2	RXSF1
-D24.155.101	85X1-CODE-1	85X1-CODE-2	RXSF1
-D24.155.301	85X2-CODE-1	85X2-CODE-2	RXSF1
-D29.101.101	1PH TRIP R-PH	21R-M2X1	RXME18

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	HITACHI	Doc. no. 1MNS500925-ABBA	Sheet 19.1
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Device name	Description (1)	Description (2)	Type designation
-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
-D29.131.101	A/R BLOCK	--	RXMS1
-D29.131.301	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 Differential/Distance Protn	RED670	RED670
-FN2	M2 Protn relay	--	Micom P545
-TS1_M-1_87/21L	TS_M-1_87/21L	--	MPG
-TS1_M-2_87/21L	TS_M-2_87/21L	--	MPG
-TS2_M-1_87/21L	TS_M-1_87/21L	--	MPG
-TS2_M-2_87/21L	TS_M-2_87/21L	--	MPG

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. 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			Language en	
Rev.	Revision note	Date	Name	HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-ABBA	Sheet 19.2
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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

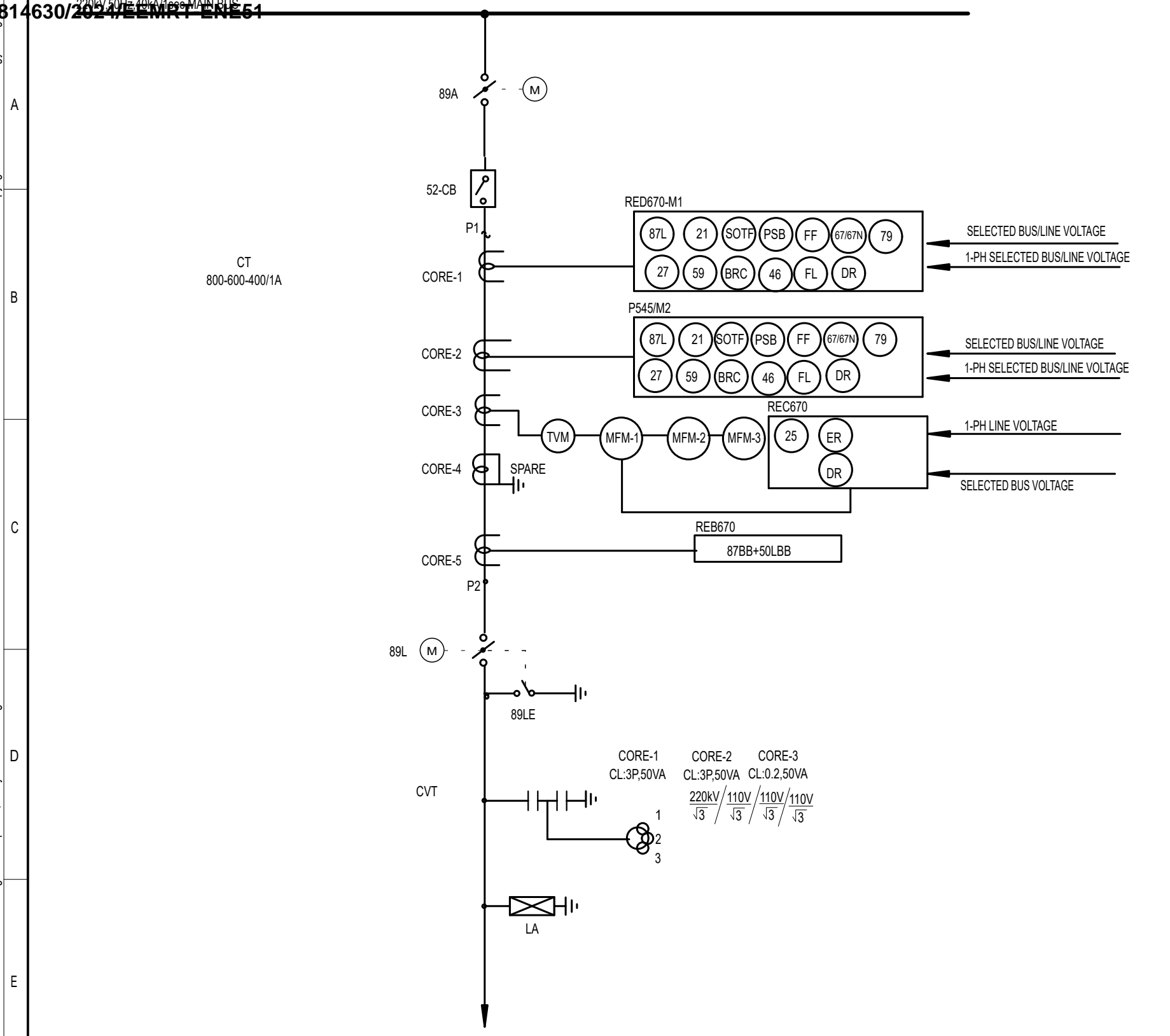
FERRULE NOMENCLATURE			
FERRULE 'A' : CT CIRCUIT- MAIN PROTECTION	FERRULE 'B' : CT CIRCUIT- BUSBAR PROTECTION	FERRULE 'C' : CT CIRCUIT- BACKUP PROTECTION	
FERRULE 'D' : CT CIRCUIT- METERING	FERRULE 'E' : PT CKTS	FERRULE 'H' : AUXILIARY AC CKTS	
FERRULE 'J' : AUXILIARY DC CKTS	FERRULE 'K' : CONTROL CKTS	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-CBBA	Sheet 21	
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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:
- 87L- DIFFERENTIAL PROTN.
 - 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- UNDERVOLTAGE PROTN
 - 59- OVERVOLTAGE PROTN
 - BRC- BROKEN CONDUCTOR PROTN
 - DR- DATA RECORDER
 - FL- FAULT LOCATER
 - ER- EVENT RECORDER

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-CBBA	Sheet 22	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
DIFFERENTIAL/DISTANCE PROTECTION TRIP(PDIF/PDIS,87/21)-MAIN 1	1 Ph	IP						TP	TP		IP				TP			BUILT IN MAIN-1 RED670
DIFFERENTIAL/DISTANCE PROTECTION TRIP(PDIF/PDIS,87/21)-MAIN 1	3 Ph		IP	IP	IP													BUILT IN MAIN-1 RED670
DIRECTIONAL EARTH FAULT(PDEF,67N)-MAIN 1	3 Ph			IP	IP	TP	TP											BUILT IN MAIN-1 RED670
OVERVOLTAGE PROTECTION TRIP(PTOV,59)-MAIN 1	3 Ph			IP	IP	TP	TP											BUILT IN MAIN-1 RED670
CH-1 CARRIER FAIL & CH-2 CARRIER FAIL			IP															
DIFFERENTIAL/DISTANCE PROTECTION TRIP(PDIF/PDIS,87/21)-MAIN 2	1 Ph	IP						TP	TP		IP					TP		BUILT IN MAIN-2 P545
DIFFERENTIAL/DISTANCE PROTECTION TRIP(PDIF/PDIS,87/21)-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

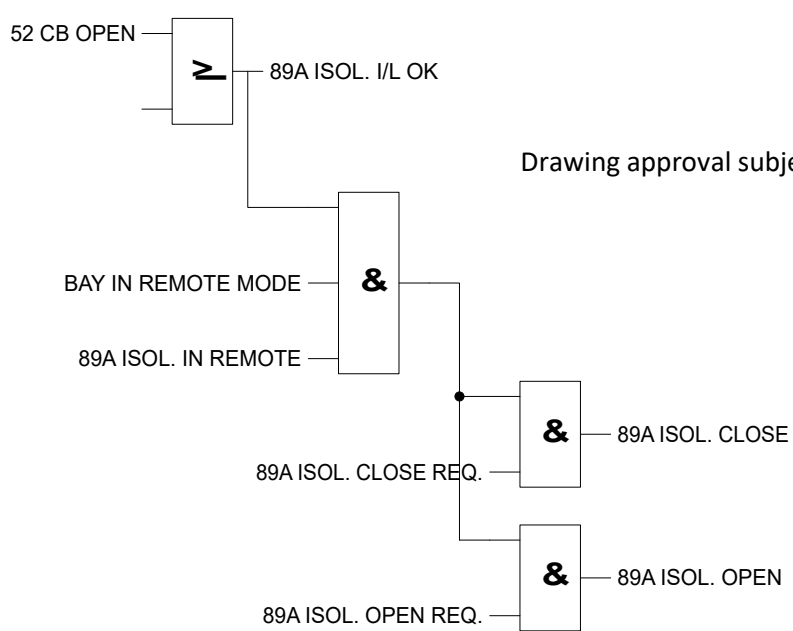
Based on		Prepared 13.12.2023 VINOD G		Title 220kV LINE FEEDER		Doc. kind. Circuit diagram		Ref.Des. =2KR	
		Approved 20.12.2023 GOURISH HEGDE		Control & Relay Panel		DCC EFS			
		Project APTRANSCO		Trip Logics		PG-GAS		Rev. ind.	
		STANDARD DRAWING		Hitachi Energy India Limited		Language en			
Rev.	Revision note	Date	Name	HITACHI		Doc. no. 1MNS500925-CBBA		Sheet 23	
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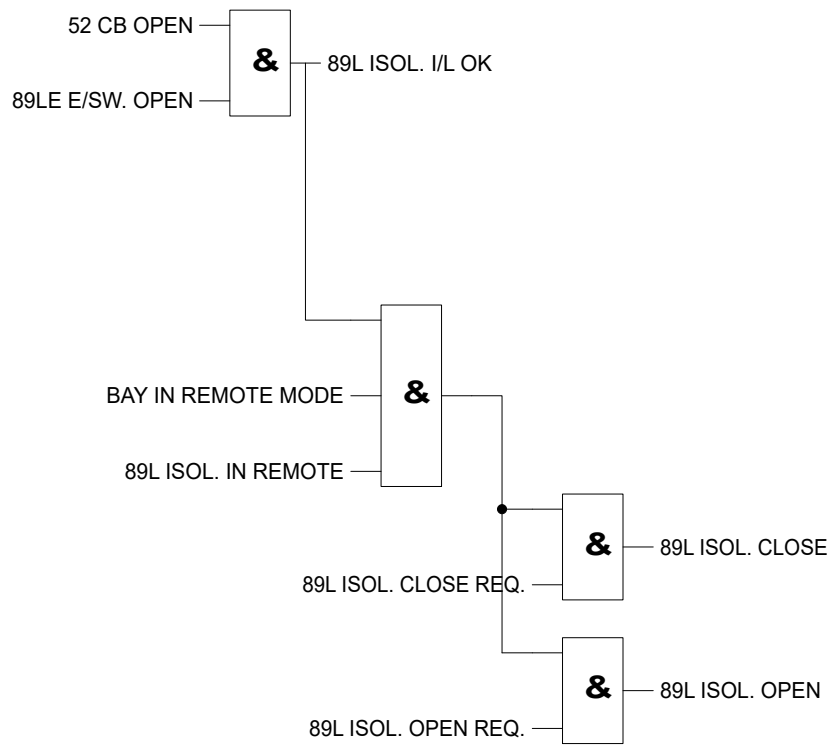
89A ISOL. OPEN/CLOSE INTERLOCK



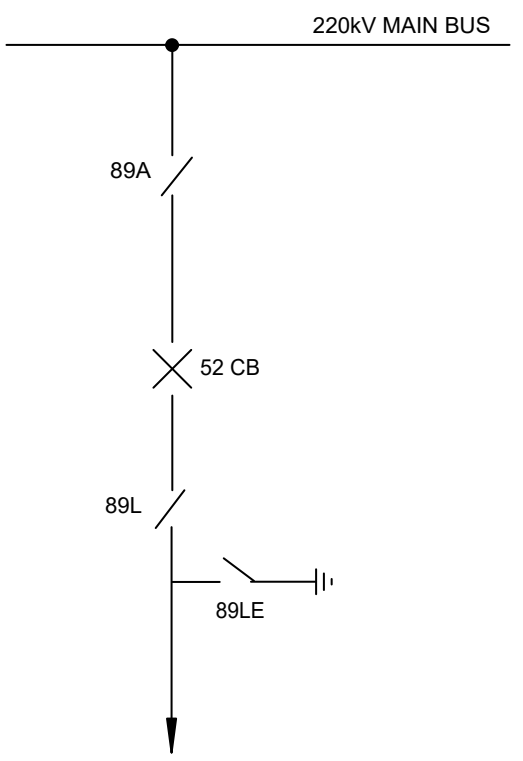
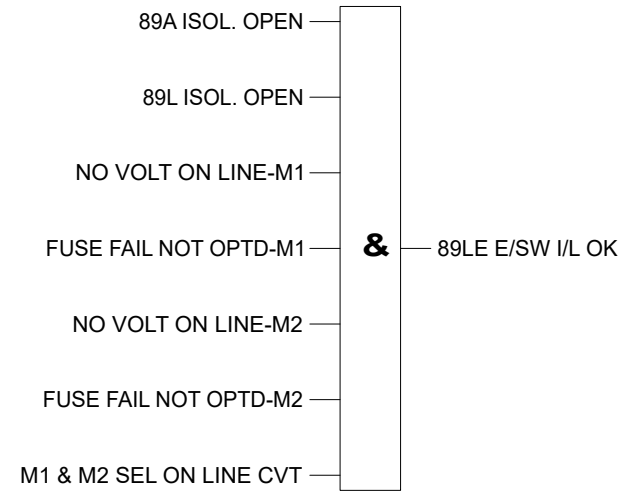
Drawing approval subject to valid vendor registration

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

89L ISOL. OPEN/CLOSE INTERLOCK



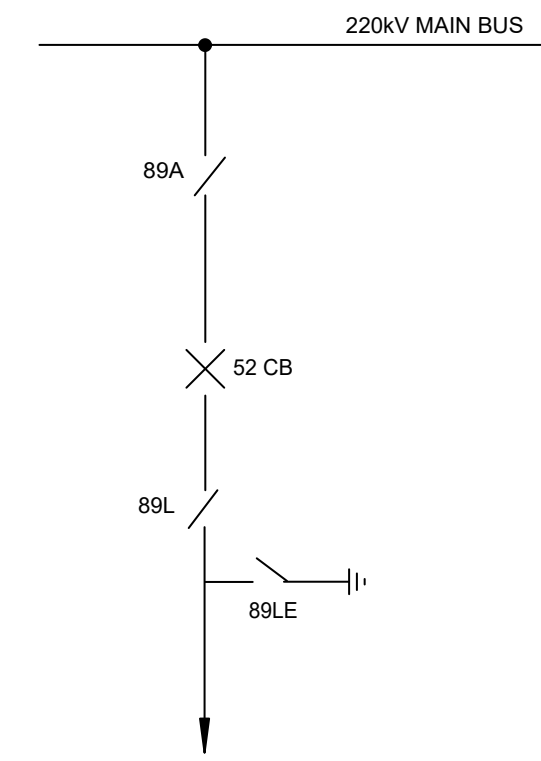
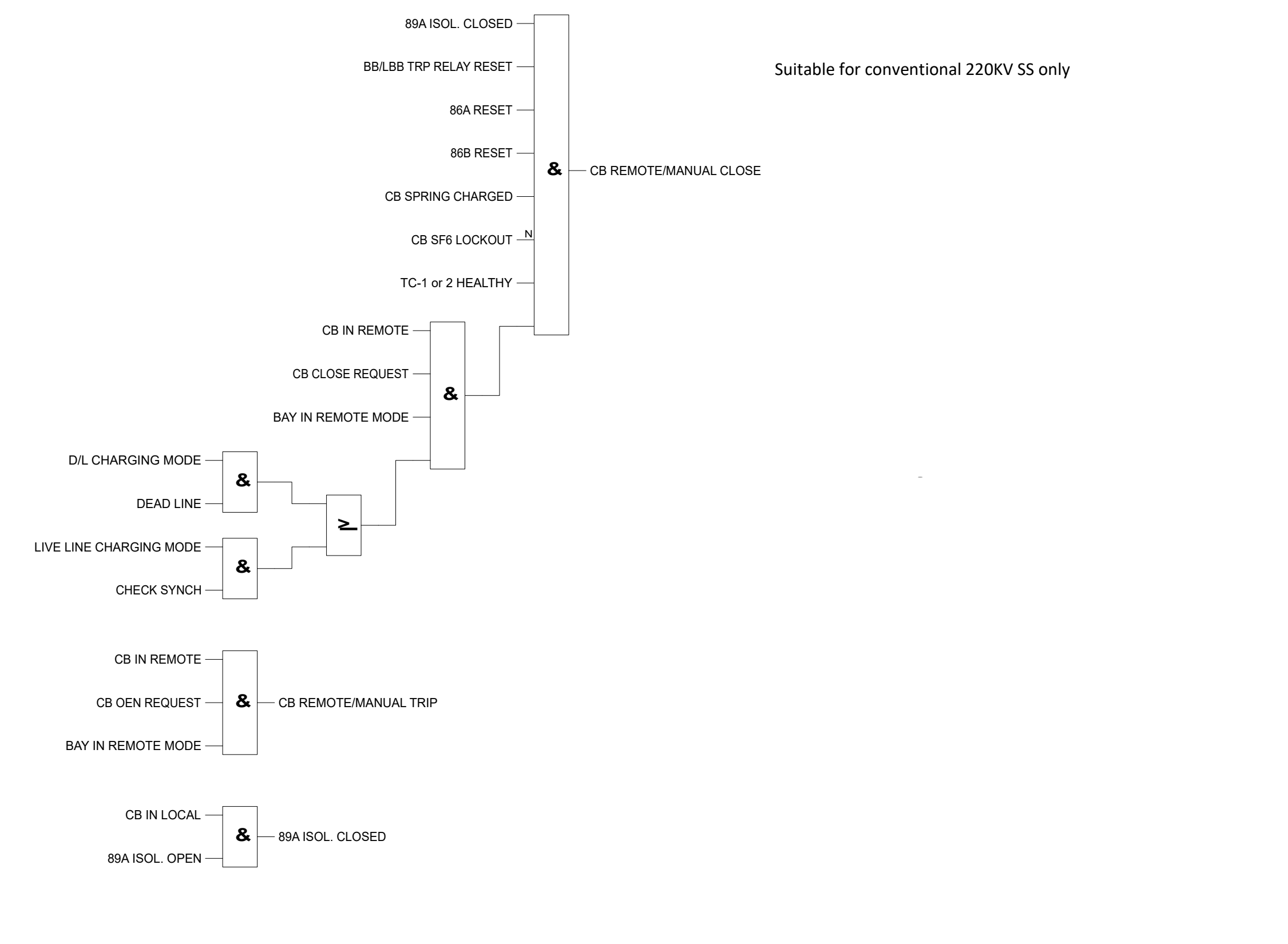
89LE E/SW. OPEN/CLOSE INTERLOCK



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	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 24
1MYN691003-102(A3)REV01						n. sheet 25

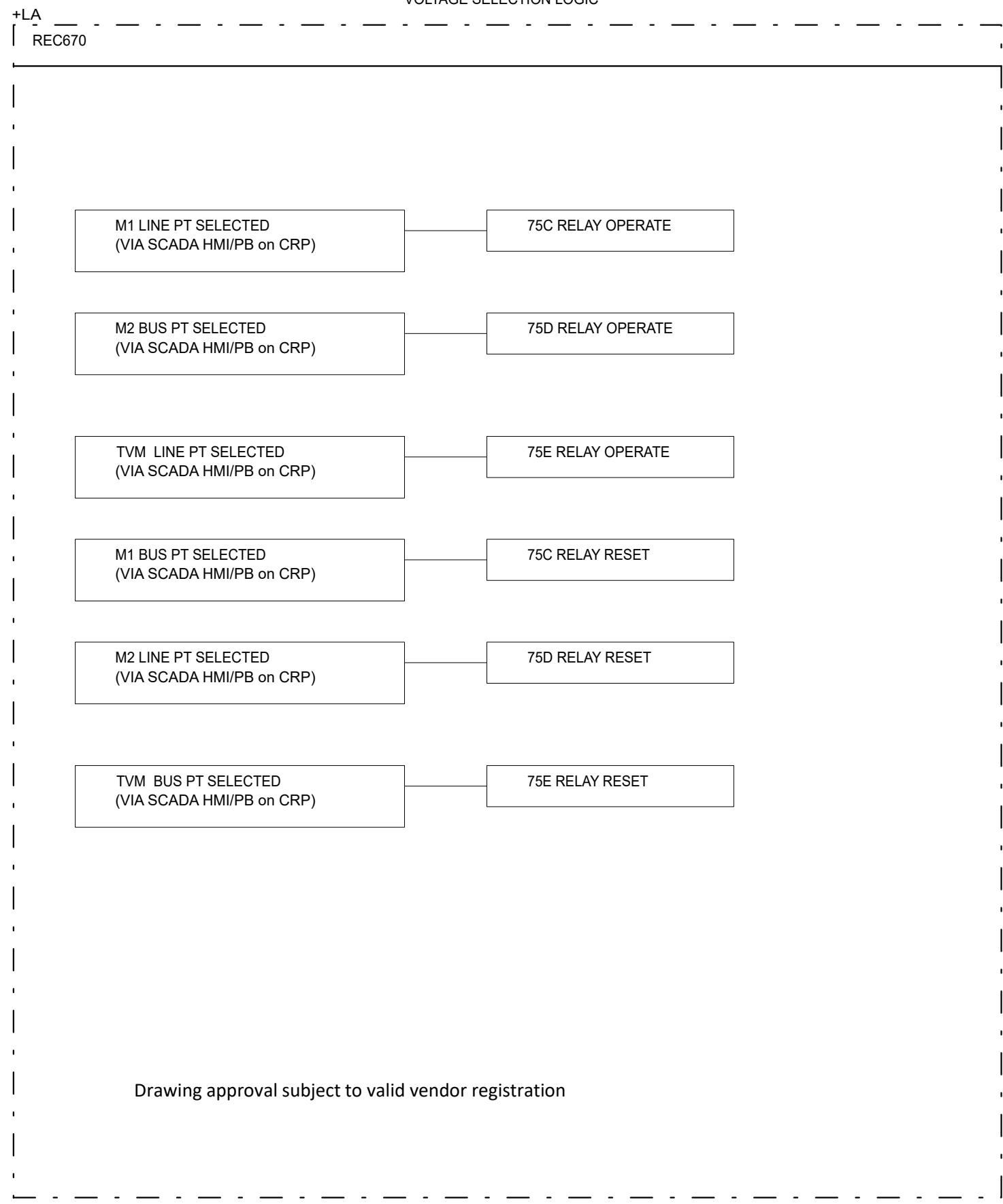
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52 CB TRIP/CLOSE INTERLOCK

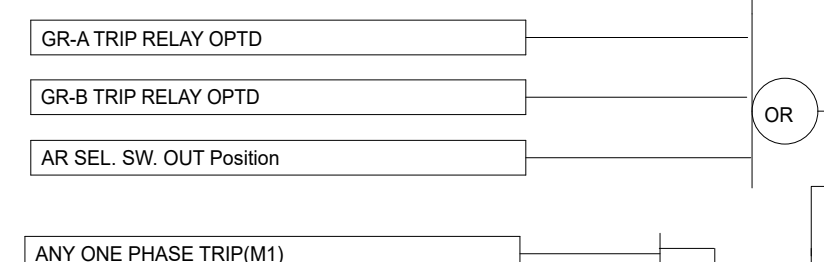
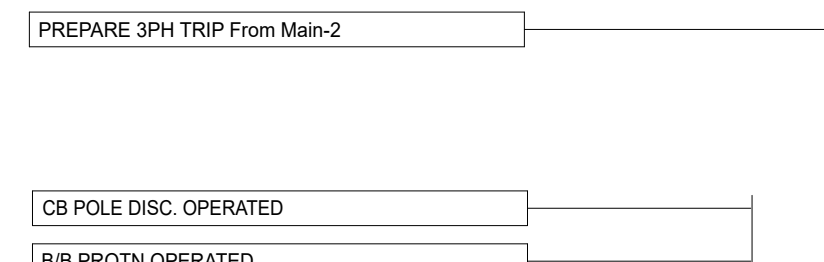
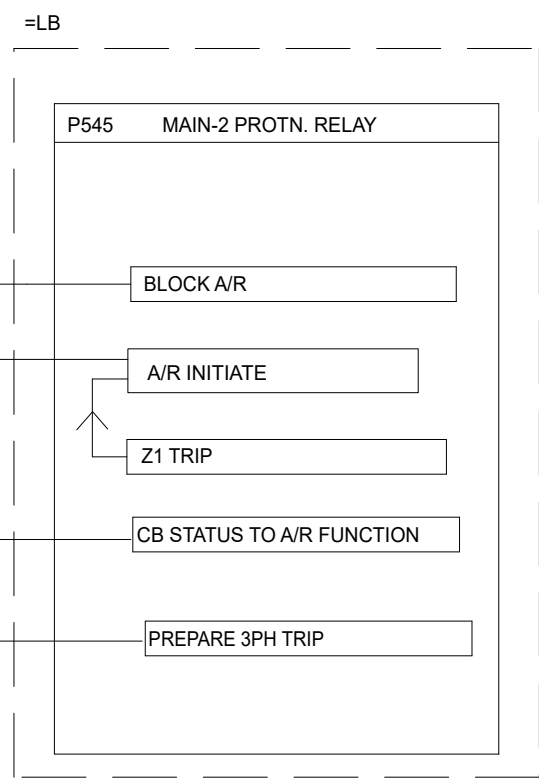
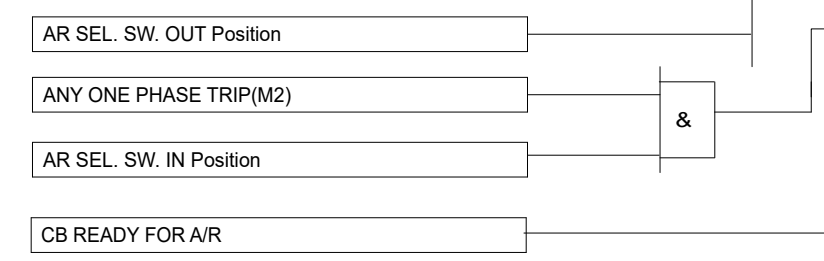
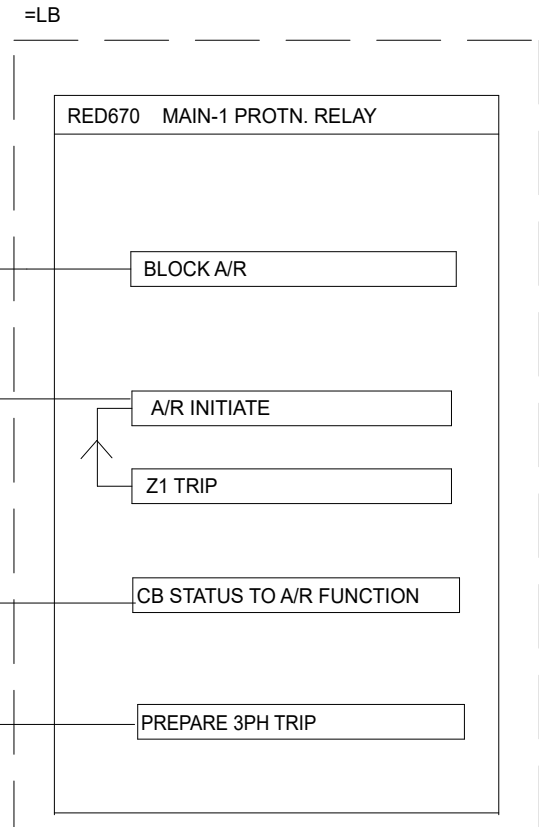
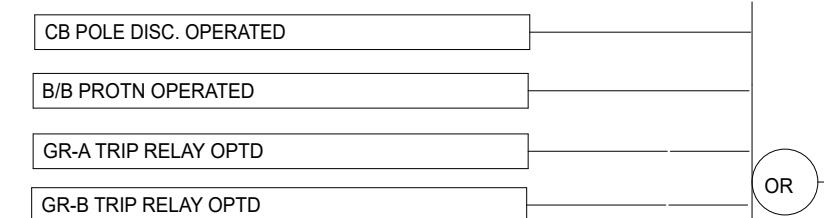
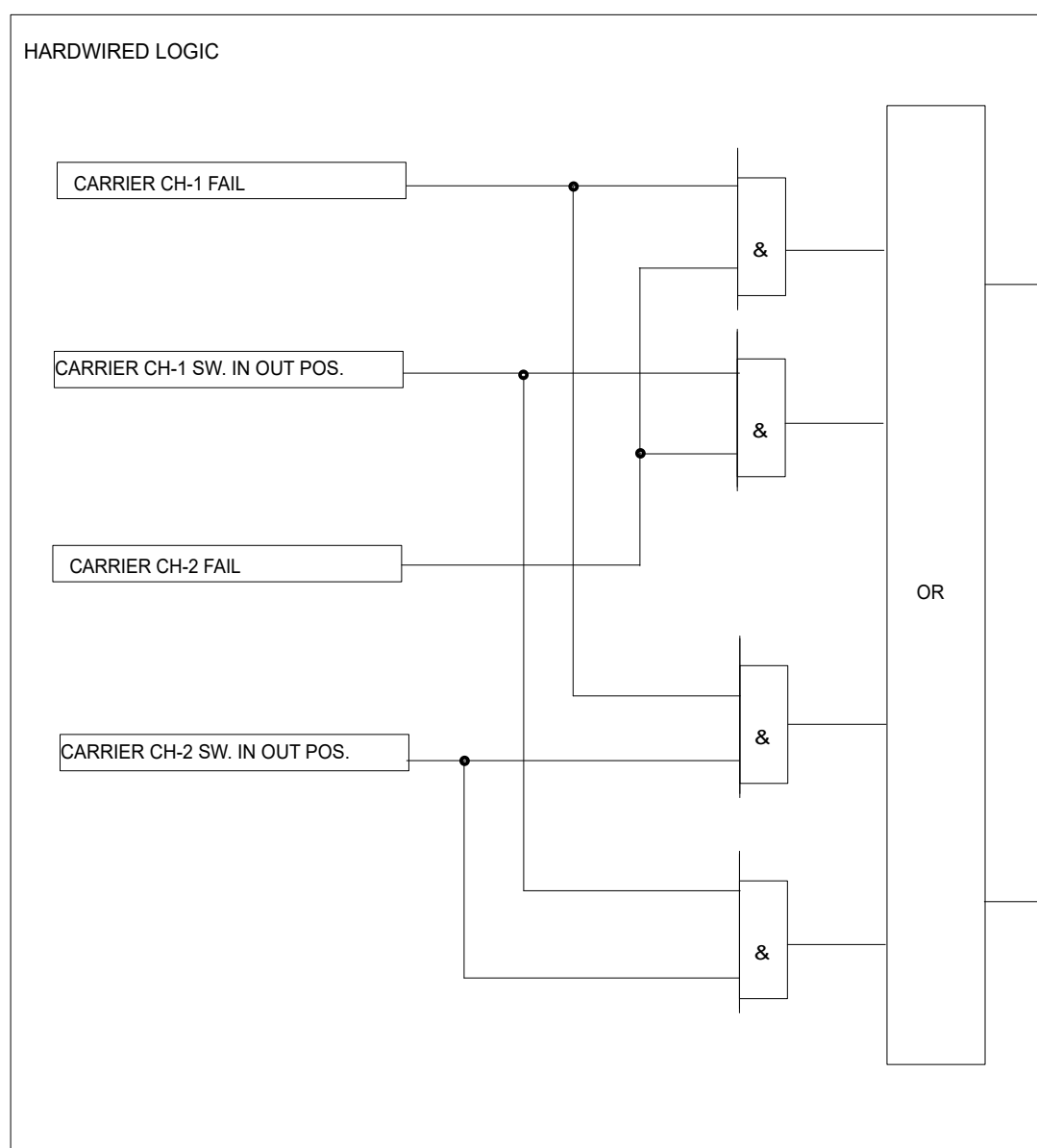


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Interlocking Logics	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
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VOLTAGE SELECTION LOGIC



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		PT Selection Logic		Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en	
Rev.	Revision note	Date	Name	HITACHI		Doc. no. 1MNS500925-CBBA	Sheet 26
1MYN691003-102(A3)REV01						n. sheet 27	



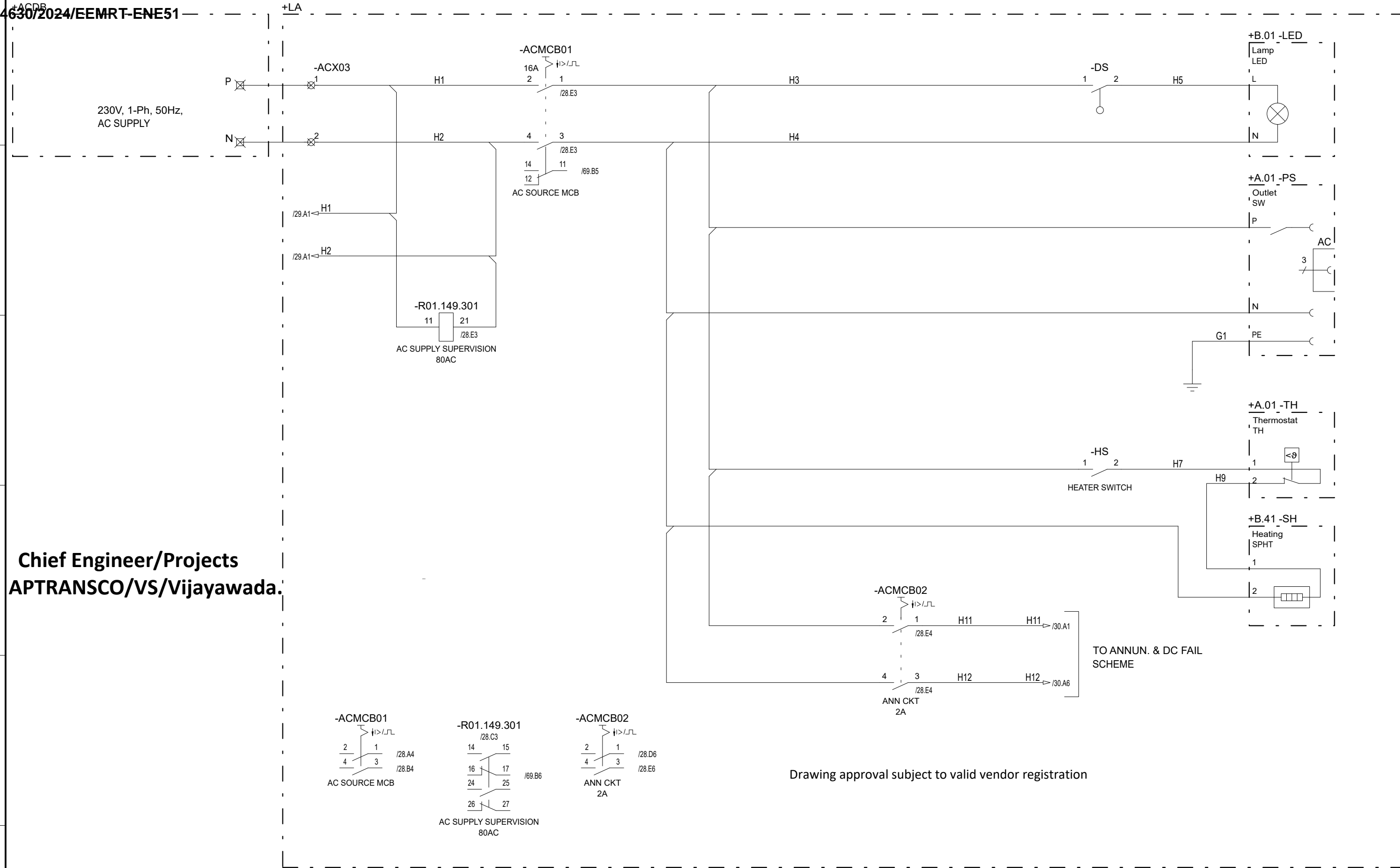
NOTE:- BOTH A/R FUNCTION OF MAIN-1 & MAIN-2 SHALL OPERATE PARALLELLY.

————— HARDWIRED SIGNAL

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Auto Reclosure Logics	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
Rev.	Revision note	Date	Name			Sheet 27
1MYN691003-102(A3)REV01						n. sheet 28

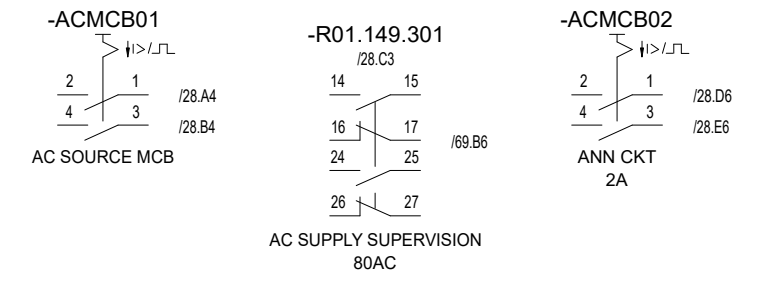
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Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

Drawing approval subject to valid vendor registration

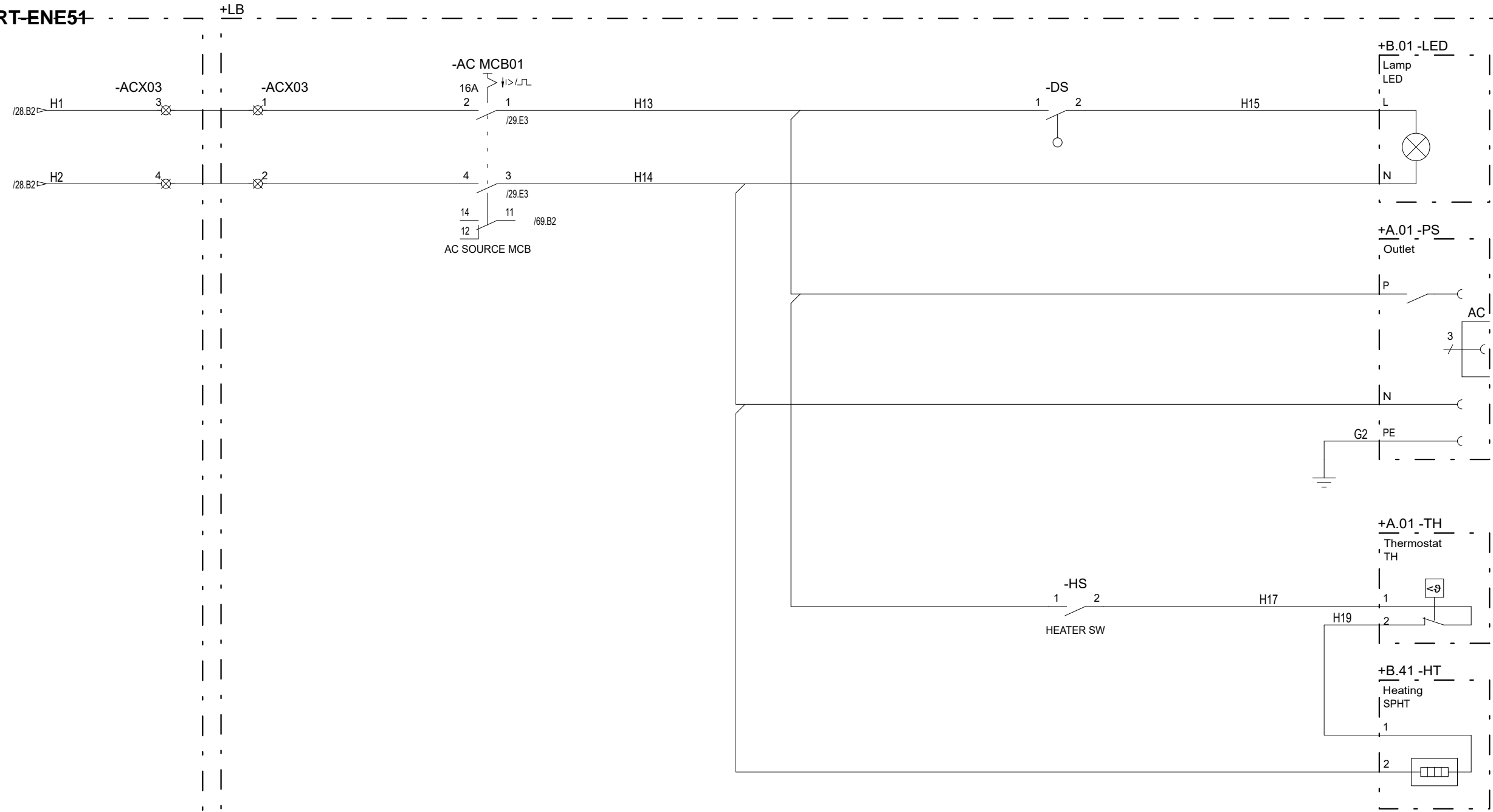


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		AC Distribution Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 28
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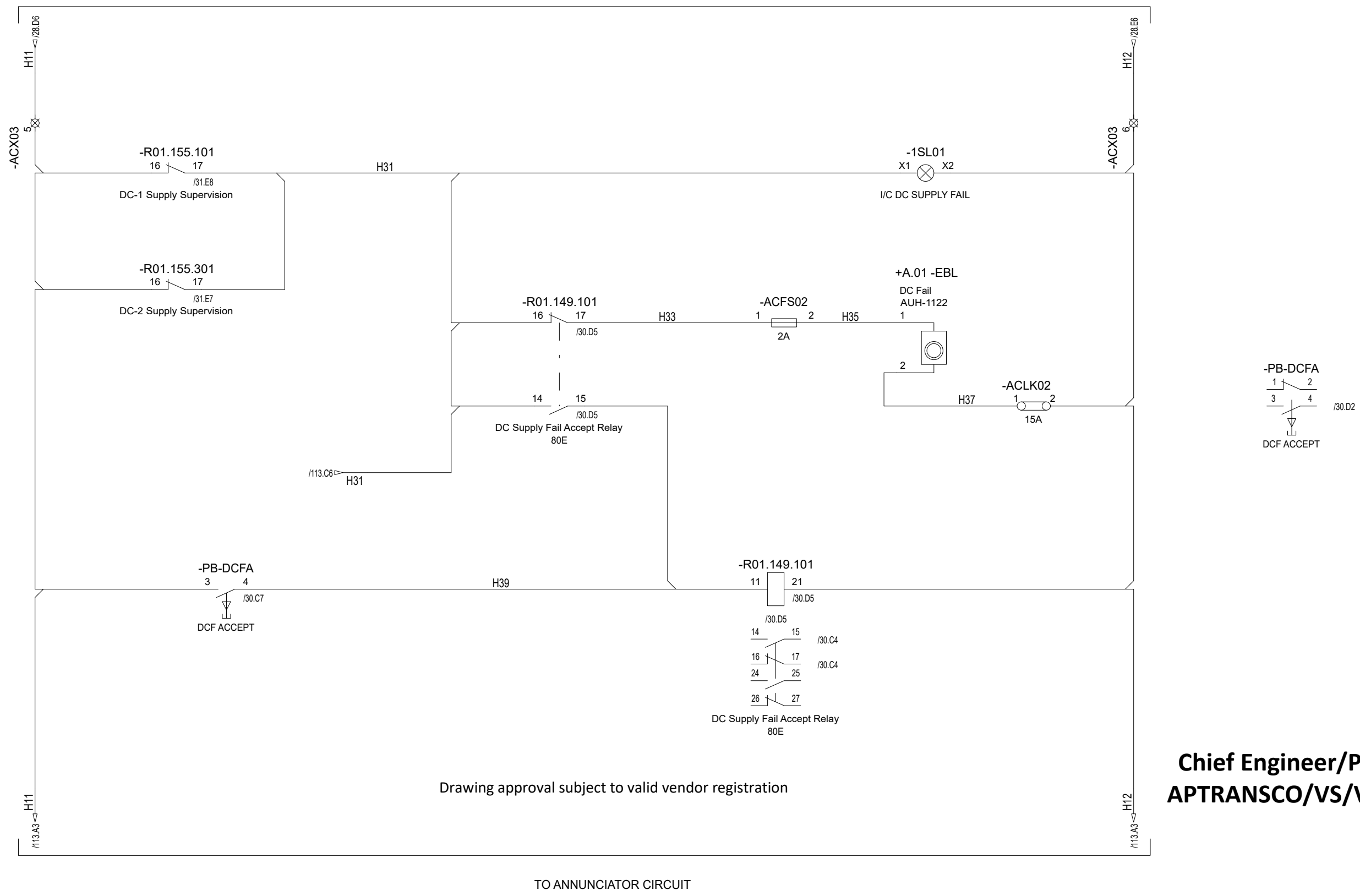
Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO STANDARD DRAWING		AC Distribution Circuit	Resp. dept. PG-GAS	Rev. ind. Language en
Rev.	Revision note	Date	Name	HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
1MYN691003-102(A3)REV01					Sheet 29	n. sheet 30

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FROM 230V AC SUPPLY



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TO ANNUNCIATOR CIRCUIT

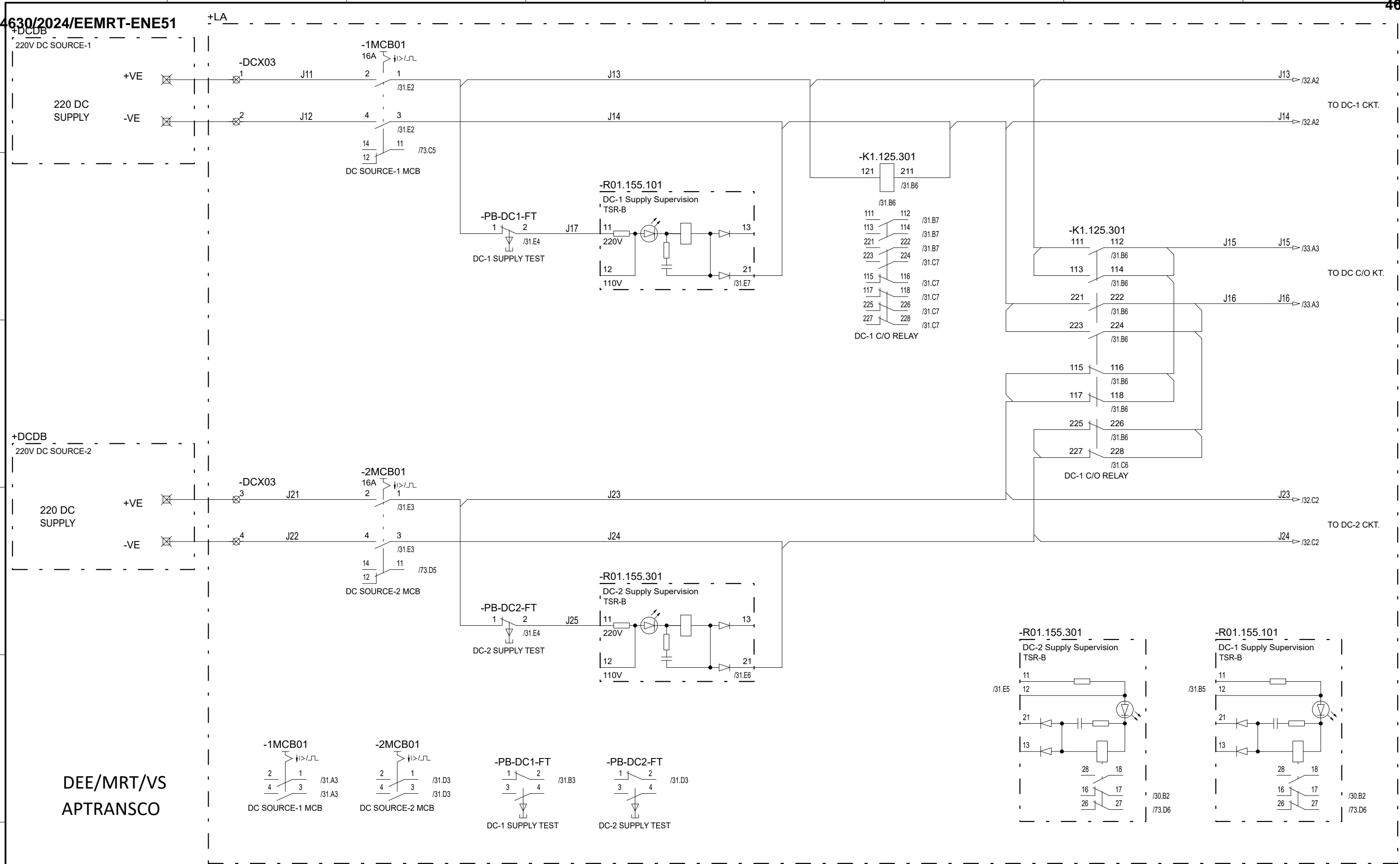
Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		DC Fail Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 30
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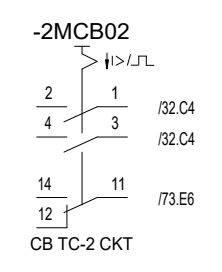
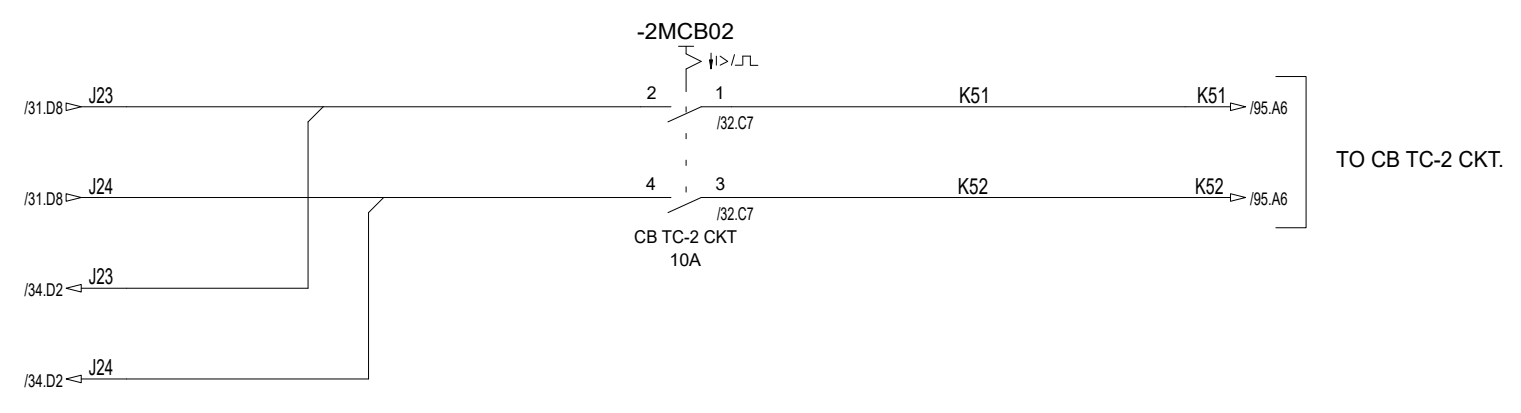
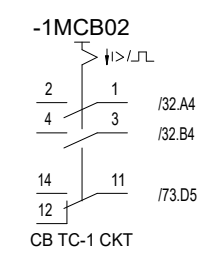
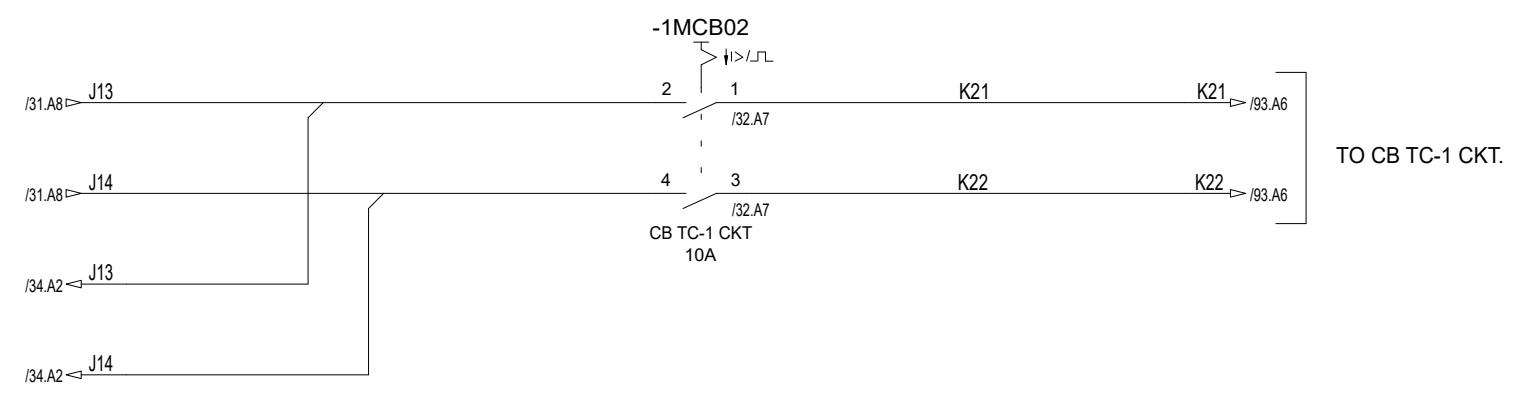


DEE/MRT/VS
APTRANSCO

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		DC Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 31
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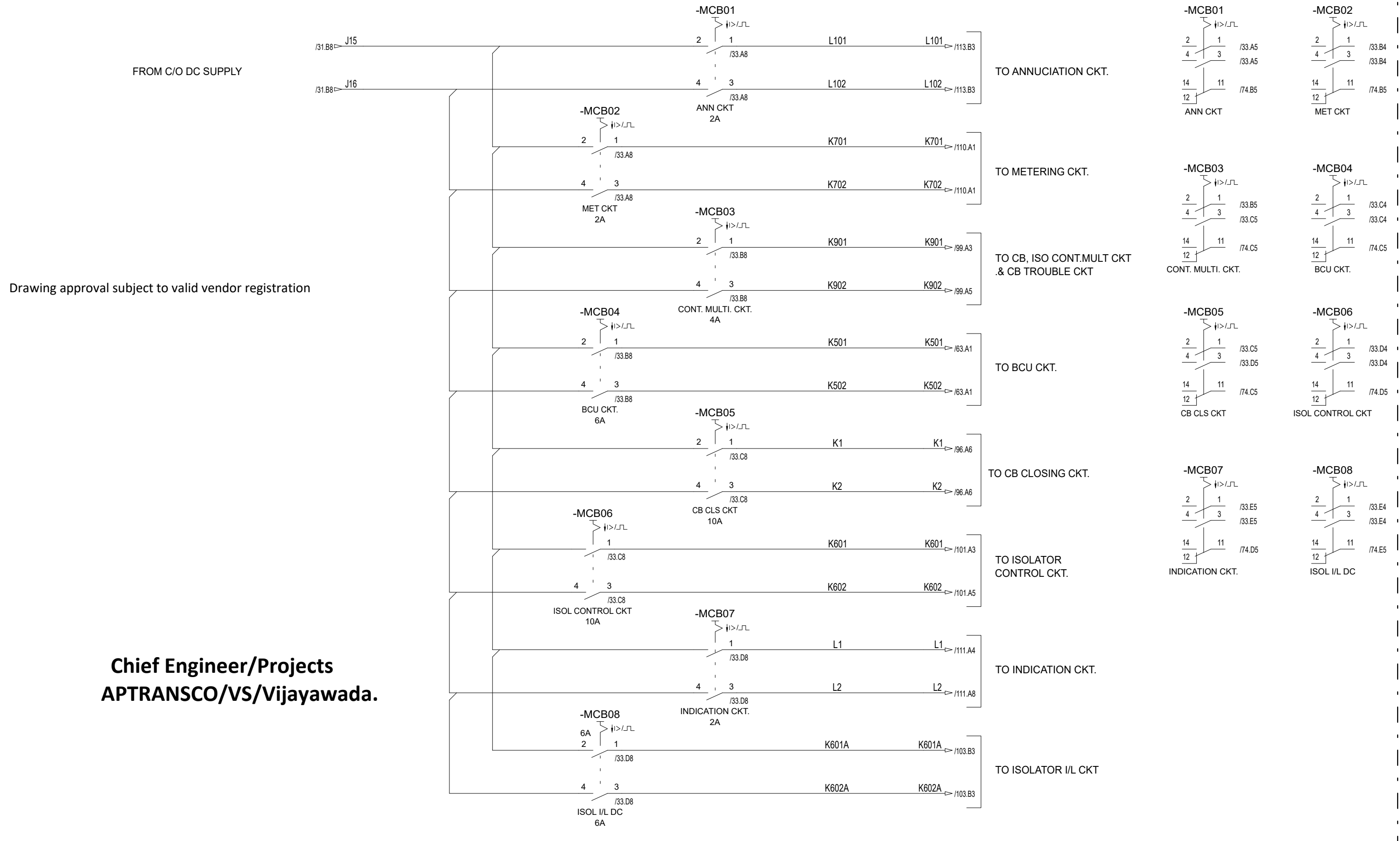
Suitable for conventional 220KV SS only

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 STANDARD DRAWING		DC Distribution Circuit	Resp. dept. PG-GAS	Rev. ind. Language en
				HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
Rev.	Revision note	Date	Name			Sheet 32 n. sheet 33
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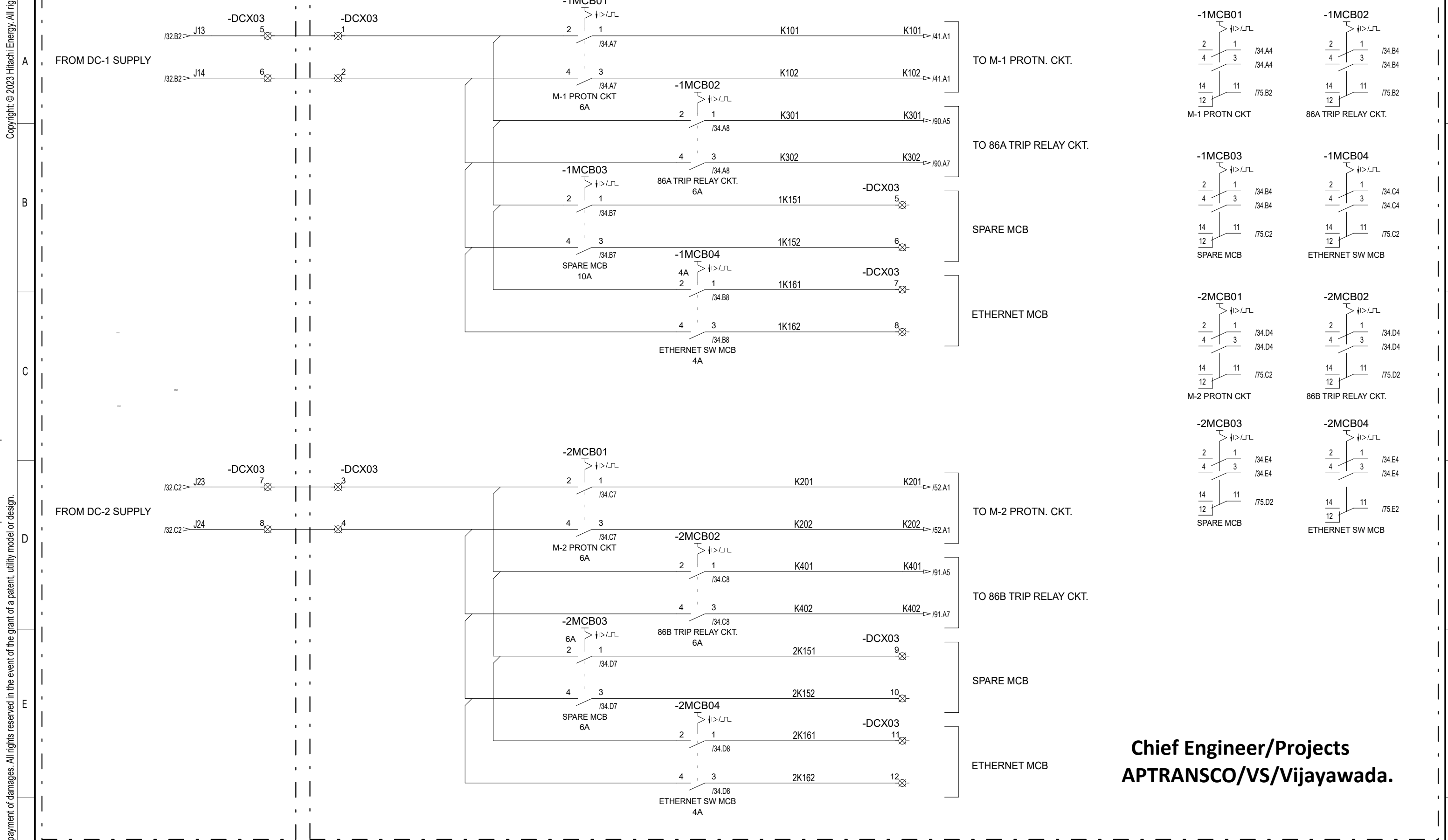
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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		DC Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 33
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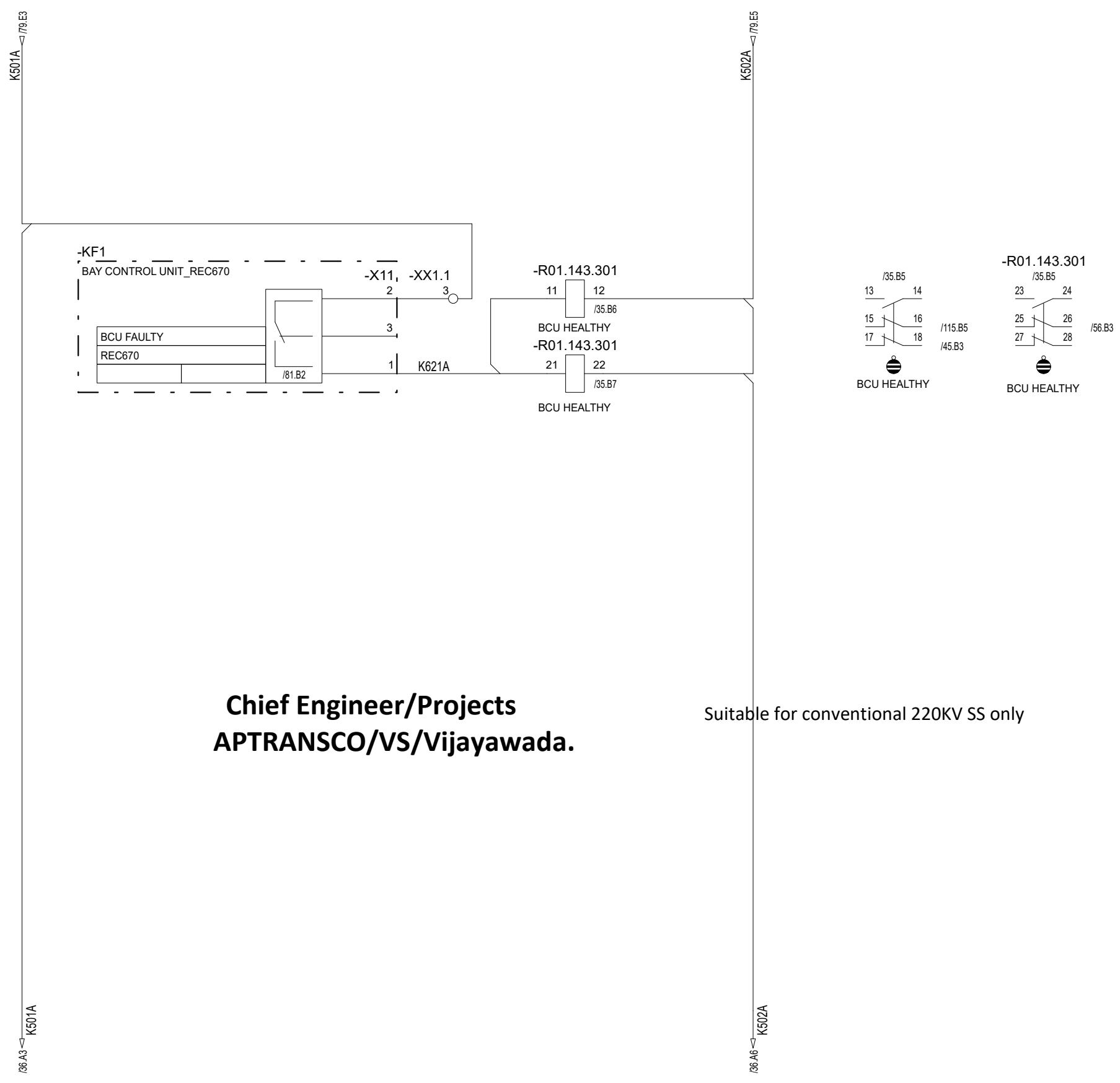
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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		DC Distribution Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 34
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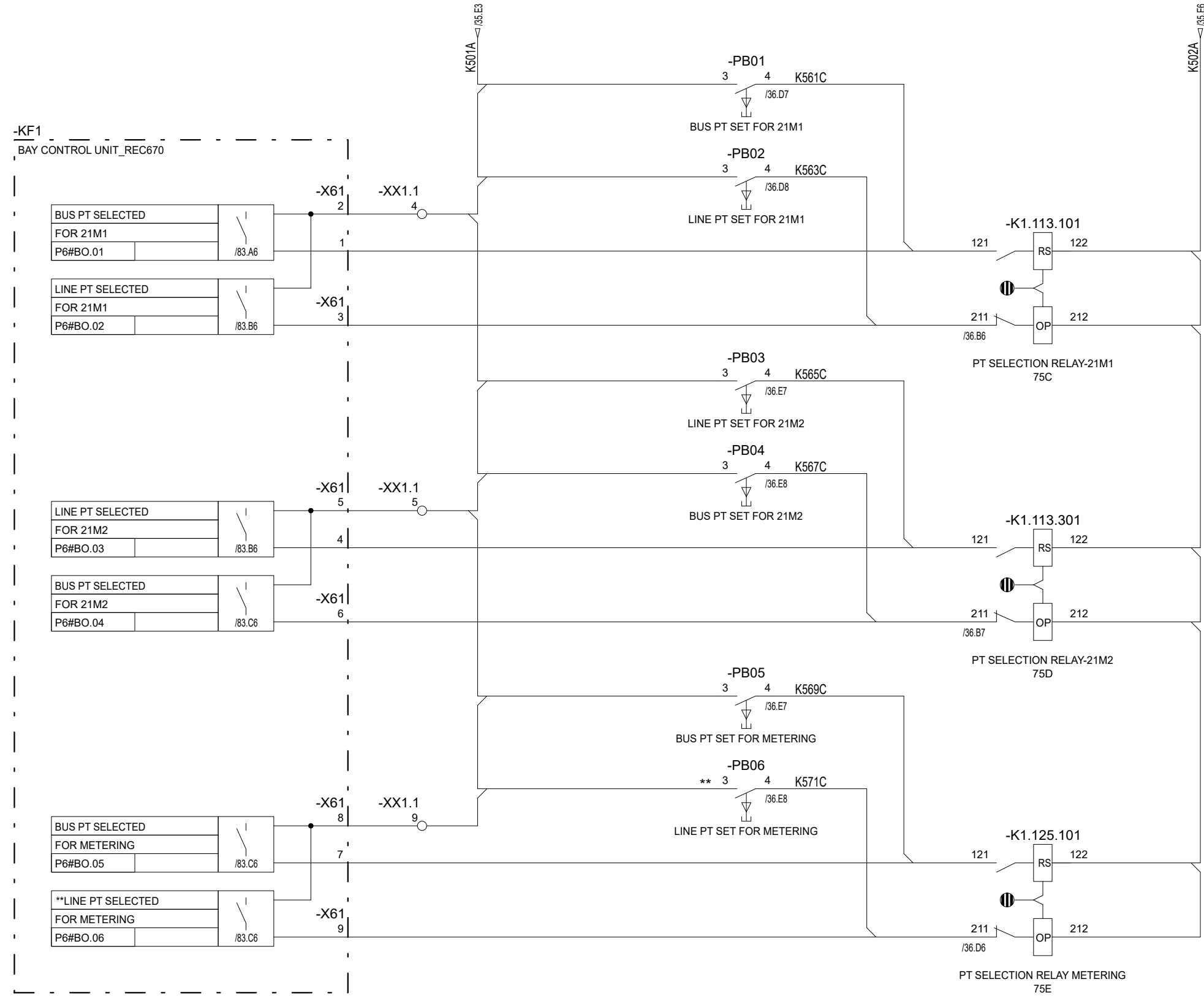
Suitable for conventional 220KV SS only

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 STANDARD DRAWING		BUS PT Selection Relay Circuit		Resp. dept.	PG-GAS	Rev. ind.	Language	en	
					HITACHI Hitachi Energy India Limited		Doc. no.		1MNS500925-CBBA		Sheet	35
Rev.	Revision note	Date	Name								n. sheet	36
1MYN691003-102(A3)REV01												

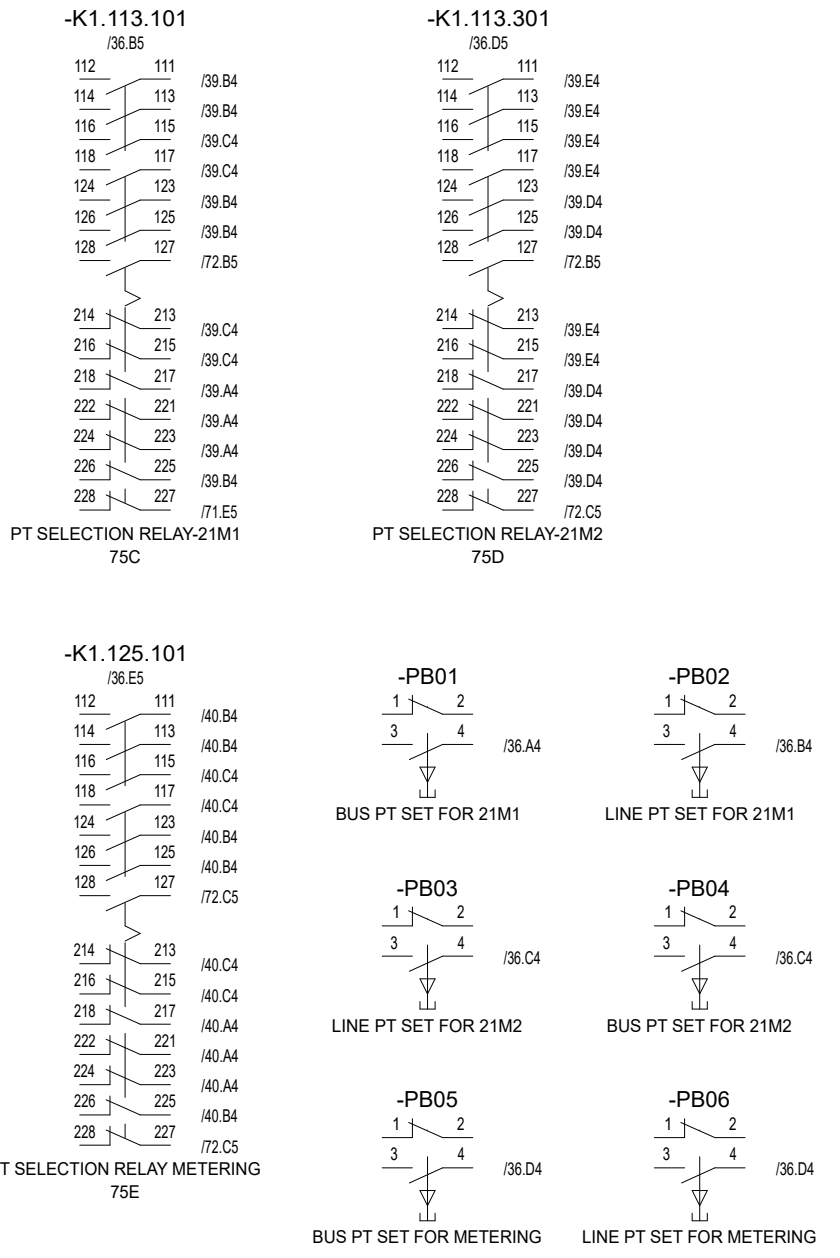
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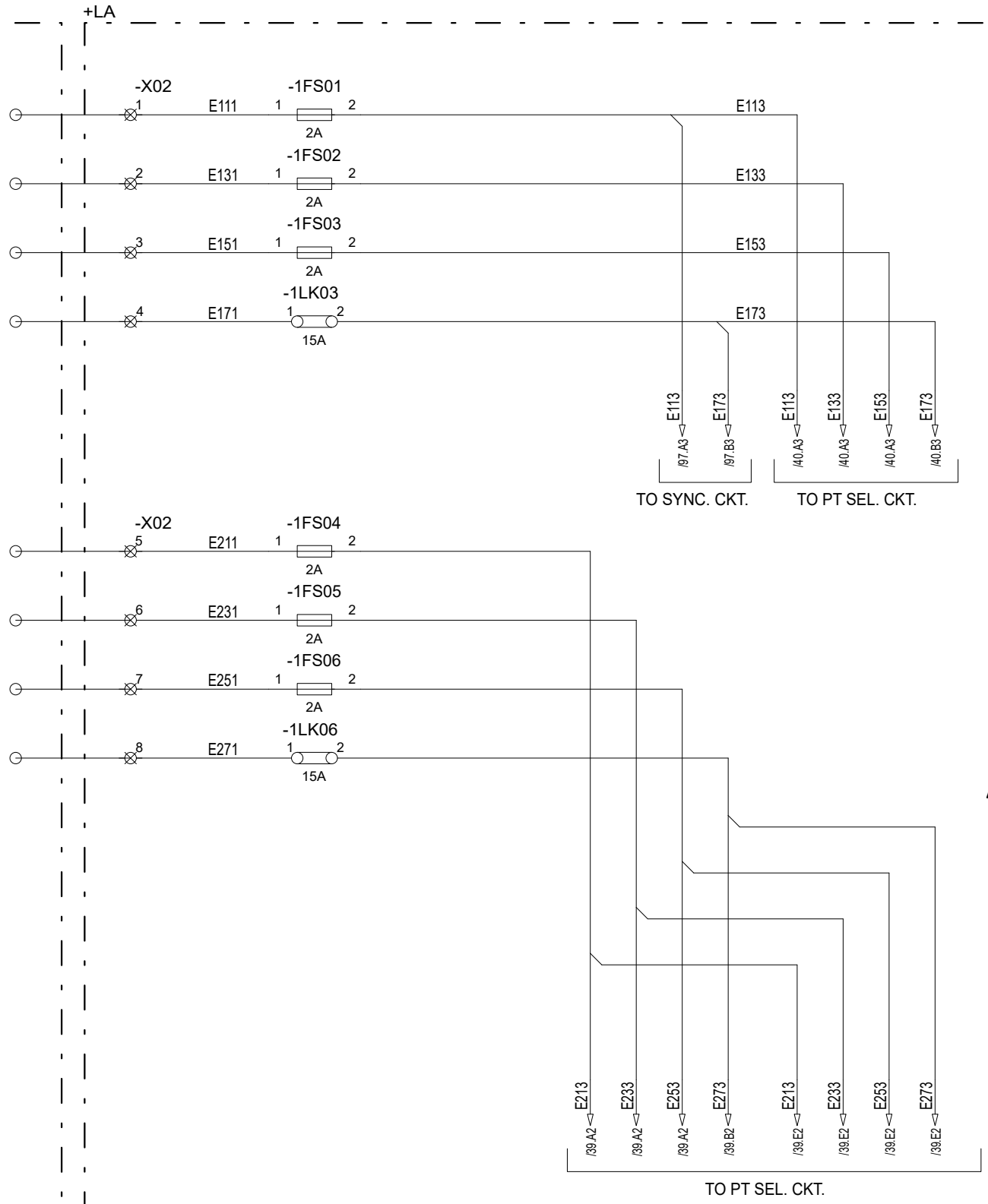


** PRIORITY SHALL BE GIVEN FOR LINE PT. BUS PT SHALL BE SET ONLY IF LINE PT IS UNHEALTHY.

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Bus PT / Line CVT Sel. Relay Ckt.	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 36
1MYN691003-102(A3)REV01						n. sheet 37

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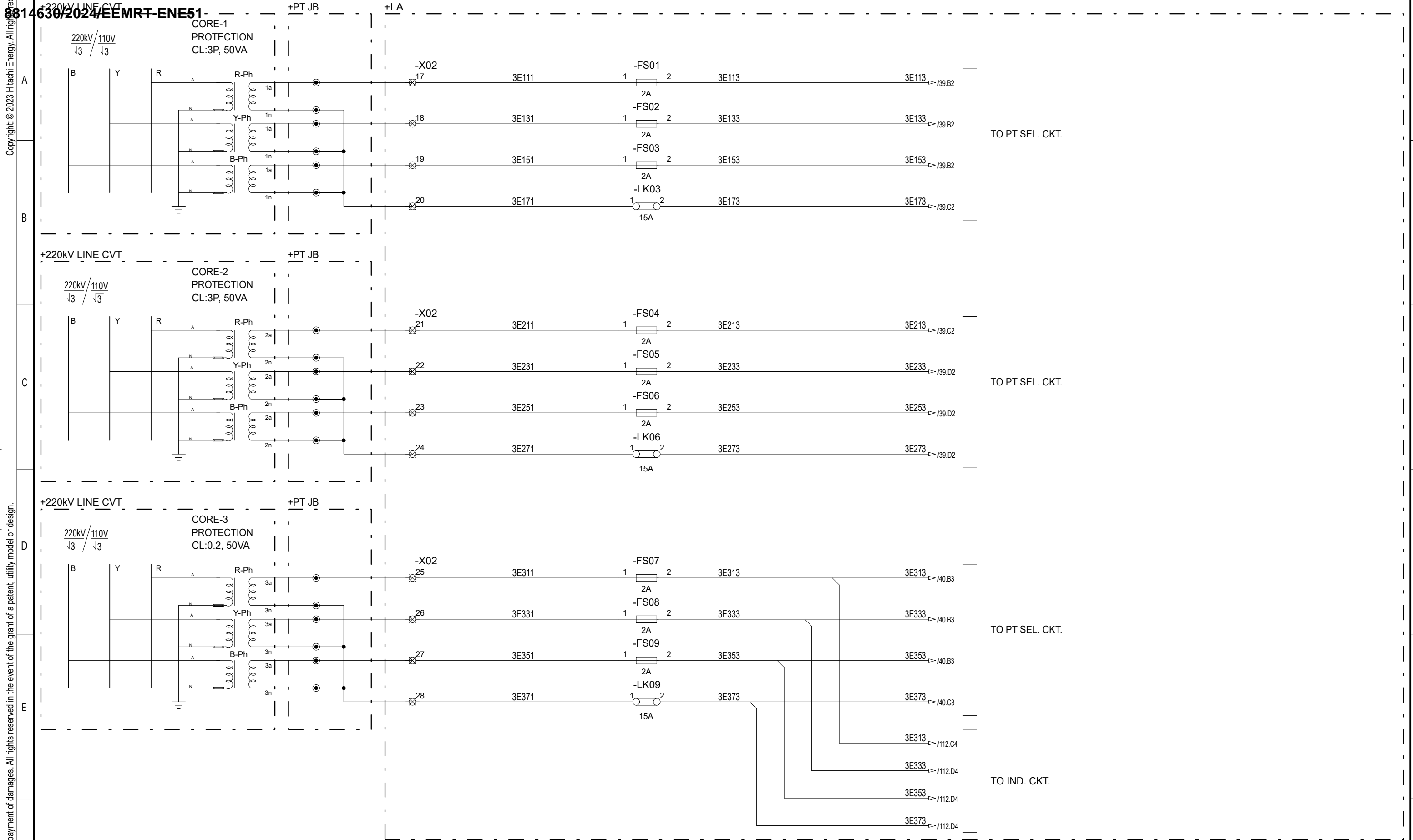
8814630/2024/EEMRT-ENE51



**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		BUS PT Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 37
1MYN691003-102(A3)REV01						n. sheet 38

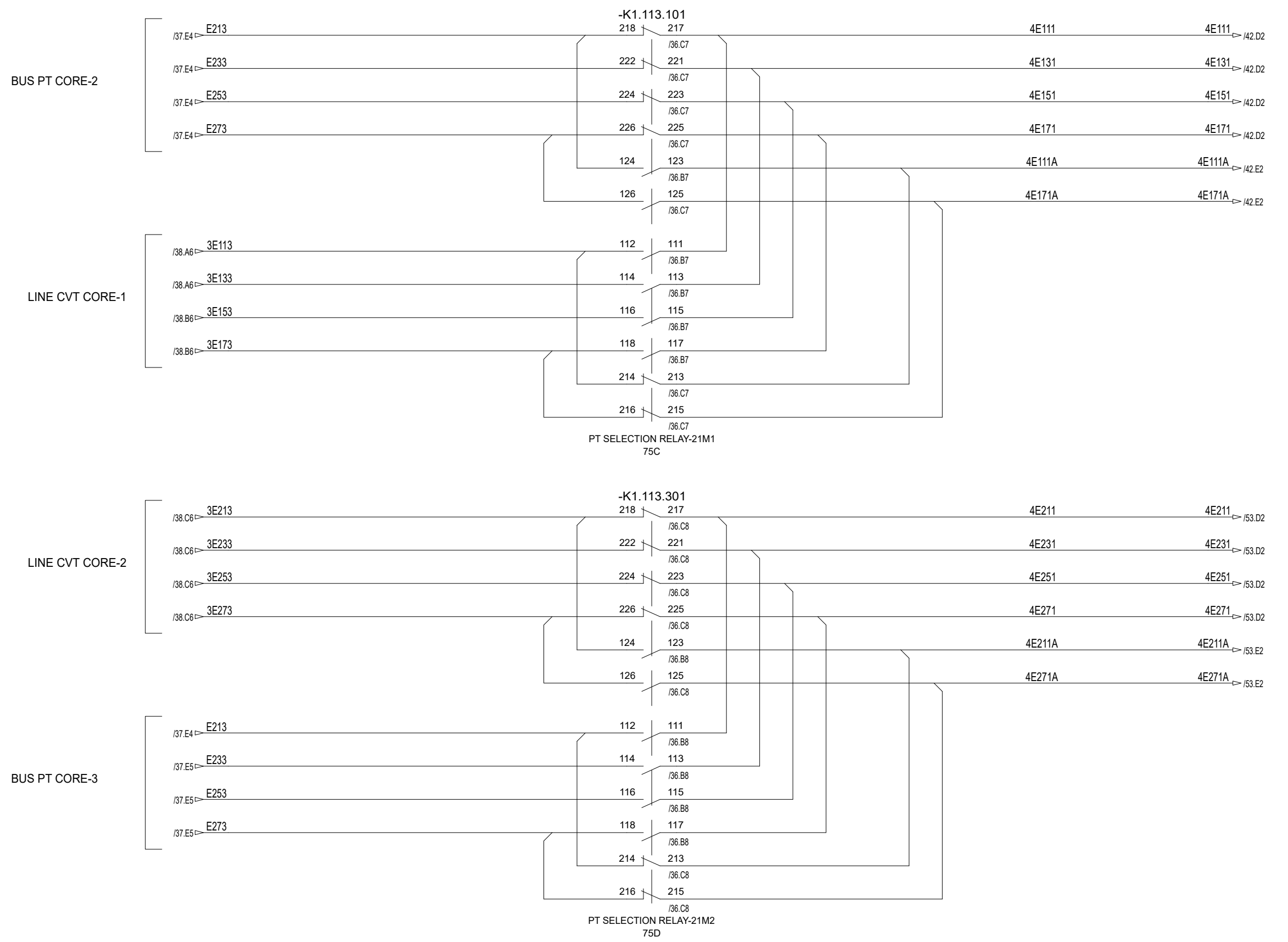
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Line CVT Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 38
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BUS PT / LINE CVT FOR M-1 PROTN. RELAY.

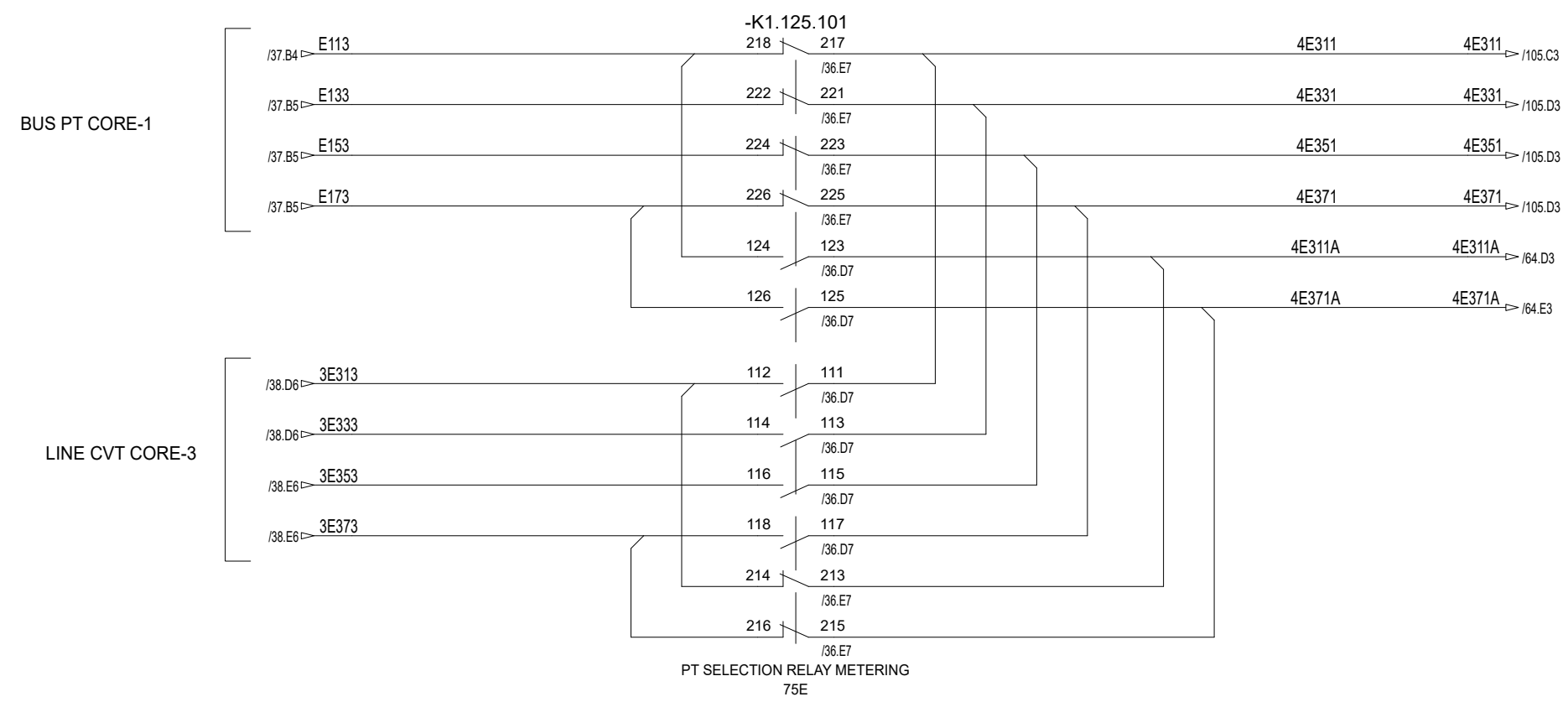
BUS PT / LINE CVT FOR M-2 PROTN. RELAY.

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		BUS PT / LINE CVT Selection Circuit		PG-GAS		Rev. ind.	
						Hitachi Energy India Limited		Language en		Sheet 39	
Rev. Revision note		Date Name				HITACHI		Doc. no. 1MNS500925-CBBA		n. sheet 40	
1MYN691003-102(A3)REV01											

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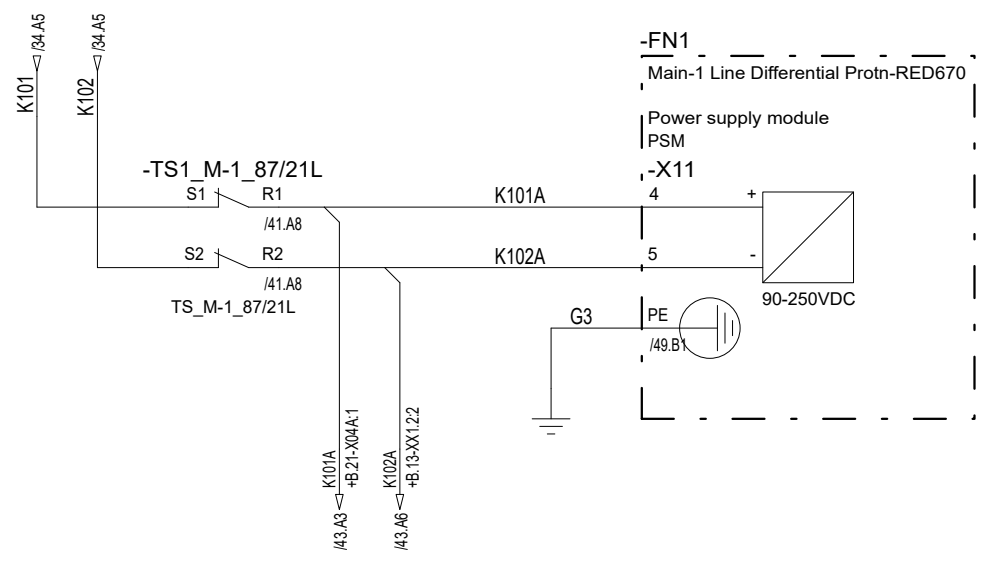
BUS PT / LINE CVT FOR METERING CKT.

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
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		BUS PT / LINE CVT Selection Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 40
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LIST OF FUNCTIONS AVAILABLE IN RELAY

- Differential Protection (PDIF,87L)
- 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

- DIFFERENTIAL PROT.N. OPTD.
- DISTANCE PROT.N. OPTD.
- 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

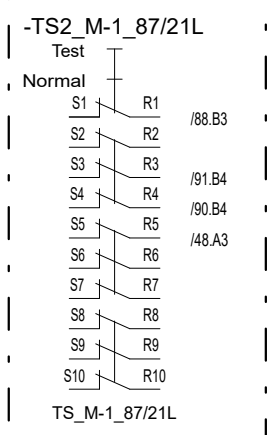
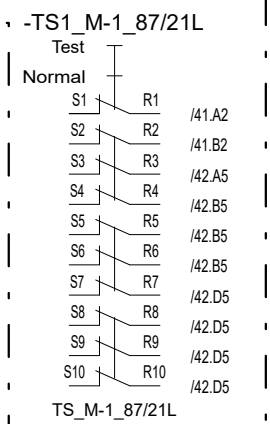
YELLOW INDICATION (GR-2)

Indication HMI LED

- PSB/BRC ALARM
- VTFF ALARM
- AR BLOCK
- AR CLOSE
- DIFFERENTIAL BLOCKED
- FO CHANNEL-1 FAIL
- FO CHANNEL-2 FAIL
- CARRIER SEND
- DT RECEIVED

GREEN INDICATION (GR-3)

Indication HMI LED



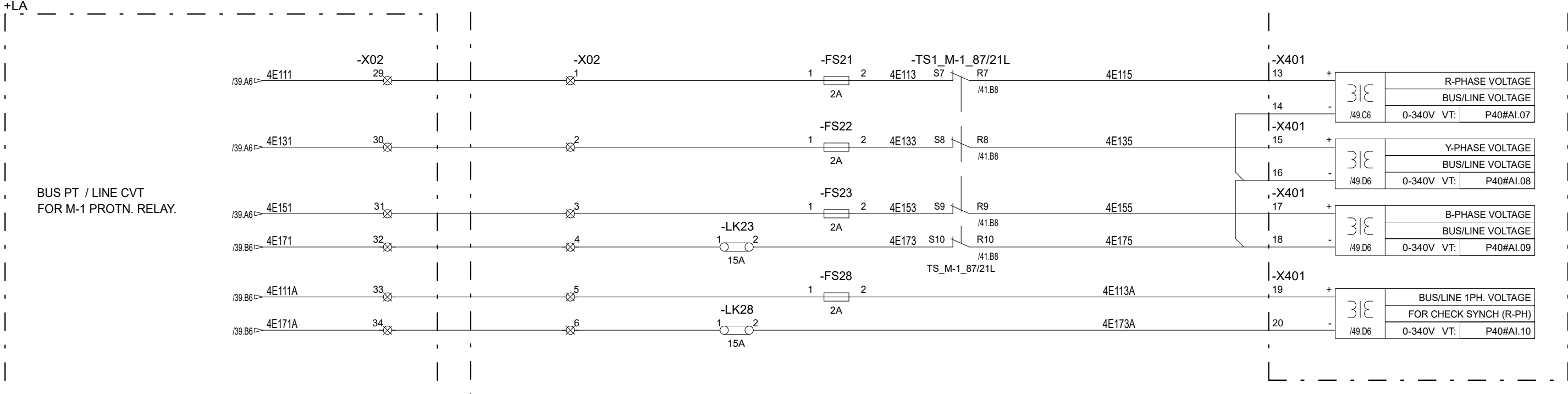
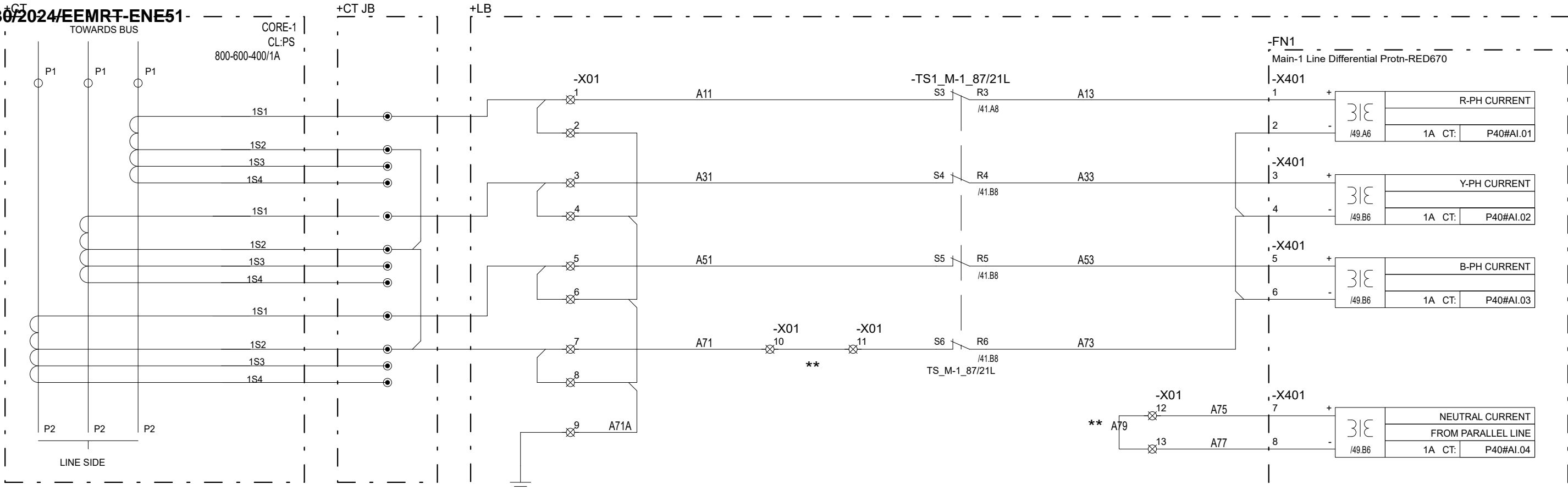
List of Functional Key Indication

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

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-CBBA	Sheet 41	n. sheet 42
1MYN691003-102(A3)REV01						

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NOTE:- CT DETAILS TO BE CONFIRMED BY THE CUSTOMER

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

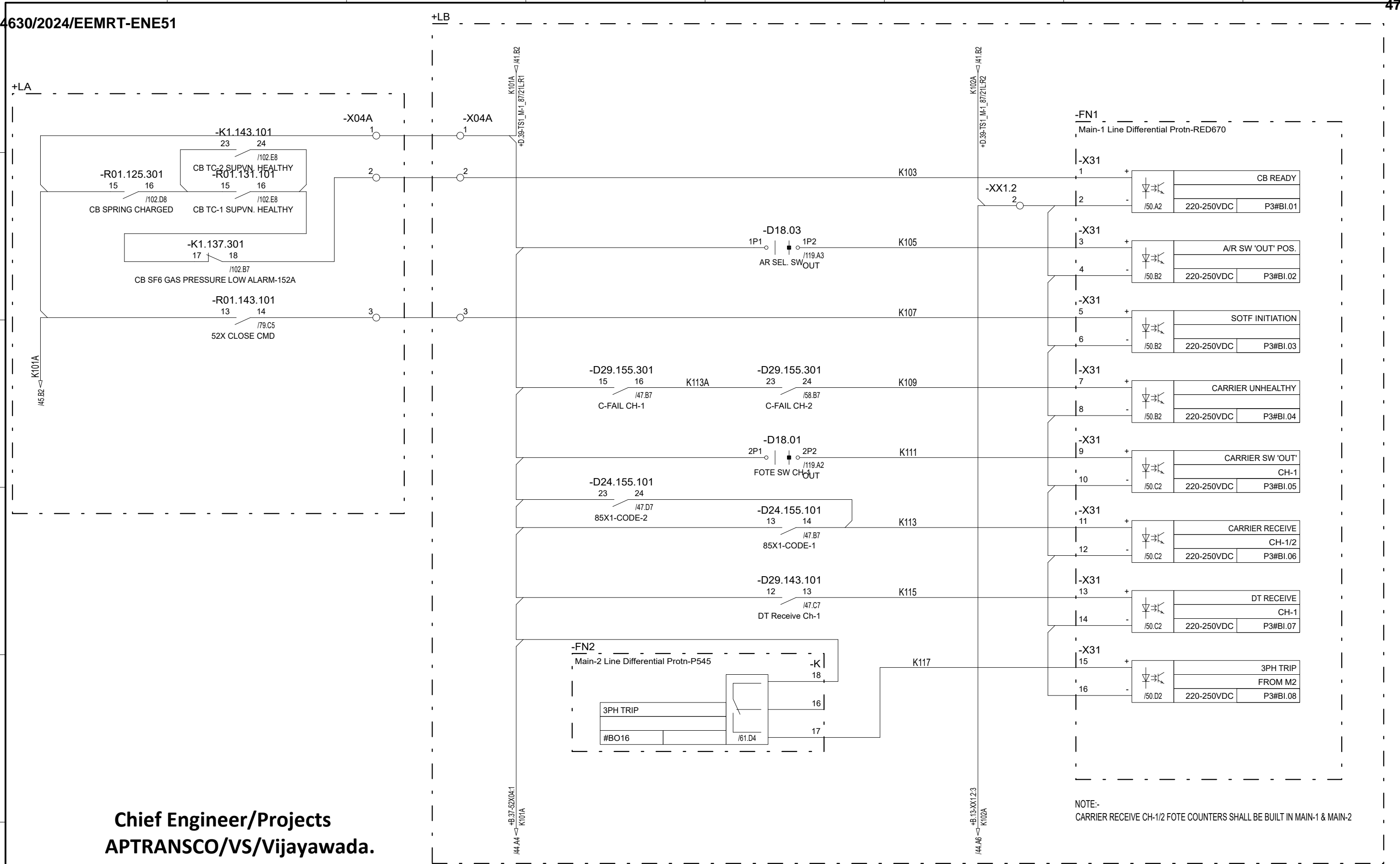
Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		CT/PT Input Circuit to M1 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 42
1MYN691003-102(A3)REV01						n. sheet 43

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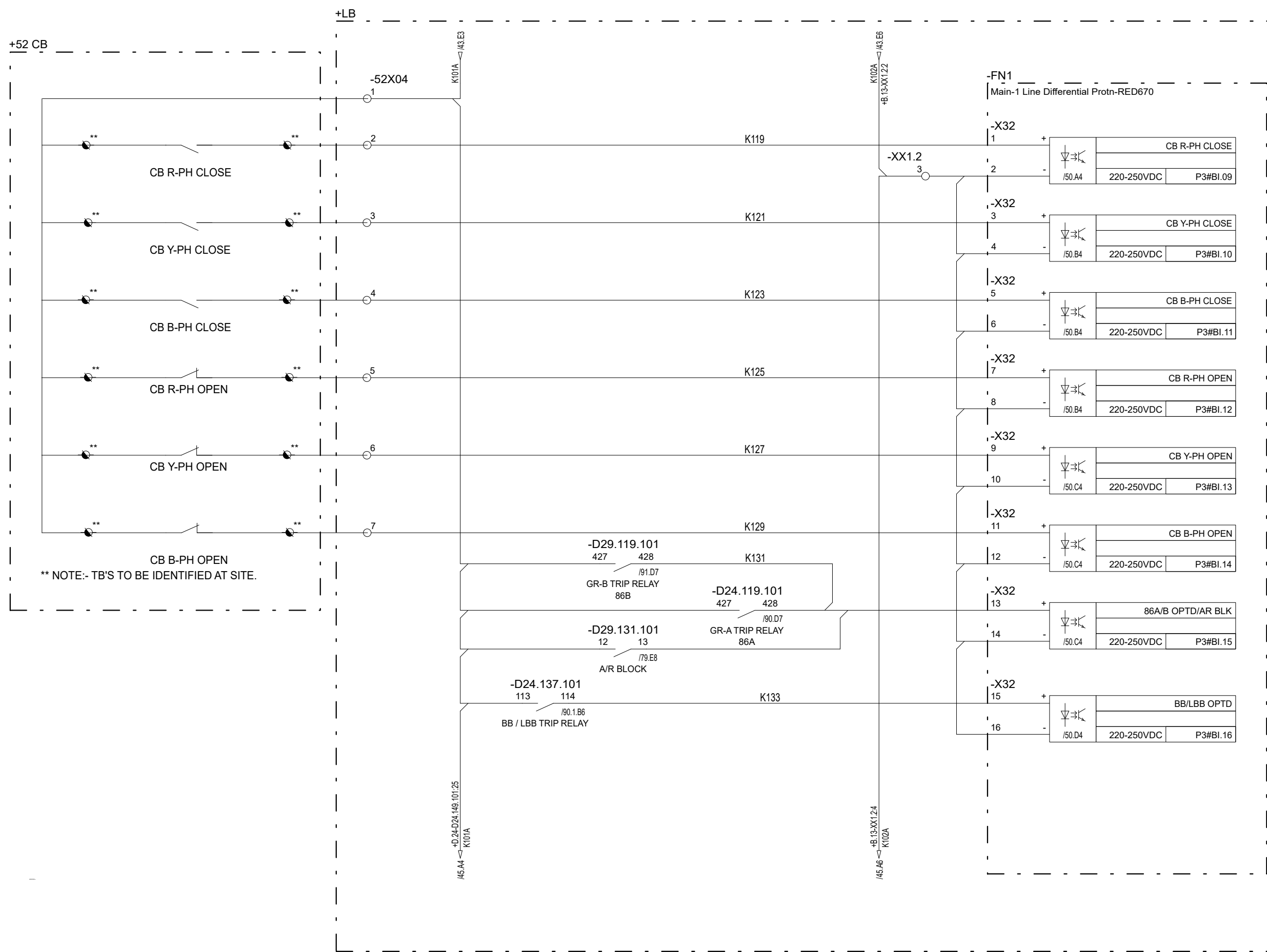
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

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 Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA	Sheet 43	n. sheet 44
1MYN691003-102(A3)REV01						

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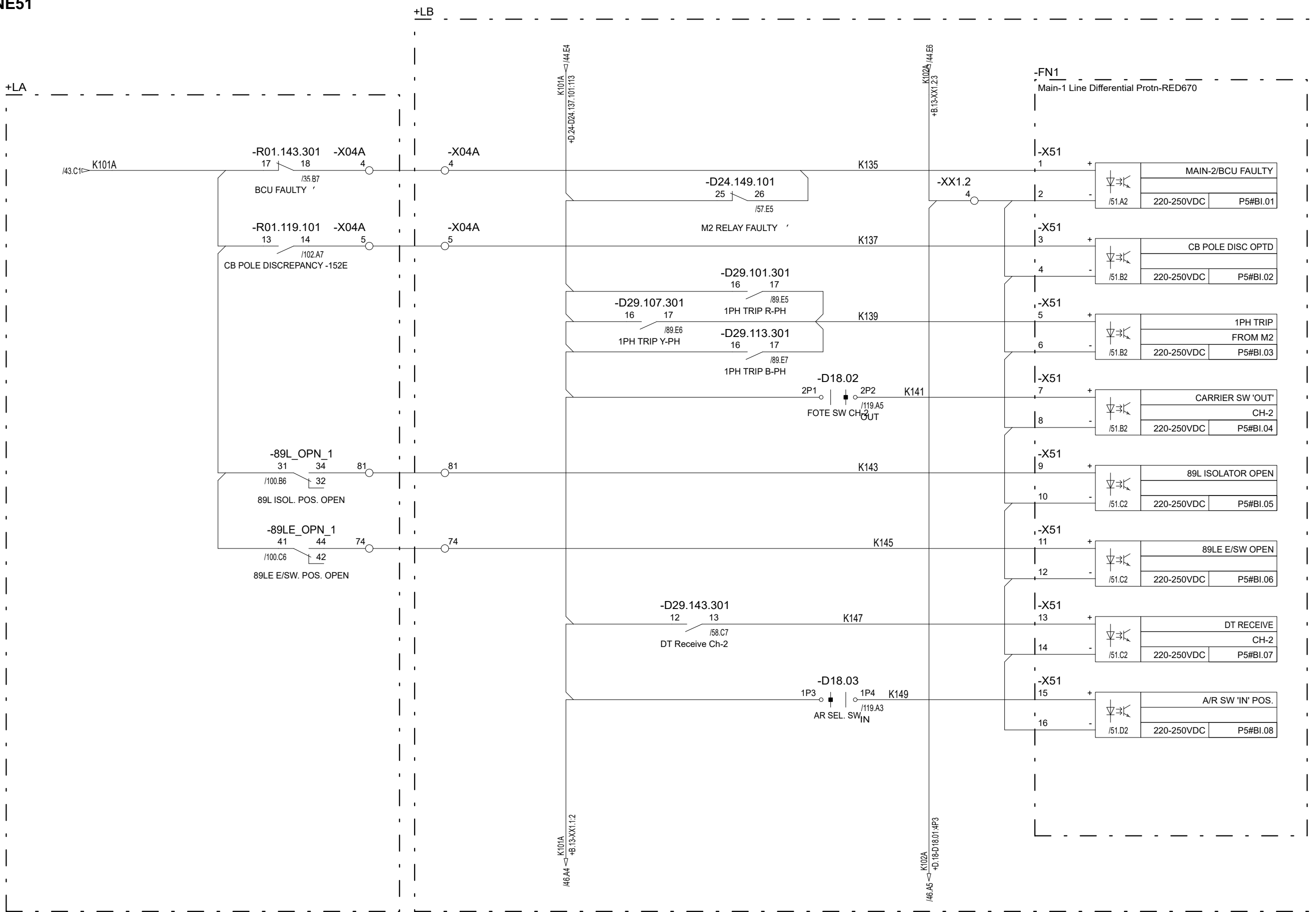
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M1 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING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

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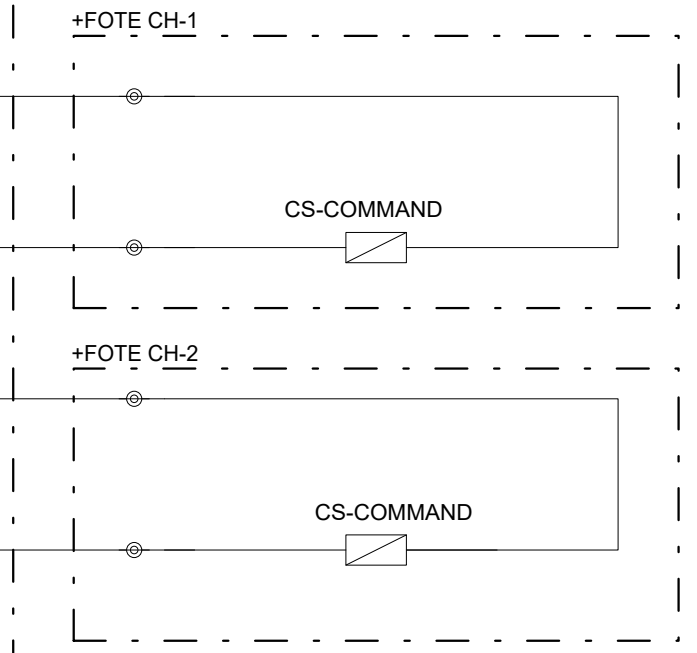
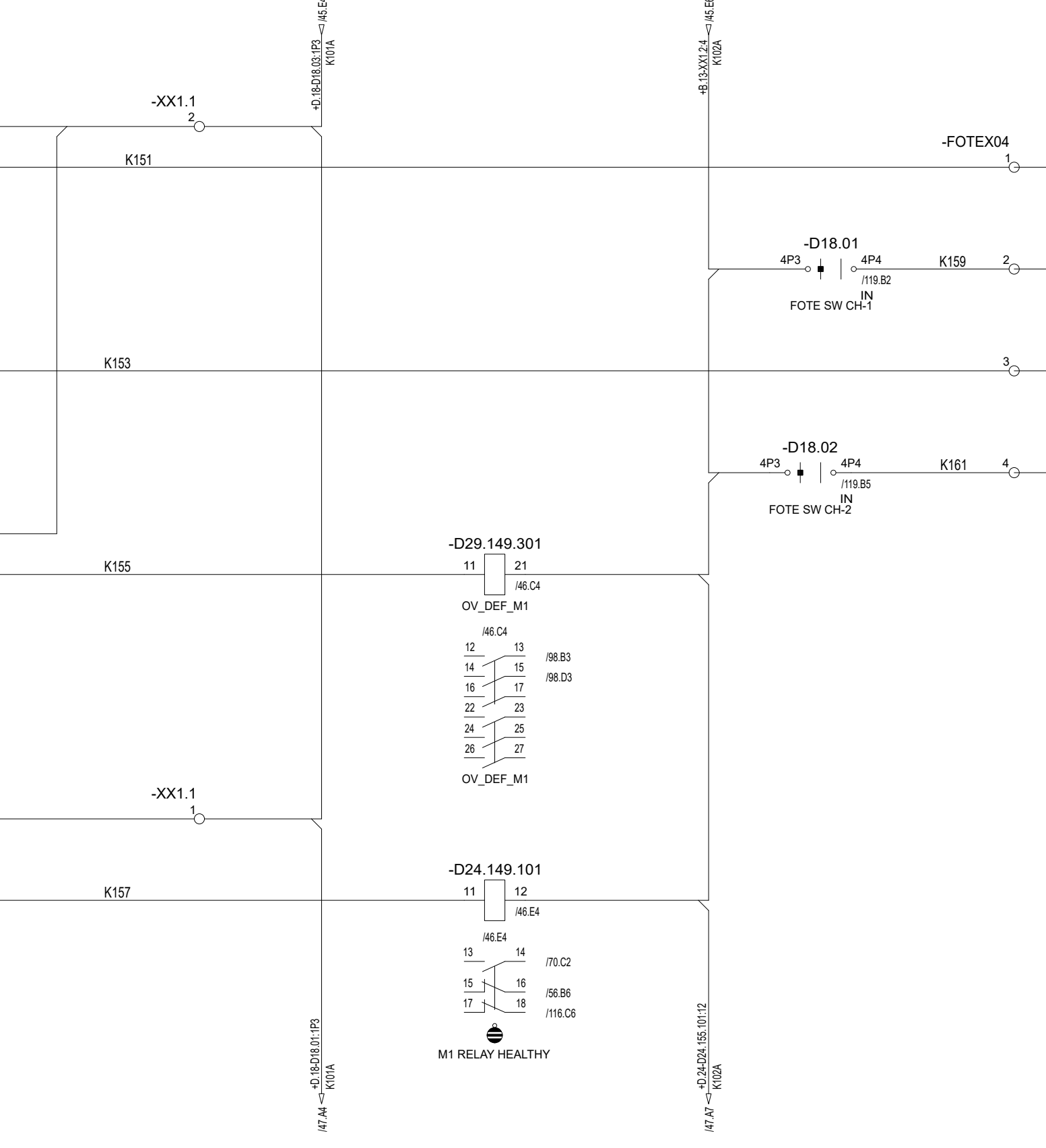
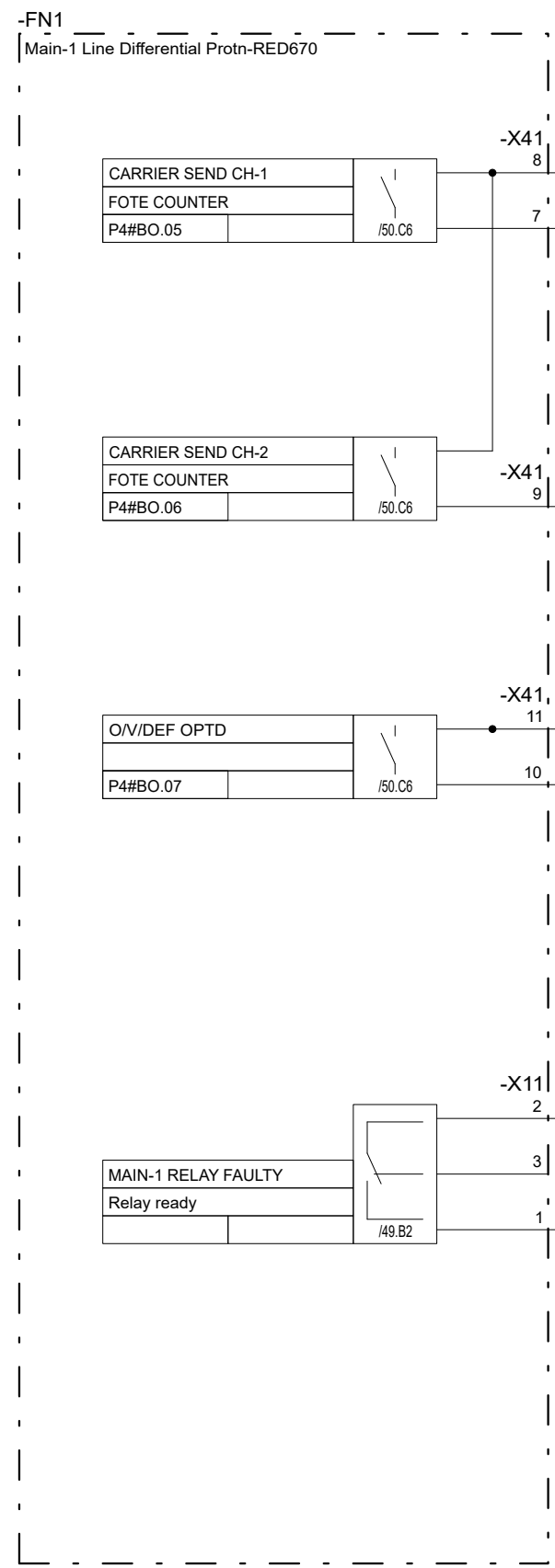


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M1 Relay	Resp. dept. PG-GAS	Rev. ind. en
		STANDARD DRAWING		Hitachi Energy India Limited	Language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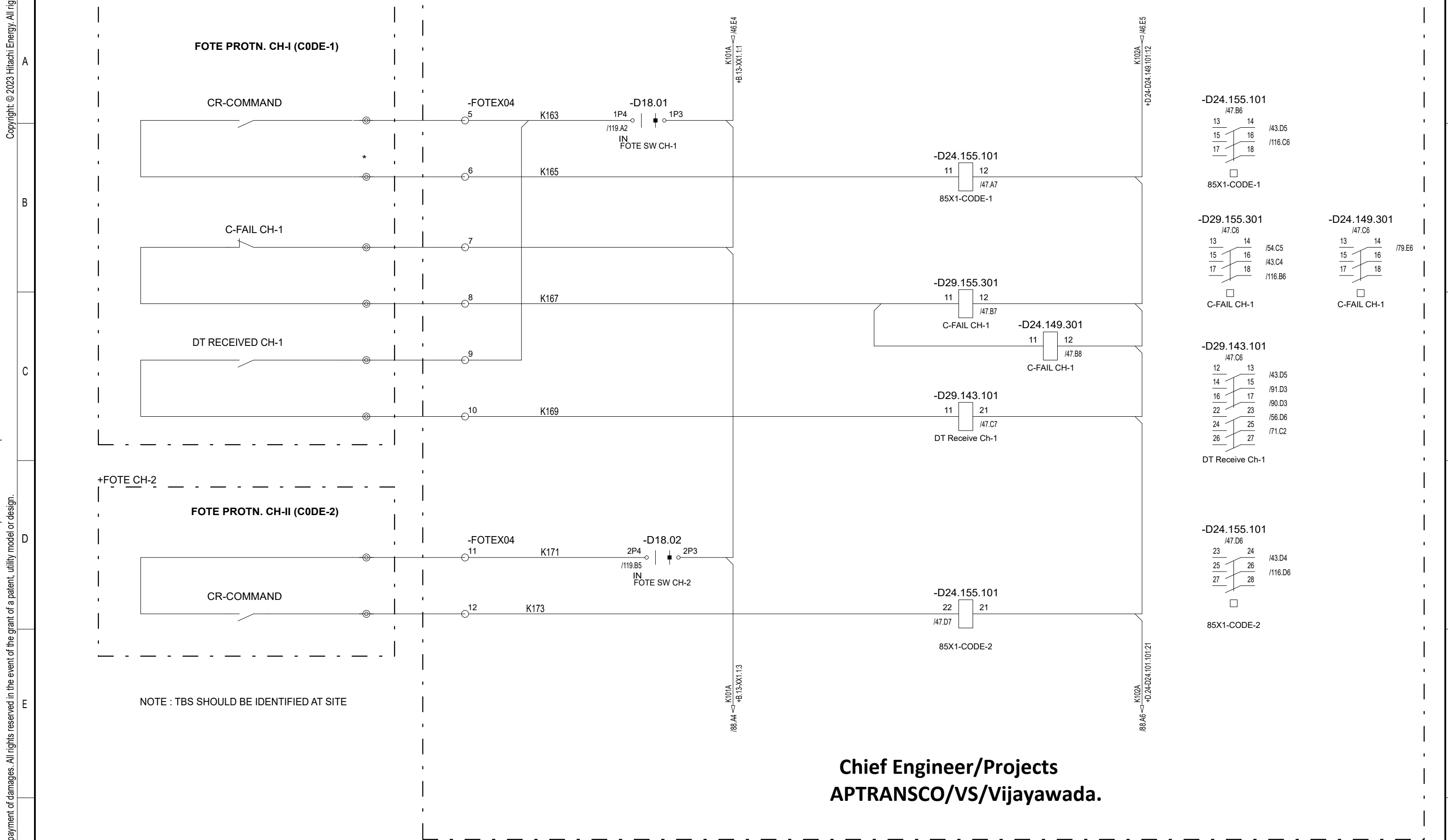


NOTE : TBS SHOULD BE IDENTIFIED AT SITE

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		Binary outputs-M1 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 46
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**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

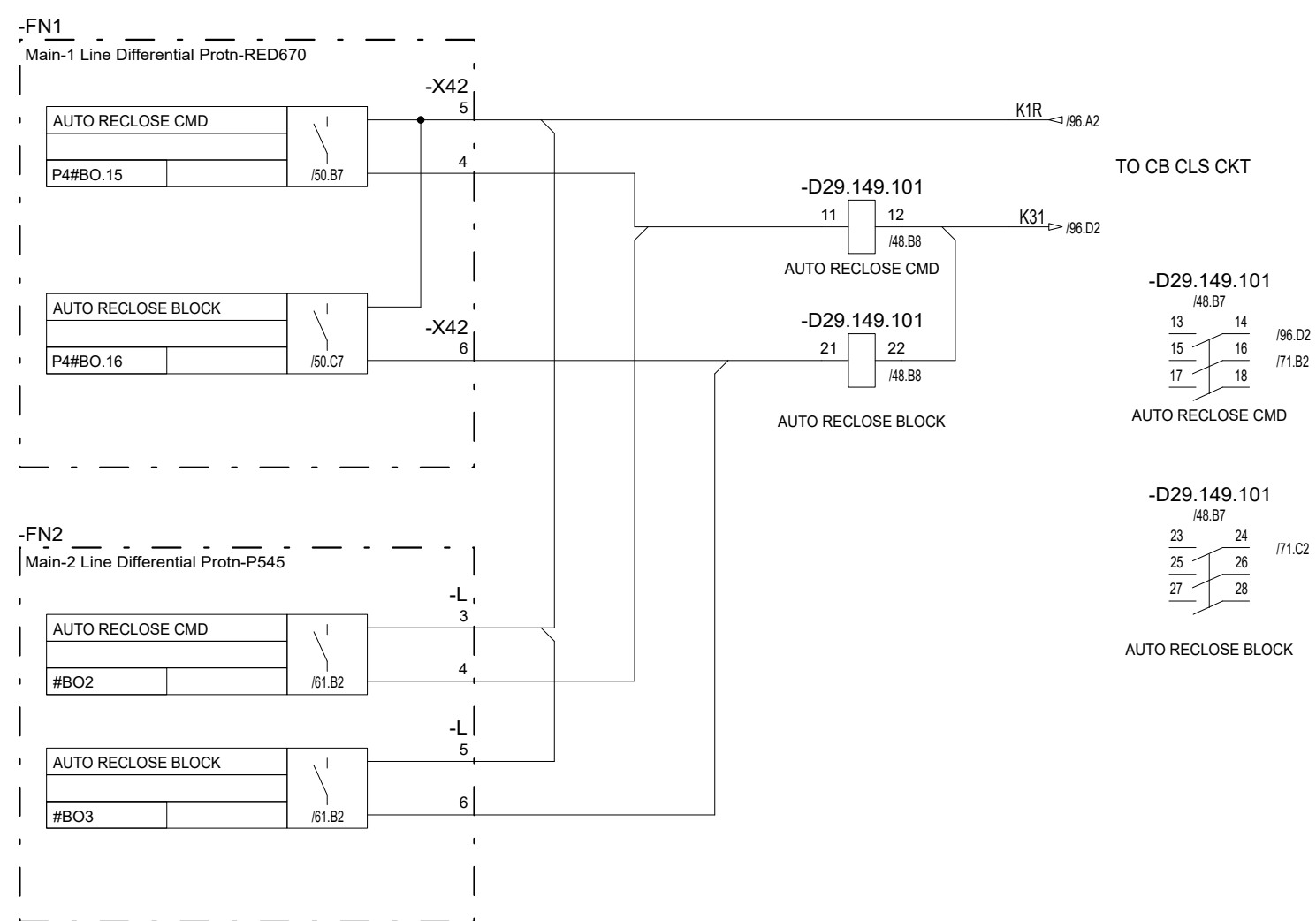
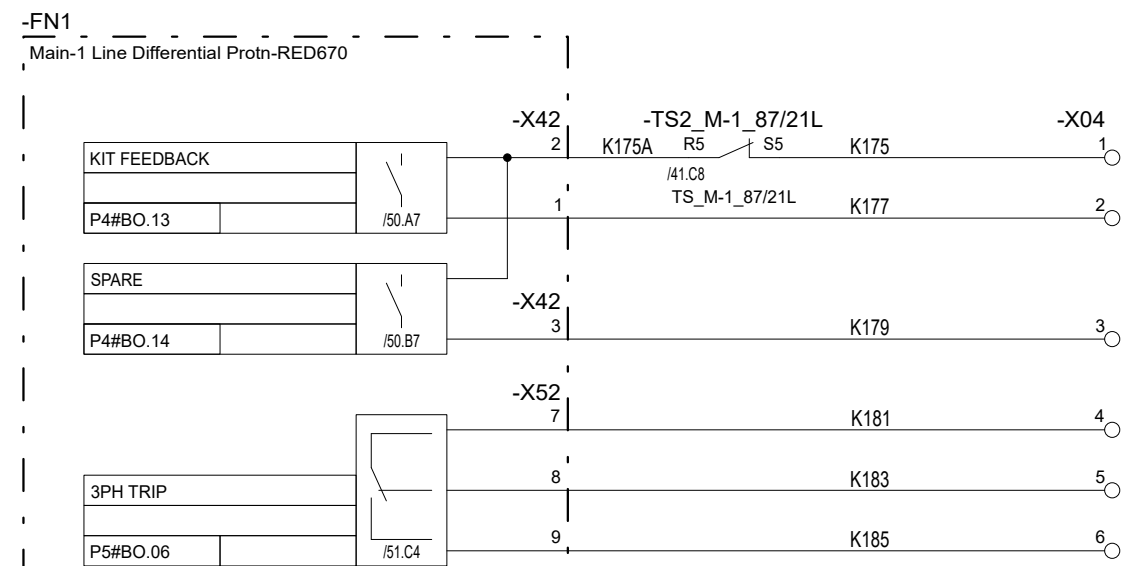
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		Project APTRANSCO		Carrier Received Signal to M1 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 47
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Suitable for conventional 220KV SS only

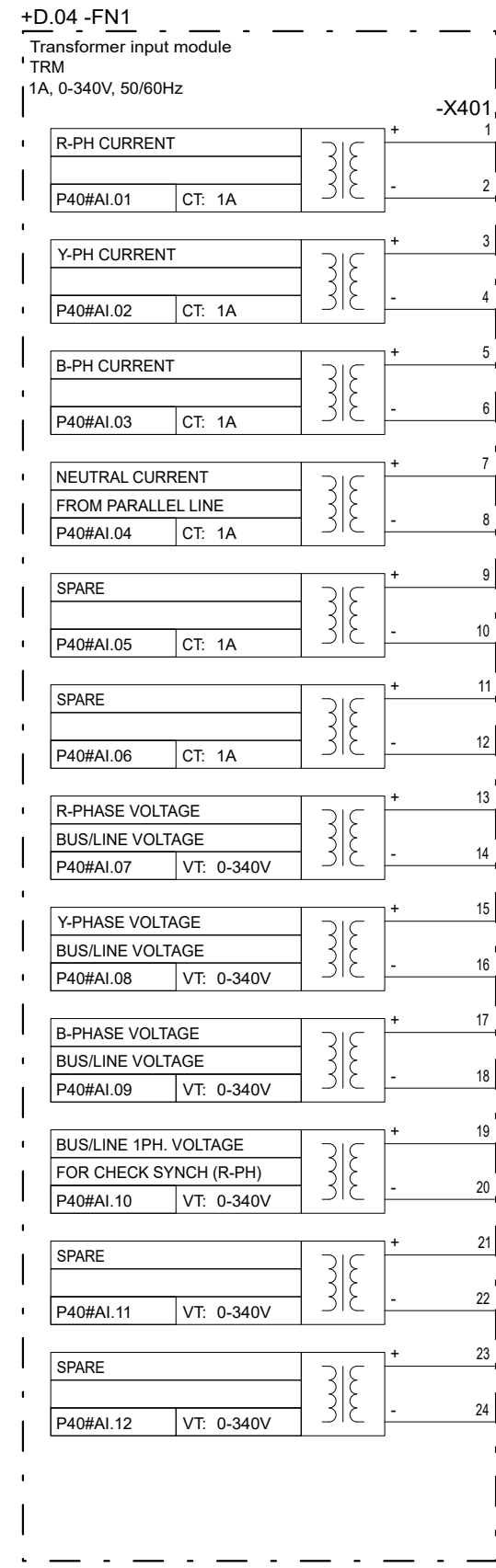
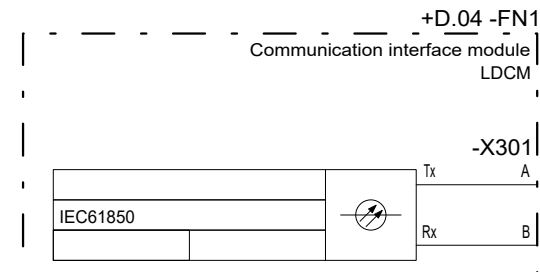
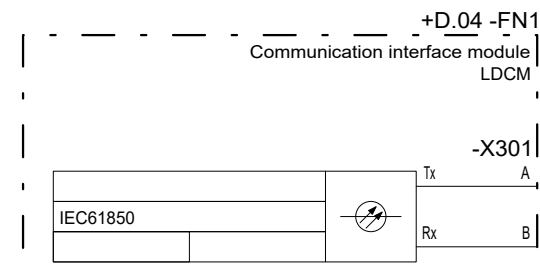
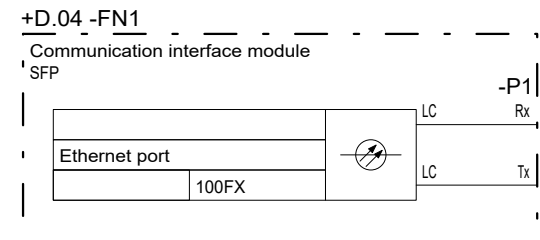
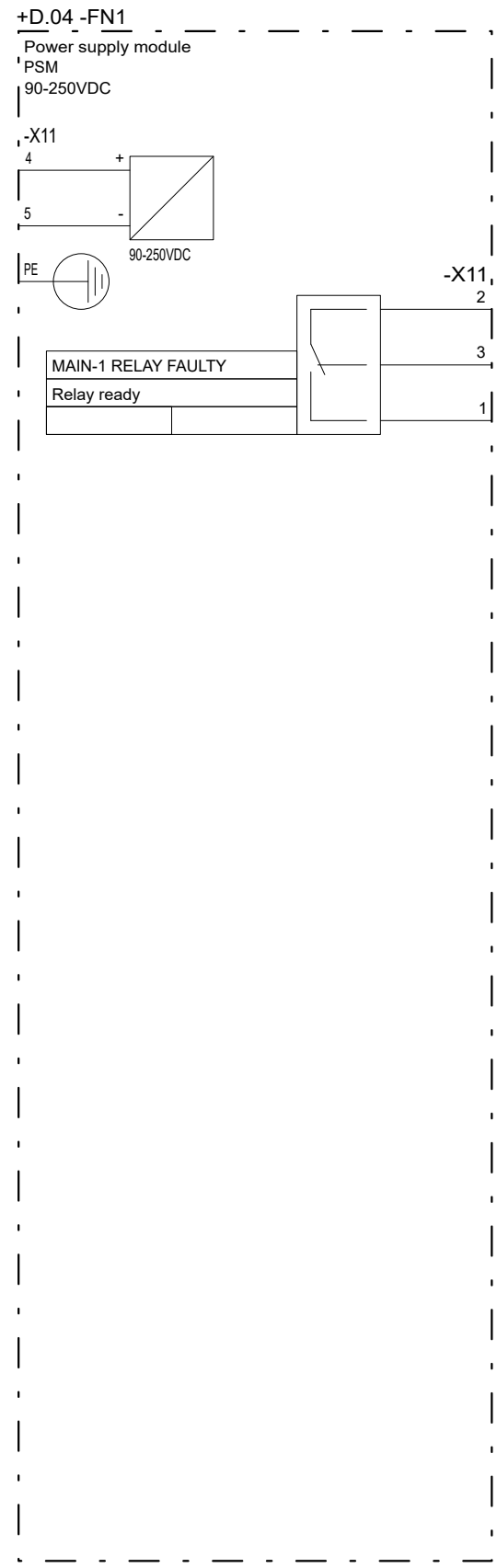
**Chief Engineer/Projects
APTRANSCO/VIS/Vijayawada.**

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	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary outputs-M1 Relay	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
Rev.	Revision note	Date	Name			Sheet 48
						n. sheet 49
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		Project	APTRANSCO STANDARD DRAWING	
Rev.	Revision note	Date	Name	
1MYN691003-102(A3)REV01				

Title		220kV LINE FEEDER Control & Relay Panel Main-1 Protn. Relay-Master Blocks	
Doc. kind.		Circuit diagram	
Resp. dept.		PG-GAS	
Doc. no.		1MNS500925-CBBA	

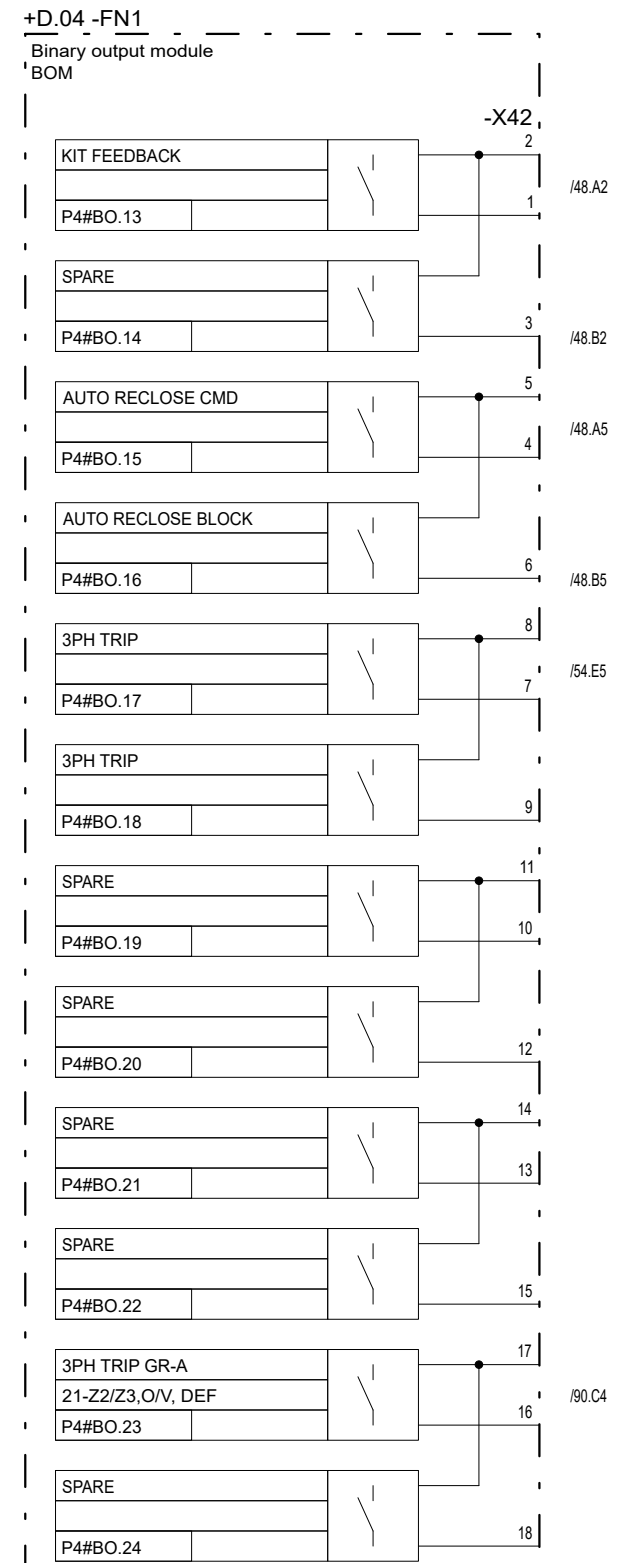
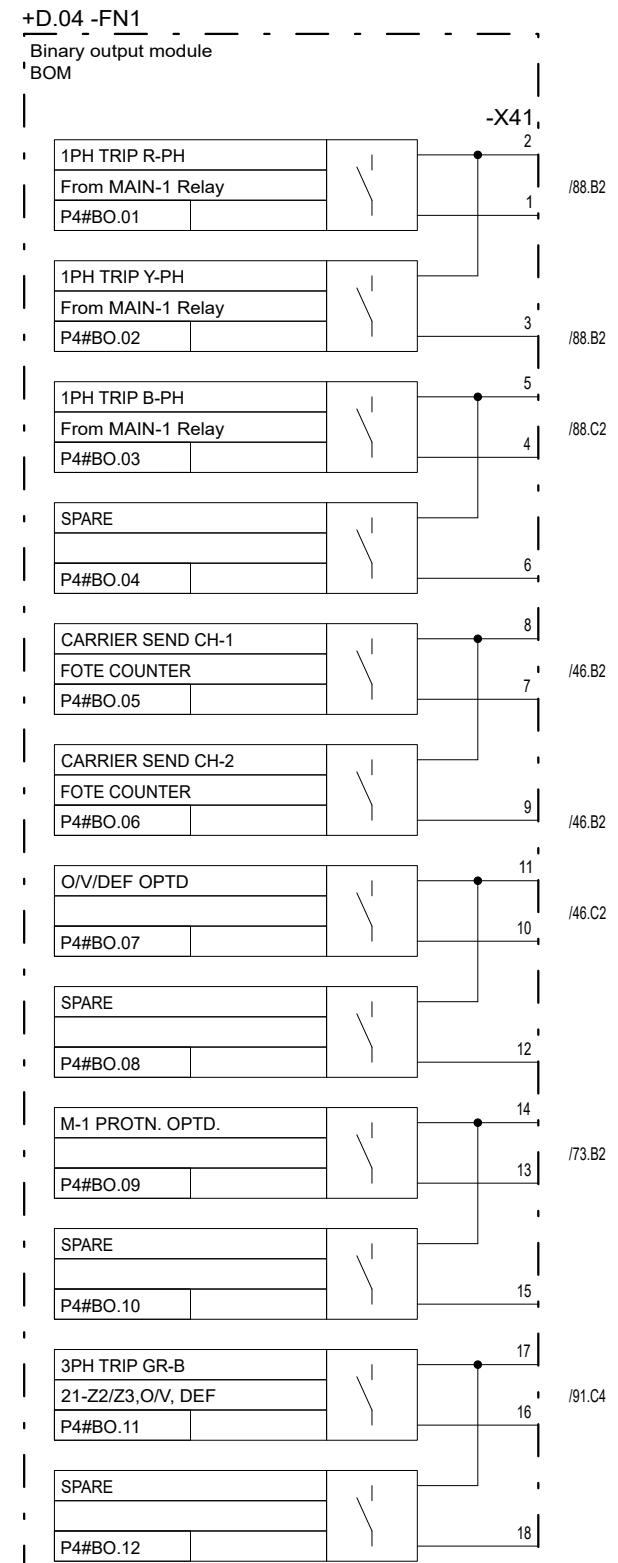
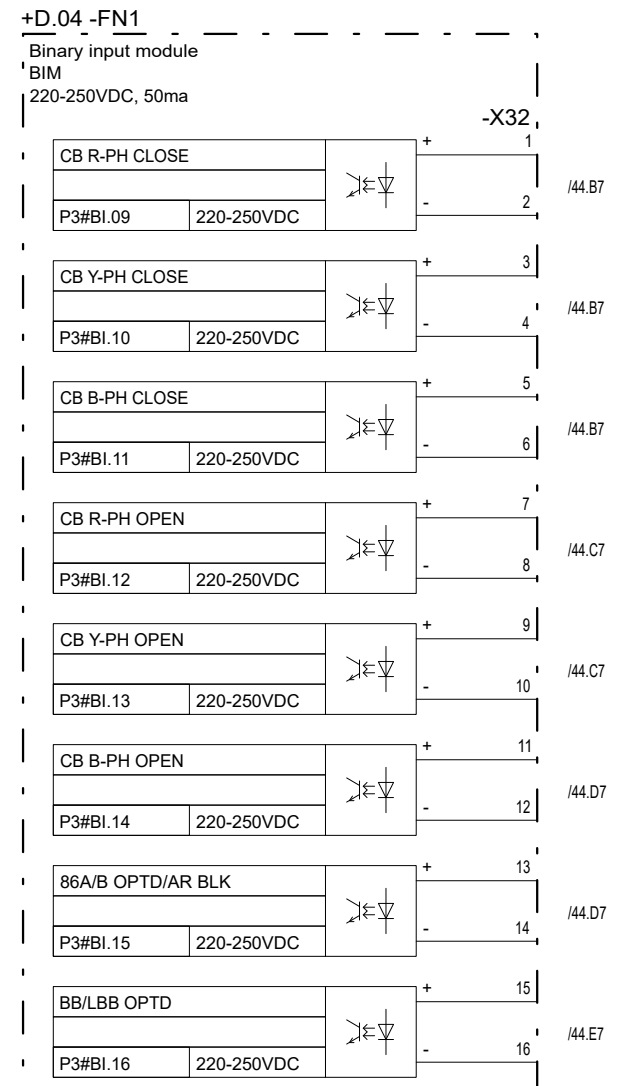
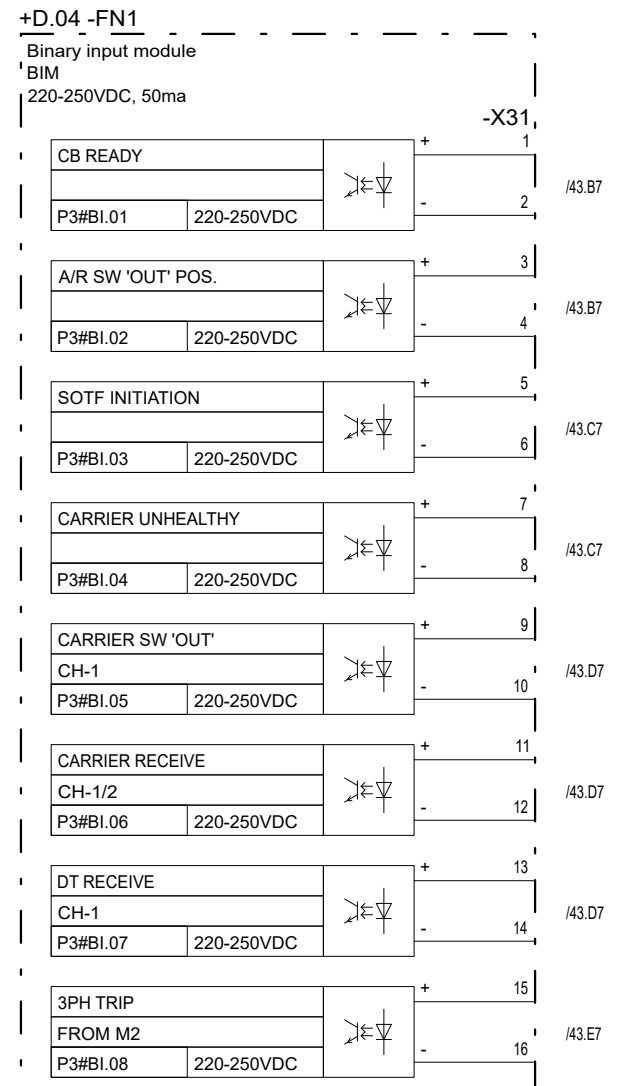
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Doc. kind.		Circuit diagram	
Resp. dept.		PG-GAS	
Doc. no.		1MNS500925-CBBA	

Doc. kind.		Circuit diagram		Ref.Des.		=2KR	
Resp. dept.		PG-GAS		Rev. ind.		Language en	
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				n. sheet		50	

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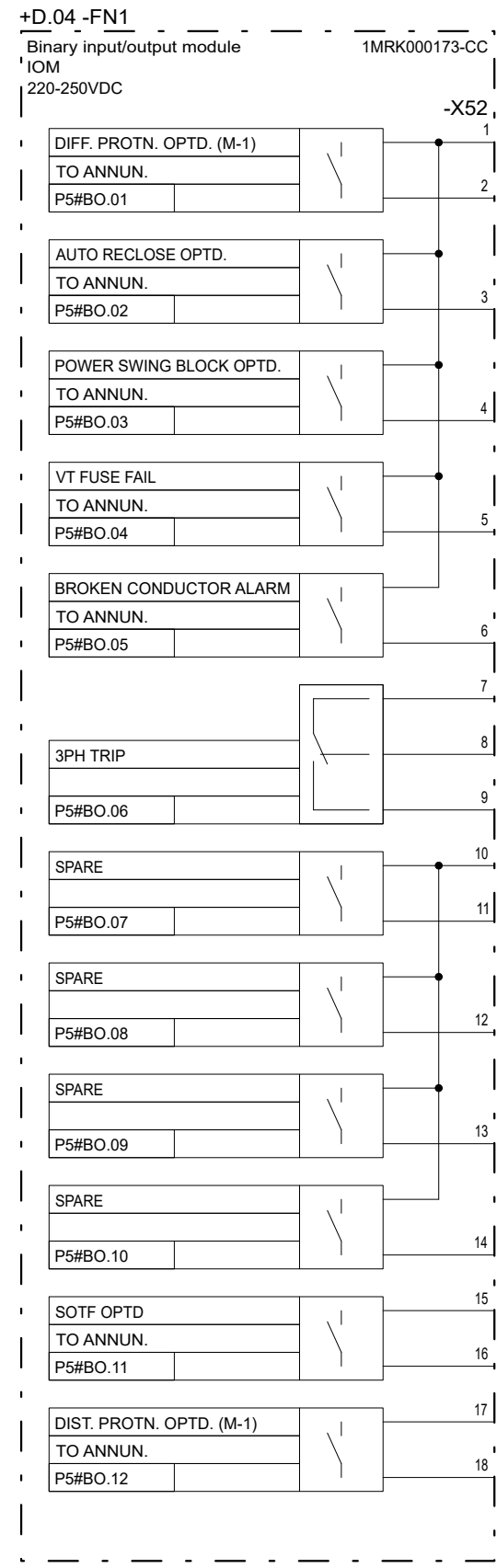
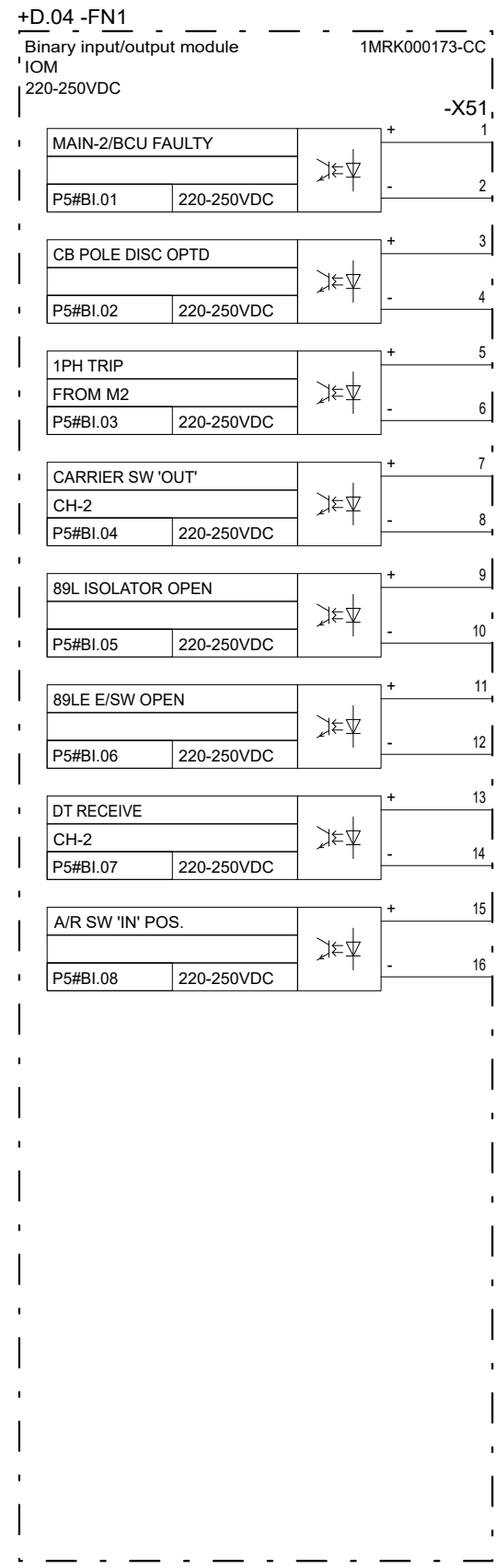


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-1 Protn. Relay-Master Blocks	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 50
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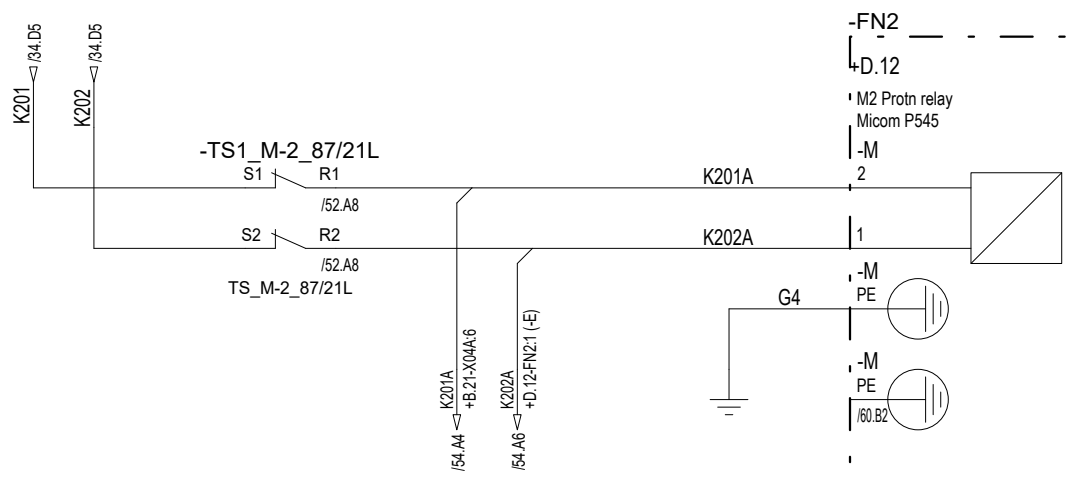


Drawing approval subject to valid vendor registration

**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	
		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	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 51
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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

+D.15 -D15.01 LED indication

List of LED indication (RED)

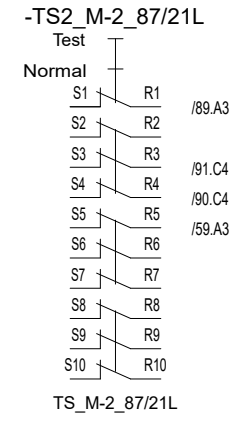
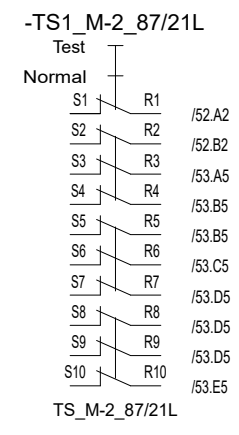
1. R-PH FAULT
2. Y-PH FAULT
3. B-PH FAULT
4. OC/DEF TRIP
5. ZONE-1 TRIP
6. ZONE-2 TRIP
7. ZONE-3 TRIP
8. ZONE-4 TRIP

List of LED indication (YELLOW)

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

List of Functional Key Indication

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

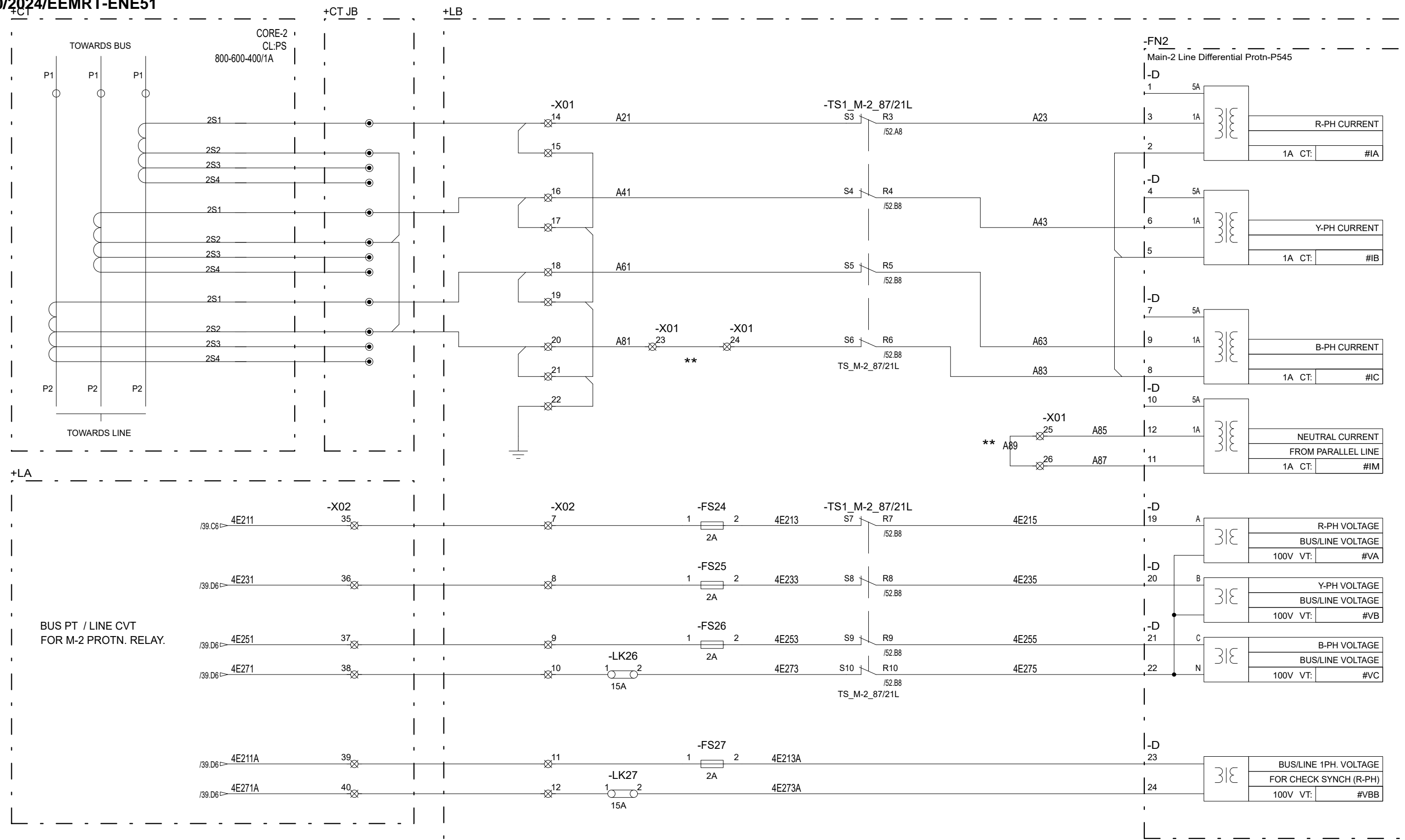


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Power supply Circuit to M2 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 52
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NOTE:- CT DETAILS TO BE CONFIRMED BY THE CUSTOMER

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

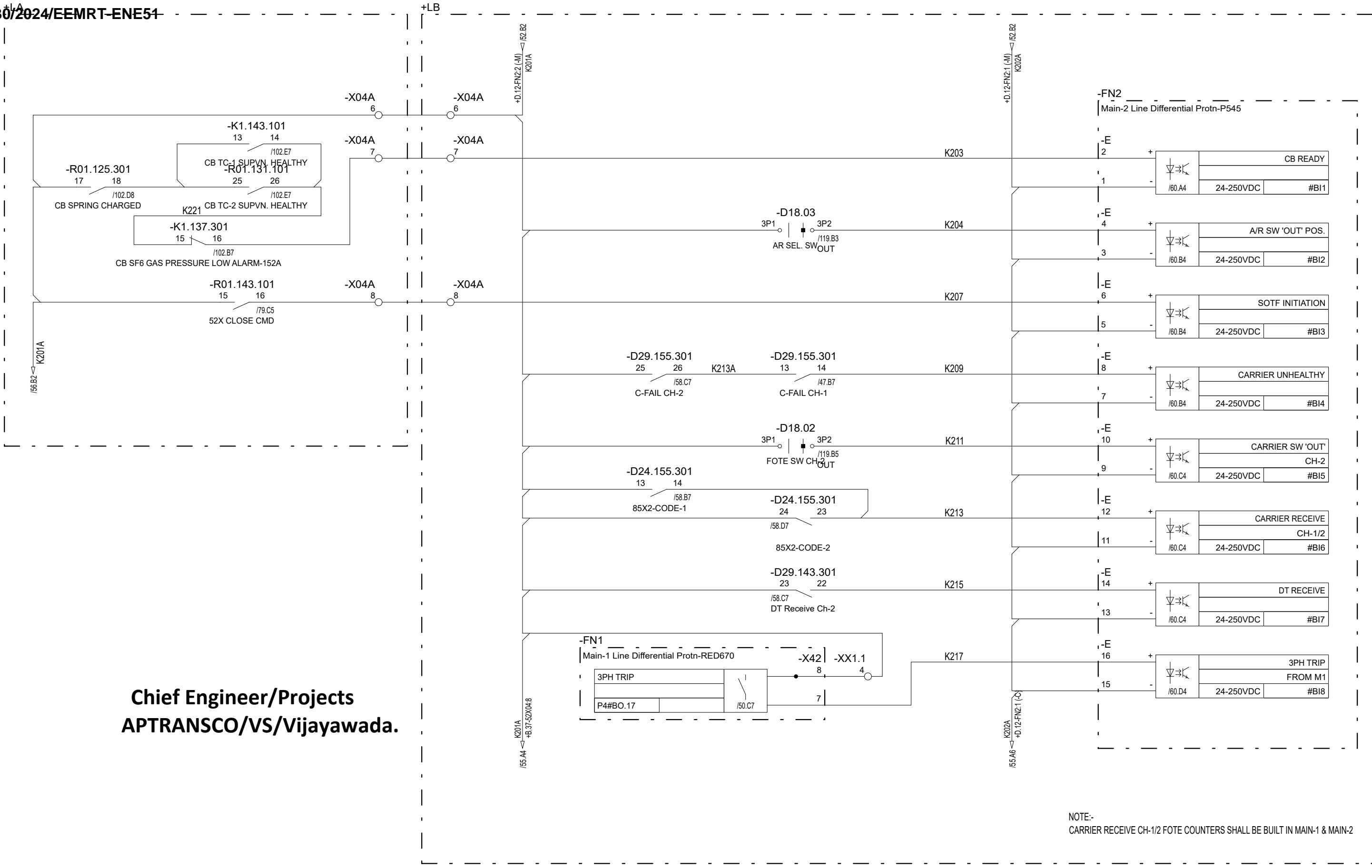
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		Project APTRANSCO		CT/PT Input Circuit to M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 53
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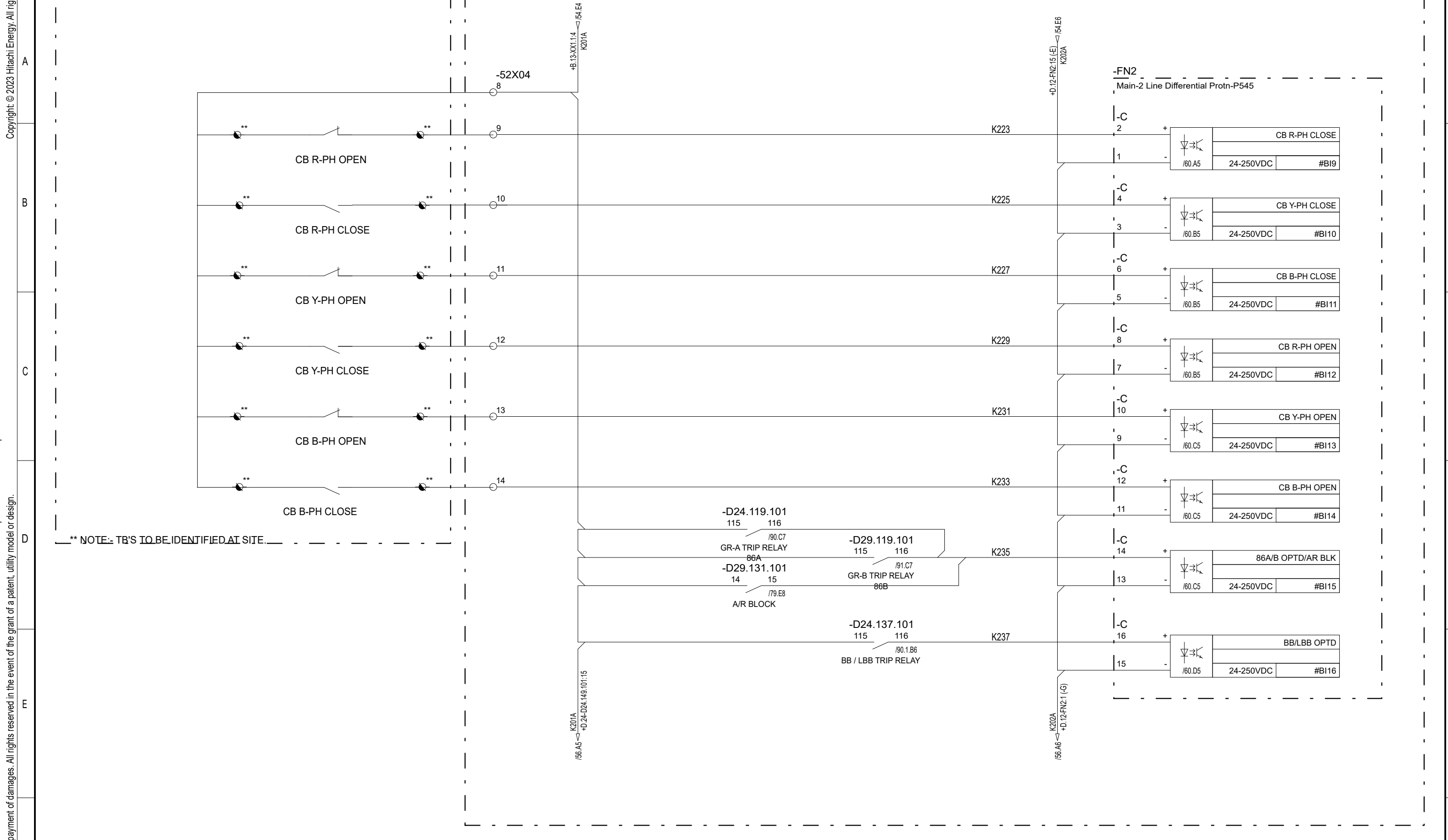
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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-M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 54
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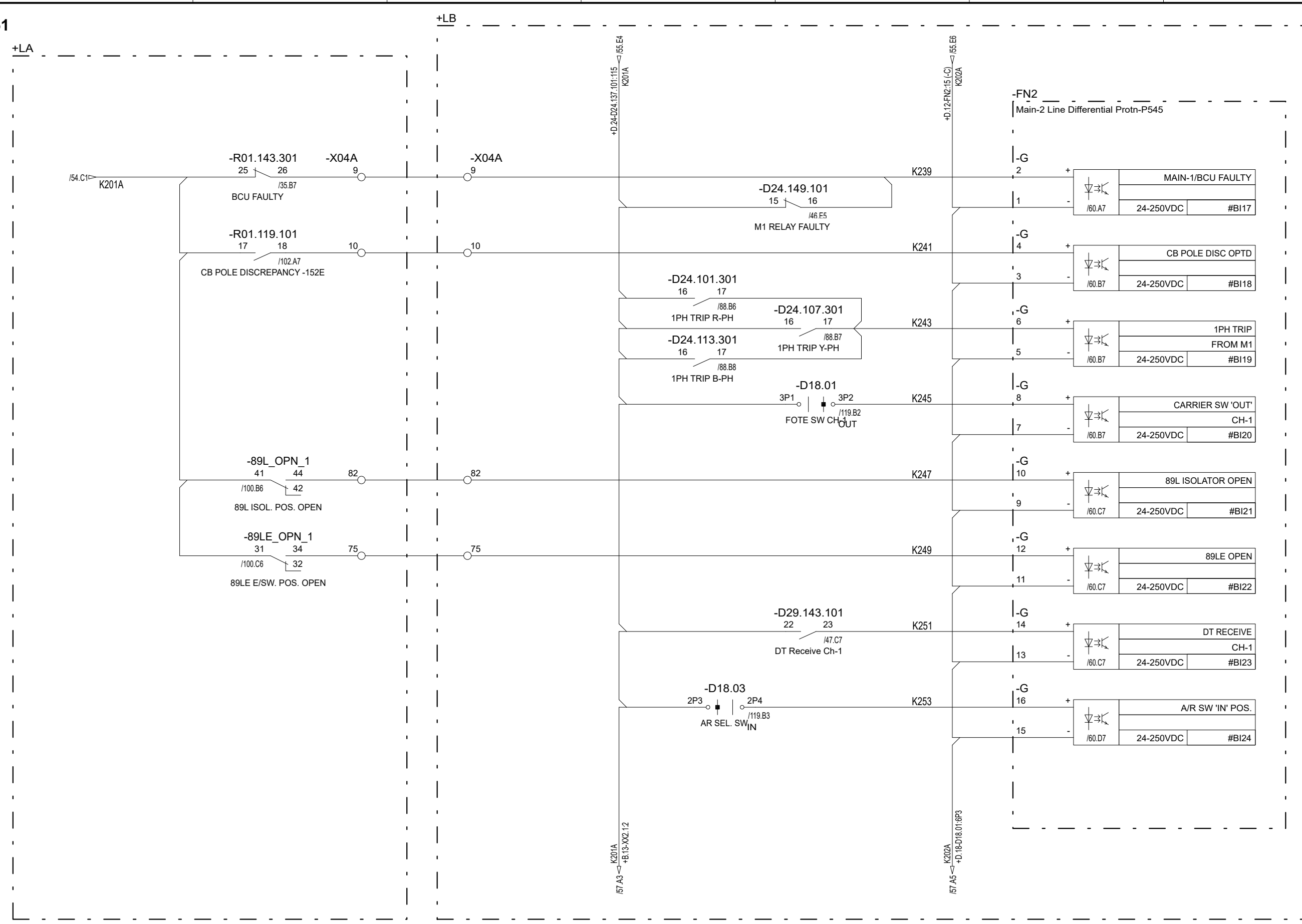
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 55
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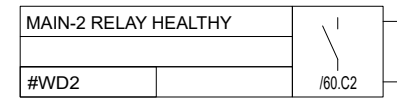
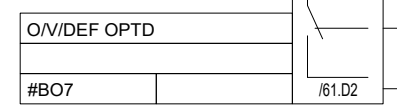
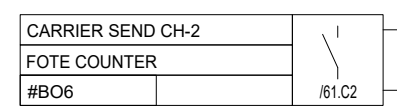
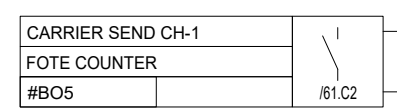
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 56
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-FN2
Main-2 Line Differential Protn-P545



-L 9
-XX2.1 2

-L 11
12

-L 15
13
14

-M 13
14

K255

K257

K259

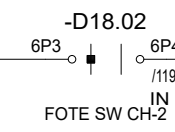
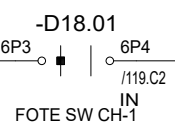
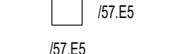
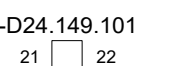
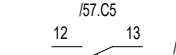
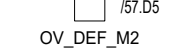
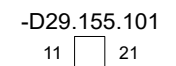
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K201A
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K202A
+D.12-FN2:15 (-G)
/66.E6

K202A
+D.24-D24.155:301:12
/58.A7



+FOTE CH-1

+FOTE CH-2

-FOTEX04 13

6P3 6P4
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IN

6P3 6P4
/119.C5
IN

CS-COMMAND

CS-COMMAND

NOTE : TBS SHOULD BE IDENTIFIED AT SITE

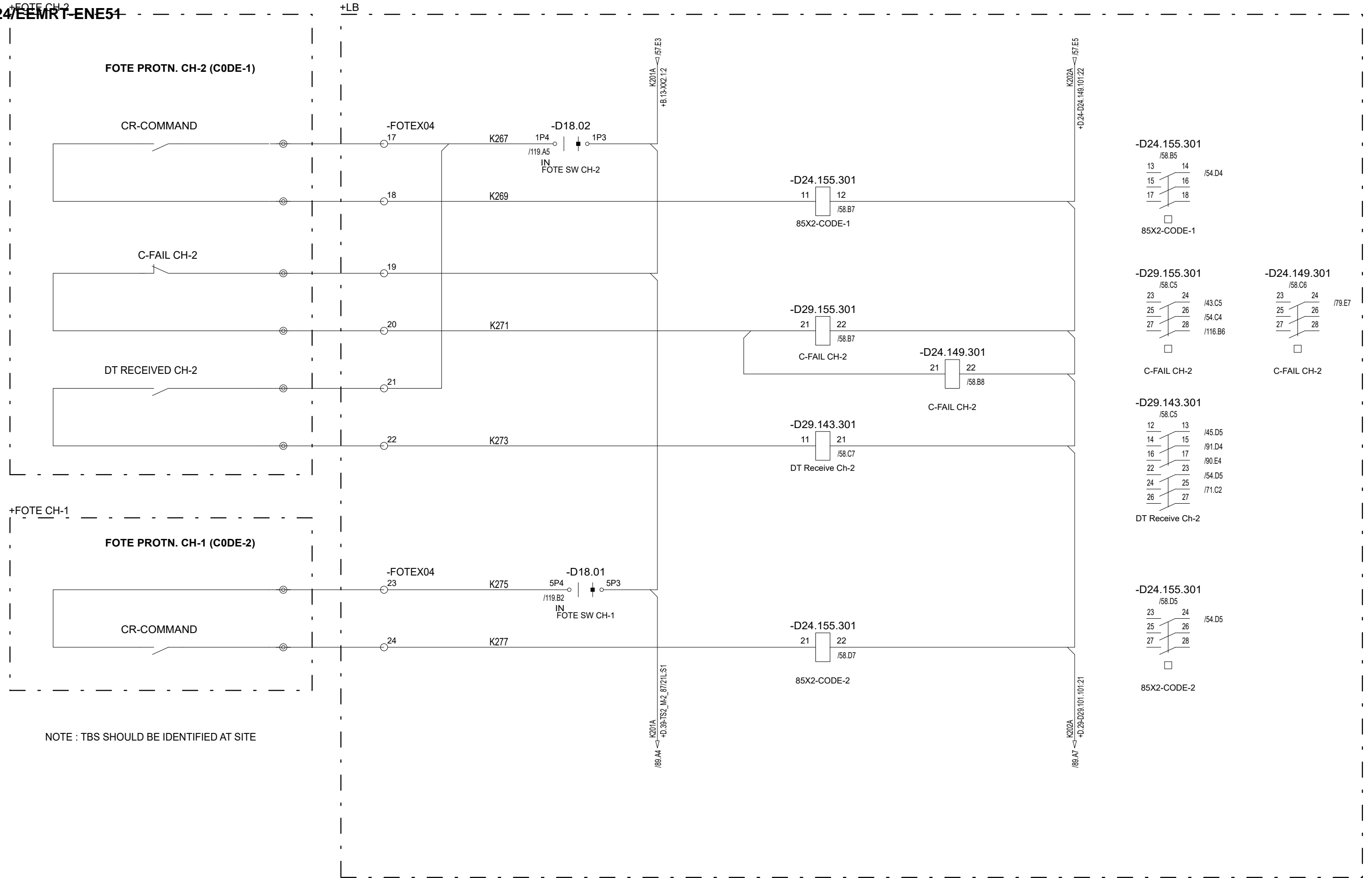
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary outputs-M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 57
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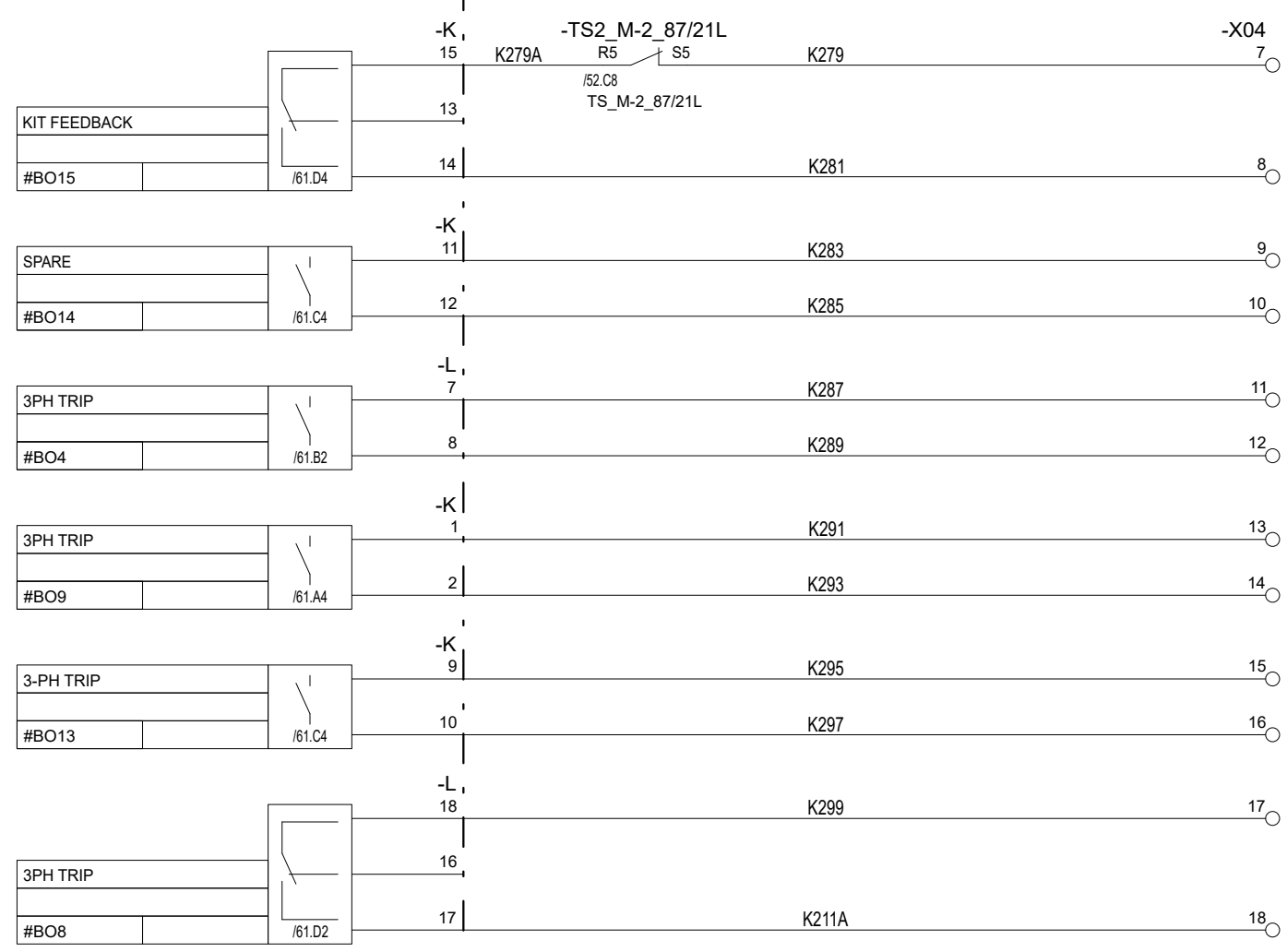
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Carrier Received Signal to M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 58
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-FN2
Main-2 Line Differential Protn-P545



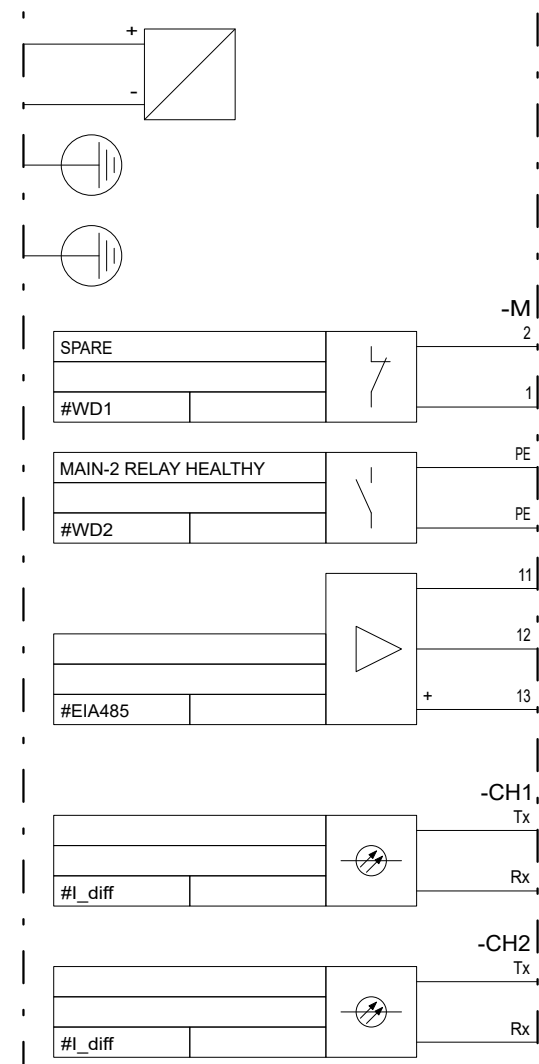
**Chief Engineer/Projects
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO STANDARD DRAWING		Spare Binary Output Circuit-M2 Relay	Resp. dept. PG-GAS	Rev. ind. en
				HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
Rev.	Revision note	Date	Name			Sheet 59
1MYN691003-102(A3)REV01						n. sheet 60

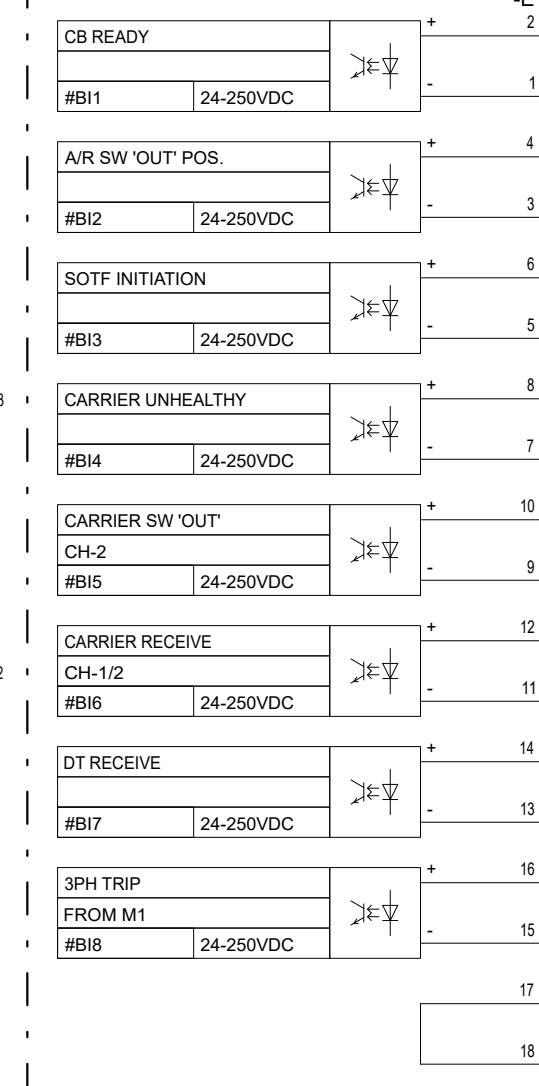
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+D.12 -FN2
M2 Protn relay
Micom P545
110-250VDC, 100-240VAC



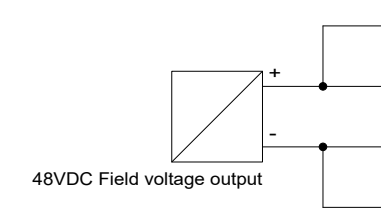
+D.12 -FN2
M2 Protn relay
Micom P545
110-250VDC, 100-240VAC



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



+D.12 -FN2
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Micom P545
110-250VDC, 100-240VAC

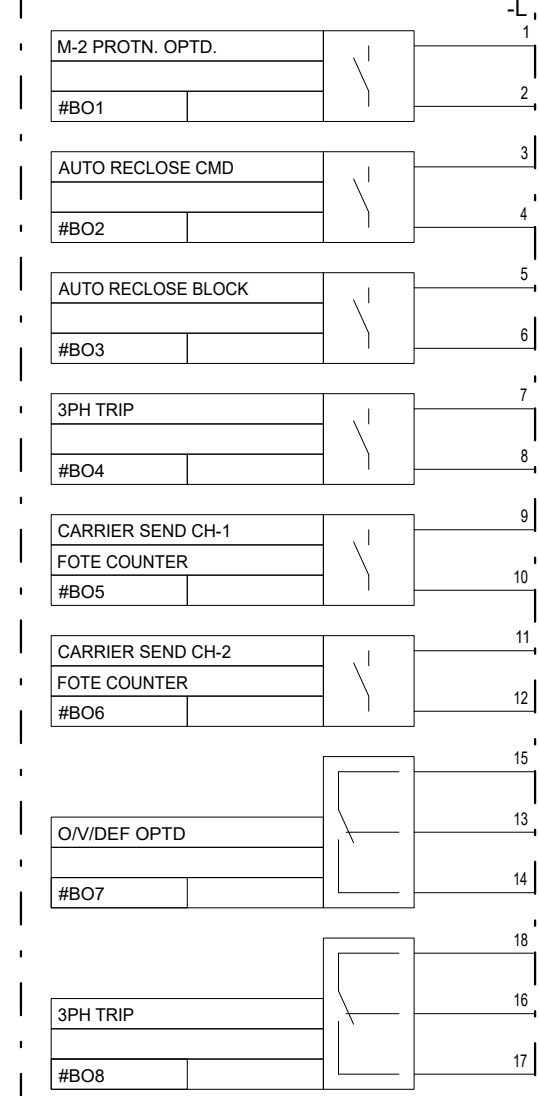


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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-2 Protn. Relay-Master Blocks	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 60
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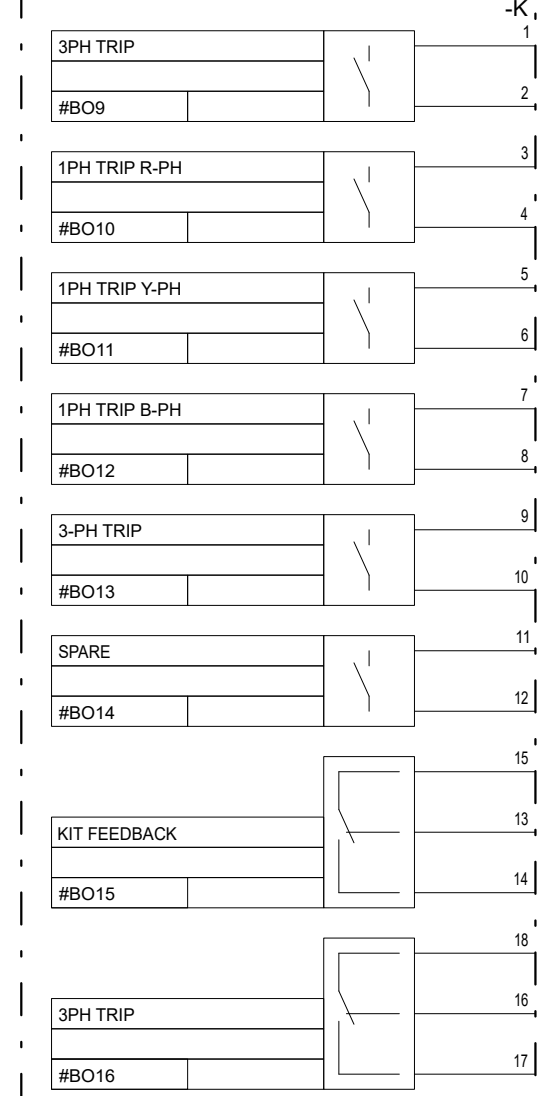
+D.12 -FN2

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



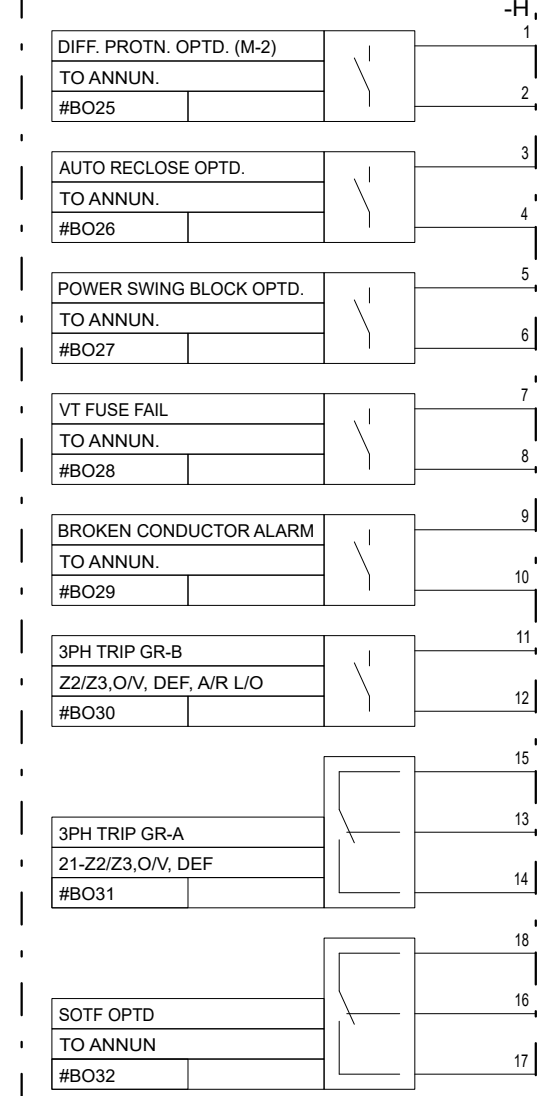
+D.12 -FN2

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



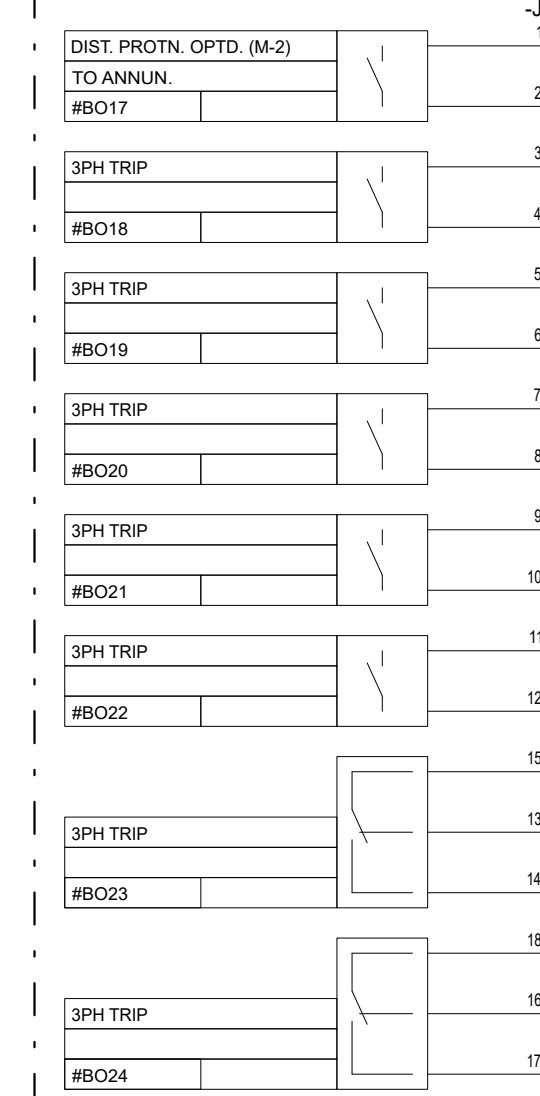
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M2 Protn relay
Micom P545
110-250VDC, 100-240VAC

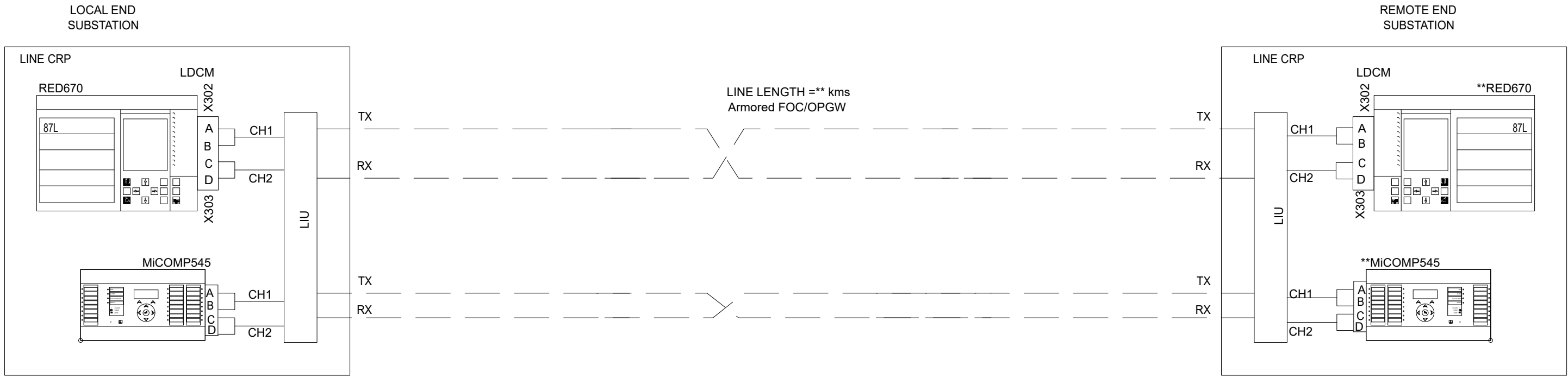


+D.12 -FN2

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



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		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	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 61
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SCOPE:

- 1) Armored Fiber Optic/OPGW Cables is not in Hitachi Energy Scope of Supply.
- 2) Patch cord between LIU to FOTE is not in Hitachi Energy Scope of Supply.
- 3) Patch cord between IED to LIU at local end will be Duplex Singlemode cable with ST connectors.
- 4) Remote end IED/LIU/Patch cord supply is in Hitachi Energy Scope of Supply.

LIST OF SIGNAL SEND THROUGH FIBRE OPTIC CABLE FROM LOCAL END TO REMOTE END

- 1] INTER TRIP SEND
- 2] LOCAL END CURRENT
- 3] BLOCK DIFFERENTIAL PROTN. DURING TEST MODE THROUGH TEST HANDLE
- 4] 89L ISO OPEN & 89LE EARTH. S/W. OPEN FOR REMOTE END EARTH SW & ISOL. CLOSING I/L

LIST OF SIGNAL SEND RECEIVED THROUGH FIBRE OPTIC CABLE FROM REMOTE END TO LOCAL END

- 1] INTER TRIP RECEIVED FROM REMOTE END
- 2] REMOTE END CURRENT
- 3] BLOCK DIFFERENTIAL PROTN. DURING TEST MODE THROUGH TEST HANDLE
- 4] LINE ISO OPEN FOR LOCAL END EARTH SW CLOSING I/L

LIST OF SIGNAL SEND THROUGH FIBRE OPTIC CABLE FROM REMOTE END TO LOCAL END

- 1] INTER TRIP SEND
- 2] REMOTE END CURRENT
- 3] BLOCK DIFFERENTIAL PROTN. DURING TEST MODE THROUGH TEST HANDLE
- 4] LINE ISO OPEN & EARTH S/W. OPEN FOR LOCAL END EARTH SW & ISOL. CLOSING I/L

LIST OF SIGNAL SEND RECEIVED THROUGH FIBRE OPTIC CABLE FROM LOCAL END TO REMOTE END

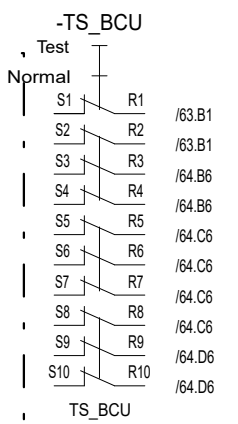
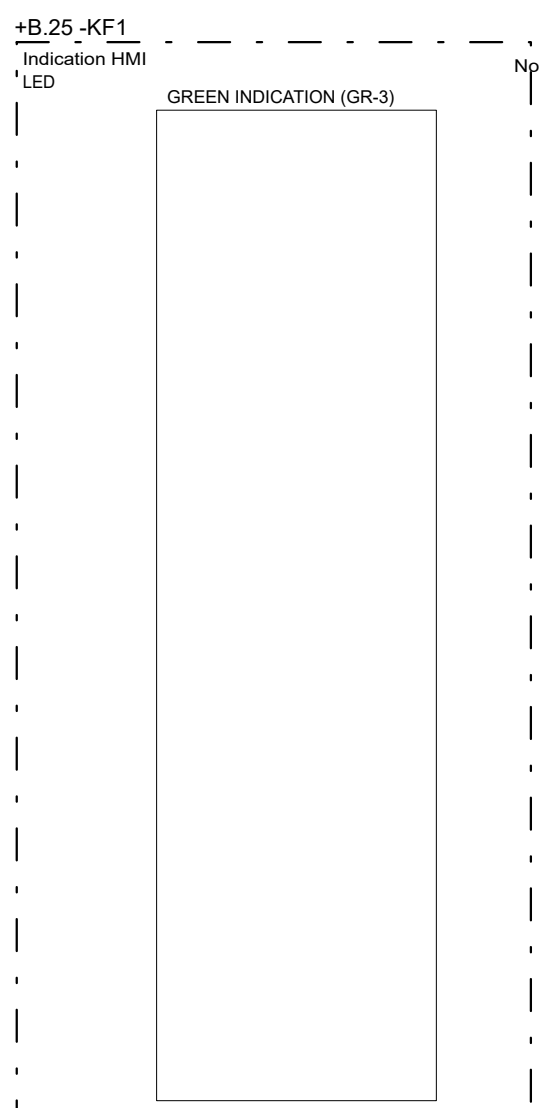
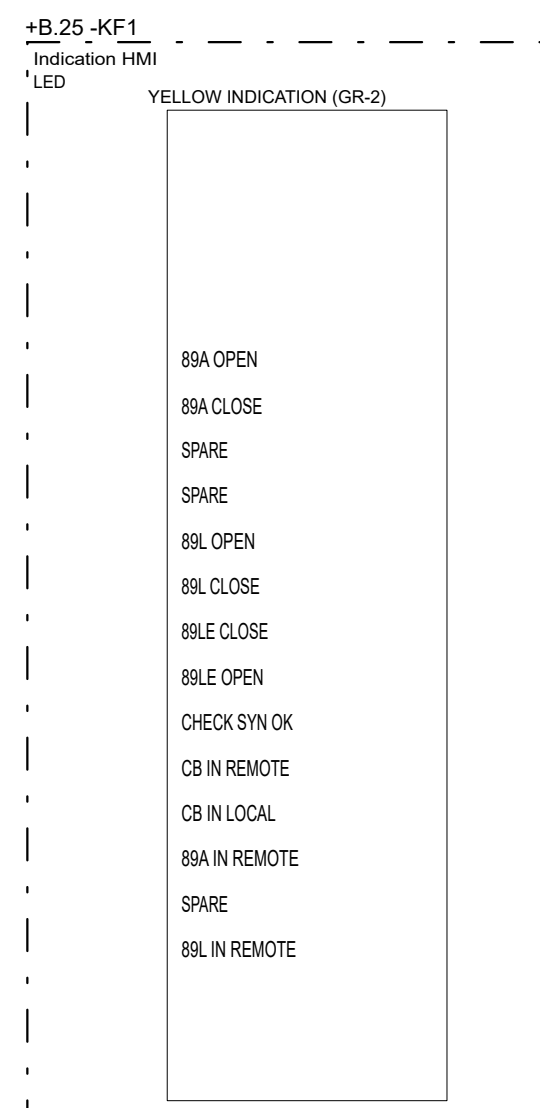
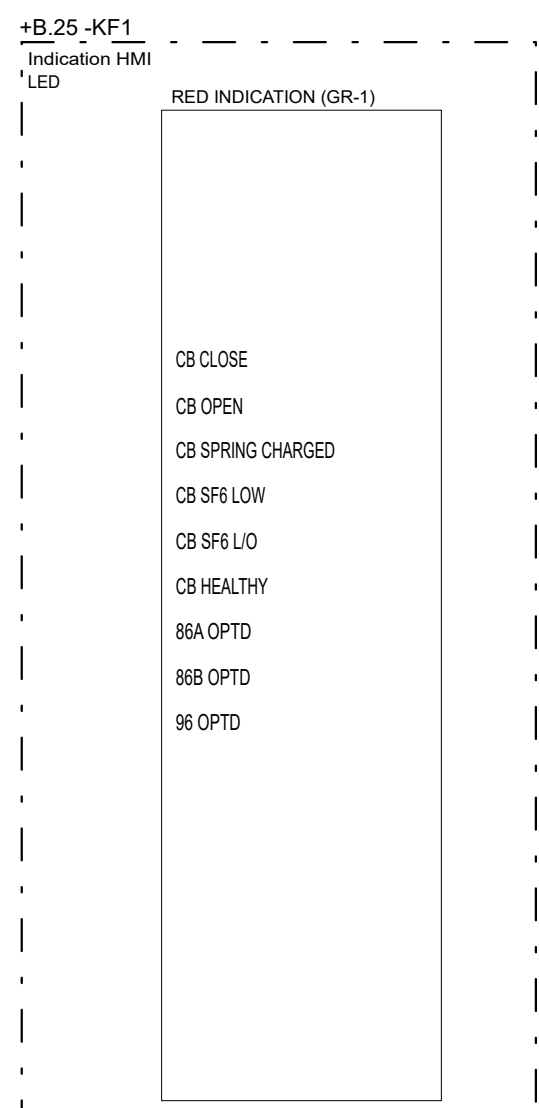
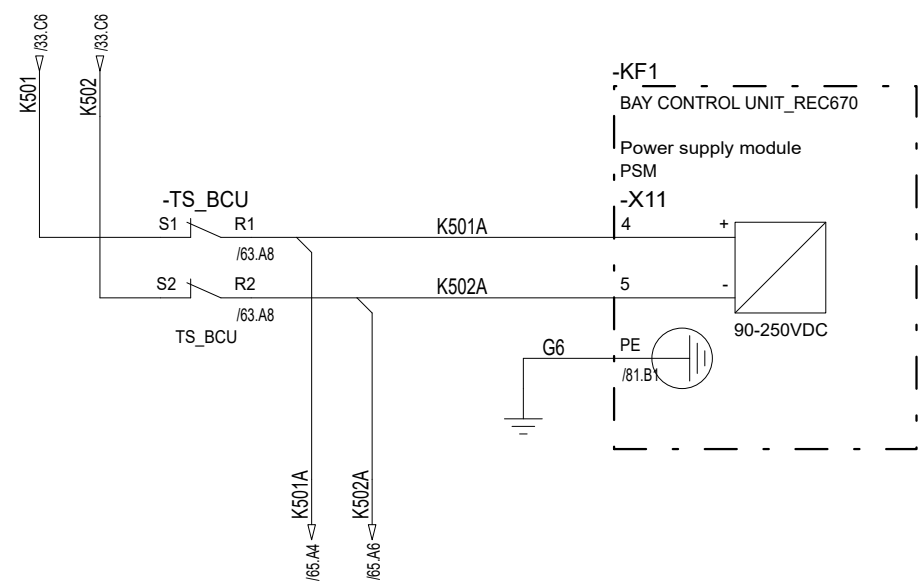
- 1] INTER TRIP RECEIVED FROM LOCAL END
- 2] LOCAL END CURRENT
- 3] BLOCK DIFFERENTIAL PROTN. DURING TEST MODE THROUGH TEST HANDLE
- 4] 89L ISO OPEN FOR REMOTE END EARTH SW CLOSING I/L

** Note: Line length to be confirmed by customer during approval.

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		LINE DIFF. PROTN COMMUNICATION	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
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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

List of Functional Key Indication

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

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

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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA	Sheet 63	n. sheet 64
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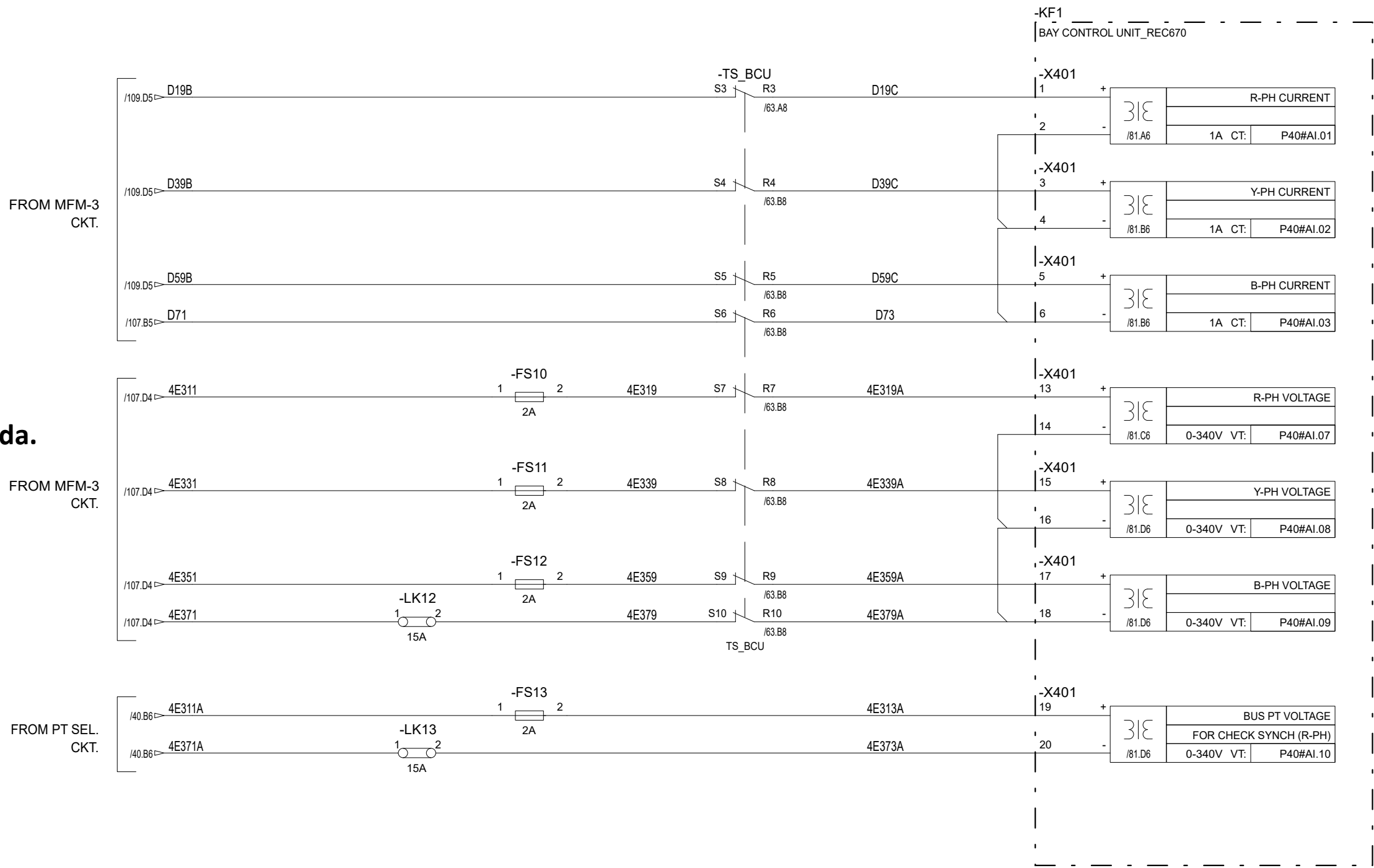
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		BCU-CT & PT Input Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
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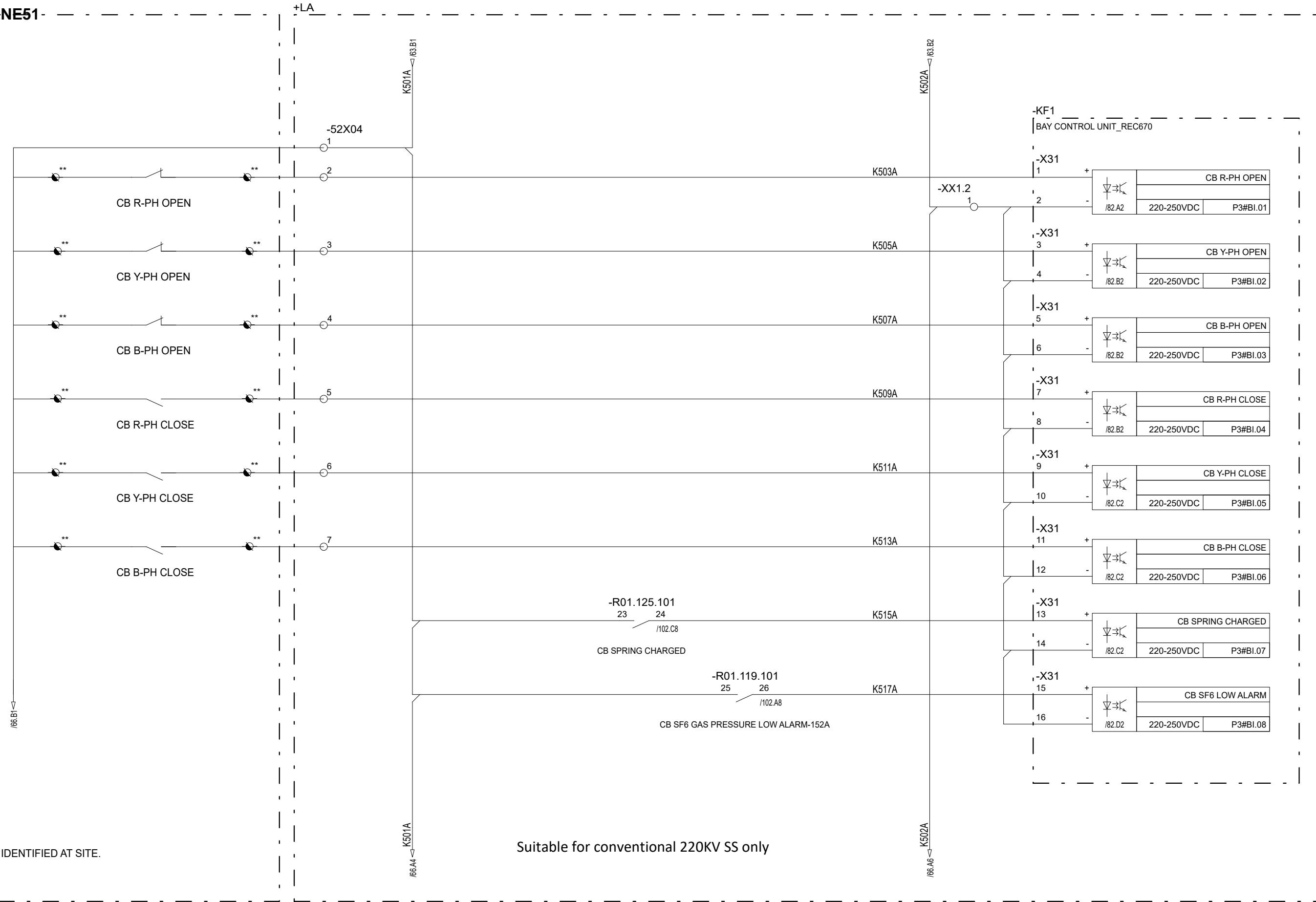
B

C

D

F

F



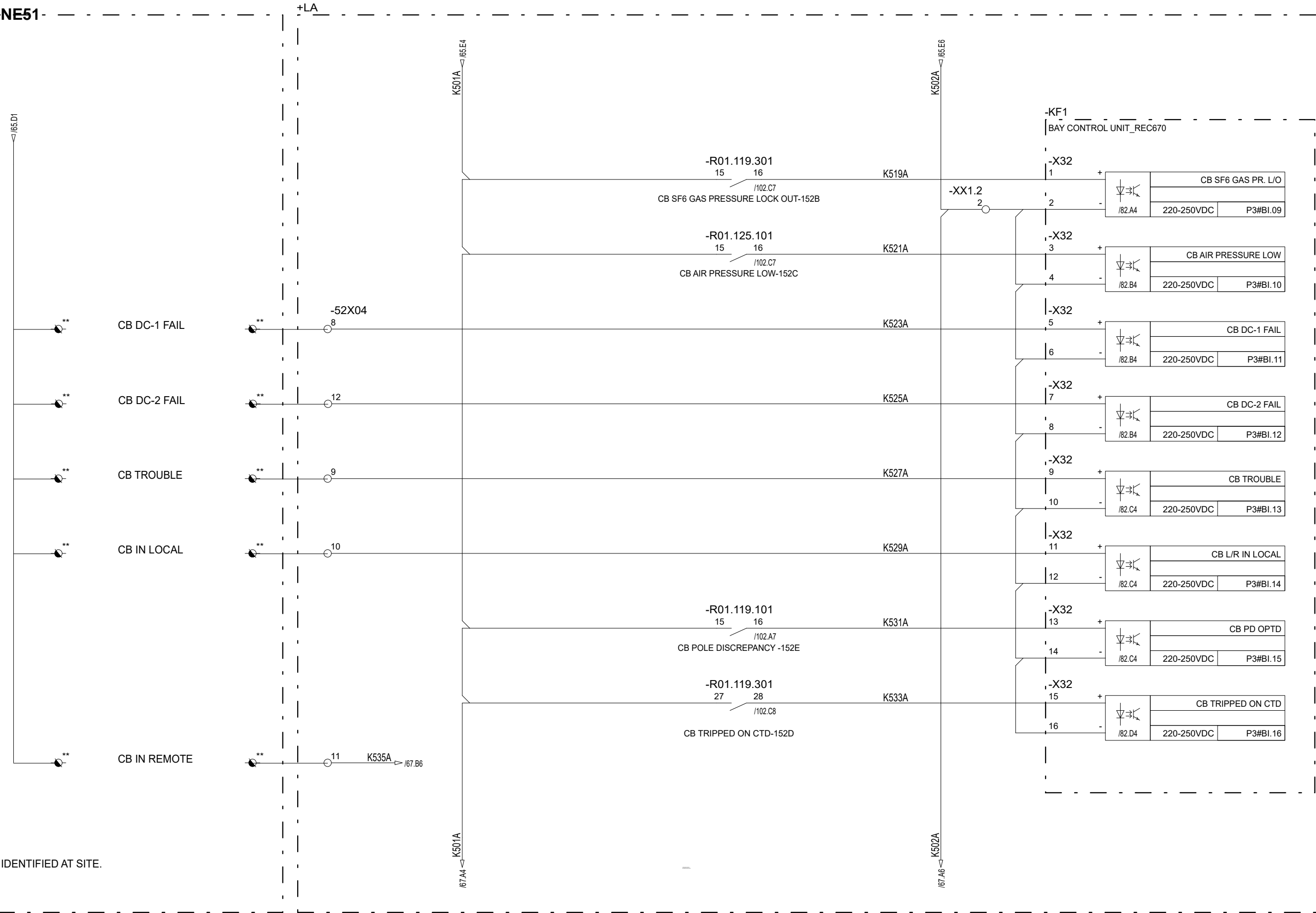
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Suitable for conventional 220KV SS only

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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
Rev.	Revision note	Date	Name			Sheet 66
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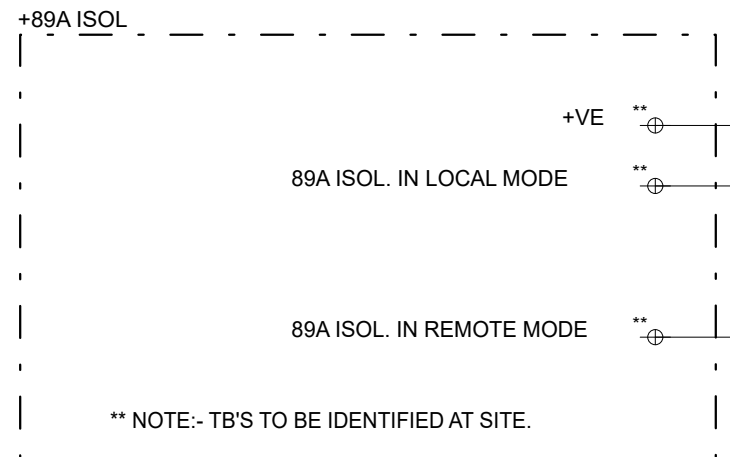
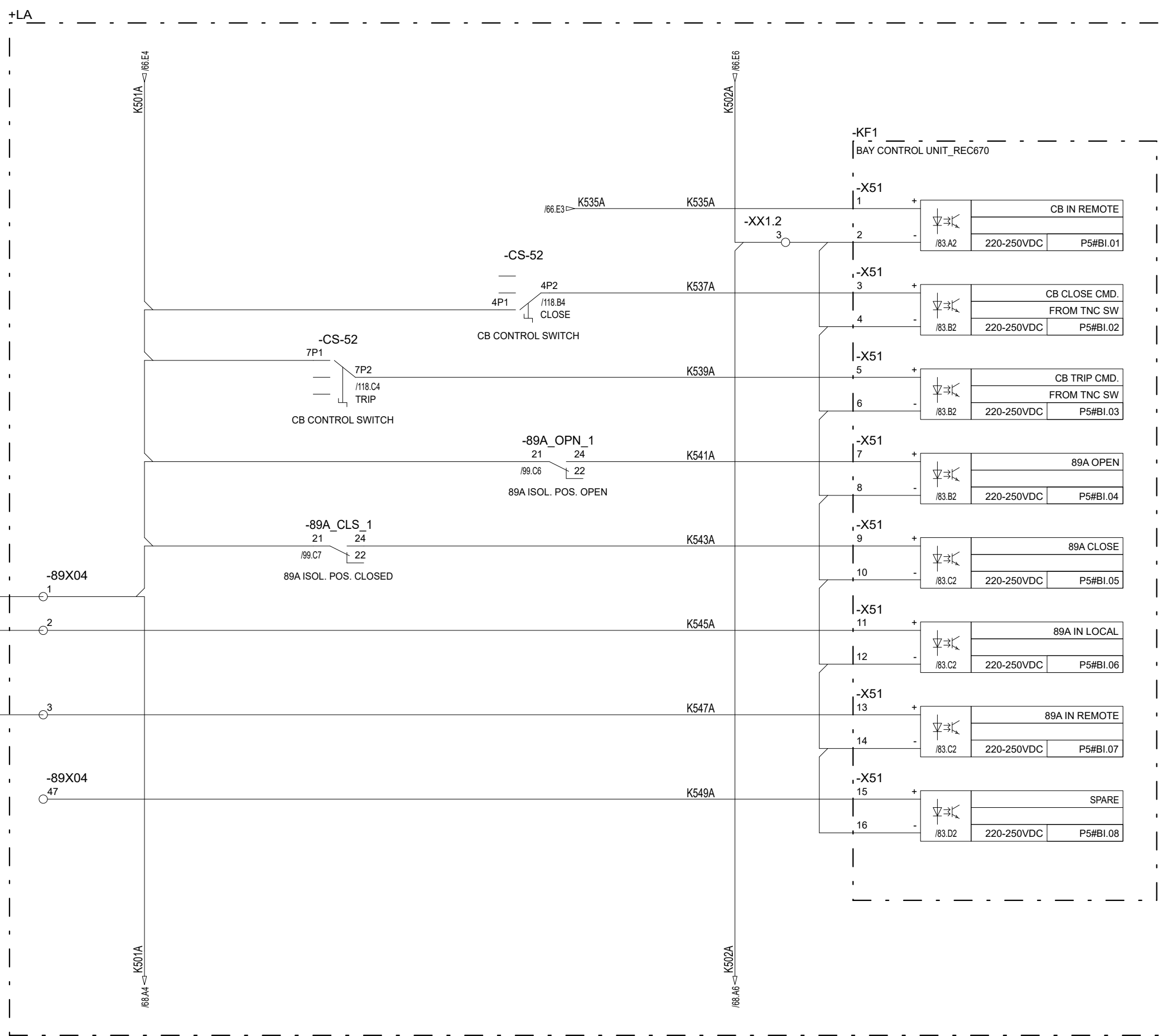
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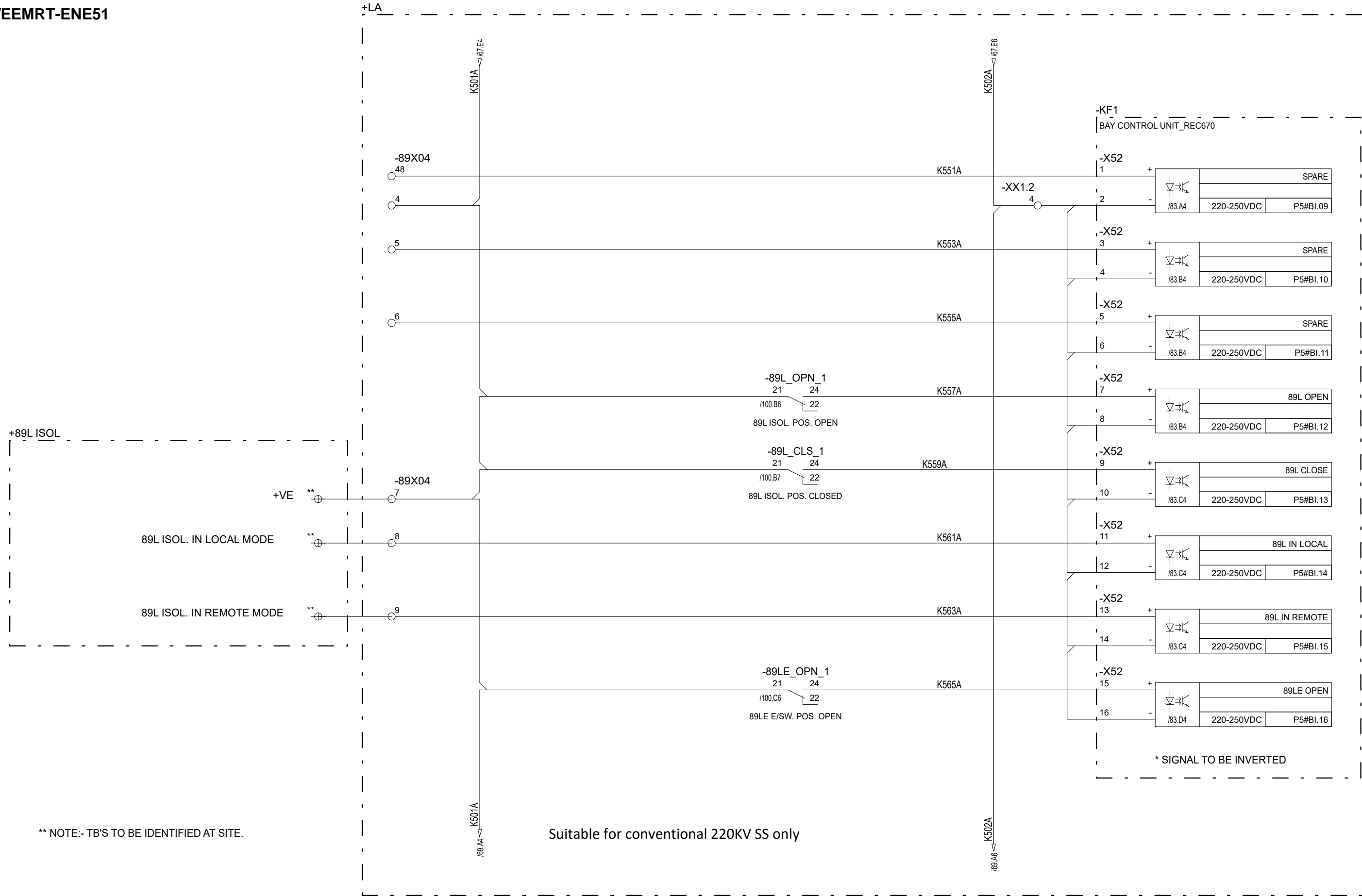


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Rev.		Revision note		Date		Name		Language en	
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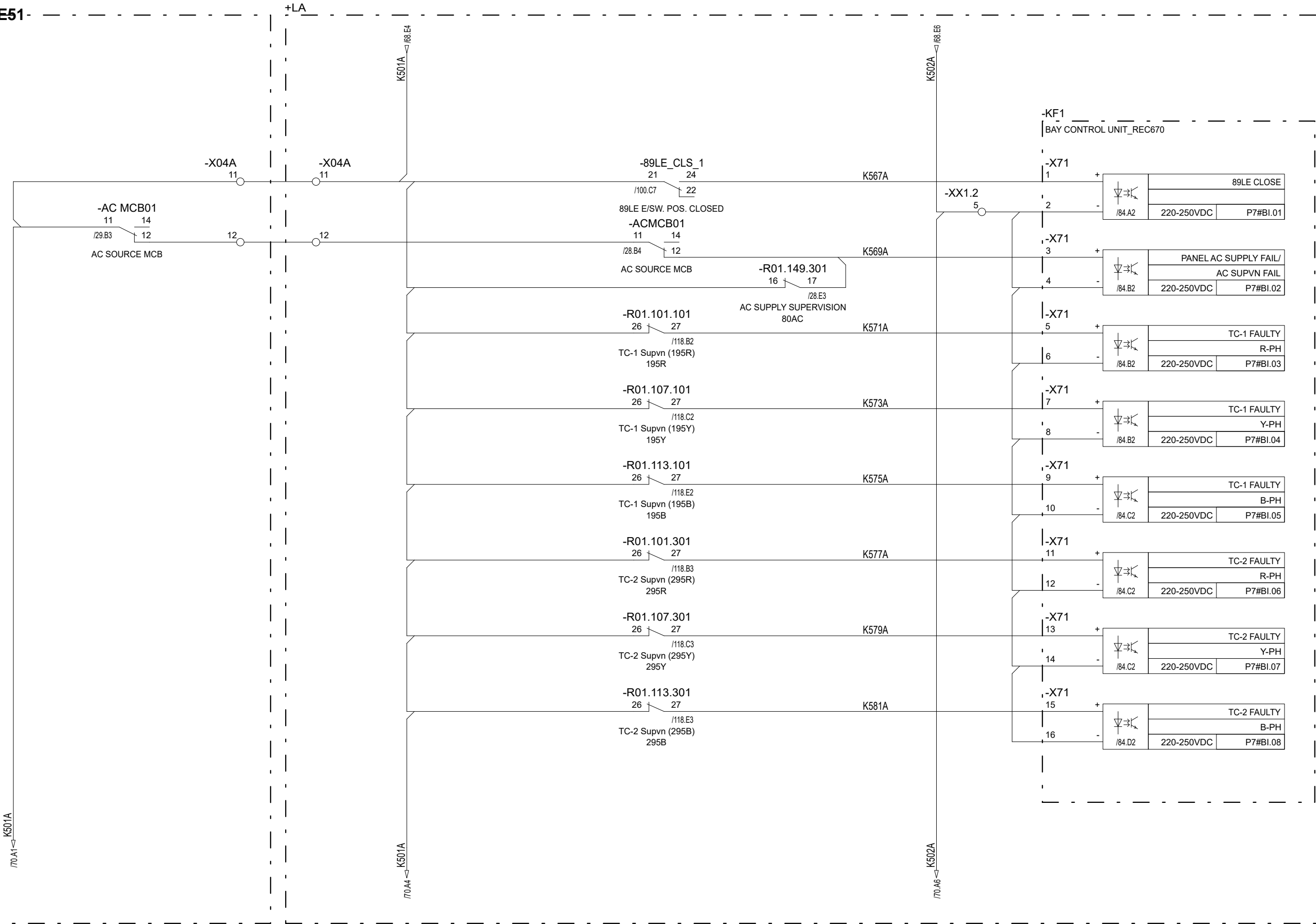
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
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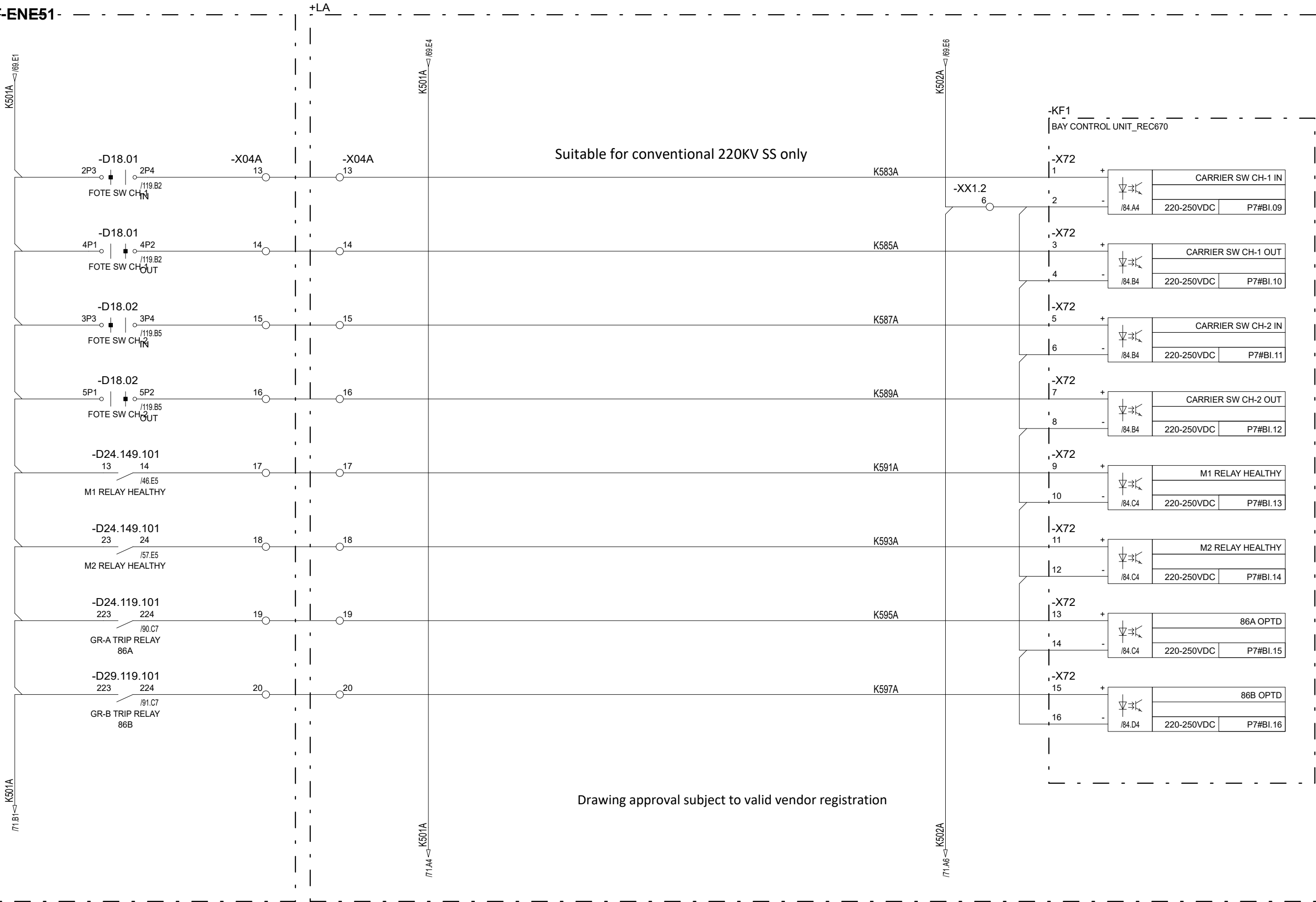


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		Project	APTRANSCO		BCU-Binary Input Ckt.		PG-GAS		Rev. ind.	Language		en
		STANDARD DRAWING			Hitachi Energy India Limited						Sheet	69
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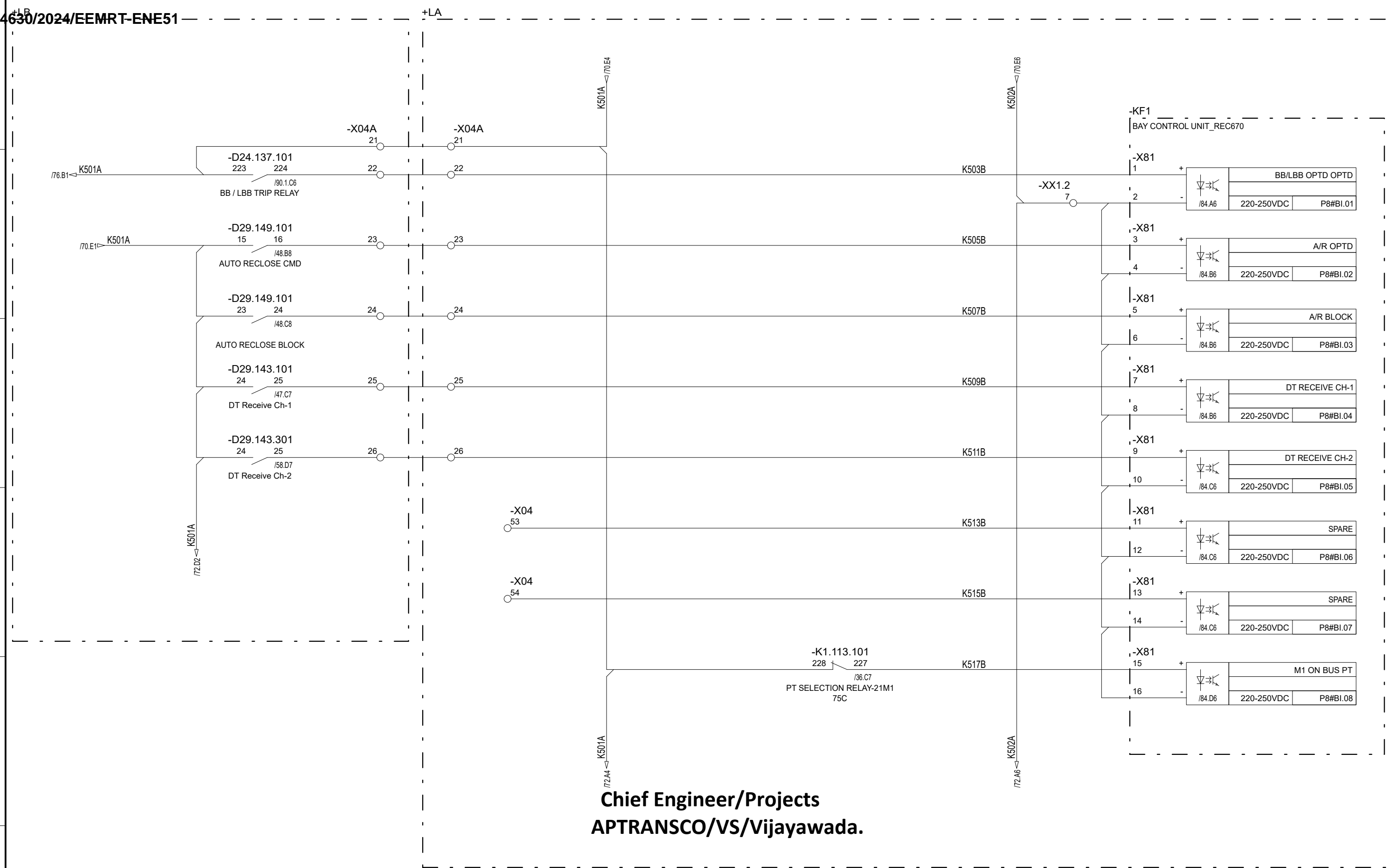


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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
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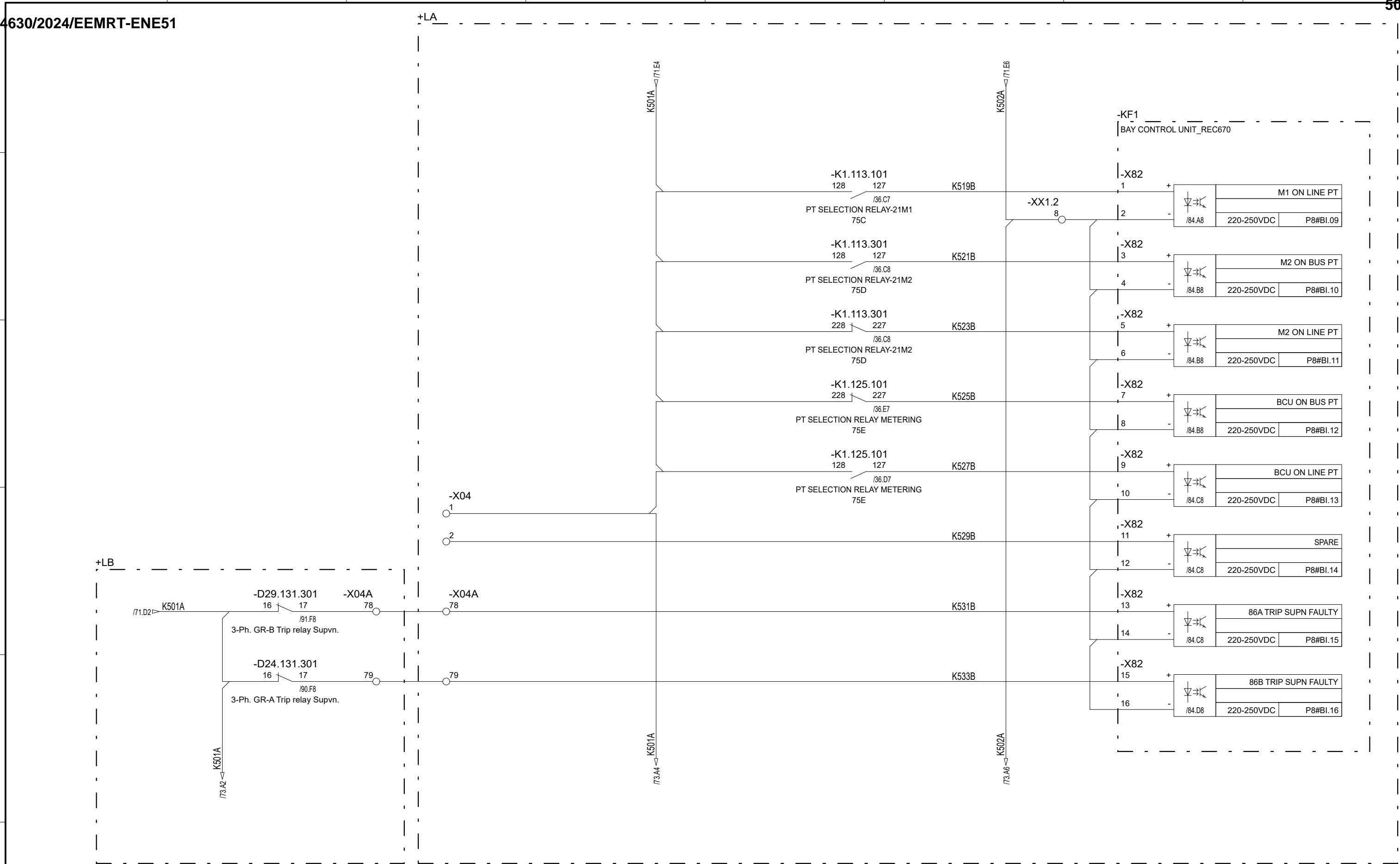
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
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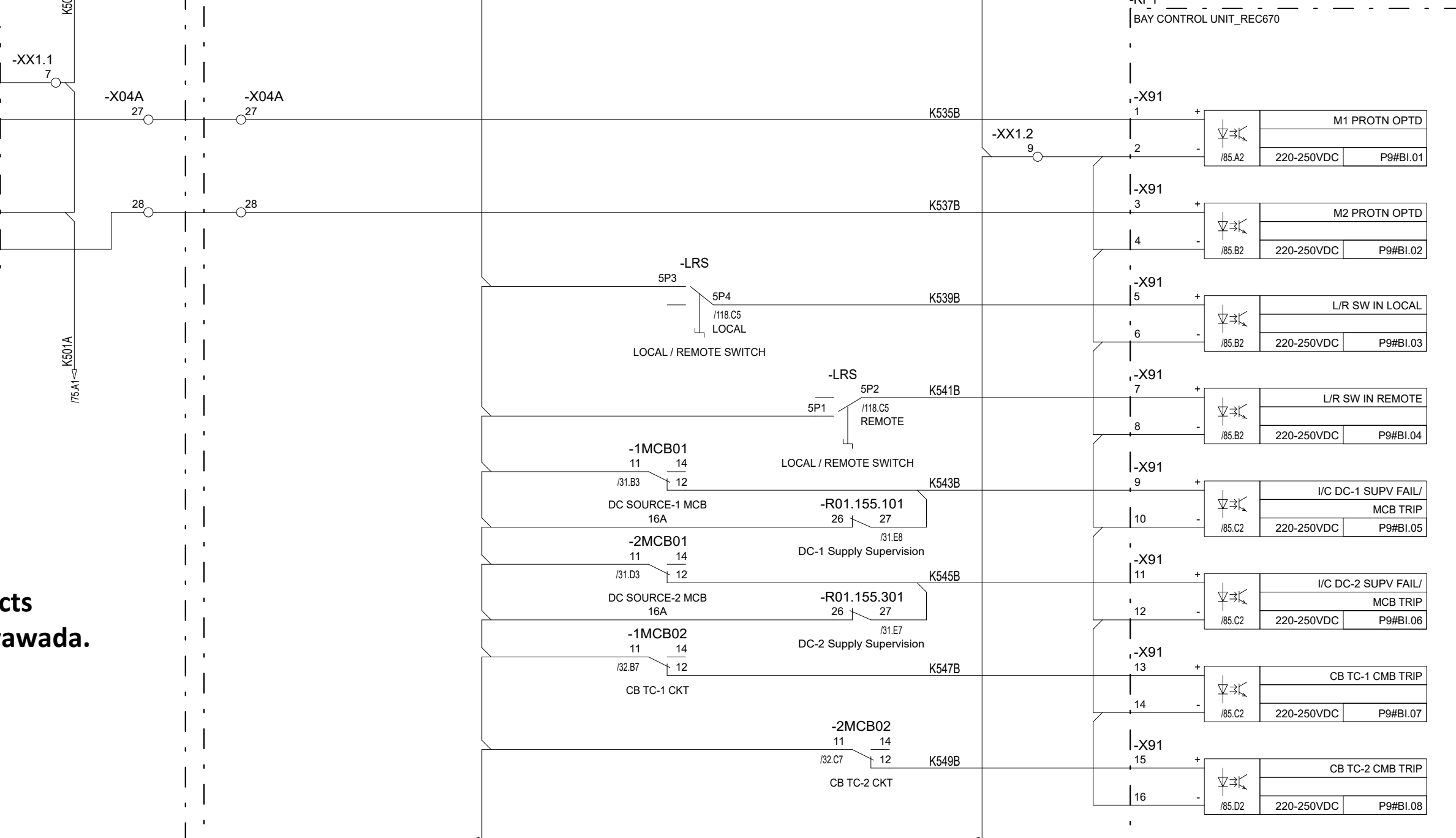
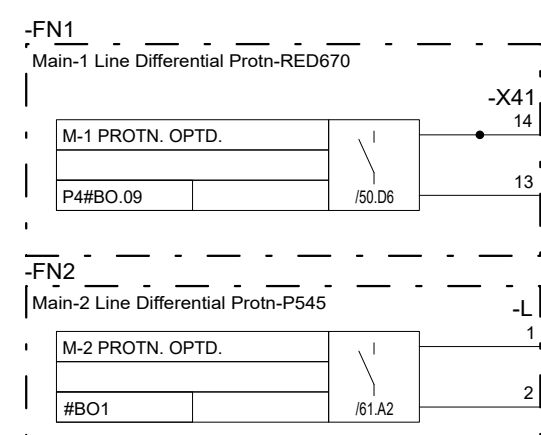


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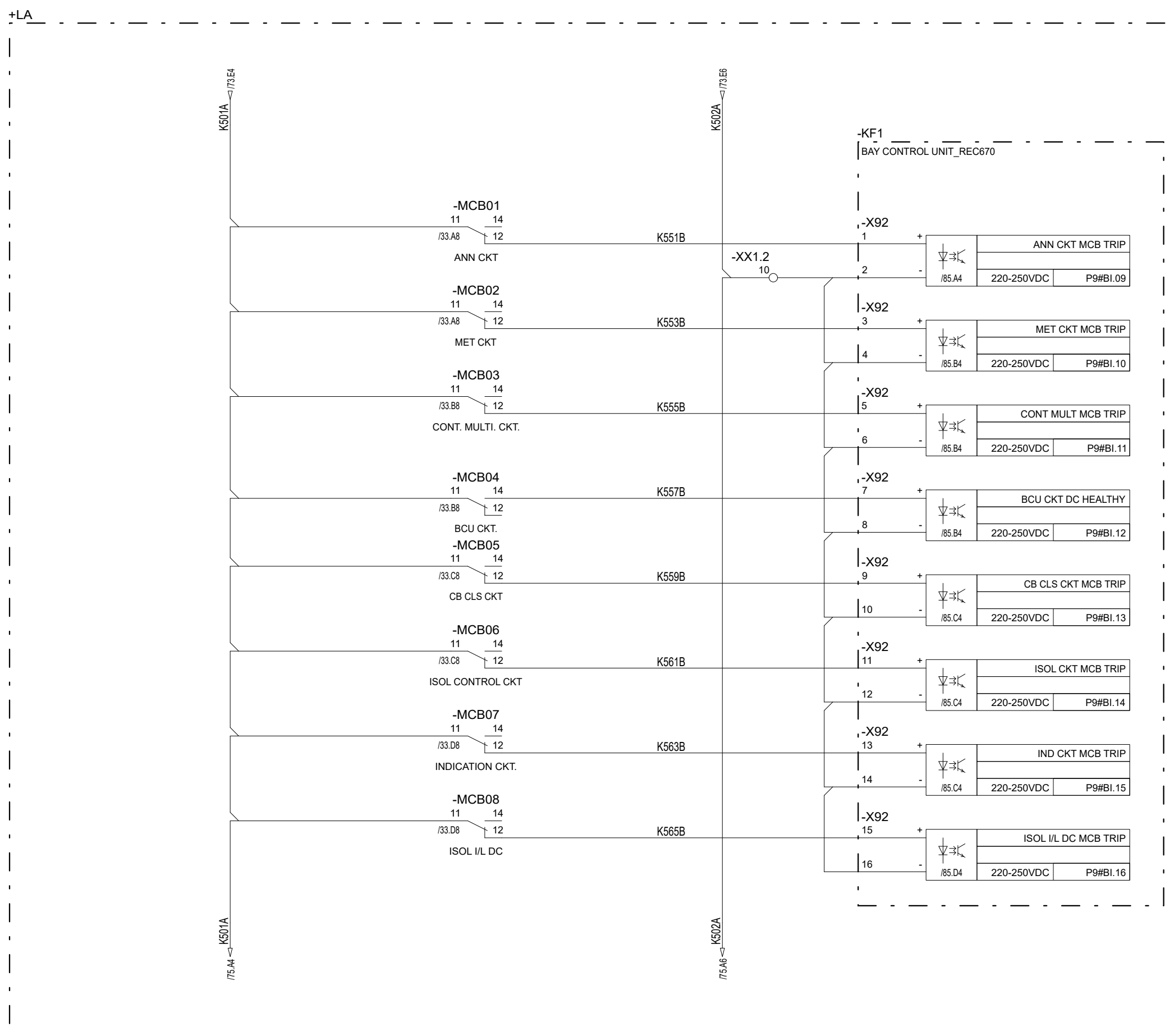


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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 73
1MYN691003-102(A3)REV01						n. sheet 74

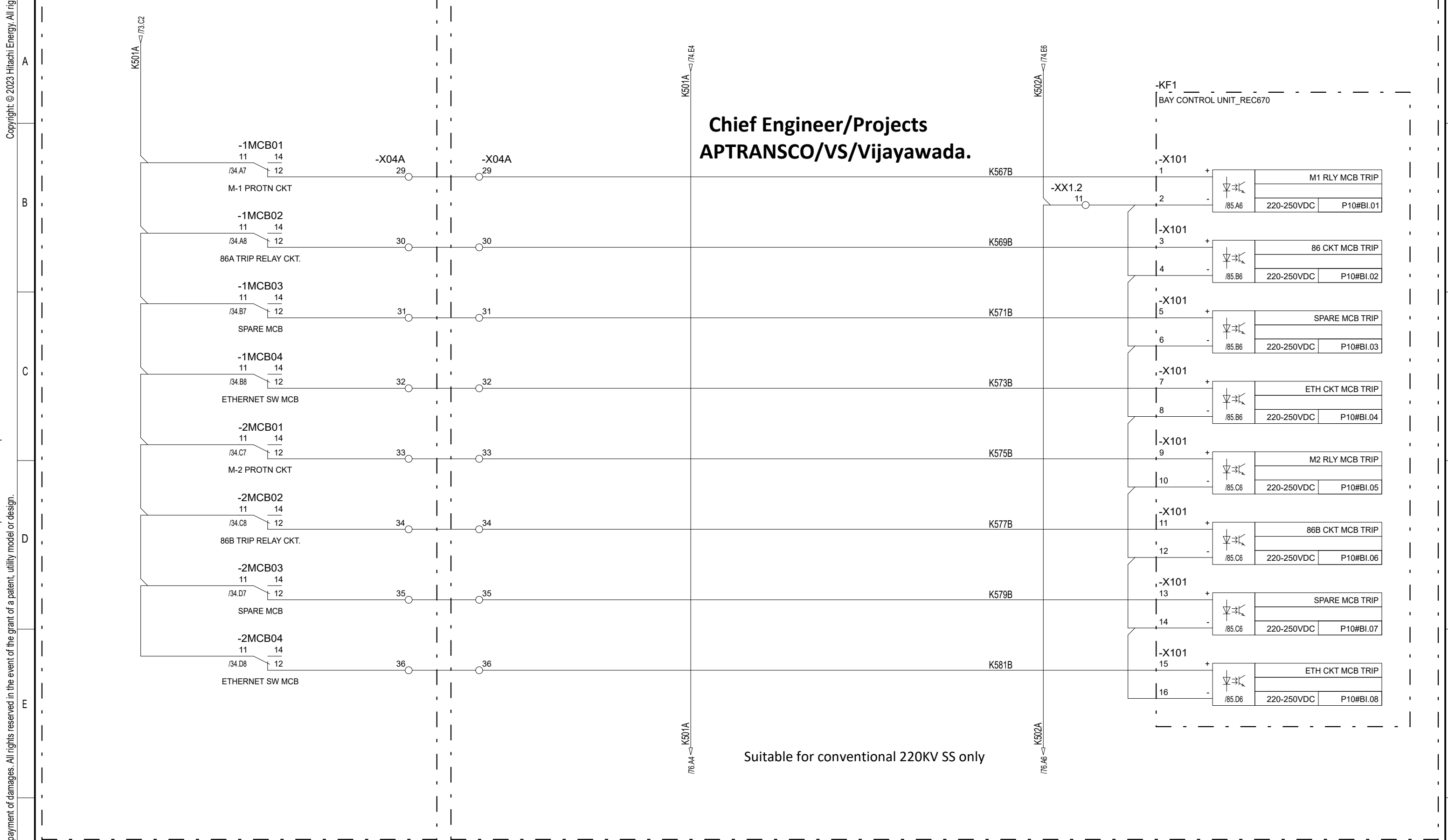
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
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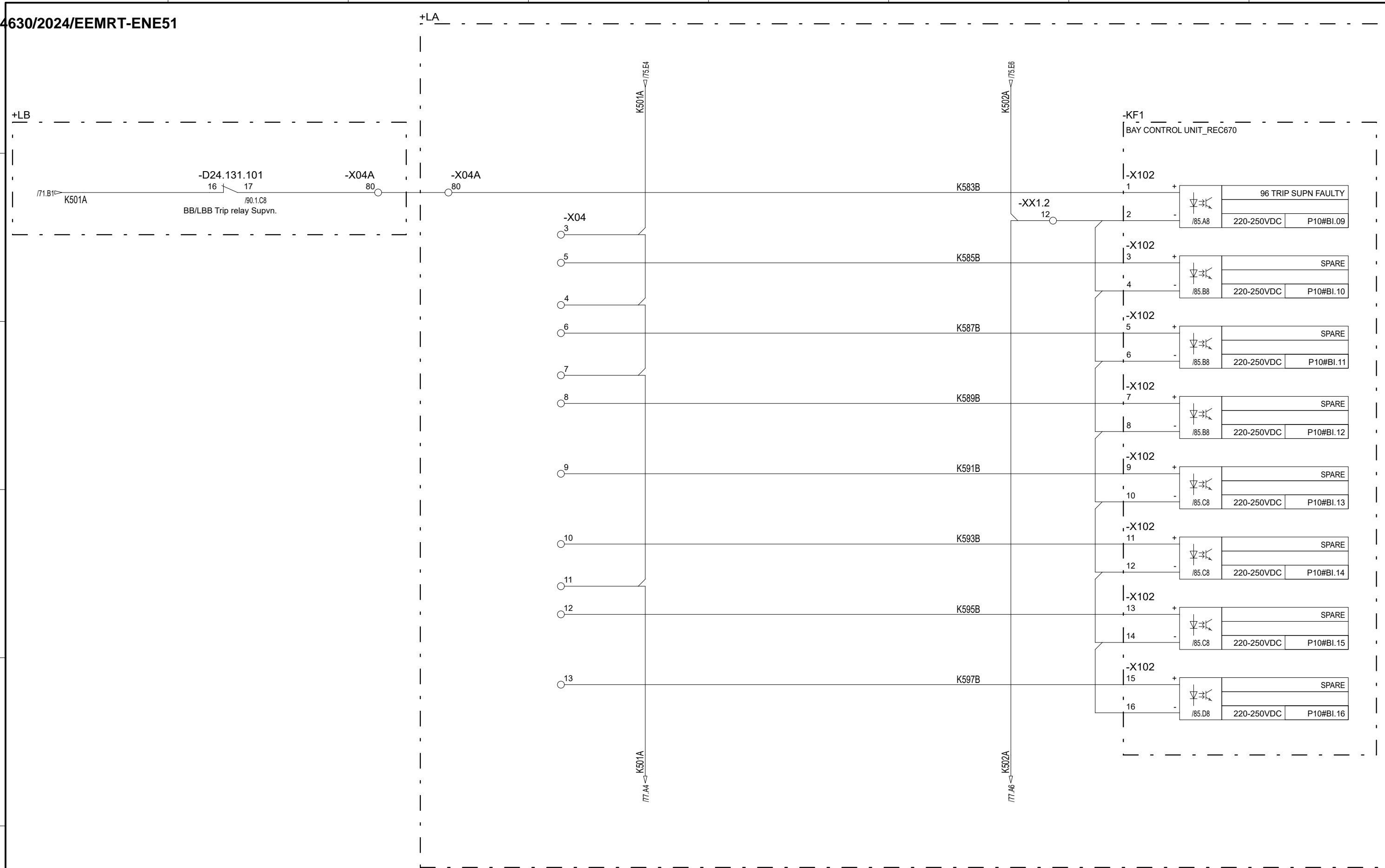


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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA	Sheet 75	n. sheet 76
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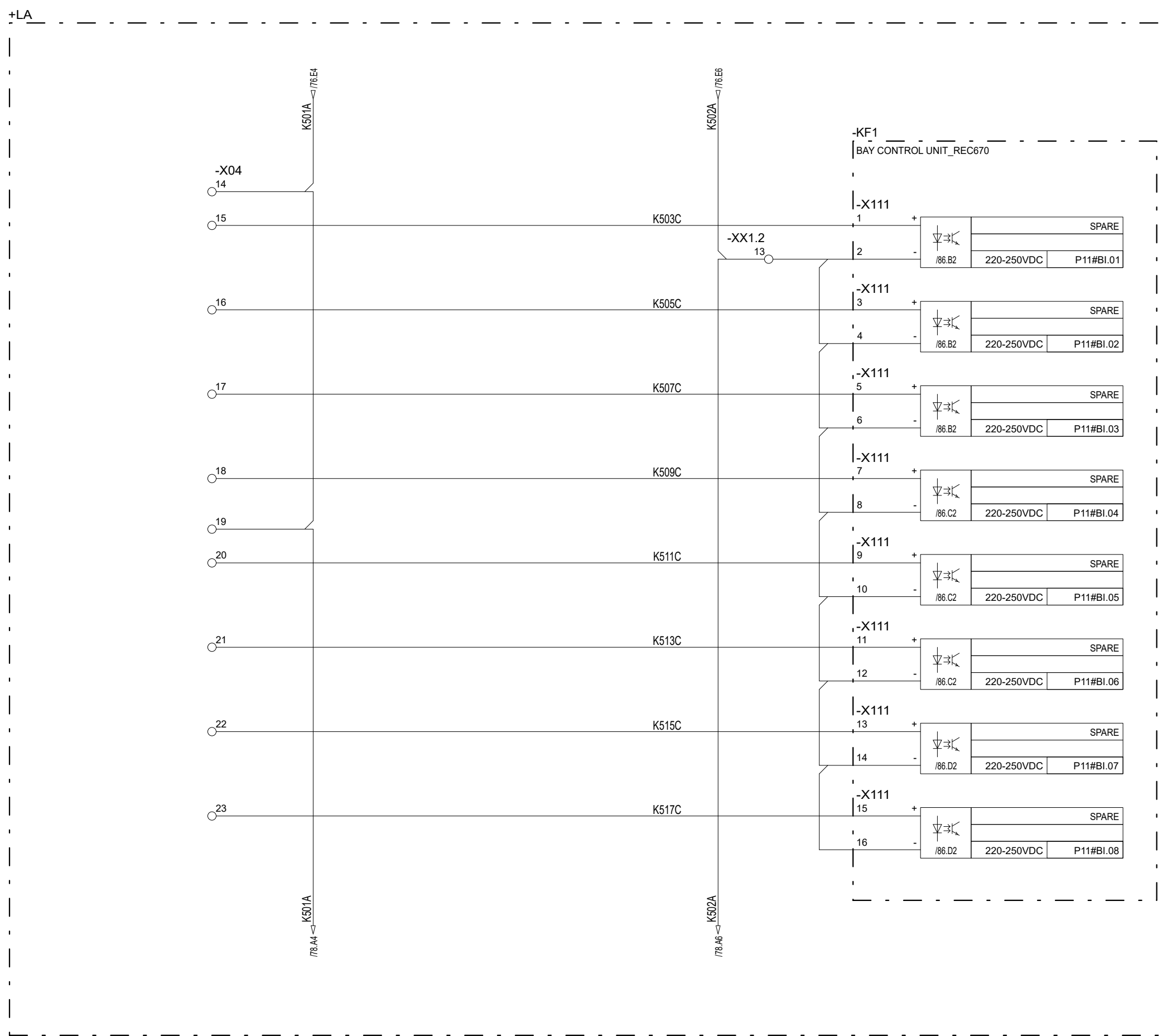


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		STANDARD DRAWING			Hitachi Energy India Limited			1MNS500925-CBBA		Sheet	76	
Rev.	Revision note	Date	Name					Doc. no.			n. sheet	77
1MYN691003-102(A3)REV01												

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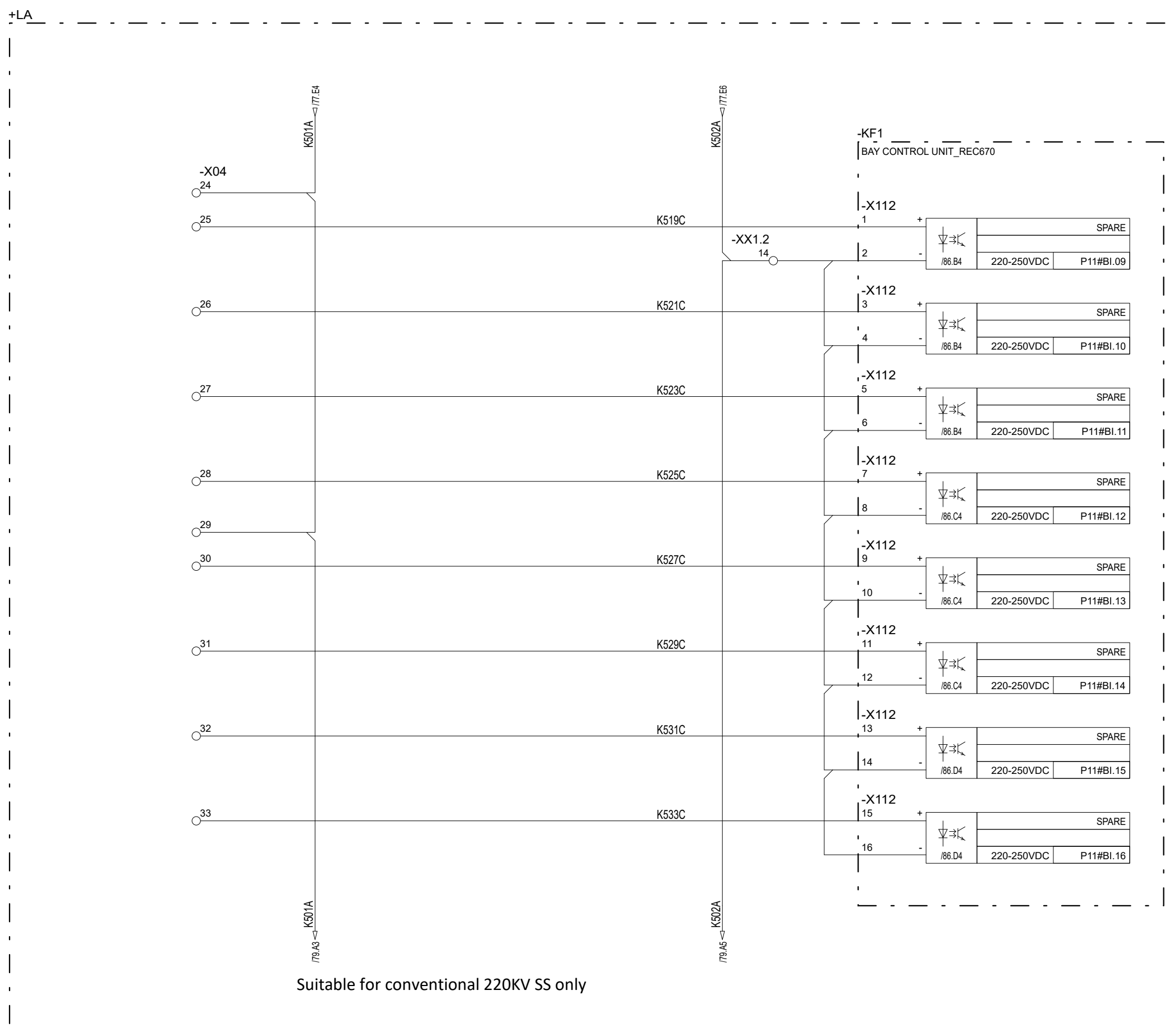
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA	Sheet 77	n. sheet 78
1MYN691003-102(A3)REV01						

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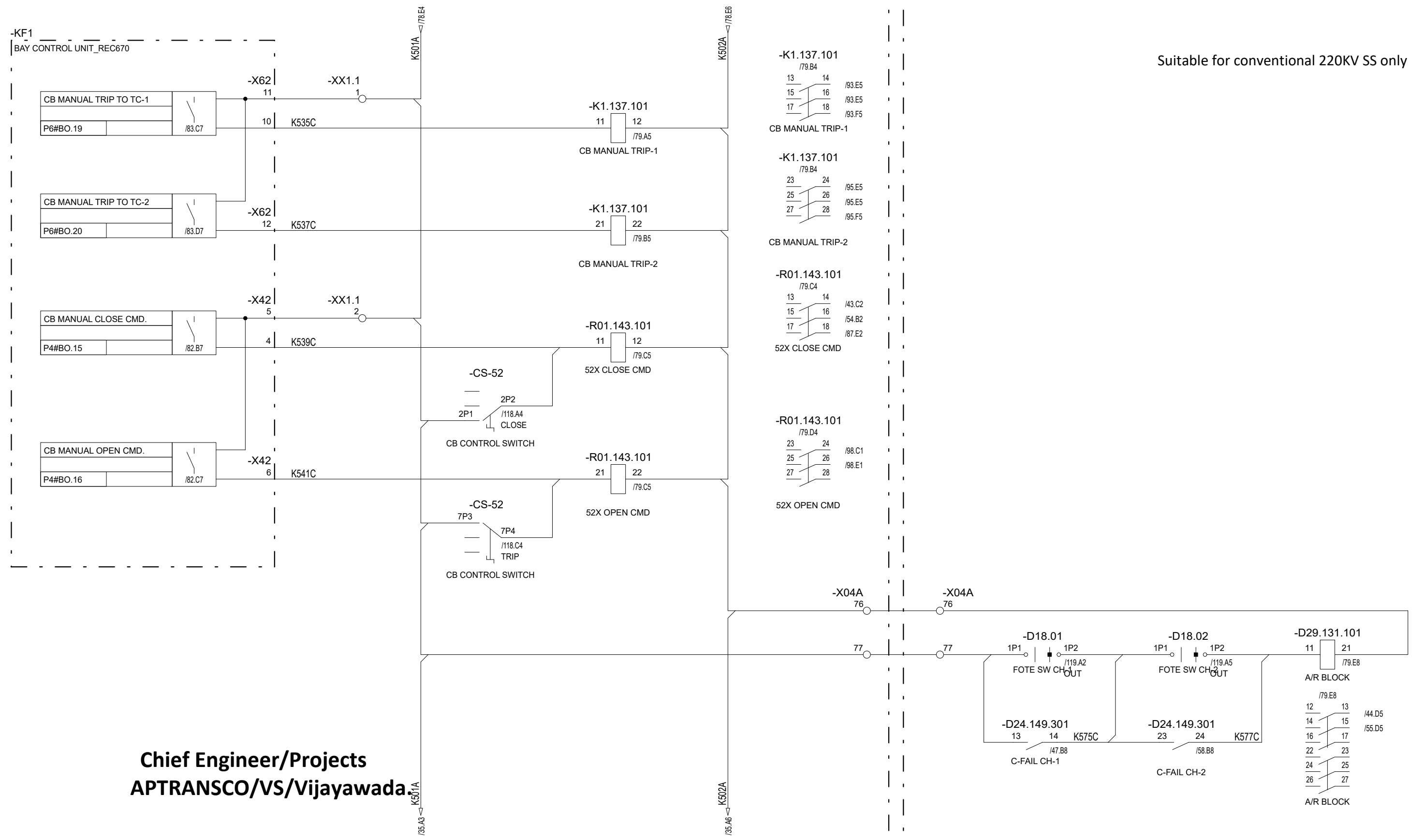


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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	Sheet 78
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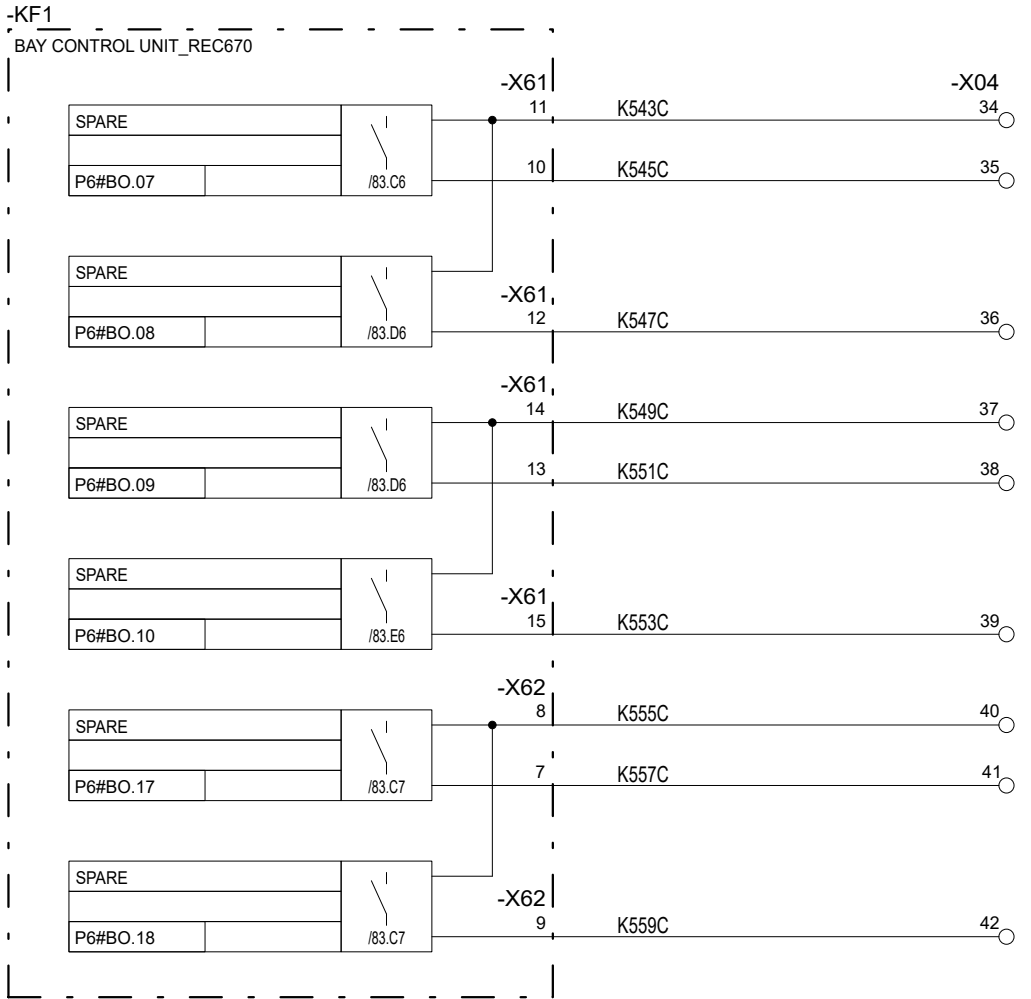
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Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER	Doc. kind.	Circuit diagram	Ref.Des.	=2KR	
		Approved	20.12.2023	GOURISH HEGDE	Control & Relay Panel		DCC EFS				
		Project	APTRANSCO		BCU-Binary Output Ckt.		Resp. dept.	PG-GAS	Rev. ind.	Language	en
		STANDARD DRAWING			Hitachi Energy India Limited				Sheet		79
Rev.	Revision note	Date	Name			Doc. no.		1MNS500925-CBBA		n. sheet	80
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Drawing approval subject to valid vendor registration

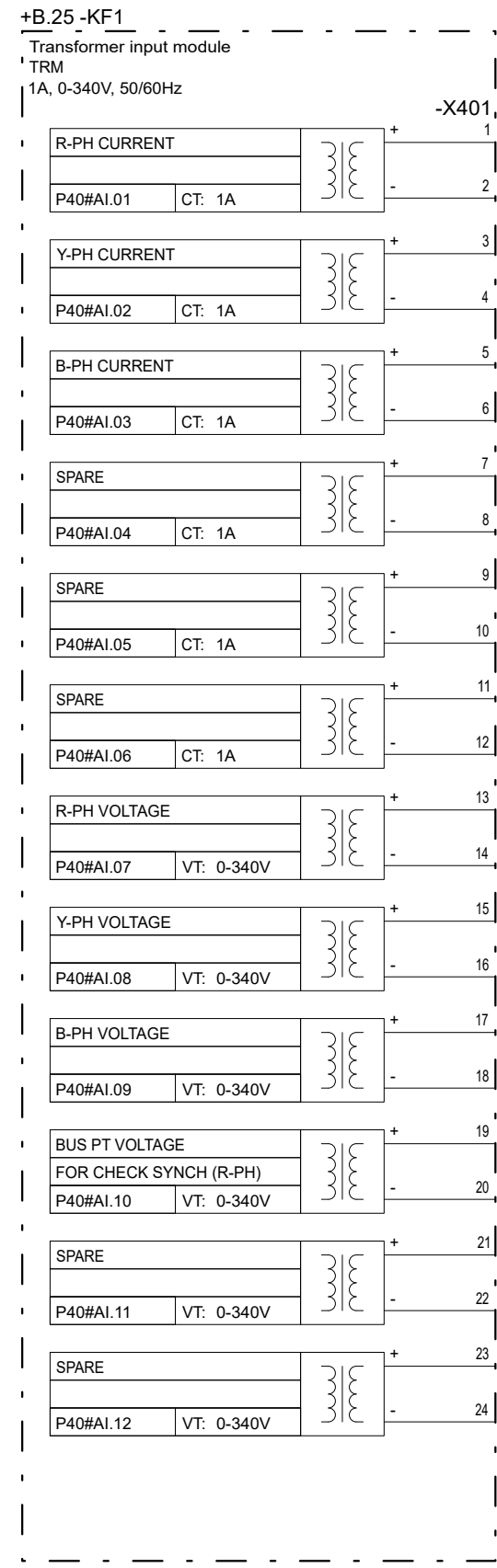
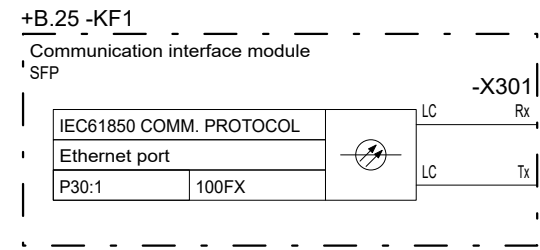
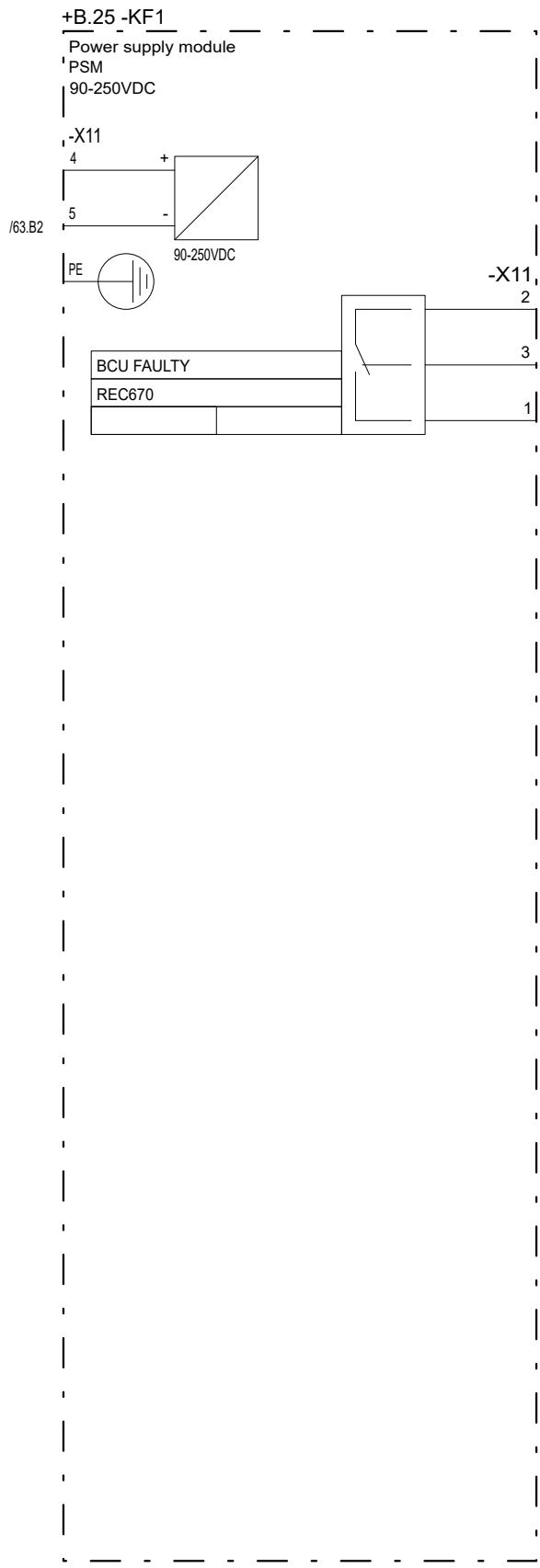
Chief Engineer/Projects
APTRANSCO/VIS/Vijayawada.

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	
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		STANDARD DRAWING		Hitachi Energy India Limited		Language en	
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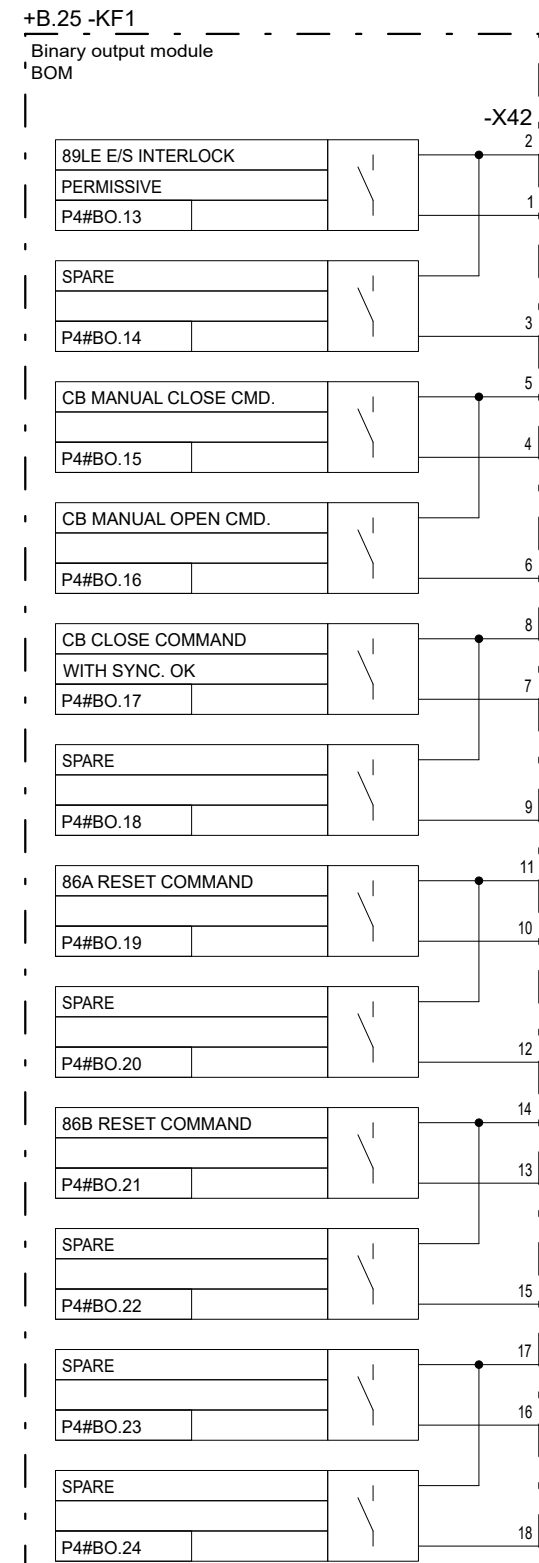
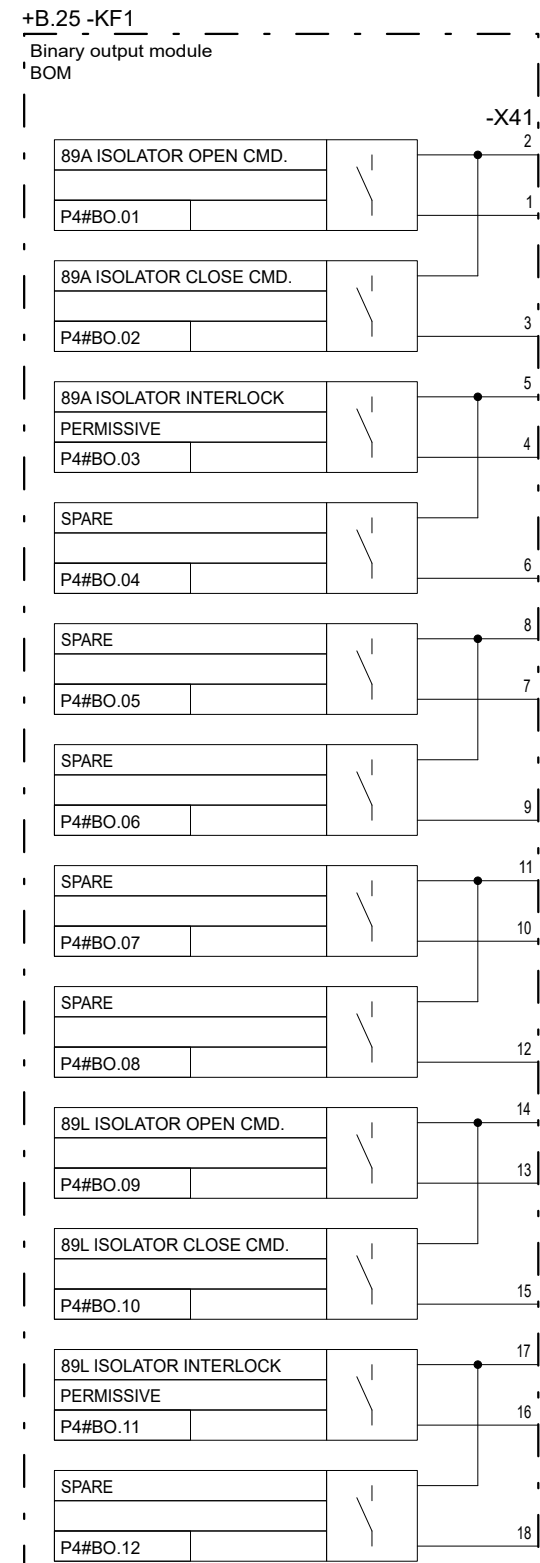
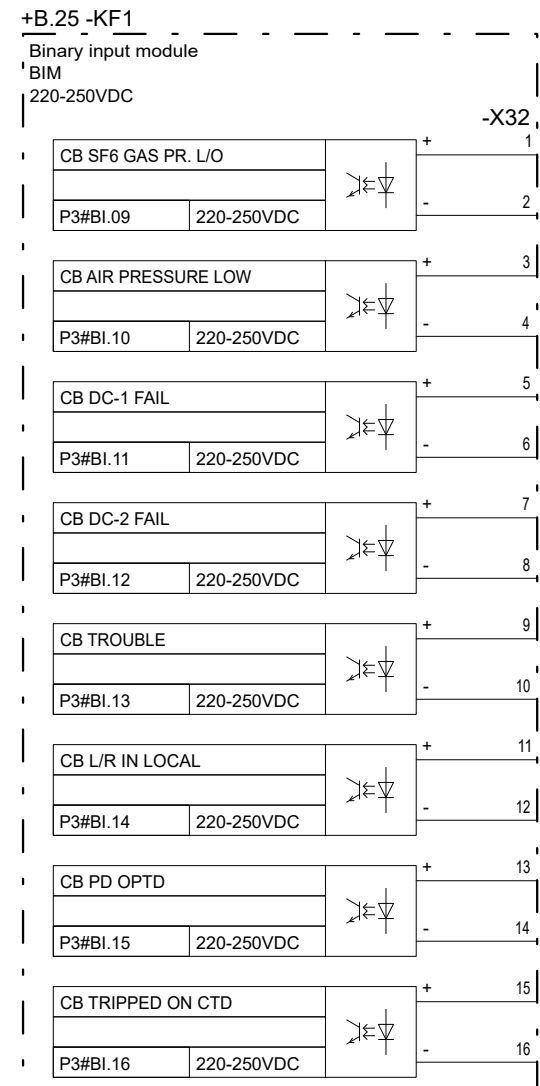
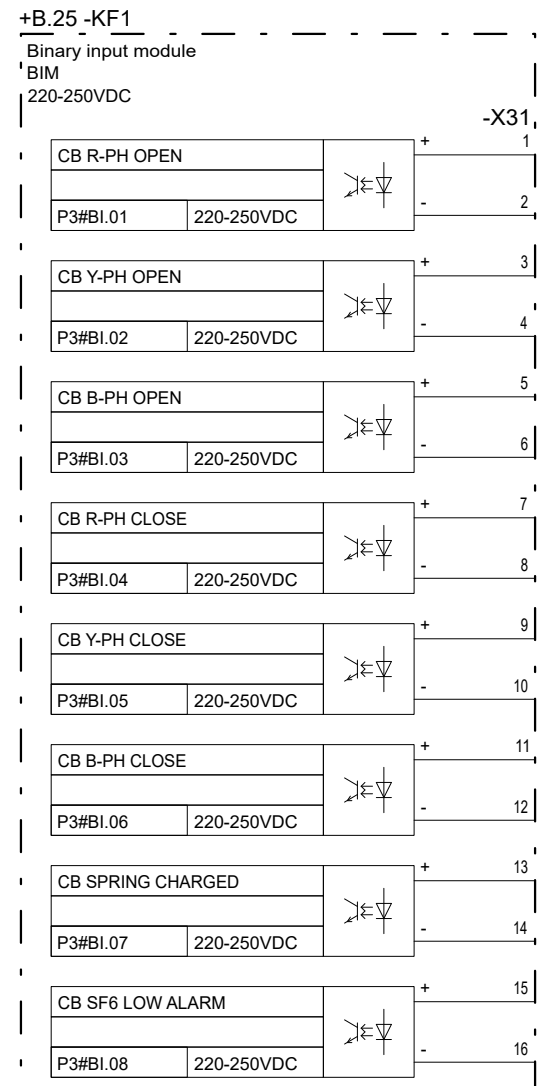
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APTRANSCO/VS/Vijayawada.**

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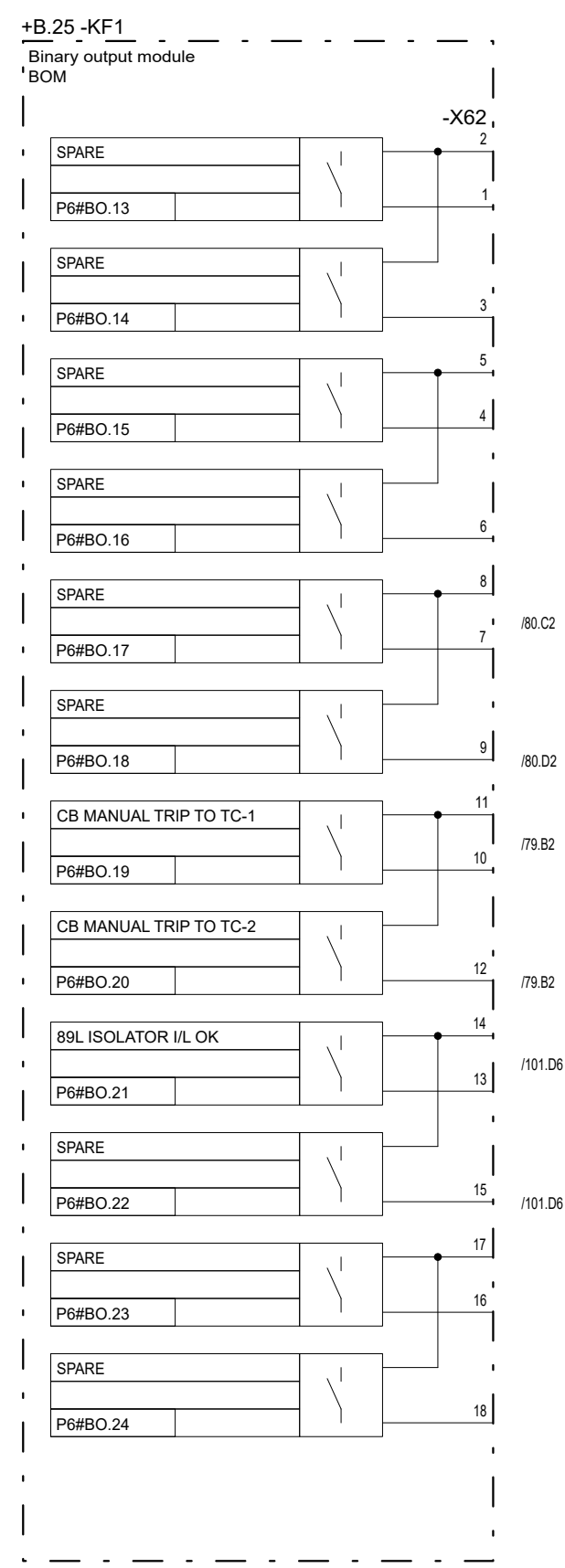
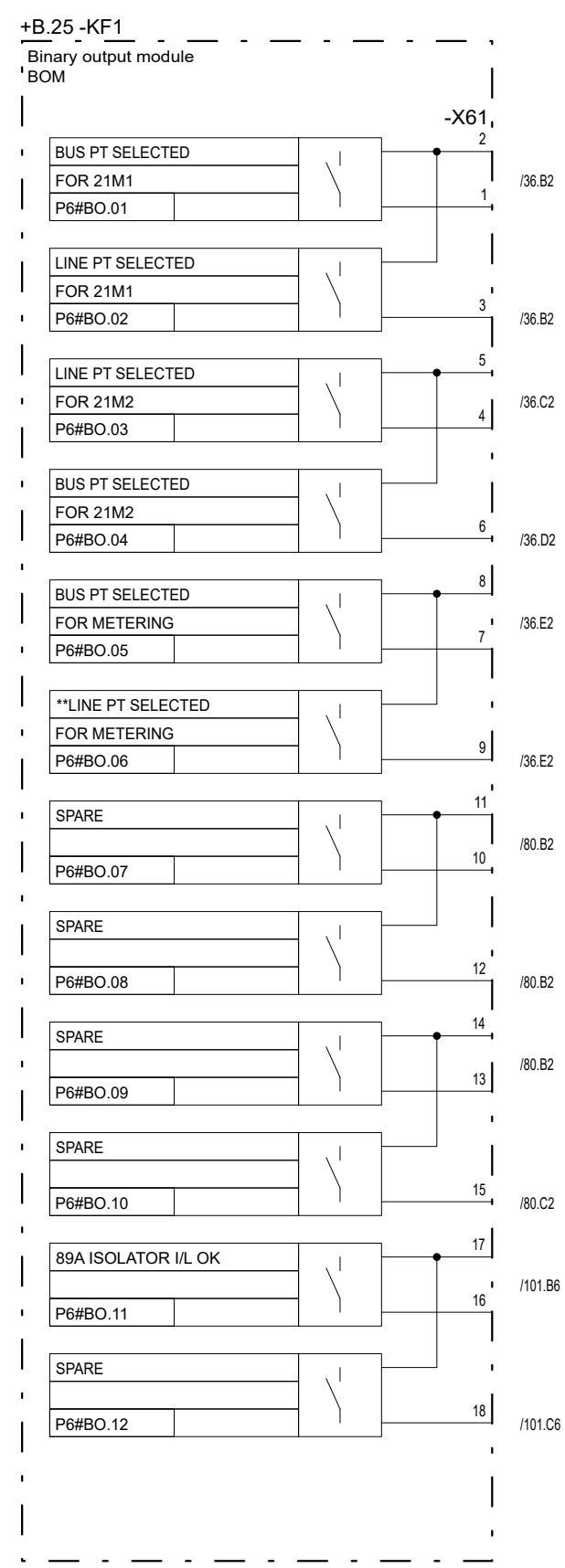
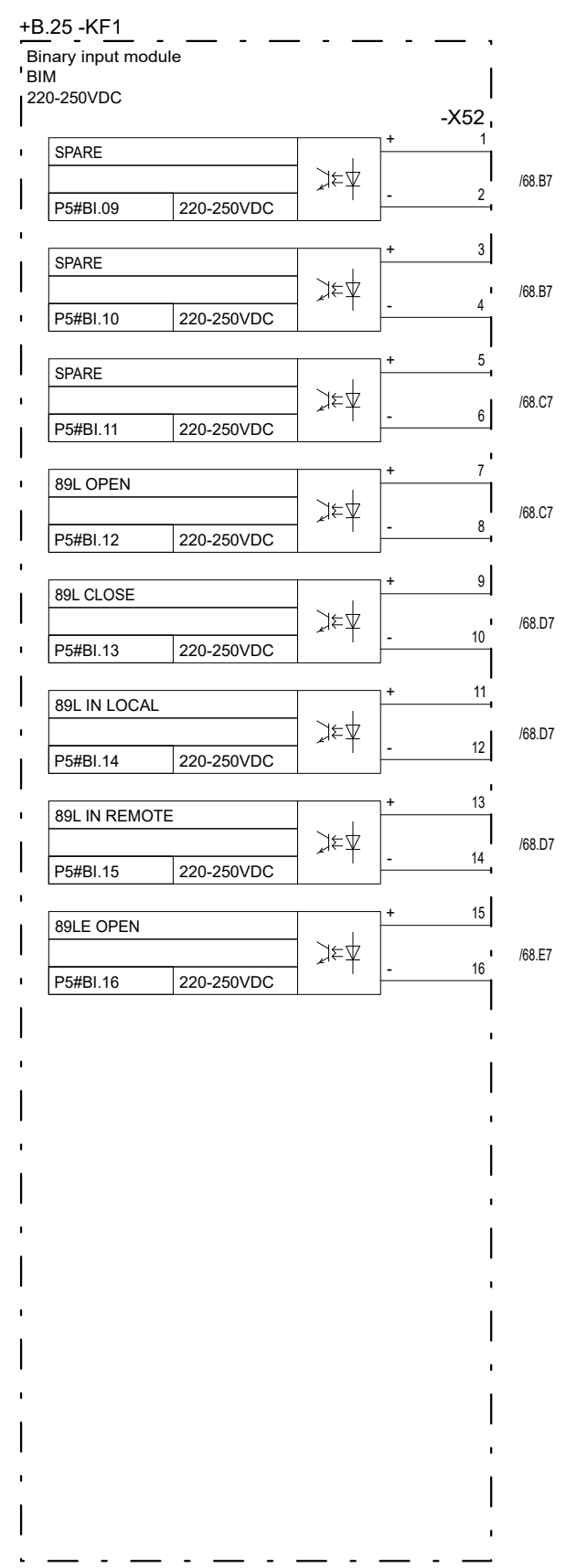
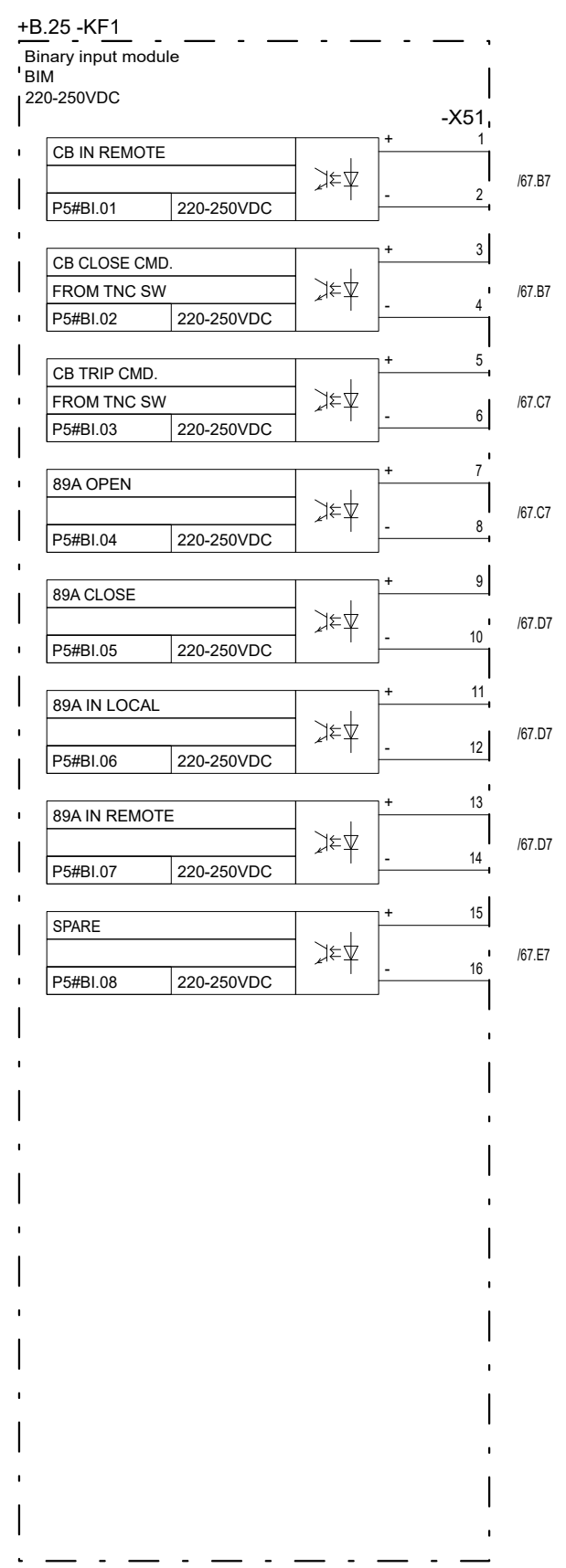
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Chief Engineer/Projects
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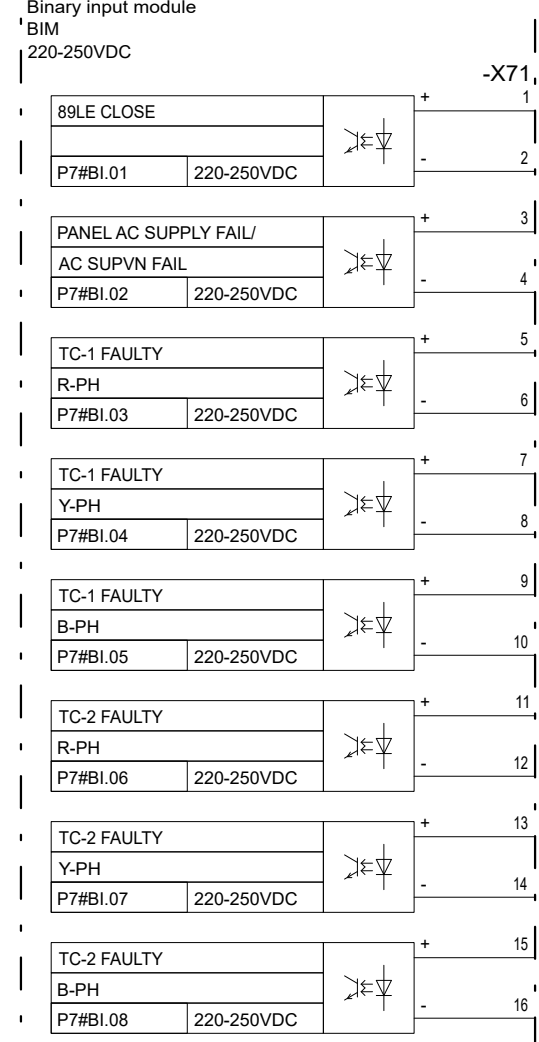
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Rev.	Revision note	Date	Name
1	1MYN691003-102(A3)REV01		

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Doc. kind.	Circuit diagram
Doc. no.	1MNS500925-CBBA

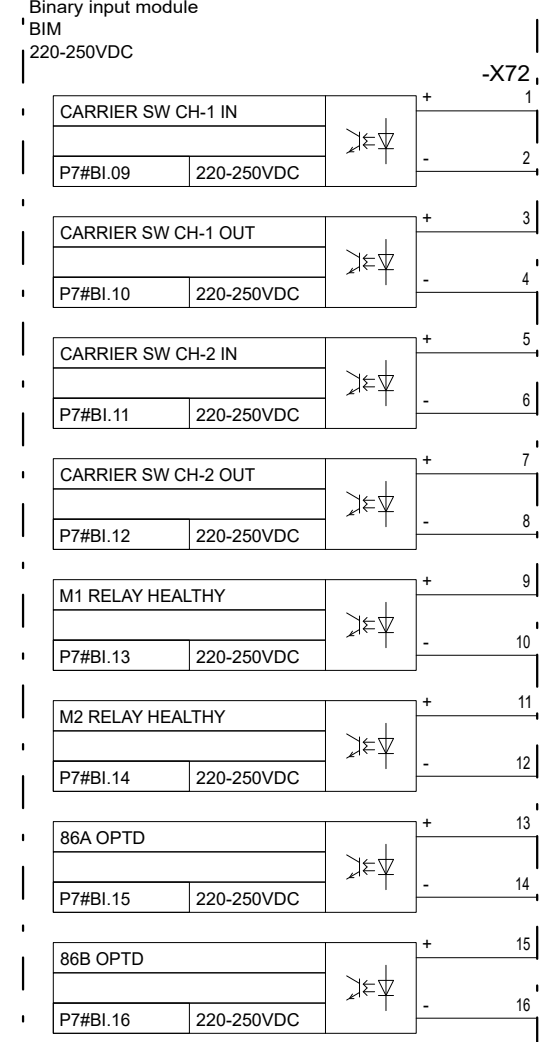
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Doc. no.	1MNS500925-CBBA	Language	en
		Sheet	83
		n. sheet	84

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Doc. no.	1MNS500925-CBBA	Language	en
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		n. sheet	84

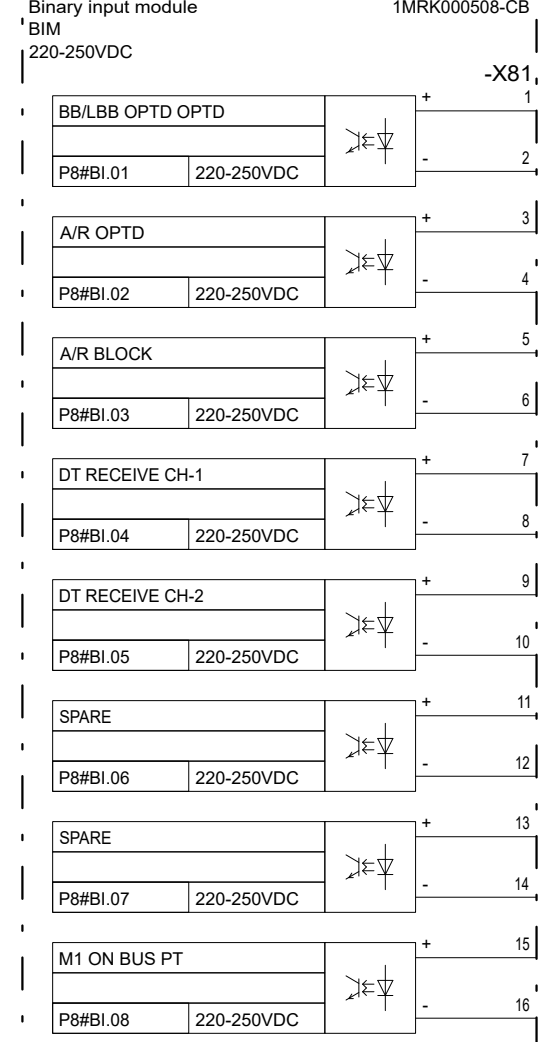
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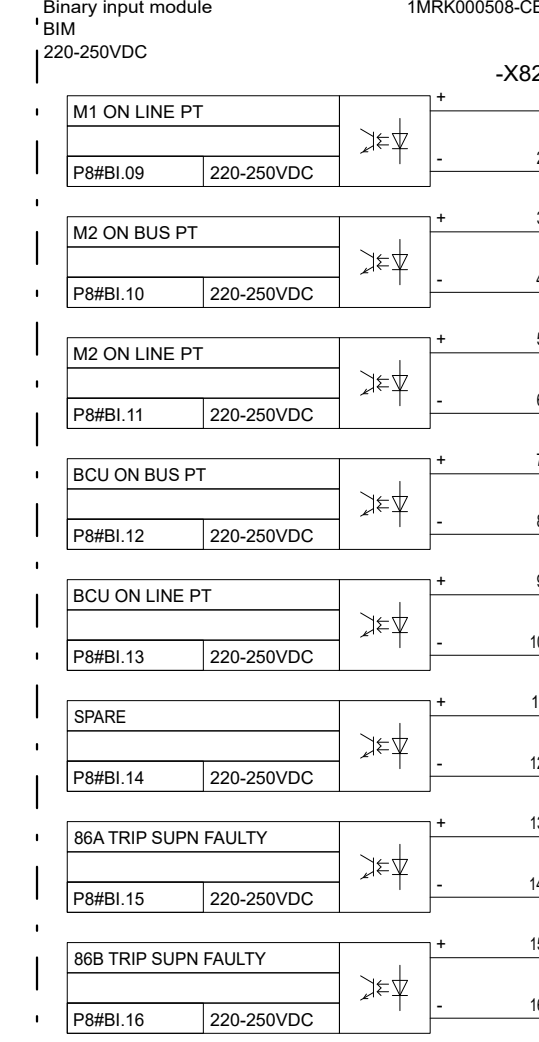
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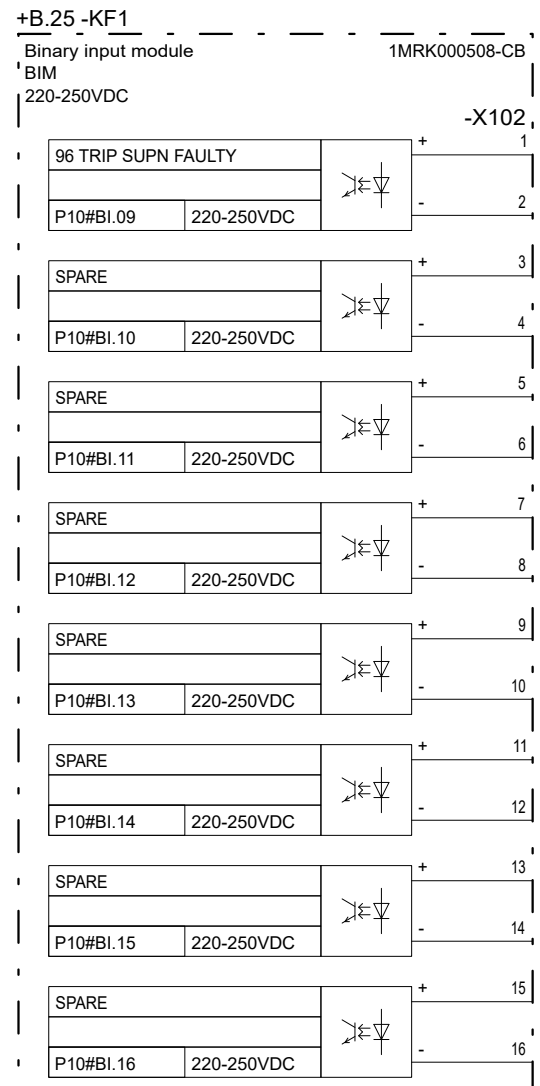
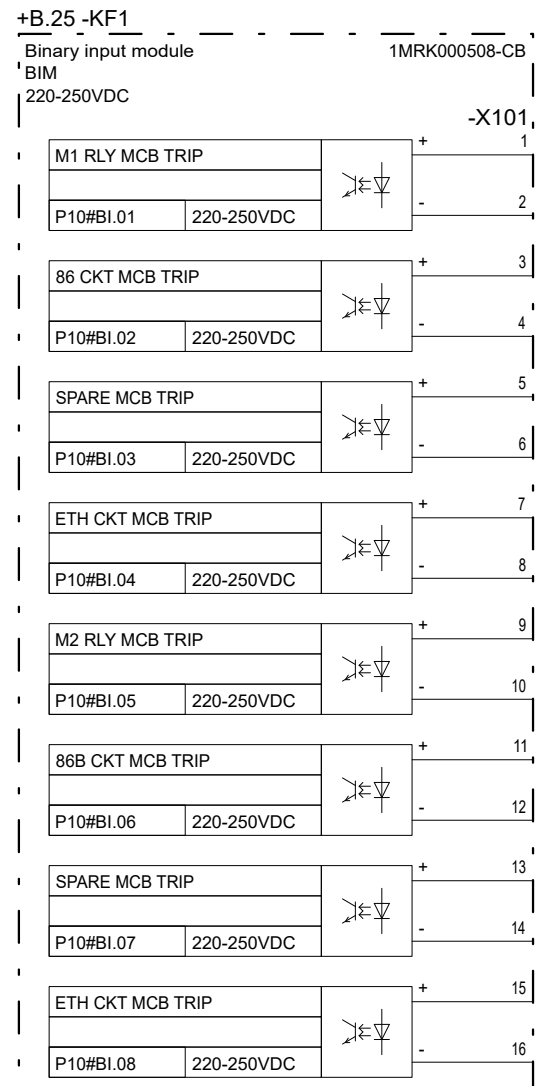
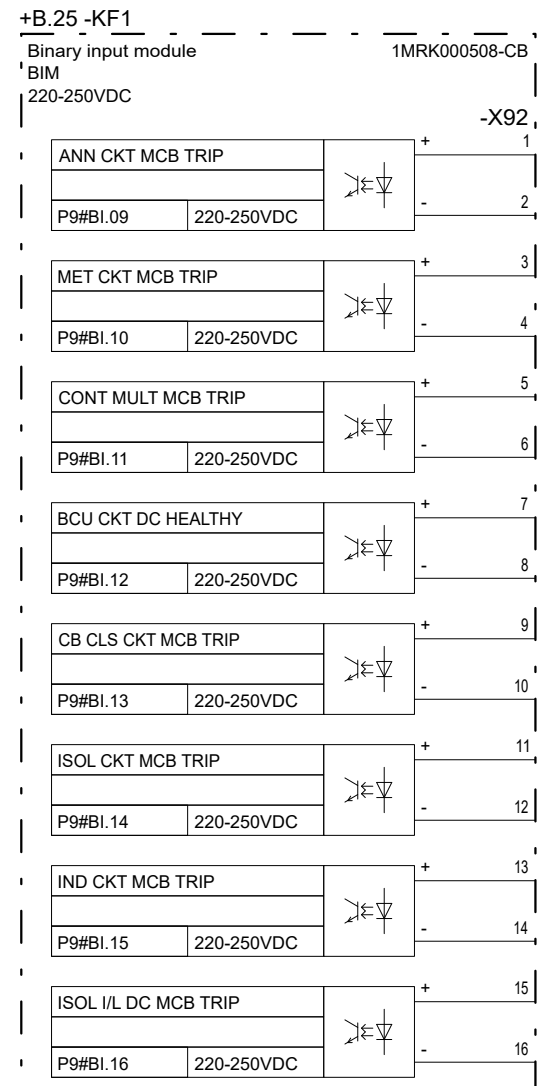
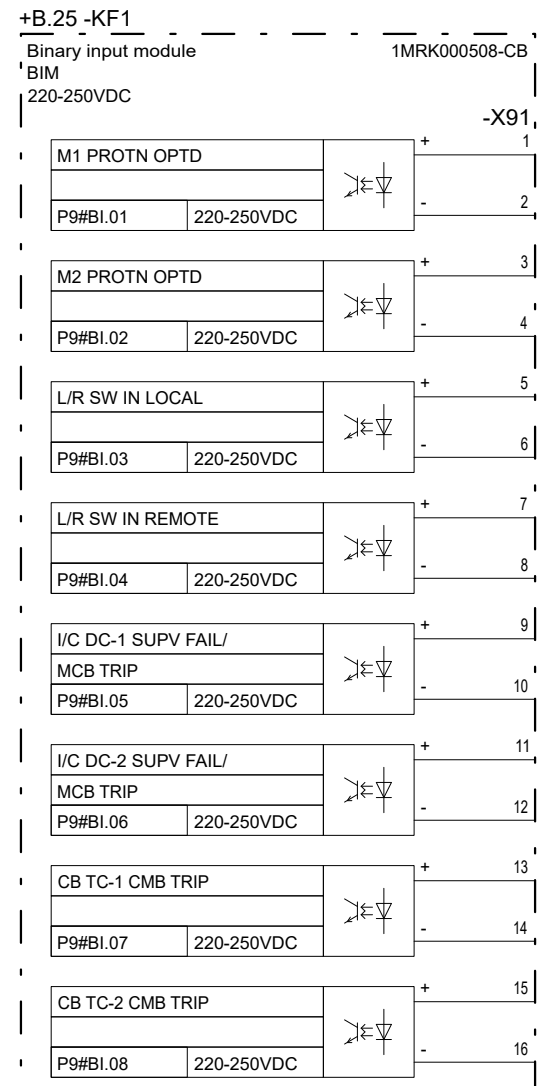
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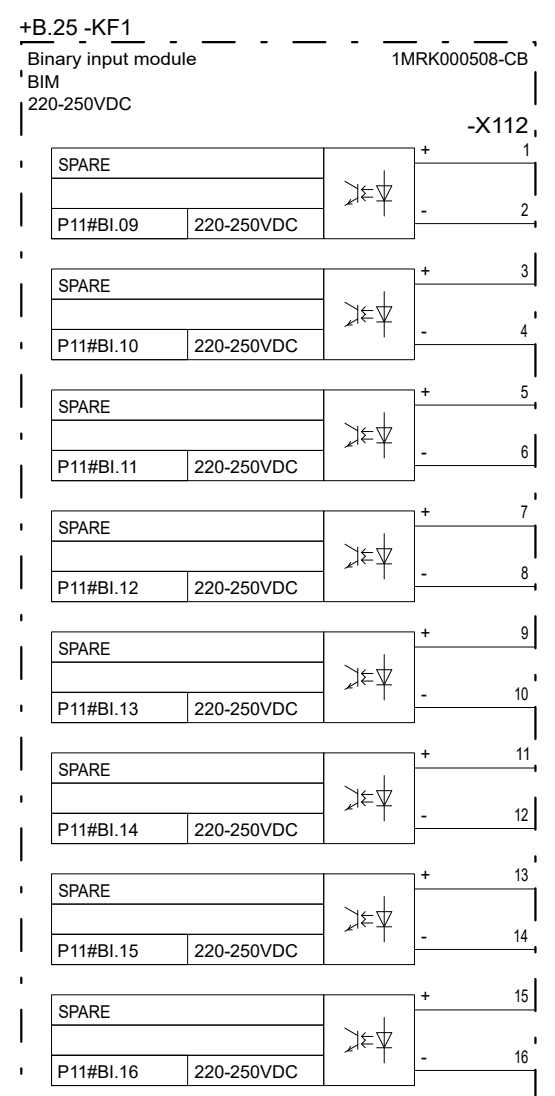
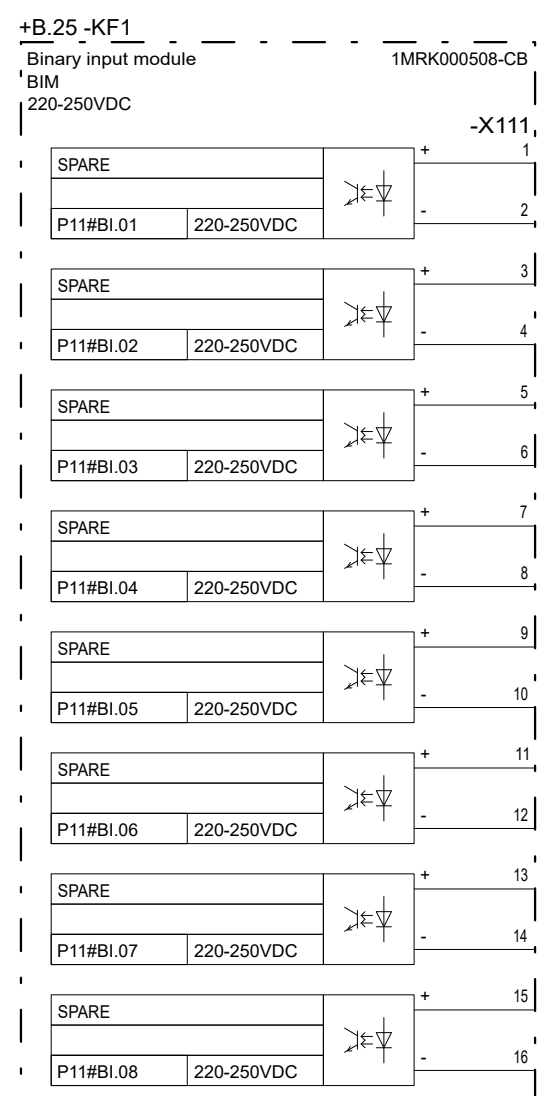


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		Project APTRANSCO		BCU-Master Blocks	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 85
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Based on		Prepared	13.12.2023	VINOD G
		Approved	20.12.2023	GOURISH HEGDE
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Rev.	Revision note	Date	Name	
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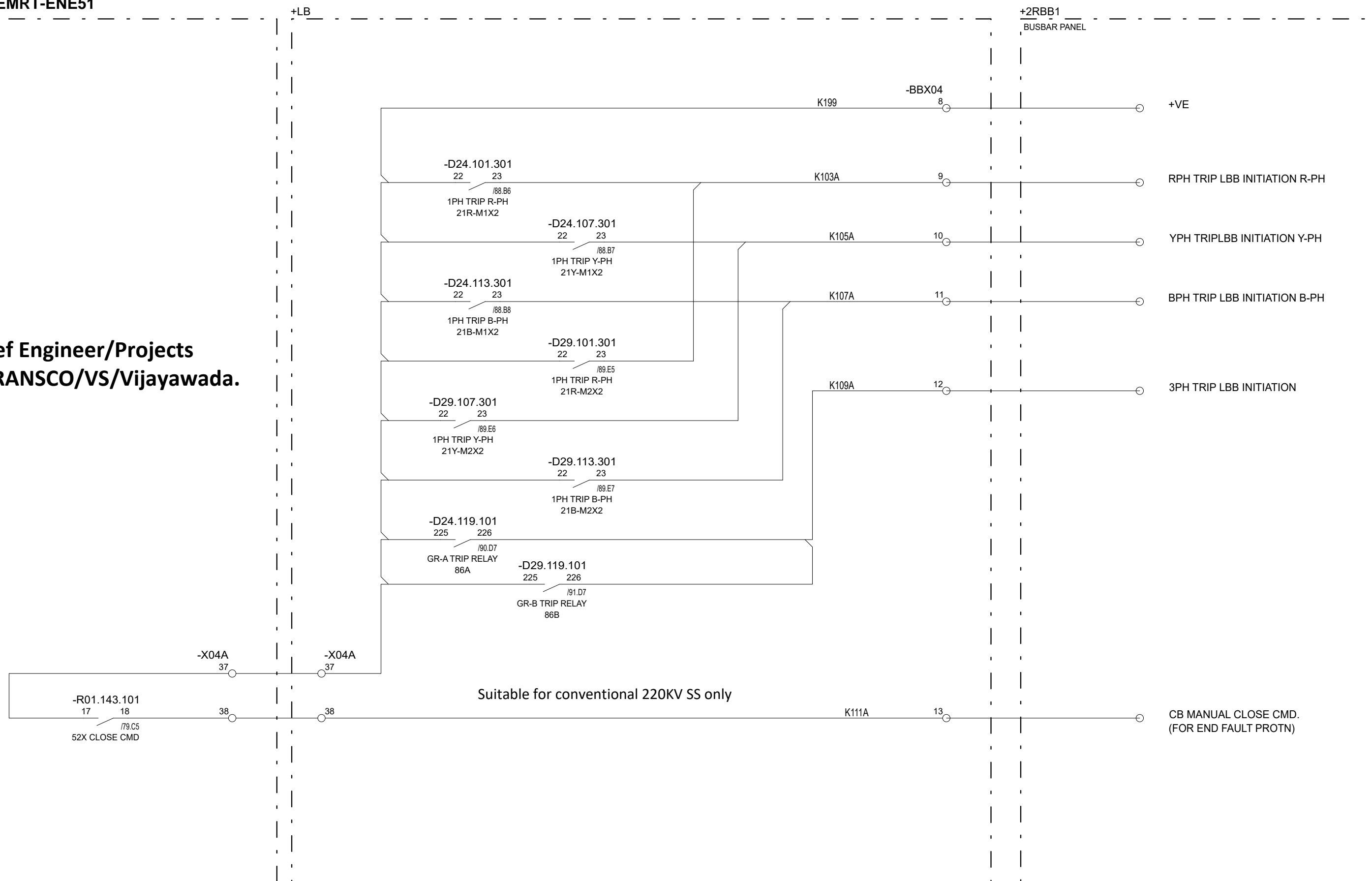
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Hitachi Energy India Limited		Ref.Des.	
Doc. no.		1MNS500925-CBBA	

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Resp. dept.		PG-GAS		Rev. ind.		Language	
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				n. sheet		87	

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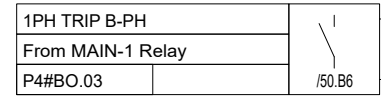
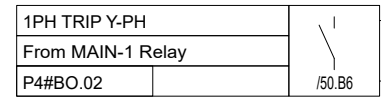
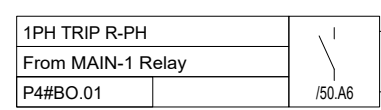
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Rev.	Revision note	Date	Name	HITACHI		Hitachi Energy India Limited		Doc. no.		1MNS500925-CBBA		Sheet	87
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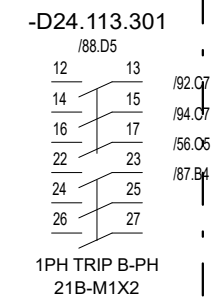
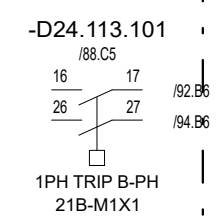
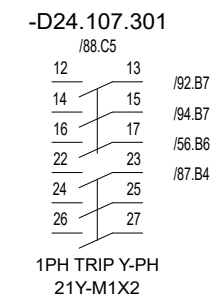
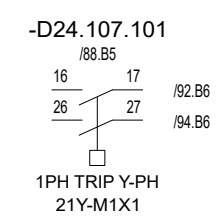
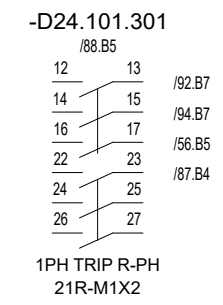
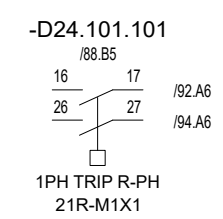
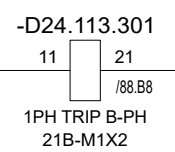
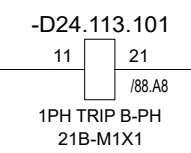
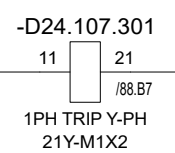
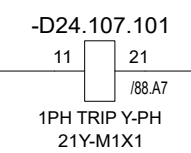
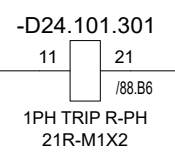
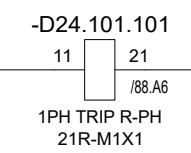
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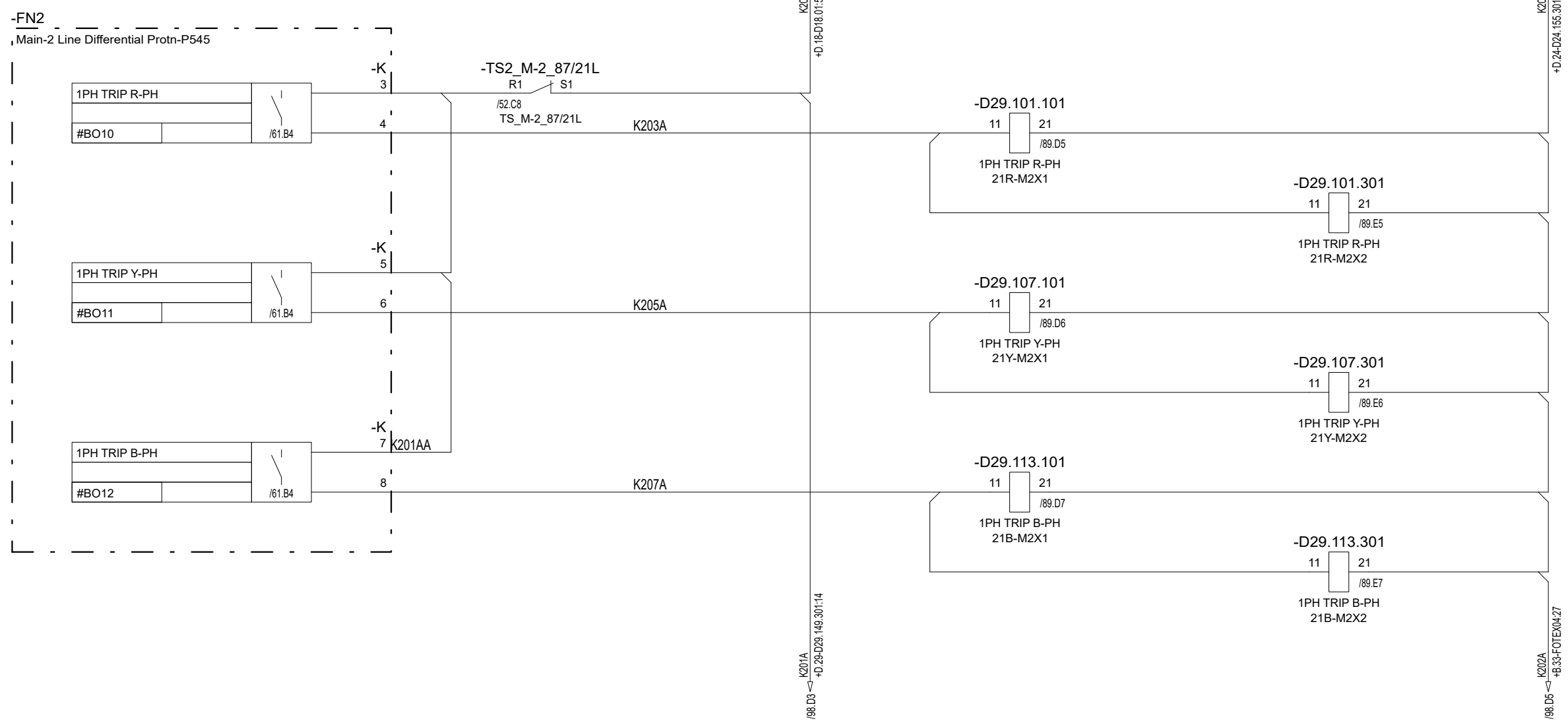
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 88
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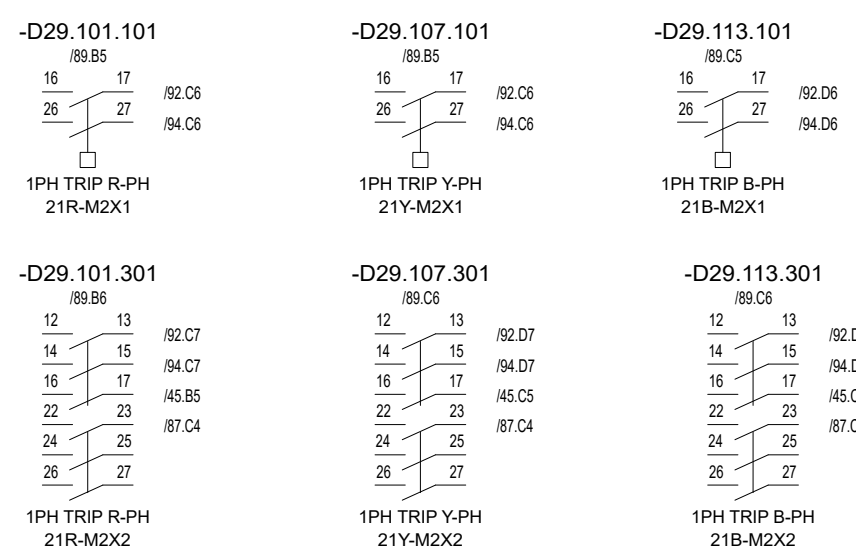
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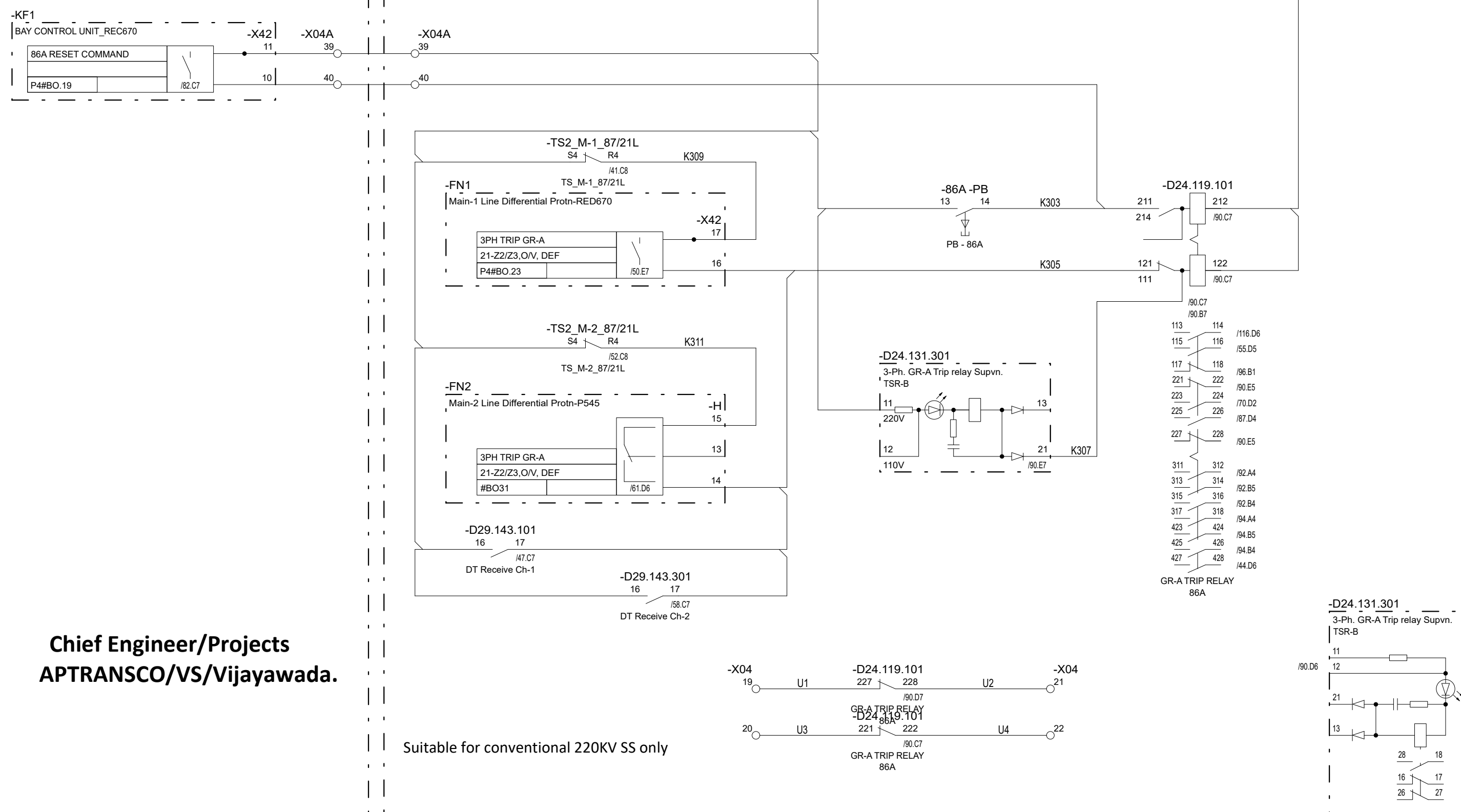


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		STANDARD DRAWING		Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
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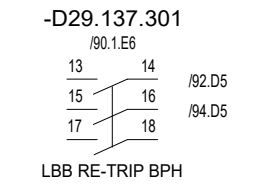
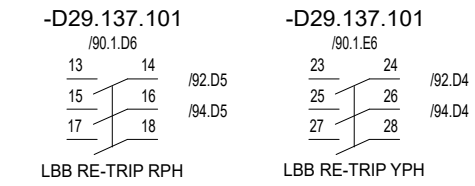
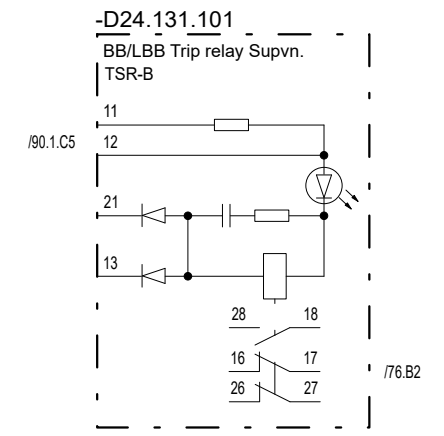
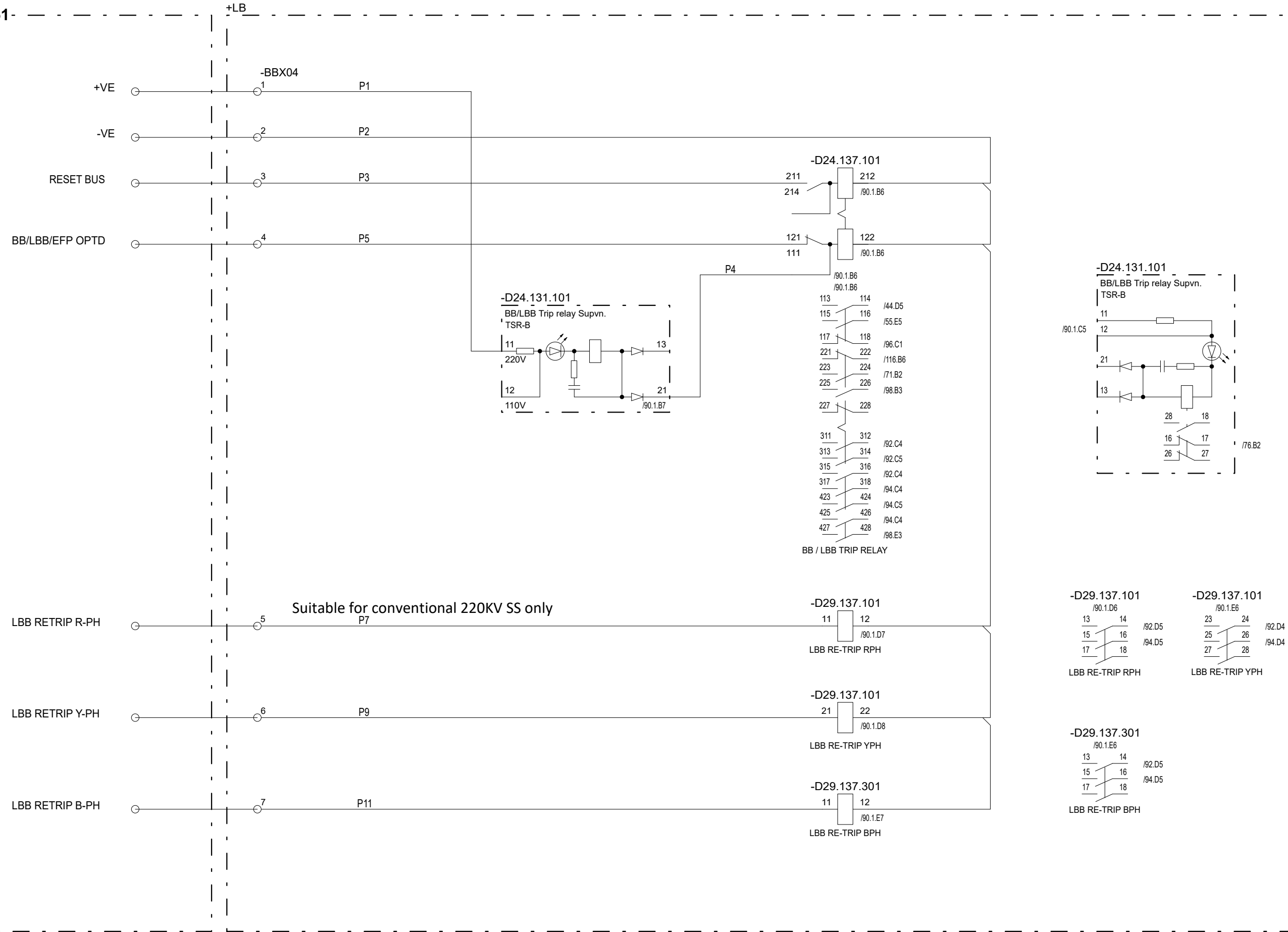
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 90
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BUSBAR PANEL

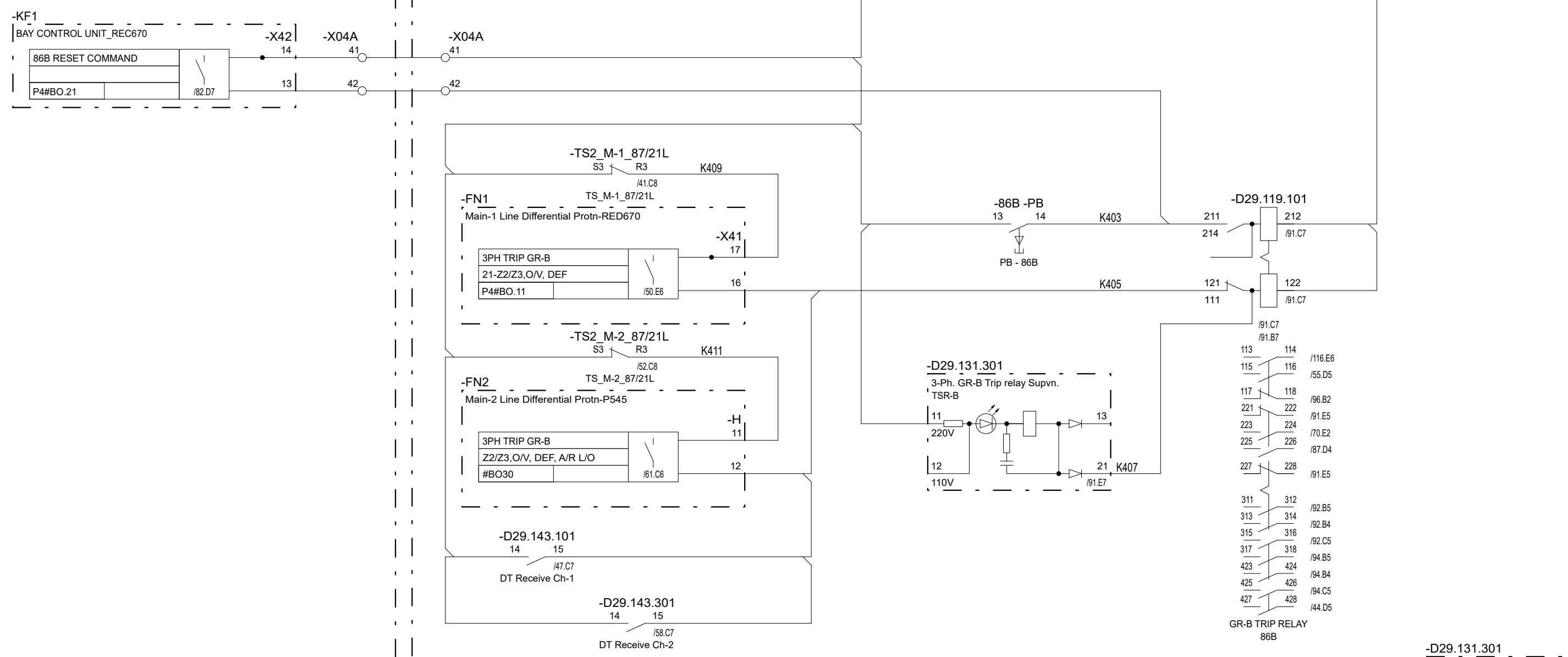


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Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 90.1
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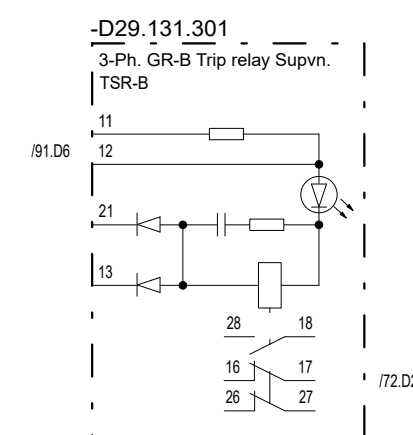
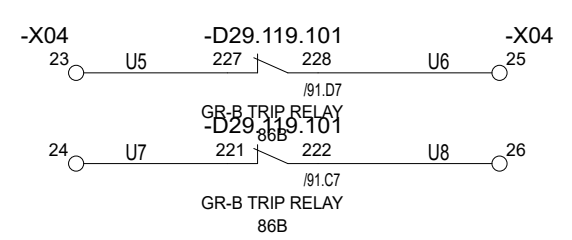
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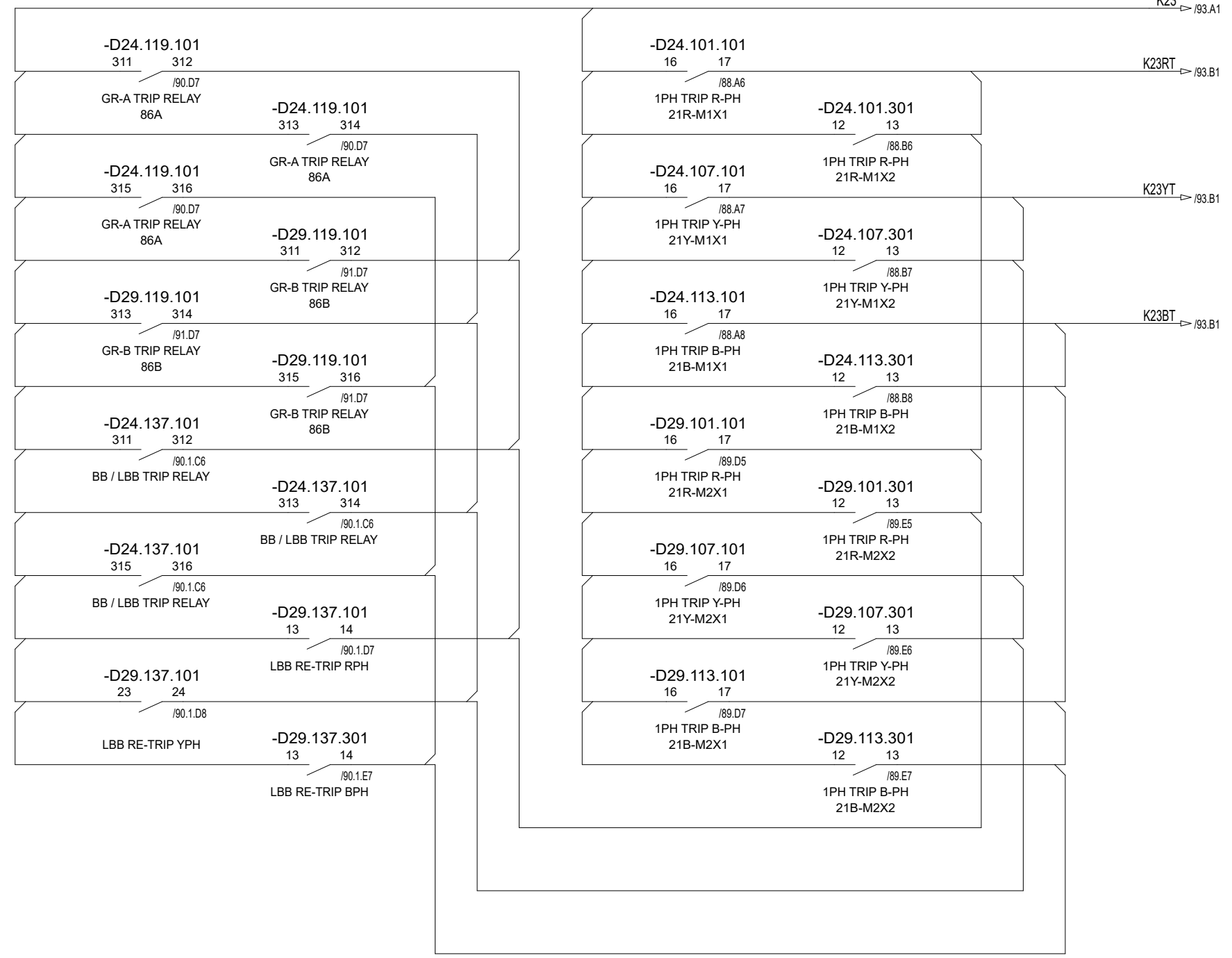
Suitable for conventional 220KV SS only



Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER		Doc. kind.	Circuit diagram		Ref.Des.	=2KR		
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Rev.	Revision note	Date	Name						Doc. no.		1MNS500925-CBBA		n. sheet	92
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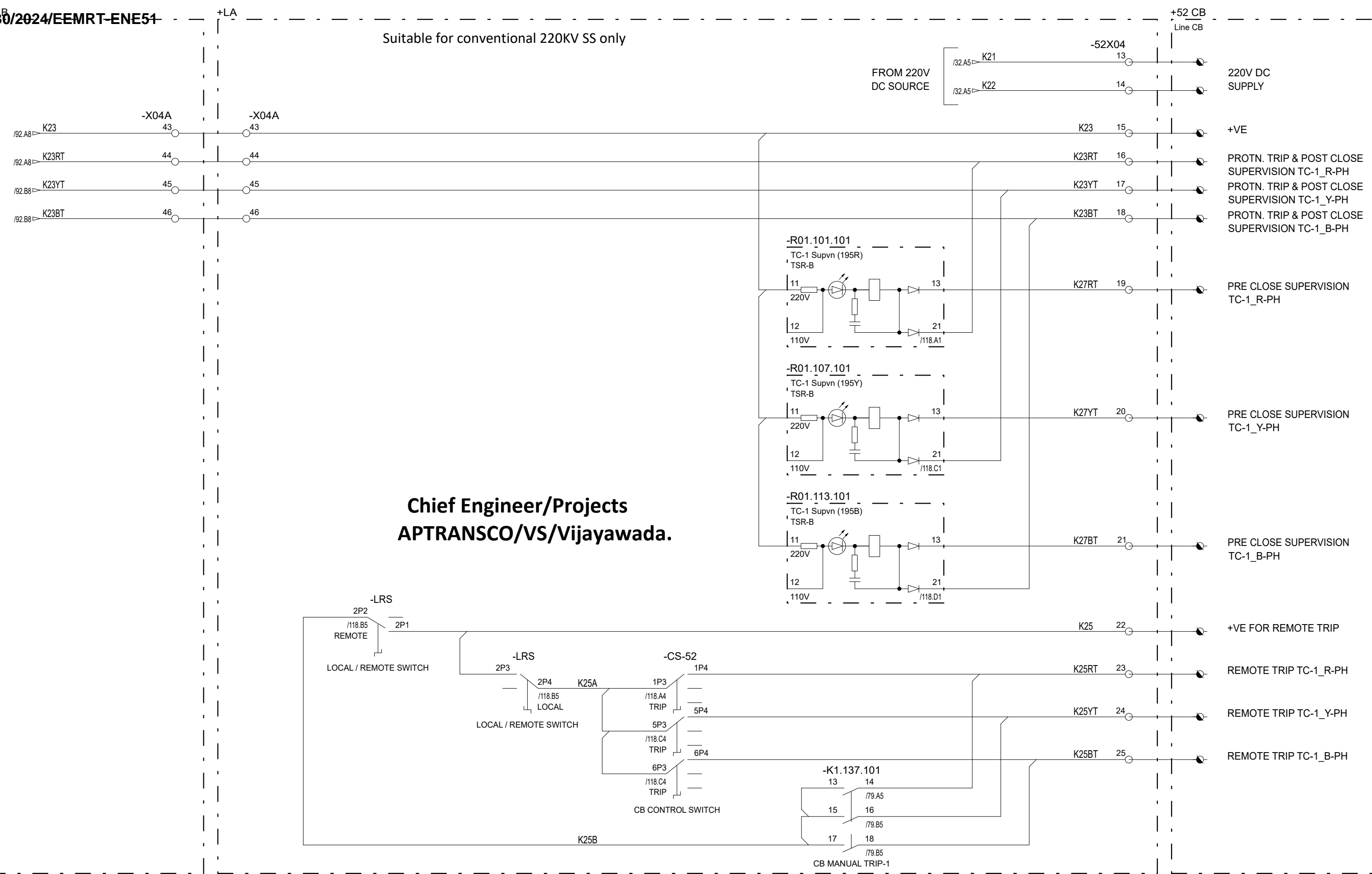
Suitable for conventional 220KV SS only

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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		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-CBBA	Sheet 92	n. sheet 93
1MYN691003-102(A3)REV01						

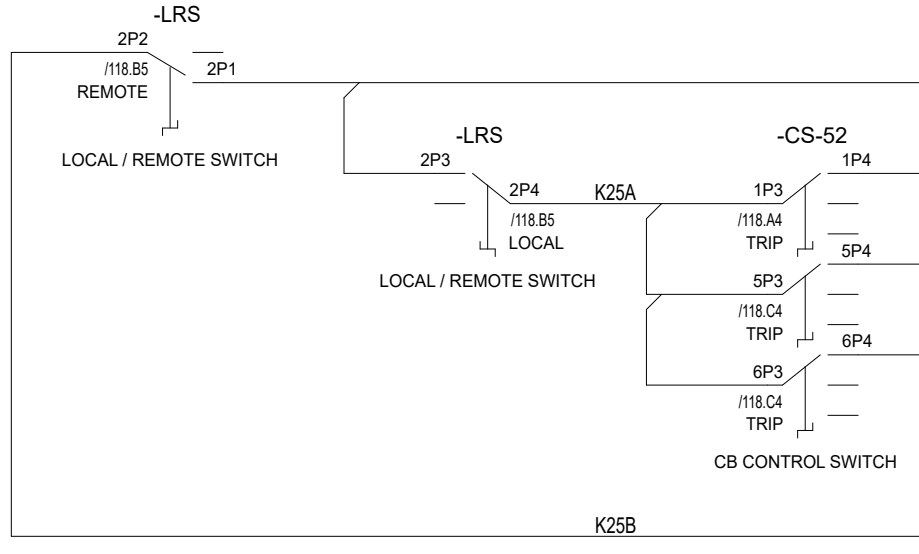
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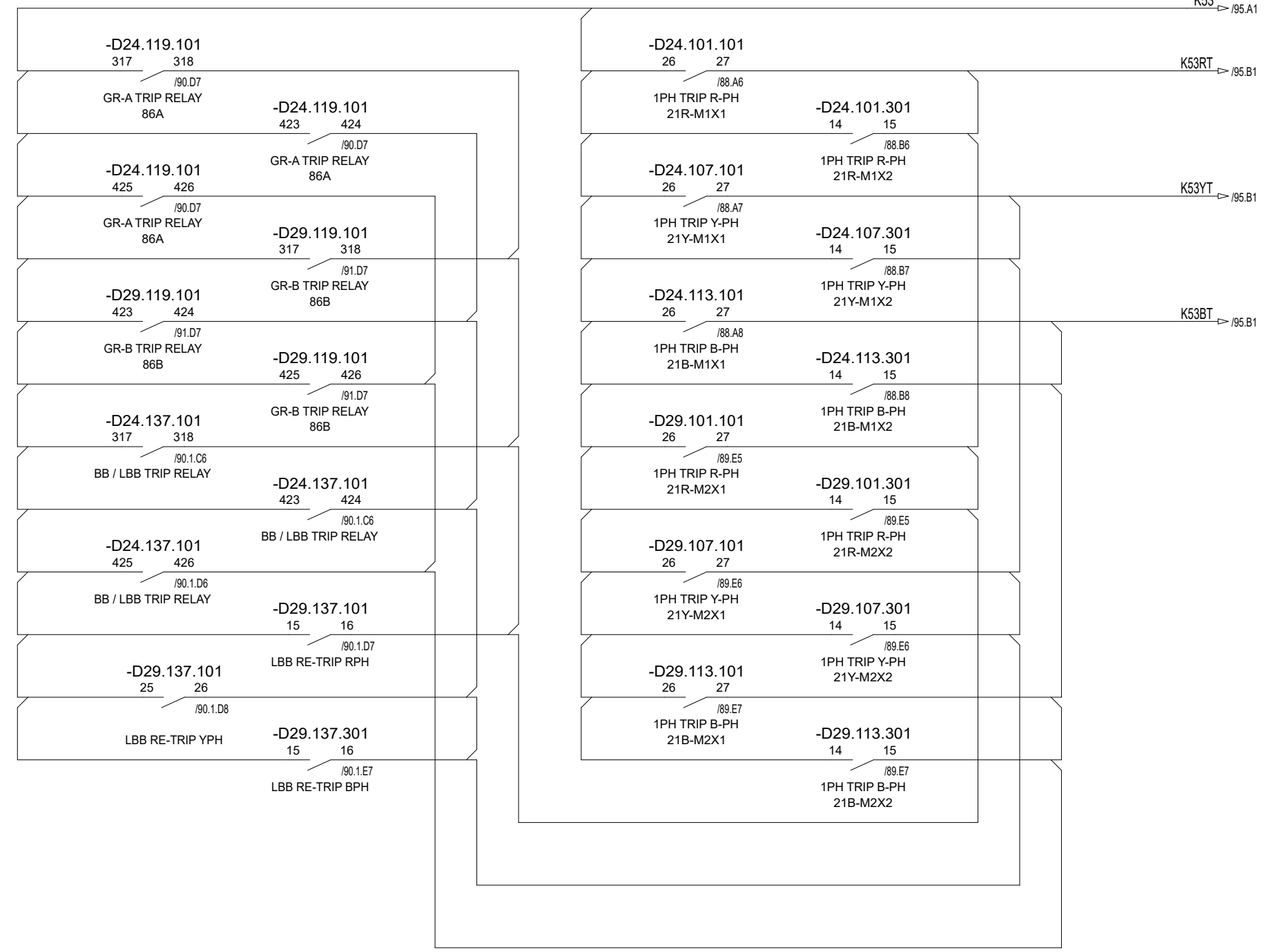
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 93
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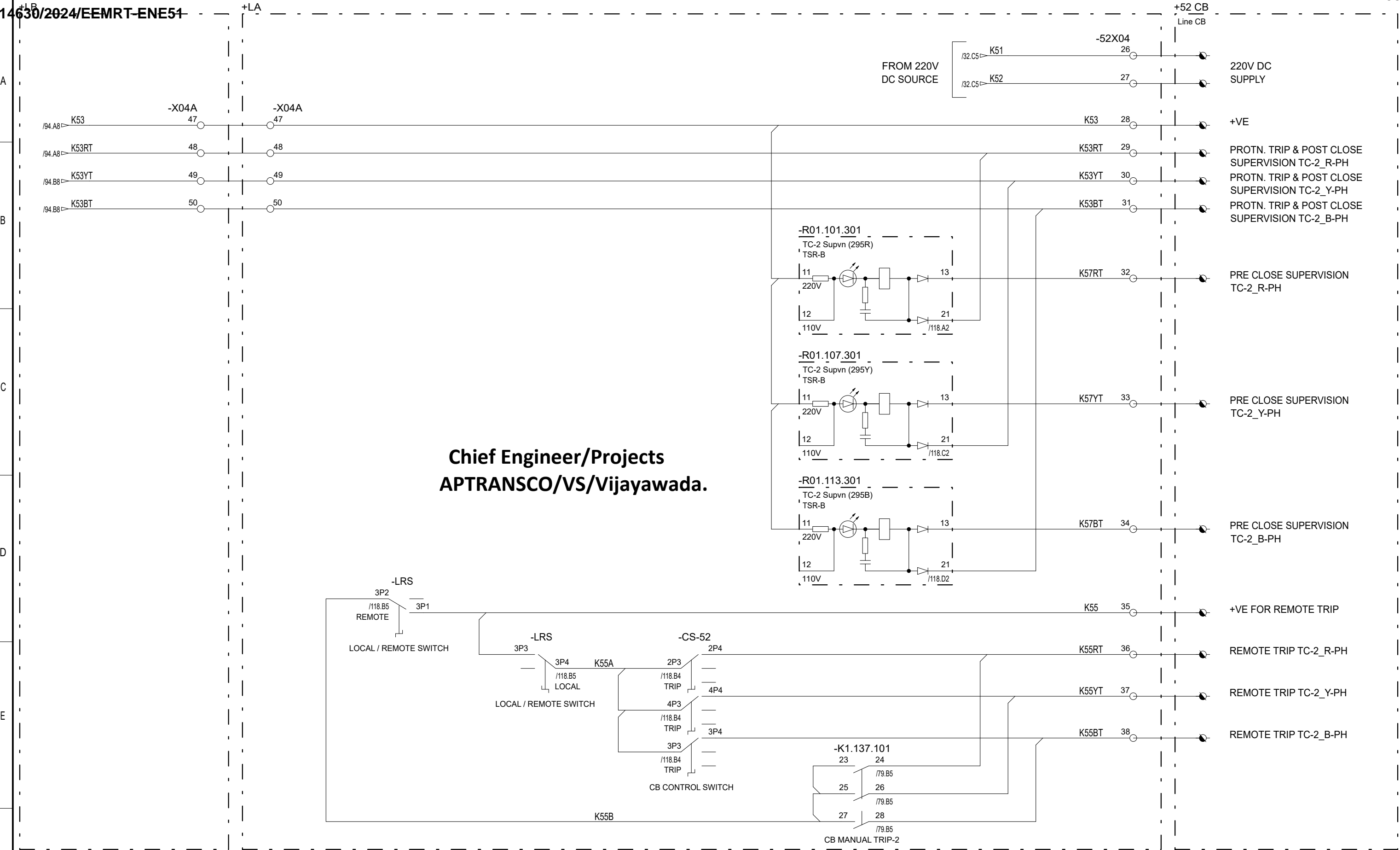
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA	Sheet 94	n. sheet 95
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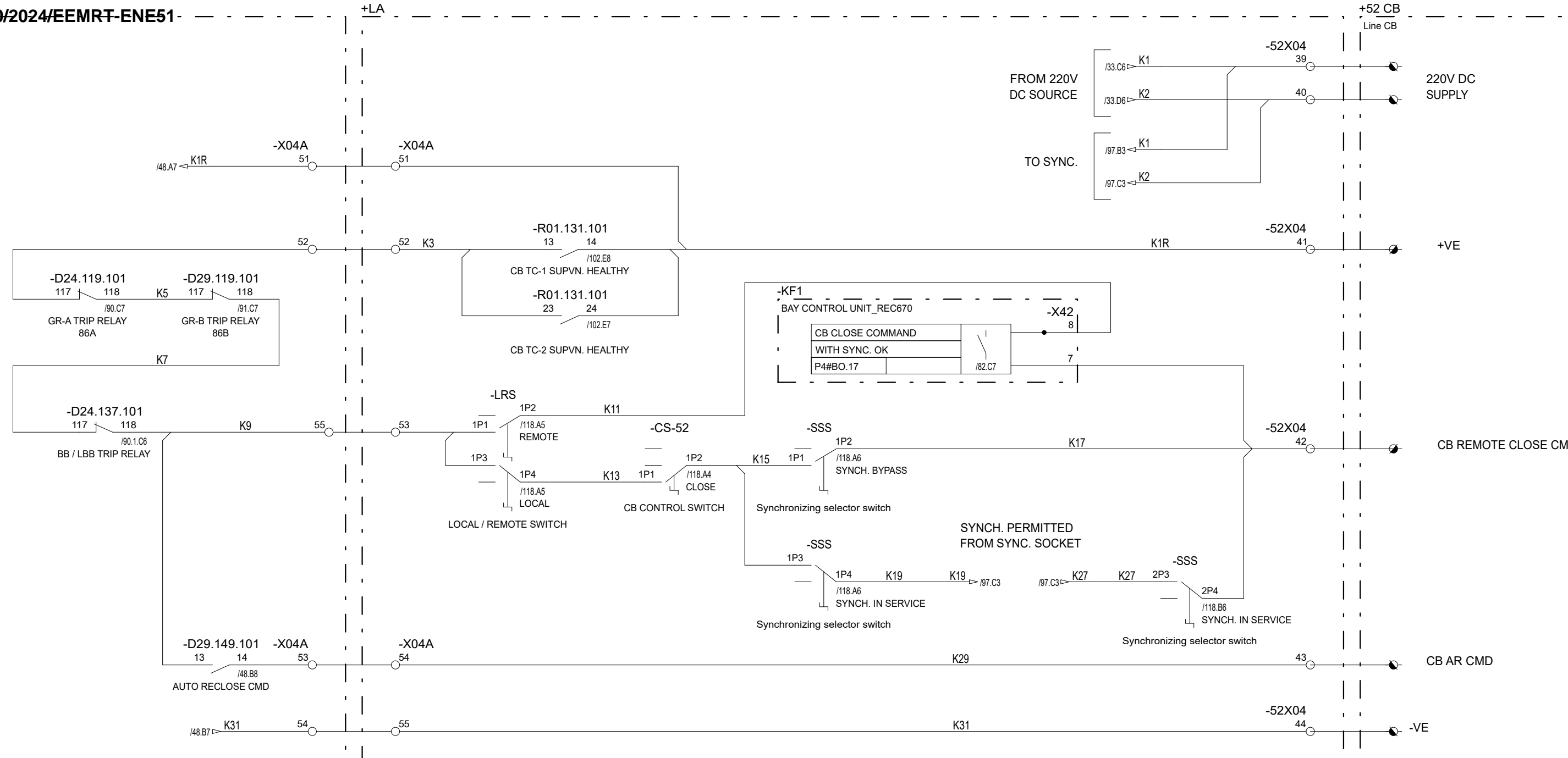
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 95
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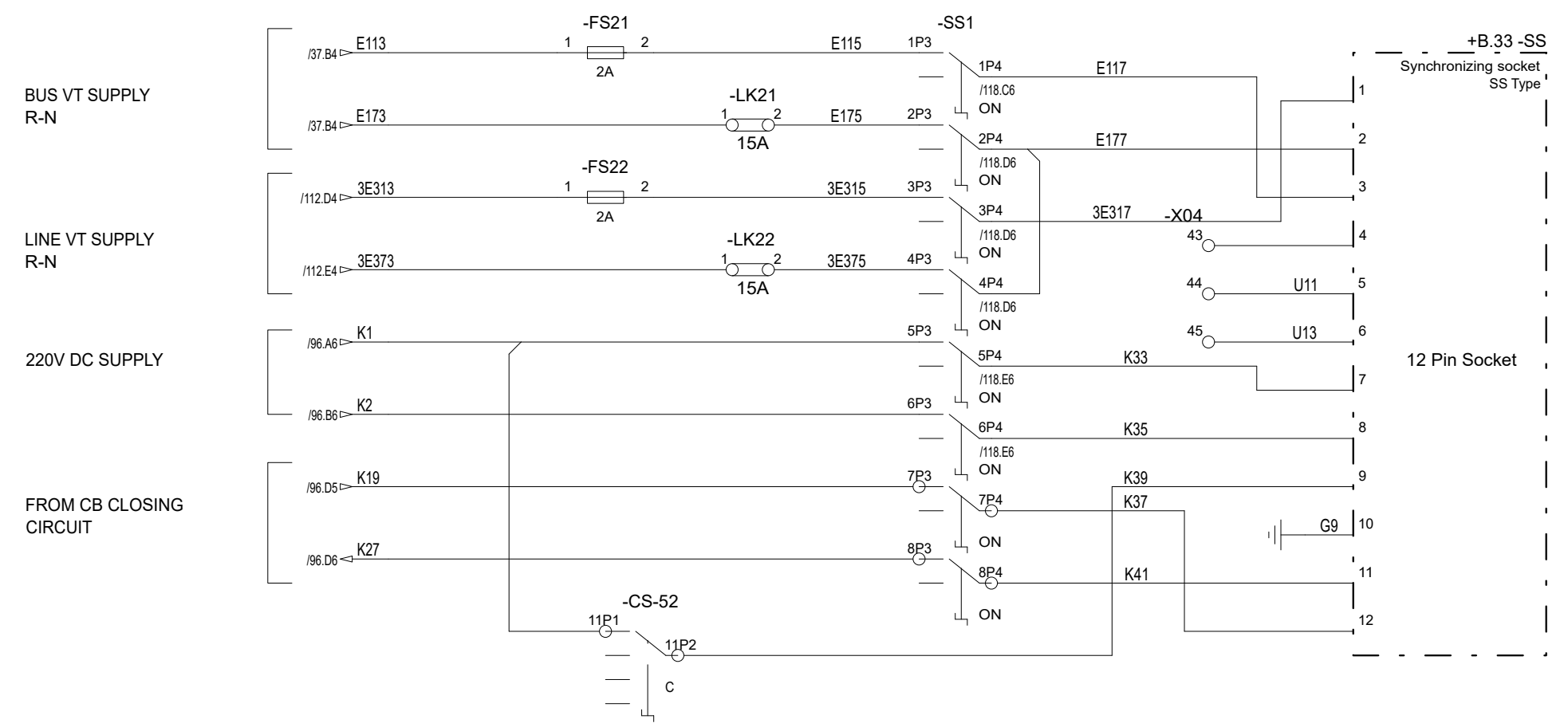
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 96
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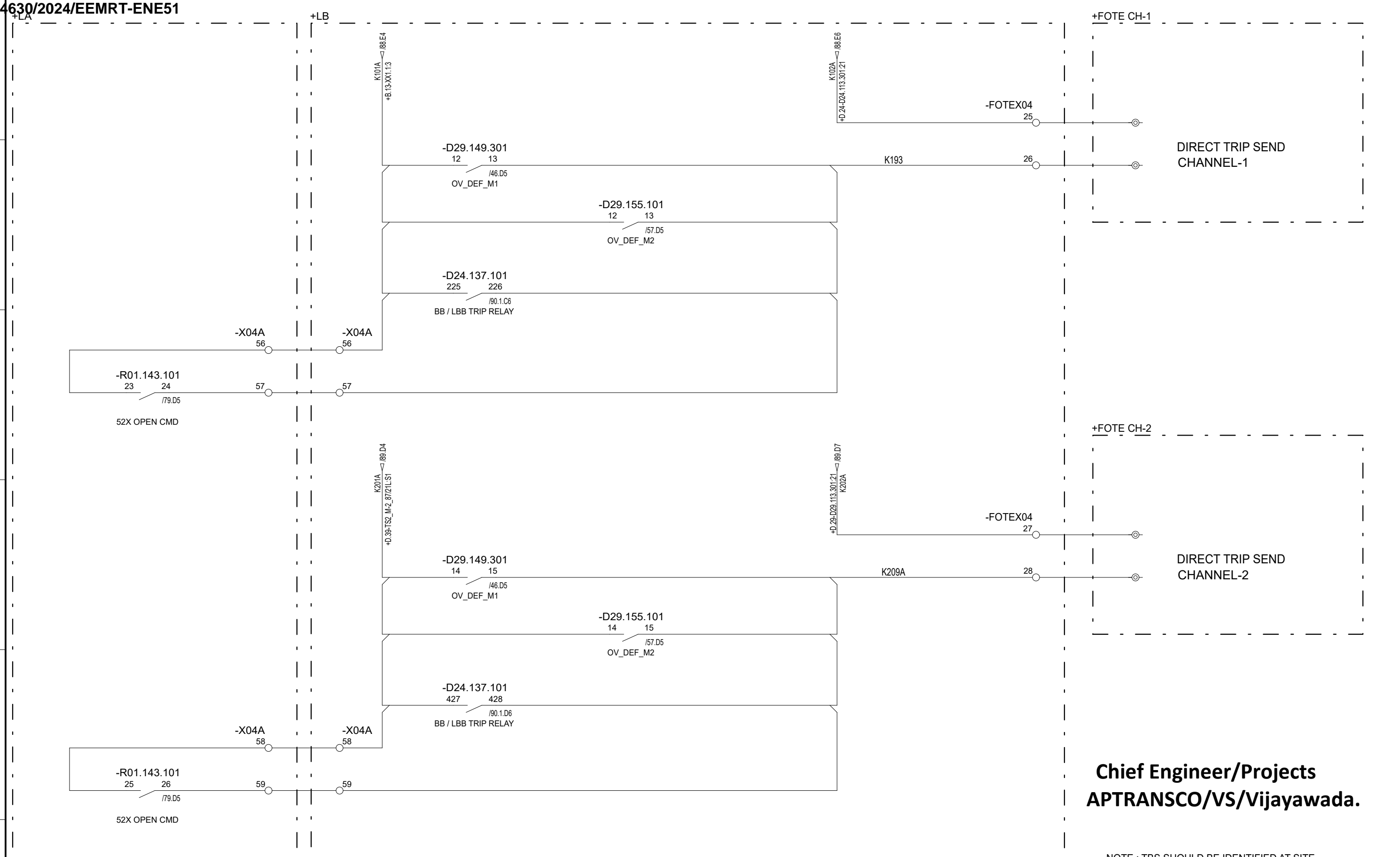
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 97
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DIRECT TRIP SEND CHANNEL-1

DIRECT TRIP SEND CHANNEL-2

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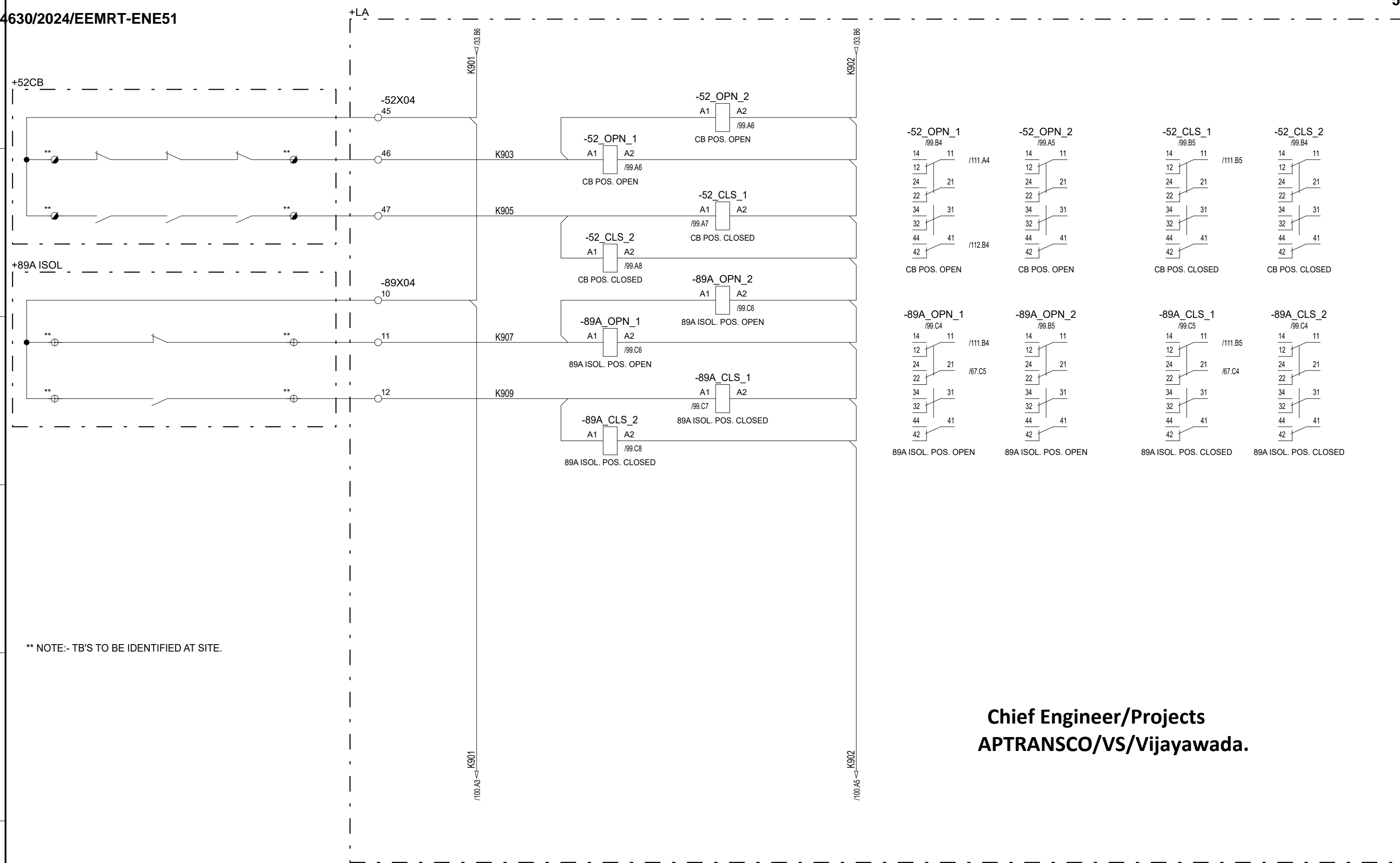
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 98
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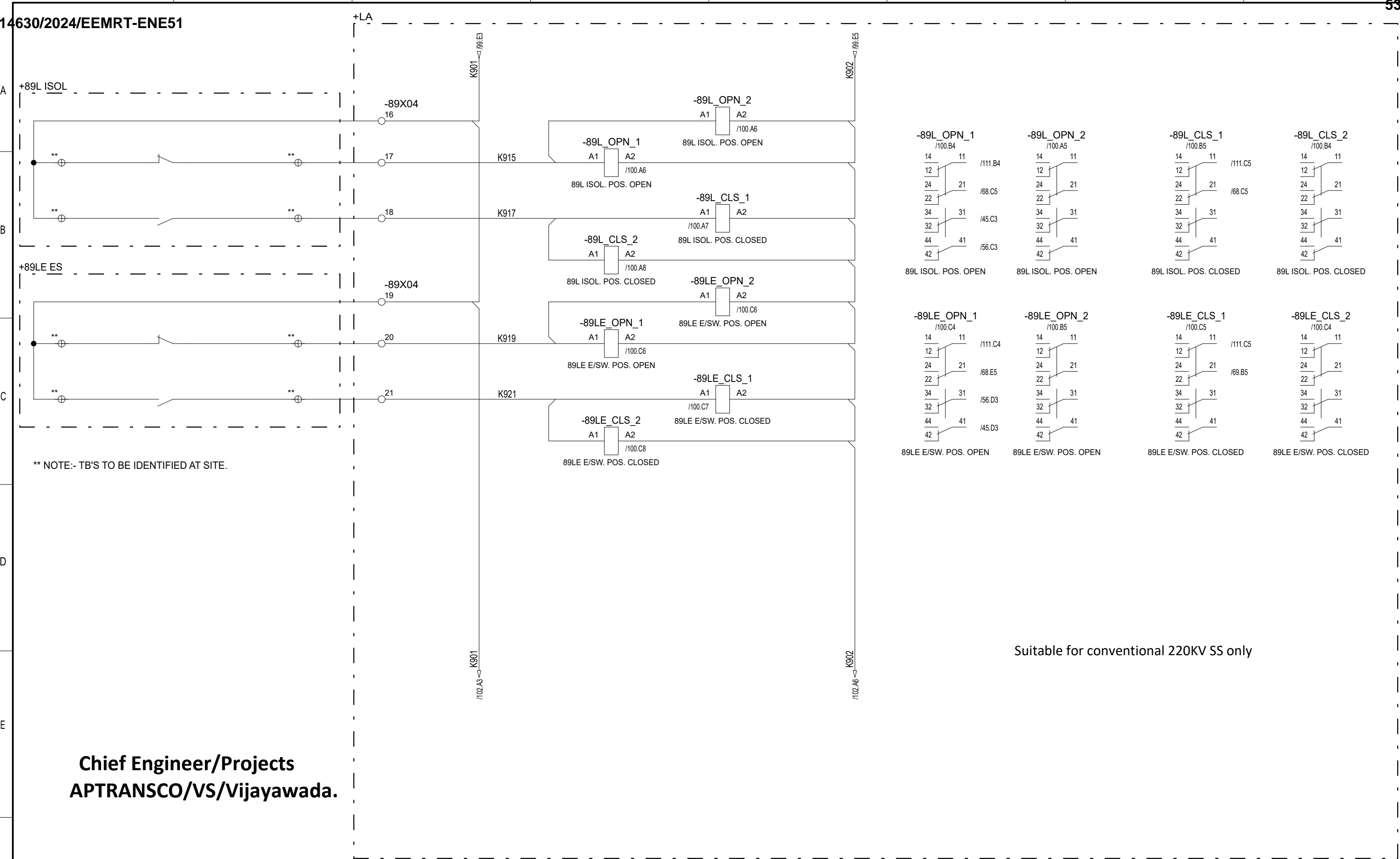
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	1MNS500925-CBBA		Sheet 99
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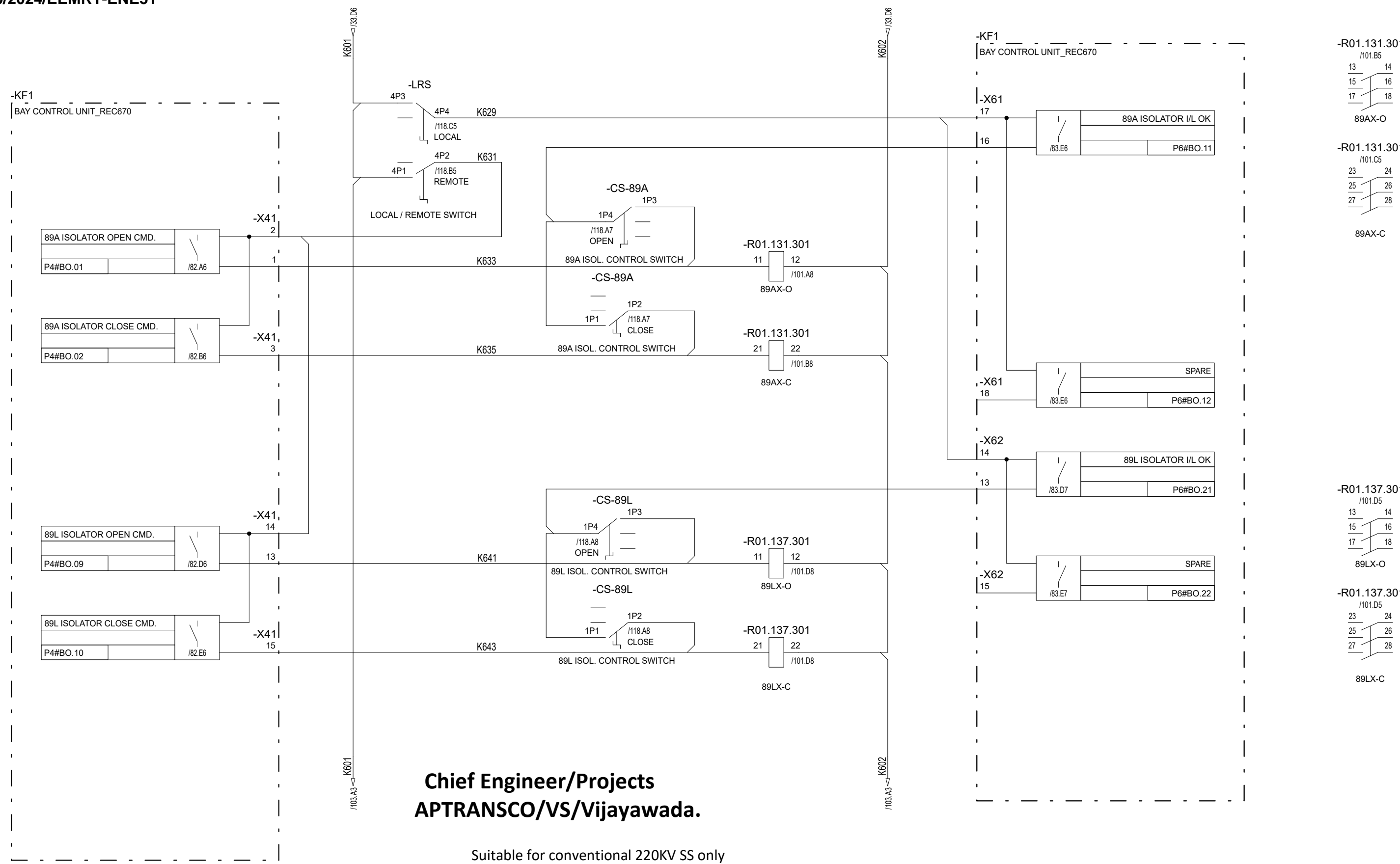
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**Chief Engineer/Projects
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 100
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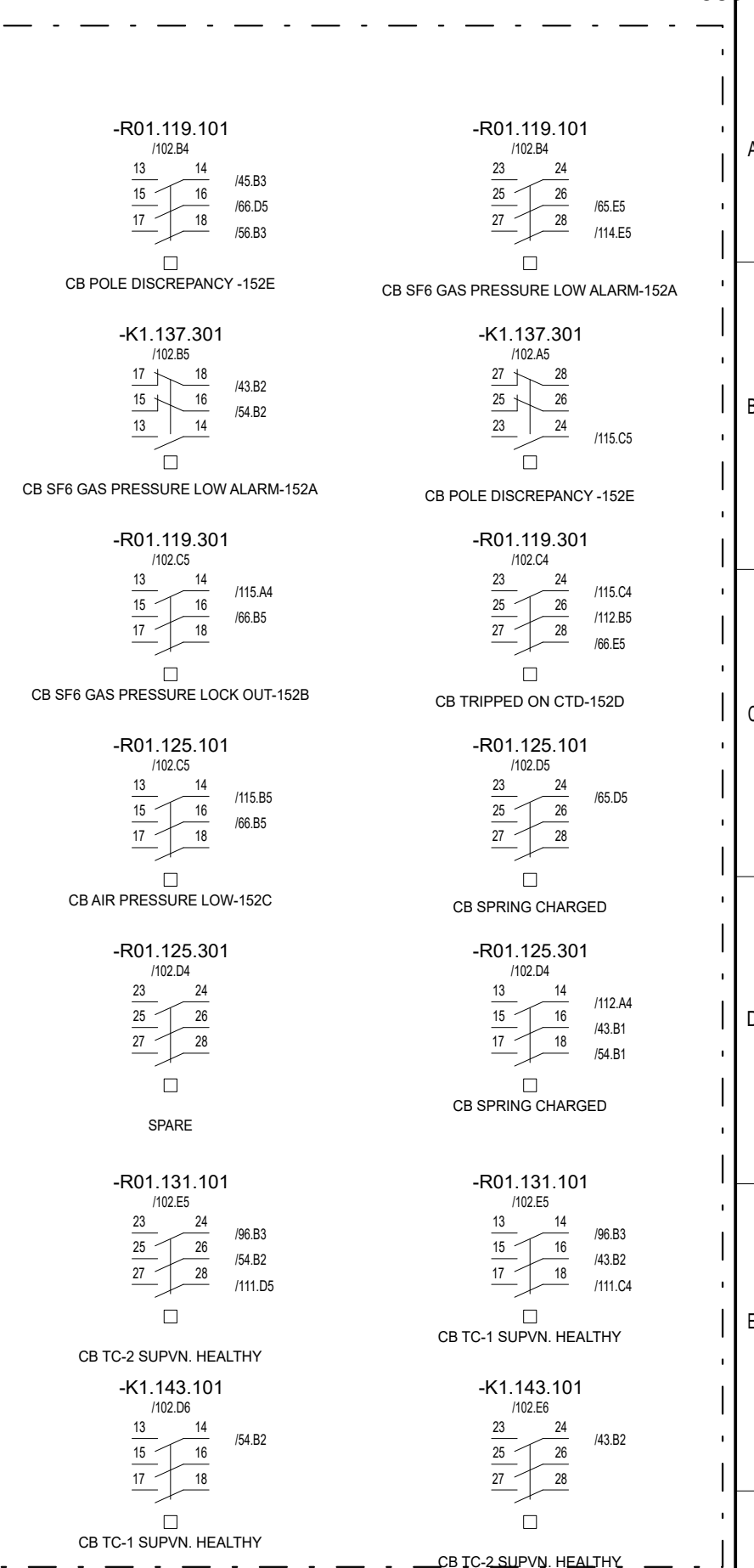
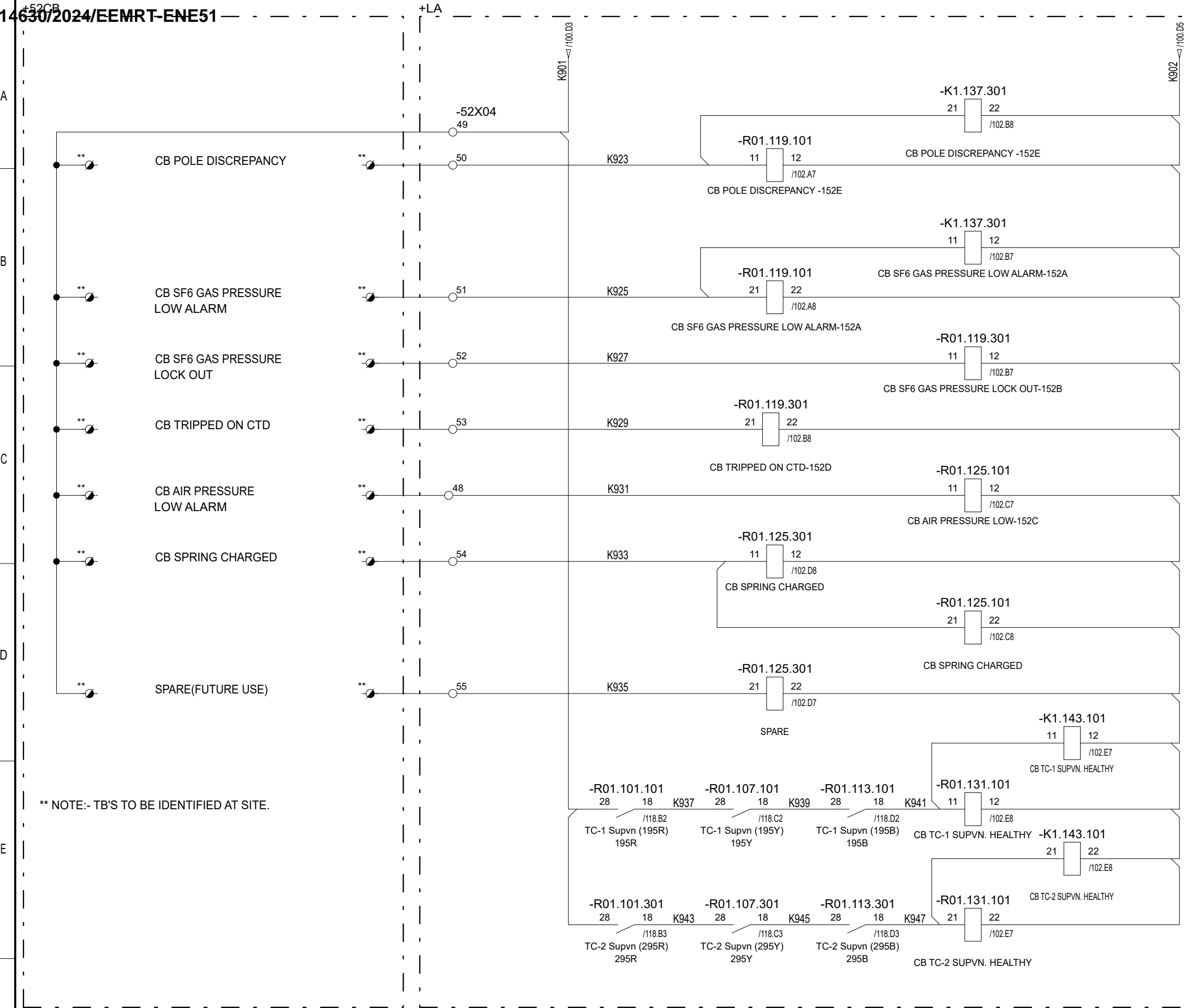


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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 101
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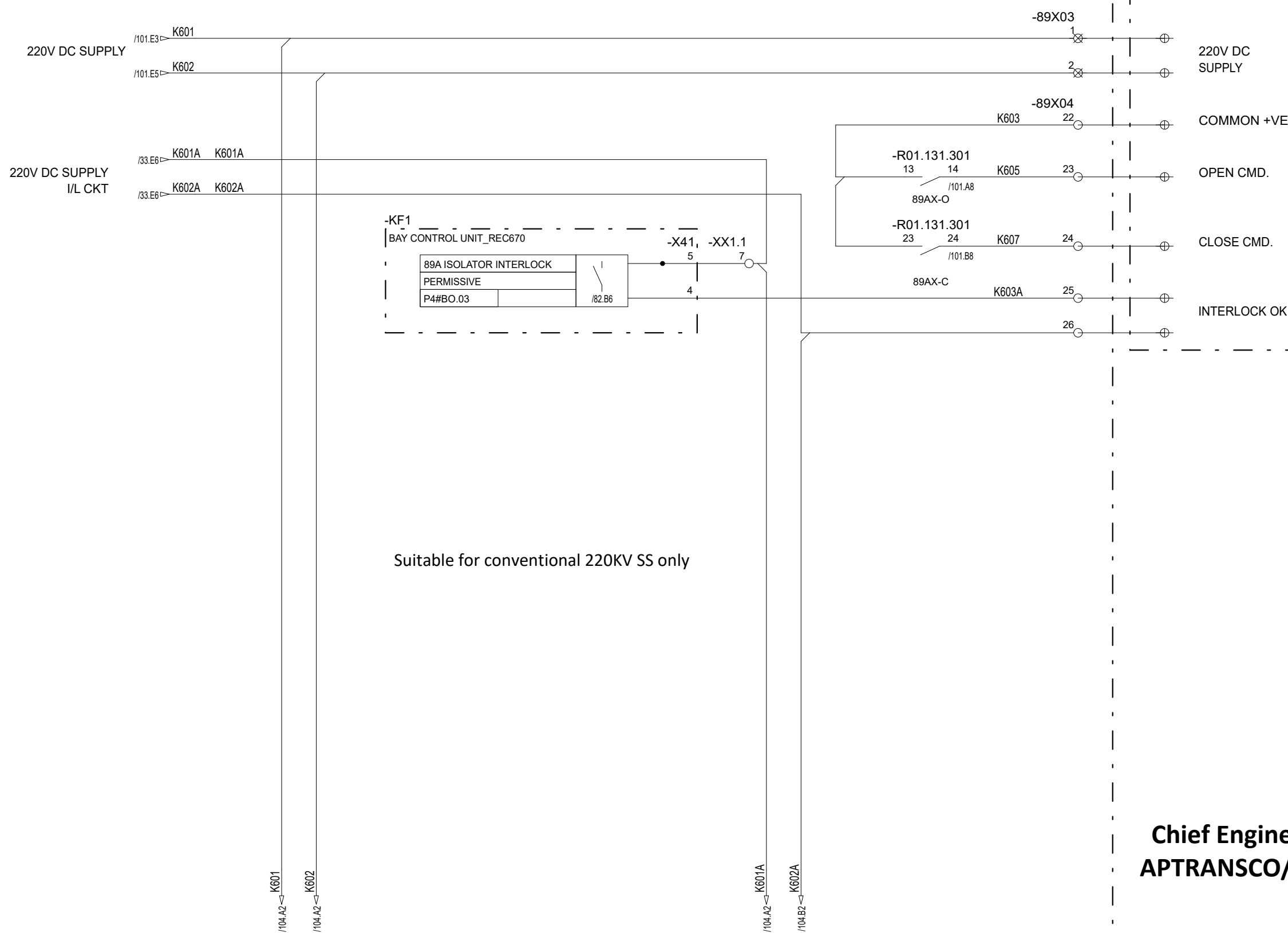
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Rev.	Revision note	Date	Name								
		1MYN691003-102(A3)REV01		Doc. no. 1MNS500925-CBBA							
				Sheet 102							
				n. sheet 103							

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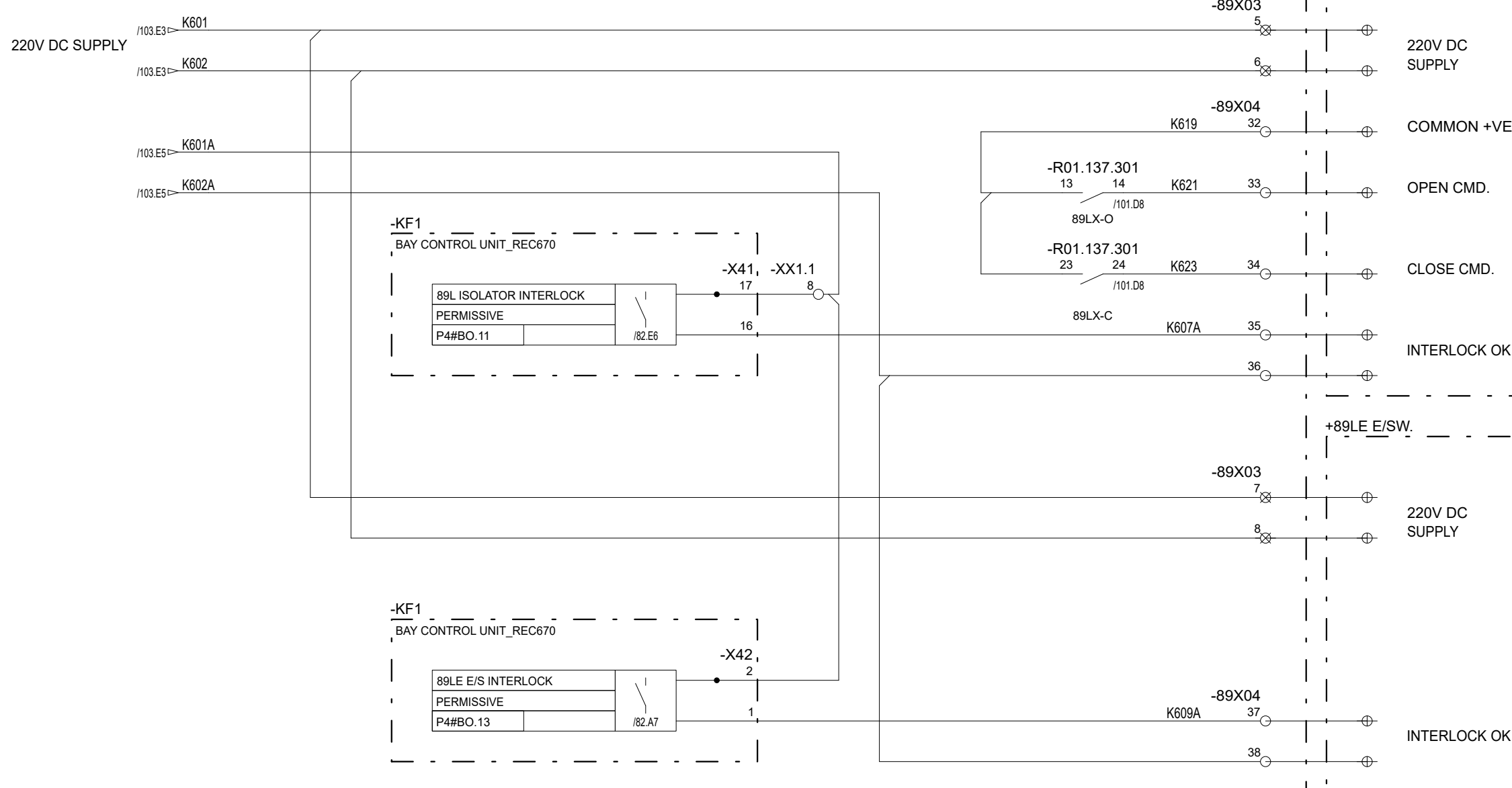
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Rev.	Revision note	Date	Name		HITACHI Hitachi Energy India Limited		Doc. no.		1MNS500925-CBBA		Sheet	103
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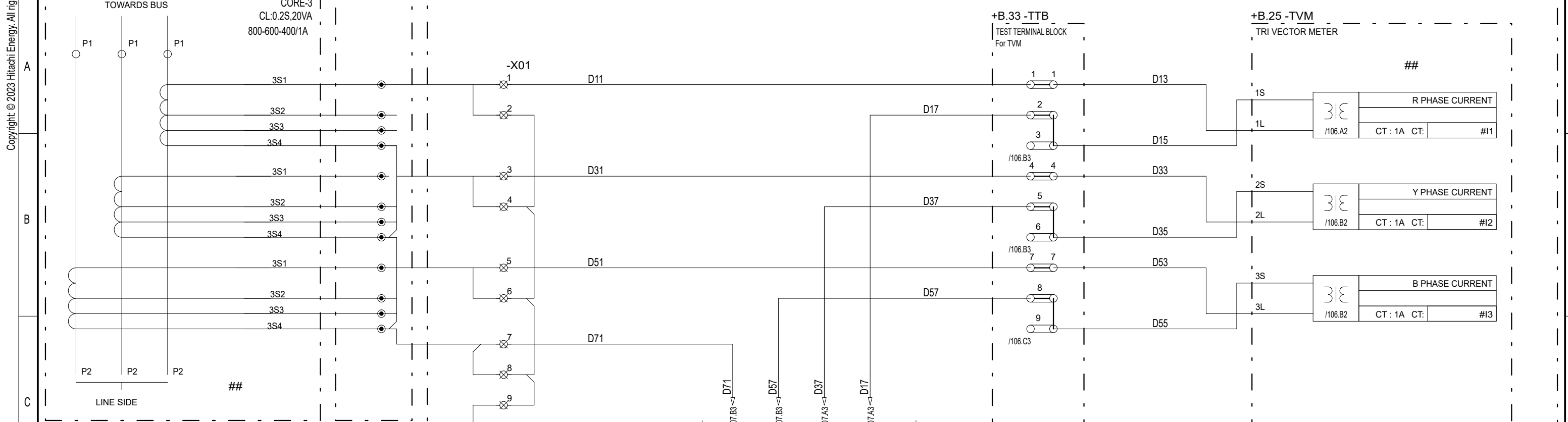
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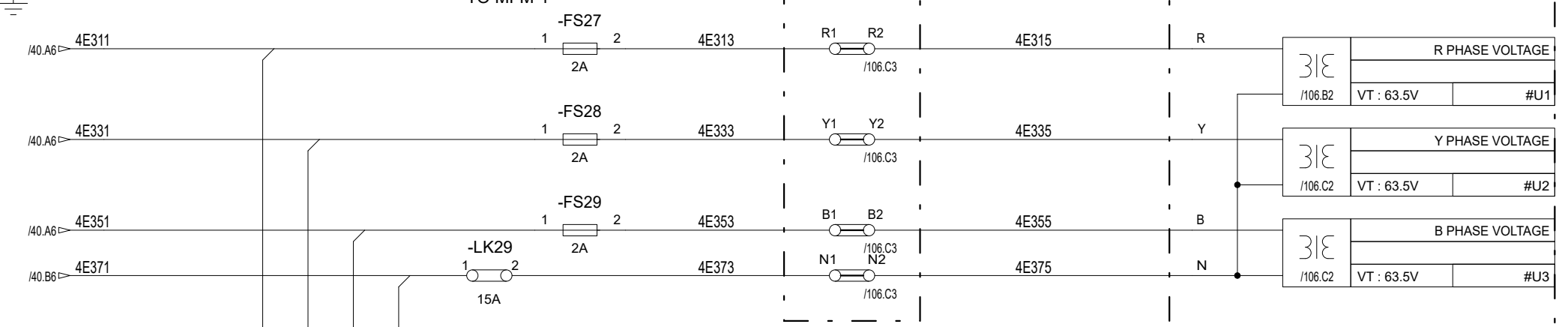
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 104
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NOTE:- CT DETAILS TO BE CONFIRMED BY THE CUSTOMER.



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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
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 105
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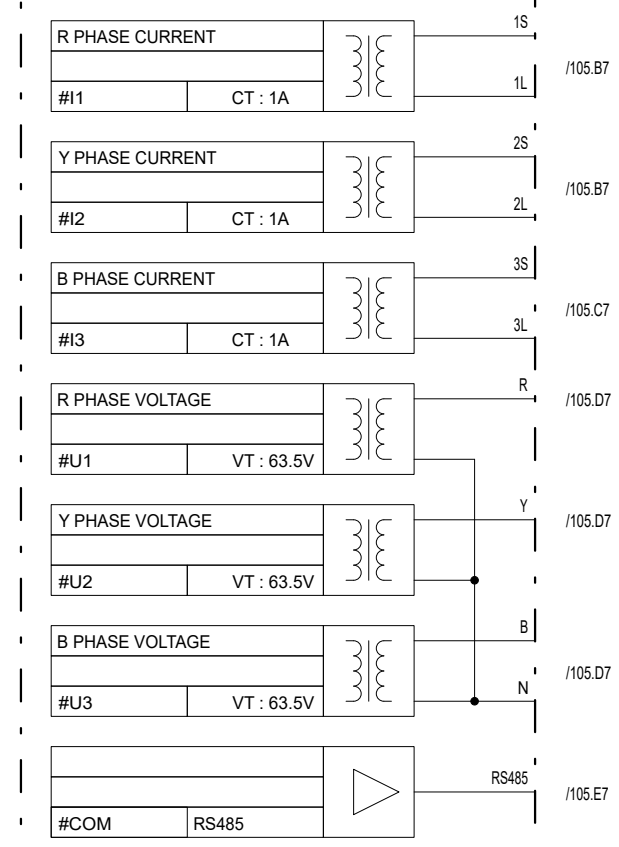
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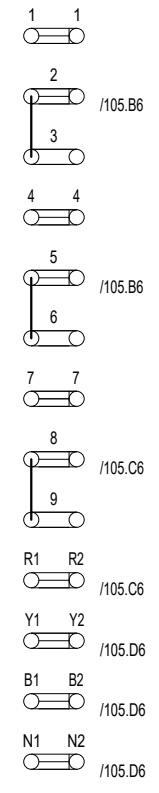
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+B.25 -TVM

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

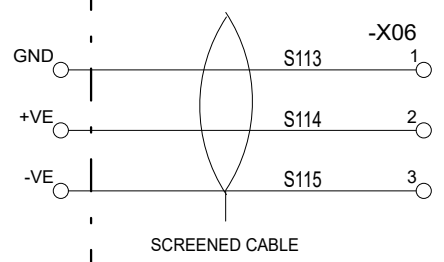


-TTB



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				HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBBA	
Rev.	Revision note	Date	Name			Sheet 106 n. sheet 107
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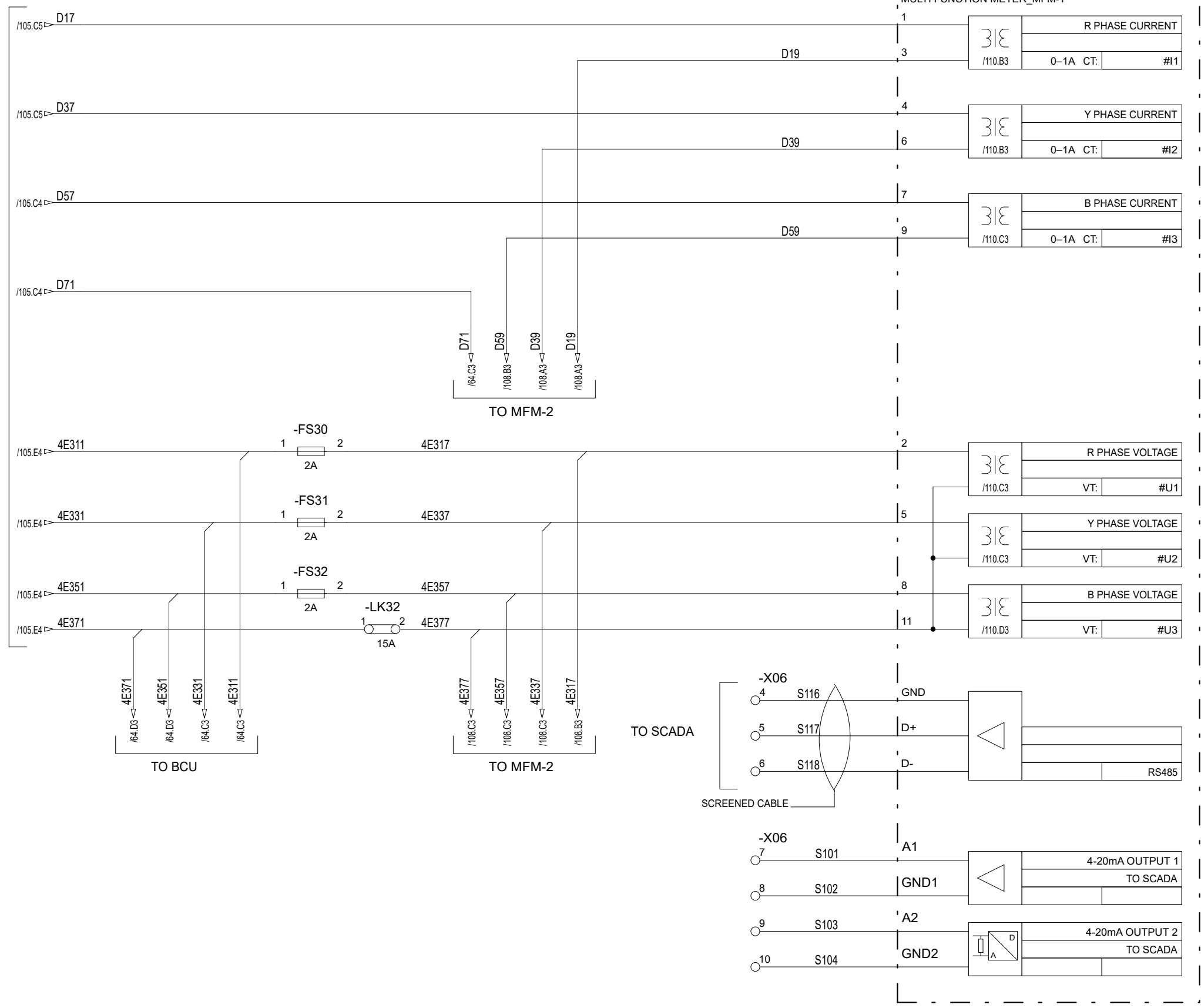
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FROM TVM
CKT.

+B.05 -MFM-1
MULTI FUNCTION METER_MFM-1



** 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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		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 107
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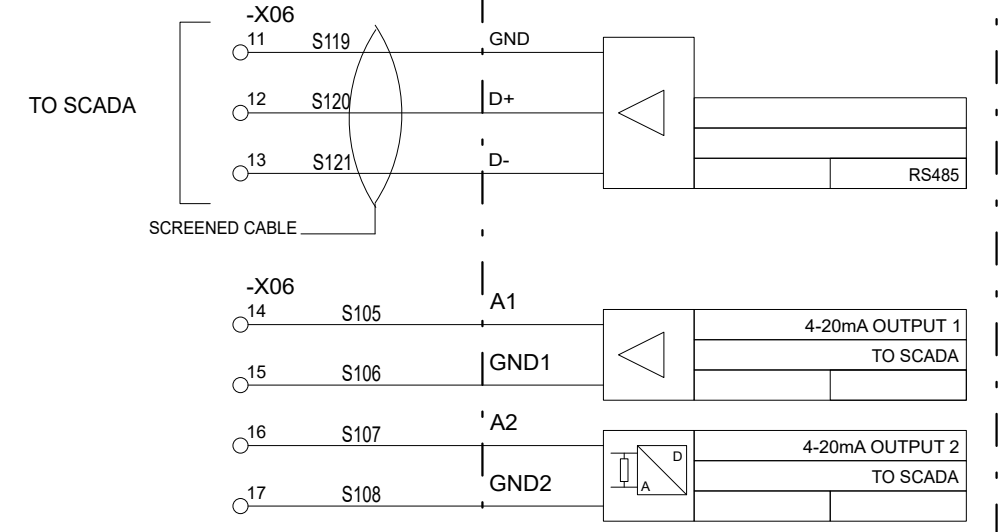
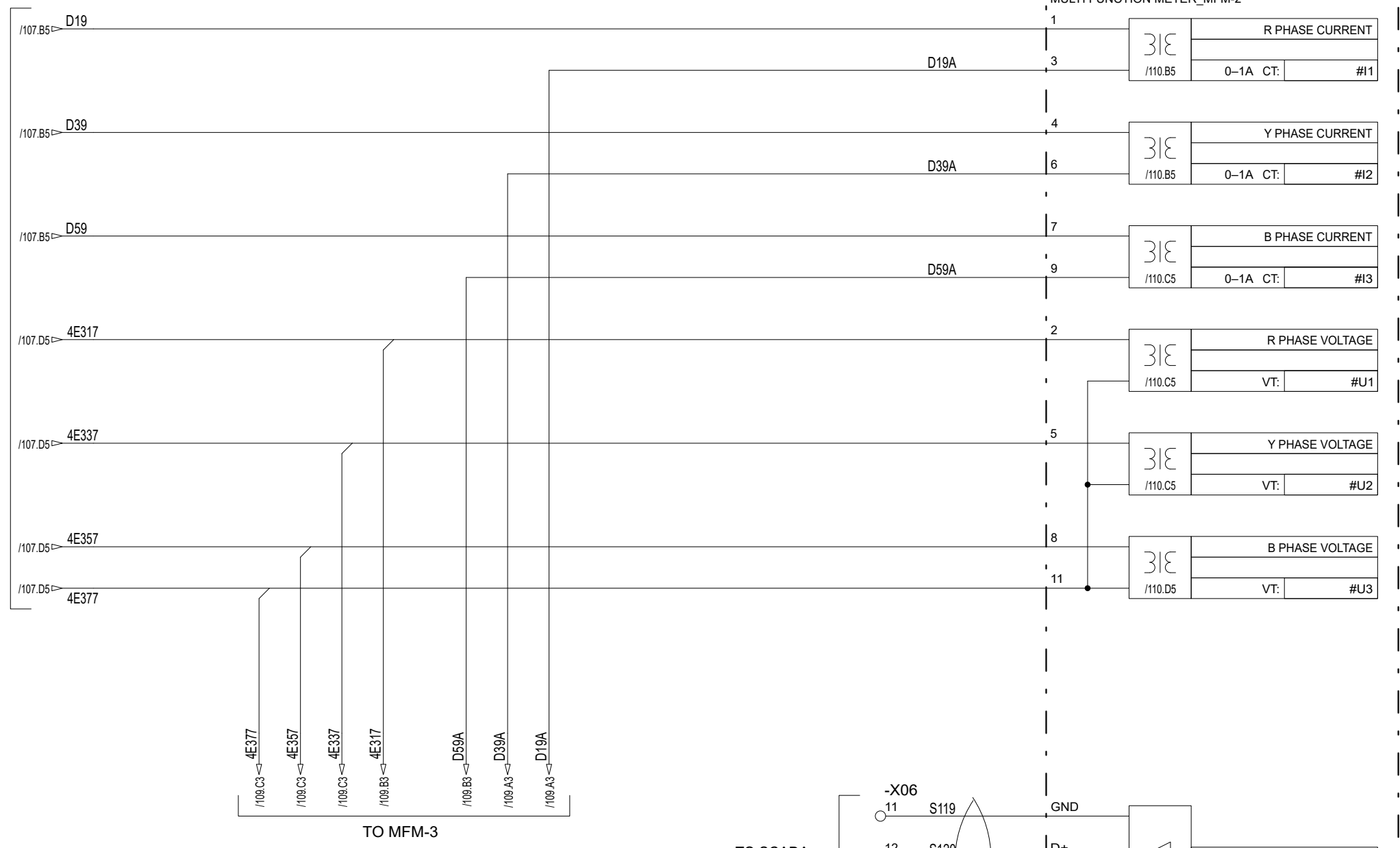
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+B.05 -MFM-2
MULTI FUNCTION METER_MFM-2

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FROM MFM-1
CKT.

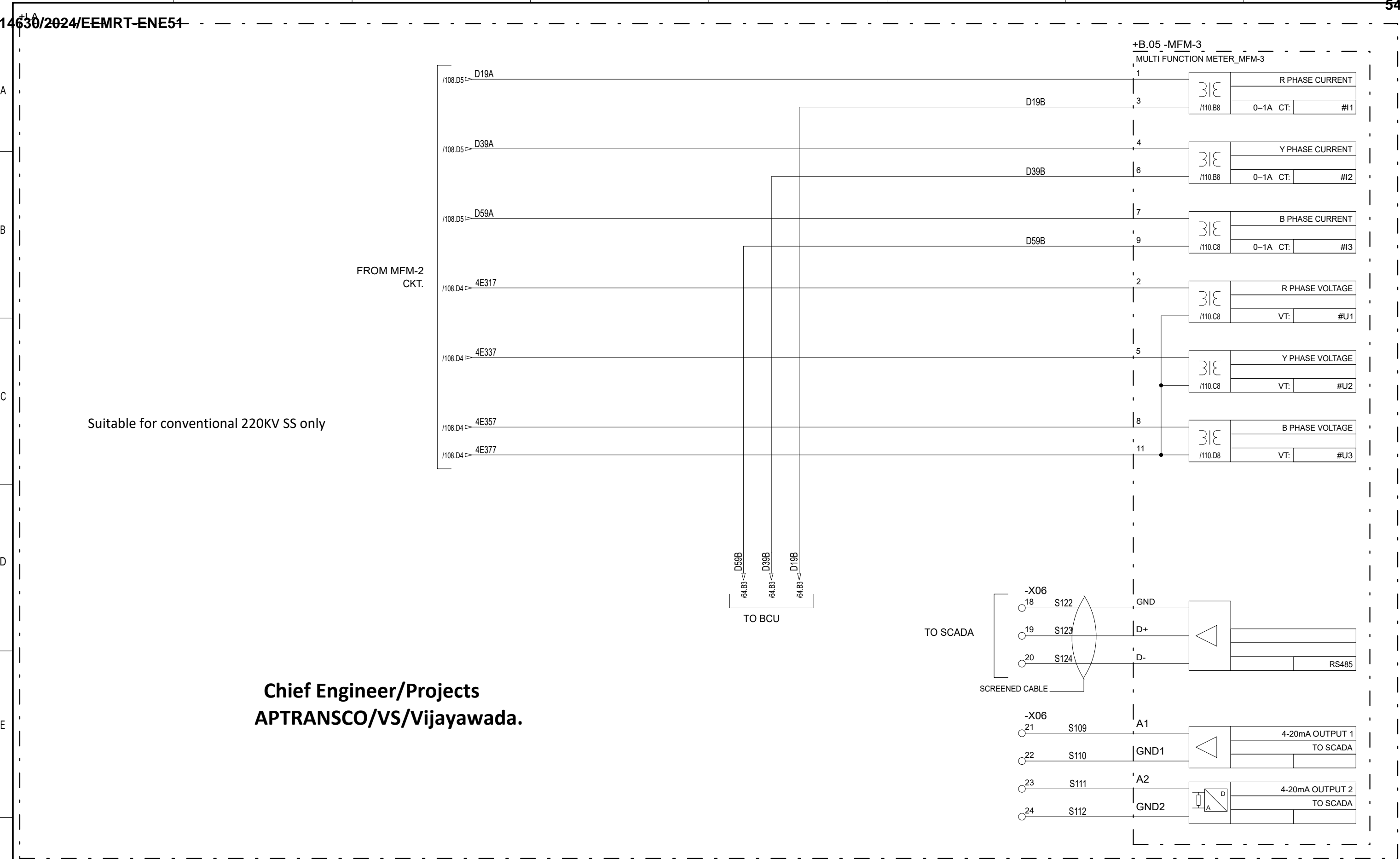


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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 108
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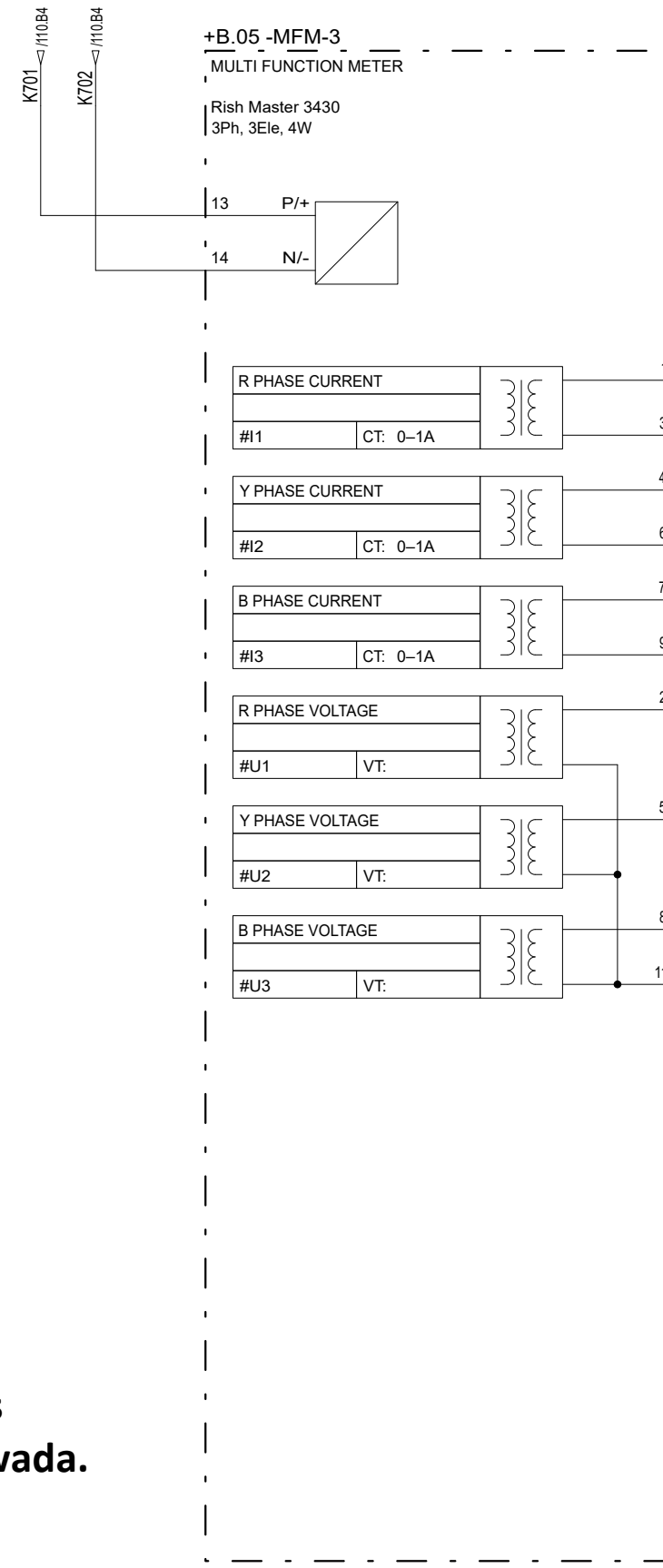
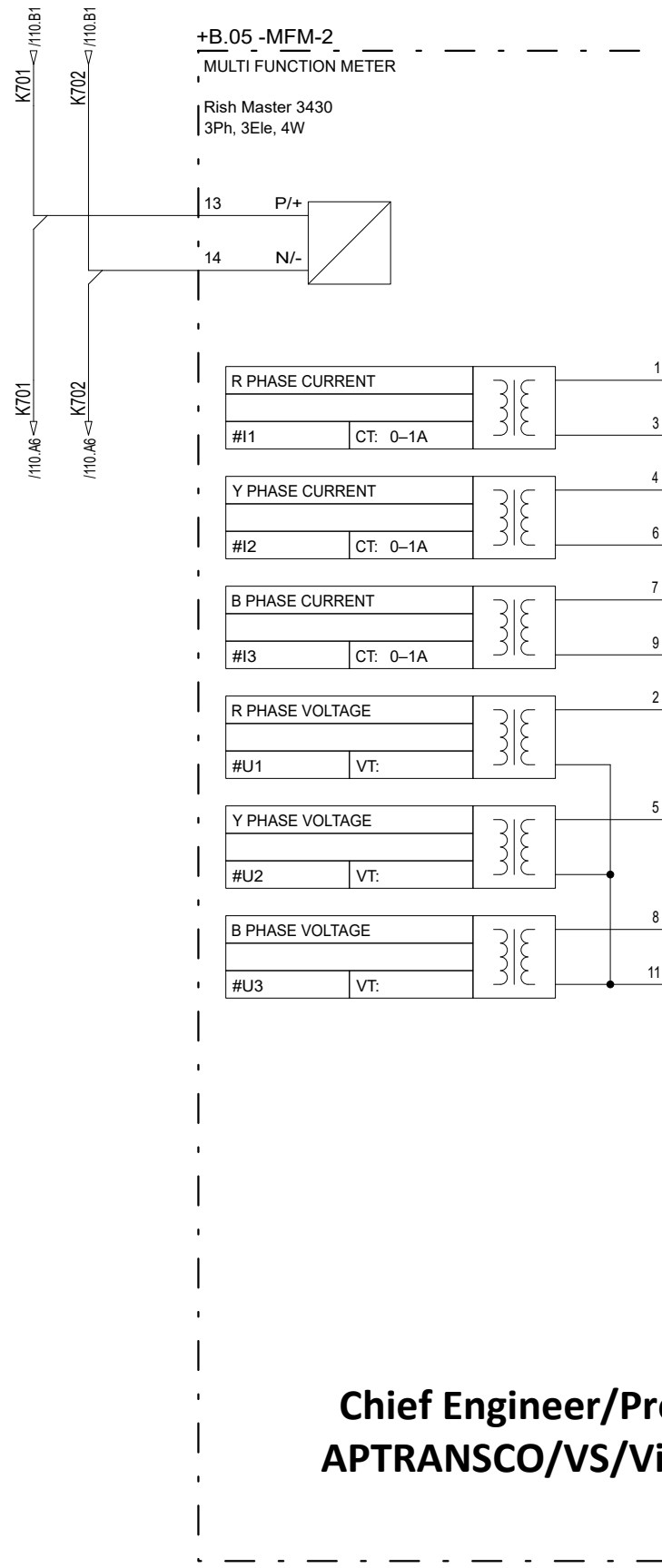
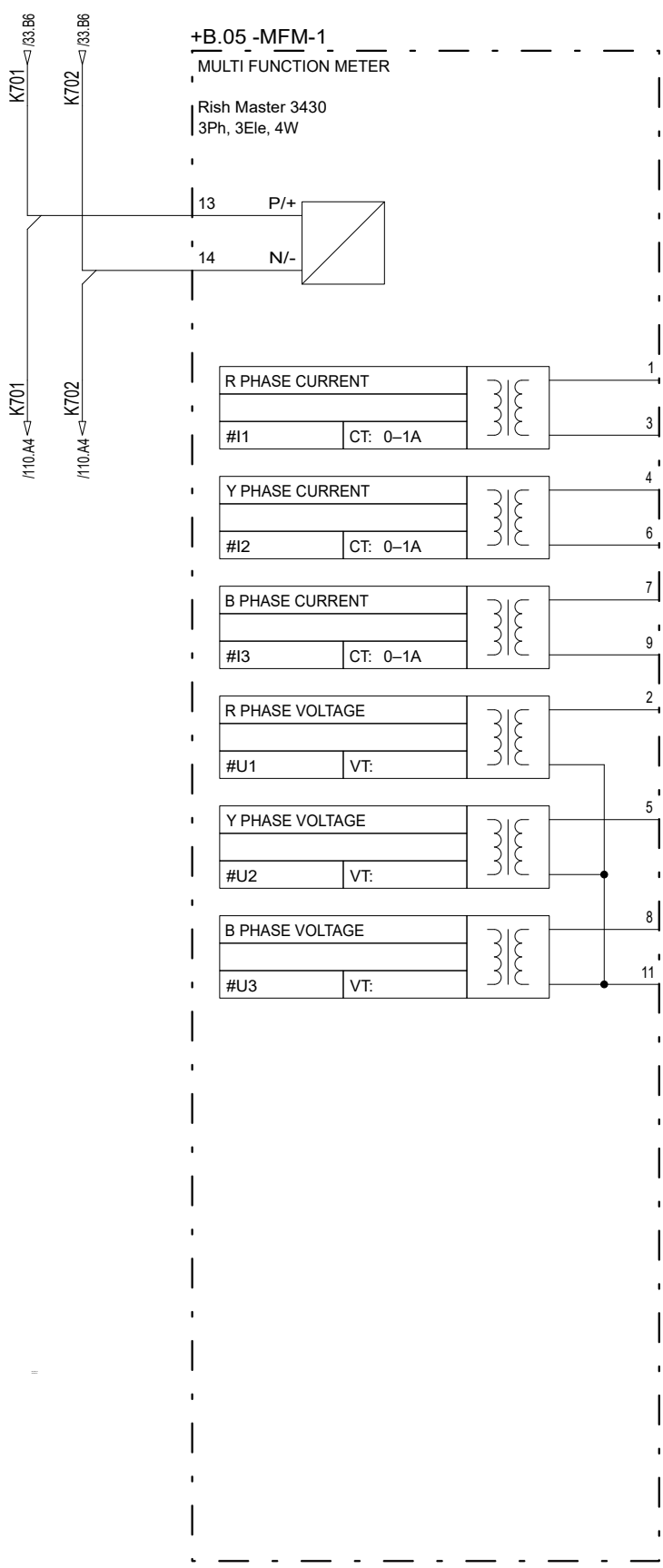


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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 109
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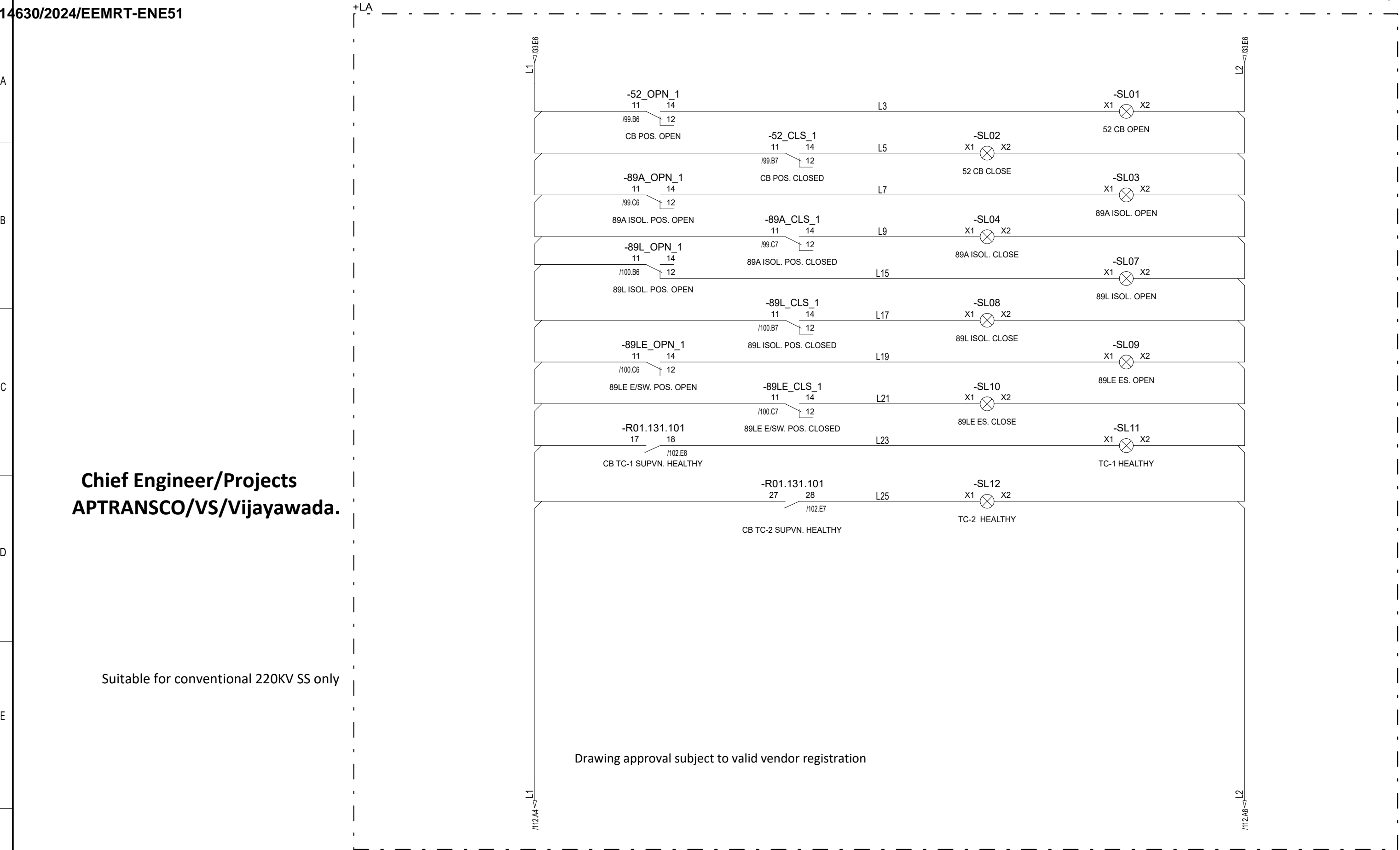
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814630/2024/EEMRT-ENE51



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

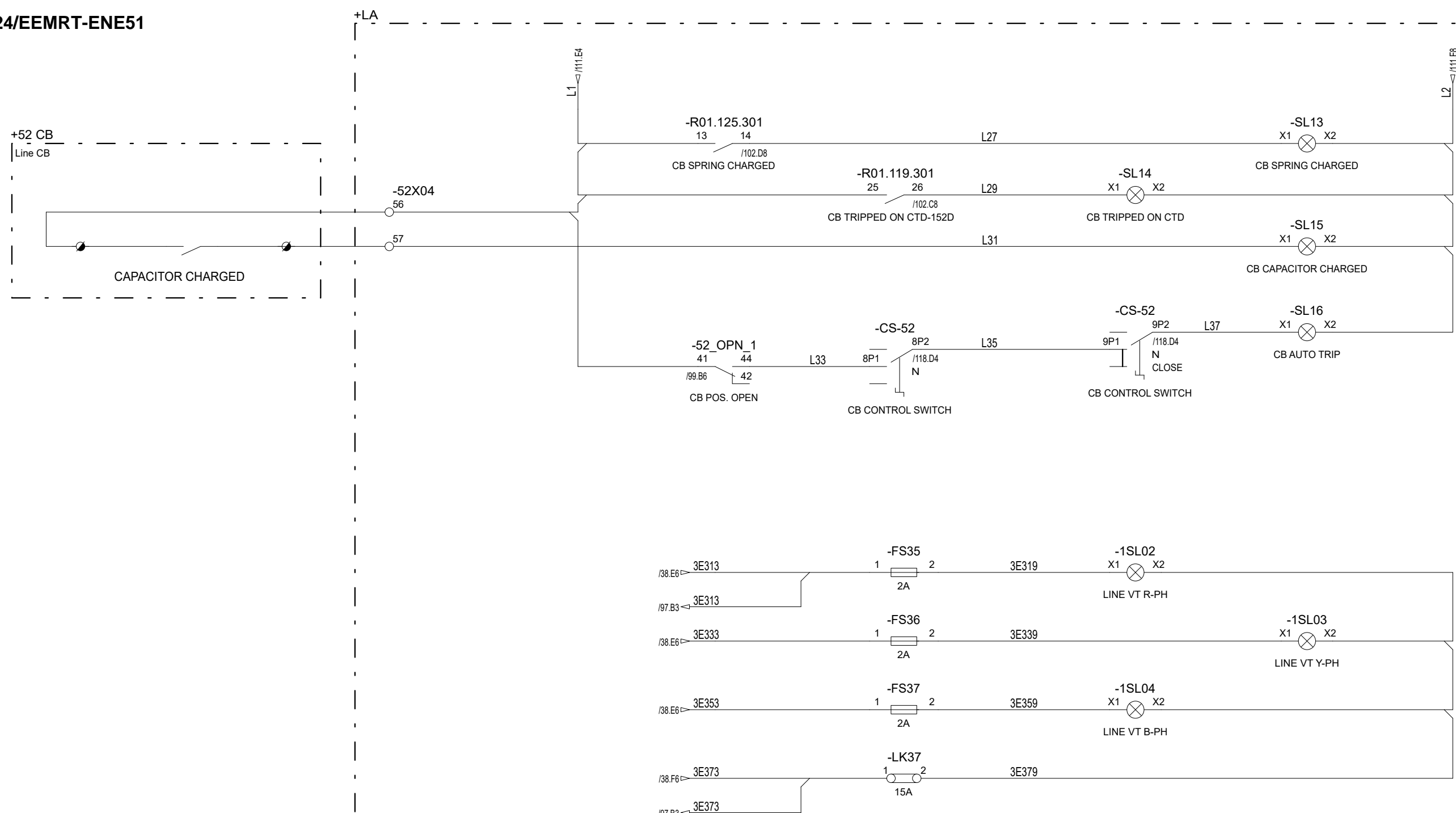
Suitable for conventional 220KV SS only

Drawing approval subject to valid vendor registration

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	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 111
1MYN691003-102(A3)REV01						n. sheet 112

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14630/2024/EEMRT-ENE51



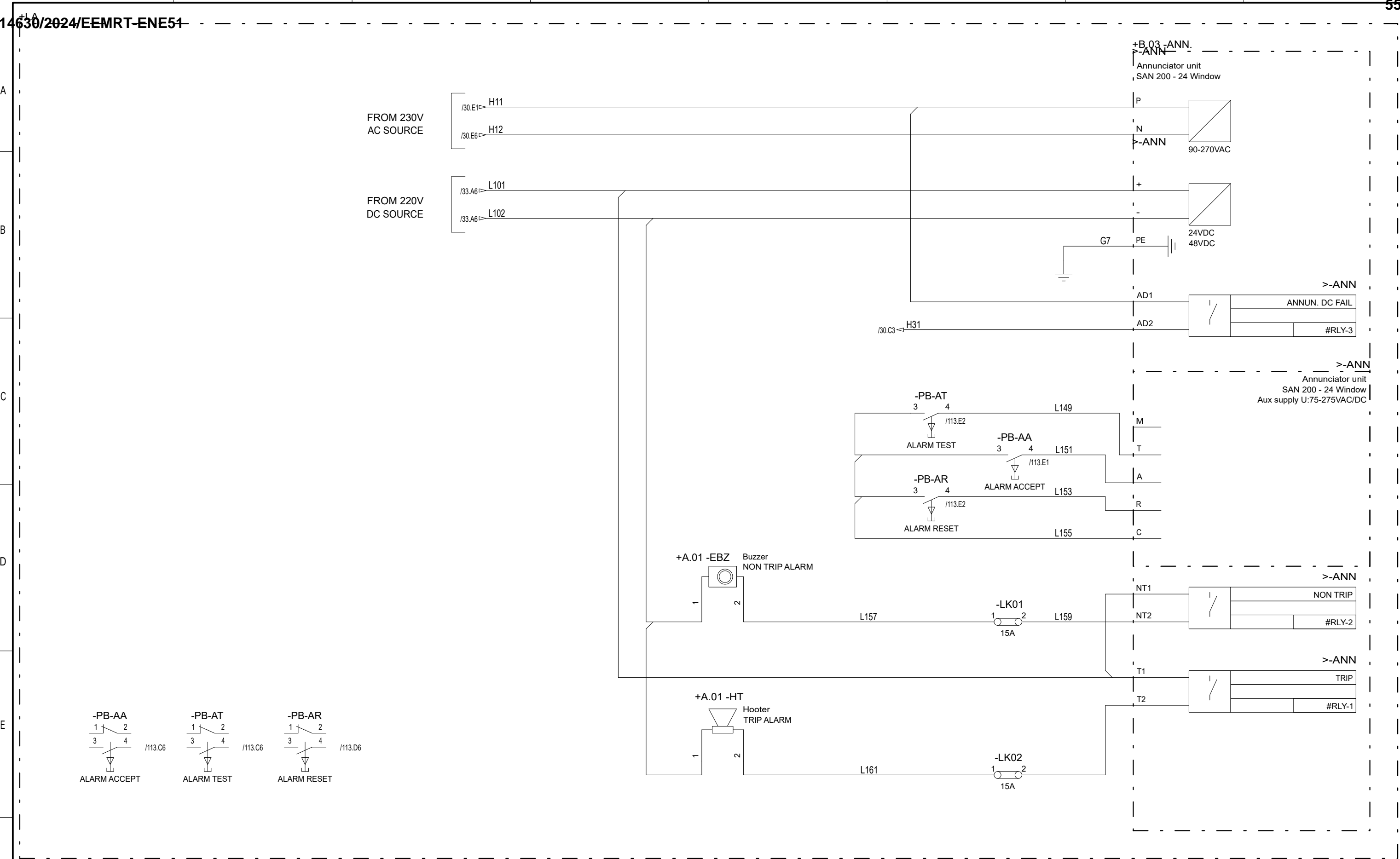
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 112
1MYN691003-102(A3)REV01						n. sheet 113

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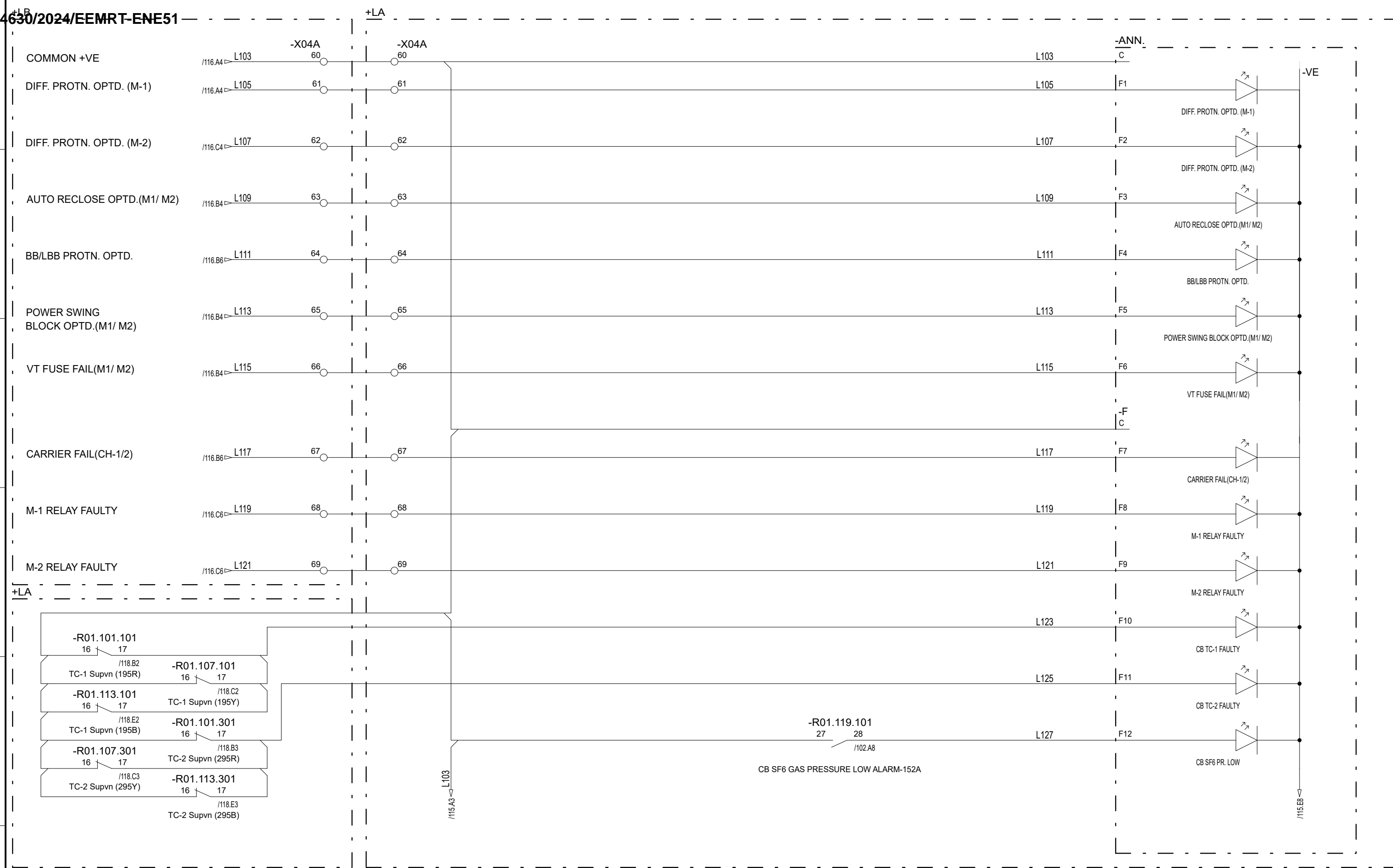


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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING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

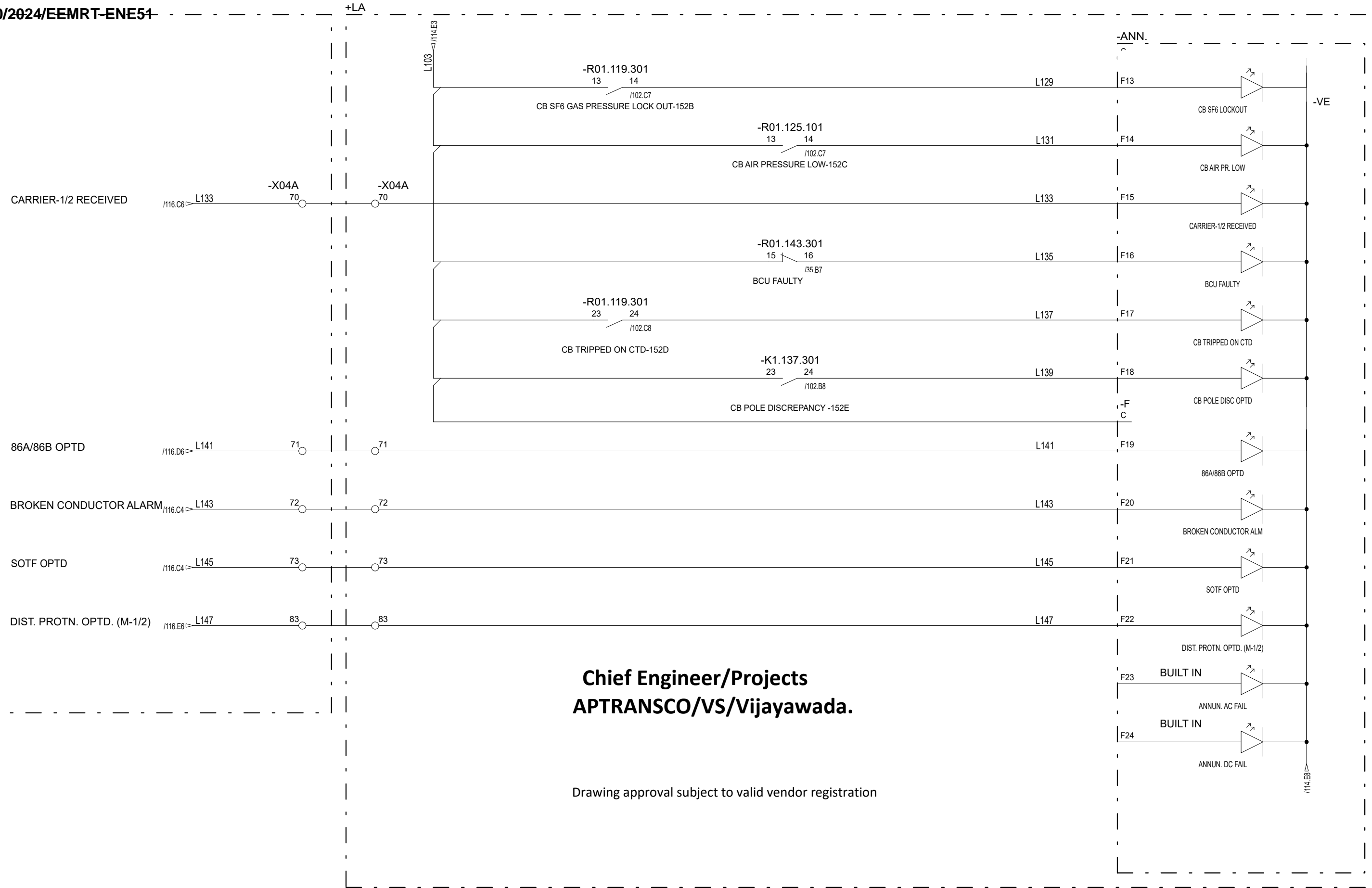
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8814630/2024/EEMRT-ENE51



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-CBBA	Sheet 114	n. sheet 115
1MYN691003-102(A3)REV01						

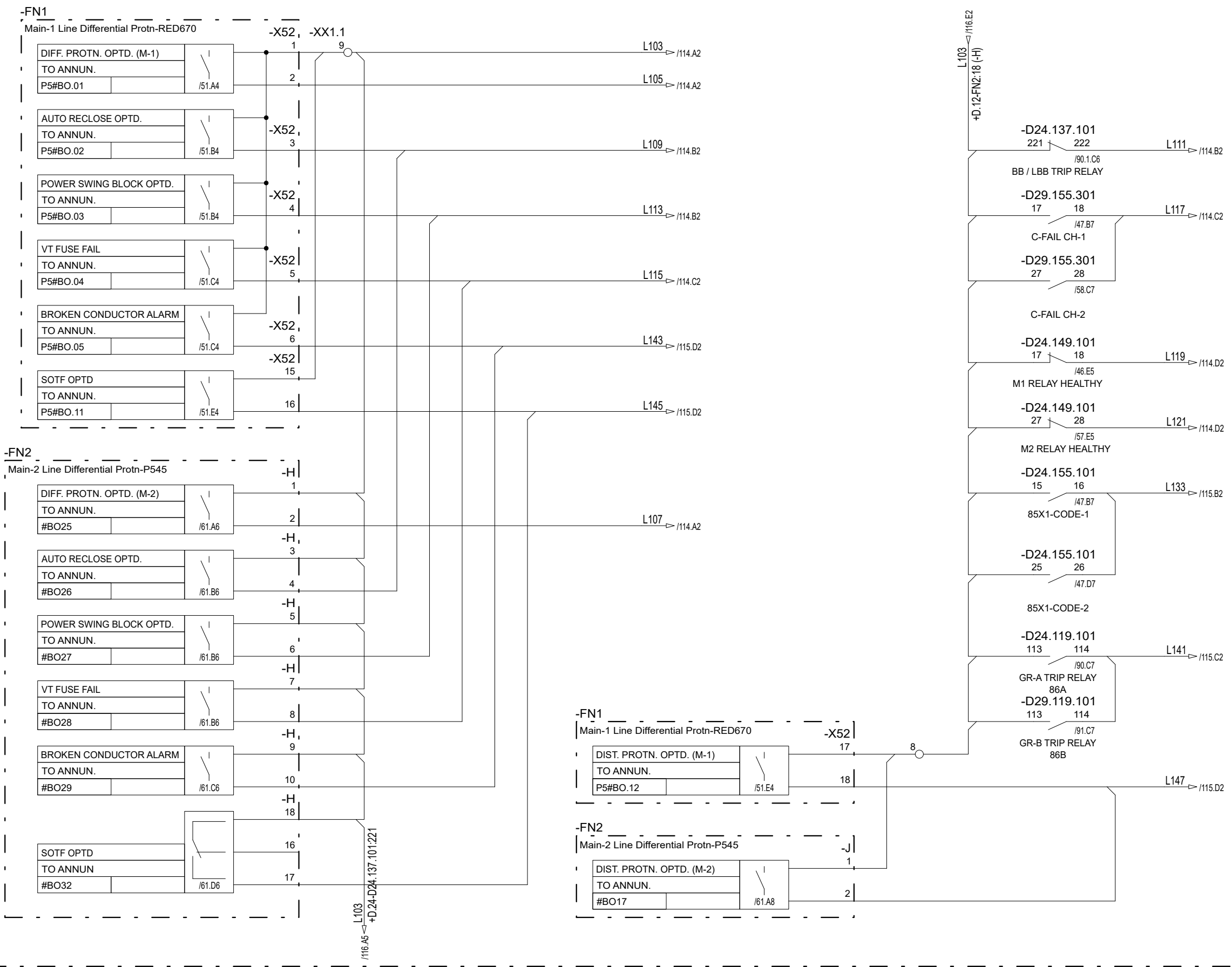
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA	Sheet 115	n. sheet 116
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 Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBBA	Sheet 116
1MYN691003-102(A3)REV01						n. sheet 117

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ANNUNCIATION INSCRIPTION DETAILS

ANN.

1 DIFF. PROTN. OPTD. (M-1) T	2 DIFF. PROTN. OPTD. (M-2) 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 DIST. PROTN. OPTD. (M-1/2) T	23 ANNUN. AC FAIL NT	24 ANNUN. DC FAIL NT

Suitable for conventional 220KV SS only

NOTE:-

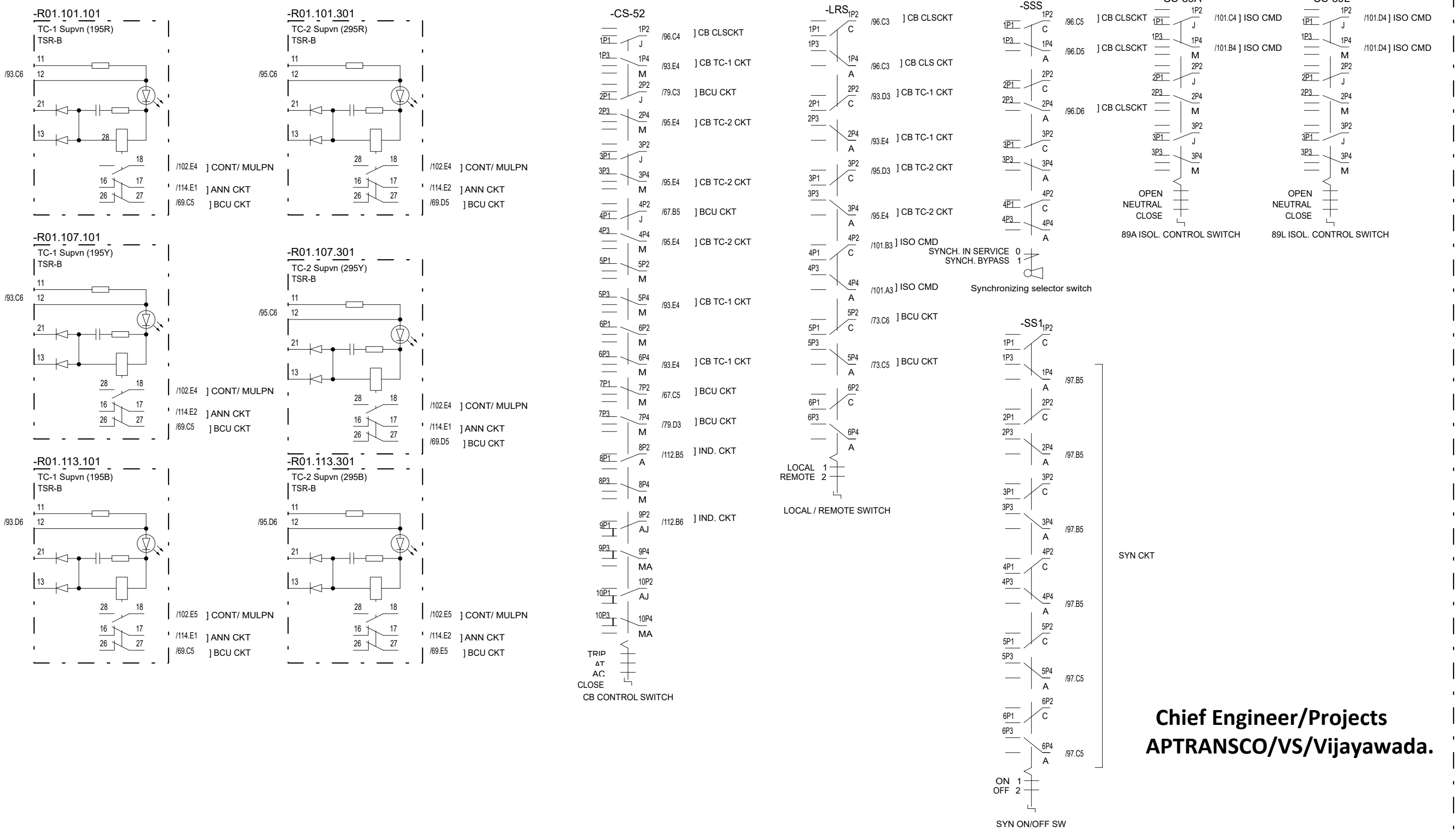
- 1) NUMBERS FROM 1 TO 24 ARE FOR WINDOW IDENTIFICATION.
- 2) T :- TRIP ALARM WITH RED COLOUR LED WINDOW
- 3) NT :- NON TRIP ALARM WITH WHITE COLOUR LED WINDOW

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		Annunciation Incriptions	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 117
1MYN691003-102(A3)REV01						n. sheet 118

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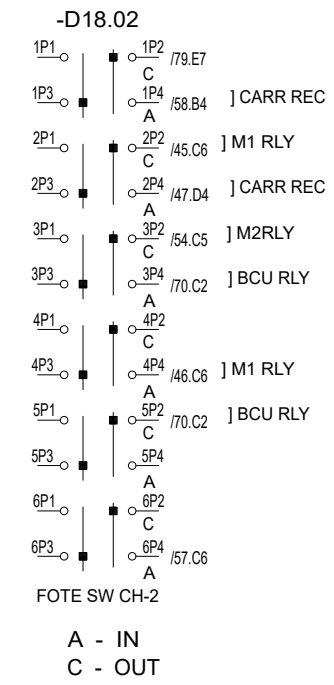
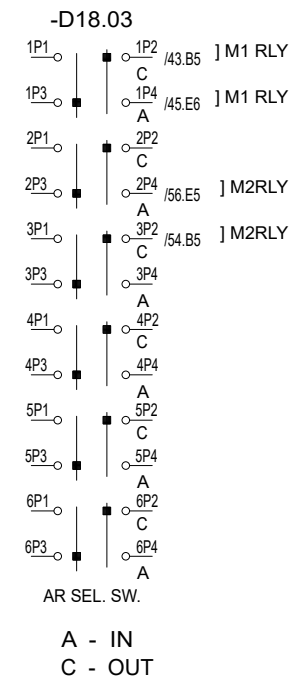
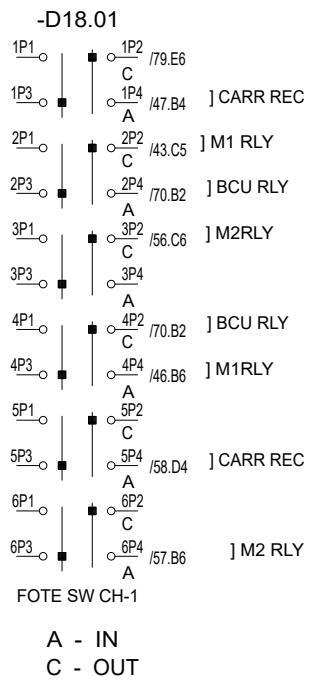
8814630/2024/EEMRT-ENE51



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		Contact Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBBA	Sheet 118
1MYN691003-102(A3)REV01						n. sheet 119

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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 STANDARD DRAWING		Contact Distribution Circuit		Resp. dept. PG-GAS		Rev. ind. Language en	
Rev.		Revision note		Date		Name		Hitachi Energy India Limited	
1MYN691003-102(A3)REV01								Hitachi	
						Doc. no. 1MNS500925-CBBA		Sheet 119 n. sheet 120	

-X04	48 ○ 49 ○ 50 ○ 51 ○ 52 ○
Used: 47	
(20%)Spare: 5	
Total: 52	
-X01	10 ⊗ 11 ⊗
Used: 9	
(20%)Spare: 2	
Total: 11	
-52X04	58 ○ 59 ○ 60 ○ 61 ○ 62 ○ 63 ○ 64 ○ 65 ○ 66 ○ 67 ○ 68 ○ 69 ○
Used: 57	
(20%)Spare: 12	
Total: 69	
-89X04	39 ○ 40 ○ 41 ○ 42 ○ 43 ○ 44 ○ 45 ○ 46 ○
Used: 38	
(20%)Spare: 8	
Total: 46	
-X04A	84 ○ 85 ○
Used: 77	
(20%)Spare: 8	
Total: 85	

-DCX03	9 ⊗ 10 ⊗
Used: 8	
(20%)Spare: 2	
Total: 10	
-ACX03	7 ⊗ 8 ⊗
Used: 6	
(20%)Spare: 2	
Total: 8	
-TVM	
Used: 3	
(20%)Spare: 0	
Total: 3	
-89X03	9 ⊗ 10 ⊗
Used: 8	
(20%)Spare: 2	
Total: 10	
-X02	41 ⊗ 42 ⊗ 43 ⊗ 44 ⊗ 45 ⊗ 46 ⊗ 47 ⊗ 48 ⊗
Used: 40	
(20%)Spare: 8	
Total: 48	
-XX1.1	10 ○ 11 ○
Used: 9	
(20%)Spare: 2	
Total: 11	

-XX1.2	15 ○ 16 ○ 17 ○
Used: 14	
(20%)Spare: 3	
Total: 17	
-X07	3 ○ 4 ○ 1 ○ 2 ○
Used: 2	
(20%)Spare: 2	
Total: 4	
-X06	25 ○ 26 ○ 27 ○ 28 ○ 29 ○
Used: 24	
(20%)Spare: 5	
Total: 29	

**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	SPARE TERMINALS	DCC ELU	+LA
		Project APTRANSCO		SPARE TERMINALS	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBBA		Sheet 121
1MYN691003-102(A3)REV01						n. sheet 122

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

XX1.1
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: 77
(20%)Spare: 8
Total: 85

84 85

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

27 28 29 30 31 32

**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	SPARE TERMINALS		DCC EFS	+LB
		Project APTRANSCO		SPARE TERMINALS		Resp. dept. PG-GAS	Rev. ind. en
		STANDARD DRAWING		Hitachi Energy India Limited		Language en	
Rev.	Revision note	Date	Name	HITACHI		Doc. no. 1MNS500925-CBBA	Sheet 122
1MYN691003-102(A3)REV01						n. sheet 1001	

8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	560						
Pos.	Location	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-CBAA/28				
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/28,69				
B	+A.01	-ACMCB02	Miniature circuit breaker	-	2A	240VAC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/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-CBAA/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-CBAA/113			
	+A.01	-HS	On/off Switch		1-2 pos on/off switch, 5A,Flush mounting	Wing Type knob		1MYN533014-001	Switron		1	1MNS500925-CBAA/28			
	+A.01	-HT	Hooter for Trip alarm	Hooter	220VDC			1MYN593002-004	Alan electronic systems pvt.ltd	1MYN593002-004	1	1MNS500925-CBAA/113			
C	+A.01	-LK01	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-CBAA/113					
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-CBAA/113					
			AC Socket with Switch	SW	230VAC, 05-15A	Box type, Indian standard		1MYN538103-001	Anchor		1	1MNS500925-CBAA/28			
	+A.01	-TH	Thermostat	TH	230VAC, 15A, 50 Hz	Range : 30-85°C	IN7635-3001	GIRISH EGO		1	1MNS500925-CBAA/28				
E	+A.03	-ACFS02	Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/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-CBAA/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-BBA		n. sheet	1002
1MYN691003-102(A3)REV01															
1	2	3	4	5	6	7	8								

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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-CBAA/64
			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-CBAA/105
			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-CBAA/105
			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-CBAA/105
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
17	+A.03	-FS35	Fuse	-	2A	Chief Engineer/Projects APTRANSCO/Vs/Vijayawada.	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/112
			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-CBAA/112
			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-CBAA/112
			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-BBA		Sheet	1002	
1MYN691003-102(A3)REV01														n. sheet	1003	

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
20	+A.03	-LK12	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-CBAA/64	
21	+A.03	-LK29	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-CBAA/105	
22	+A.03	-LK37	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-CBAA/112	
23	+A.05	-1MCB01	Miniature circuit breaker	-	16A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/31
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/31,73
24	+A.05	-1MCB02	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/32
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/32,73
25	+A.05	-2MCB01	Miniature circuit breaker	-	16A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/31
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/31,73
26	+A.05	-2MCB02	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/32
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/32,73
27	+A.05	-FS22	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/97
			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	Parts list =2KR+LA		DCC EPB		
				Project APTRANSCO		Hitachi Energy India Limited		PG-GAS	Rev. ind.	Language en
				STANDARD DRAWING		HITACHI		1MNS500925-BBA		Sheet 1003
Rev.	Revision note	Date	Name					Doc. no.	n. sheet 1004	

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Pos.	Location	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-CBAA/107
			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-CBAA/107
			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-CBAA/107
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
31	+A.05	-LK22	Control Fuse Base	-	32A	Chief Engineer/Projects APTRANSCO/VS/Vijayawada.	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	15A	15A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/97
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-CBAA/107
33	+A.07	-MCB01	Miniature circuit breaker	-	2A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/33
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/33,74
34	+A.07	-MCB02	Miniature circuit breaker	-	2A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/33
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/33,74
35	+A.07	-MCB03	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/33
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBAA/33,74

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-BBA		Sheet	1004	
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8814630/2024/EEMRT-ENE51		1		2		3		4		5		6		7		8		
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet							
A	36	+A.07	-MCB04	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33	A					
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33,74						
B	37	+A.07	-MCB05	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33	B					
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33,74						
C	38	+A.07	-MCB06	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33	C					
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33,74						
C	39	+A.07	-MCB07	Miniature circuit breaker	-	2A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33	C					
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33,74						
C	40	+A.07	-MCB08	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33	C					
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33,74						
D	41	+A.09	-89X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		48	1MNS500925-CBAA/67,68,99,100,103,104,121	D					
	42	+A.09	-X06	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		29	1MNS500925-CBAA/106,107,108,109,121						
	43	+A.09	-XX1.1	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		3	1MNS500925-CBAA/79,121						
	44	+A.10	-52X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		69	1MNS500925-CBAA/65,66,93,95,96,99,102,112,121						
E	45	+A.10	-X07	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		4	1MNS500925-CBAA/115,121	E					
	46	+A.11	-ACX03	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		8	1MNS500925-CBAA/28,29,30,121						
	47	+A.11	-X01	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		11	1MNS500925-CBAA/105,121						
	48	+A.11	-X02	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		48	1MNS500925-CBAA/37,38,42,53,121						
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			Resp. dept. PG-GAS		Rev. ind.		Language en			
Rev. Revision note				Date		Name		HITACHI			Doc. no. 1MNS500925-BBA		Sheet 1005		n. sheet 1006			
1MYN691003-102(A3)REV01																		
1		2		3		4		5		6		7		8				

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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	565				
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet		
A	49	+A.11	-XX1.2	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		17	1MNS500925-CBAA/ 65,66,67,68,69,70,71, 72,73,74,75,76,77,78, 121	A
	50	+B.01	-DS	Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	1MNS500925-CBAA/28	
	51	+B.01	-LED	LED Lamp	LED	240VAC, 9.08W			SPECTRUM TECHVISION (P) LTD		1	1MNS500925-CBAA/28	
B	52	+B.03	-ANN.	Annunciator unit	SAN 200 - 24 Window	Aux supply U:75- 275VAC/DC	without multi tone, Size:34x74mm, 6N case	1MYN900017-723	Seco		1	1MNS500925-CBAA/ 113,114,115	B
	53	+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	1MNS500925-MAAA	Rishab		1	1MNS500925-CBAA/107,110	
C	54	+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	1MNS500925-MAAA	Rishab		1	1MNS500925-CBAA/108,110	C
	55	+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	1MNS500925-MAAA	Rishab		1	1MNS500925-CBAA/109,110	D
D	56	+B.09	-1SL01	Indicator light	-	230V AC, 7mA	WHITE	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/30	D
	57	+B.09	-1SL02	Indicator light	-	60VDC/63.5VAC, 7mA	RED	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/112	
	58	+B.09	-1SL03	Indicator light	-	60VDC/63.5VAC, 7mA	YELLOW	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/112	
E	59	+B.09	-1SL04	Indicator light	-	60VDC/63.5VAC, 7mA	BLUE	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/112	E
	60	+B.09	-PB01	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/36	
	61	+B.09	-PB02	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/36	
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		STANDARD DRAWING		=2KR+LA		Resp. dept. PG-GAS		Rev. ind. Language en	
								HITACHI Hitachi Energy India Limited		Doc. no. 1MNS500925-BBA		Sheet 1006	
Rev. Revision note				Date		Name						n. sheet 1007	
1MYN691003-102(A3)REV01													

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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	566																																																																																						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																																																				
A	62	+B.09	-PB03	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/36	A																																																																																		
	63	+B.09	-PB04	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/36																																																																																			
	64	+B.09	-PB05	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/36																																																																																			
B	65	+B.09	-PB06	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/36	B																																																																																		
	66	+B.09	-PB-AA	Push button	-	1NO, 1NC	Red, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/113																																																																																			
	67	+B.09	-PB-AR	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/113																																																																																			
	68	+B.09	-PB-AT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/113																																																																																			
C	69	+B.09	-PB-DC1-FT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/31	C																																																																																		
	70	+B.09	-PB-DC2-FT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/31																																																																																			
	71	+B.09	-PB-DCFA	Push button	-	1NO, 1NC	Red, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/30																																																																																			
D	72	+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-CBAA/101,118	D																																																																																		
	73	+B.13	-SL03	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111																																																																																			
	74	+B.13	-SL04	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111																																																																																			
E	75	+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-CBAA/67,79,93,95,96,112,118	E																																																																																		
	76	+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-CBAA/73,93,95,96,101,118																																																																																			
<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+LA</td> <td colspan="2">DCC EPB</td> <td colspan="1">+LA</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">HITACHI</td> <td colspan="2">1MNS500925-BBA</td> <td colspan="1">Language en</td> </tr> <tr> <td colspan="3">Rev.</td> <td colspan="2">Revision note</td> <td colspan="2">Date</td> <td colspan="2"></td> <td colspan="2">Doc. no.</td> <td colspan="1">Sheet 1007</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 1008</td> </tr> <tr> <td colspan="12">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				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB		+LA				Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited		PG-GAS		Rev. ind.								HITACHI		1MNS500925-BBA		Language en	Rev.			Revision note		Date				Doc. no.		Sheet 1007												n. sheet 1008	1MYN691003-102(A3)REV01											
Based on			Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR																																																																																				
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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	567				
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet		
A	77	+B.17	-SL01	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	A
	78	+B.17	-SL02	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
	79	+B.17	-SL11	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
B	80	+B.17	-SL12	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	B
	81	+B.17	-SL13	Indicator light	-	220VDC, 7mA	BLUE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/112	
	82	+B.17	-SL14	Indicator light	-	220VDC, 7mA	AMBER	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/112	
	83	+B.17	-SL15	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/112	
C	84	+B.17	-SL16	Indicator light	-	220VDC	AMBER	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/112	C
	85	+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-CBAA/101,118	
	86	+B.19	-SL07	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
D	87	+B.19	-SL08	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	D
	88	+B.19	-SL09	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
	89	+B.19	-SL10	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
E	90	+B.19	-SS1	Rotary Switch	16-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MNS500925-NAAB	Switron	1MNS500925-NAAB	1	1MNS500925-CBAA/97,118	E
	91	+B.19	-SSS	Rotary Switch	8 2-pos. contacts	32A, 660V	Stayput, Lever Handle, Key removable in both postions, 90D Switching angle	1MYN533019-001	Switron		1	1MNS500925-CBAA/96,118	
F	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		Resp. dept. PG-GAS		Rev. ind. Language en	
								HITACHI		Doc. no. 1MNS500925-BBA		Sheet 1008	
	Rev. Revision note			Date		Name						n. sheet 1009	
	1MYN691003-102(A3)REV01												
	1	2	3	4	5	6	7	8					

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
A	+B.25	-KF1	Numerical bay control IED	REC670			1MNS500925-XCAC	ABB	1MNS500925-XCAC	1	
			Power supply module	PSM	90-250VDC	50/60Hz		ABB		1	1MNS500925-CBAA/35,63,81
			Binary input module	BIM	220-250VDC	16 inputs		ABB		7	1MNS500925-CBAA/65,66,67,68,69,70,71,72,73,74,75,76,77,78,82,83,84,85,86
			Binary output module	BOM		24 output relays		ABB		2	1MNS500925-CBAA/36,79,80,82,83,90,91,96,101,103,104
			Ethernet module	SFP	100Base-FX, LC connectors	Version 2.2		ABB		1	1MNS500925-CBAA/81
			Transformer input module	TRM	1A, 0-340V, 50/60Hz	6I+6U		ABB		1	1MNS500925-CBAA/64,81
			Rack casing	1/1x19" rack casing	14xI/O, 1xTRM	1/1x19", Version 2.2		ABB		1	
B			15 LED indication module	LED		Normal size		ABB		1	
			15 LED indication module	LED		Normal size, Rex670 V2.2		ABB		3	1MNS500925-CBAA/63
C	+B.25	-TVM	Energy meter	Premier 300	3Ph-4W-3E, Acc. Cl: 0.2s,CTR:TO BE DEFINED, ADOPTED CTR:TO BE DEFINED, PTR: 220kV/110V	ABT meter & AMRI compatible,with 1no. front optical & 1no. RS485 port, MDI : 15 Min.	1MNS500925-MAAB	Secure meters limited	1MNS500925-MAAB	1	1MNS500925-CBAA/105,106
D											
F											

**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	Parts list =2KR+LA		DCC EPB		
				Project APTRANSCO		=2KR+LA		Resp. dept. PG-GAS	Rev. ind.	Language en
				STANDARD DRAWING		Hitachi Energy India Limited				Sheet 1009
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-BBA	n. sheet 1010	
1MYN691003-102(A3)REV01										

8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	569					
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet			
A	94	+B.33	-R01	Terminal base	RX4	4U12C	Rack mounting	ABB	5619499-A	5	1MNS500925-CBAA/ 69,93,102,114,118			
			-R01.101.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	5619499-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		
			-R01.137.301	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						
-R01.143.301	Auxiliary relay	RXSF1	220-250VDC	2NO, 4NC	RK271-019-AS	ABB	RK271-019-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						
95	+B.33	-SS	Synchronizing socket	SS Type	500VAC/DC	Panel mounting socket	IN 5381 3001-1	BCH Electric limited		1	1MNS500925-CBAA/97			
96	+B.33	-TS_BCU	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBAA/63,64			
97	+B.33	-TTB	Test Terminal Block for TVM	TTB	1100V, 50A	Compact, Flush mounting	1MYN266015-003	Deepl		1	1MNS500925-CBAA/105,106			
98	+B.41	-SH	Heating	SPHT	230V AC, 50W		IN6677-3001-2	KWK RESISTORS / TGS		1	1MNS500925-CBAA/28			
99	+C.03	-FS01	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/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		DCC EPB				+LA	
				Project	APTRANSCO		=2KR+LA		Resp. dept.	PG-GAS		Rev. ind.	Language	en
				STANDARD DRAWING			HITACHI Hitachi Energy India Limited				Rev. ind.	Language	en	
Rev.	Revision note		Date	Name			HITACHI		Doc. no.		1MNS500925-BBA		Sheet	1010
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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	570		
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
A	+C.03	-FS02	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
B	+C.03	-FS03	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
C	+C.03	-FS04	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
D	+C.03	-FS05	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
D	+C.03	-FS06	Fuse	-	2A	Chief Engineer/Projects APTRANSCO/Vs/Vijayawada.	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
E	+C.03	-FS07	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
F	+C.03	-FS08	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/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 +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		Rev. ind.		Language en
Rev. Revision note			Date		Name		HITACHI		Doc. no. 1MNS500925-BBA		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
107	+C.03	-FS09	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
108	+C.03	-FS10	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/64
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
109	+C.03	-FS11	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/64
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
110	+C.03	-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-CBAA/38
111	+C.03	-LK06	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
			Neutral link	NL	15A	Chief Engineer/Projects APTRANSCO/VS/Vijayawada.	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
112	+C.03	-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-CBAA/38
113	+C.05	-1FS01	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/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			PG-GAS		Rev. ind.		Language		en			
										Hitachi Energy India Limited									
Rev.				Revision note			Date			Name			Doc. no.		1MNS500925-BBA		Sheet		1012
																	n. sheet		1013
1MYN691003-102(A3)REV01																			

1	2	3	4	5	6	7	8										
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet						
A	121	+C.05	-FS13	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/64						
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1							
B	122	+C.05	-FS21	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/97						
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1							
C	123	+C.05	-LK13	Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1							
				Neutral link	NL	15A	Chief Engineer/Projects APTRANSCO/VIS/Vijayawada.		-	1	1MNS500925-CBAA/64						
C	124	+C.05	-LK21	Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1							
				Neutral link	15A	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/97						
D	125	+C.07	-52_CLS_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	1MNS500579-CRMA	Phoenix Contact	1109562	1	1MNS500925-CBAA/99,111					
				Diode module	DP-12-220 DC	6-230VDC	-	1MNS500579-CRMC	Phoenix contact	2907517	1						
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	1MNS500579-CRMB	Phoenix contact	2907521	1							
E	126	+C.07	-52_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	1MNS500579-CRMA	Phoenix Contact	1109562	1	1MNS500925-CBAA/99					
				Diode module	DP-12-220 DC	6-230VDC	-	1MNS500579-CRMC	Phoenix contact	2907517	1						
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	1MNS500579-CRMB	Phoenix contact	2907521	1							
F				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		Parts list		=2KR+LA		DCC EPB					
				Project	APTRANSCO		Hitachi Energy India Limited		HITACHI		PG-GAS		Rev. ind.	Language		en	
				STANDARD DRAWING								1MNS500925-BBA		Sheet		1014	
Rev.	Revision note			Date	Name							Doc. no.		n. sheet		1015	
1MYN691003-102(A3)REV01																	

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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	574																																																																																						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																																																				
A	127	+C.07	-52_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/99,111,112																																																																																				
				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	128	+C.07	-52_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/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	129	+C.07	-89A_CLS_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/67,99,111																																																																																				
				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																																																																																						
D	130	+C.07	-89A_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/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	131	+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-CBAA/67,99,111																																																																																				
				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																																																																																						
<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 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-BBA</td> <td colspan="2"></td> <td colspan="2">Sheet 1015</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 1016</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 Hitachi Energy India Limited		Resp. dept.		Language en		Rev. Revision note				Date		Name		Doc. no. 1MNS500925-BBA				Sheet 1015		1MYN691003-102(A3)REV01												n. sheet 1016	
Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA																																																																																			
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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	575																																																																																						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																																																				
A	132	+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-CBAA/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																																																																																					
B	133	+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-CBAA/100,111																																																																																				
				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	134	+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-CBAA/100																																																																																				
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			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1																																																																																					
E	136	+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-CBAA/100																																																																																				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1																																																																																					
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Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR +LA																																																																																			
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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	576									
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet							
A	137	+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-CBAA/69,100,111							
				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								
B	138	+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-CBAA/100							
				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	139	+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-CBAA/68,100,111							
				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								
D	140	+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-CBAA/100							
				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	141	+C.07	-K1 -K1.113.101	Terminal base	RXZ 4	4U12C	Rail mounting	ABB	1MRK000893-D	4								
				Bistable relay	RXMFV 21	220VDC	7NO, 7NC	ABB	1MRK030401-AS	1	1MNS500925-CBAA/36,39,71,72							
				Bistable relay	RXMFV 21	220VDC	7NO, 7NC	ABB	1MRK030401-AS	1	1MNS500925-CBAA/36,39,72							
				Bistable relay	RXMFV 21	220VDC	7NO, 7NC	ABB	1MRK030401-AS	1	1MNS500925-CBAA/36,40,72							
				Auxiliary relay	RXMH2	220VDC	4NO, 4NC, without flag	ABB	RK 223069-AS	1	1MNS500925-CBAA/31							
				Auxiliary relay	RXMM1	220-250VDC	6NO	ABB	RK214-003-AS	1	1MNS500925-CBAA/79,93,95							
Auxiliary relay	RXSF1	220-250VDC	4NC, 2NO	ABB	RK271-009-AS	1	1MNS500925-CBAA/43,54,102,115											
			Auxiliary relay	RXSF1	220-250VDC	6NO		ABB	RK 271018-AS	1	1MNS500925-CBAA/43,54,102							
F	142	+C.11	-89X03	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	Elmex		10	1MNS500925-CBAA/103,104,121							
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		Hitachi Energy India Limited		PG-GAS		Rev. ind.		Language		en	
				STANDARD DRAWING		HITACHI				1MNS500925-BBA		Sheet		1017				
Rev.	Revision note			Date	Name					Doc. no.		1MNS500925-BBA		n. sheet		1018		
1MYN691003-102(A3)REV01																		
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8814630/2024/EEMRT-ENE51

Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
143	+C.11	-DCX03	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		10	1MNS500925-CBAA/31,34,121
144	+C.11	-X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		54	1MNS500925-CBAA/ 68,71,72,76,77,78,80, 97,121
145	+C.11	-X04A	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		85	1MNS500925-CBAA/ 43,45,54,56,69,70,71, 73,75,87,90,91,93,95, 96,98,114,115,121

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

Based on				Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER Parts list =2KR+LA	Doc. kind. Parts list DCC EPB	Ref.Des. =2KR +LA	
				Approved 20.12.2023	GOURISH HEGDE				
				Project APTRANSCO STANDARD DRAWING		Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind.	Language en
Rev.	Revision note	Date	Name						Doc. no. 1MNS500925-BBA
1MYN691003-102(A3)REV01								n. sheet 1021	

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8814630/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	578					
Pos.	Location	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	-	16A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBBA/29		
											Auxiliary contact block	-	1	1MNS500925-CBBA/29,69
B	2	+A.01	-HS	On/off Switch		1-2 pos on/off switch, 5A, Flush mounting		1MYN533014-001	Switron		1	1MNS500925-CBBA/29		
	3	+A.01	-PS	AC Socket with Switch	SW	230VAC, 05-15A	Box type, Indian standard	1MYN538103-001	Anchor		1	1MNS500925-CBBA/29		
	4	+A.01	-TH	Thermostat	TH	250VAC, 15A, 50 Hz	Range : 25-85°C	IN7635-3001	GIRISH EGO		1	1MNS500925-CBBA/29		
	5	+A.10	-BBX04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm², grey	IN2662-3001-3	Elmex		16	90.1 1MNS500925-CBBA/87,122		
	6	+A.10	-X01	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm²	1MYN266003-002	Elmex		32	1MNS500925-CBBA/42,53,122		
C	7	+A.10	-X02	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm²	1MYN266003-002	Elmex		15	1MNS500925-CBBA/42,53,122		
	8	+B.01	-DS	Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	1MNS500925-CBBA/29		
	9	+B.01	-LED	LED Lamp	LED	240VAC, 9.08W			SPECTRUM TECHVISION (P) LTD		1	1MNS500925-CBBA/29		
	10	+B.05	-FS21	Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/42		
D	11	+B.05	-FS22	Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/42		
											Control Fuse Base	-	1	ABB/EATON(cooper Bussmann) /Schneider/L&T
E	12	+B.05	-FS23	Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/42		
											Control Fuse Base	-	1	ABB/EATON(cooper Bussmann) /Schneider/L&T
											Chief Engineer/Projects APTRANSCO/VIS/Vijayawada.			
F	13	+B.05	-FS24	Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/53		
											Control Fuse Base	-	1	ABB/EATON(cooper Bussmann) /Schneider/L&T

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 Hitachi Energy India Limited			Resp. dept. PG-GAS		Rev. ind.	
				STANDARD DRAWING					Language en			
Rev.		Revision note		Date		Name		Doc. no. 1MNS500925-BBB			Sheet 1021	
											n. sheet 1022	

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
14	+B.05	-FS25	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/53
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
15	+B.05	-FS26	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/53
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
16	+B.05	-FS27	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/53
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
17	+B.05	-FS28	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/42
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
18	+B.05	-LK23	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/42
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
19	+B.05	-LK26	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/53
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
20	+B.05	-LK27	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBBA/53
			Neutral link	NL	15A		-	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	
				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		HITACHI		Language en		Sheet 1022	
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-BBB		n. sheet 1023	
1MYN691003-102(A3)REV01											

Pos.		Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
A	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-CBBA/42
B	22	+B.09	-1MCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
C	23	+B.09	-1MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
C	24	+B.09	-1MCB03	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
D	25	+B.09	-1MCB04	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
D	26	+B.09	-2MCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
E	27	+B.09	-2MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
E	28	+B.09	-2MCB03	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
F	29	+B.09	-2MCB04	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	1MNS500925-CBBA/34,75
F	30	+B.13	-XX1.1	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		11	1MNS500925-CBBA/ 46,54,73,88,116,122

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		PG-GAS		Rev. ind.		Language		en	
				STANDARD DRAWING			HITACHI		Hitachi Energy India Limited				Sheet		1023	
Rev.	Revision note			Date	Name		HITACHI				Doc. no.		1MNS500925-BBB		n. sheet	1024
1MYN691003-102(A3)REV01																

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

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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.24	-D24 -D24.101.101 -D24.101.301	Terminal base Auxiliary relay High speed trip relay	RX4	4U12C	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	1MNS500925-CBBA/88,92,94 1MNS500925-CBBA/ 56,87,88,92,94
				RXME18	220-250VDC					1	
				RXMS1	220VDC					1	
		-D24.107.101 -D24.107.301	Auxiliary relay High speed trip relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	1MNS500925-CBBA/88,92,94
				RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1	1MNS500925-CBBA/ 56,87,88,92,94
		-D24.113.101 -D24.113.301	Auxiliary relay High speed trip relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	1MNS500925-CBBA/88,92,94
				RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1	1MNS500925-CBBA/ 56,87,88,92,94
		-D24.119.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	1MNS500925-CBBA/ 44,55,70,87,90,92,94, 96,116
-D24.131.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	90.1 1MNS500925-CBBA/76		
-D24.131.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	1MNS500925-CBBA/72,90		
-D24.137.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	90.1 1MNS500925-CBBA/ 44,55,71,92,94,96,98, 116		
-D24.149.101	Auxiliary relay	RXSF1	220-250VDC	2NO, 4NC	RK271-019-AS	ABB	RK271-019-AS	1	1MNS500925-CBBA/ 45,46,56,57,70,116		
-D24.149.301 -D24.155.101 -D24.155.301	Auxiliary relay Auxiliary relay Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBBA/47,58,79		
		RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBBA/43,47,116		
		RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBBA/54,58		

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.**

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		PG-GAS		Rev. ind.
				STANDARD DRAWING		HITACHI		Language en		Sheet 1026
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-BBB		n. sheet 1027
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	+D.29	-D29	Terminal base	RX4	4U12C	Rack mounting	5619499-A	ABB	5619499-A	5	1MNS500925-CBBA/89,92,94 1MNS500925-CBBA/ 45,87,89,92,94			
		-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	RXMMB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1				
		-D29.131.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1				
		-D29.131.301	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				
		B	+D.39	-D29.143.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB		RK216-063-AS	1	90.1 1MNS500925-CBBA/92,94
-D29.143.301	High speed trip relay			RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	90.1 1MNS500925-CBBA/92,94			
-D29.149.101	Auxiliary relay			RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	1MNS500925-CBBA/48,71,96			
-D29.149.301	High speed trip relay			RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/46,98			
-D29.155.101	High speed trip relay			RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/57,98			
-D29.155.301	Auxiliary relay			RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBBA/ 43,47,54,58,116			
-D29.137.101	Auxiliary relay			RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	90.1 1MNS500925-CBBA/92,94			
C	+D.39	-TS1_M-1_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/41,42			
		-TS1_M-2_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/52,53			
		-TS2_M-1_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/ 41,48,88,90,91			
		-TS2_M-2_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/ 52,59,89,90,91			
D	+D.39	-D29.143.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/ 43,47,56,71,90,91			
		-D29.143.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/ 45,54,58,71,90,91			
		-D29.149.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	1MNS500925-CBBA/48,71,96			
		-D29.149.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/46,98			
		-D29.155.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/57,98			
		-D29.155.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBBA/ 43,47,54,58,116			
		-D29.137.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	90.1 1MNS500925-CBBA/92,94			
		-D29.137.301	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	90.1 1MNS500925-CBBA/92,94			
		-D29.143.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/ 43,47,56,71,90,91			
		-D29.143.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/ 45,54,58,71,90,91			
		-D29.149.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	1MNS500925-CBBA/48,71,96			
		-D29.149.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/46,98			
		-D29.155.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBBA/57,98			
-D29.155.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBBA/ 43,47,54,58,116					
E	+D.39	-TS1_M-1_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/41,42			
		-TS1_M-2_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/52,53			
		-TS2_M-1_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/ 41,48,88,90,91			
		-TS2_M-2_87/21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBBA/ 52,59,89,90,91			
F	Suitable for conventional 220KV SS only										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. 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. Language en		
	Rev. Revision note			Date		Name		HITACHI		Doc. no. 1MNS500925-BBB		Sheet 1027		
	1MYN691003-102(A3)REV01											n. sheet		
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	7			8										

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