

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 (DISTANCE PROTECTION)

DRAWING REF. : General Arrangement : 1MNS500925-ABAA
 Bill of Material : 1MNS500925-BAA,BAB
 Schematic Drawings : 1MNS500925-CBAA

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-ABAA	
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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		STANDARD DRAWING		List of contents		Resp. dept. PG-GAS		Rev. ind.	
							HITACHI Hitachi Energy India Limited				Language en	
Rev. Revision note			Date		Name				Doc. no. 1MNS500925-ABAA		Sheet 2	
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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		List of contents		DCC		EAB						
				Project	APTRANSCO		Hitachi Energy India Limited		HITACHI		PG-GAS		Rev. ind.		Language		en		
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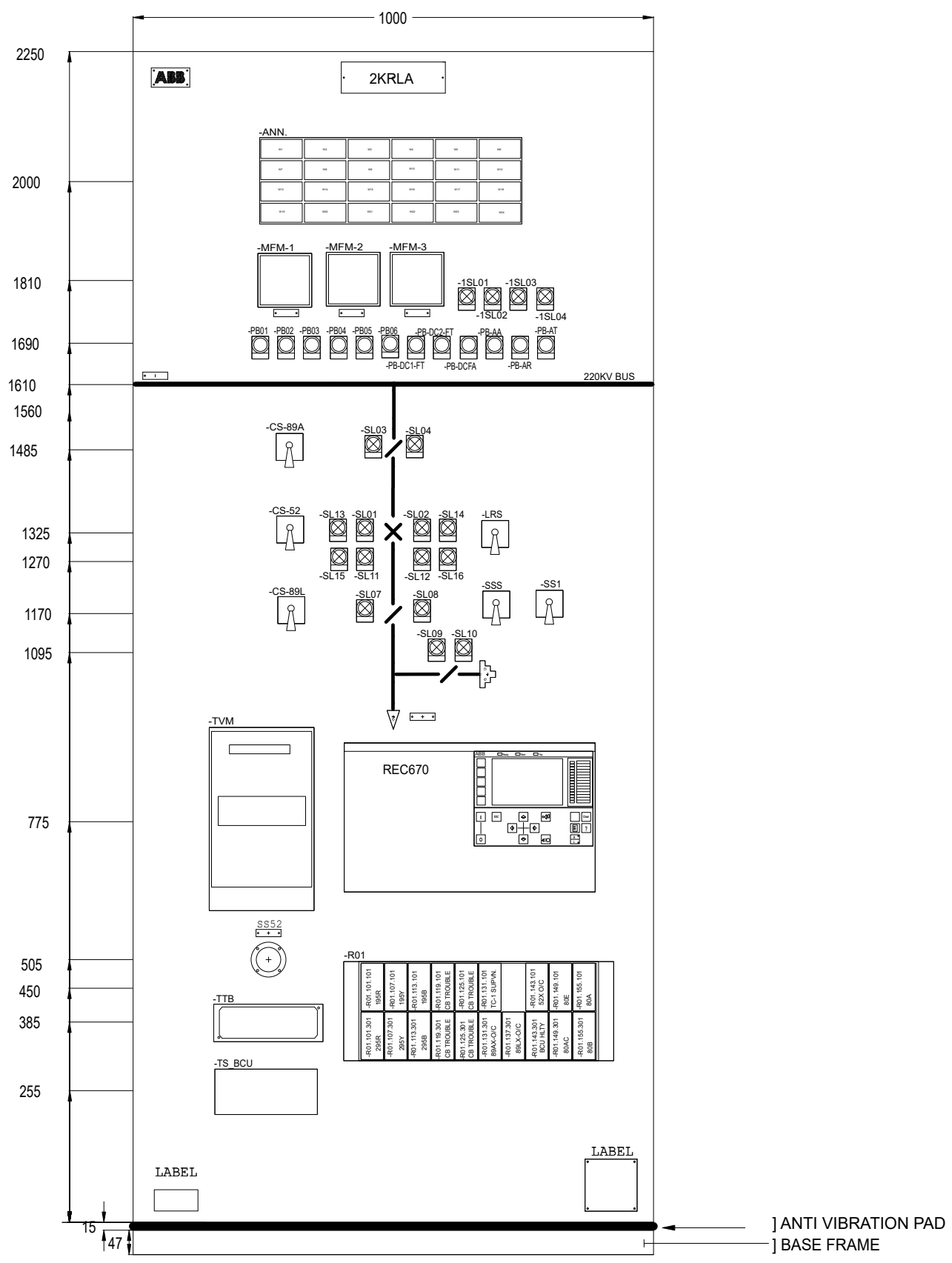
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120	1001	SPARE TERMINALS	SPARE TERMINALS		
1001	1002	Parts list	=2KR+LA		
1002	1003	Parts list	=2KR+LA		
1003	1004	Parts list	=2KR+LA		
1004	1005	Parts list	=2KR+LA		
1005	1006	Parts list	=2KR+LA		
1006	1007	Parts list	=2KR+LA		
1007	1008	Parts list	=2KR+LA		
1008	1009	Parts list	=2KR+LA		
1009	1010	Parts list	=2KR+LA		
1010	1011	Parts list	=2KR+LA		
1011	1012	Parts list	=2KR+LA		
1012	1013	Parts list	=2KR+LA		
1013	1014	Parts list	=2KR+LA		
1014	1015	Parts list	=2KR+LA		
1015	1016	Parts list	=2KR+LA		
1016	1017	Parts list	=2KR+LA		
1017	1018	Parts list	=2KR+LA		
1018	1021	Parts list	=2KR+LA		
1021	1022	Parts list	=2KR+LB		
1022	1023	Parts list	=2KR+LB		
1023	1024	Parts list	=2KR+LB		
1024	1025	Parts list	=2KR+LB		
1025	1026	Parts list	=2KR+LB		
1026		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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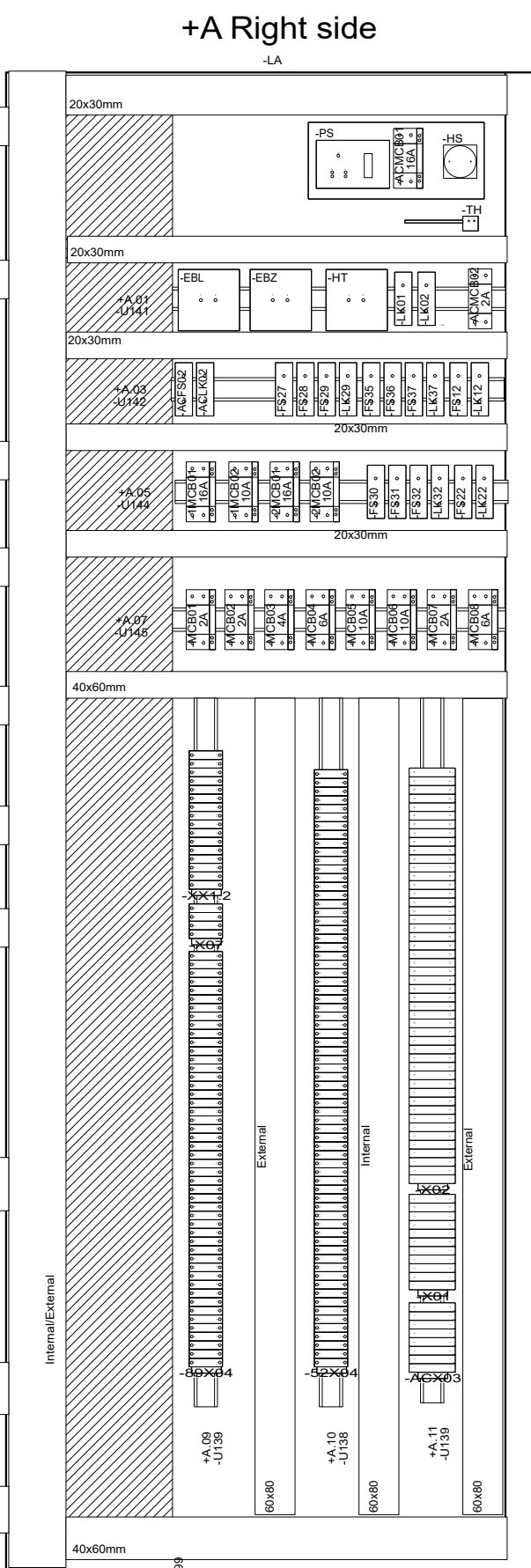
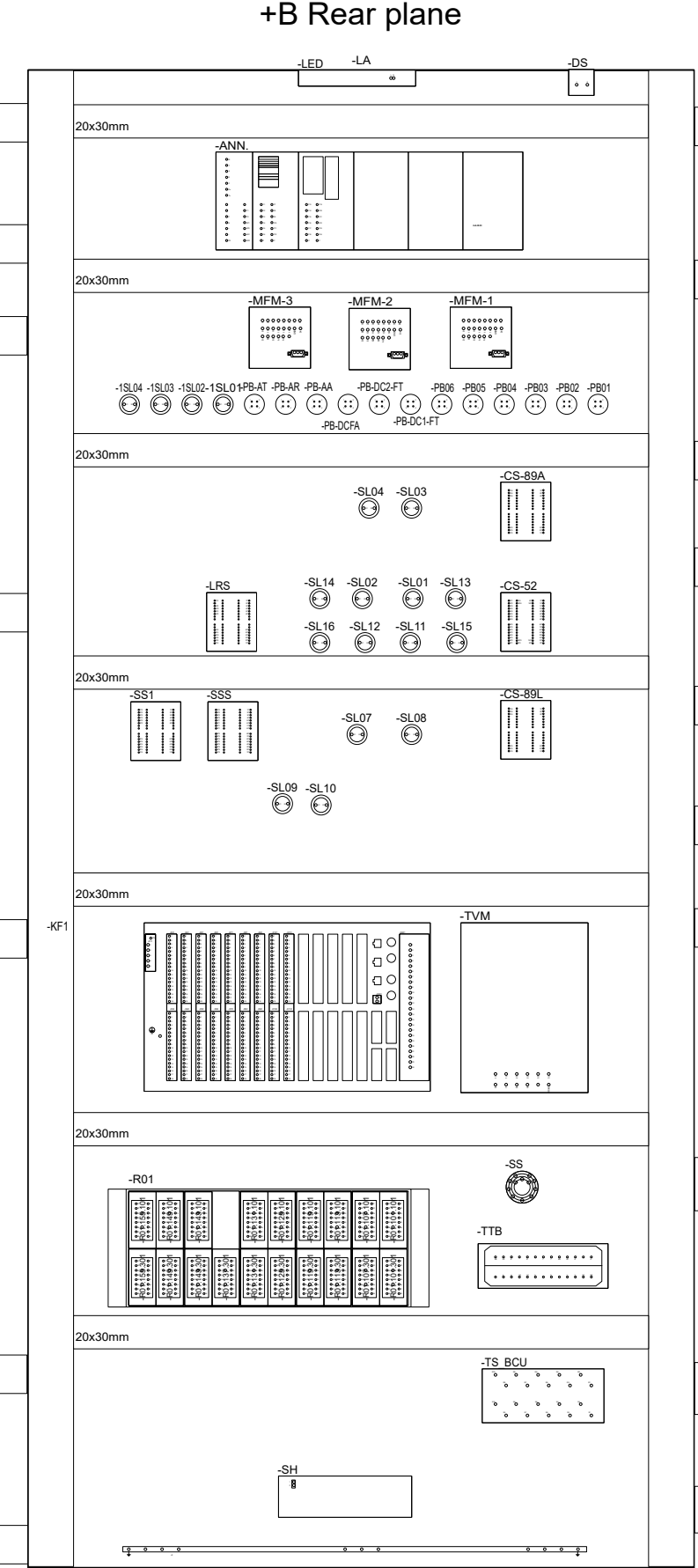
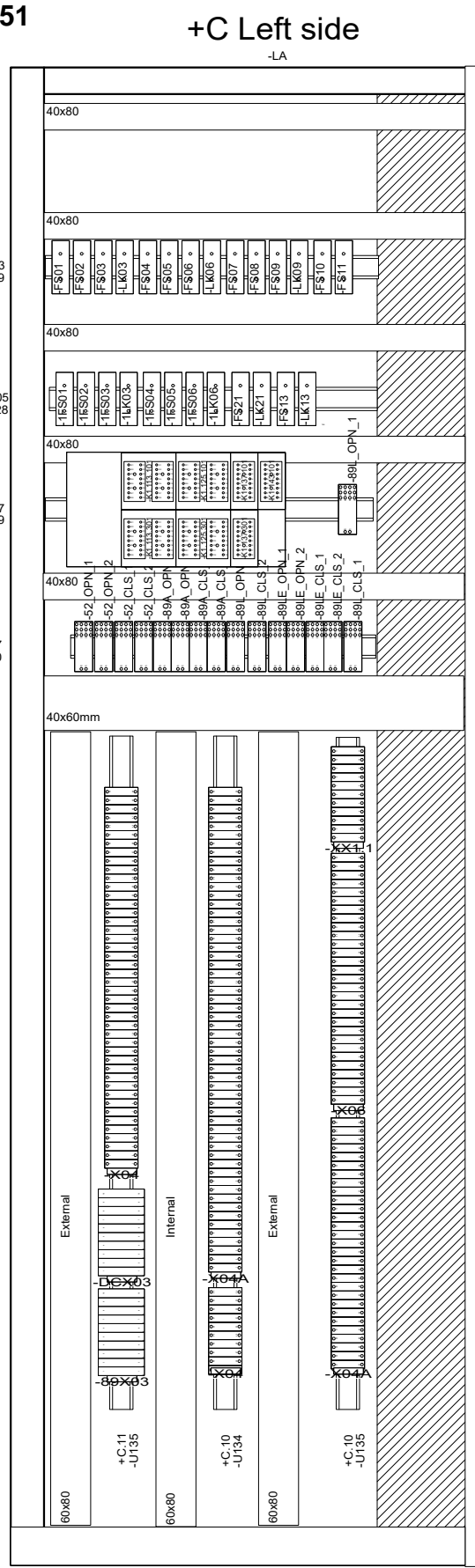
PANEL: 2KRLA	
ITEM DESIGNATION	DESCRIPTION
ANN.	ANNUNCIATOR
MFM-1	MULTI FUNCTION METER-1
MFM-2	MULTI FUNCTION METER-2
MFM-3	MULTI FUNCTION METER-3
PB01	BUS PT SET FOR 21M1
PB02	LINE PT SET FOR 21M1
PB03	LINE PT SET FOR 21M2
PB04	BUS PT SET FOR 21M2
PB05	BUS PT SET FOR METERING
PB06	LINE PT SET FOR METERING
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	DCC ELU		+LA
		Project APTRANSCO		Front View	PG-GAS	Rev. ind.	Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-ABAA		Sheet 11
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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			

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

Title	220kV LINE FEEDER Control & Relay Panel Inside view
Doc. kind.	Assembly drawing DCC ELU
Resp. dept.	PG-GAS
Doc. no.	1MNS500925-ABAA
Hitachi Energy India Limited	

Ref.Des.	=2KR +LA
Rev. ind.	en
Language	en
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n. sheet	12.1

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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
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	+LA
		Project APTRANSCO		Legend list	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-ABAA	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-ABAA	
1MYN691003-102(A3)REV01						Sheet 12.2
						n. sheet 12.3

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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-ABAA	Sheet 12.3
1MYN691003-102(A3)REV01						n. sheet 12.4

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0814618/2024/EEMRT-ENE51

Device name	Description (1)	Description (2)	Type designation
-K1.113.101	PT SELECTION RELAY-21M1	75C	RXMVF 21
-K1.113.301	PT SELECTION RELAY-21M2	75D	RXMVF 21
-K1.125.101	PT SELECTION RELAY METERING	75E	RXMVF 21
-K1.125.301	DC-1 C/O RELAY	RXMH2	RXMH2
-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

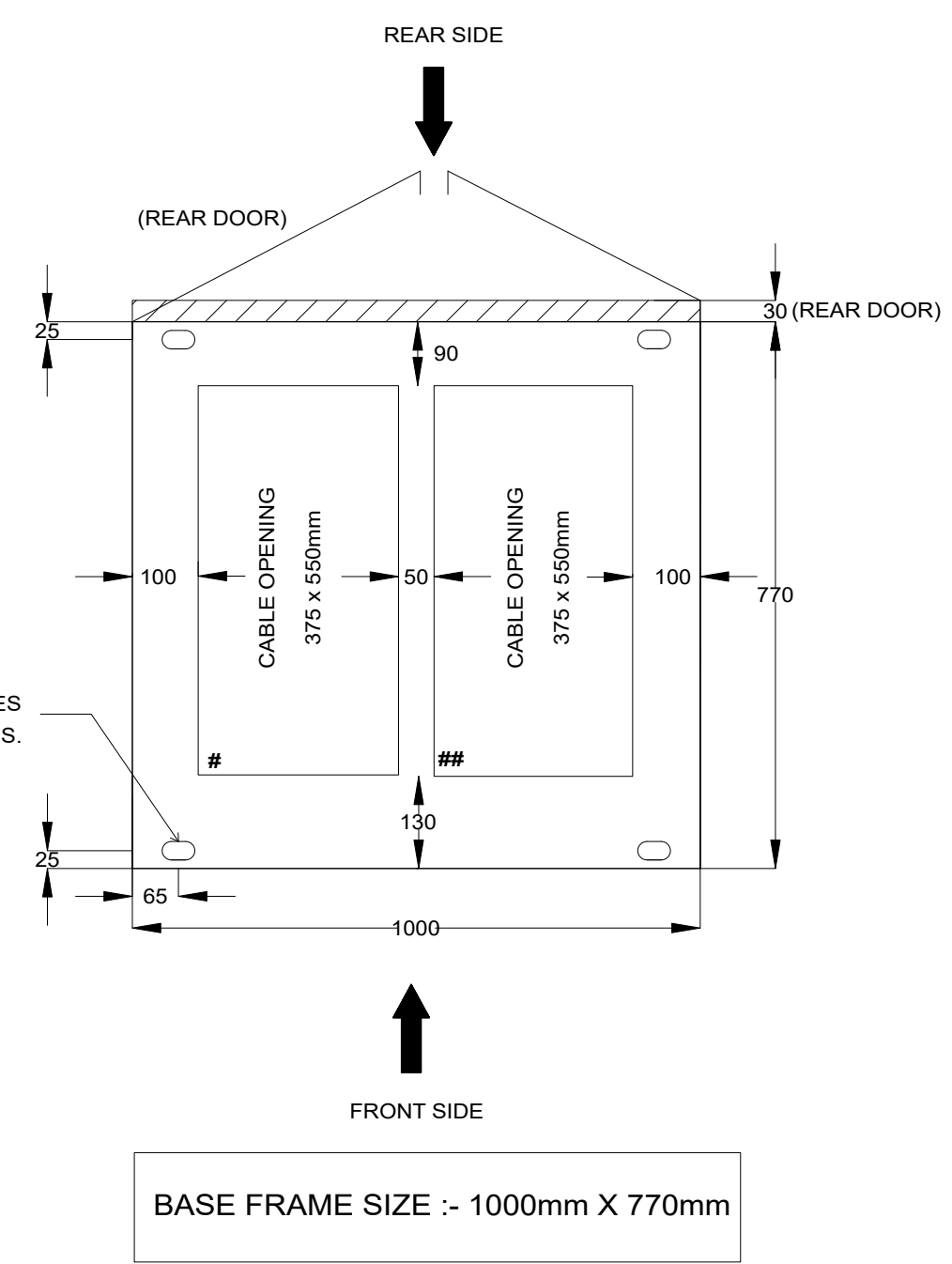
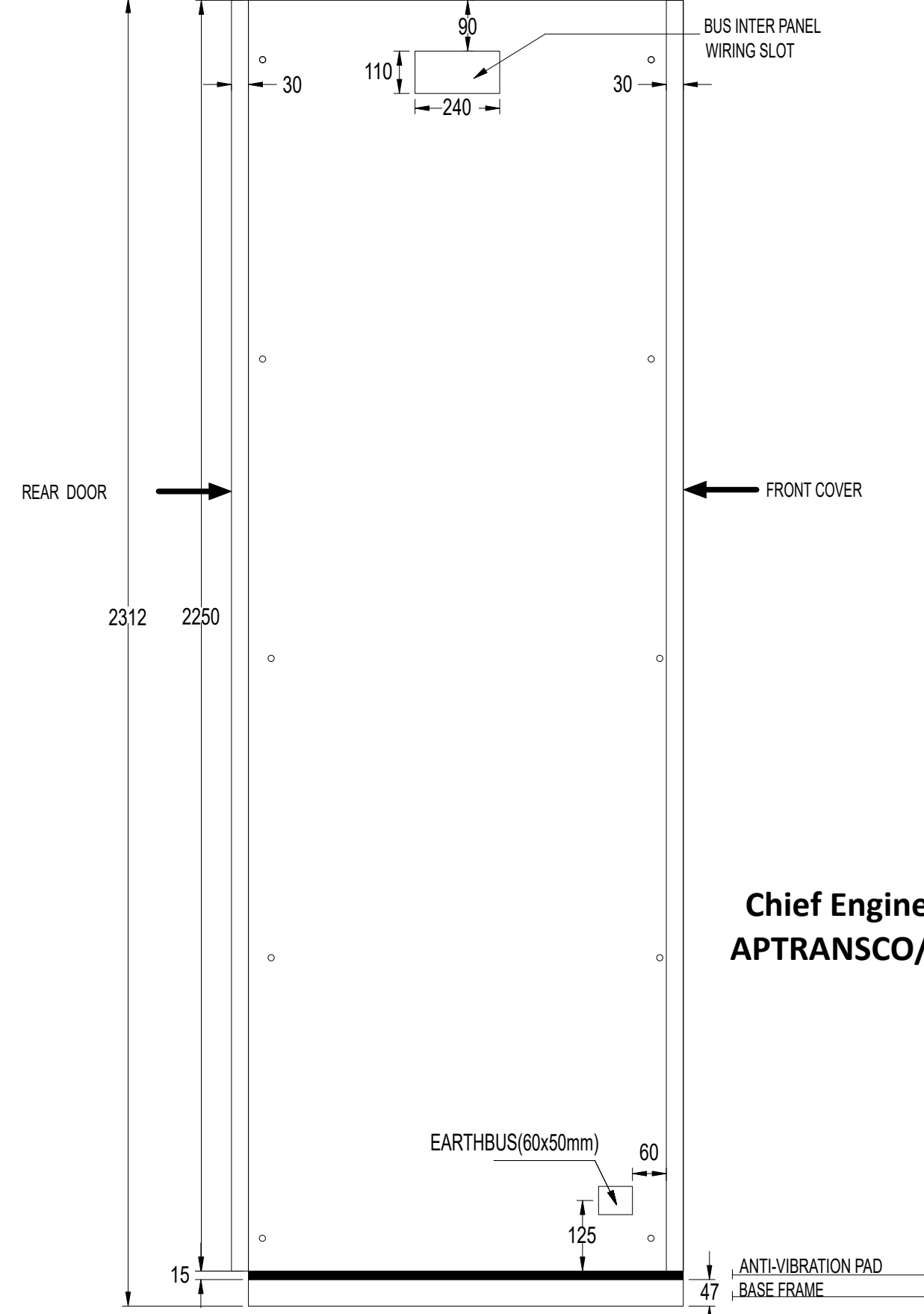
Drawing approval subject to valid vendor registration

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	+LA
		Project APTRANSCO		Legend list	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-ABAA		Sheet 12.4
1MYN691003-102(A3)REV01						n. sheet 13

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 24 Nos. KNOCKOUT PUNCH HOLES OF 19mm DIA. TO BE PROVIDED.
 5. ## GLAND PLATE WITH 24 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-ABAA		Sheet 13
Rev.	Revision note	Date	Name			n. sheet	14
1MYN691003-102(A3)REV01							

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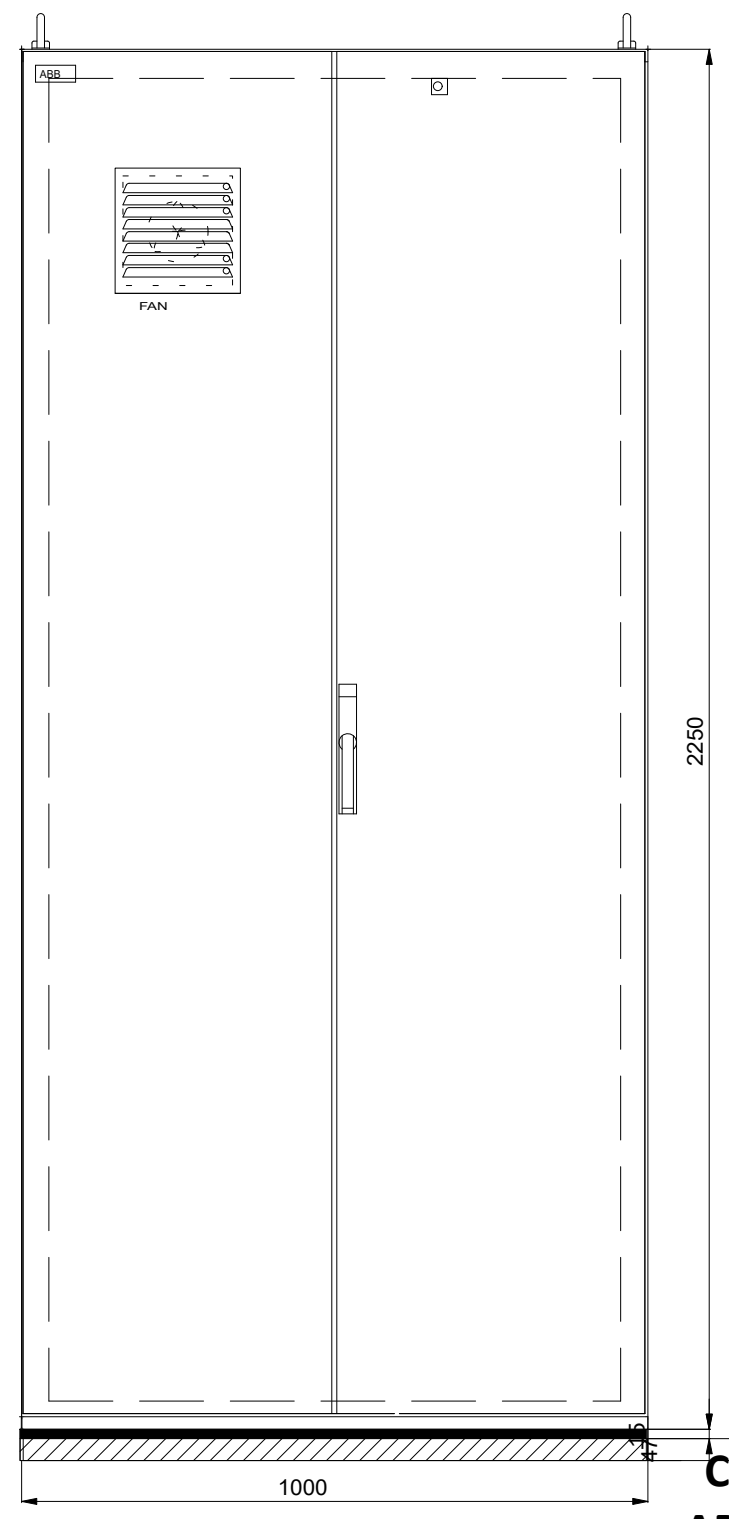
PANEL DETAILS:-

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 275mmx550mm		
Gland Plate	2 nos of plates - Fixing cable glands 315 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 Designation 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

**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	DCC ELU	+LA
		Project APTRANSCO		Panel Details & Rear Door Details	PG-GAS	Rev. ind. en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-ABAA	Sheet 14	n. sheet 16
1MYN691003-102(A3)REV01						

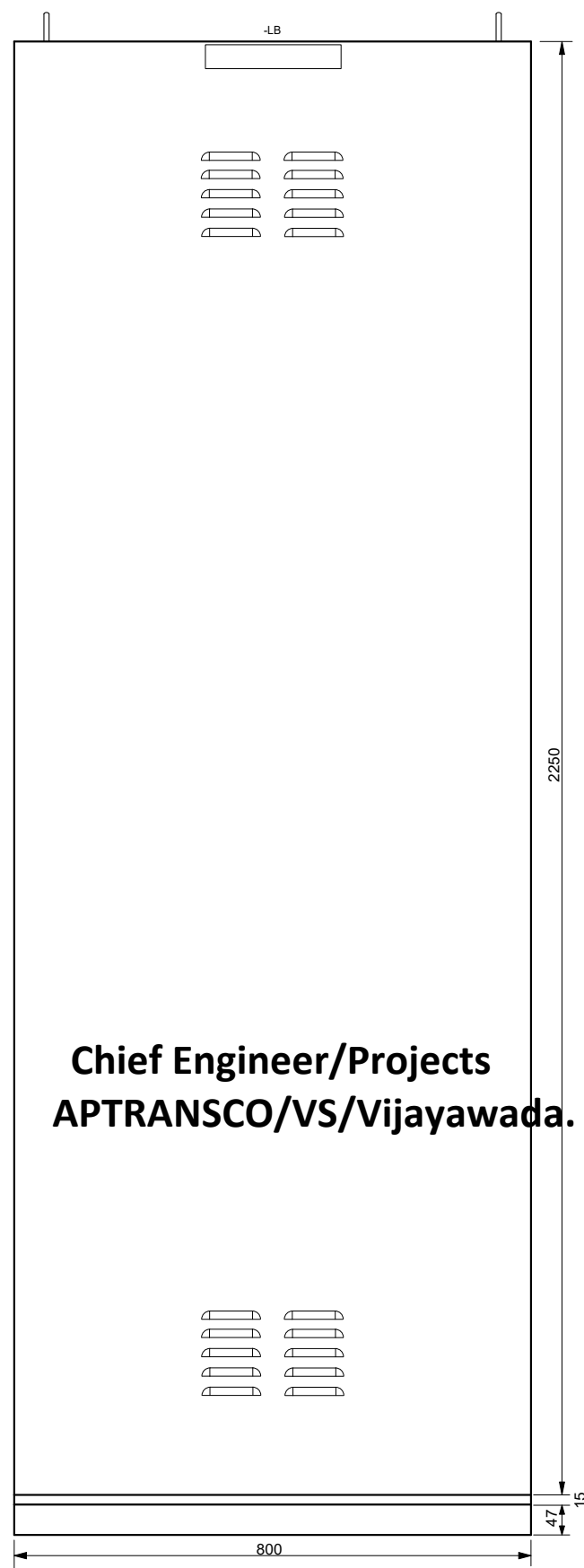
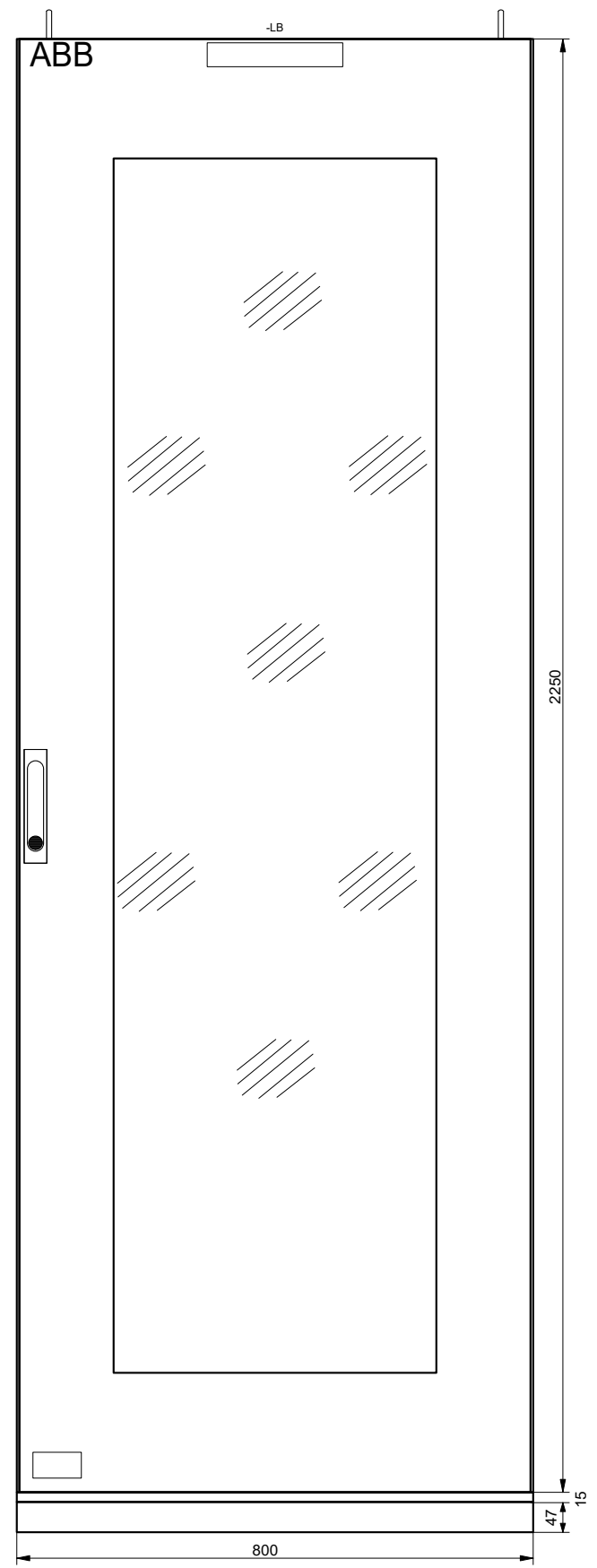
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814618/2024/EEMRT-ENE51 Front view with door

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	

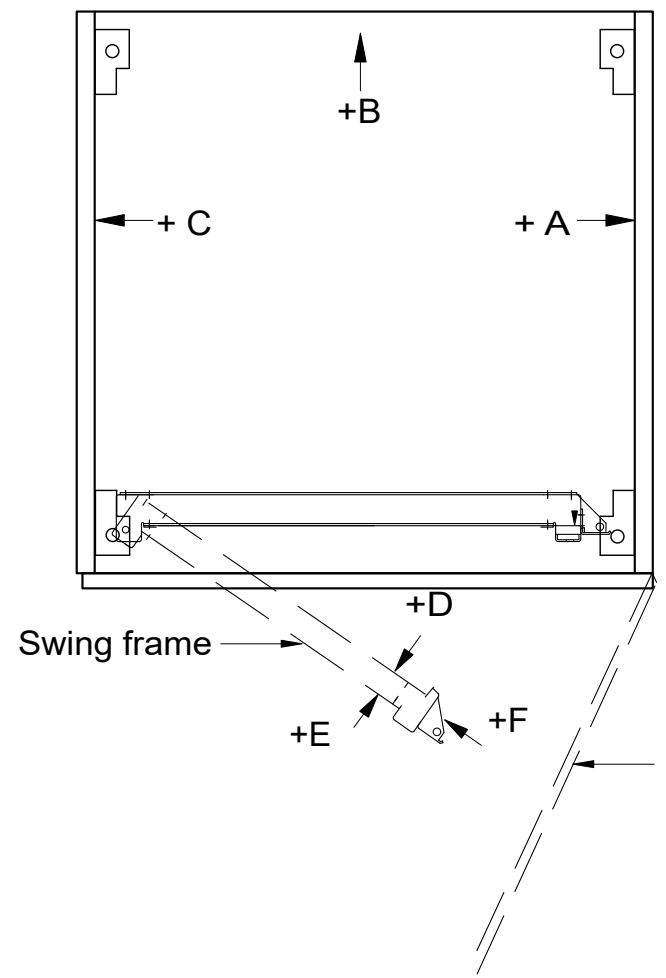
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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	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-ABAA	
Rev.	Revision note	Date	Name		Sheet 16	n. sheet 17
1MYN691003-102(A3)REV01						

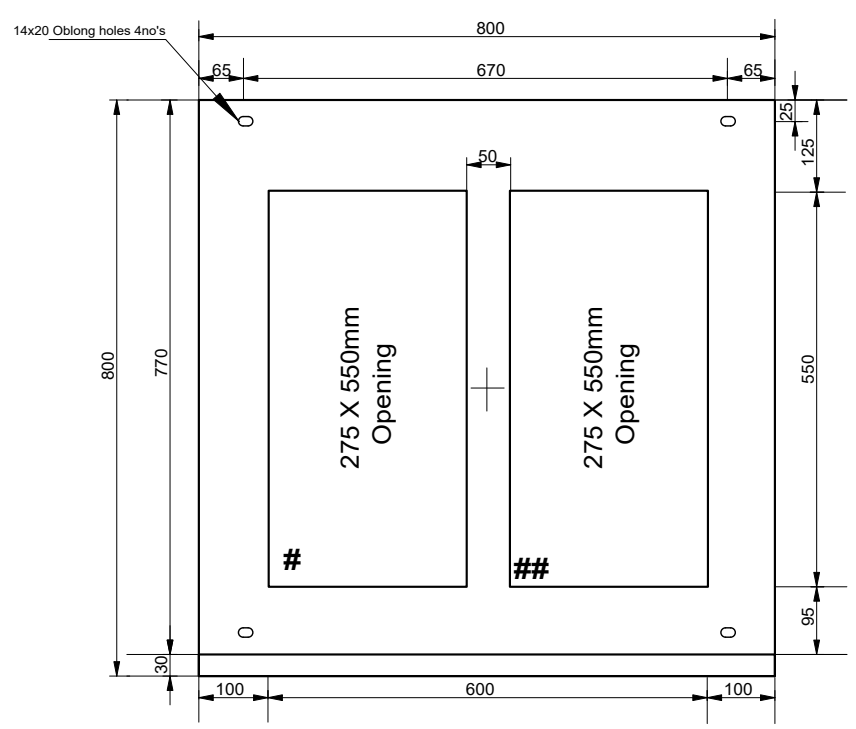
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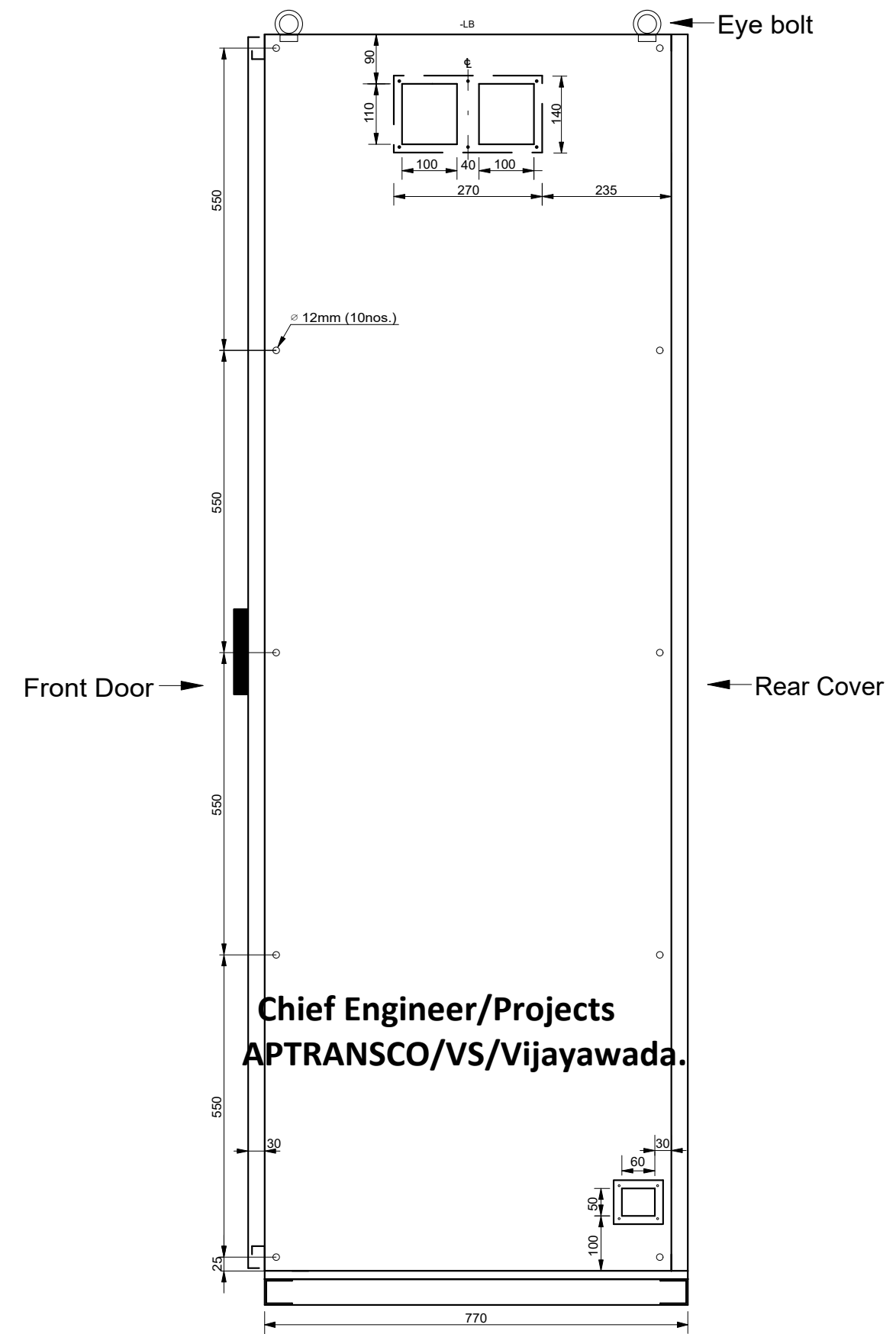
Cross sectional view



Foundation Details



Side view



↑
Front

Drawing approval subject to valid vendor registration

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

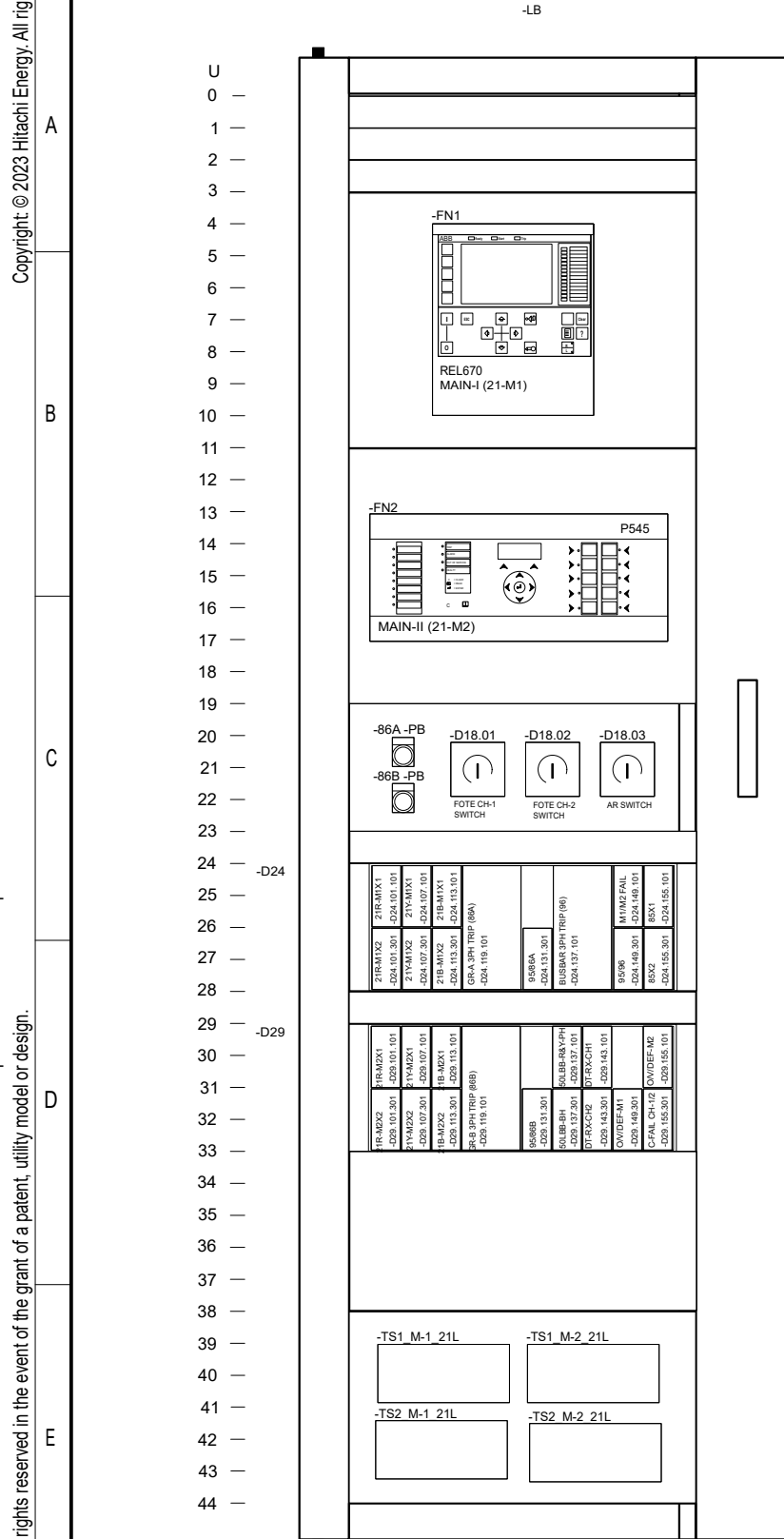
- Note :
1. All Dimensions are in mm
 2. Base frame Dimension is 800mm(W)x770mm(D)
 3. # GLAND PLATE WITH 21 Nos. KNOCKOUT PUNCH HOLES OF 19mm DIA. TO BE PROVIDED.
 4. ## GLAND PLATE WITH 21 Nos. KNOCKOUT PUNCH HOLES OF 25mm DIA. TO BE PROVIDED.

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

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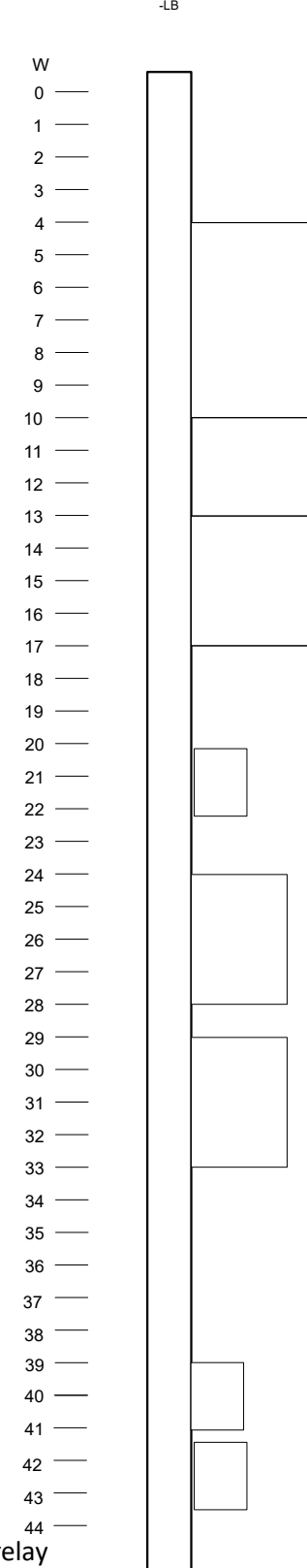
Chief Engineer/Projects APTRANSCO/VIS/Vijayawada.

PANEL: 2KRLB

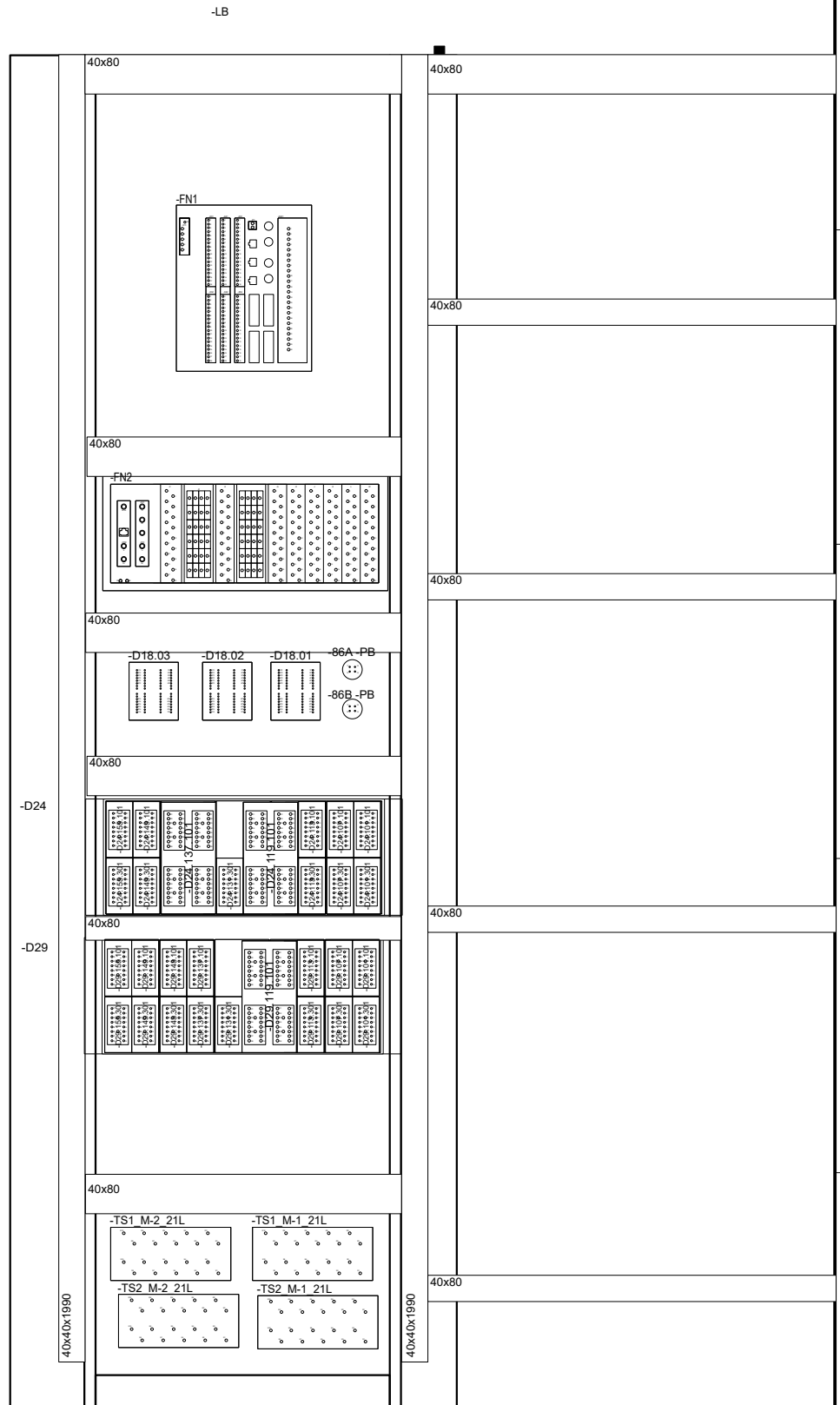
ITEM DESIGNATION	DESCRIPTION
FN1	DISTANCE PROTECTION M1-RELAY(REL670)
FN2	DISTANCE PROTECTION M2-RELAY (P545)
86A-PB	PUSH BUTTON FOR GROUP-A 86A RESET
86B-PB	PUSH BUTTON FOR GROUP-B 86B RESET
D20.01	CARRIER SELECTOR SWITCH CH-1
D20.02	CARRIER SELECTOR SWITCH CH-2
D20.03	AUTO RECLOSE SELECTOR SWITCH
D24.101.101	1PH TRIP RELAY(R-PH) 21-M1X1
D24.101.301	1PH TRIP RELAY(R-PH) 21-M1X2
D24.107.101	1PH TRIP RELAY(Y-PH) 21-M1X1
D24.107.301	1PH TRIP RELAY(Y-PH) 21-M1X2
D24.113.101	1PH TRIP RELAY(B-PH) 21-M1X1
D24.113.301	1PH TRIP RELAY(B-PH) 21-M1X2
D24.119.101	GROUP-A(86A) TRIP RELAY
D24.131.301	GR-A TRIP RELAY SUPERVISION
D24.137.101	BUSBAR TRIP RELAY
D24.149.301	BUSBAR TRIP RELAY SUPERVISION
D24.155.101	AUX. RELAY FOR CARRIER SEND CH-1
D24.155.301	AUX. RELAY FOR CARRIER SEND CH-2
D29.101.101	1PH TRIP RELAY(R-PH) 21-M2X1
D29.101.301	1PH TRIP RELAY(R-PH) 21-M2X2
D29.107.101	1PH TRIP RELAY(Y-PH) 21-M2X1
D29.107.301	1PH TRIP RELAY(Y-PH) 21-M2X2
D29.113.101	1PH TRIP RELAY(B-PH) 21-M2X1
D29.113.301	1PH TRIP RELAY(B-PH) 21-M2X2
D29.119.101	GROUP-B(86B) TRIP RELAY
D29.131.301	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 OVI/ DEF-M1
D29.155.101	AUX. RELAY OF OVI/ DEF-M2
D29.155.301	AUX. RELAY FOR CARRIER FAIL CH-1/ CH-2
TS1/TS2_M-1_21L	TEST SWITCH FOR M-1 PROTN. RELAY
TS1/2_M-2_21L	TEST SWITCH FOR M-2 PROTN. RELAY

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

+F Side view hinged frame



+D Back view hinged frame



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

Title	220kV LINE FEEDER Control & Relay Panel Hinged frame view
Doc. kind.	Assembly drawing DCC ELU
Resp. dept.	PG-GAS
Rev. ind.	en
Doc. no.	1MNS500925-ABAA
Sheet	18
n. sheet	19

Ref.Des.	=2KR +LB
Language	en
Sheet	18
n. sheet	19

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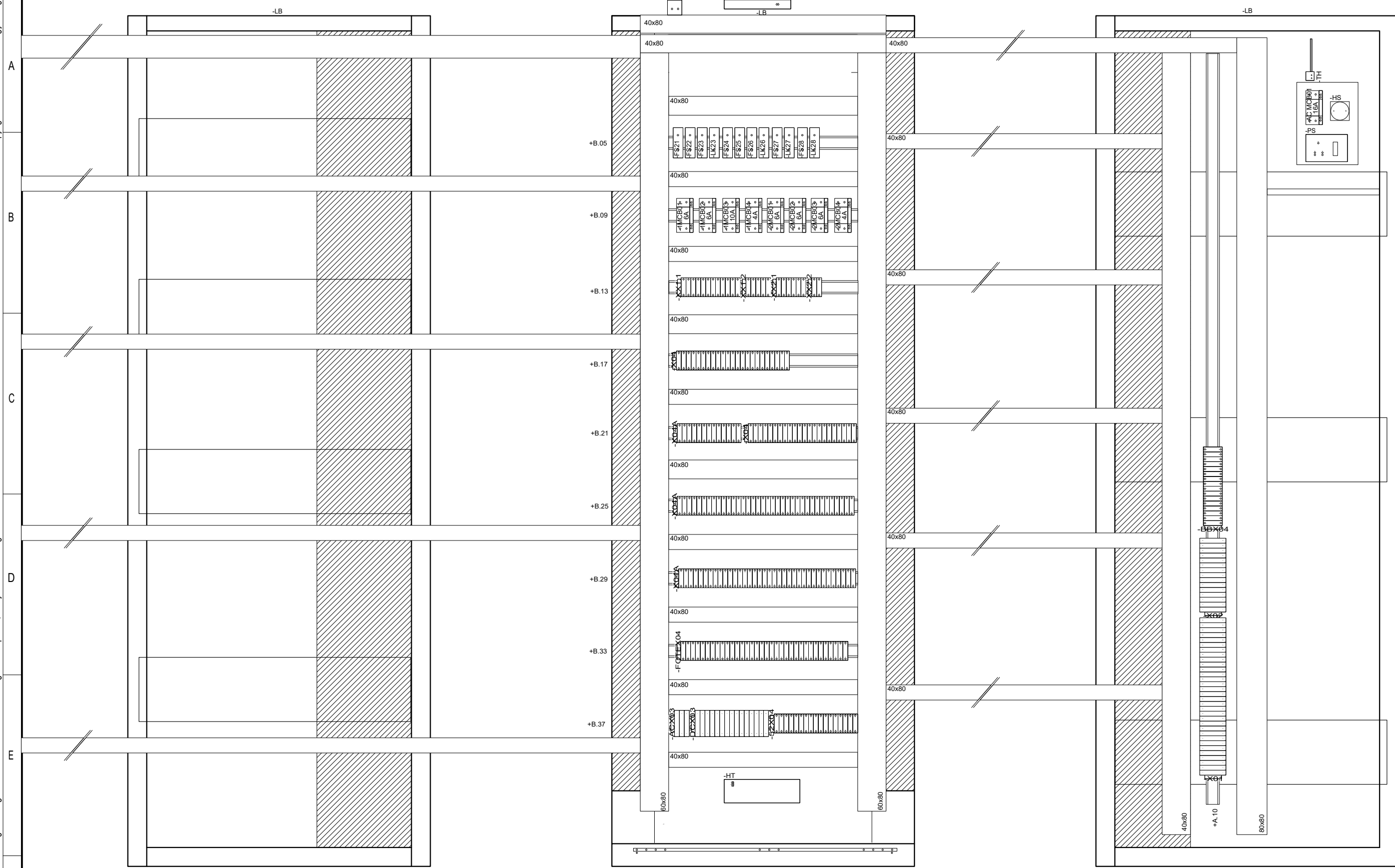
14618/2024/EEMRT-ENE51

+C Left side

+B Rear plane

+A Right side

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

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

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814618/2024/EEMRT-ENE51

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

Plane: B

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

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

Plane: D

Device name	Description (1)	Description (2)	Type designation
-86A -PB	PB - 86A	--	-
-86B -PB	PB - 86B	--	-
-D18.01	FOTE SW CH-1	--	12-2-pos. contacts
-D18.02	FOTE SW CH-2	--	12-2-pos. contacts
-D18.03	AR SEL. SW.	--	12-2-pos. contacts
-D24.101.101	1PH TRIP R-PH	21R-M1X1	RXME18
-D24.101.301	1PH TRIP R-PH	21R-M1X2	RXMS1
-D24.107.101	1PH TRIP Y-PH	21Y-M1X1	RXME18
-D24.107.301	1PH TRIP Y-PH	21Y-M1X2	RXMS1
-D24.113.101	1PH TRIP B-PH	21B-M1X1	RXME18
-D24.113.301	1PH TRIP B-PH	21B-M1X2	RXMS1
-D24.119.101	GR-A TRIP RELAY	86A	RXMVB4
-D24.131.301	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	BB/LBB Trip relay Supvn.	--	TSR-B
-D24.155.101	85X1-CODE-1	85X1-CODE-2	RXSF1

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

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Device name	Description (1)	Description (2)	Type designation
-D24.155.301	85X2-CODE-1	85X2-CODE-2	RXSF1
-D29.101.101	1PH TRIP R-PH	21R-M2X1	RXME18
-D29.101.301	1PH TRIP R-PH	21R-M2X2	RXMS1
-D29.107.101	1PH TRIP Y-PH	21Y-M2X1	RXME18
-D29.107.301	1PH TRIP Y-PH	21Y-M2X2	RXMS1
-D29.113.101	1PH TRIP B-PH	21B-M2X1	RXME18
-D29.113.301	1PH TRIP B-PH	21B-M2X2	RXMS1
-D29.119.101	GR-B TRIP RELAY	86B	RXMVB4
-D29.131.301	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 Line Distance Protn.	REL670	REL670
-FN2	M2 Protn relay	--	Micom P545
-TS1_M-1_21L	TS_M-1_21L	--	MPG
-TS1_M-2_21L	TS_M-2_21L	--	MPG
-TS2_M-1_21L	TS_M-1_21L	--	MPG
-TS2_M-2_21L	TS_M-2_21L	--	MPG

Suitable for conventional 220KV SS only

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

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Assembly drawing	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Legend list	DCC ELU	+LB
		Project APTRANSCO		Legend list	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-ABAA		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-CBAA	Sheet 21
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A

B

C

D

E

F

A

B

C

D

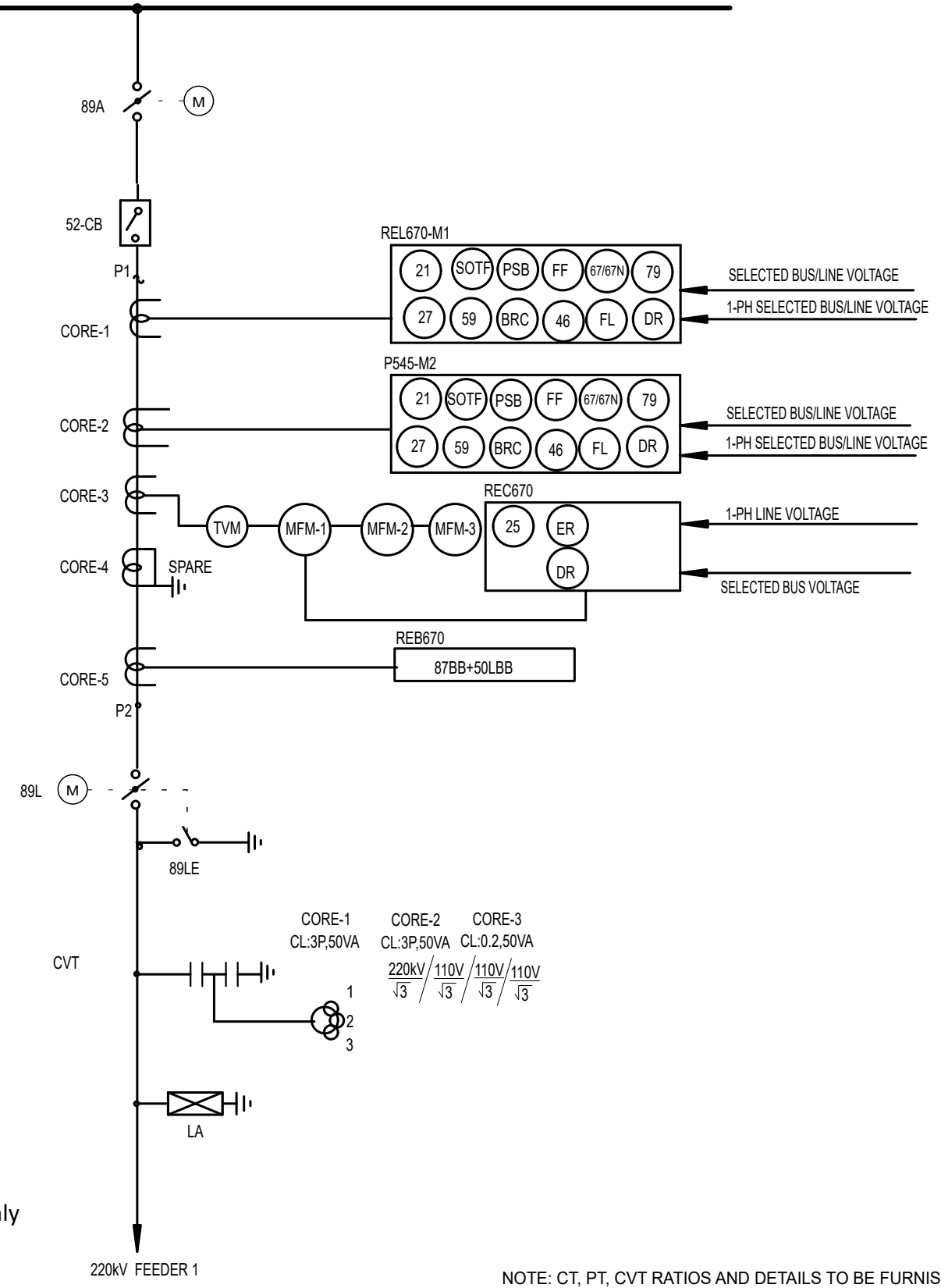
E

F

220KV 50Hz 40kA/1sec MAIN BUS

8814618/2024/EMRT-ENE51

CT
800-600-400/1A



Suitable for conventional 220KV SS only

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

220KV CT DETAILS FOR LINE FEEDER

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

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

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-CBAA	Sheet 22	n. sheet 23
1MYN691003-102(A3)REV01						

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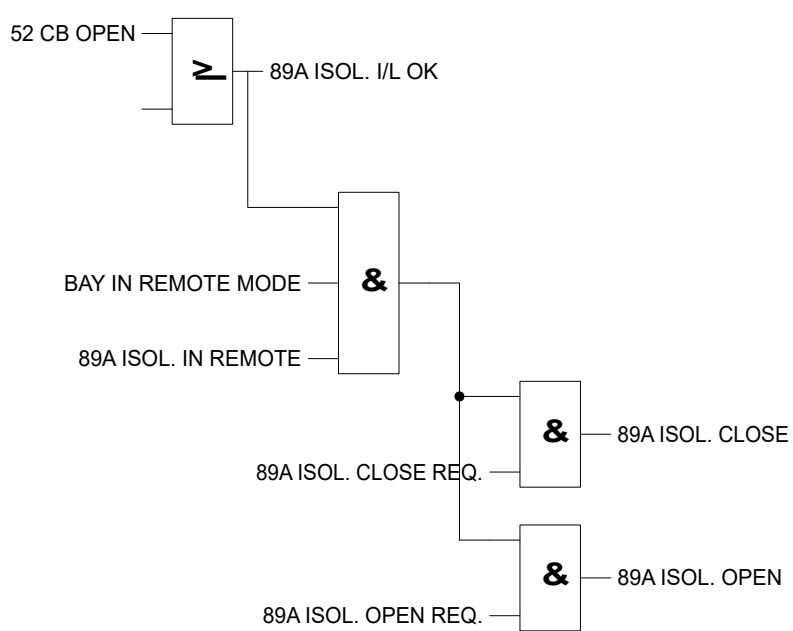
PROTECTION FUNCTION	OUTPUT	START AUTO RECLOSE MAIN CB	BLOCK AUTO RECLOSE MAIN CB	3PH MASTER TRIP RELAY GROUP-A, MAIN CB	3PH MASTER TRIP RELAY GROUP-B, MAIN CB	DIREC TRIP SEND CHANNEL-1	DIREC TRIP SEND CHANNEL-2	FOTE CHANNEL-1	FOTE CHANNEL-2	BUSBAR PROTECTION	BREAKER FAIL PROT N MAIN CB	TO CB TRIP COIL-1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

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

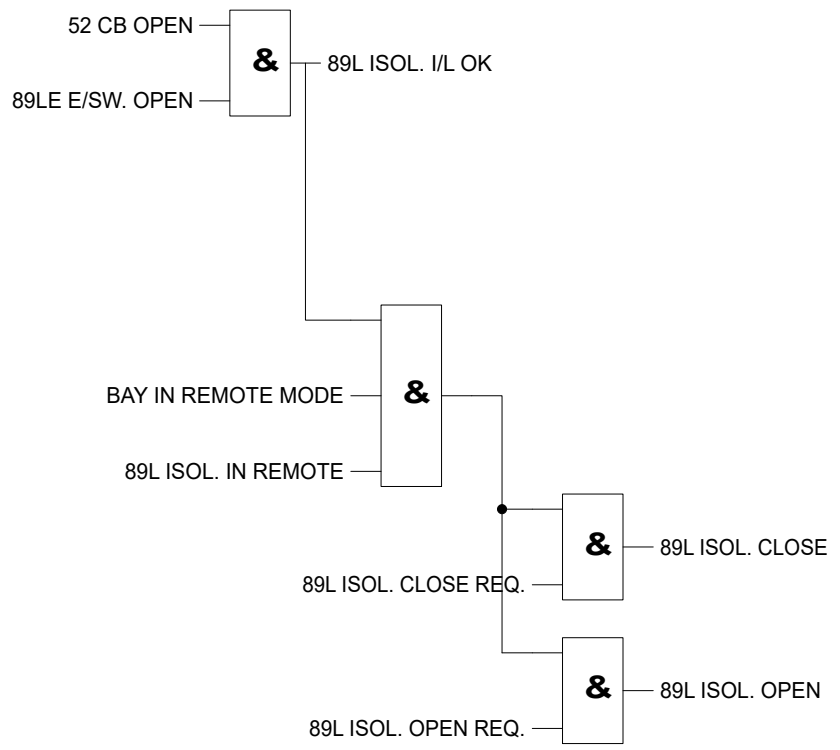
IP INDICATES INITIATION FROM PROTECTION FUNCTION TP INDICATES TRIP FROM PROTECTION FUNCTION RS INDICATES RESET STATUS FOR CB CLOSING

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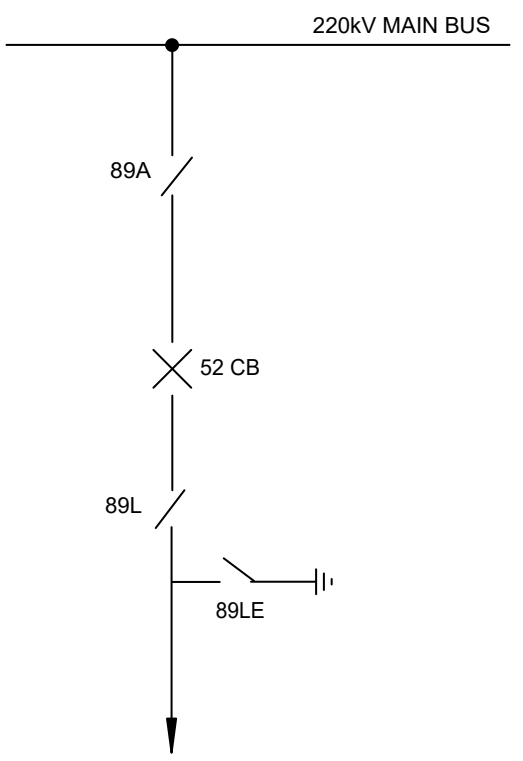
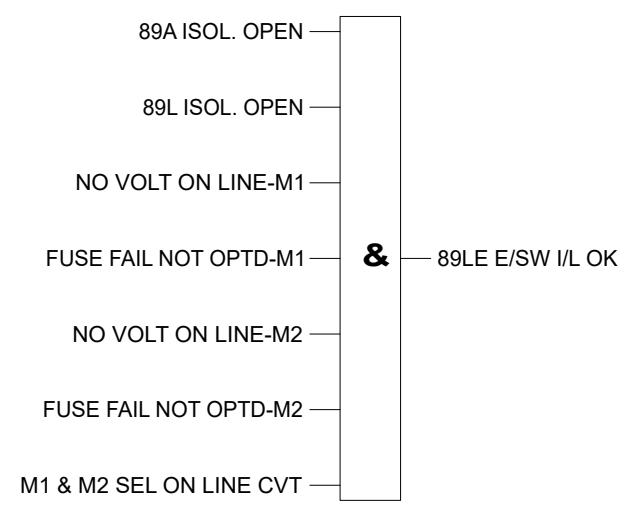
89A ISOL. OPEN/CLOSE INTERLOCK



89L ISOL. OPEN/CLOSE INTERLOCK



89LE E/SW. OPEN/CLOSE INTERLOCK



Drawing approval subject to valid vendor registration

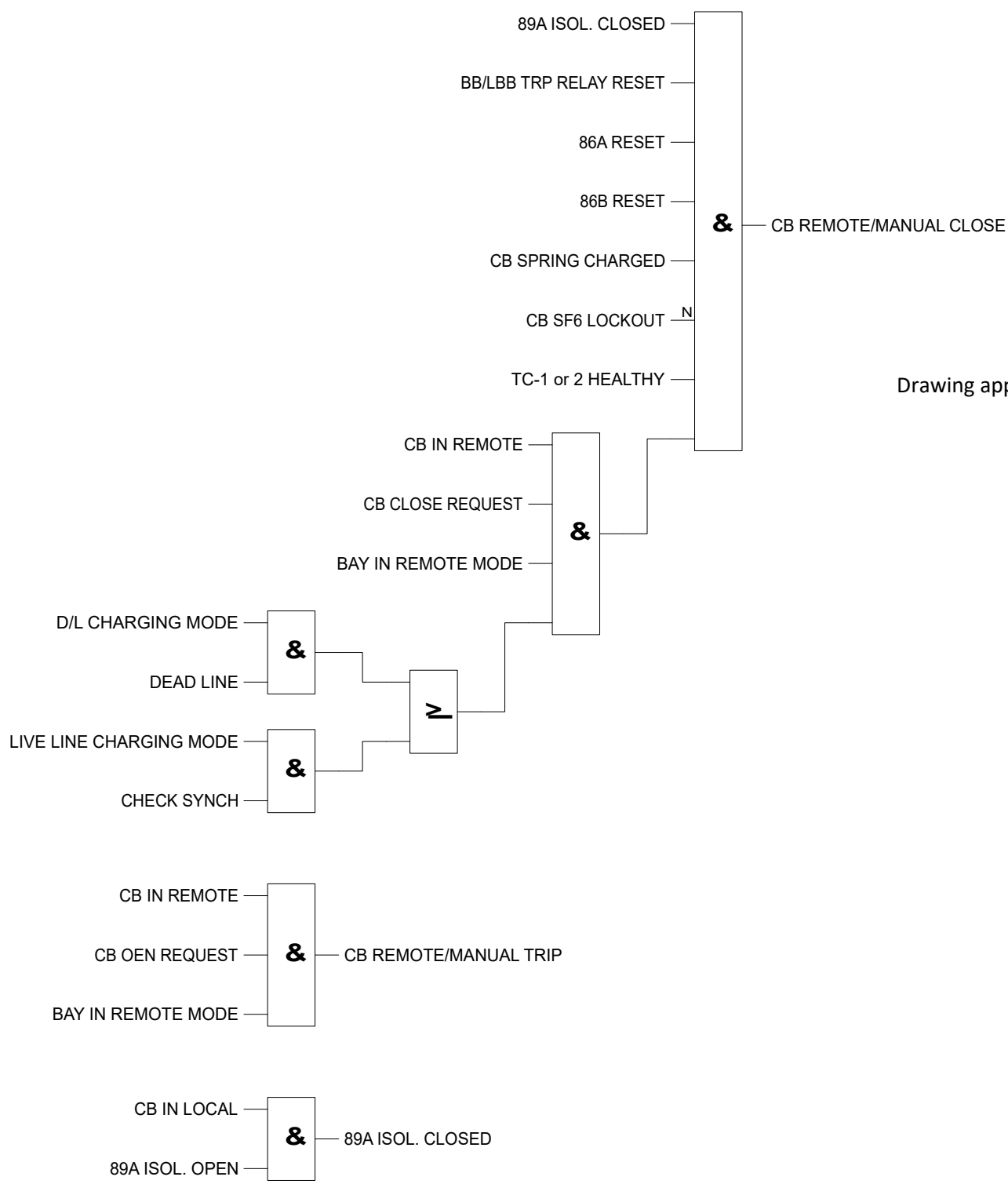
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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		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-CBAA		Sheet 24
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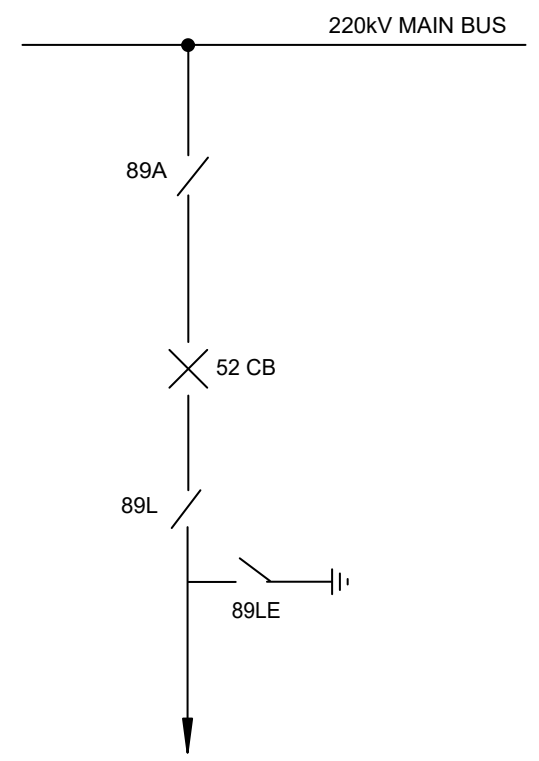
8814618/2024/EEMRT-ENE51

52 CB TRIP/CLOSE INTERLOCK



Drawing approval subject to valid vendor registration

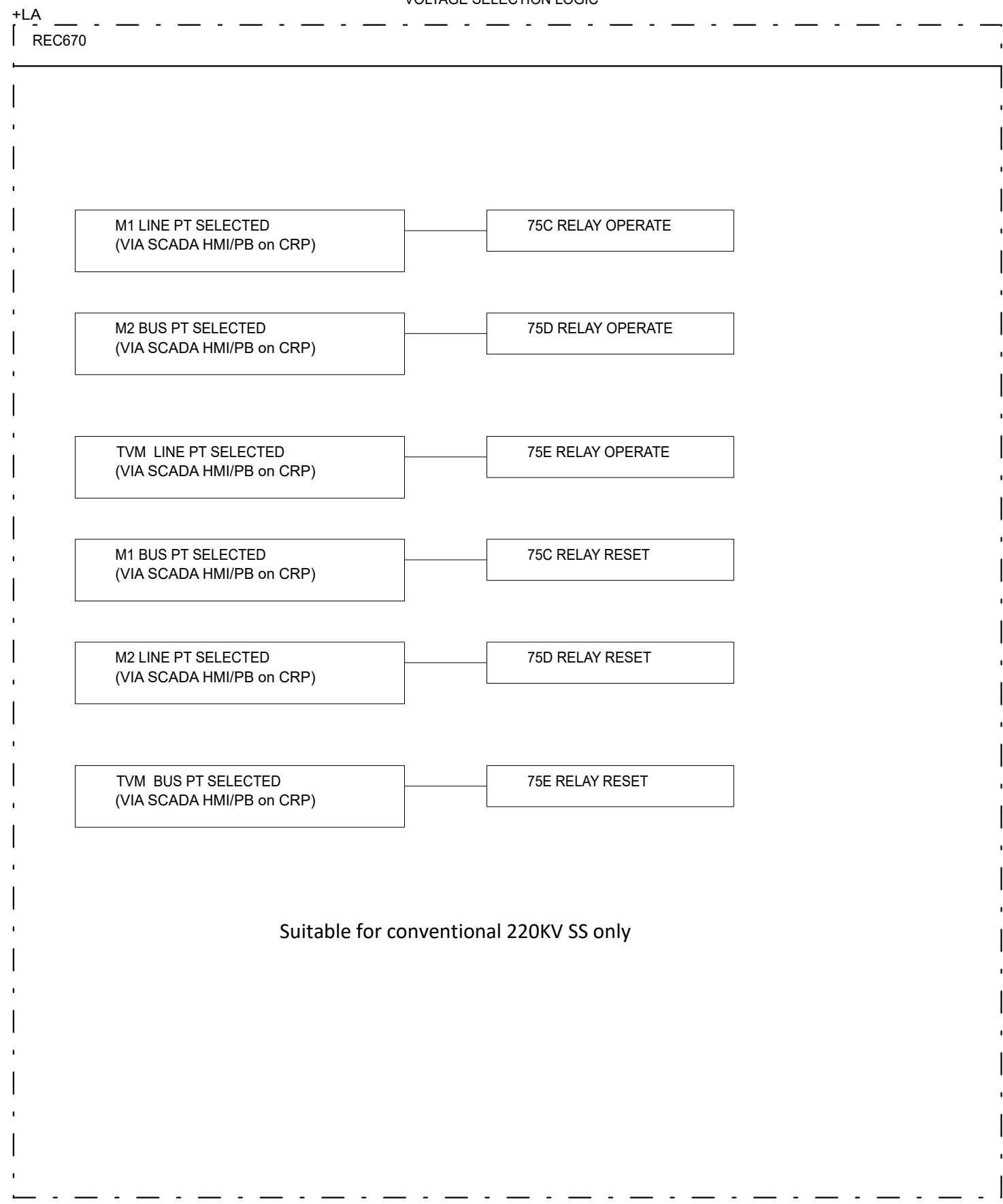
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**



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		Interlocking Logics	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
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VOLTAGE SELECTION LOGIC

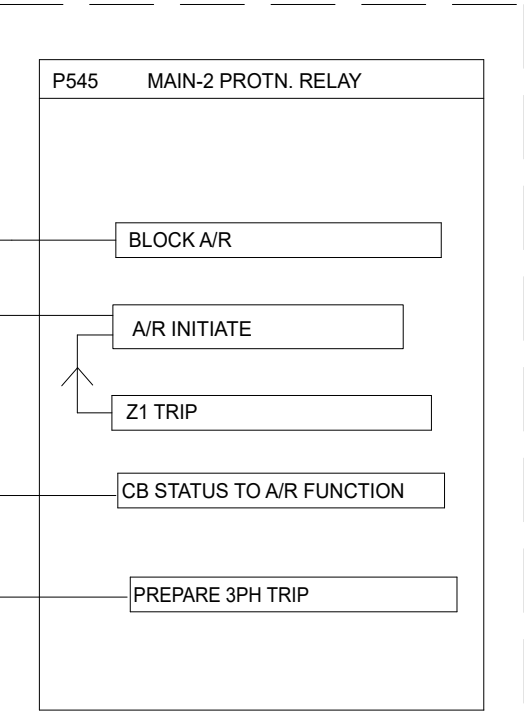
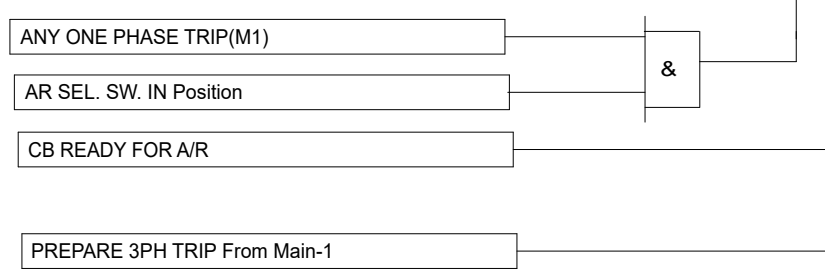
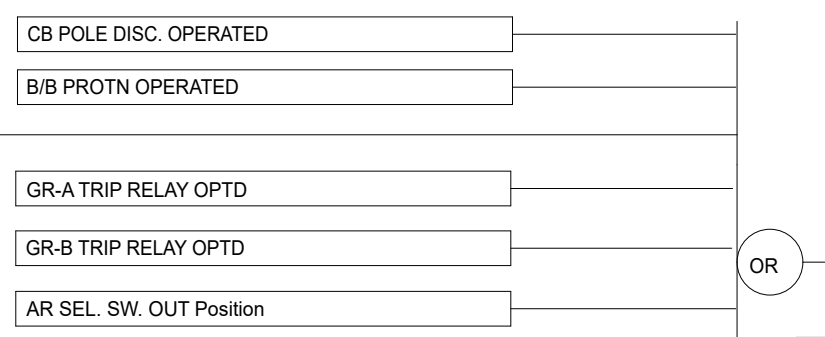
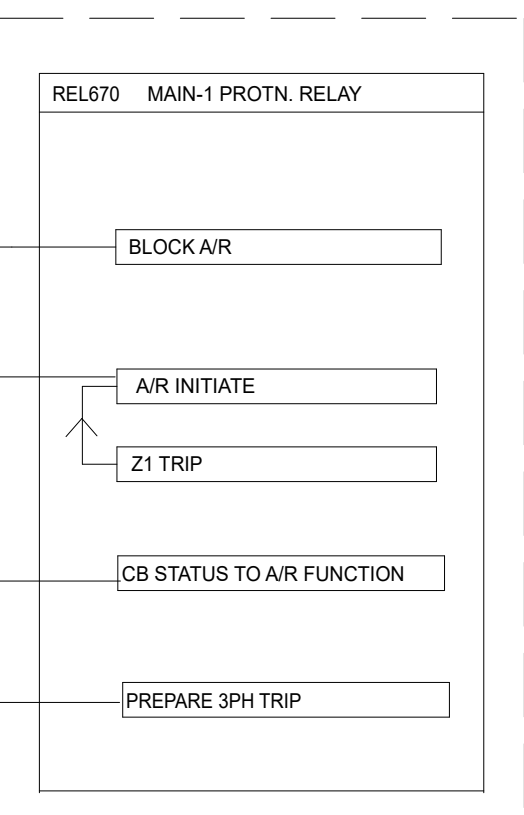
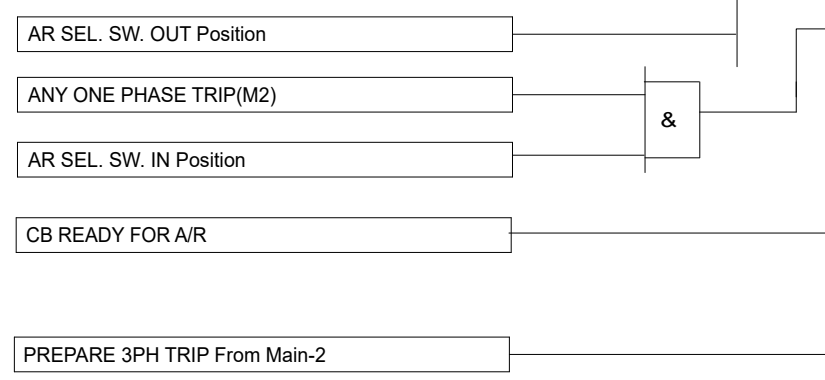
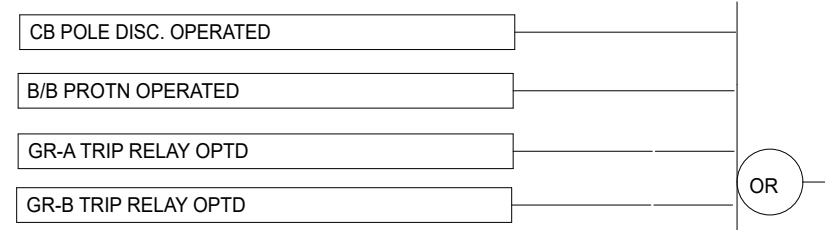
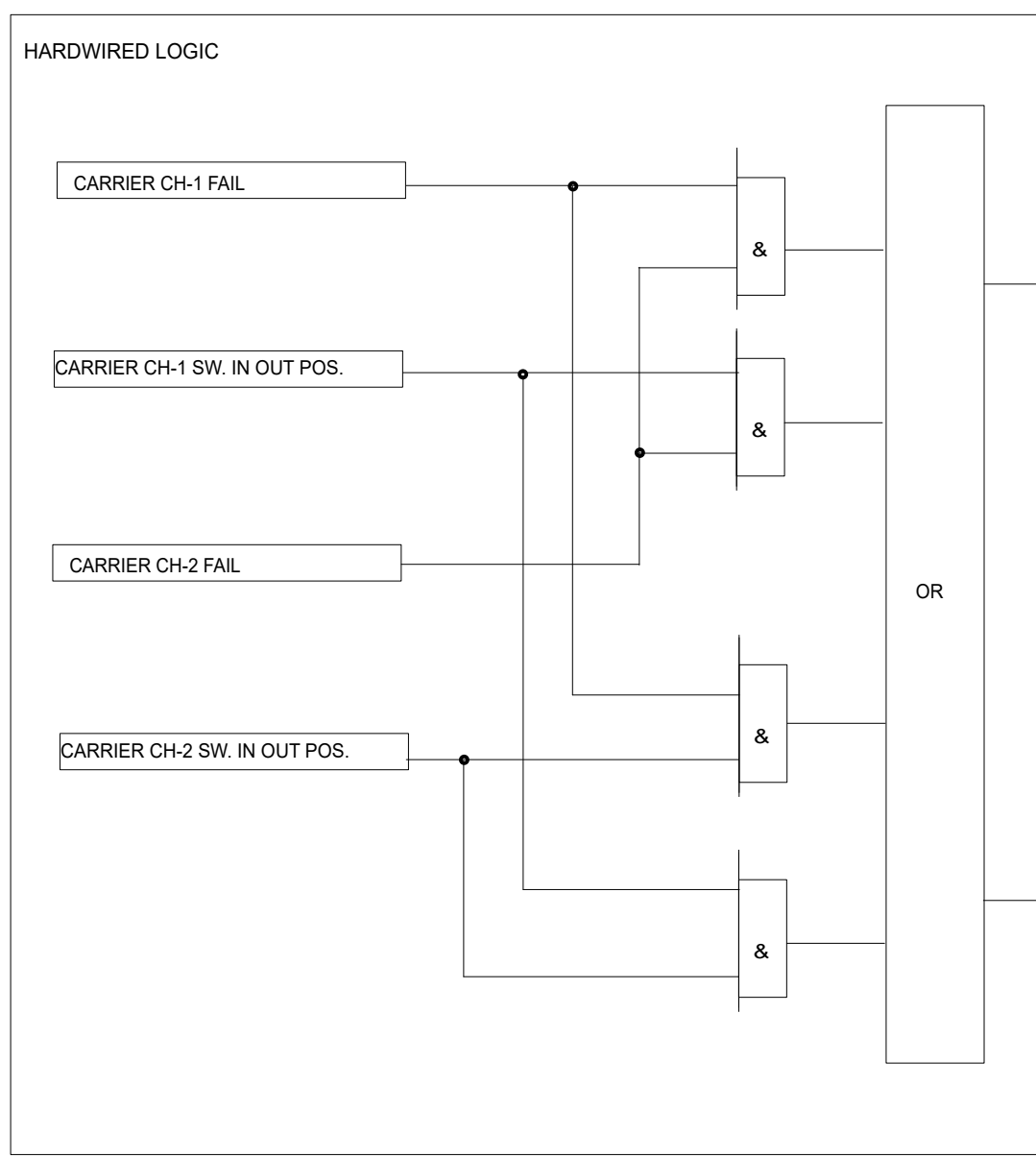


Suitable for conventional 220KV SS only

**Chief Engineer/Projects
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER Control & Relay Panel PT Selection Logic	Doc. kind. Circuit diagram	Ref.Des. =2KR	
		Approved 20.12.2023	GOURISH HEGDE		DCC EFS		
		Project APTRANSCO STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind.	Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 26	n. sheet 27
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**Chief Engineer/Projects
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NOTE:- BOTH A/R FUNCTION OF MAIN-1 & MAIN-2 SHALL OPERATE PARALLELLY.

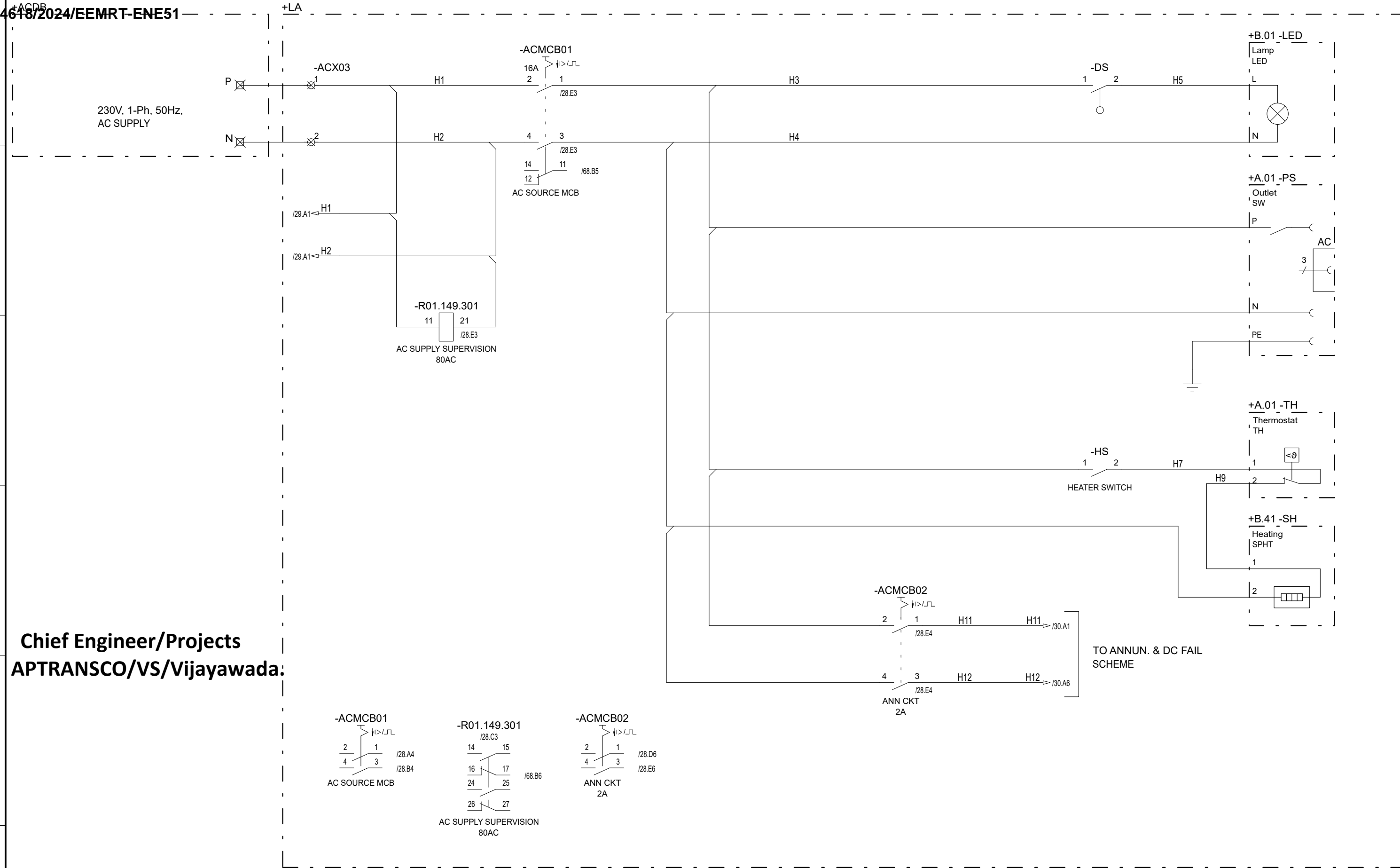
_____ HARDWIRED SIGNAL

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

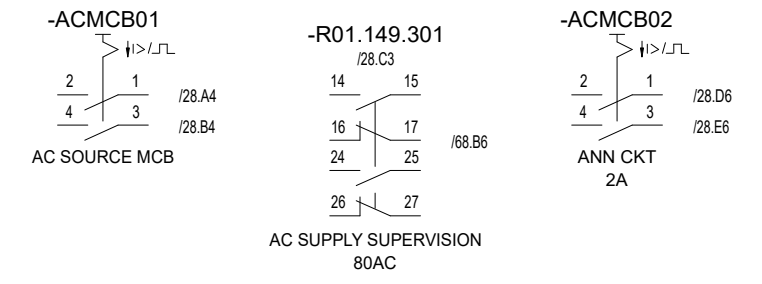
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Chief Engineer/Projects
APTRANSCO/VS/Vijayawada:

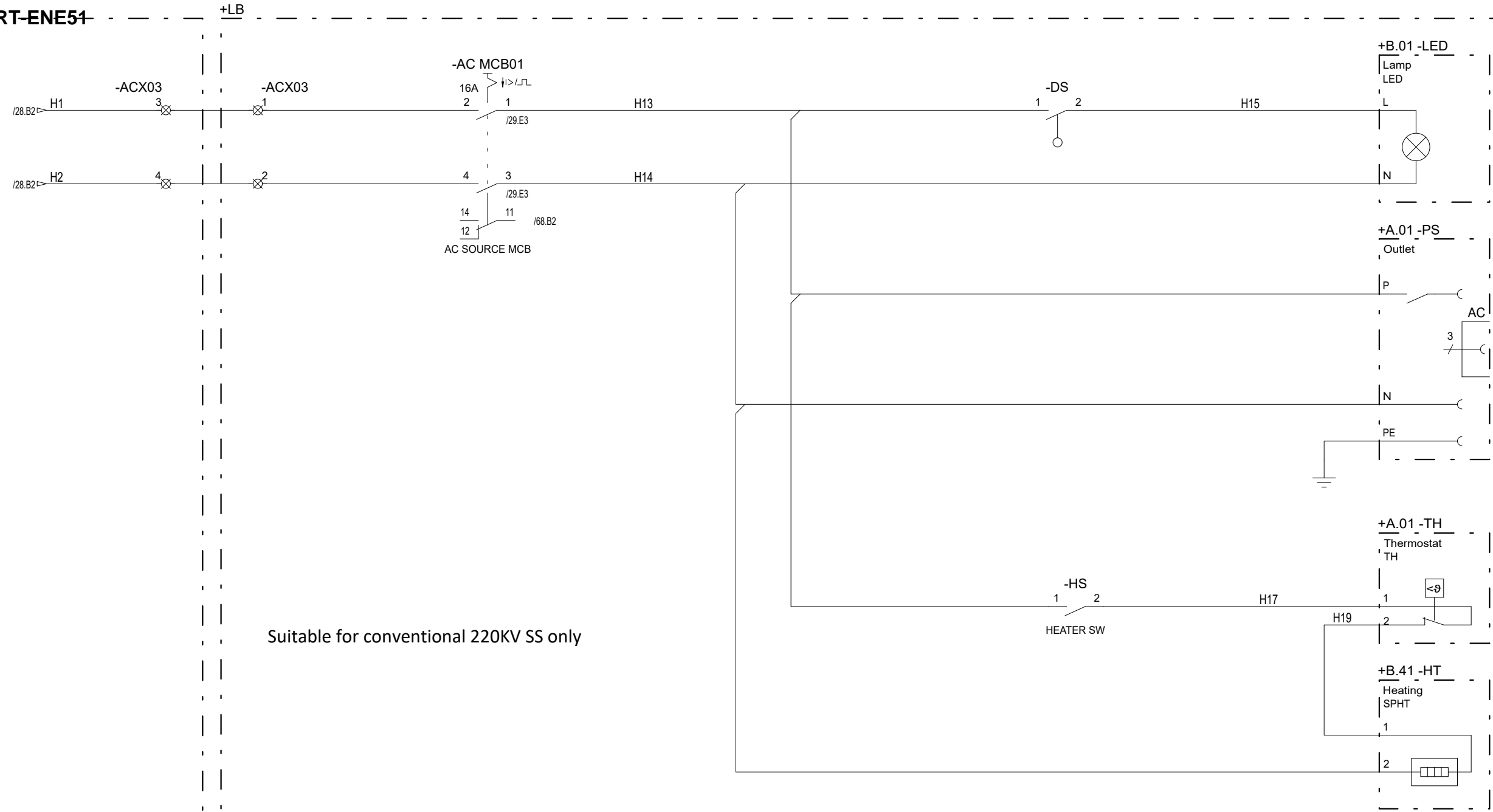


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		AC Distribution Circuit	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited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

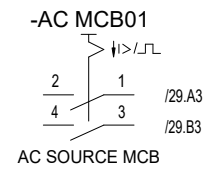
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Suitable for conventional 220KV SS only



Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

Drawing approval subject to valid vendor registration

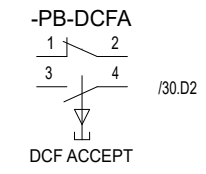
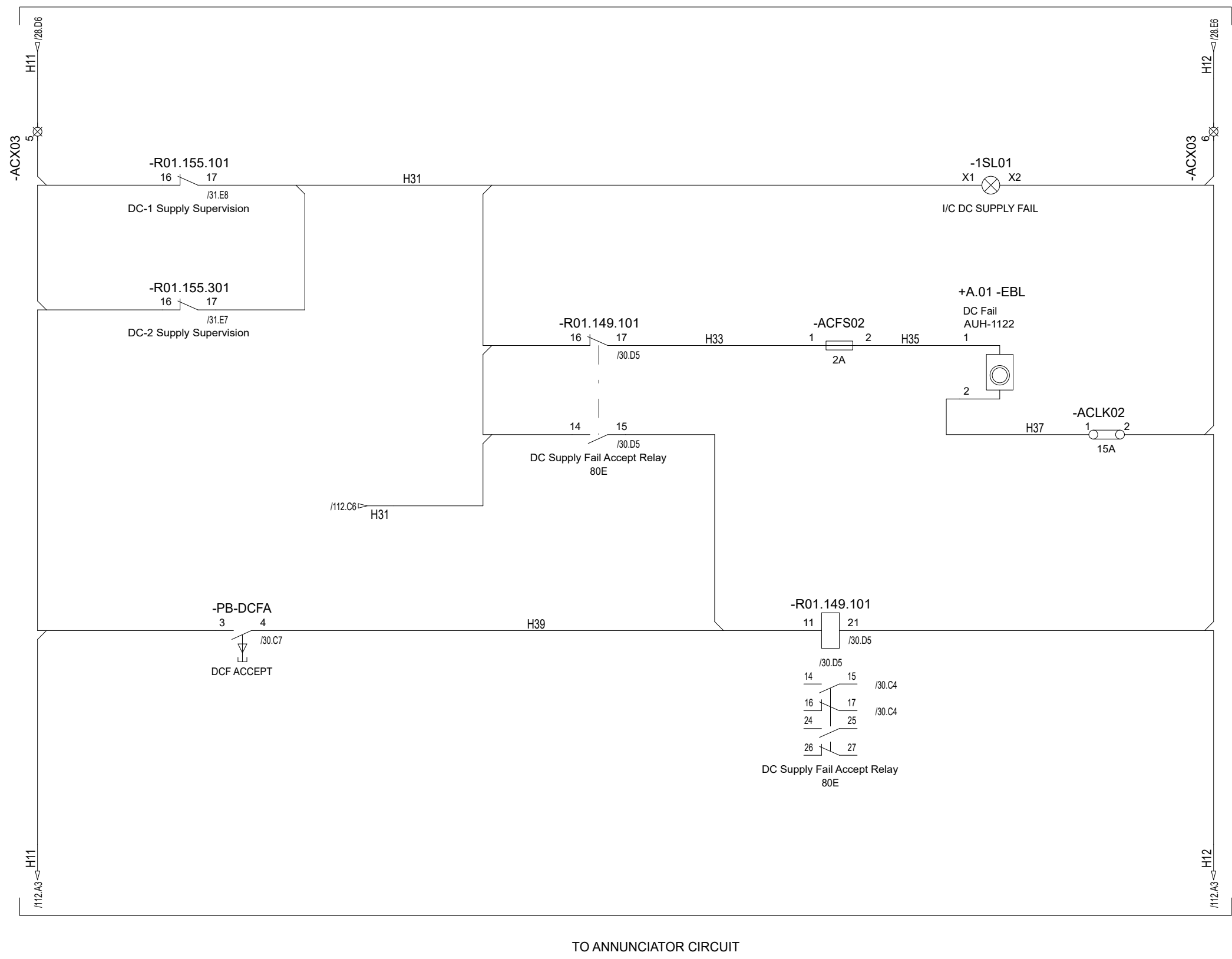
Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		AC Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en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

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FROM 230V AC SUPPLY

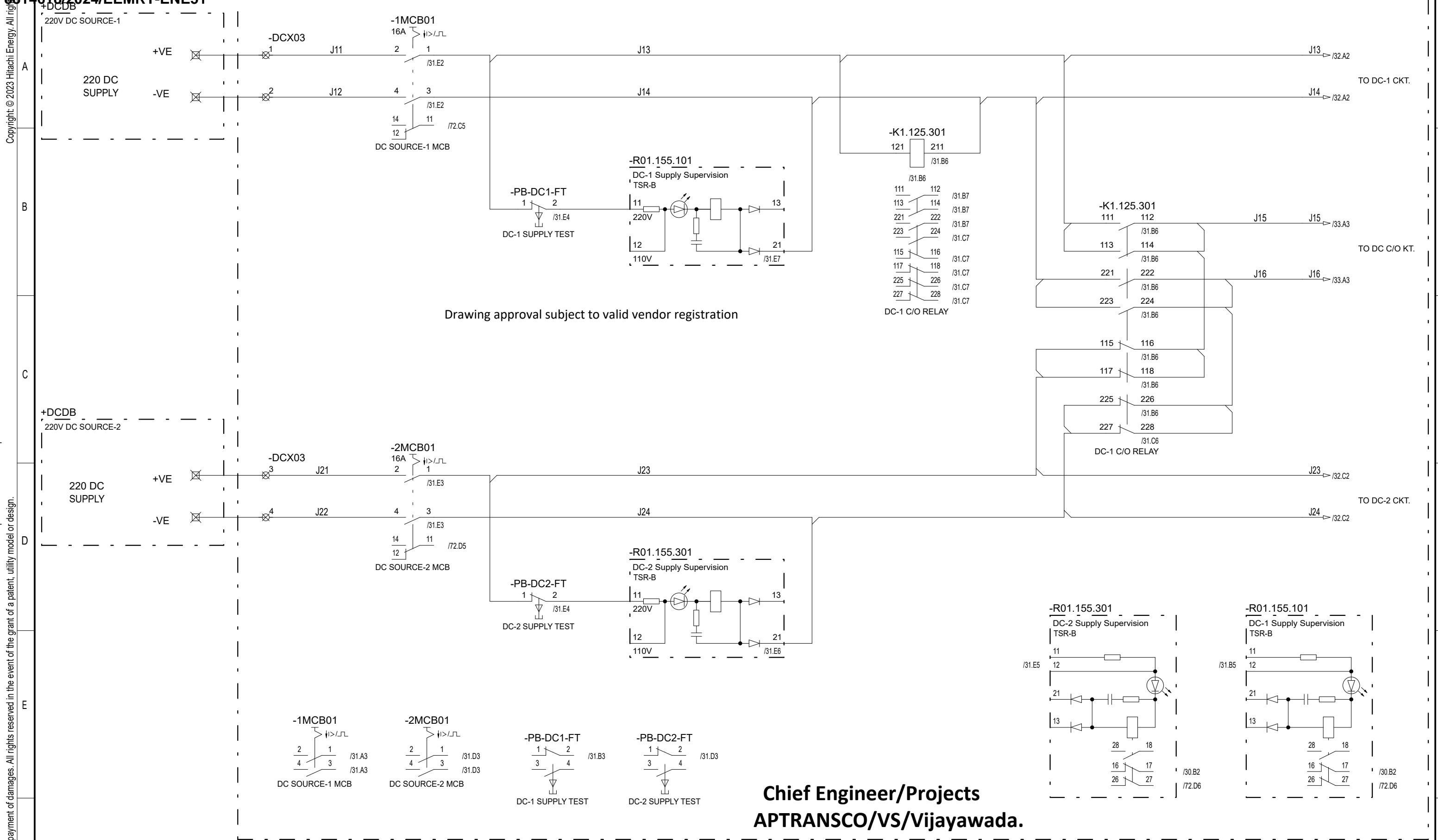


TO ANNUNCIATOR CIRCUIT

**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 Fail Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 30
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Drawing approval subject to valid vendor registration

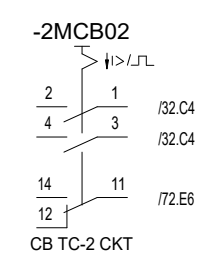
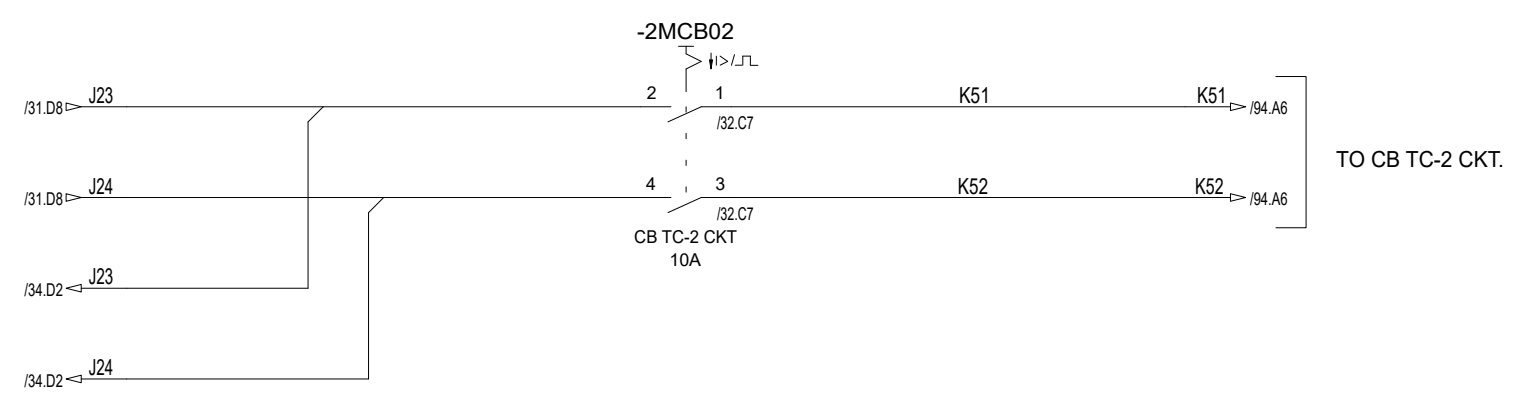
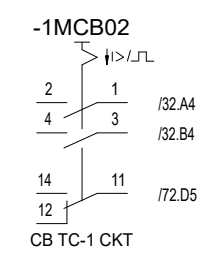
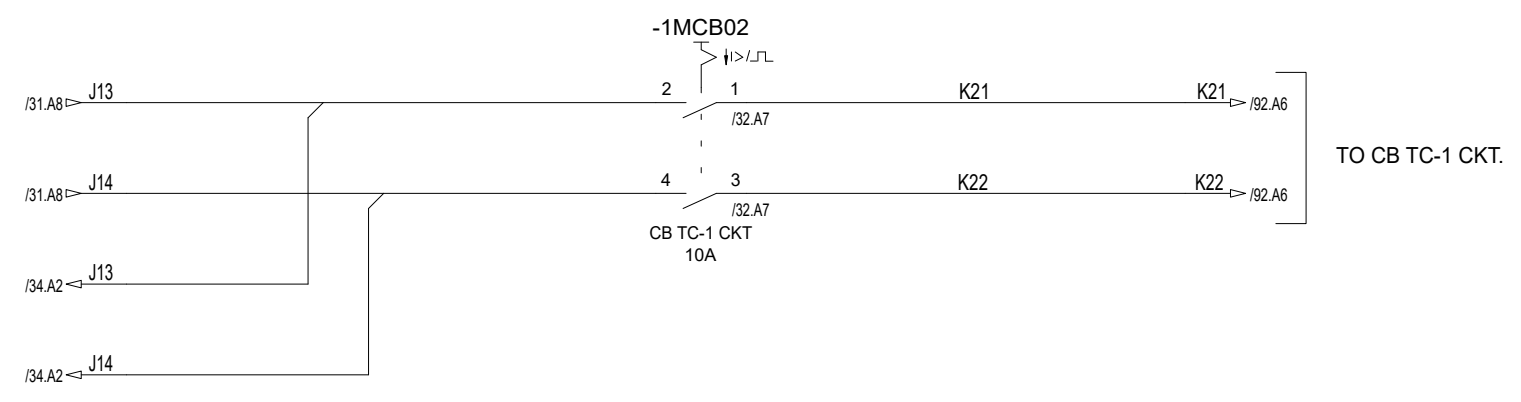
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APTRANSCO/VS/Vijayawada.**

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

**Chief Engineer/Projects
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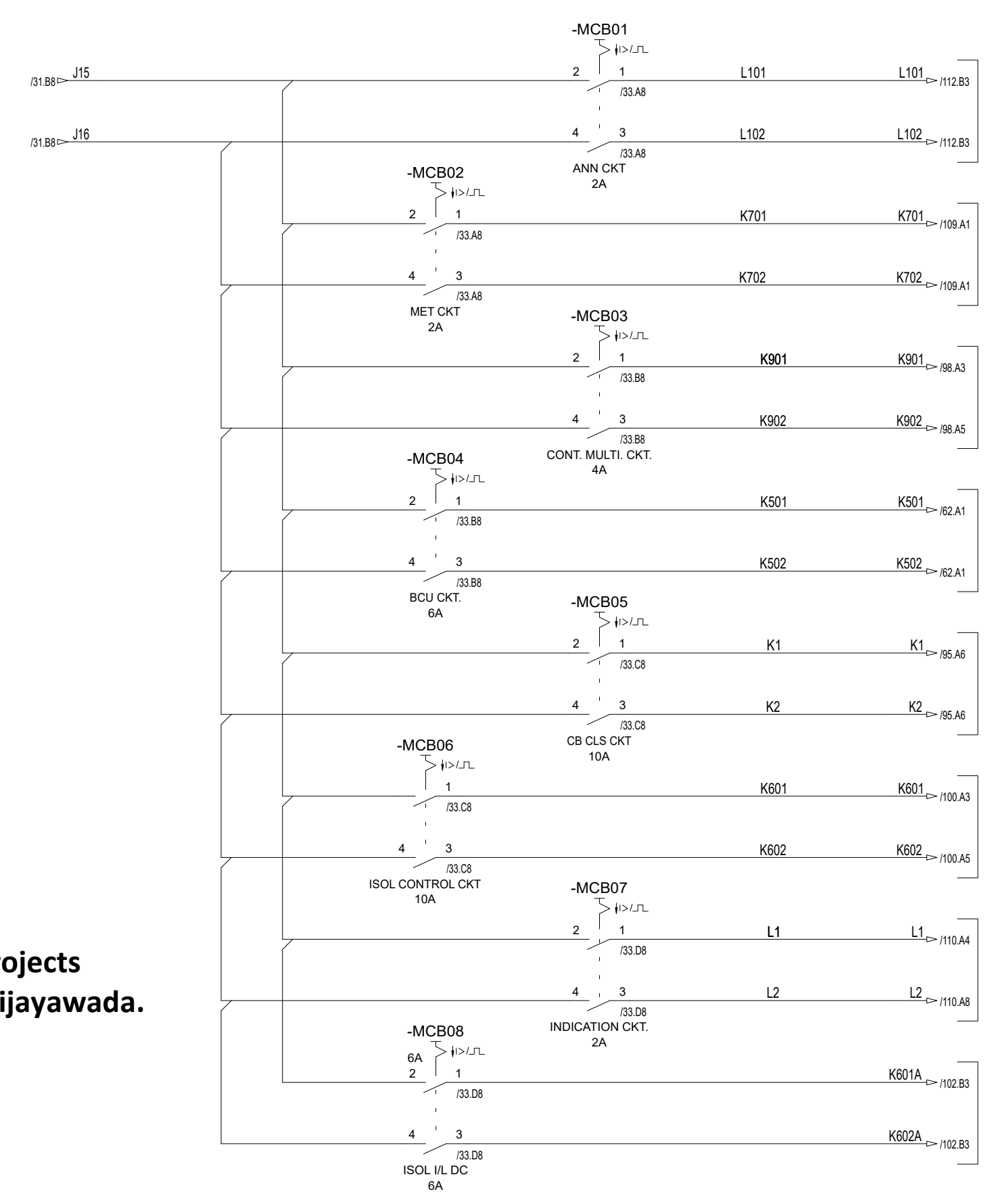
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		Project APTRANSCO		DC Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 32
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FROM C/O DC SUPPLY



TO ANNUCIATION CKT.

TO METERING CKT.

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

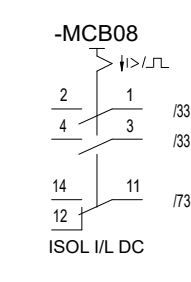
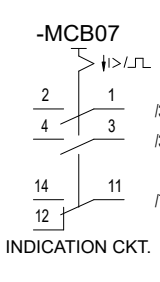
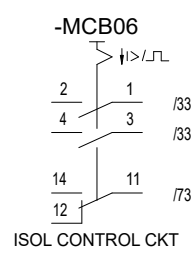
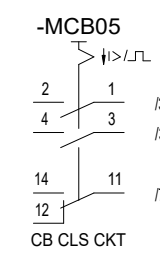
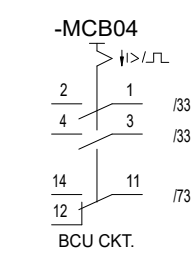
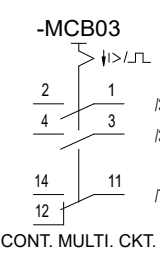
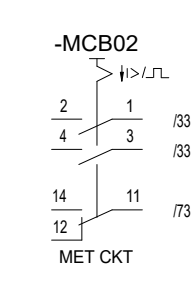
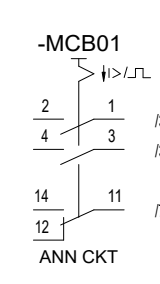
TO BCU CKT.

TO CB CLOSING CKT.

TO ISOLATOR
CONTROL CKT.

TO INDICATION CKT.

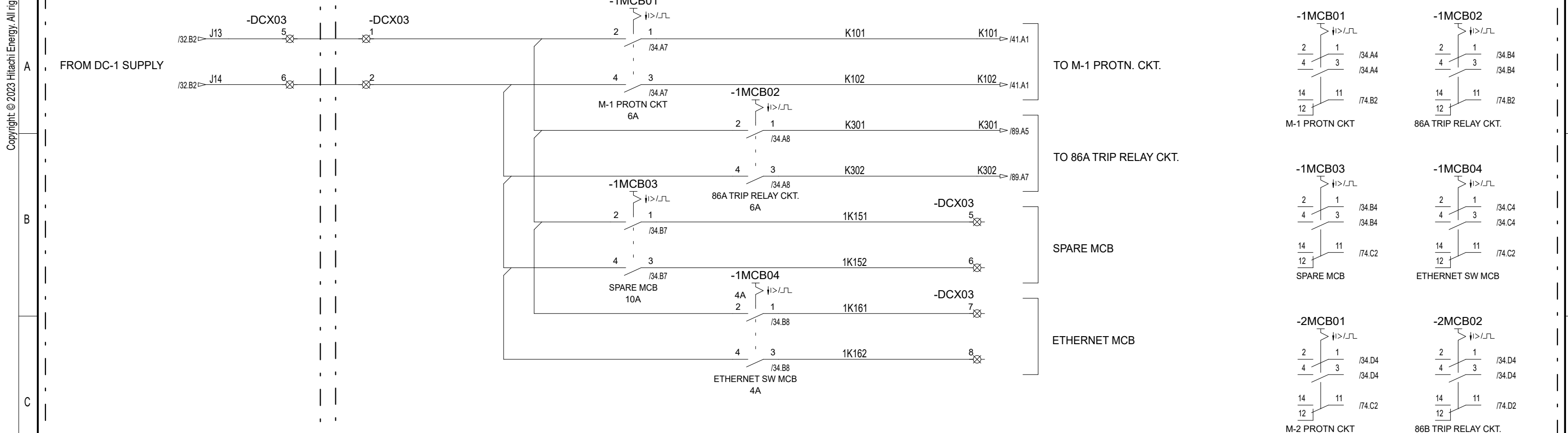
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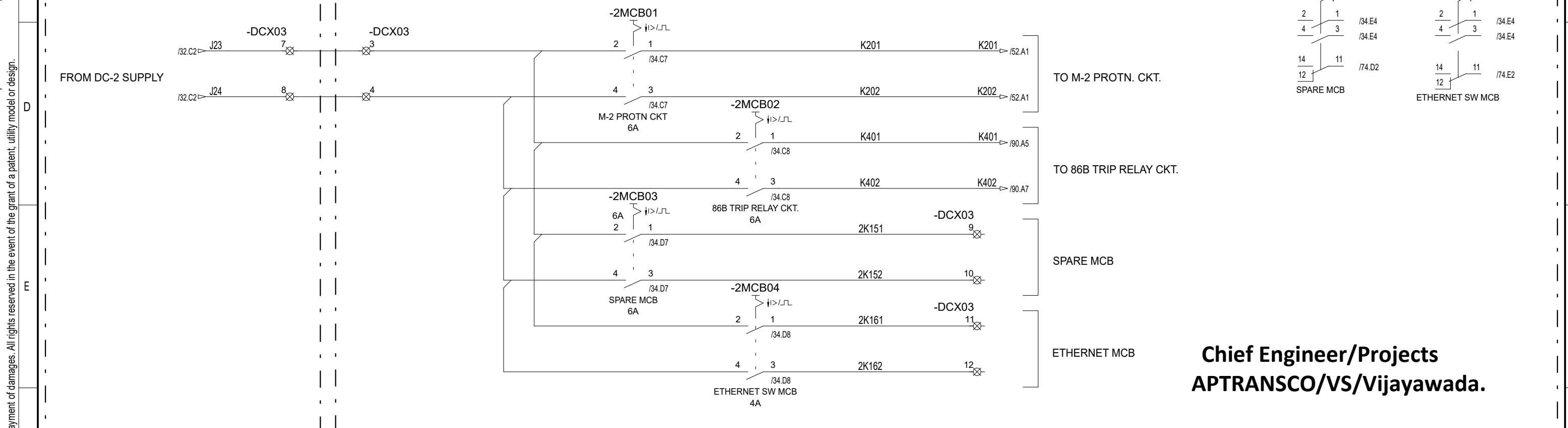
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APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		DC Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA		Sheet 33
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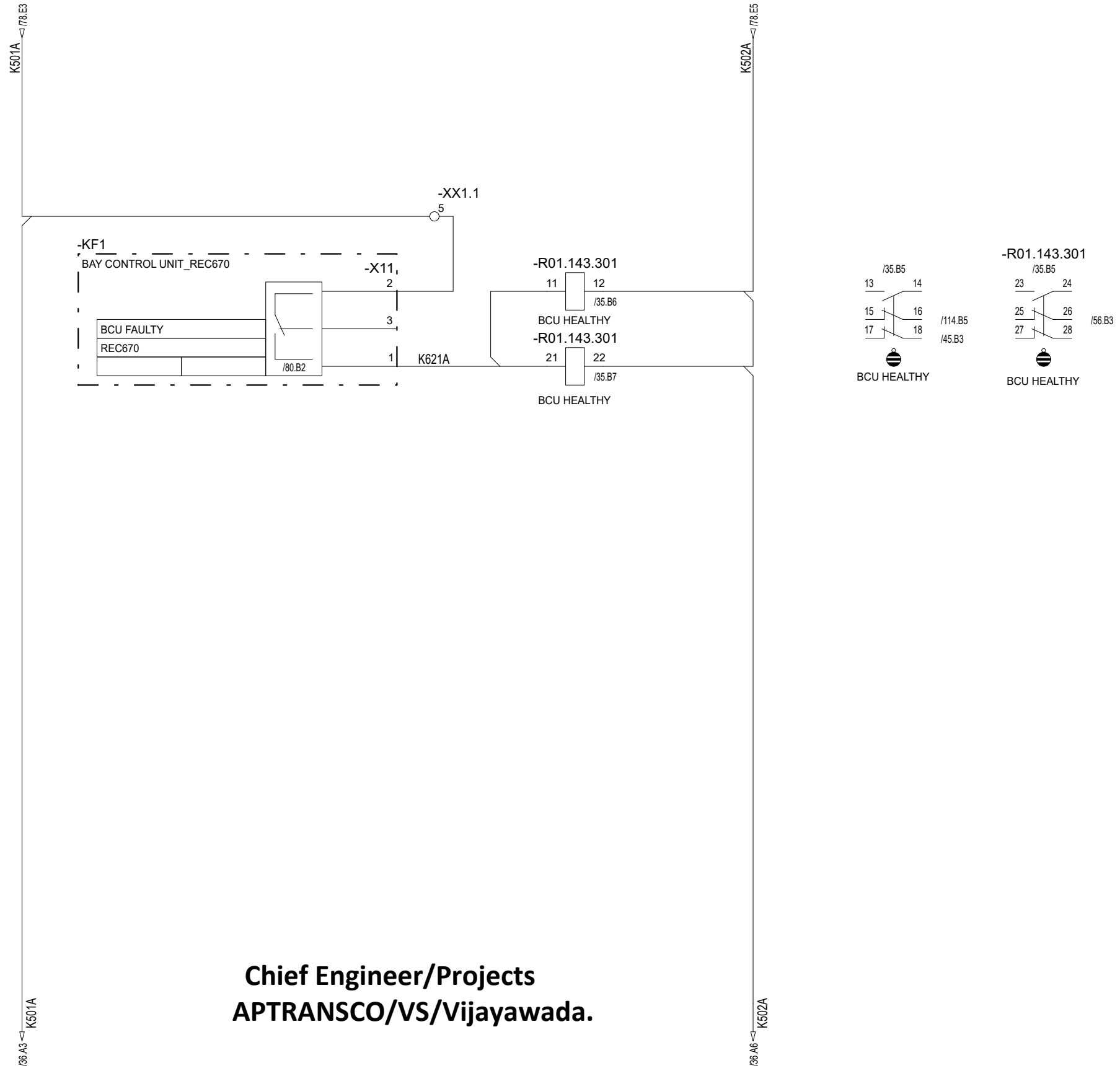
Drawing approval subject to valid vendor registration



**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		DC Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA	Sheet 34	n. sheet 35
1MYN691003-102(A3)REV01						

Suitable for conventional 220KV SS only

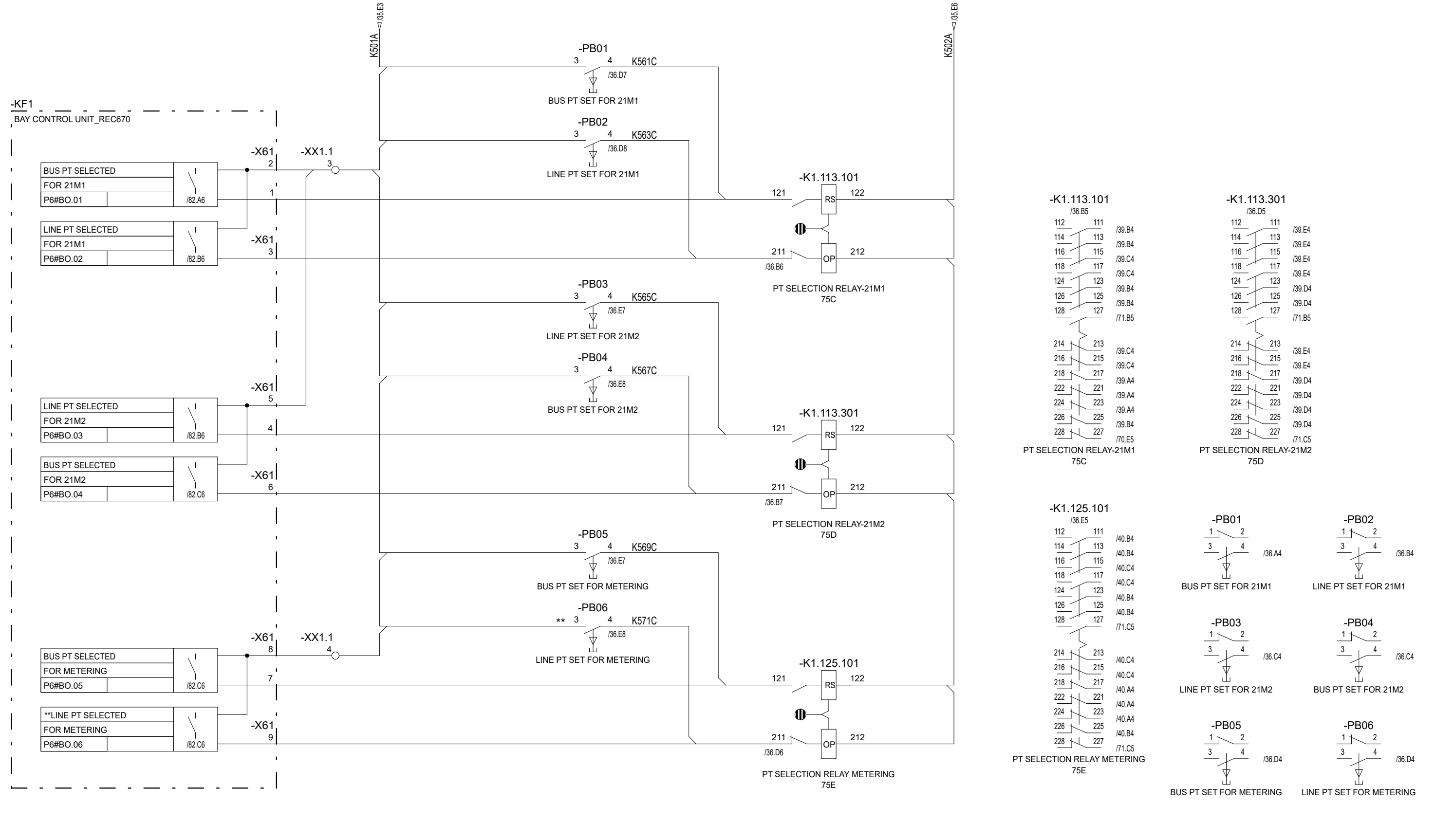


**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

Based on		Prepared	13.12.2023	VINOD G	Title	220kV LINE FEEDER	Doc. kind.	Circuit diagram	Ref.Des.	=2KR	
		Approved	20.12.2023	GOURISH HEGDE	Control & Relay Panel		DCC EFS				
		Project	APTRANSCO STANDARD DRAWING		BUS PT Selection Relay Circuit		Resp. dept.	PG-GAS	Rev. ind.	Language	en
					HITACHI Hitachi Energy India Limited		Doc. no.		1MNS500925-CBAA		
Rev.	Revision note	Date	Name						Sheet	35	
1MYN691003-102(A3)REV01								n. sheet	36		

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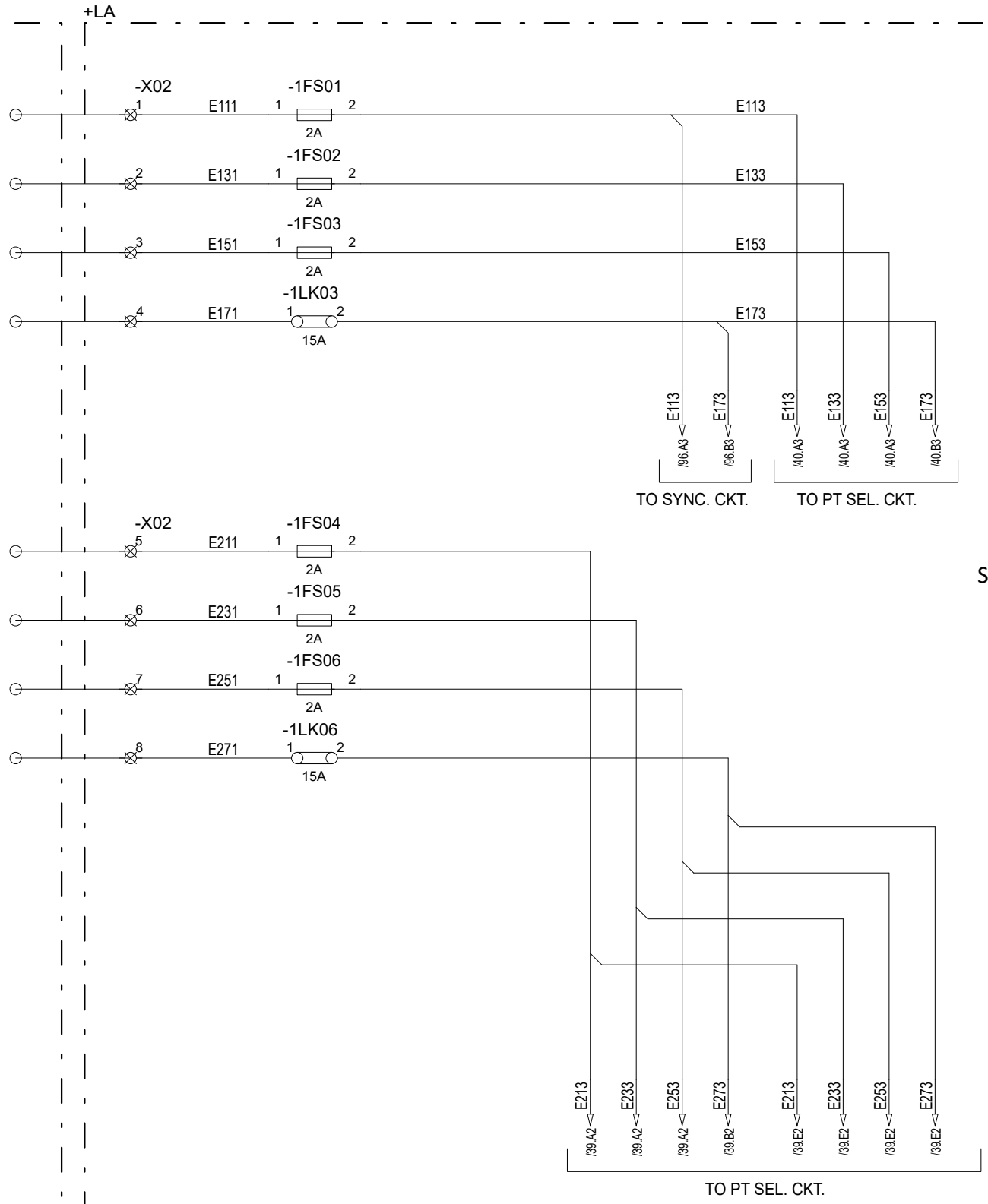
** PRIORITY SHALL BE GIVEN FOR LINE PT. BUS PT SHALL BE SET ONLY IF LINE PT IS UNHEALTHY.

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		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-CBAA	Sheet 36
1MYN691003-102(A3)REV01						n. sheet 37

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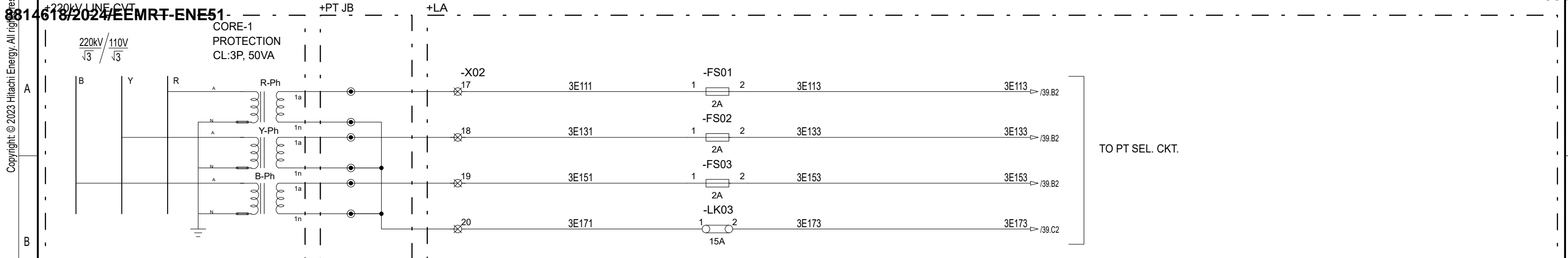


Suitable for conventional 220KV SS only

Chief Engineer/Projects
APTRANSCO/VIS/Vijayawada.

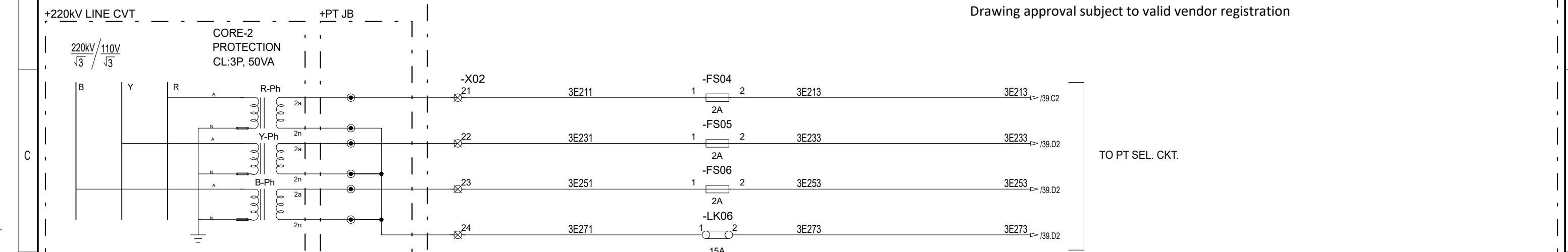
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		Project APTRANSCO		BUS PT Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 37
1MYN691003-102(A3)REV01						n. sheet 38

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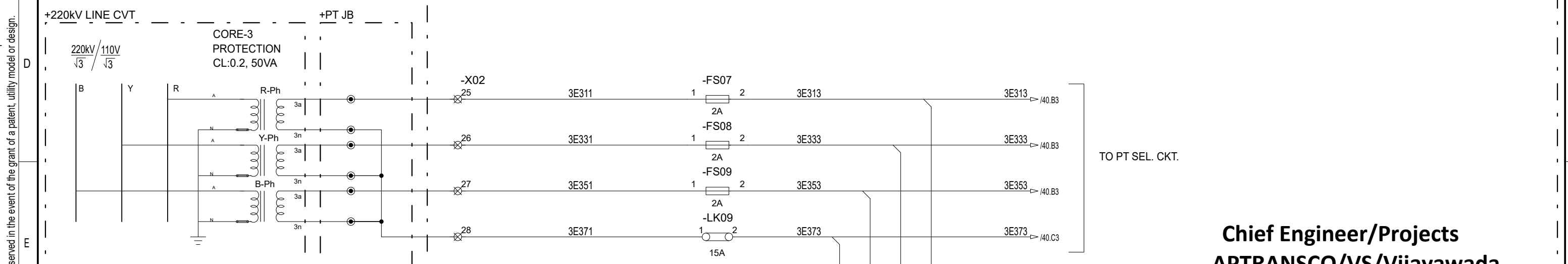


TO PT SEL. CKT.

Drawing approval subject to valid vendor registration



TO PT SEL. CKT.



TO PT SEL. CKT.

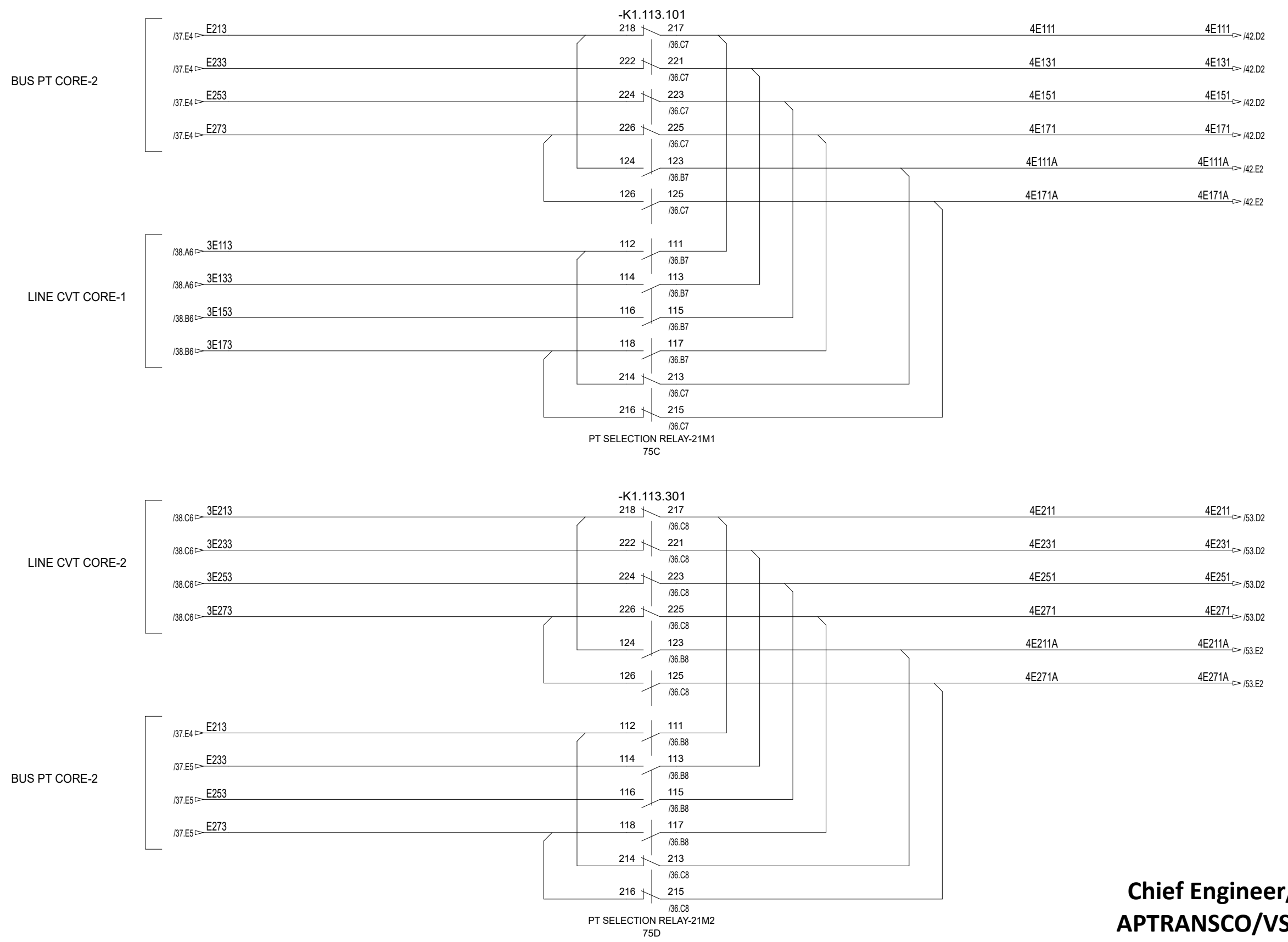
TO IND. CKT.

**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		Line CVT Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 38
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BUS PT / LINE CVT FOR M-1 PROTN. RELAY.

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

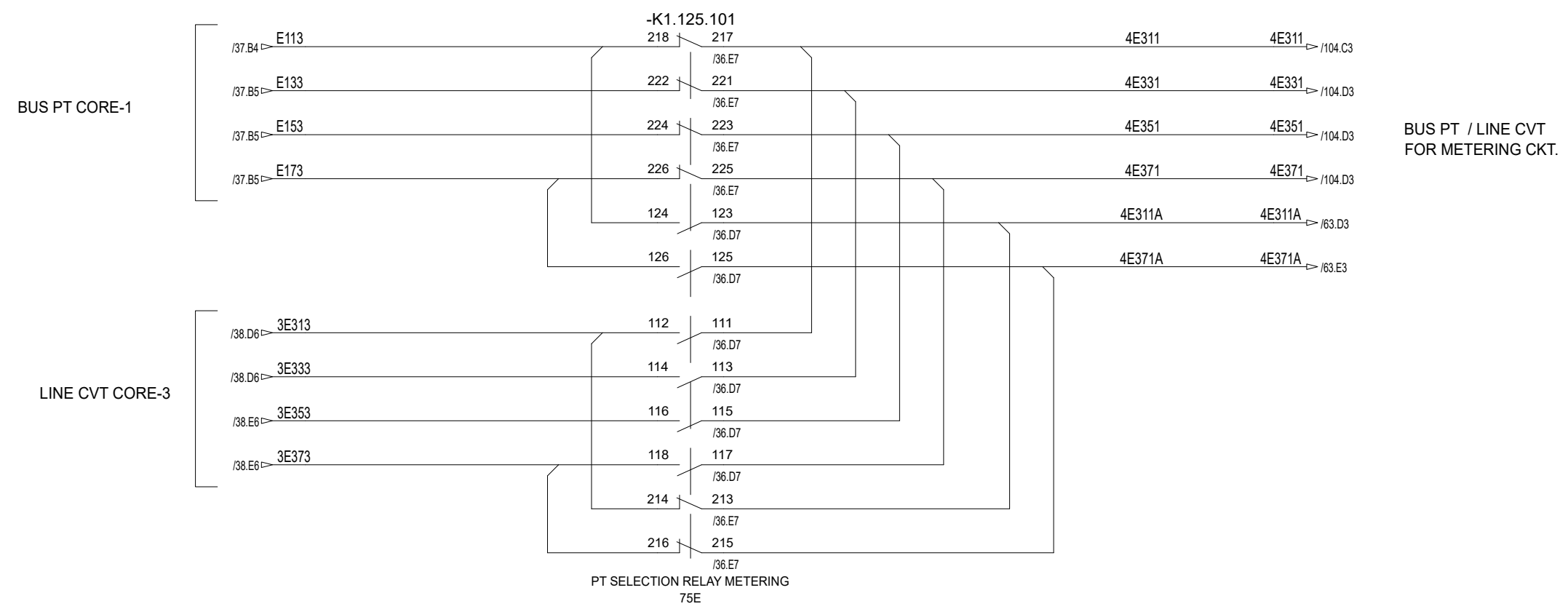
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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 / 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-CBAA	Sheet 39
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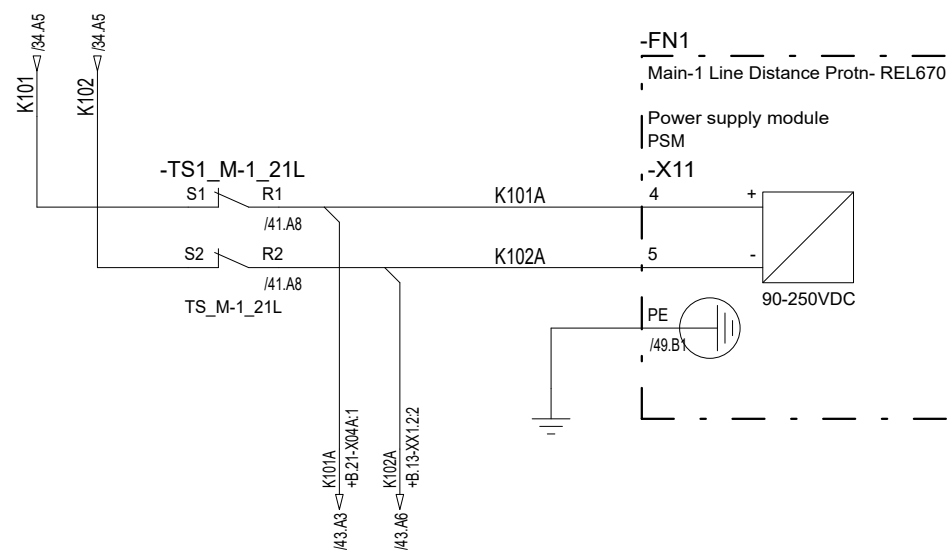
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**Chief Engineer/Projects
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		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-CBAA		Sheet 40
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LIST OF FUNCTIONS AVAILABLE IN RELAY

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

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

+D.04 -FN1
 Indication HMI LED

RED INDICATION (GR-1)

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

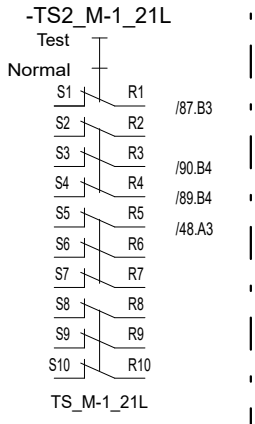
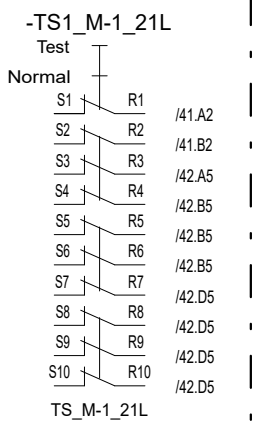
+D.04 -FN1
 Indication HMI LED

YELLOW INDICATION (GR-2)

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

+D.04 -FN1
 Indication HMI LED

GREEN INDICATION (GR-3)



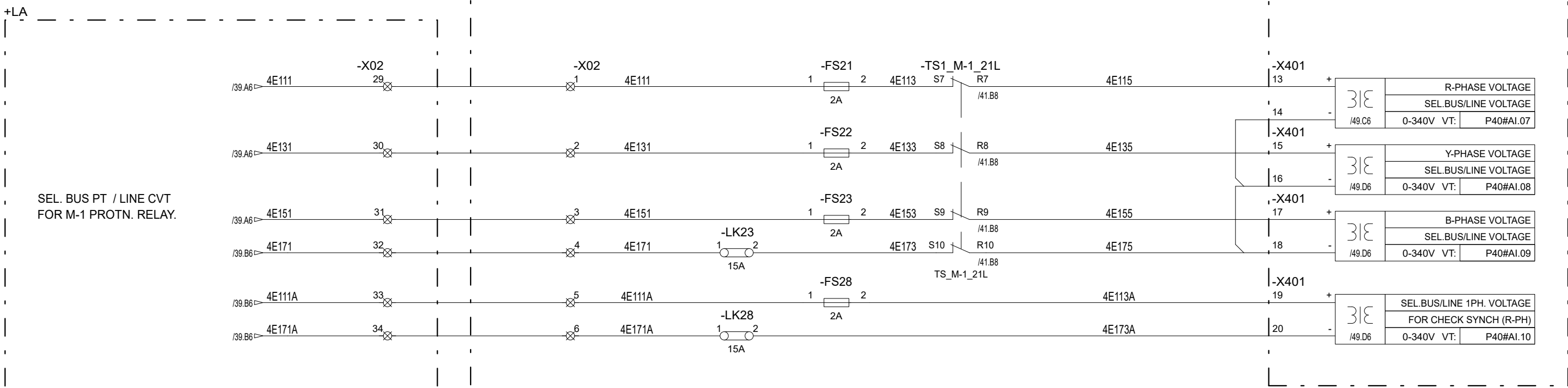
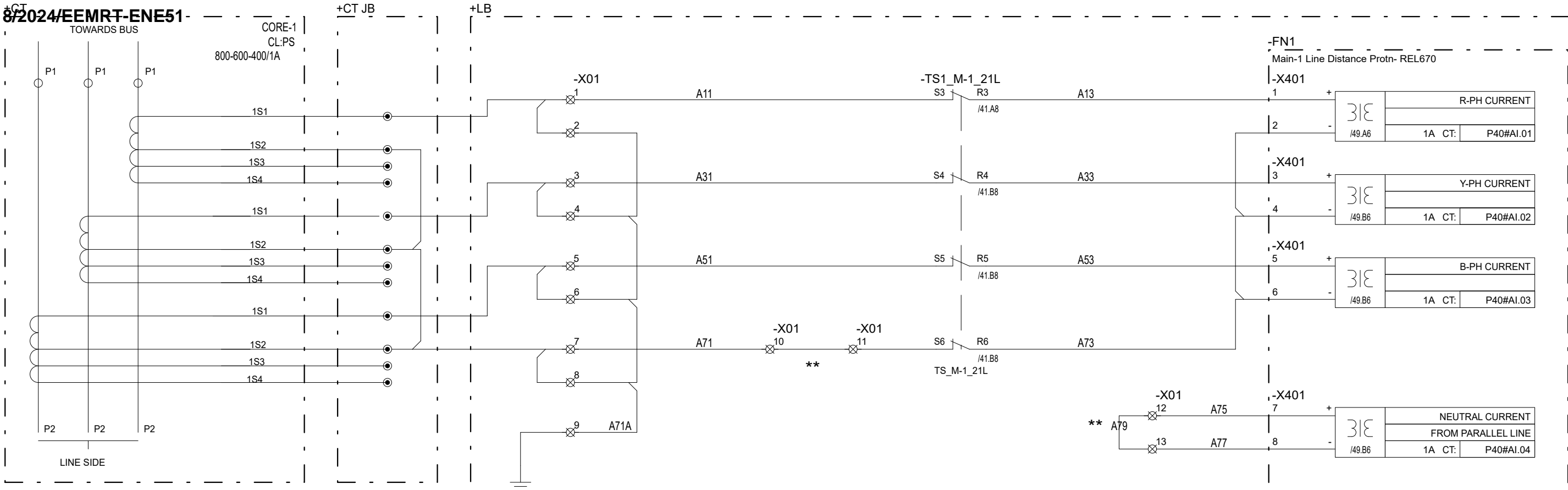
List of Functional Key Indication

- 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-CBAA		Sheet 41
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NOTE:- CT DETAILS TO BE CONFIRMED BY THE CUSTOMER

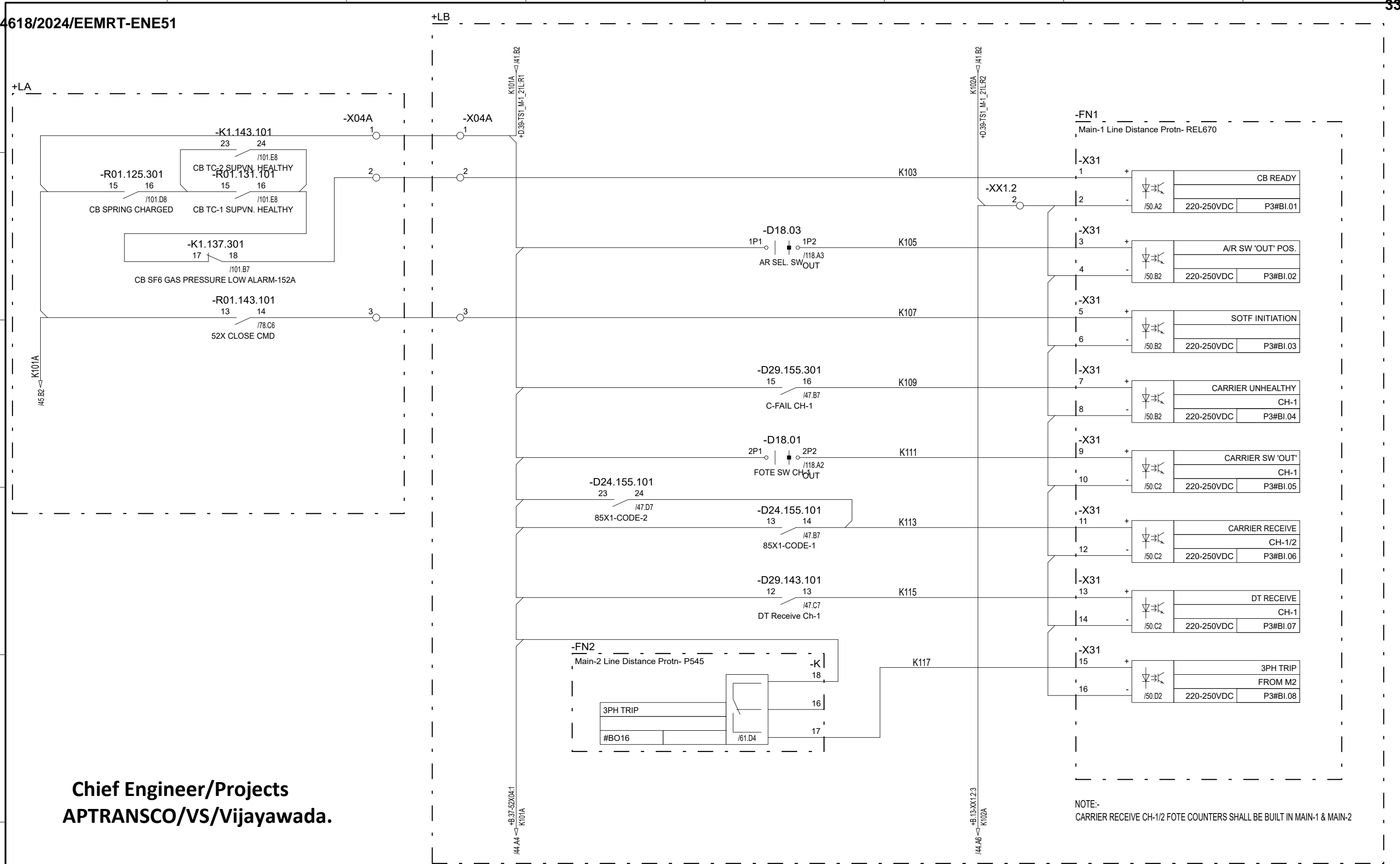
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

**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	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 42
1MYN691003-102(A3)REV01						n. sheet 43

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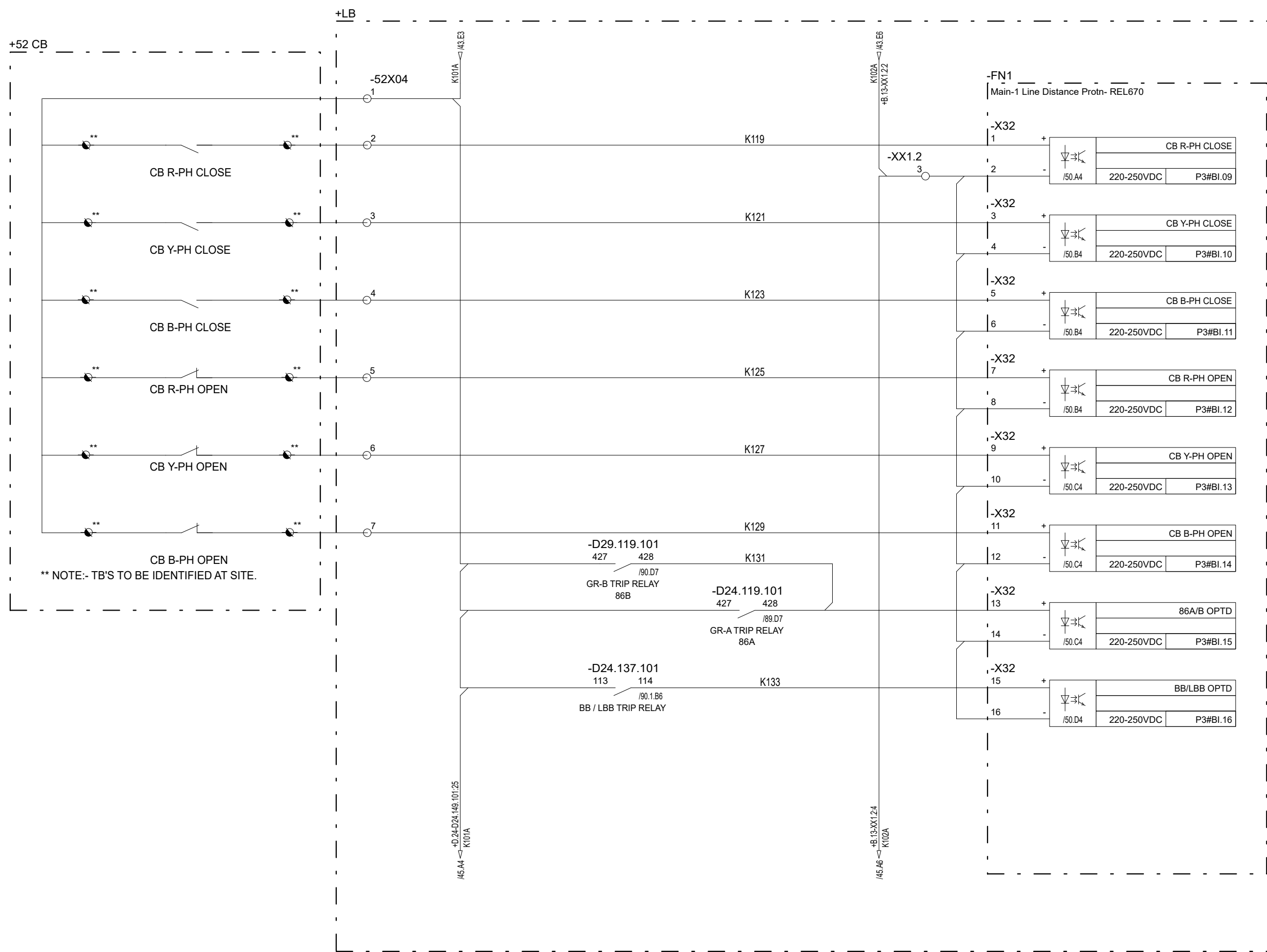


Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

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 Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 43
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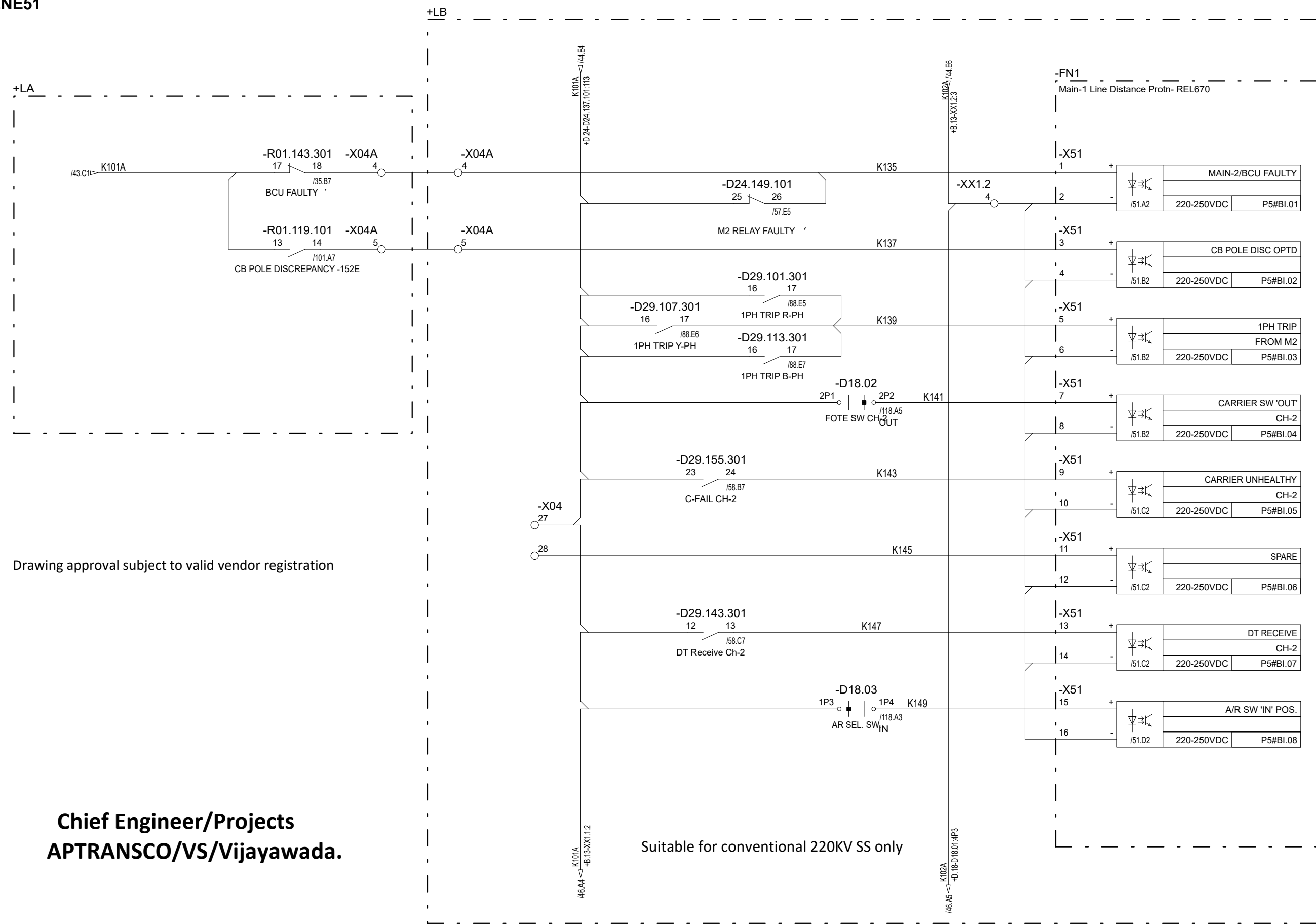


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Binary inputs-M1 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision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

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Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

Suitable for conventional 220KV SS only

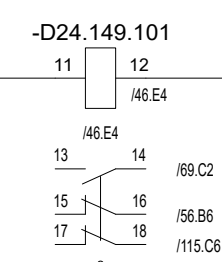
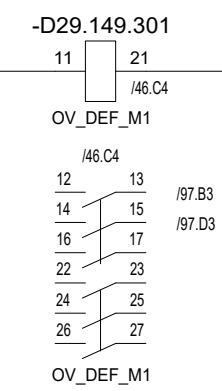
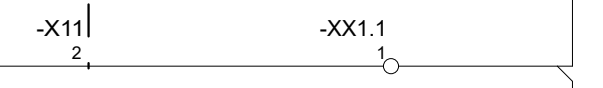
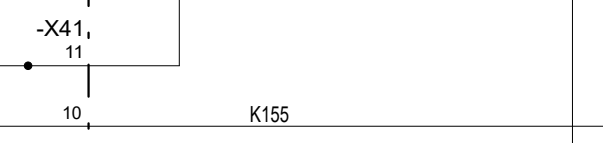
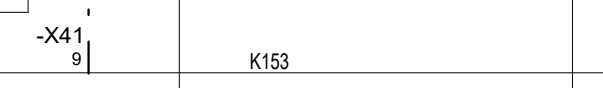
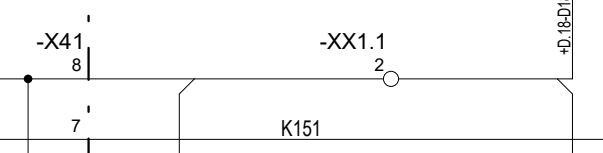
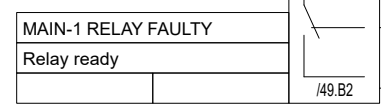
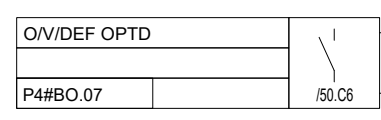
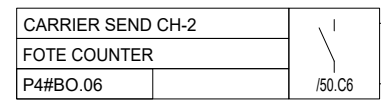
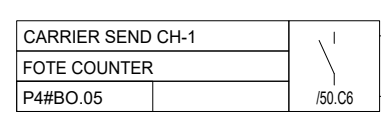
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		Approved 20.12.2023		GOURISH HEGDE		Control & Relay Panel		DCC EFS			
		Project APTRANSCO				Binary inputs-M1 Relay		Resp. dept. PG-GAS		Rev. ind.	
		STANDARD DRAWING				Hitachi Energy India Limited		Language en		Sheet 45	
Rev.	Revision note	Date	Name			HITACHI		Doc. no. 1MNS500925-CBAA		n. sheet 46	
1MYN691003-102(A3)REV01											

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-FN1
Main-1 Line Distance Protn- REL670

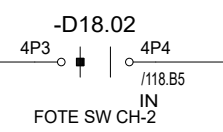
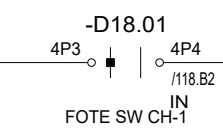


M1 RELAY HEALTHY

+B.13-XX1.2.4 K102A

+D.24-D24.155.101:12 K102A

-FOTEX04 1



+FOTE CH-1

+FOTE CH-2

CS-COMMAND

CS-COMMAND

NOTE : TBS SHOULD BE IDENTIFIED AT SITE

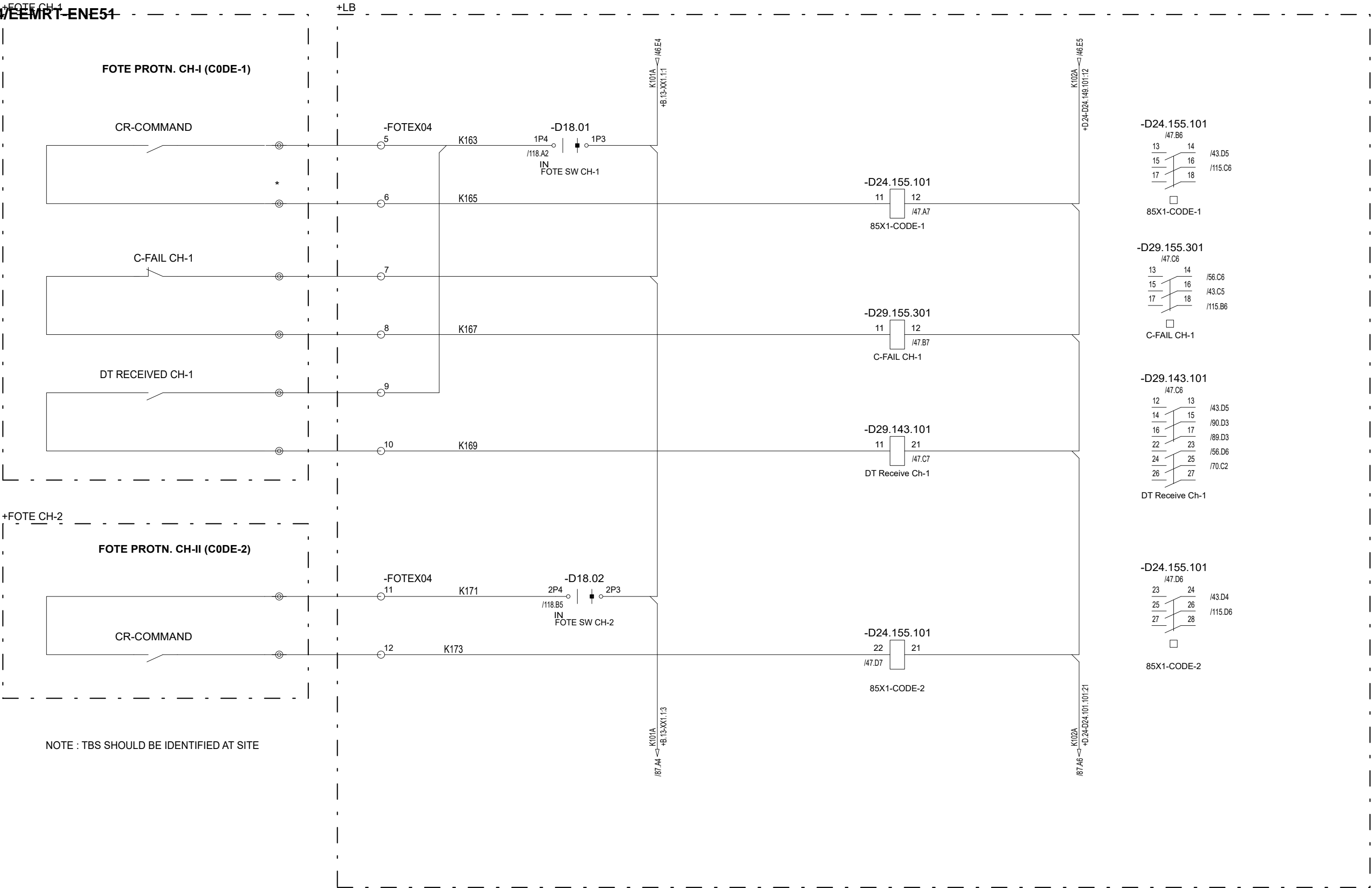
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

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-CBAA	Sheet 46
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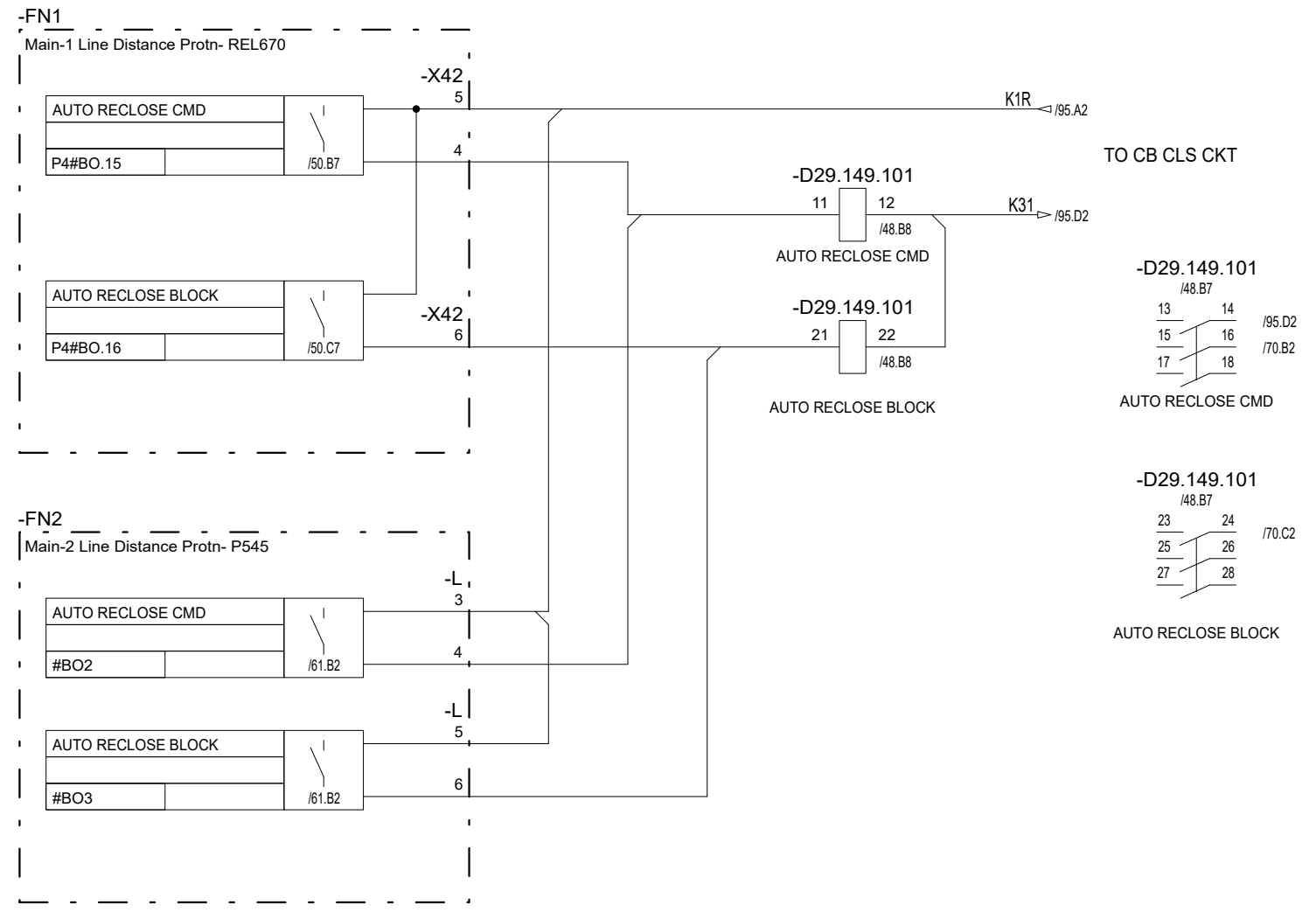
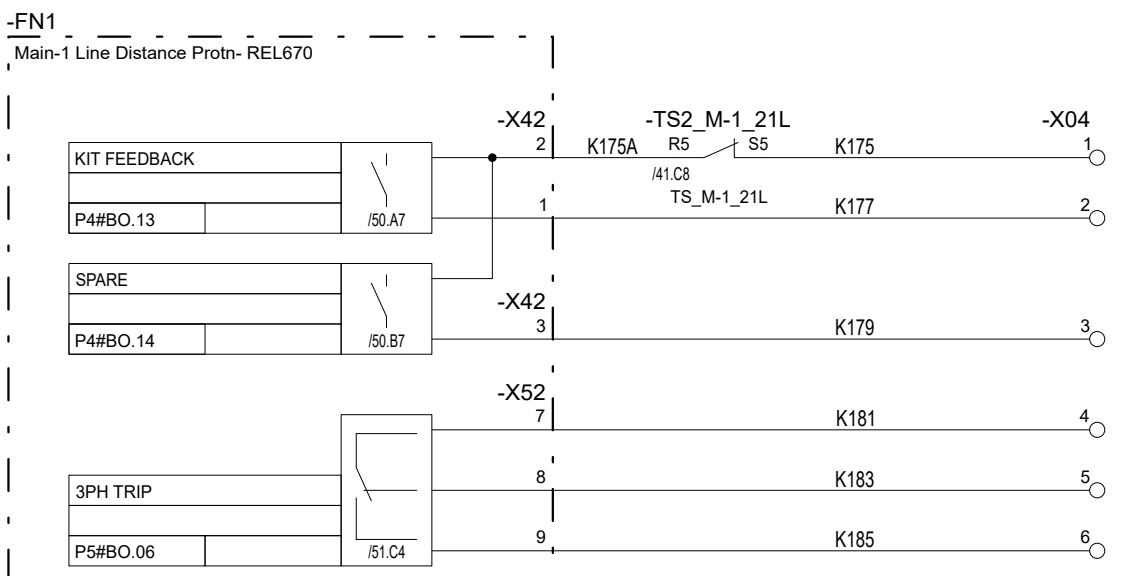


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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Carrier Received Signal to M1 Relay	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA		Sheet 47
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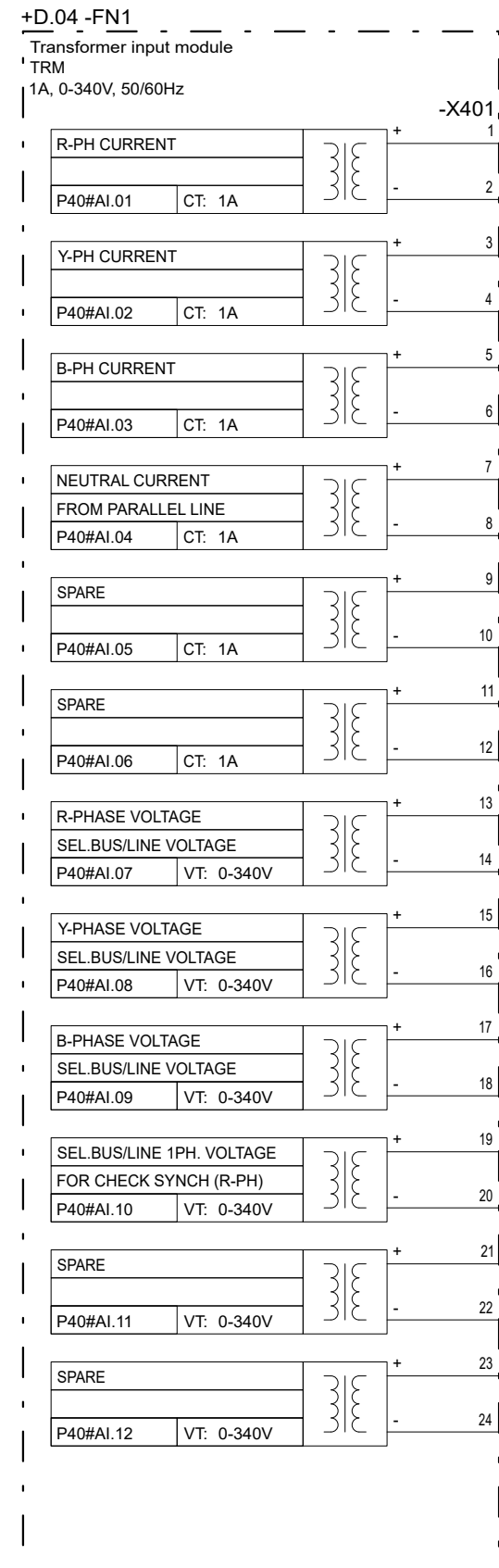
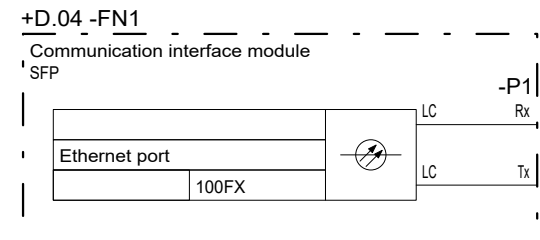
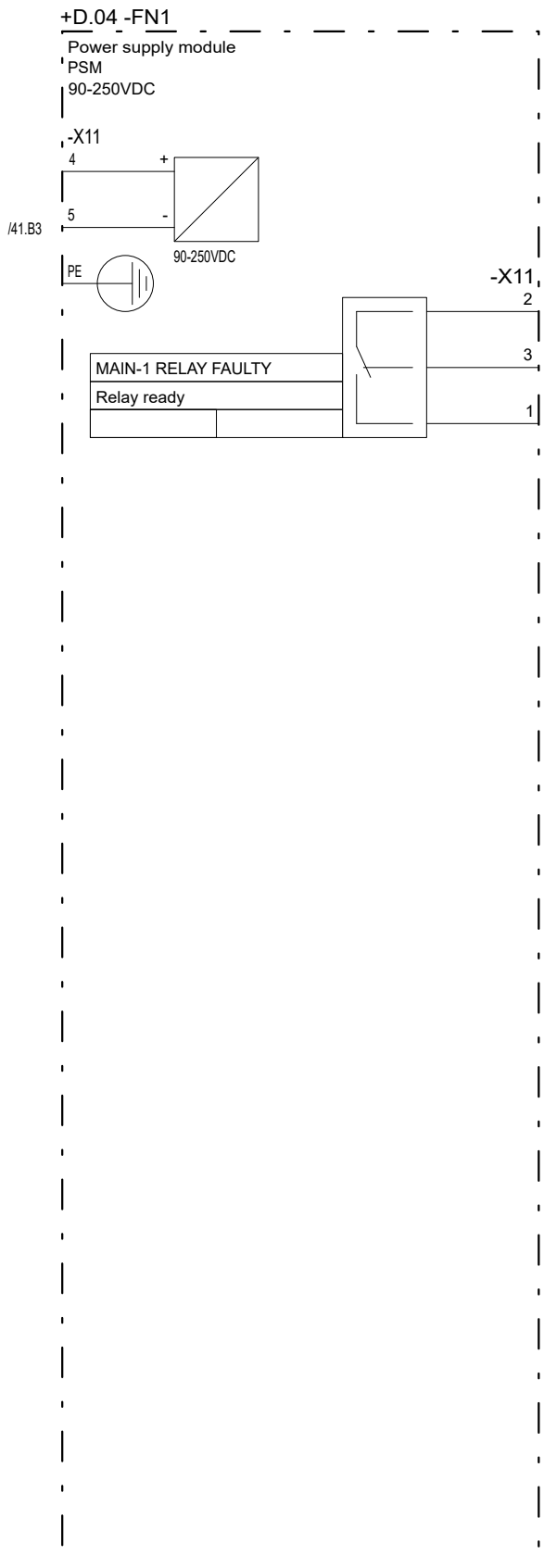
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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		Binary outputs-M1 Relay	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBAA	
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						n. sheet 49
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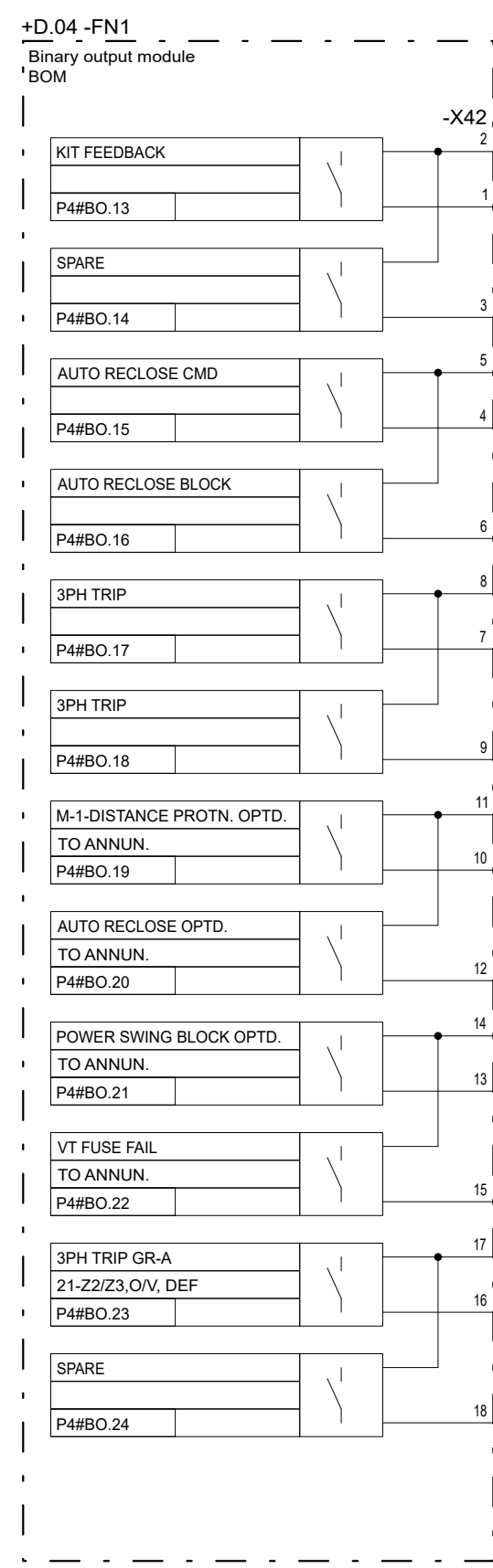
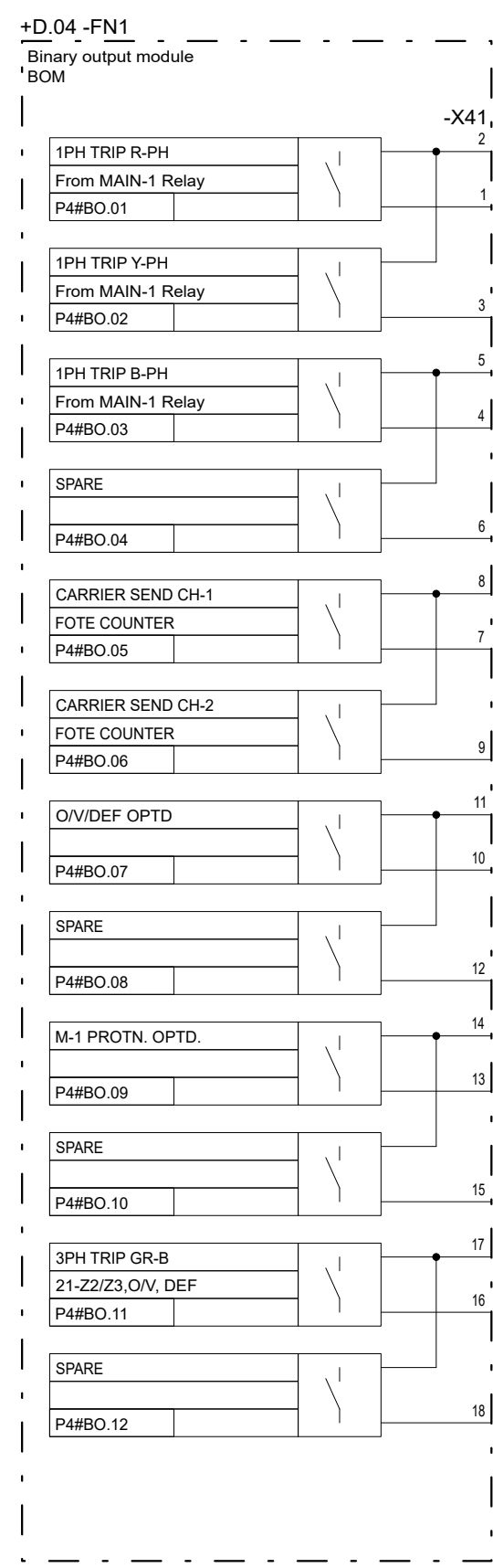
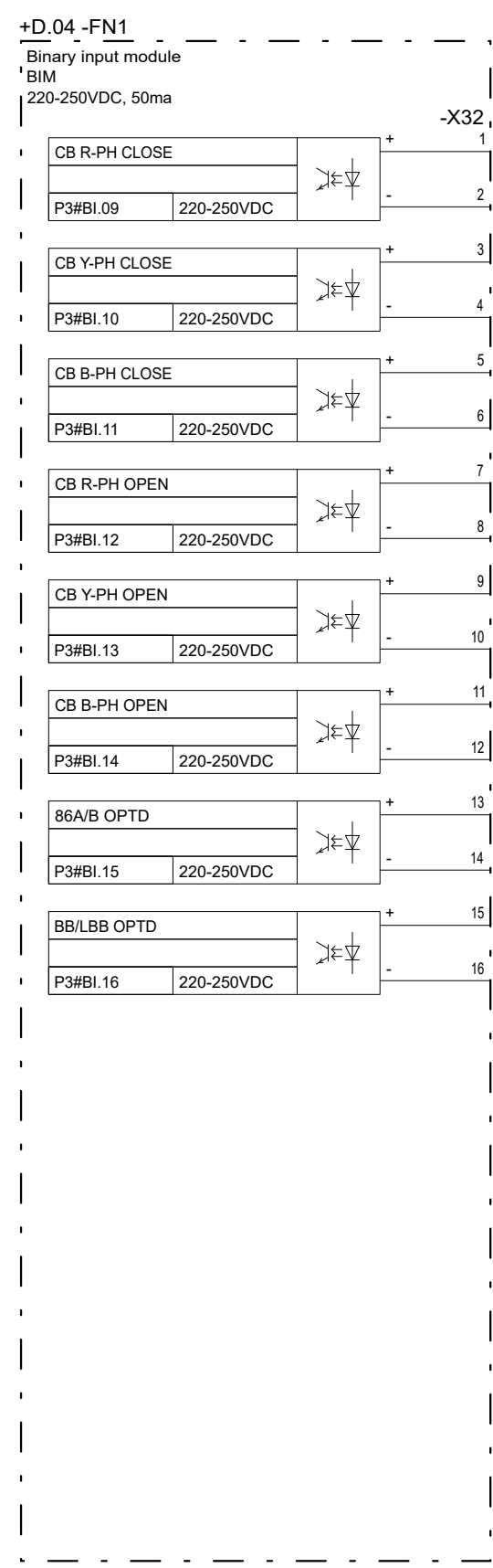
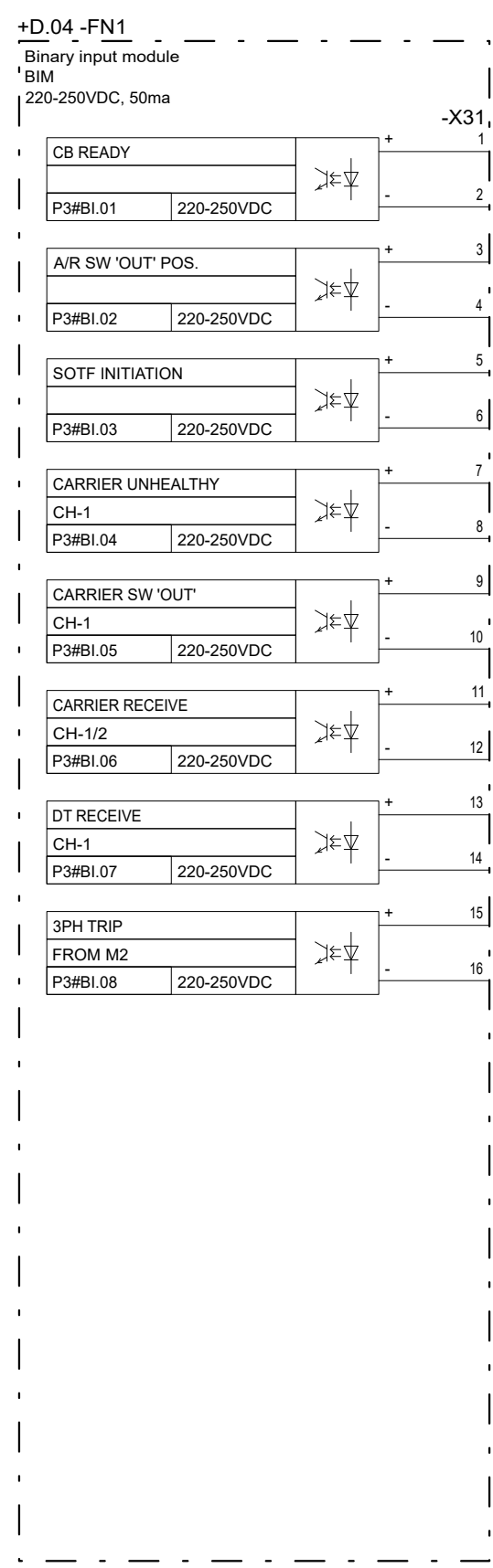
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-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-CBAA	Sheet 49
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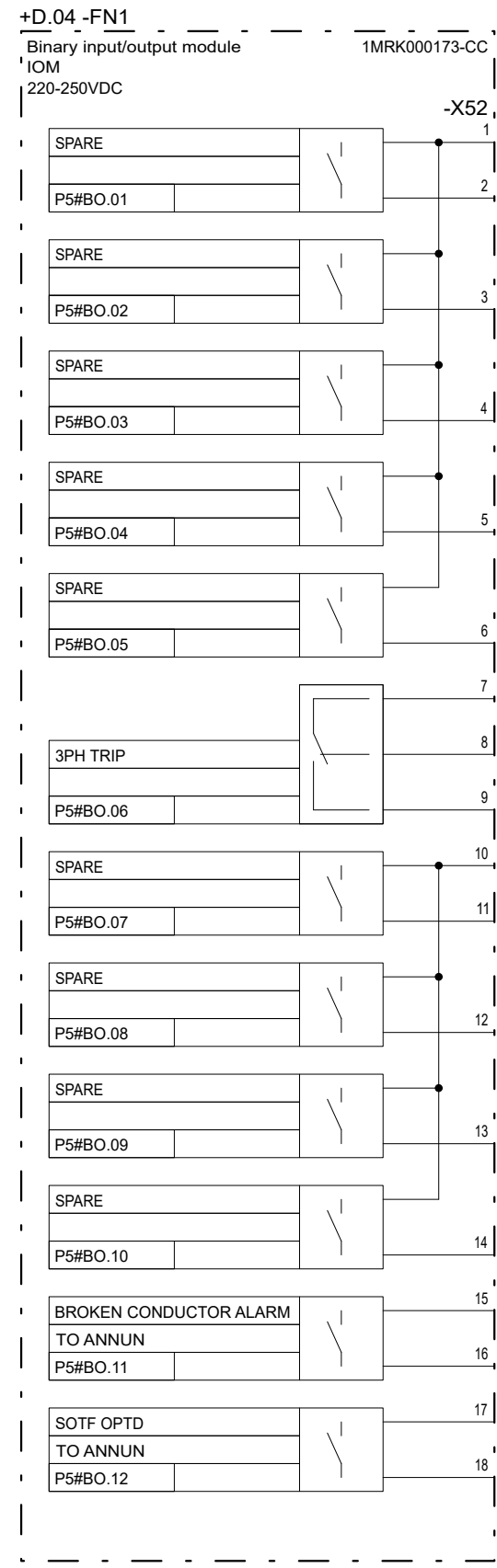
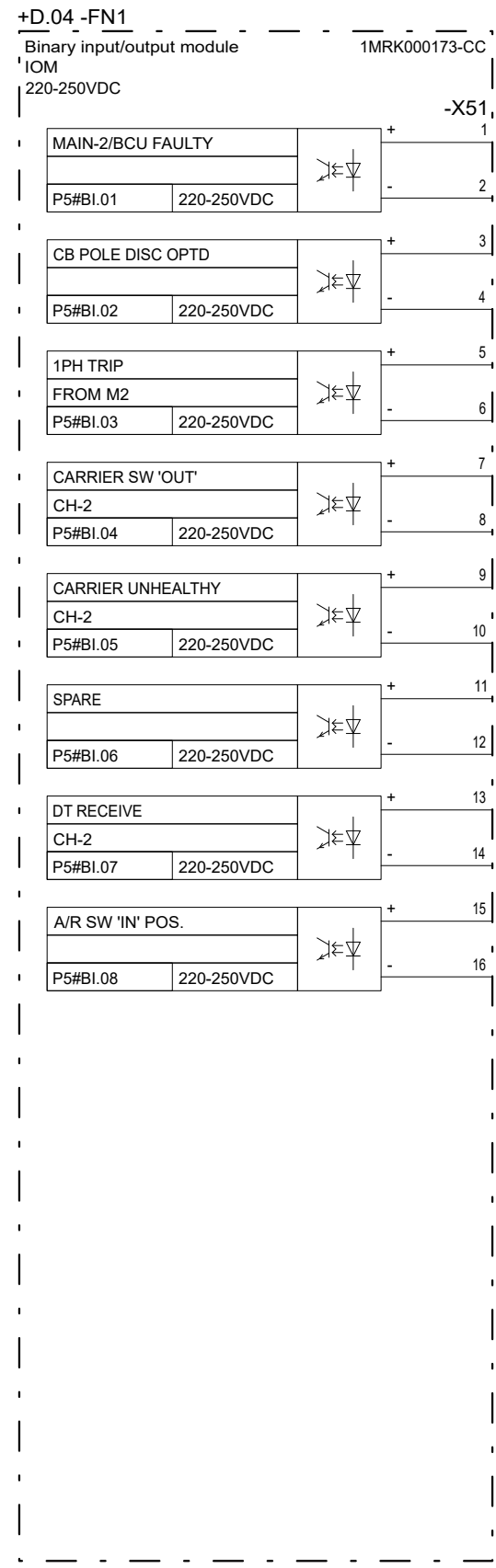


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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-1 Protn. Relay-Master Blocks	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA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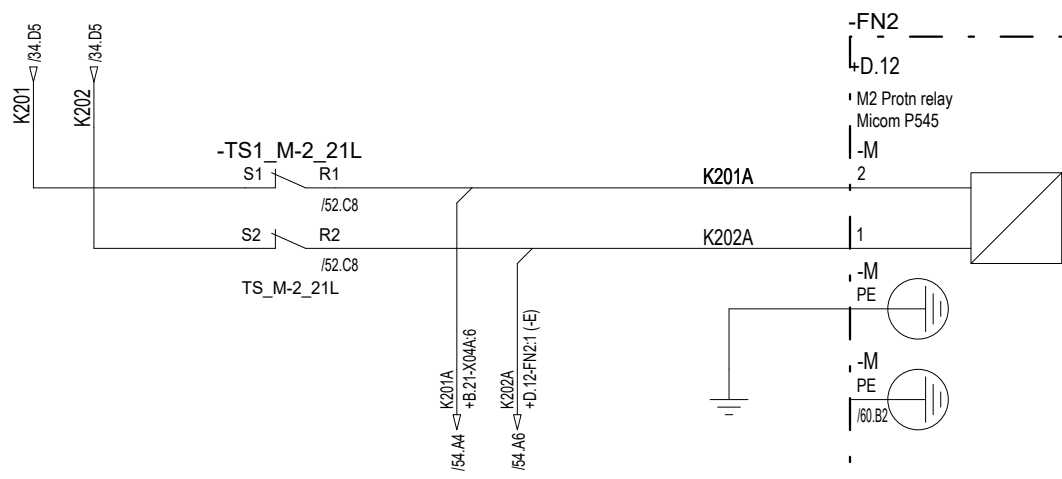
**Chief Engineer/Projects
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Main-1 Protn. Relay-Master Blocks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

NOTE:- BLOCK DIFFERENTIAL FUNCTION

+D.15 -D15.01
LED indication

List of LED indication (RED)

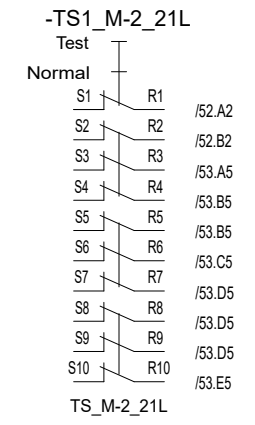
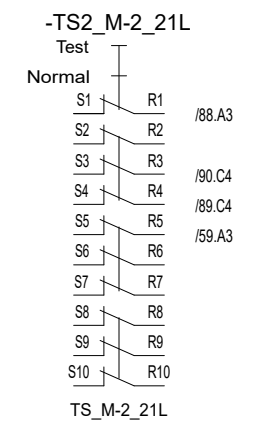
1. R-PH FAULT
2. Y-PH FAULT
3. B-PH FAULT
4. OC/DEF TRIP
5. ZONE-1 TRIP
6. ZONE-2 TRIP
7. ZONE-3 TRIP
8. ZONE-4 TRIP

List of LED indication (YELLOW)

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

List of Functional Key Indication

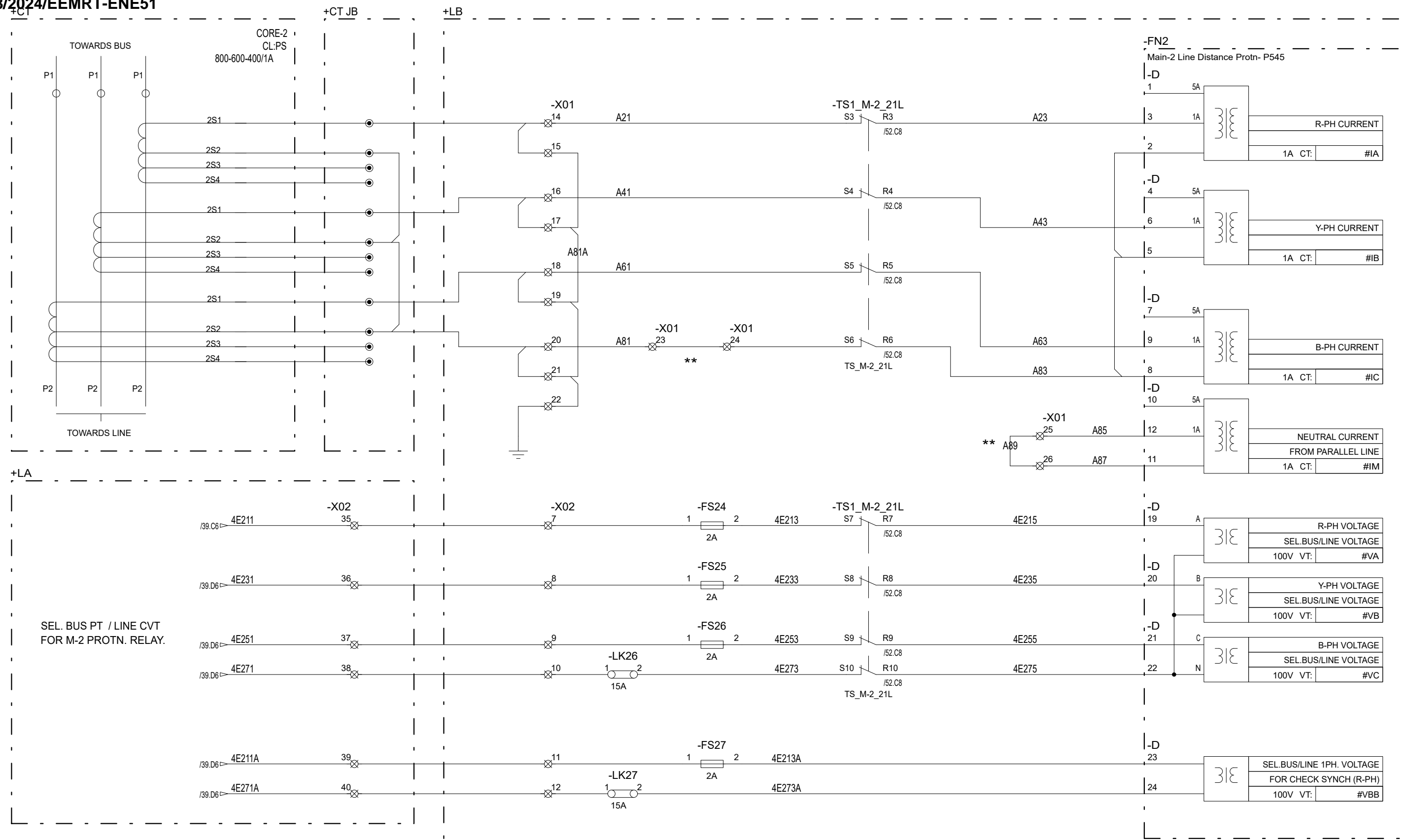
- FK1. ZONE-5 TRIP (REV)
- FK2. Z-COM TRIP
- FK3. SOTF TRIP
- FK4. BRC ALARM
- FK5. PSB ALARM
- FK6. VTFF ALARM
- FK7. AR BLOCK
- FK8. AR CLOSE
- FK9. OC/EF TRIP
- FK10. LED RESET



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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		Power supply 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-CBAA	Sheet 52
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NOTE:- CT DETAILS TO BE CONFIRMED BY THE CUSTOMER

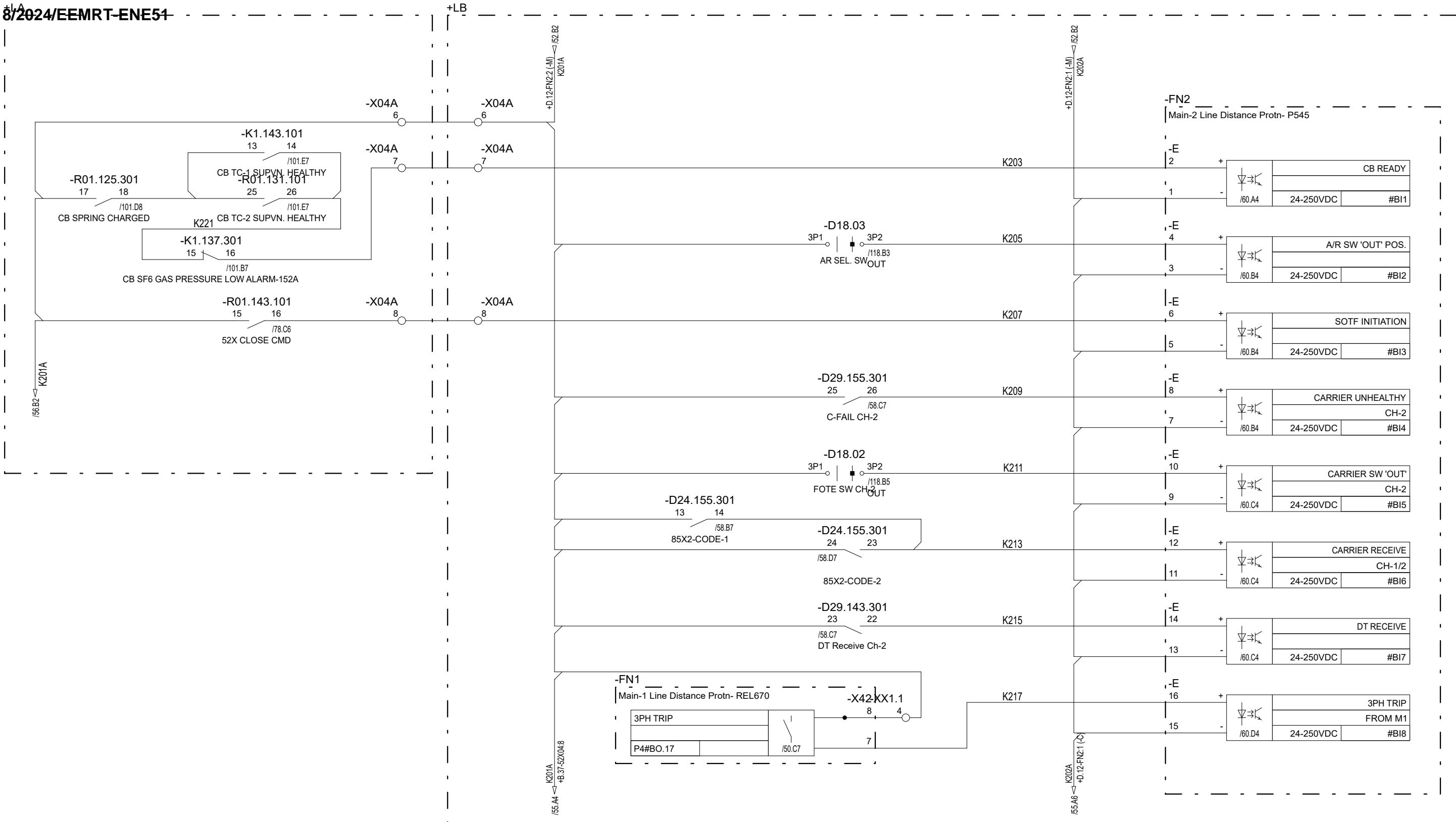
**SHORTING TO BE REMOVED WHEN DOUBLE CKT IS COMMISSIONED
(TO ENABLE MUTUAL COMPENSATION FOR FAULT LOCATOR)

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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		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-CBAA	Sheet 53
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NOTE:- CARRIER RECEIVE CH-1/2 FOTE COUNTERS SHALL BE BUILT IN MAIN-1 & MAIN-2

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		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-CBAA	Sheet 54
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A

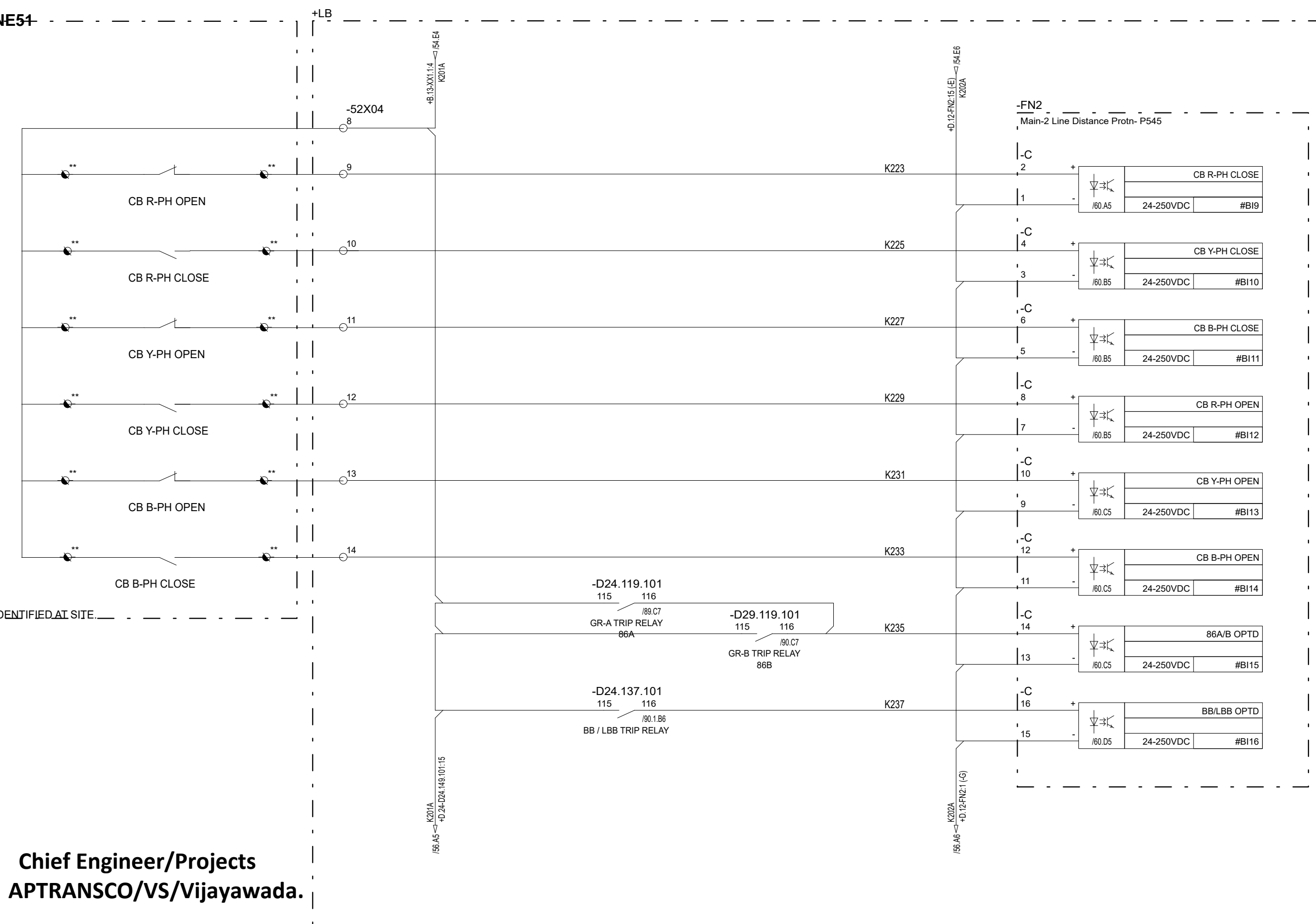
B

C

D

F

F



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-CBAA	Sheet 55
1MYN691003-102(A3)REV01						n. sheet 56

A

B

C

D

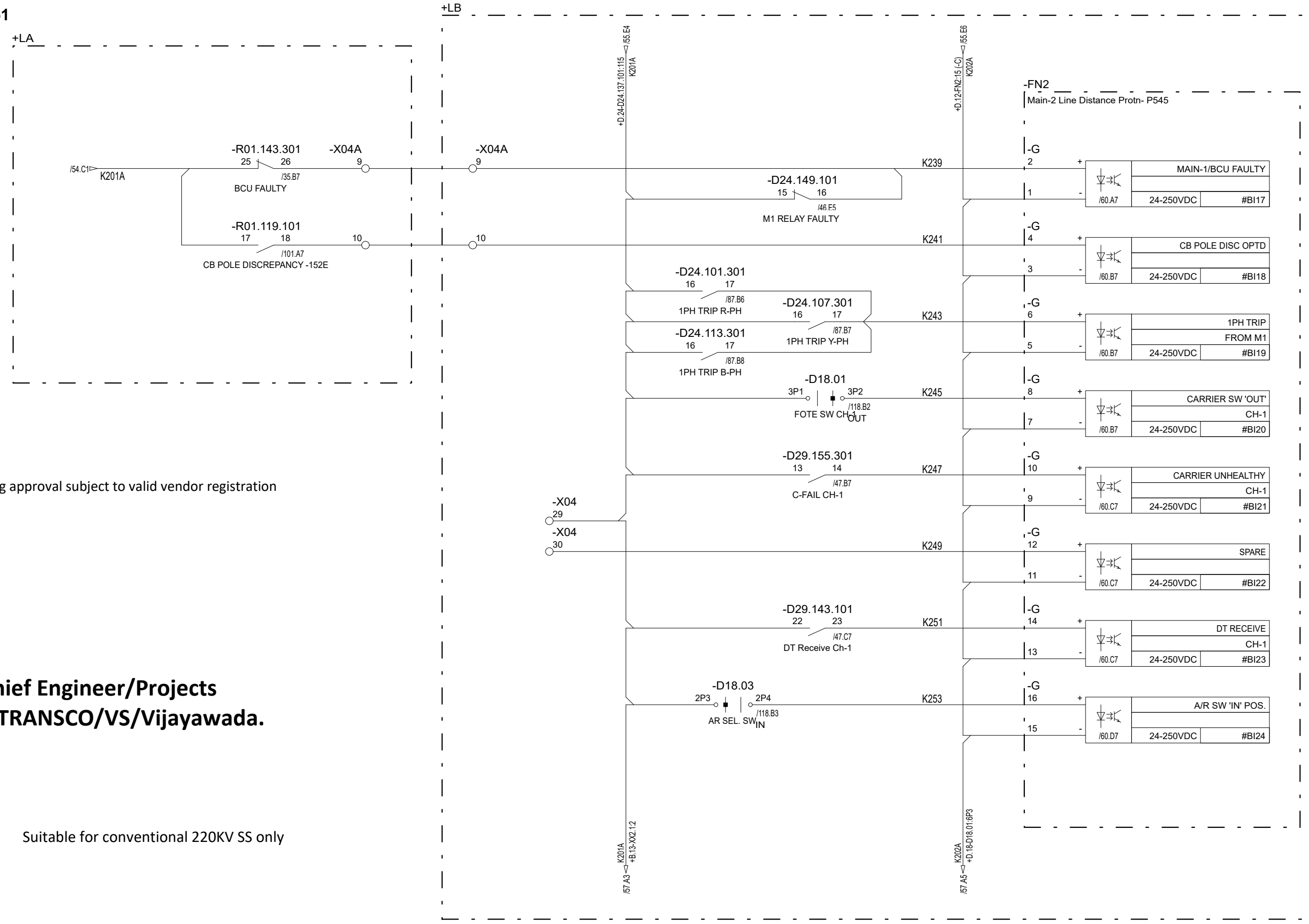
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F

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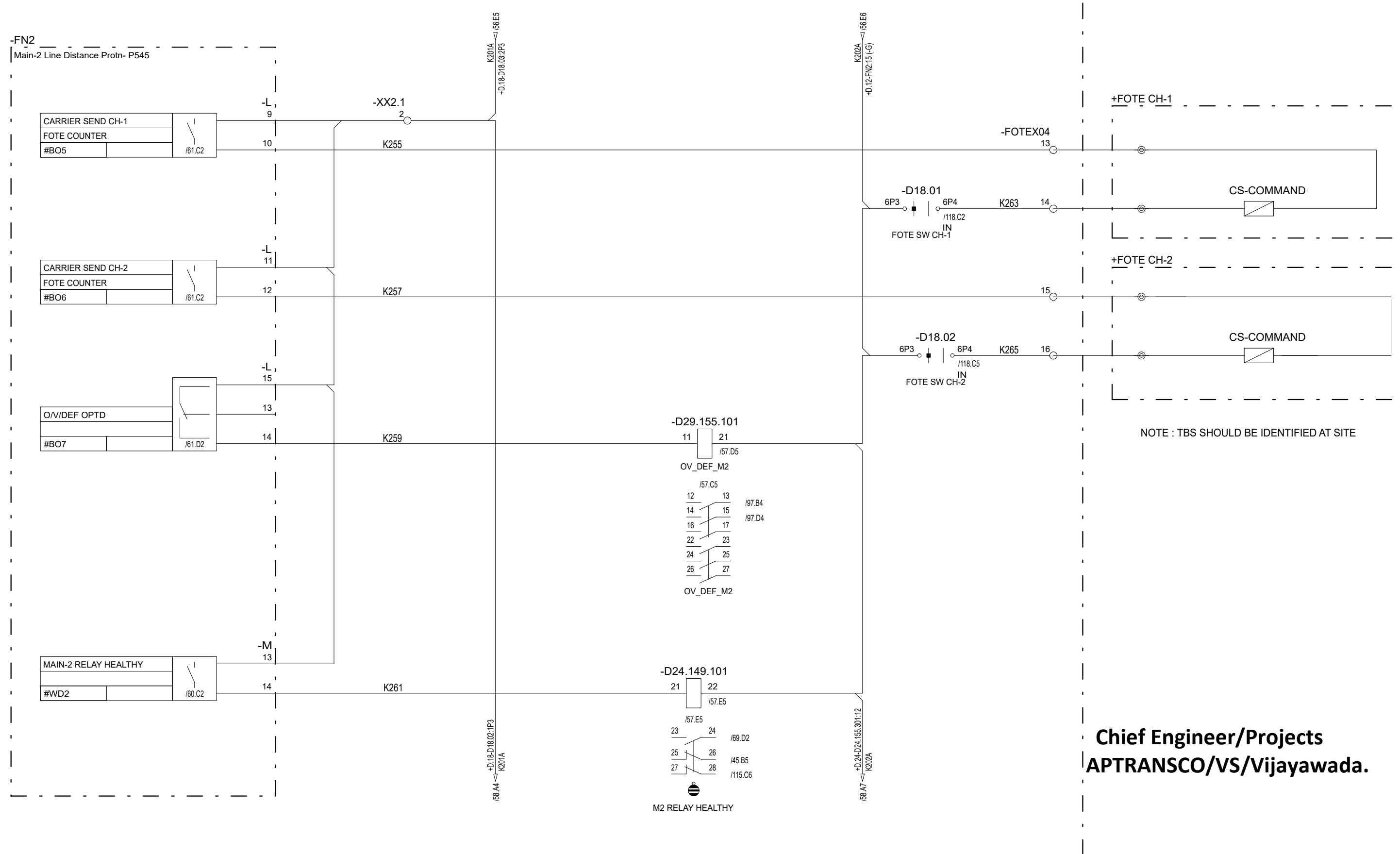
Suitable for conventional 220KV SS only

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		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-CBAA	Sheet 56
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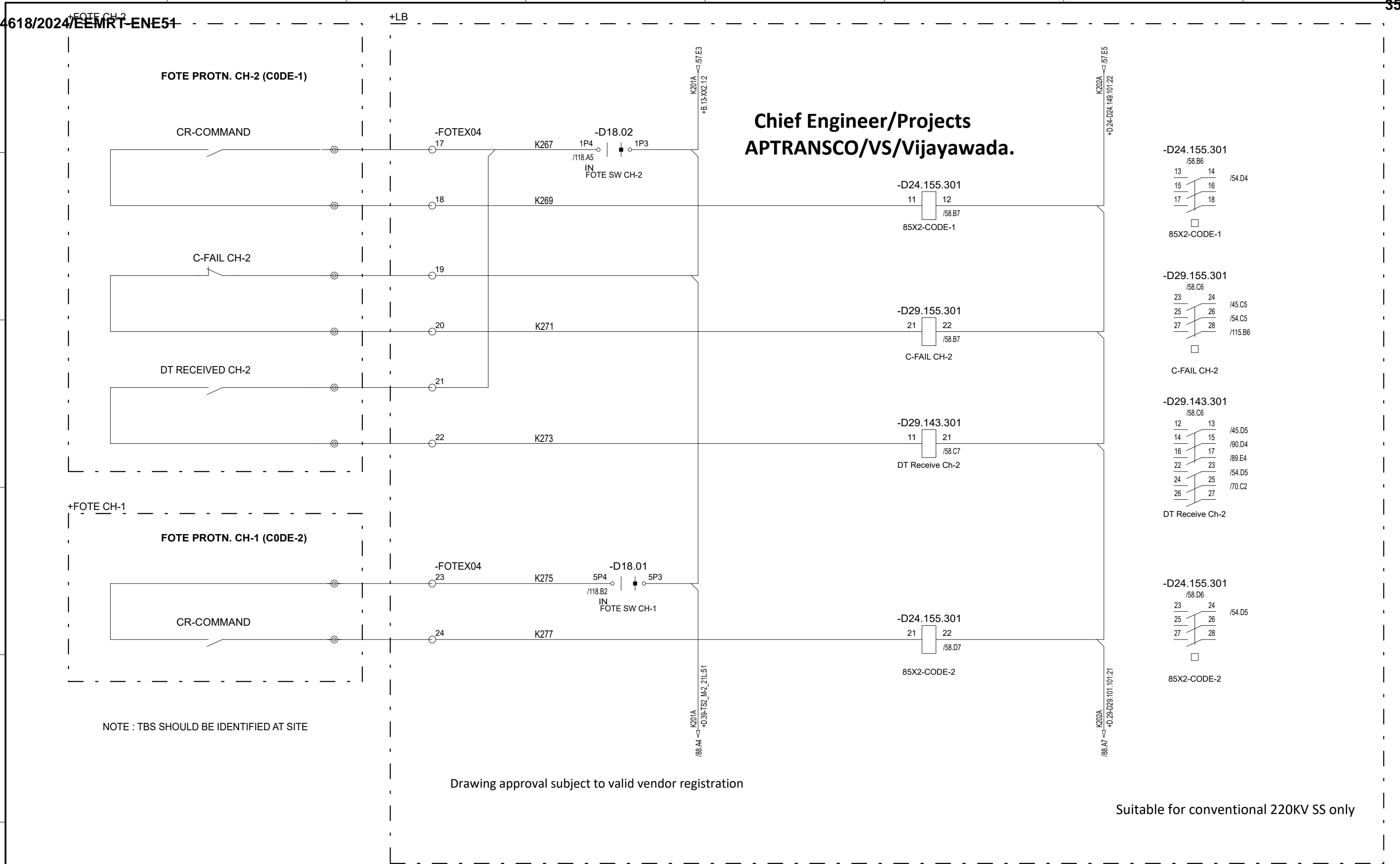
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		Project APTRANSCO		Binary outputs-M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 57
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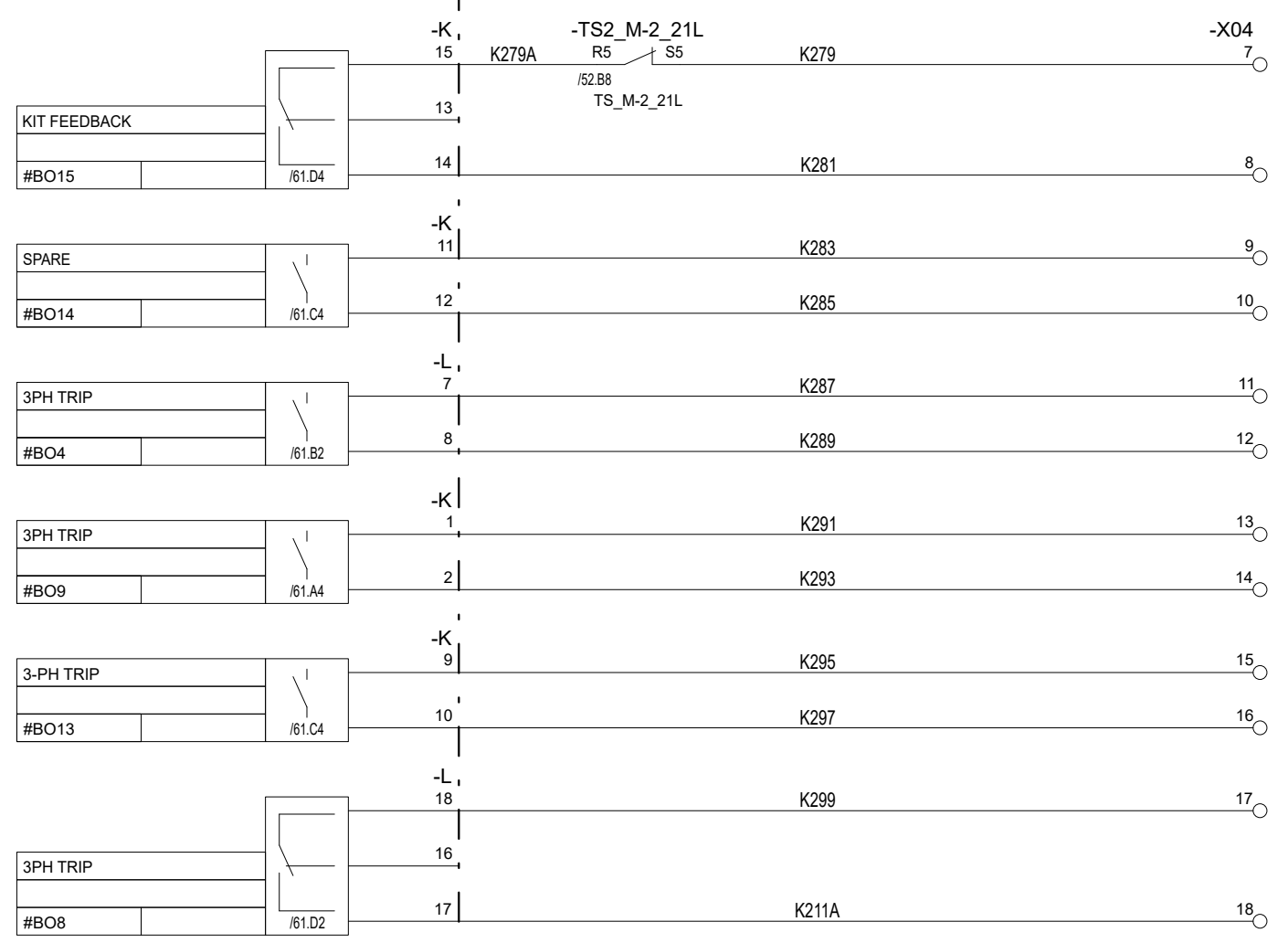
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Carrier Received Signal to M2 Relay	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA		Sheet 58
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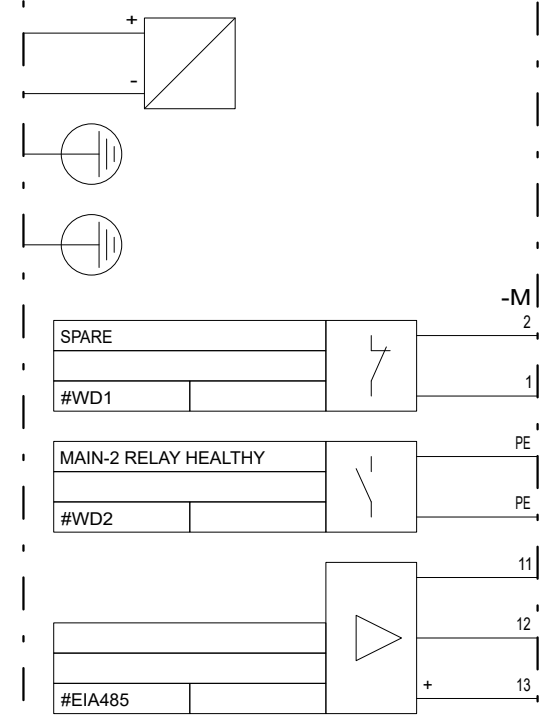
-FN2
Main-2 Line Distance Protn- P545



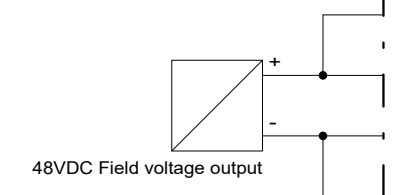
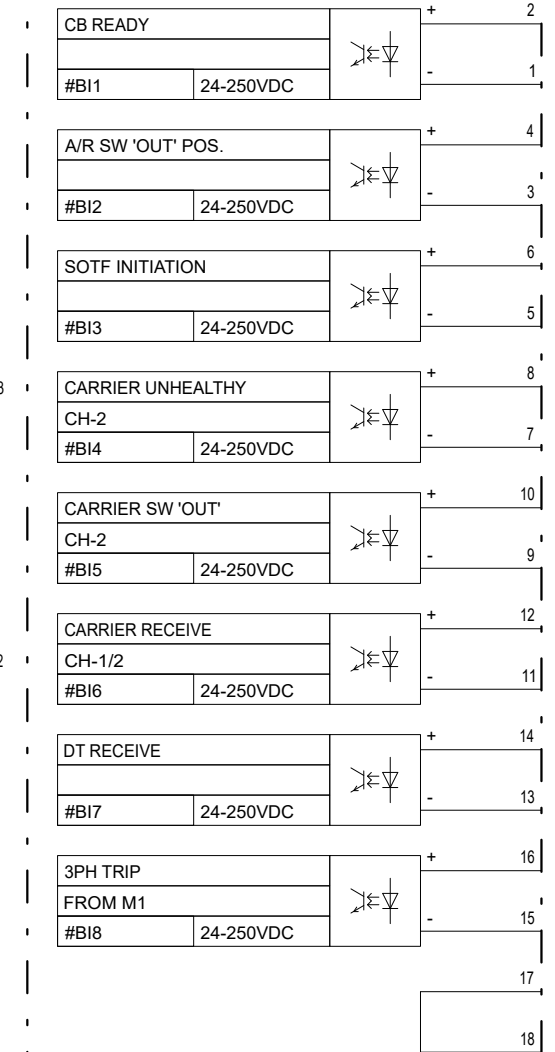
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER		Doc. kind. Circuit diagram	Ref.Des. =2KR
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		Project APTRANSCO		Spare Binary Output Circuit-M2 Relay		Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en	
Rev.	Revision note	Date	Name	HITACHI		Doc. no. 1MNS500925-CBAA	Sheet 59
1MYN691003-102(A3)REV01							n. sheet 60

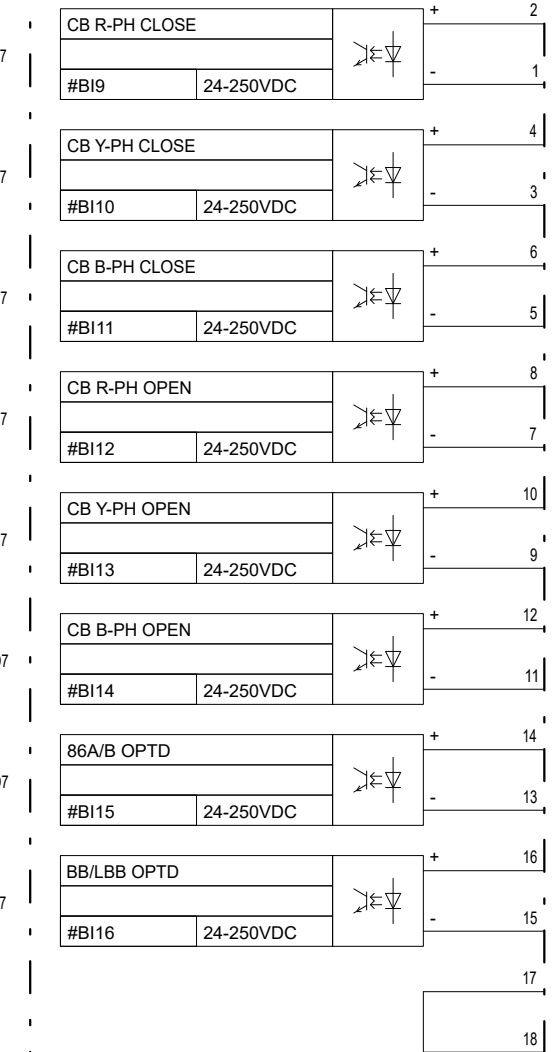
+D.12 -FN2
M2 Protn relay
Micom P545
110-250VDC, 100-240VAC



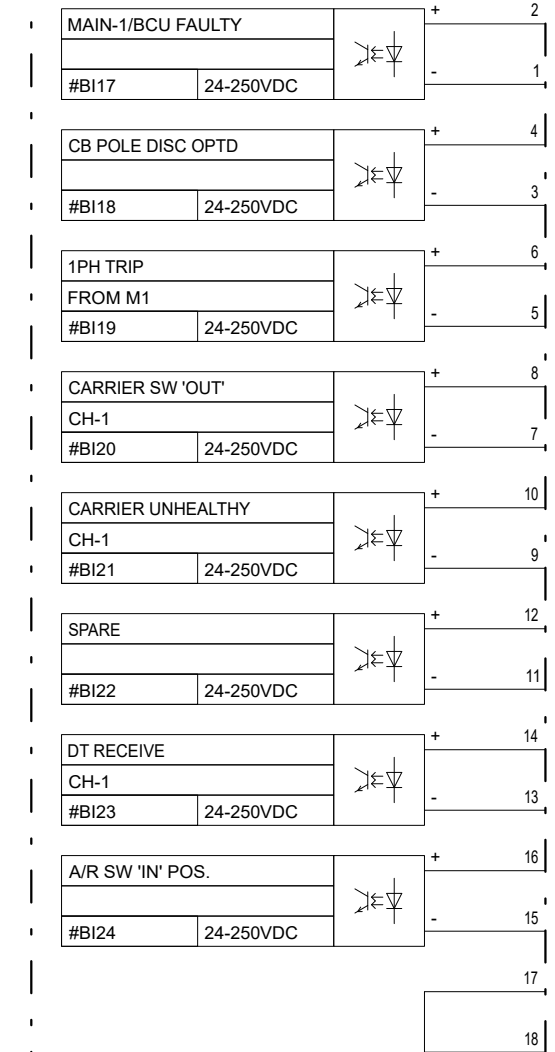
+D.12 -FN2
M2 Protn relay
Micom P545
110-250VDC, 100-240VAC



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



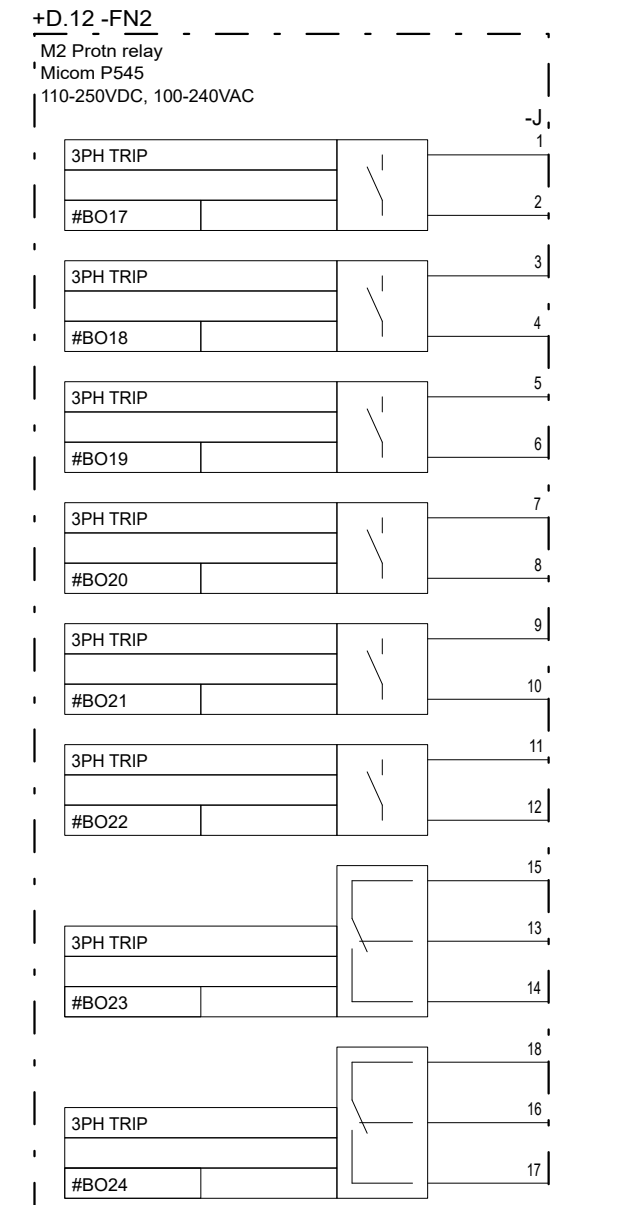
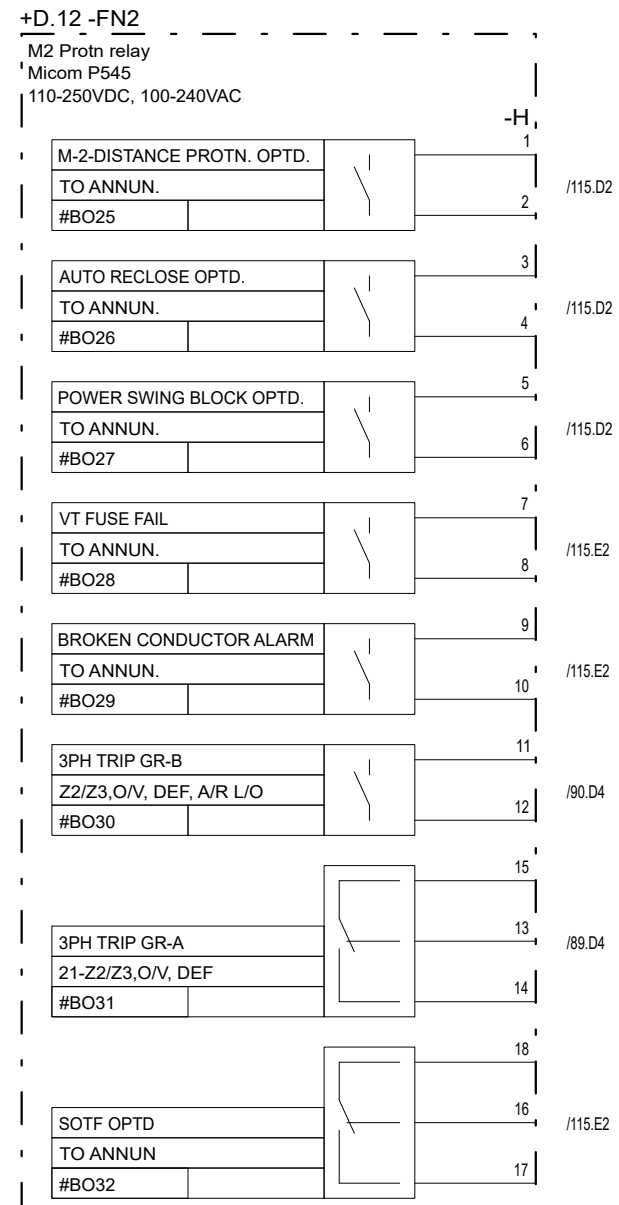
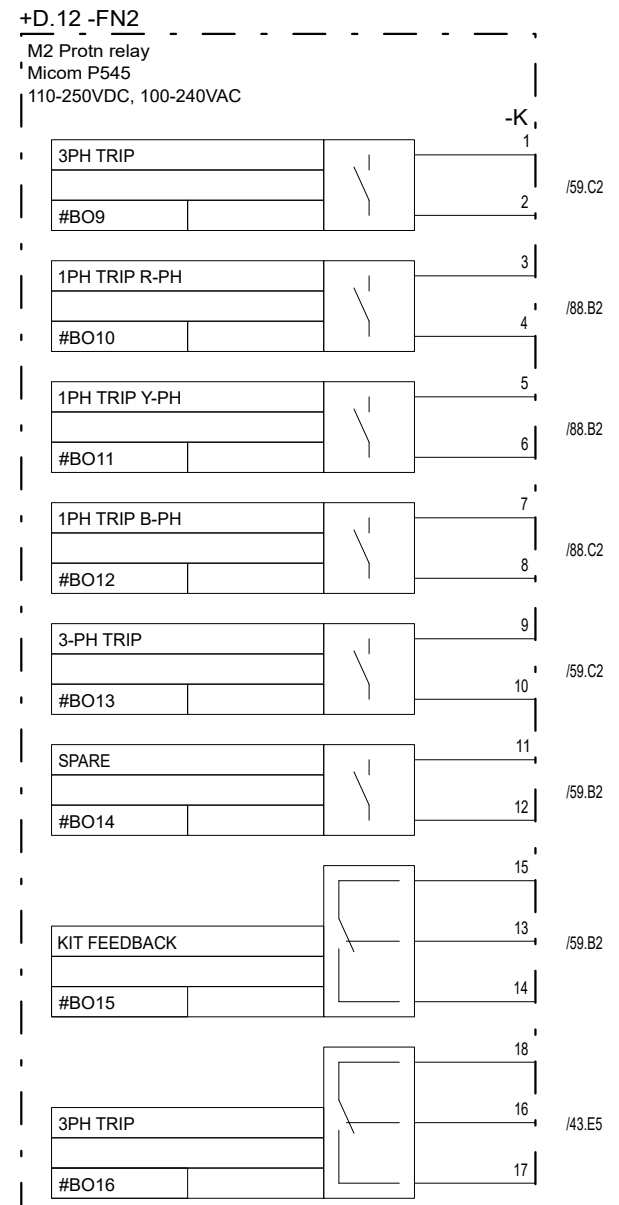
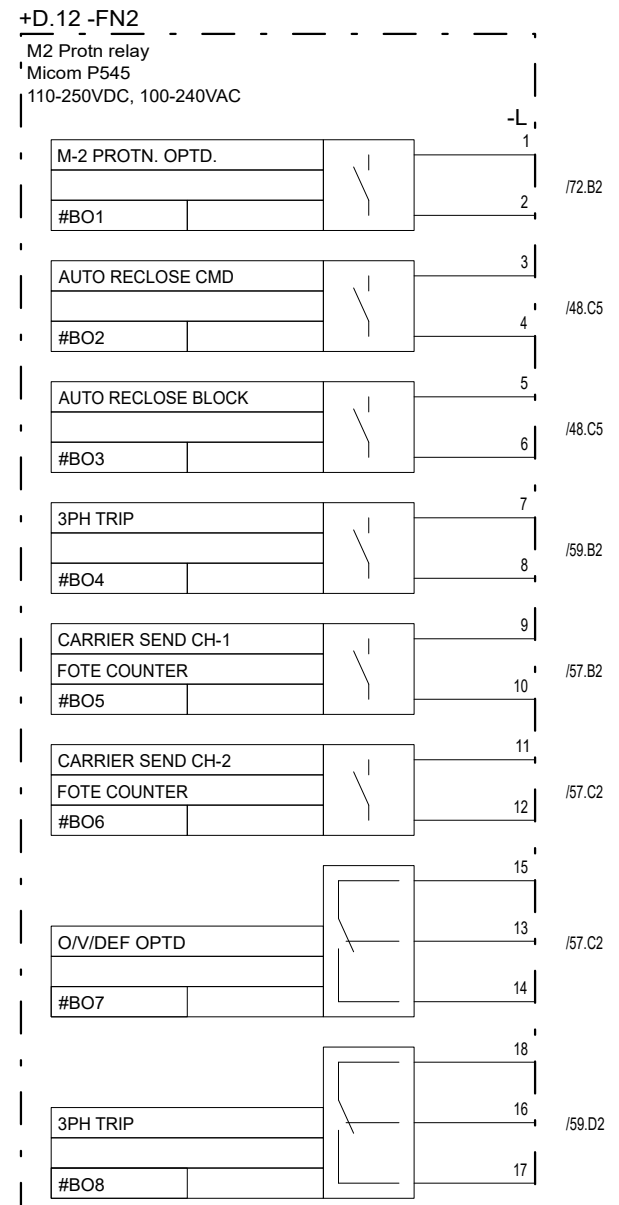
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M2 Protn relay
Micom P545
110-250VDC, 100-240VAC



Suitable for conventional 220KV SS only

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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	
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
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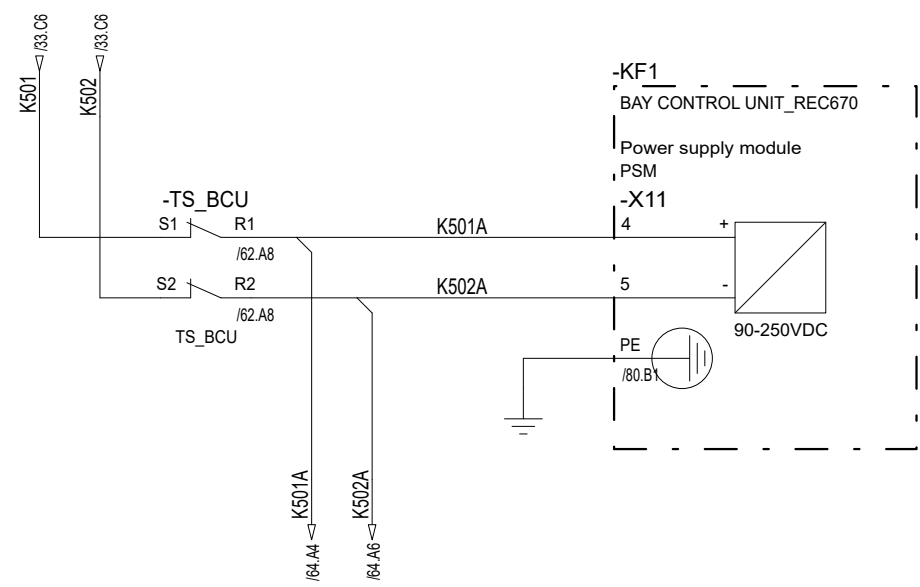


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		STANDARD DRAWING				Hitachi Energy India Limited		Language en		Sheet 61	
Rev.	Revision note	Date	Name			HITACHI		Doc. no. 1MNS500925-CBAA		n. sheet 62	
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+B.25 -KF1
Indication HMI
LED

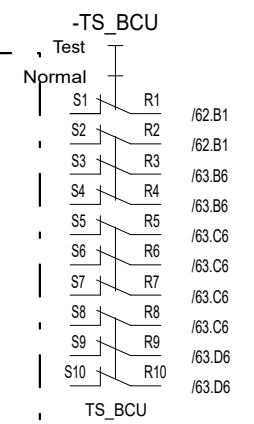
- RED INDICATION (GR-1)
- CB CLOSE
 - CB OPEN
 - CB SPRING CHARGED
 - CB SF6 LOW
 - CB SF6 L/O
 - CB HEALTHY
 - 86A OPTD
 - 86B OPTD
 - 96 OPTD

+B.25 -KF1
Indication HMI
LED

- YELLOW INDICATION (GR-2)
- 89A OPEN
 - 89A CLOSE
 - SPARE
 - SPARE
 - 89L OPEN
 - 89L CLOSE
 - 89LE OPEN
 - 89LE CLOSE
 - CHECK SYN OK
 - CB IN REMOTE
 - CB IN LOCAL
 - 89A IN REMOTE
 - SPARE
 - 89L IN REMOTE

+B.25 -KF1
Indication HMI
LED

- GREEN INDICATION (GR-3)



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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

Suitable for conventional 220KV SS only

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

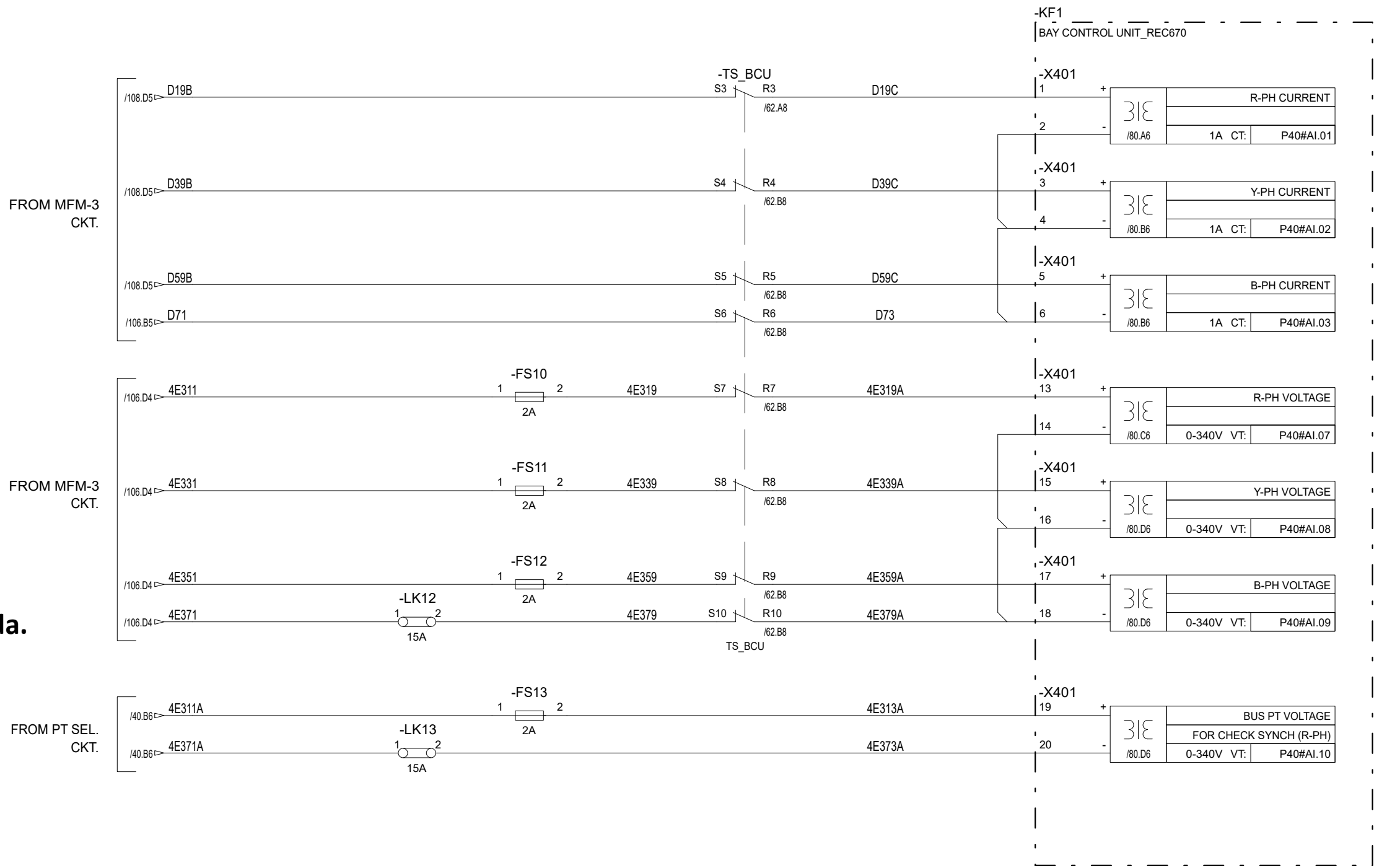
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA		Sheet 62
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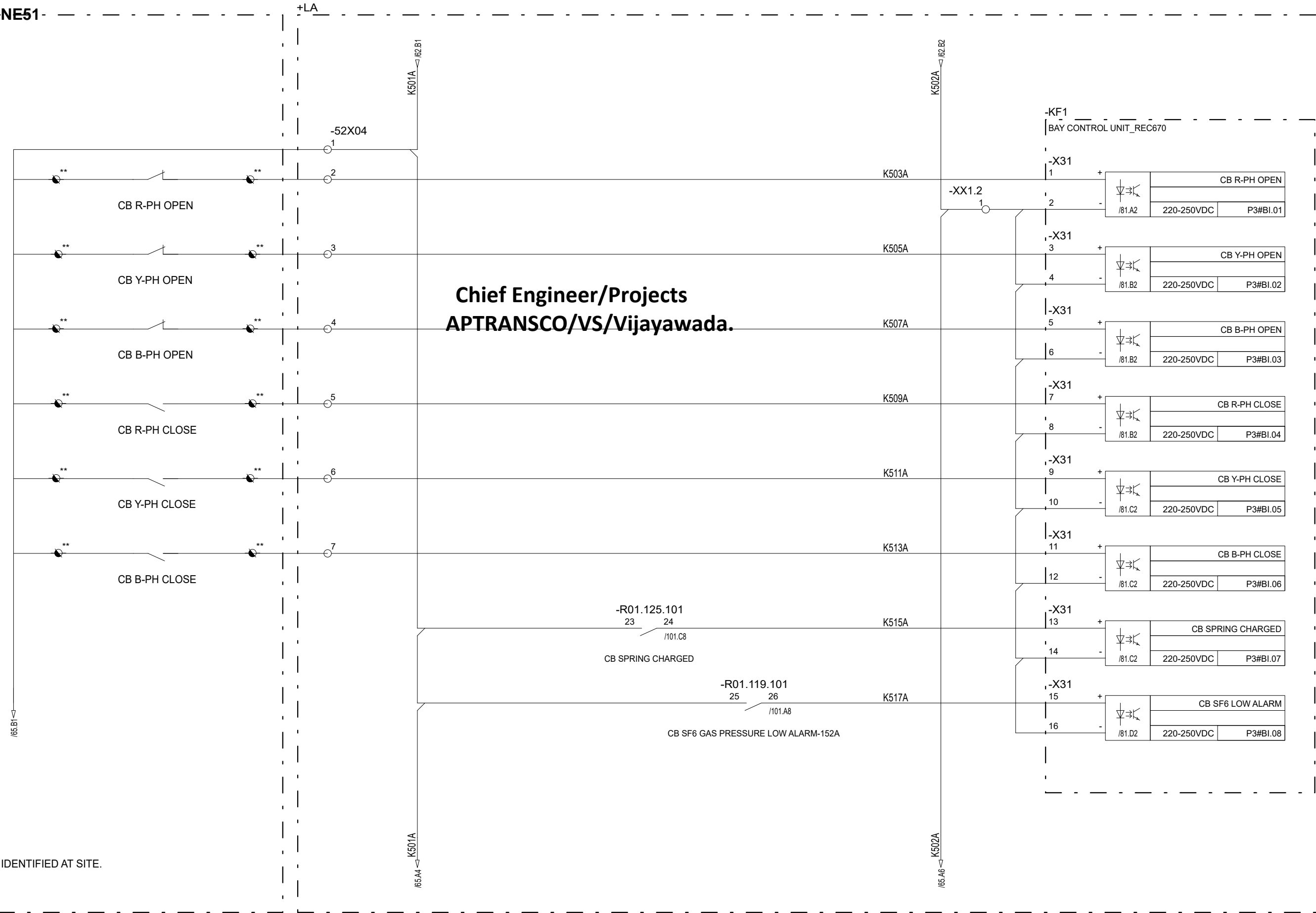
Drawing approval subject to valid vendor registration

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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	
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						n. sheet 64

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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA	Sheet 64	n. sheet 65
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+52 CB

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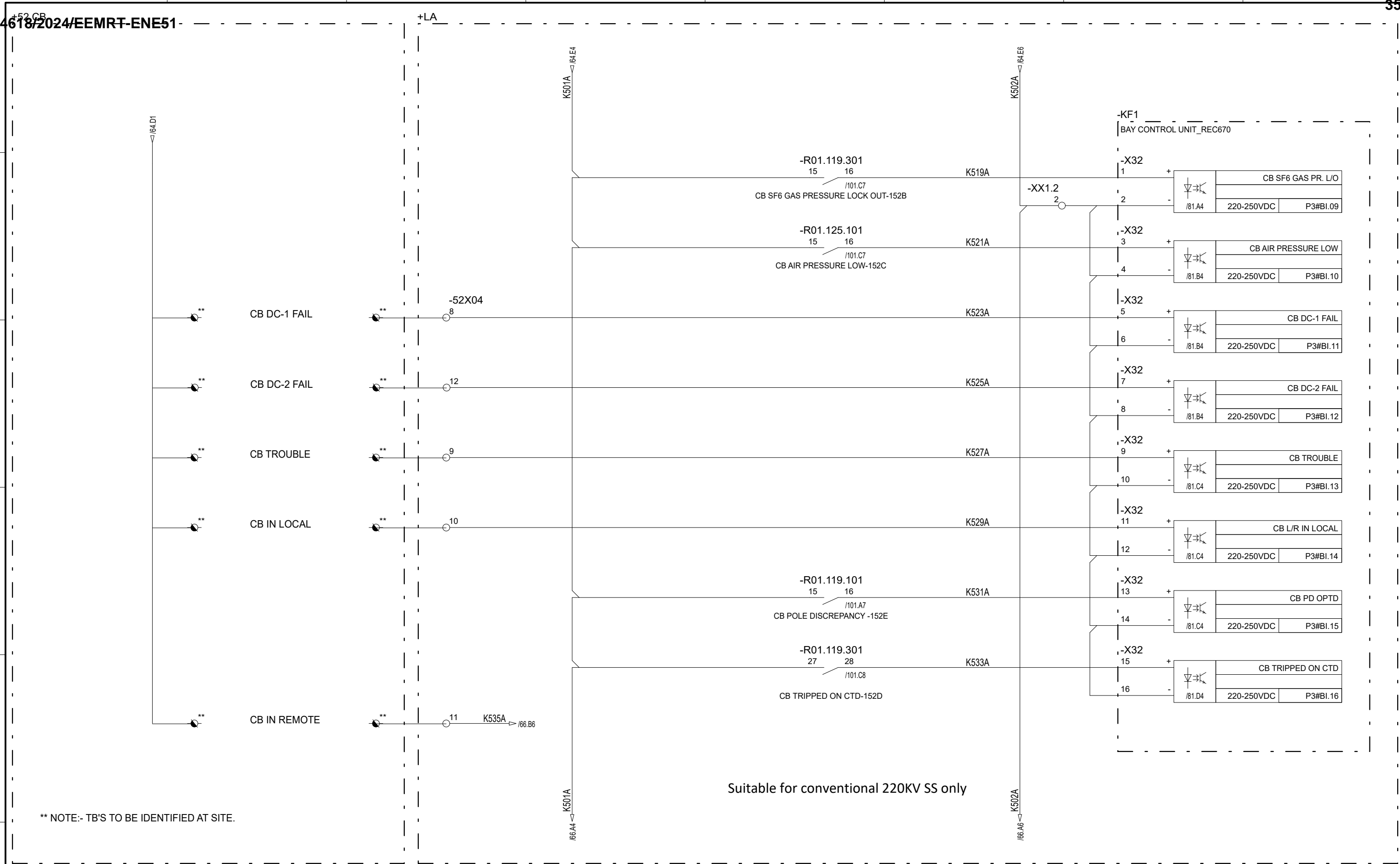
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		STANDARD DRAWING				Hitachi Energy India Limited		Language en		Sheet 65	
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-CBAA		n. sheet 66	
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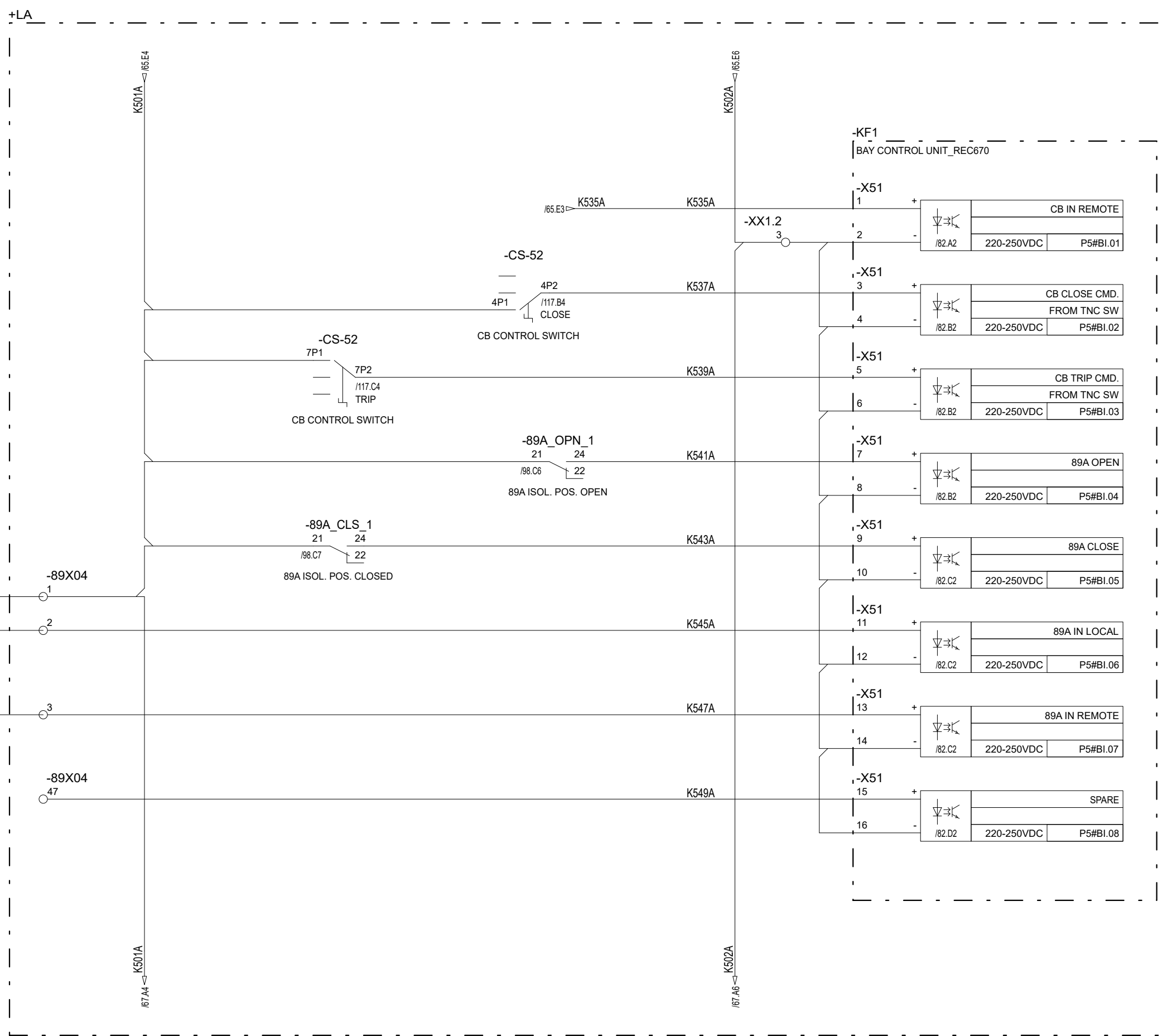
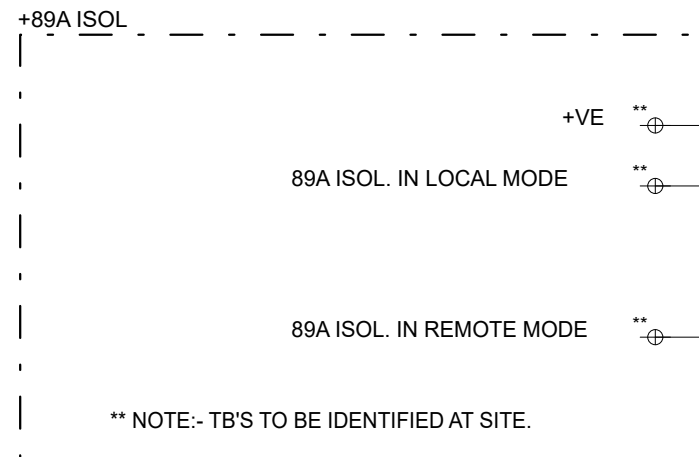
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 66
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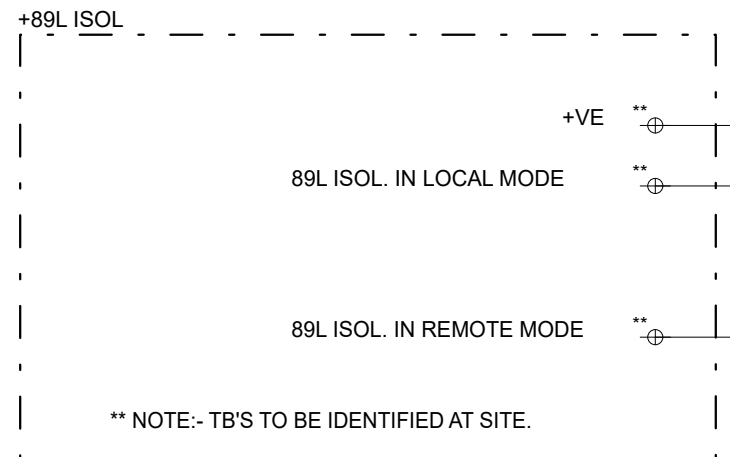
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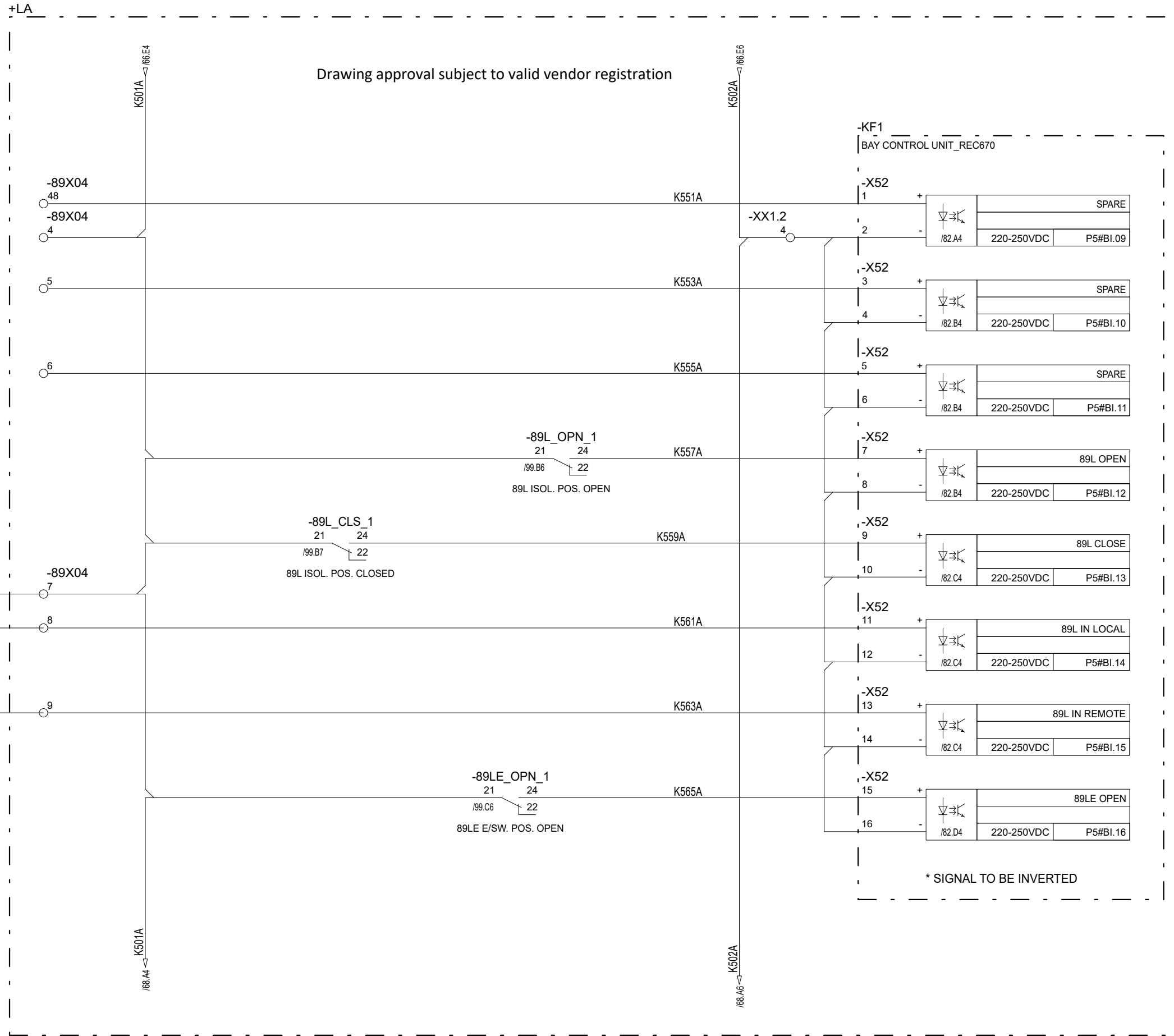
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 67
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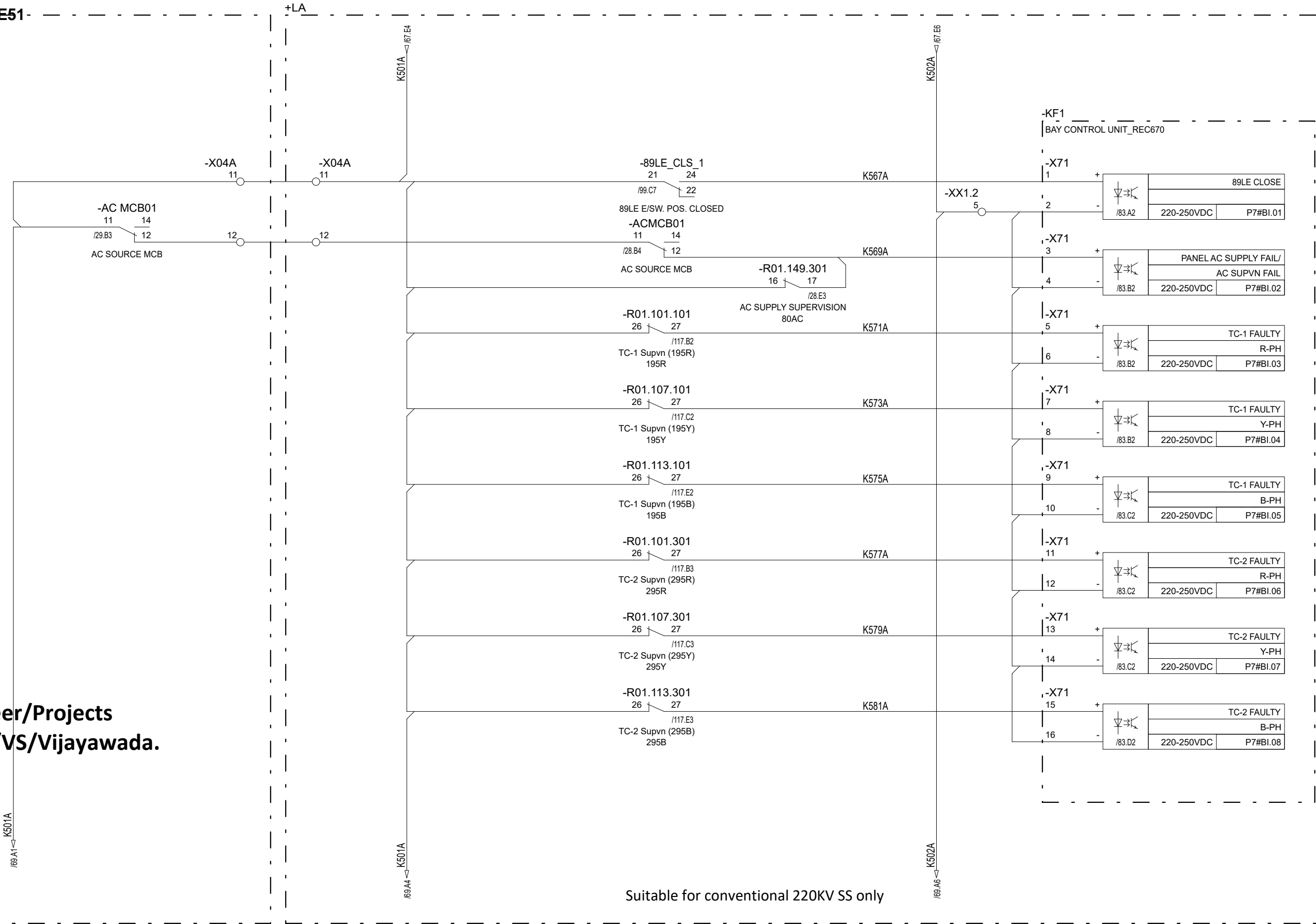
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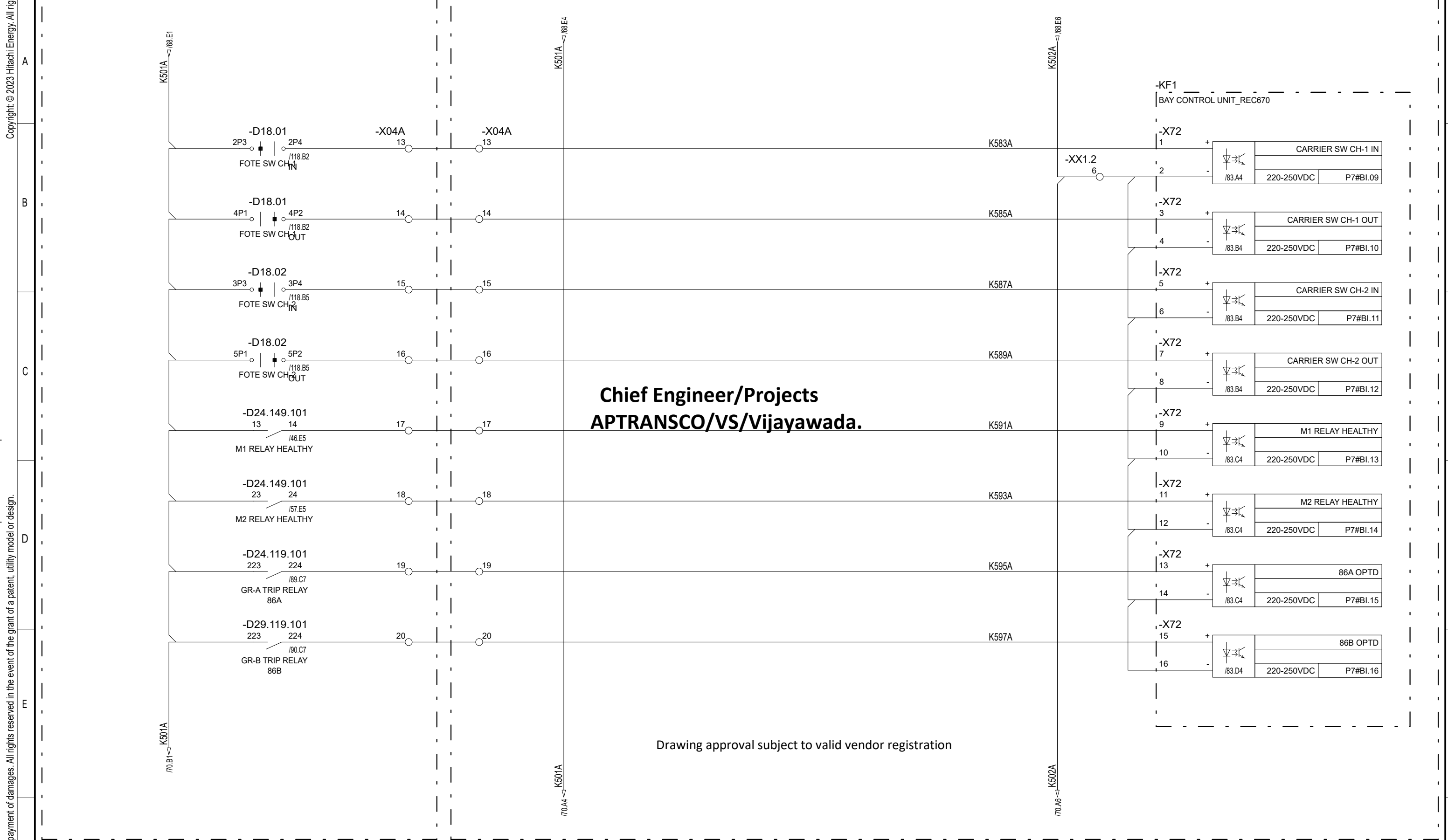
Suitable for conventional 220KV SS only

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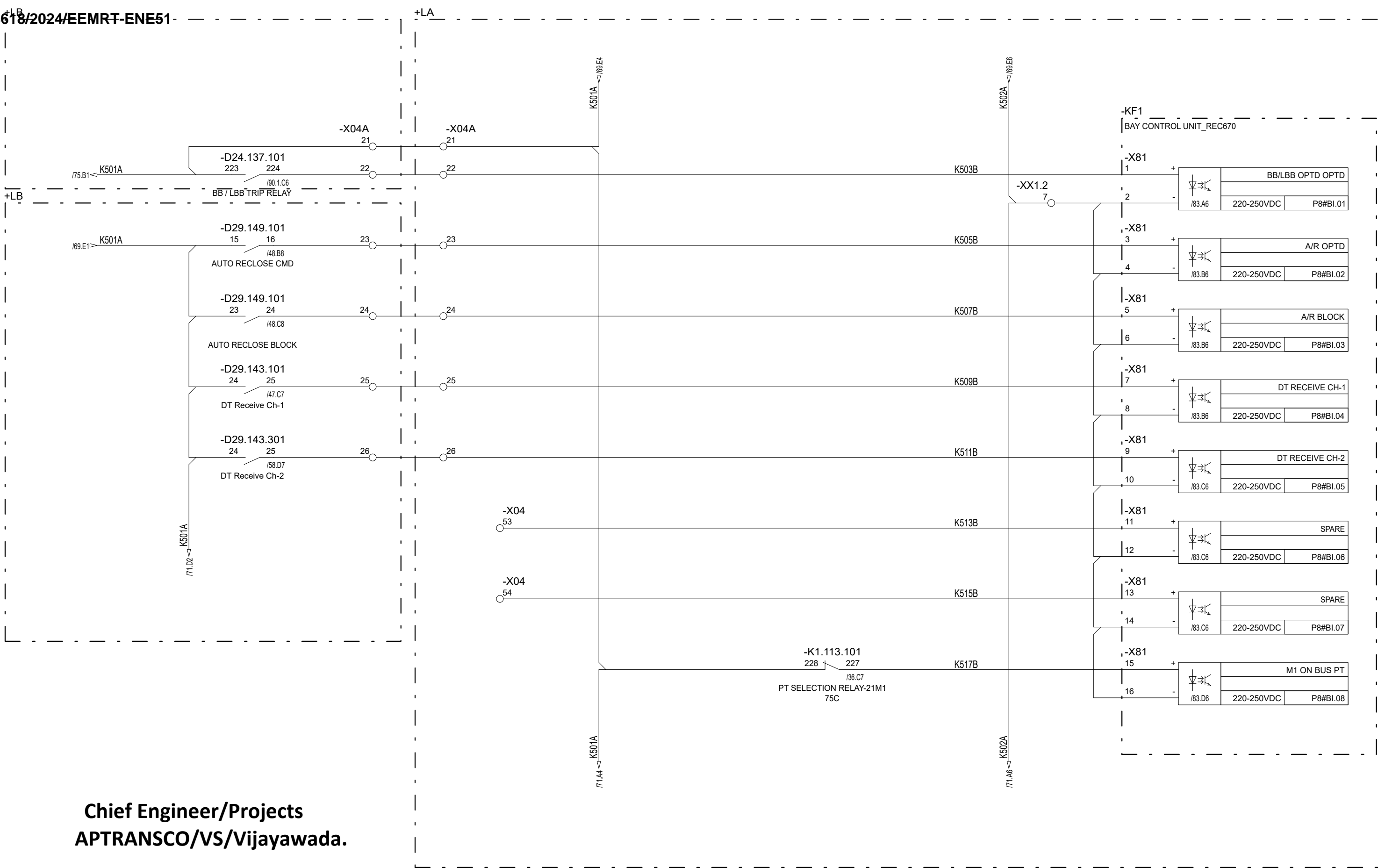
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Rev.	Revision note	Date	Name		1MNS500925-CBAA	
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 70
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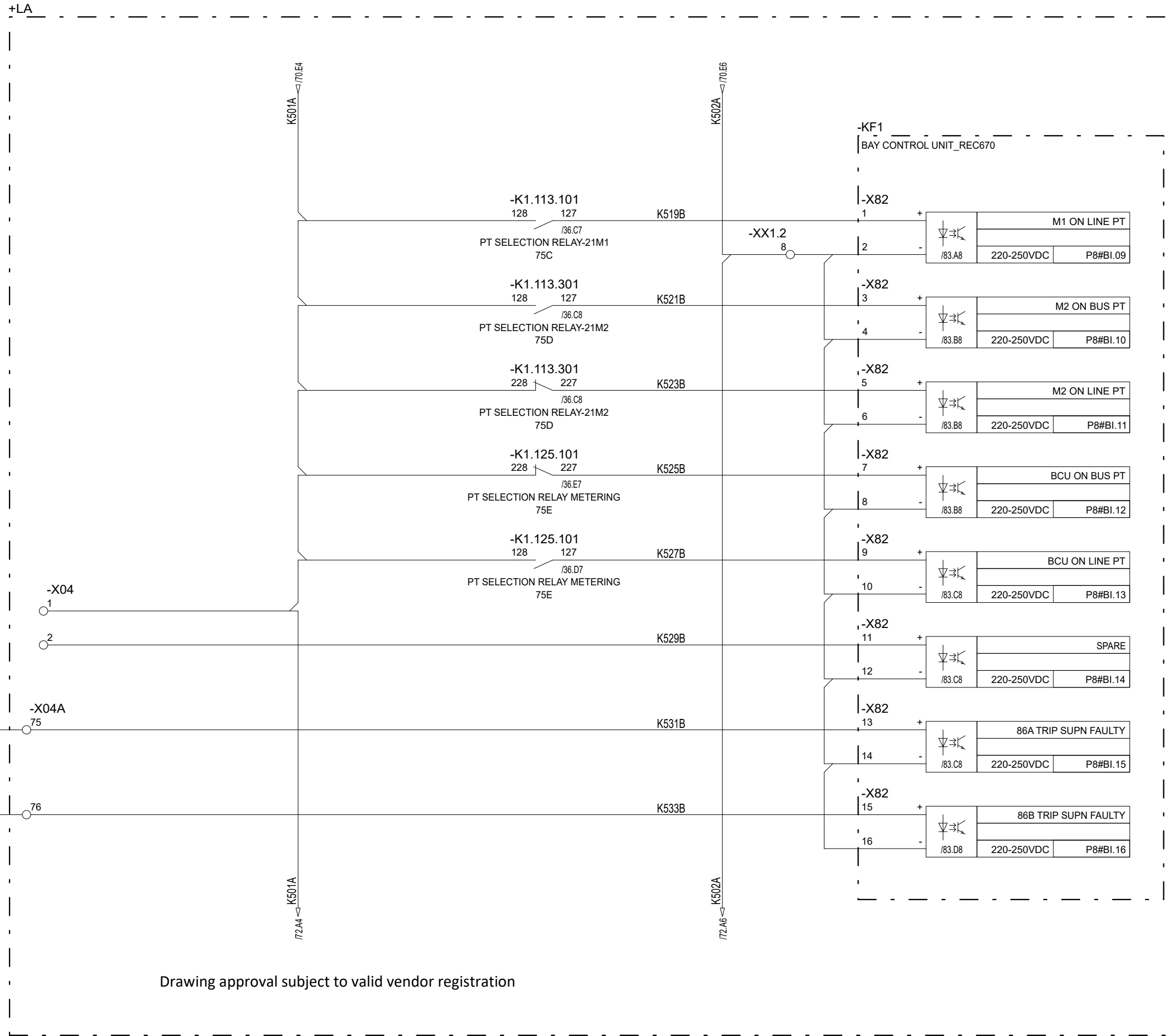
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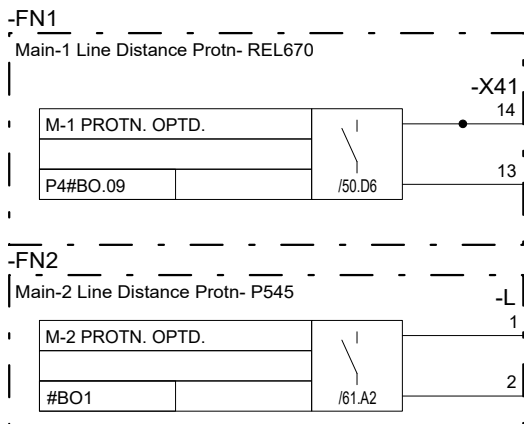
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA		Sheet 71
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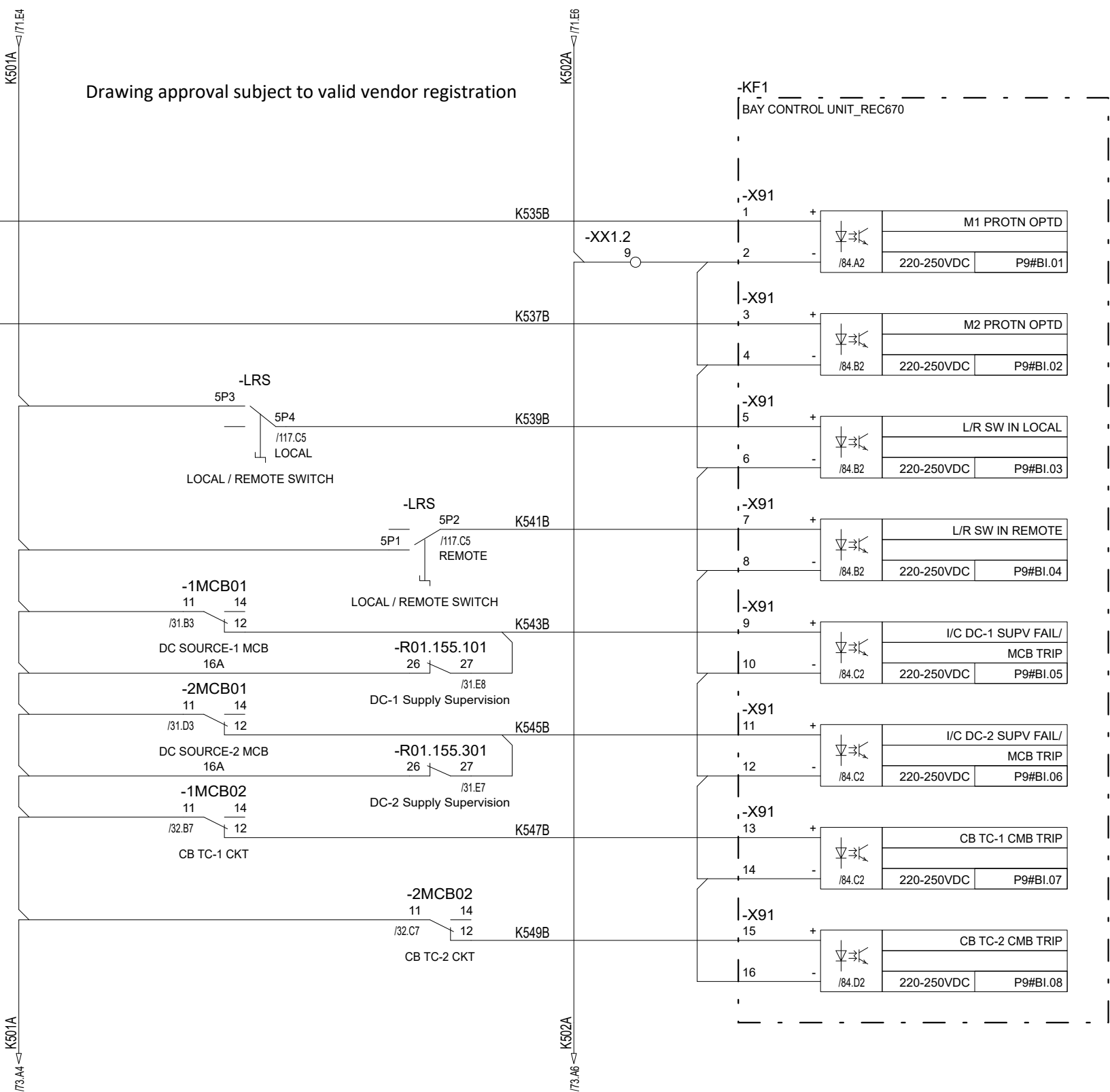
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-KF1
BAY CONTROL UNIT_REC670



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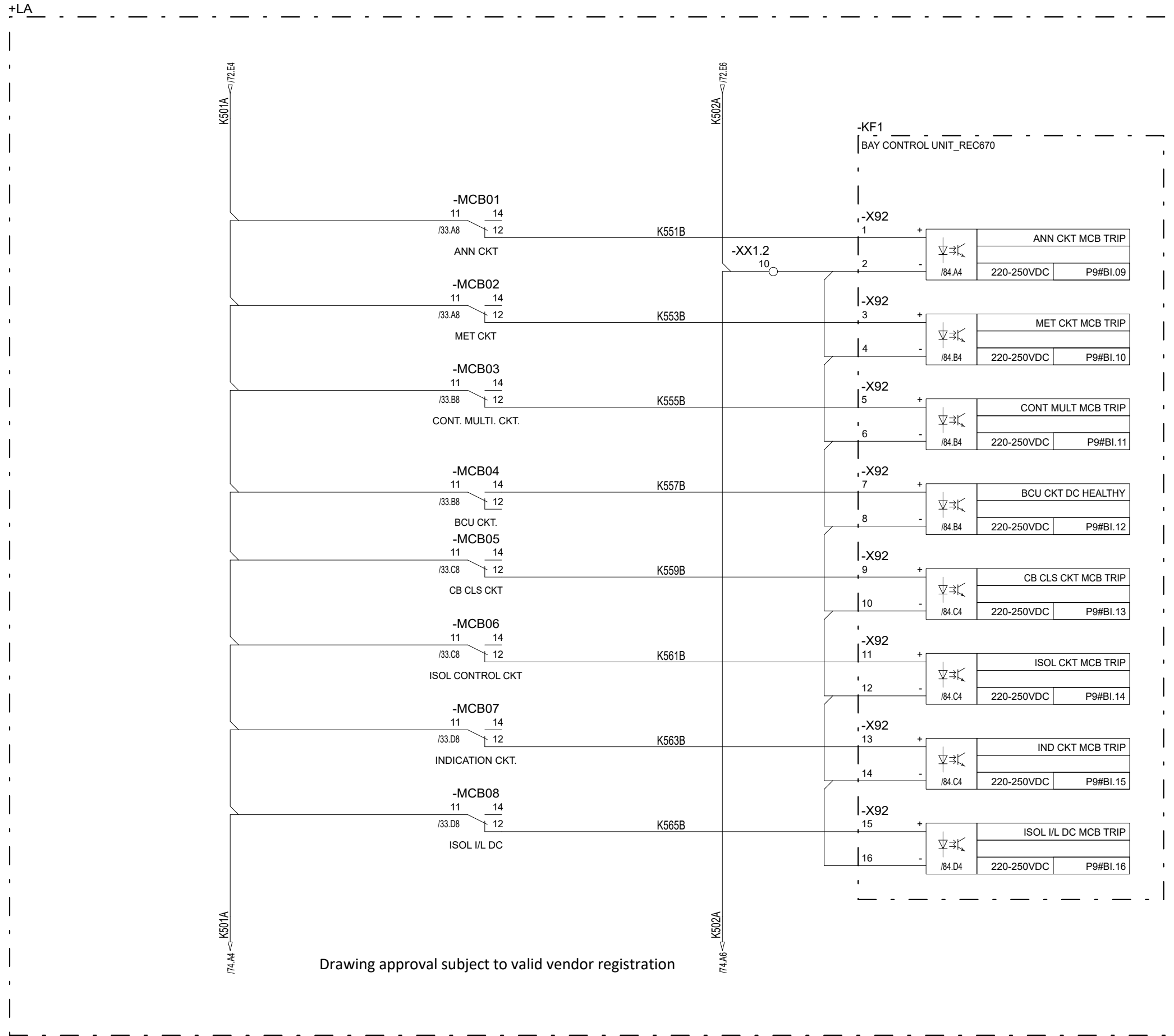
Suitable for conventional 220KV SS only

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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 72
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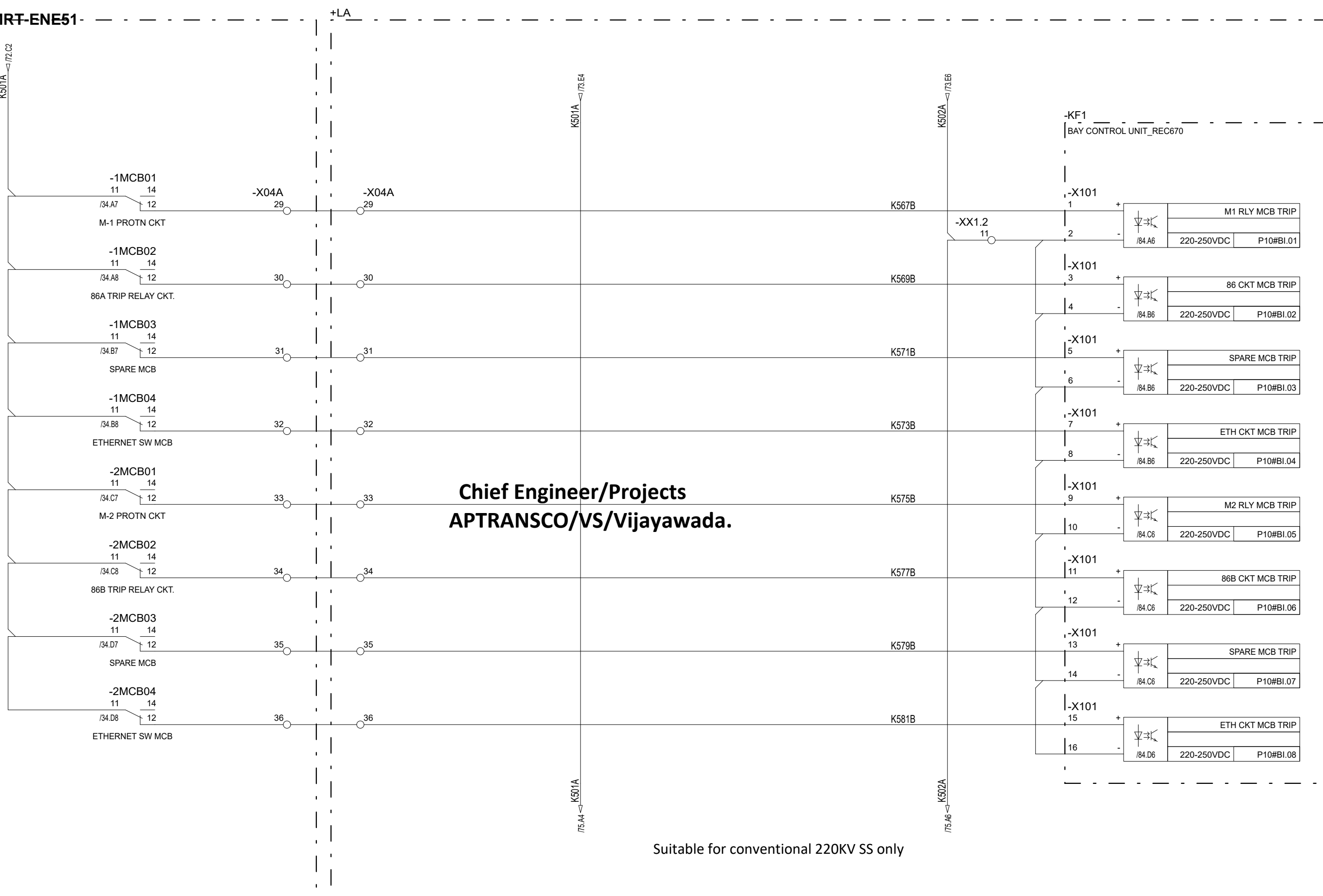
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 73
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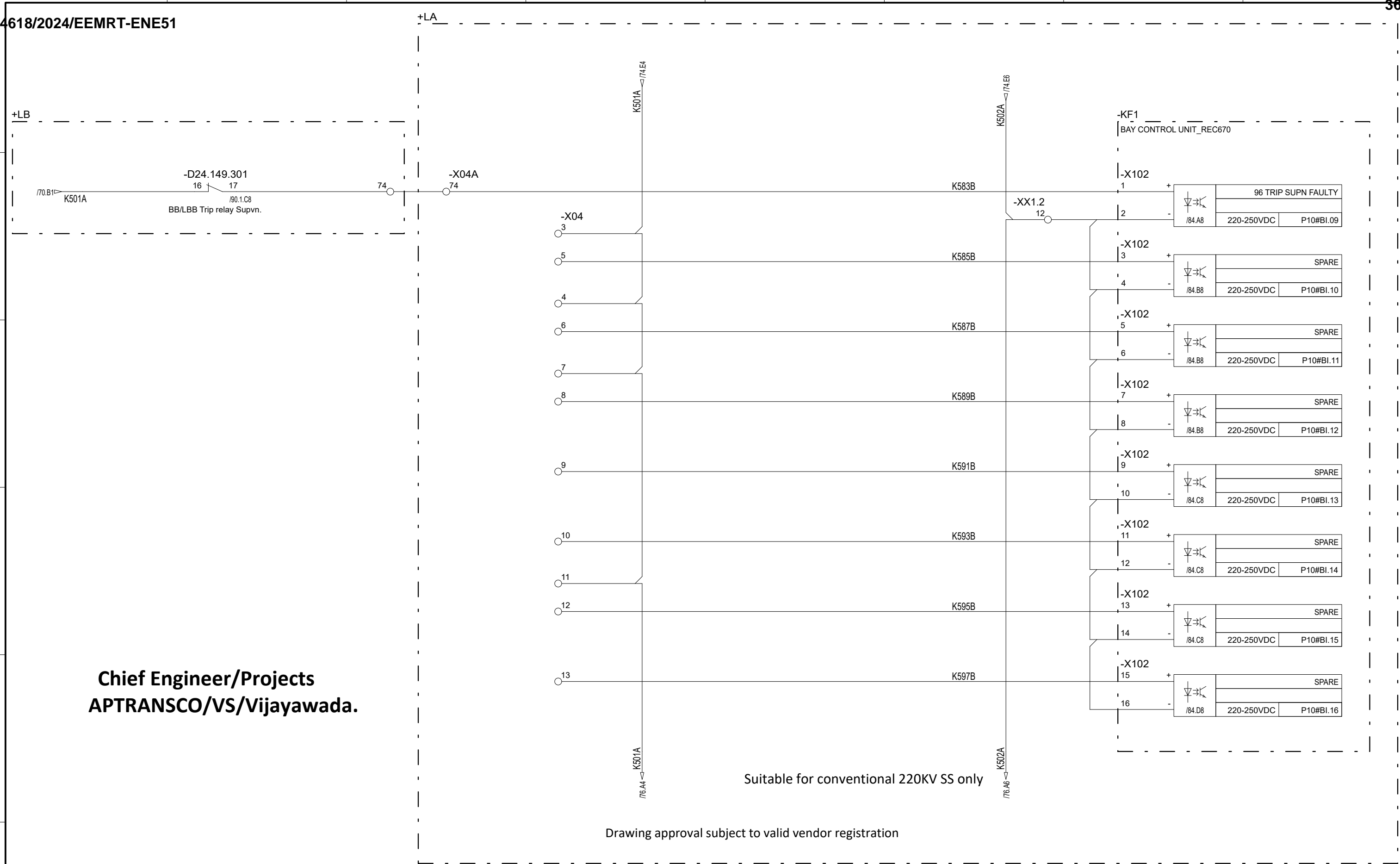
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA		Sheet 74
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Suitable for conventional 220KV SS only

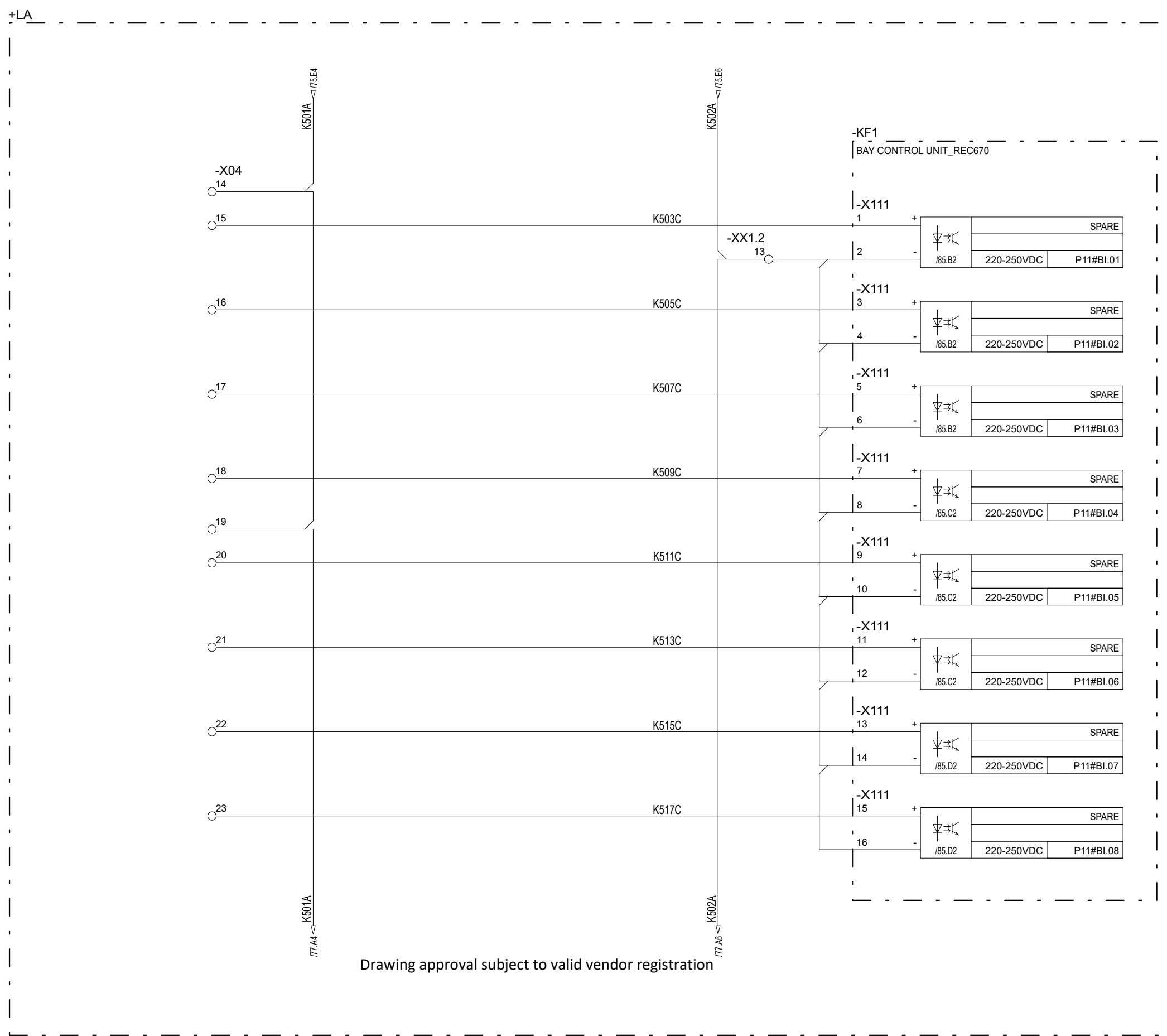
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Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA	Sheet 75	n. sheet 76
1MYN691003-102(A3)REV01						

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Rev.	Revision note	Date	Name	HITACHI		Doc. no.		1MNS500925-CBAA		Sheet	76
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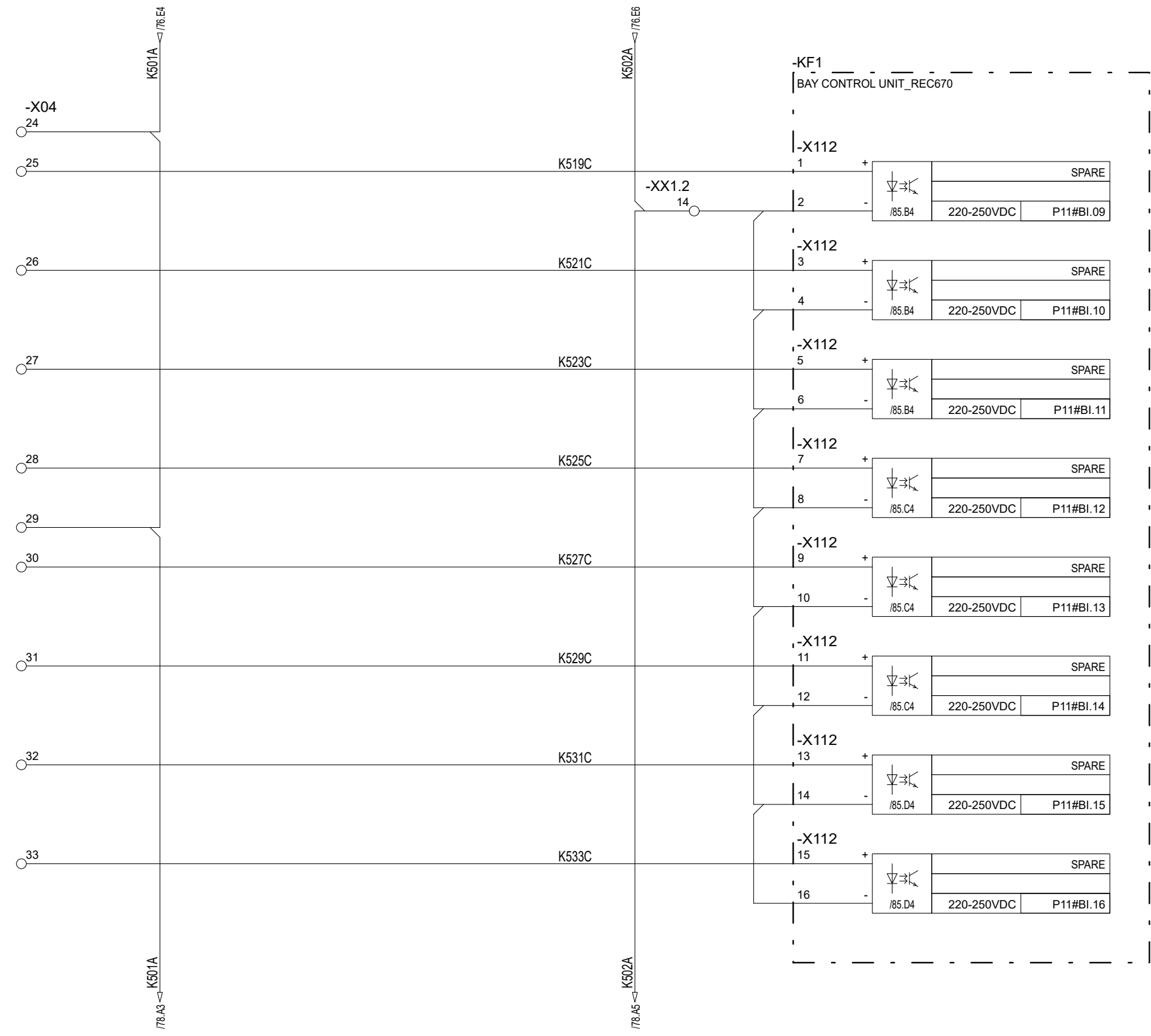
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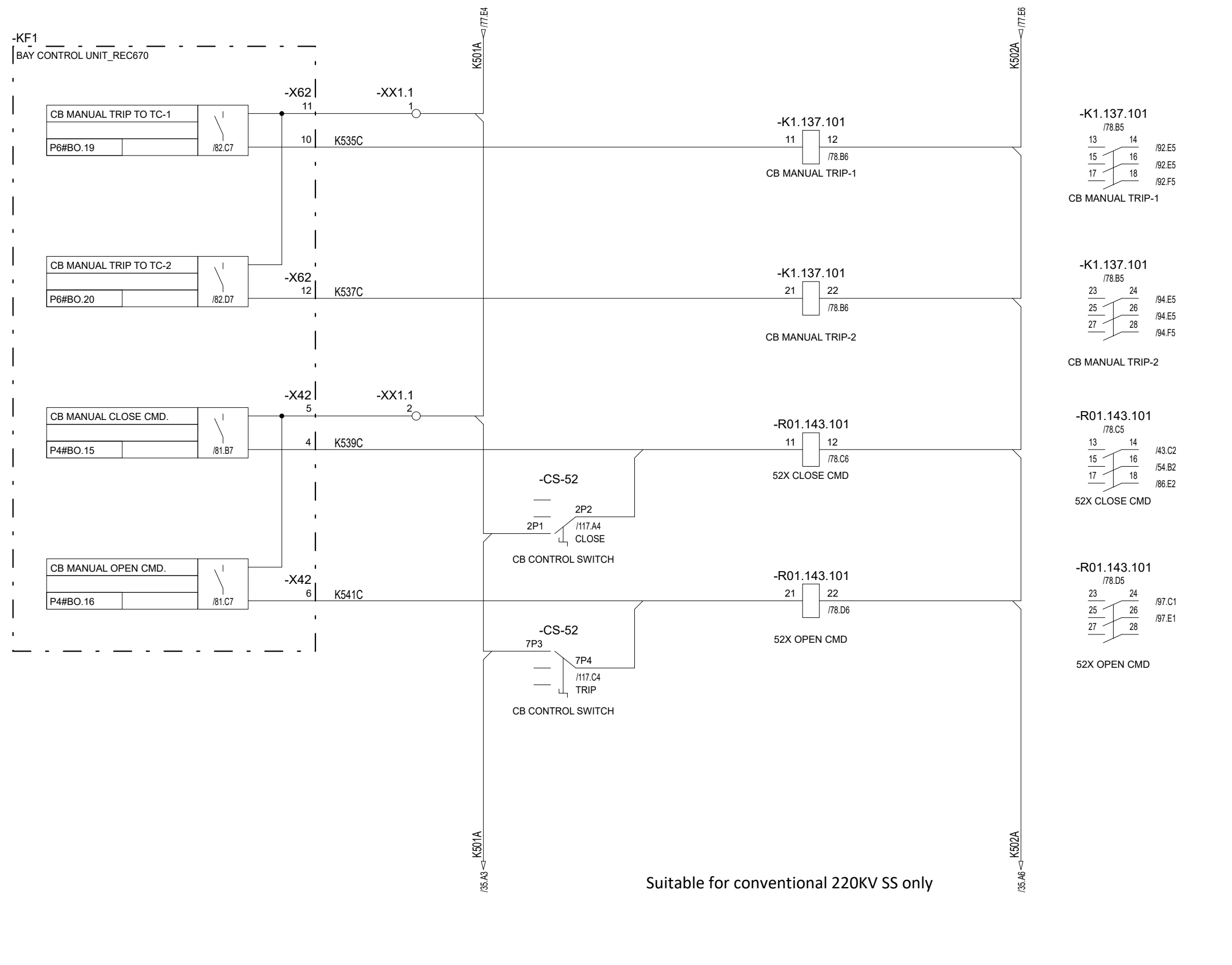
**Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.**

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		BCU-Binary Input Ckt.	Resp. dept. PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
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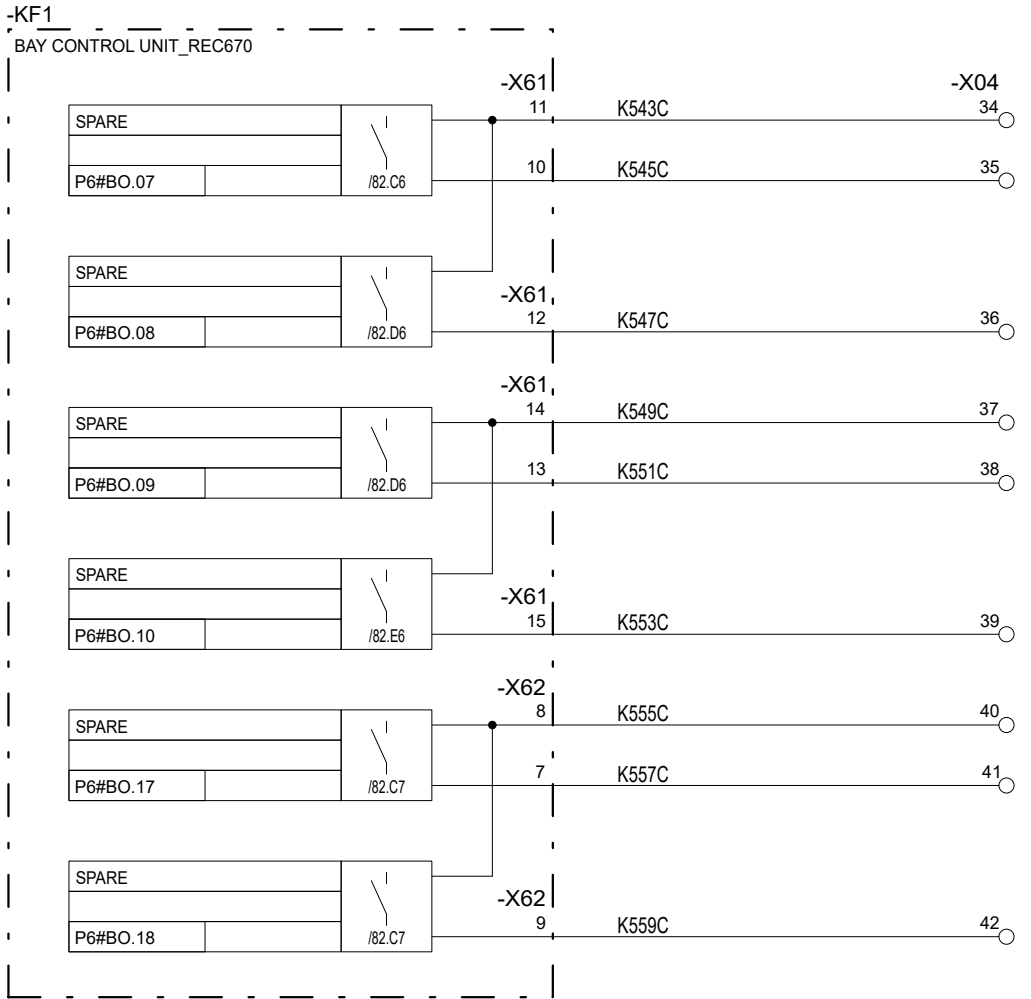
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APTRANSCO/VS/Vijayawada.**

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Rev.	Revision note	Date	Name		Sheet 78	n. sheet 79
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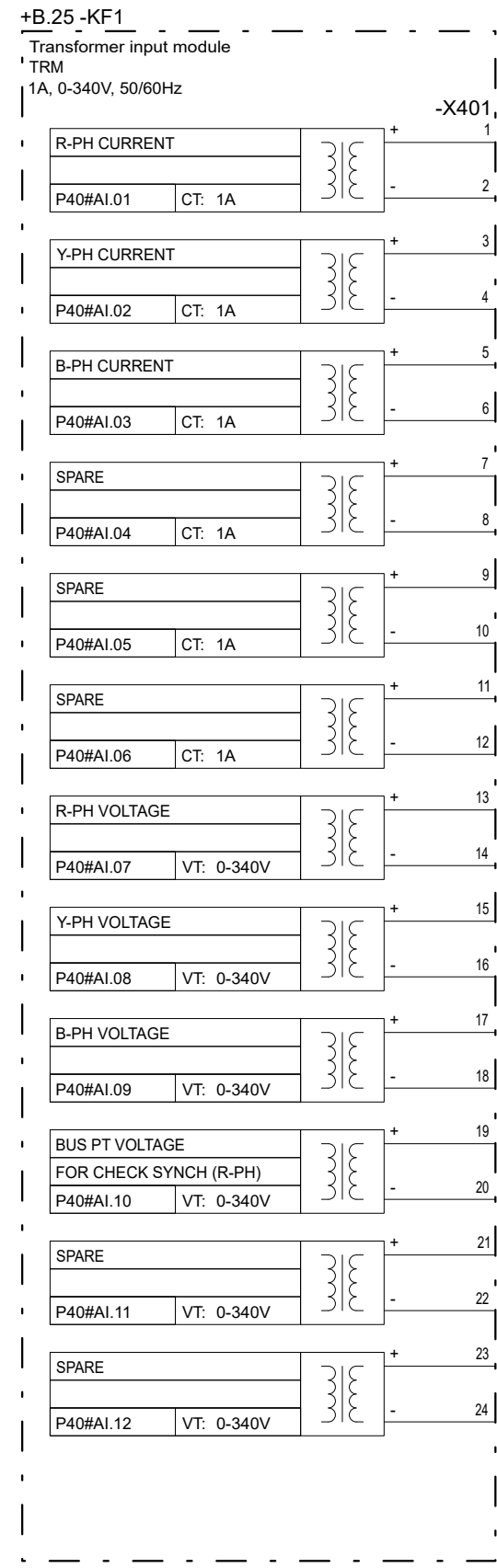
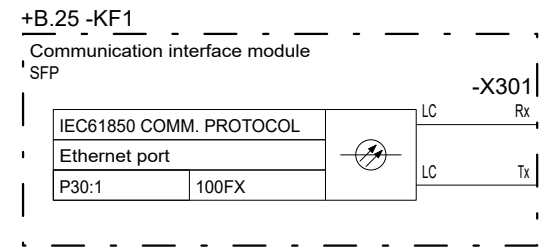
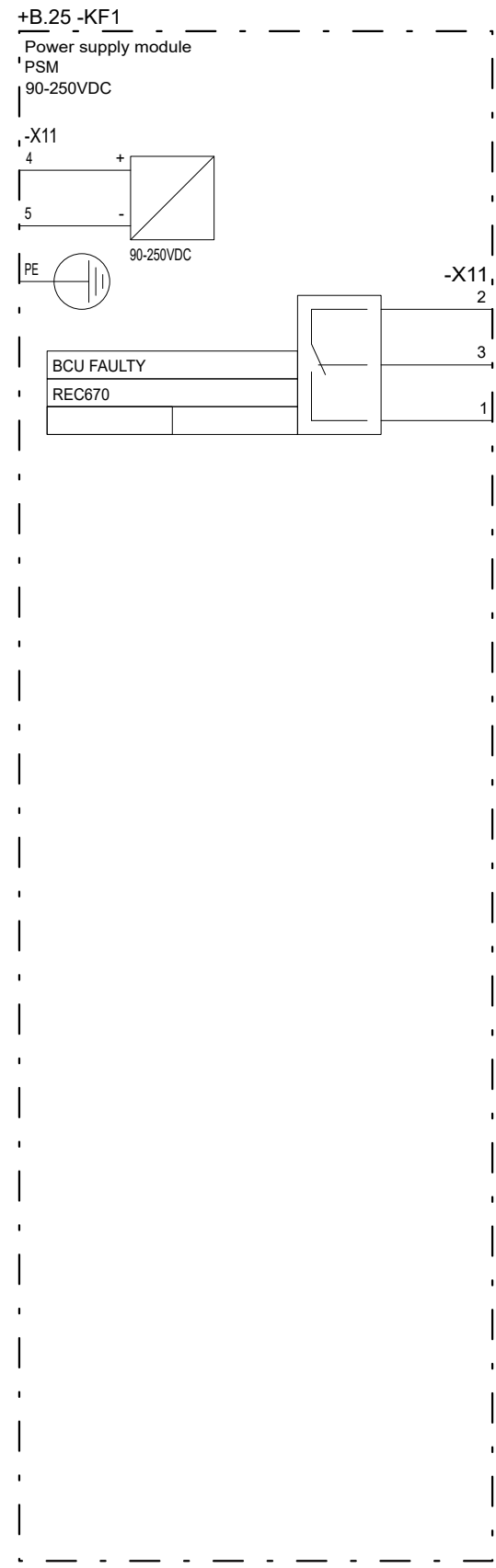
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APTRANSCO/VS/Vijayawada.**

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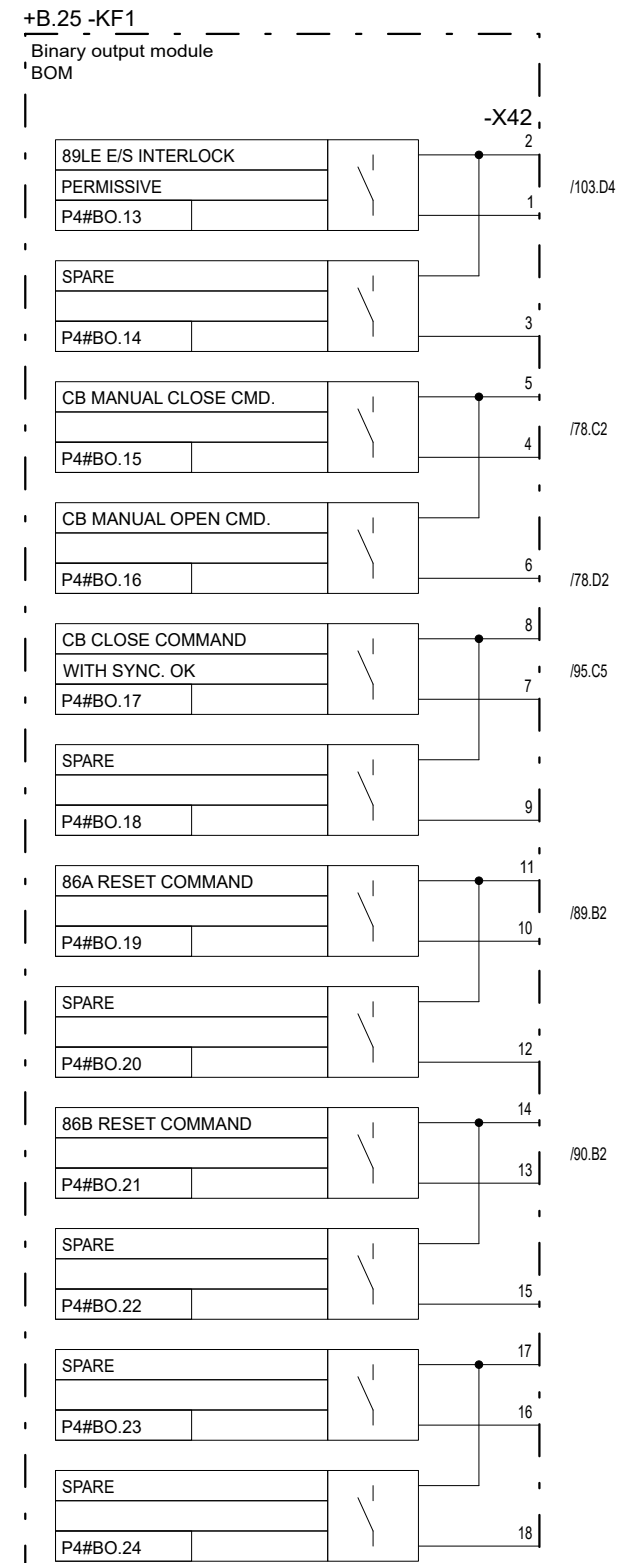
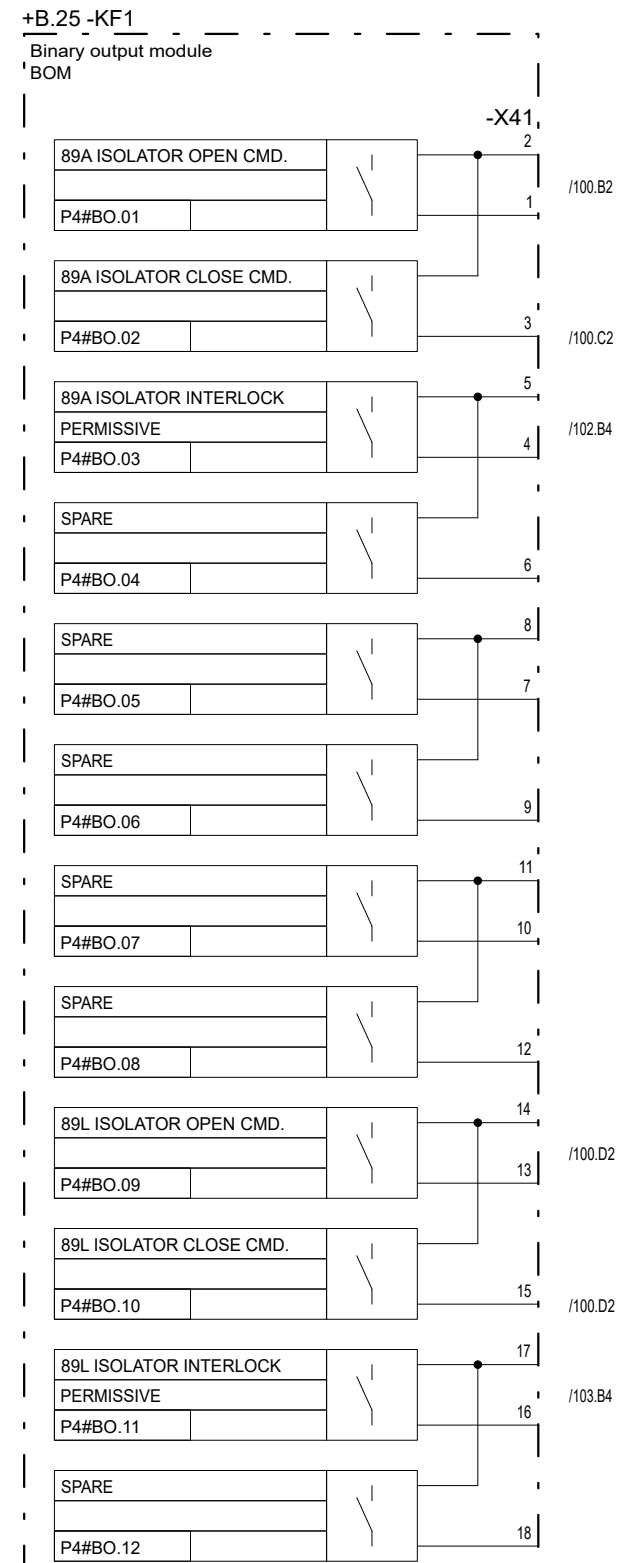
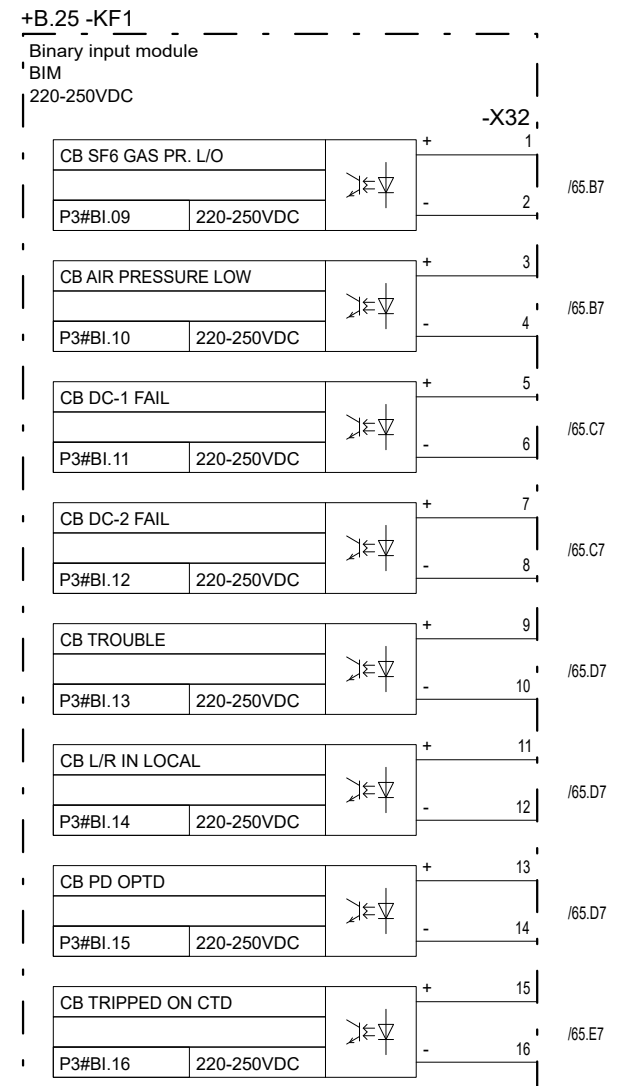
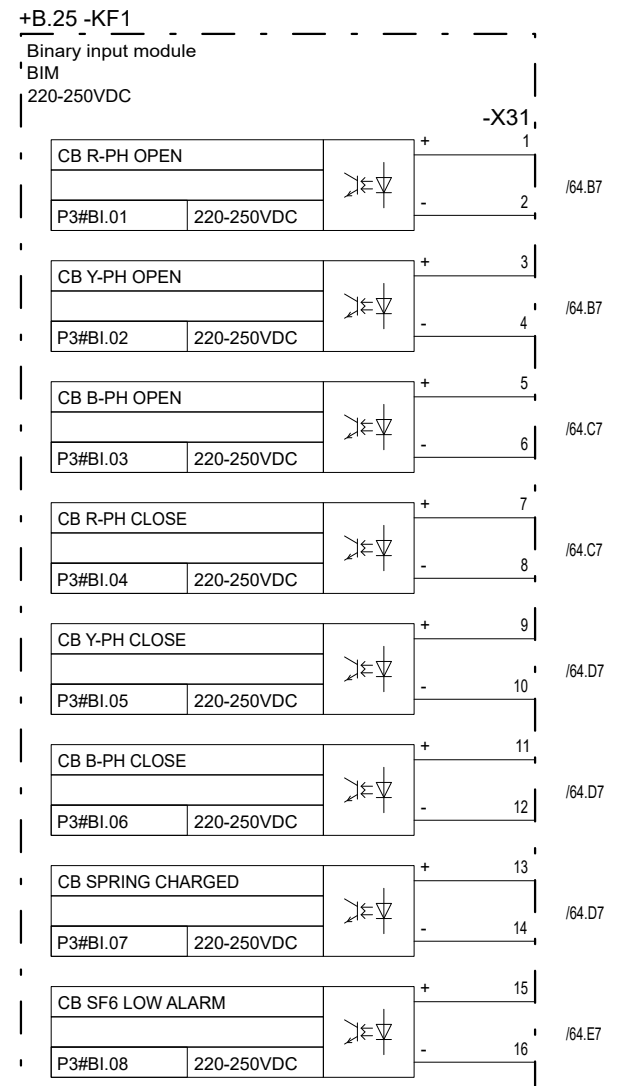
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 80
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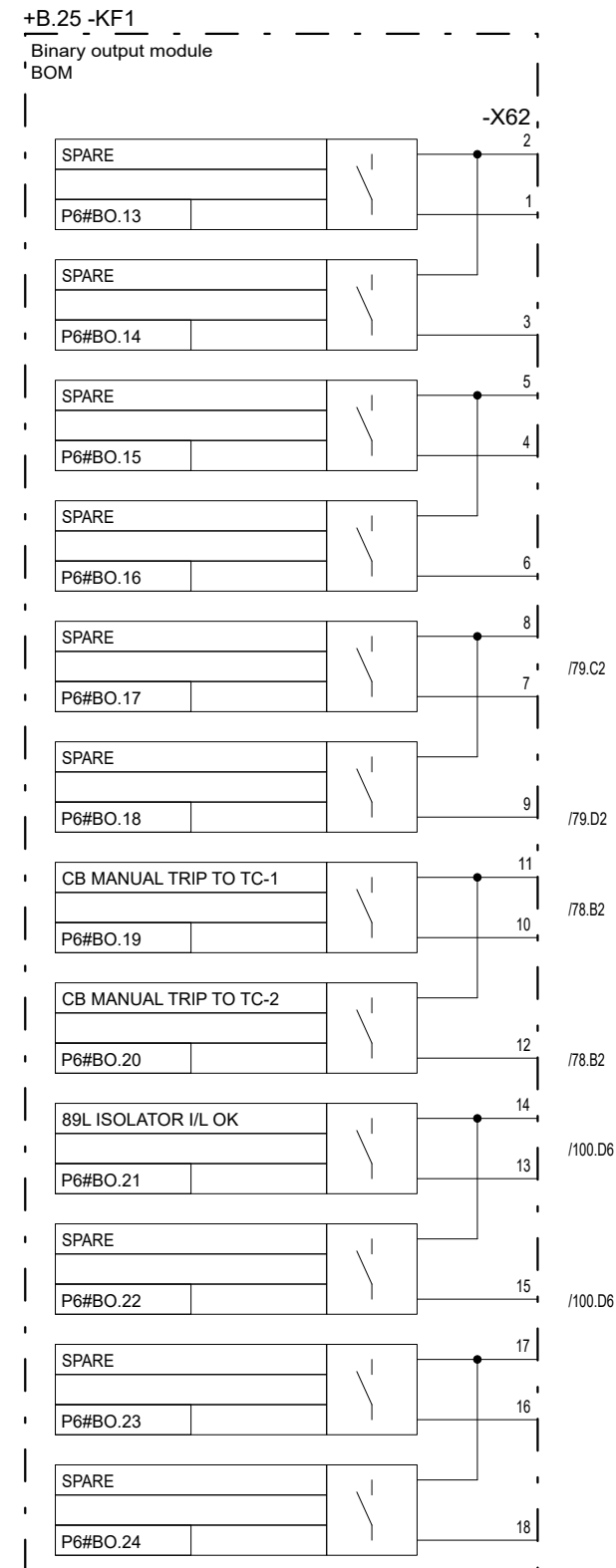
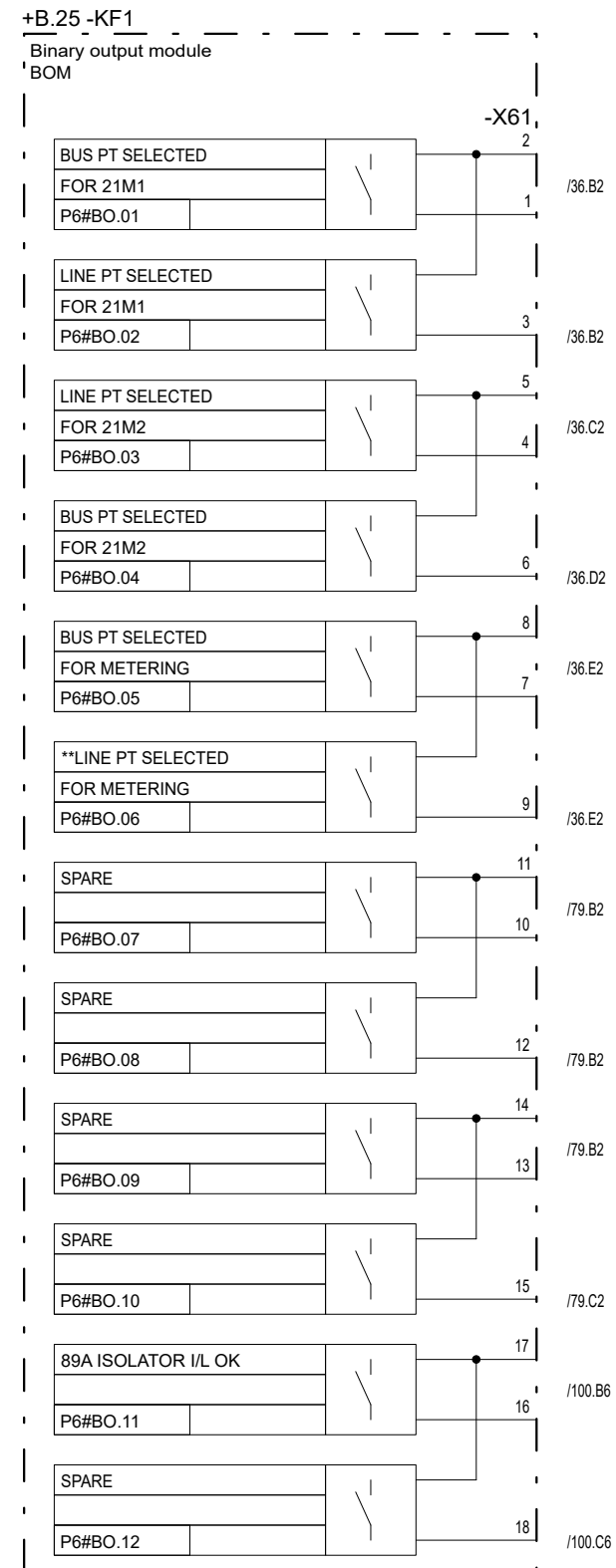
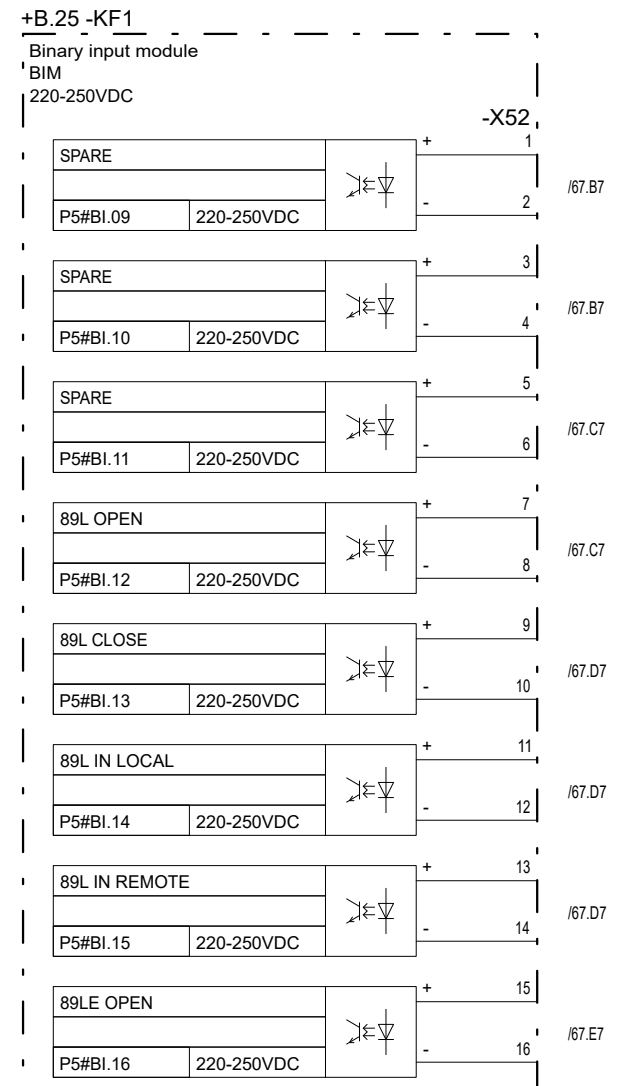
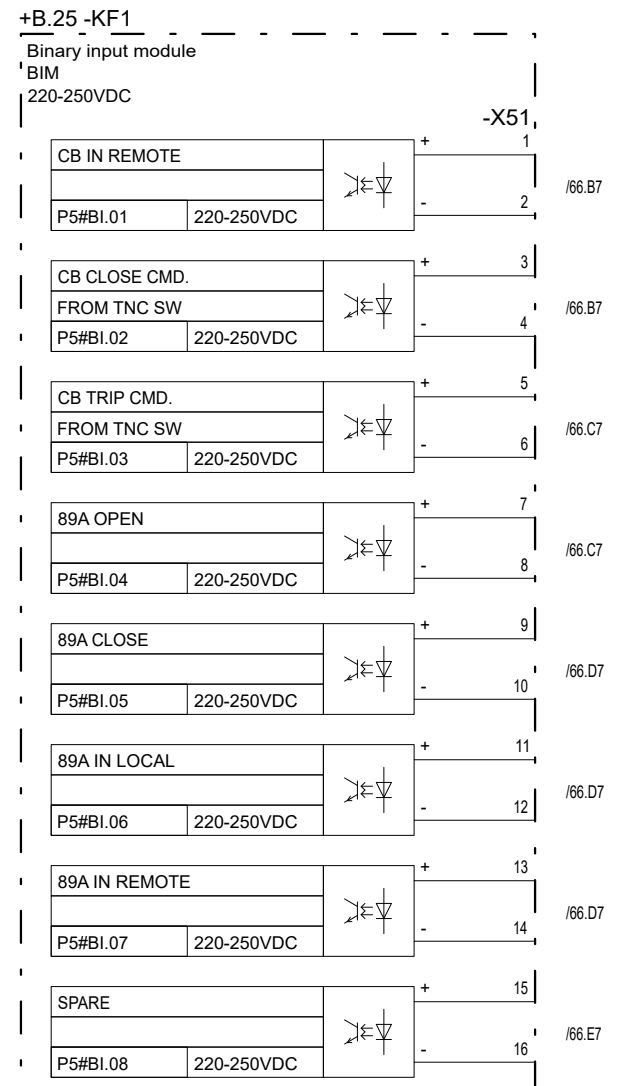
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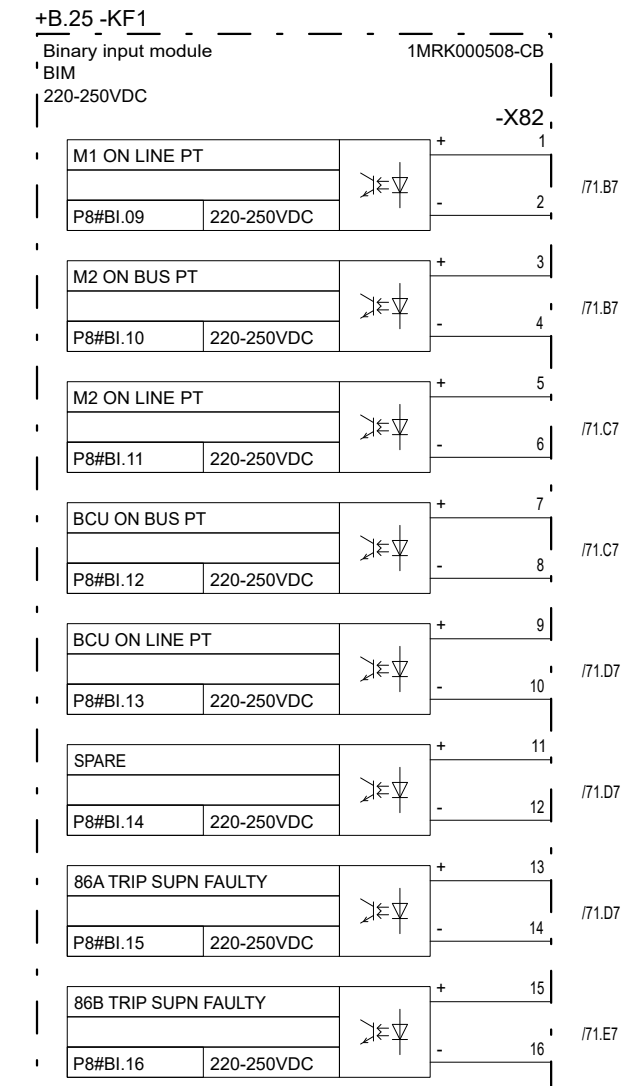
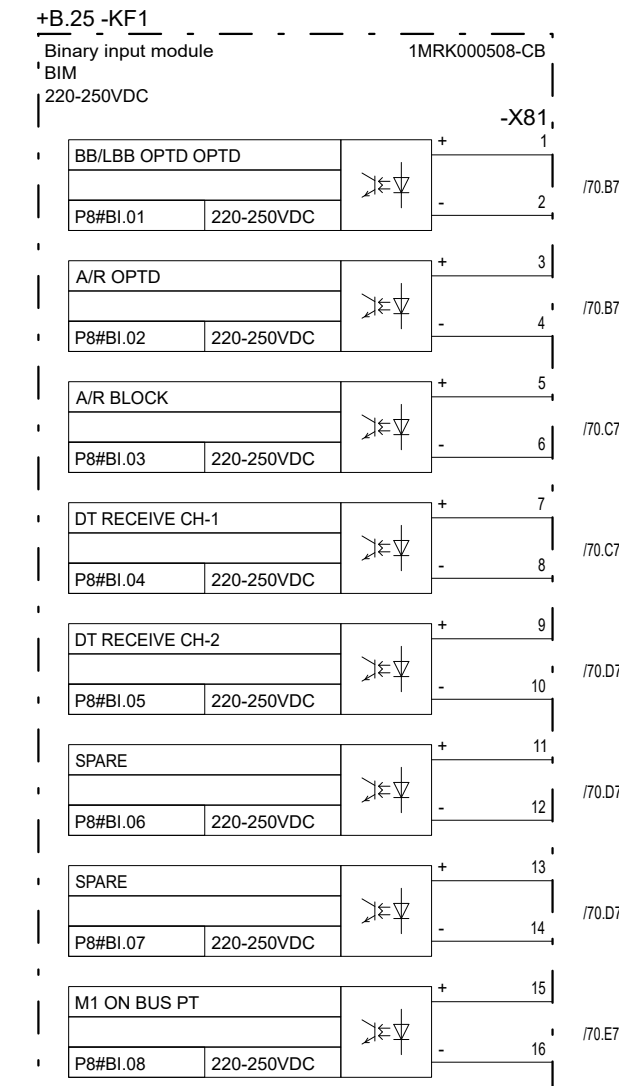
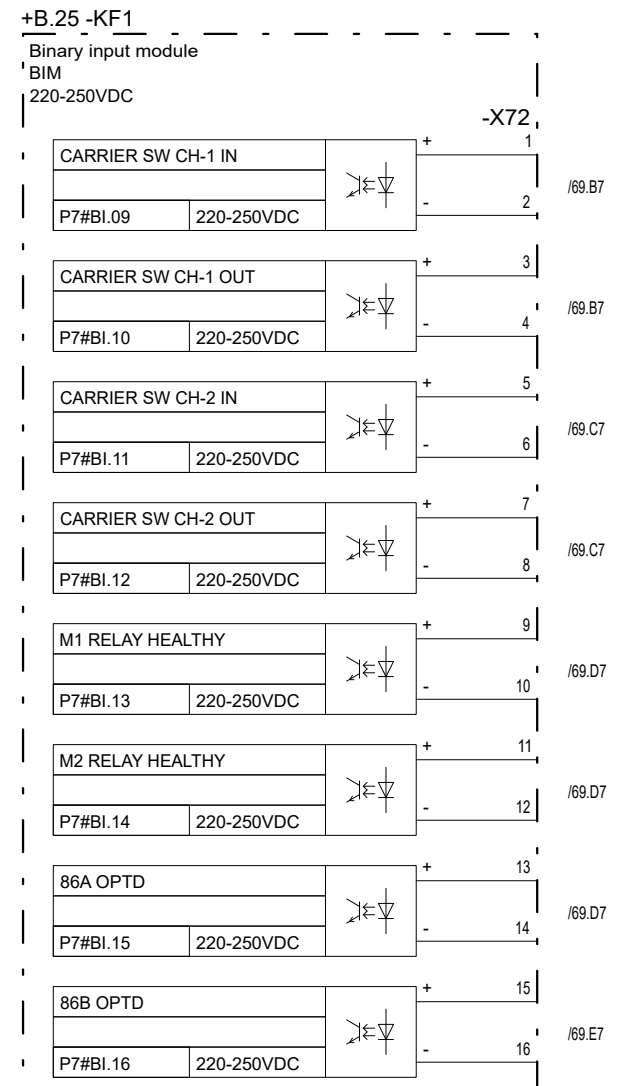
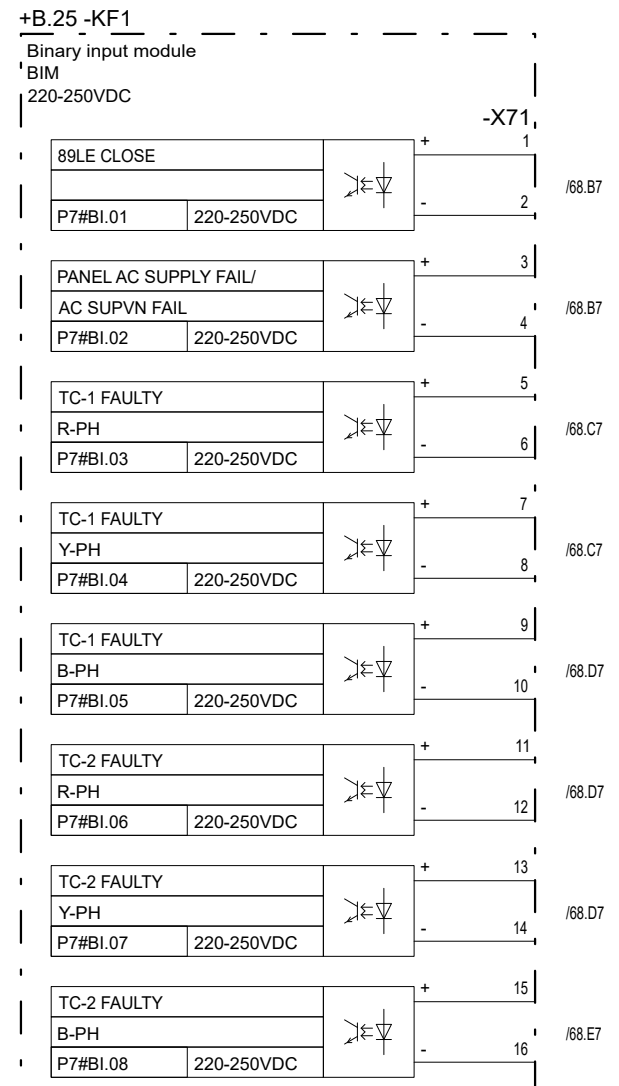
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 82
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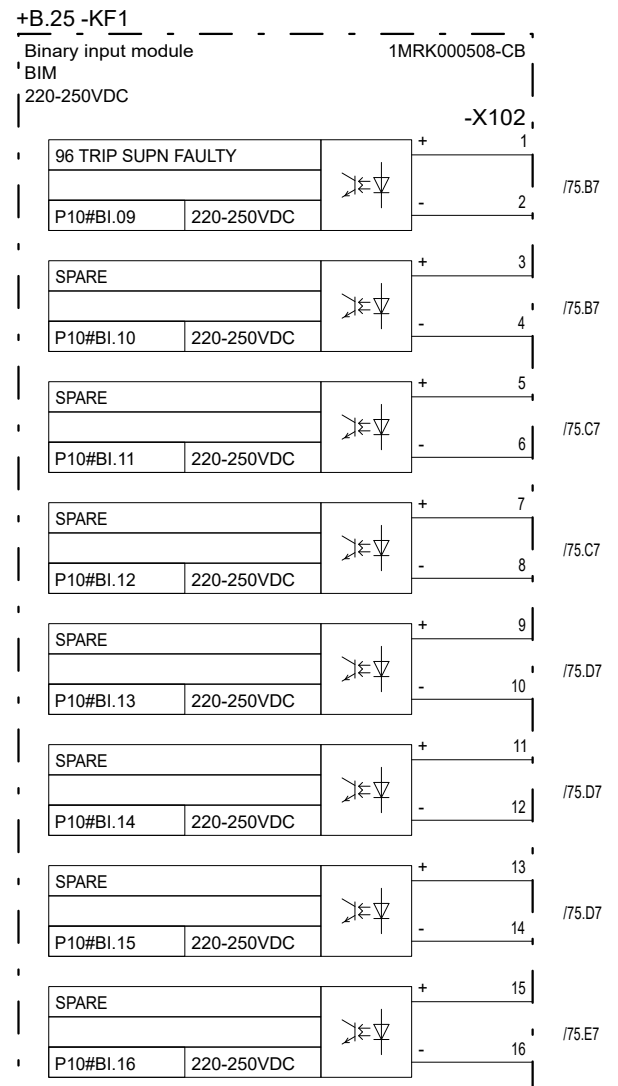
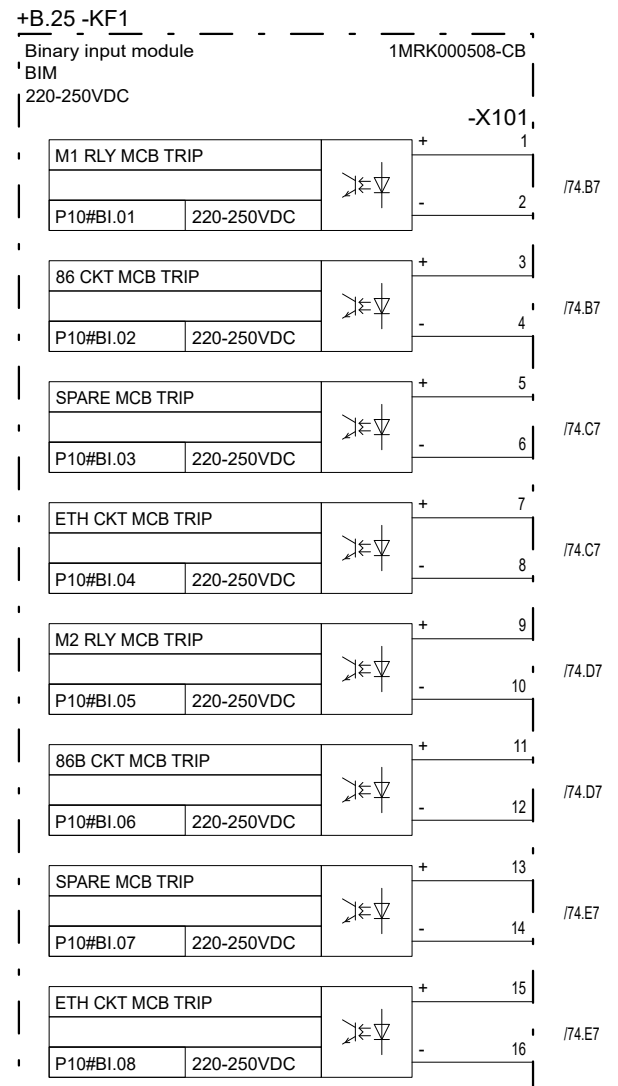
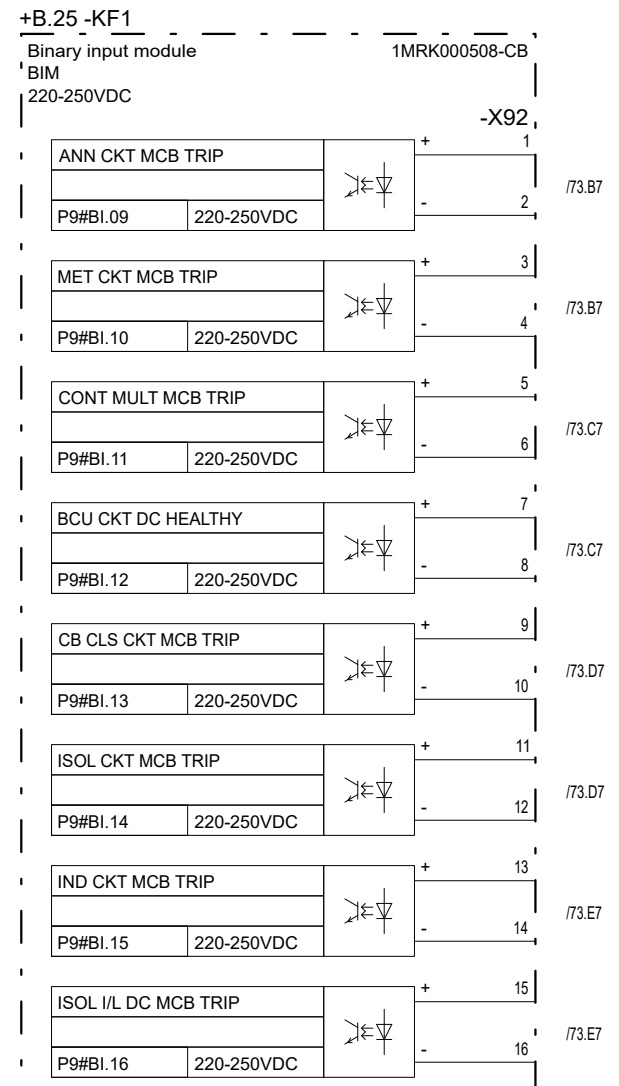
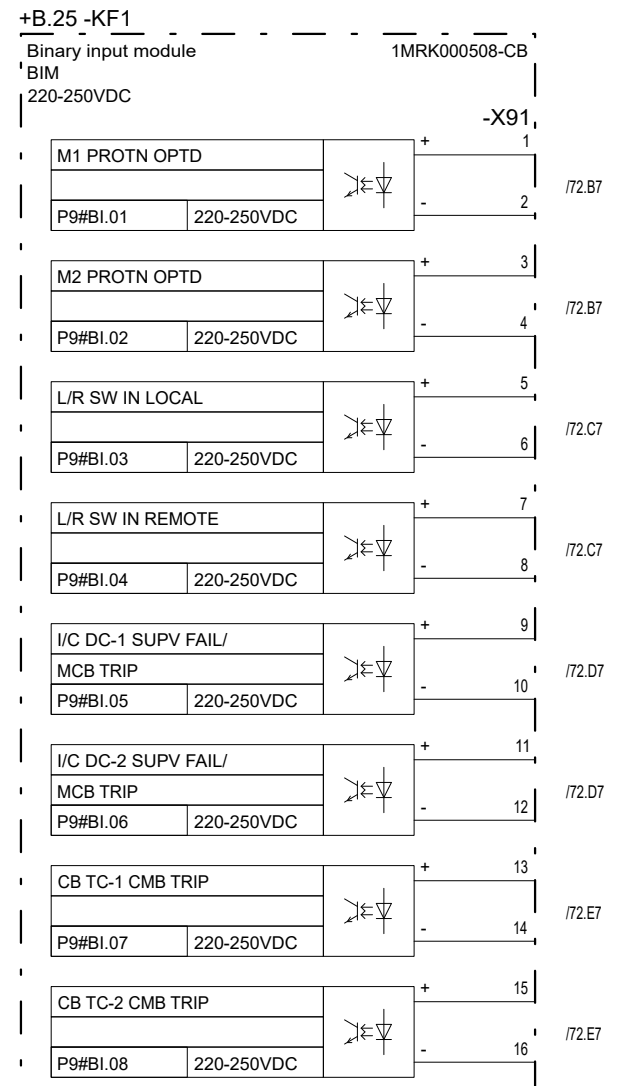
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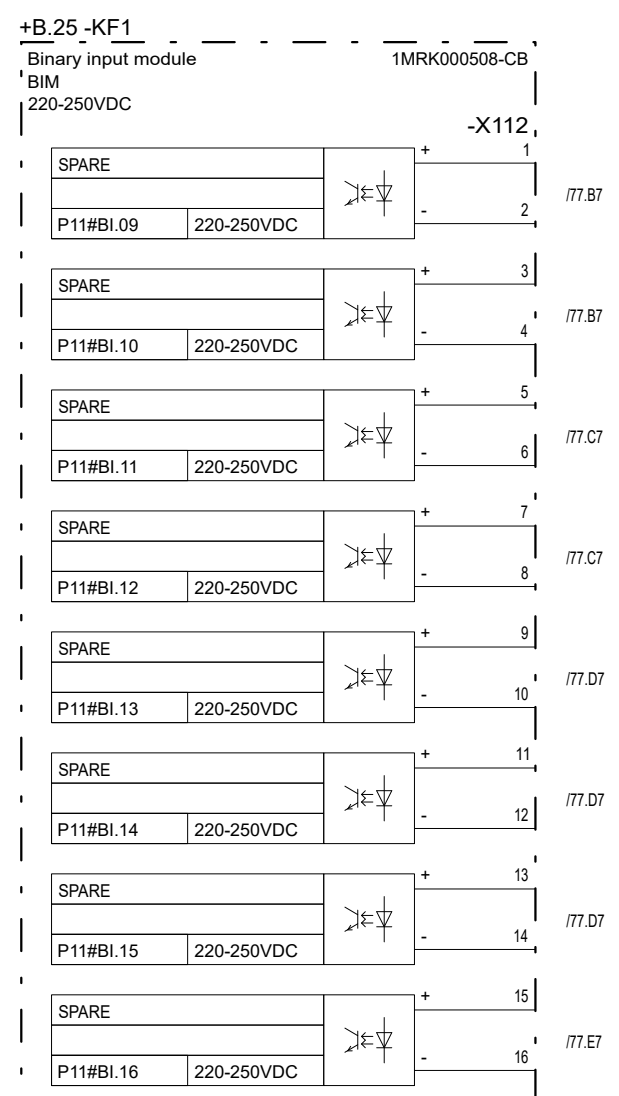
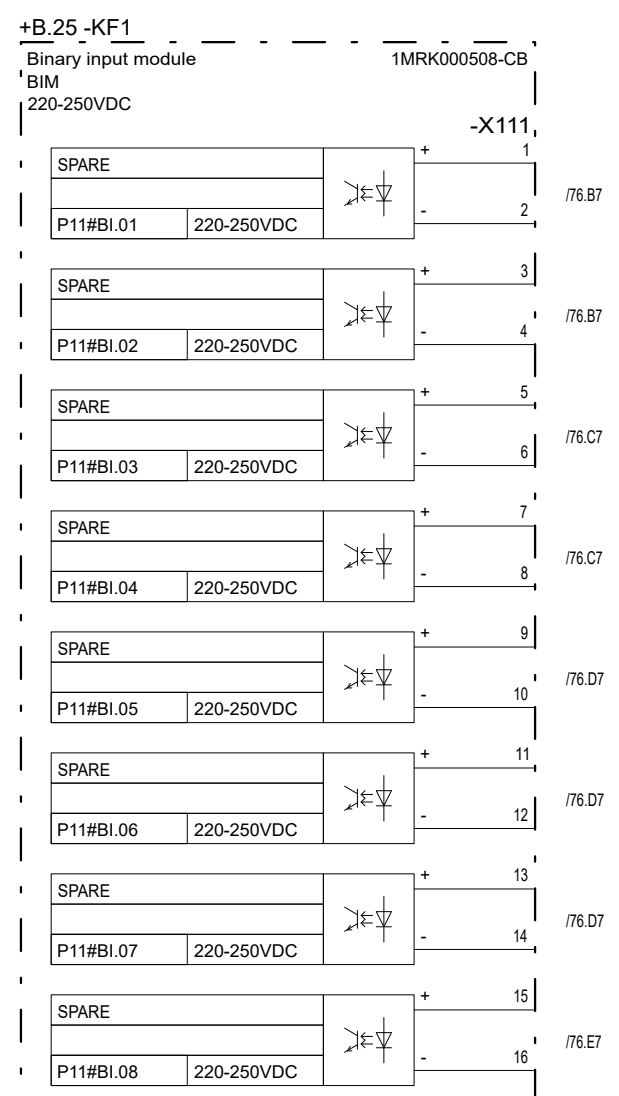
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
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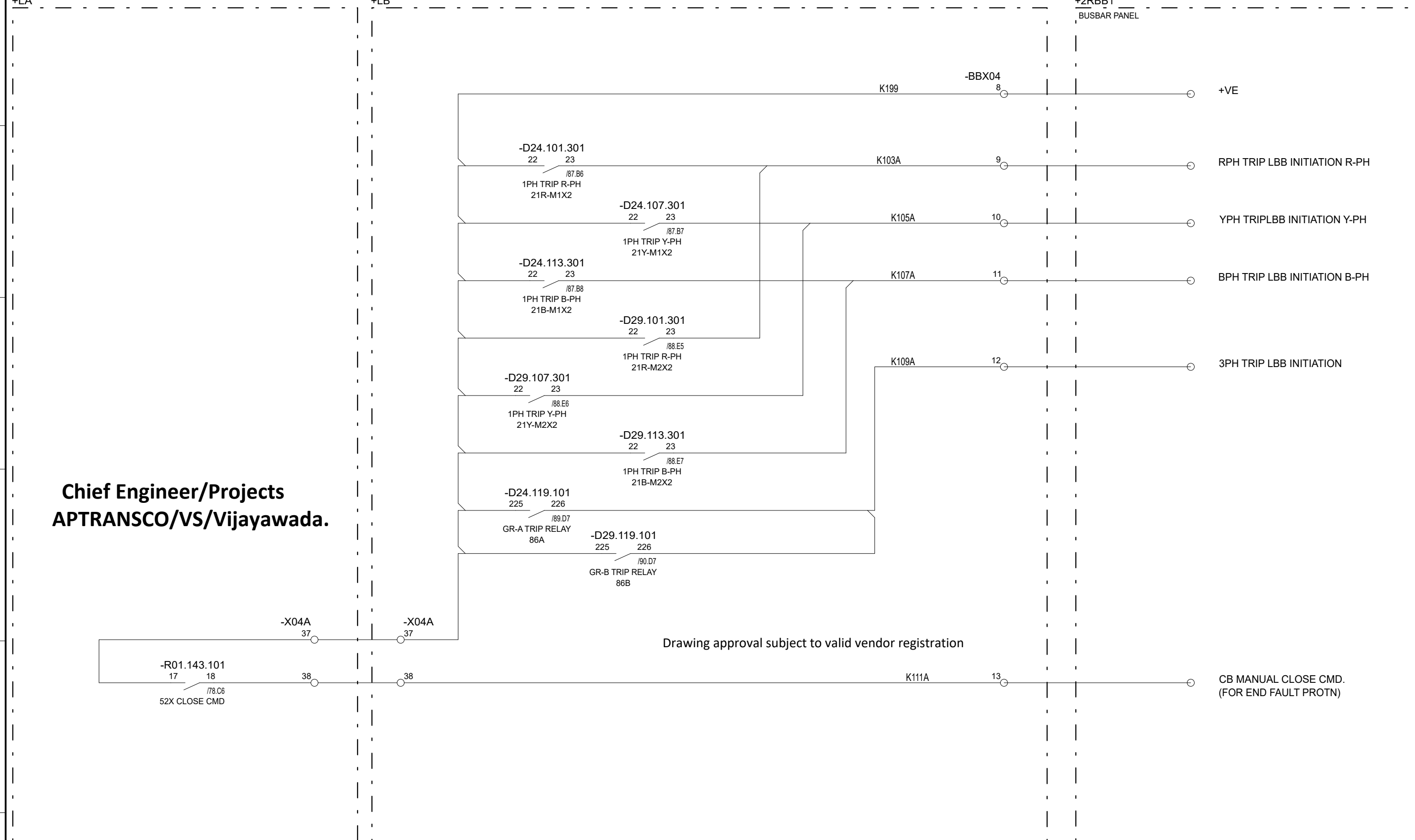


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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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				HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBAA	
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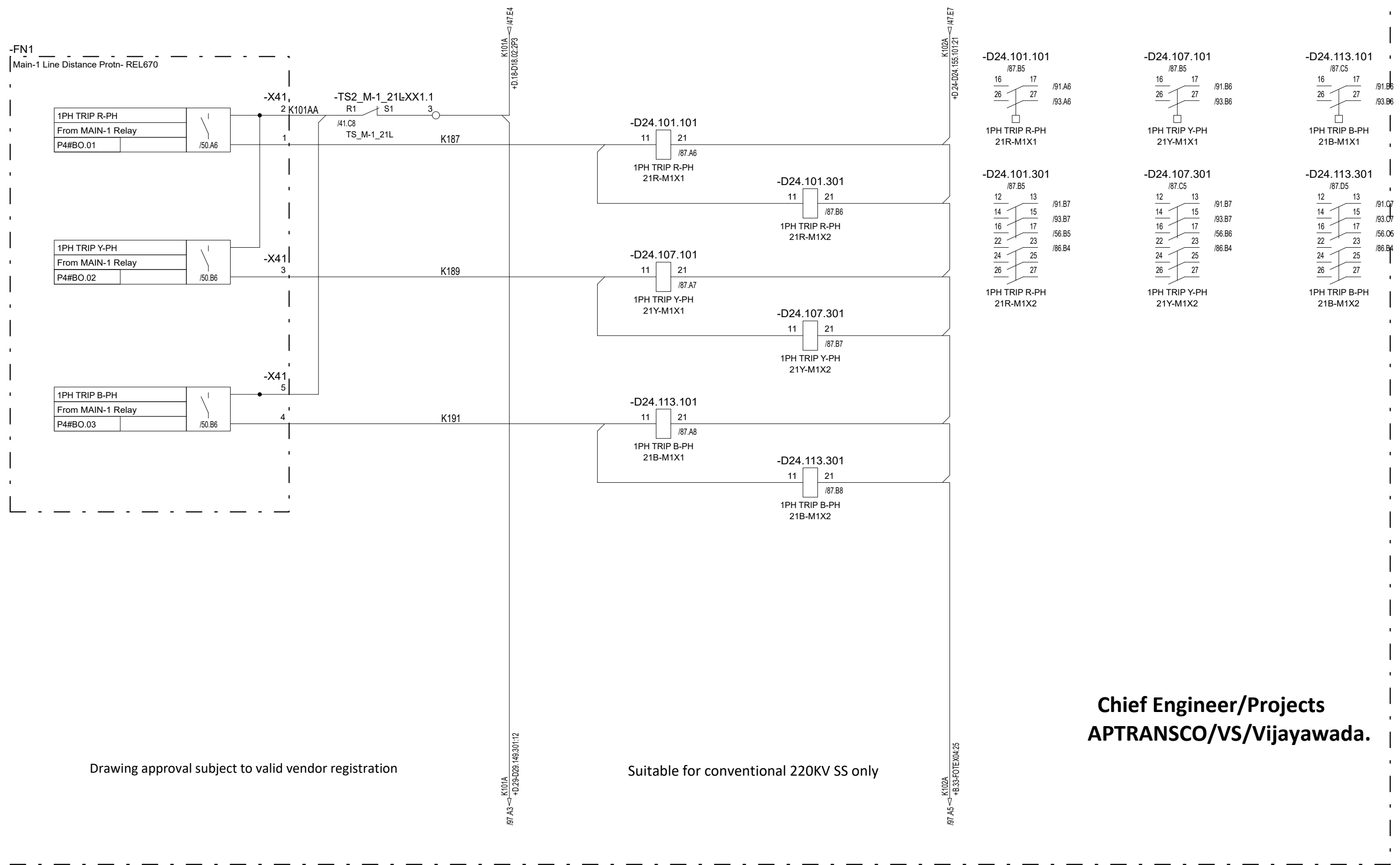
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
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		Project APTRANSCO		Single Phase Tripping-Main-1	Resp. dept. PG-GAS	Rev. ind.
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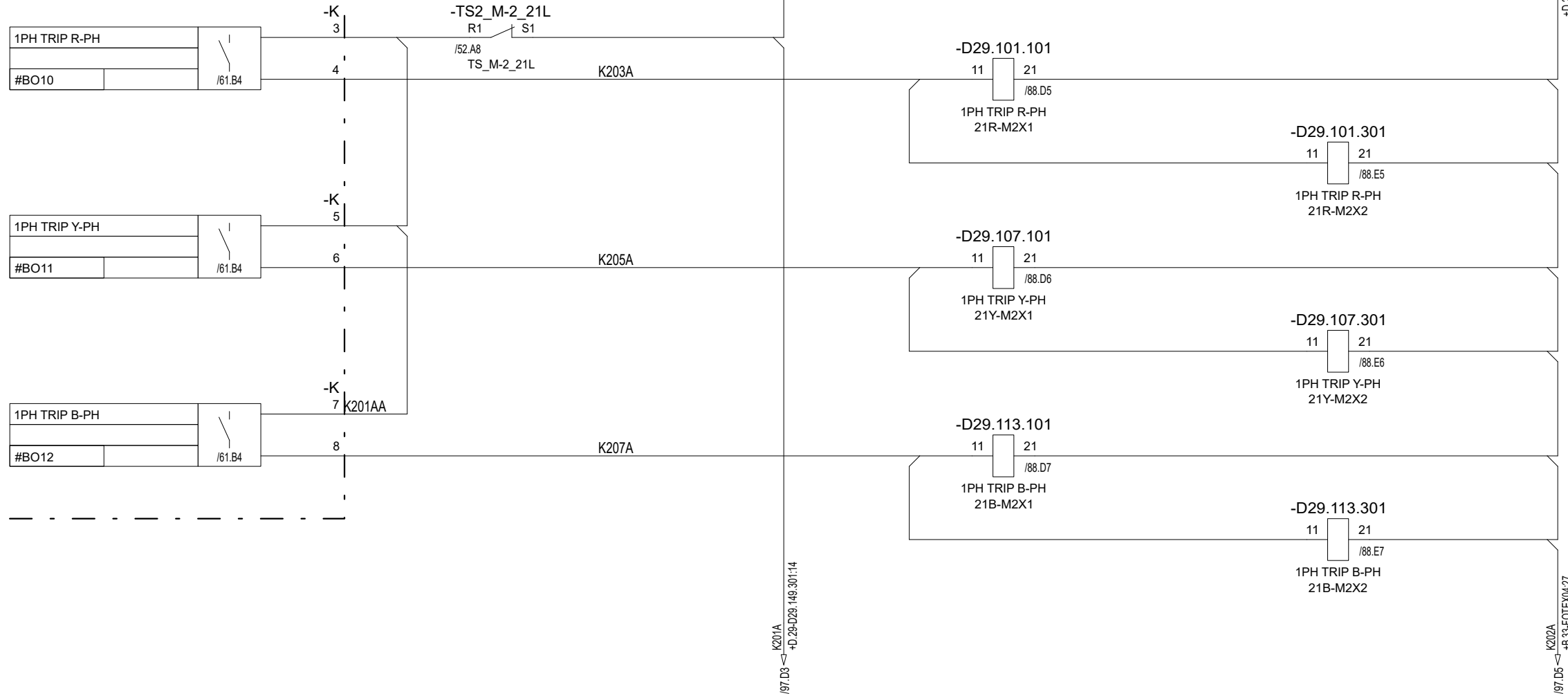
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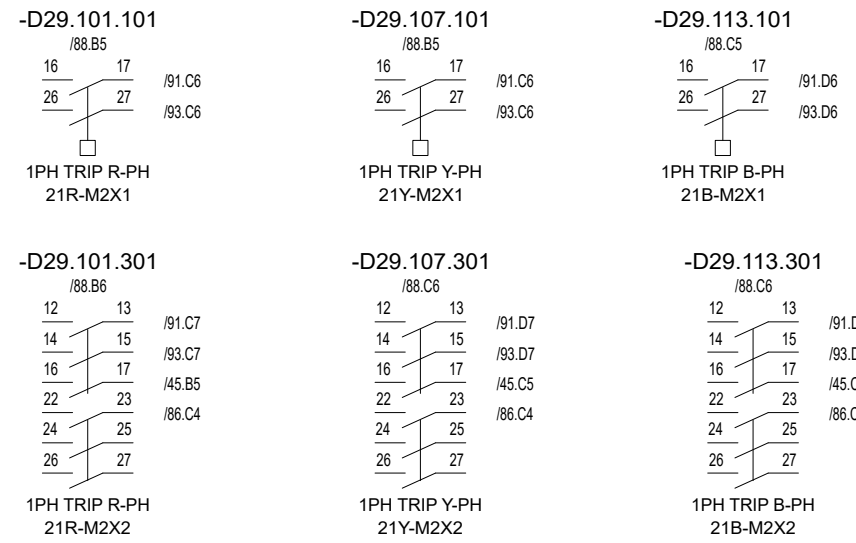
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-FN2
Main-2 Line Distance Protn- P545



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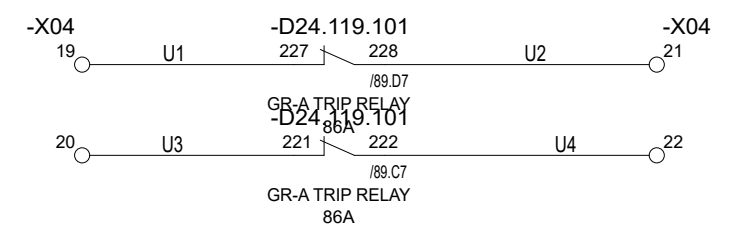
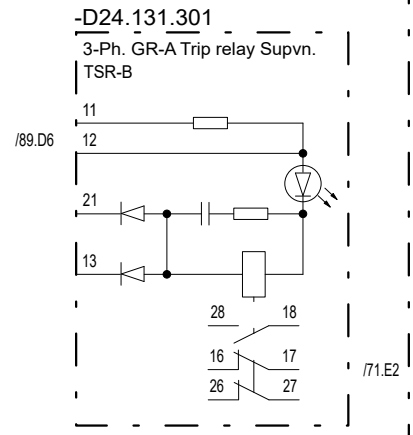
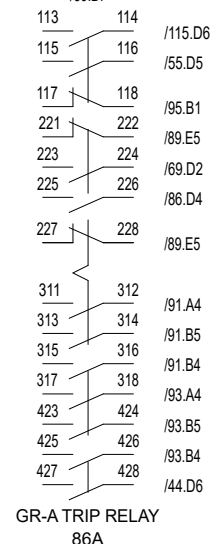
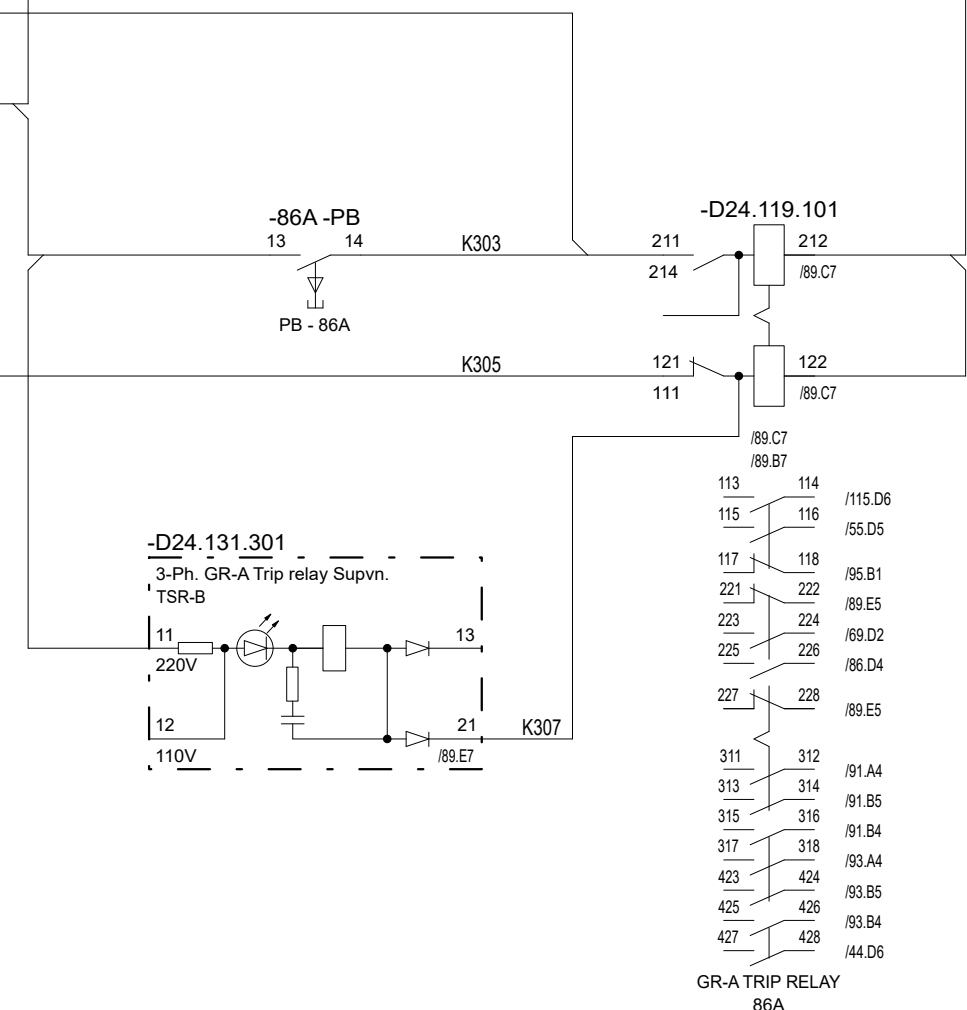
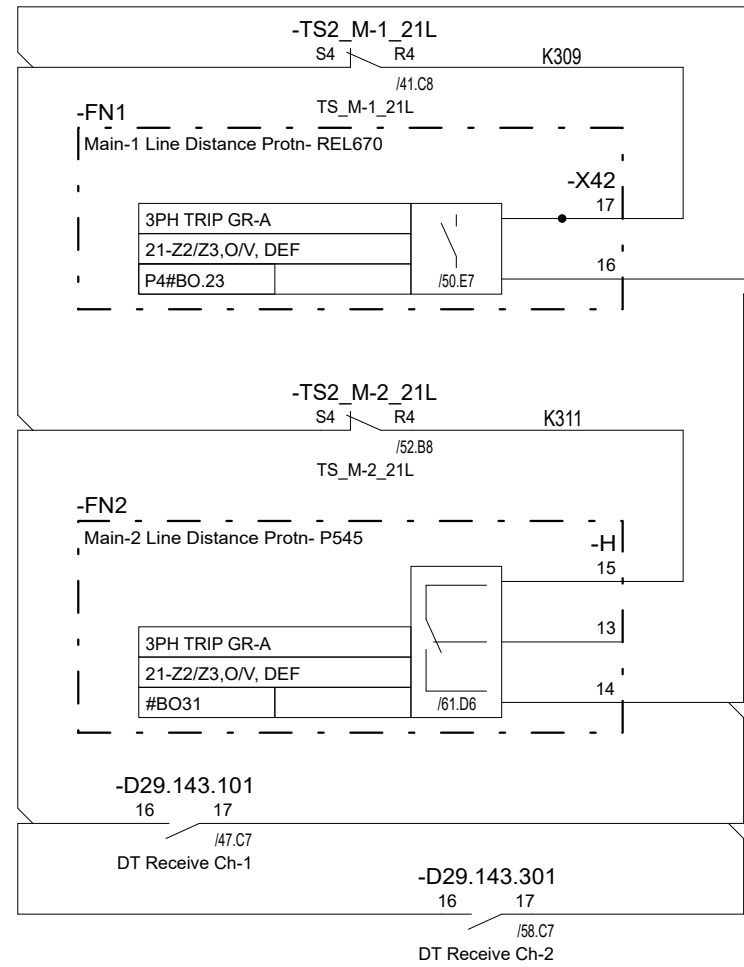
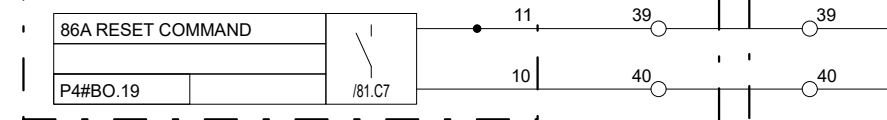
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-KF1
BAY CONTROL UNIT_REC670



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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 89
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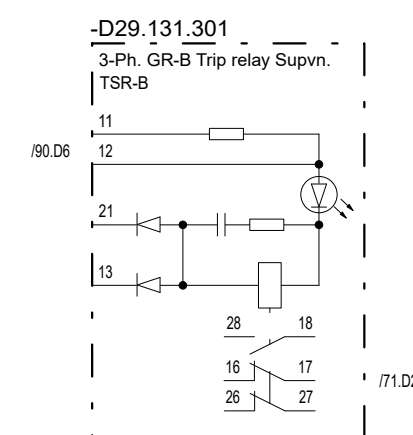
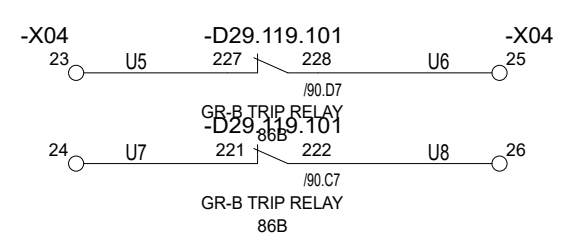
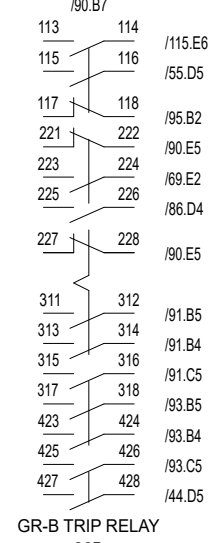
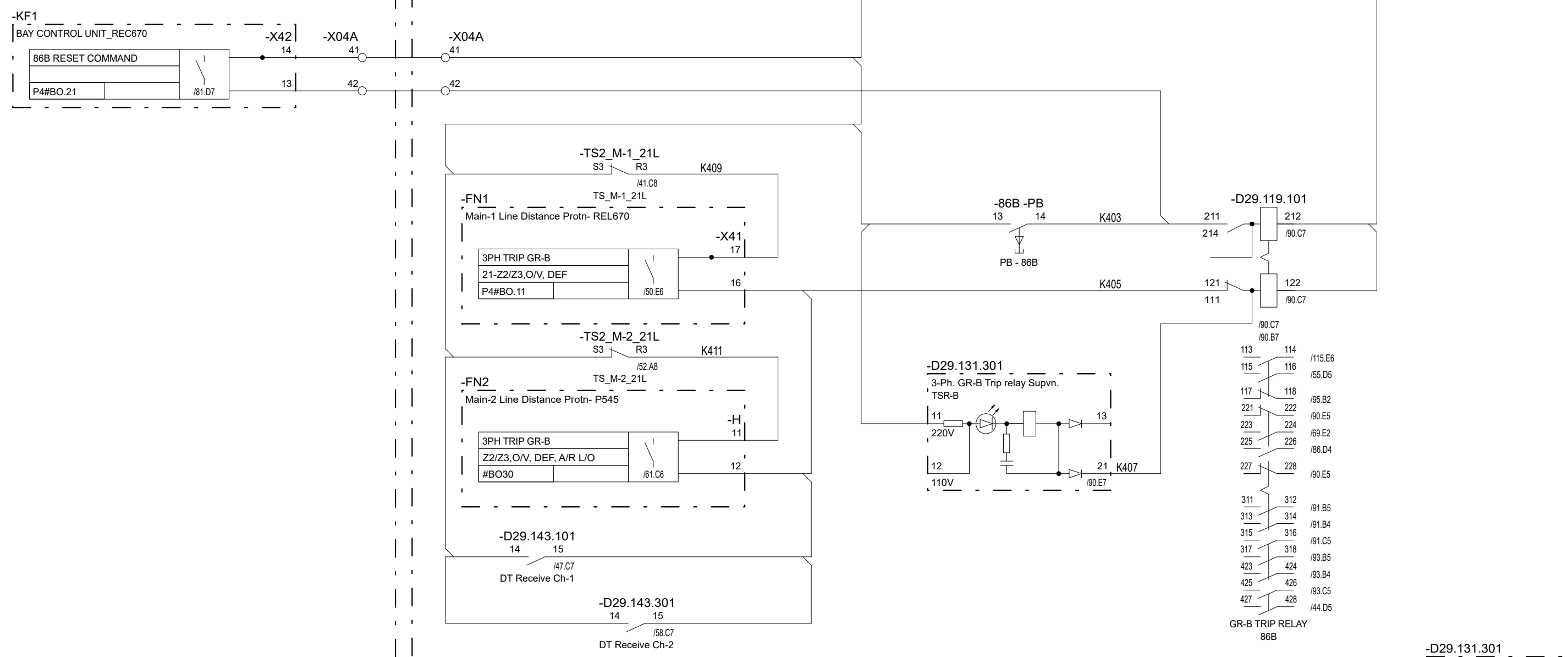
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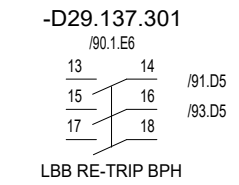
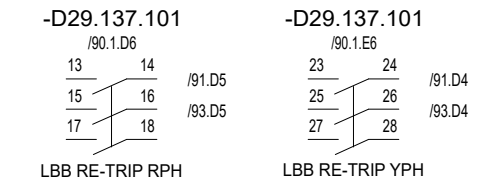
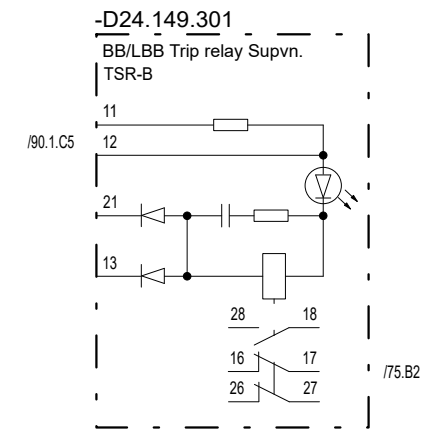
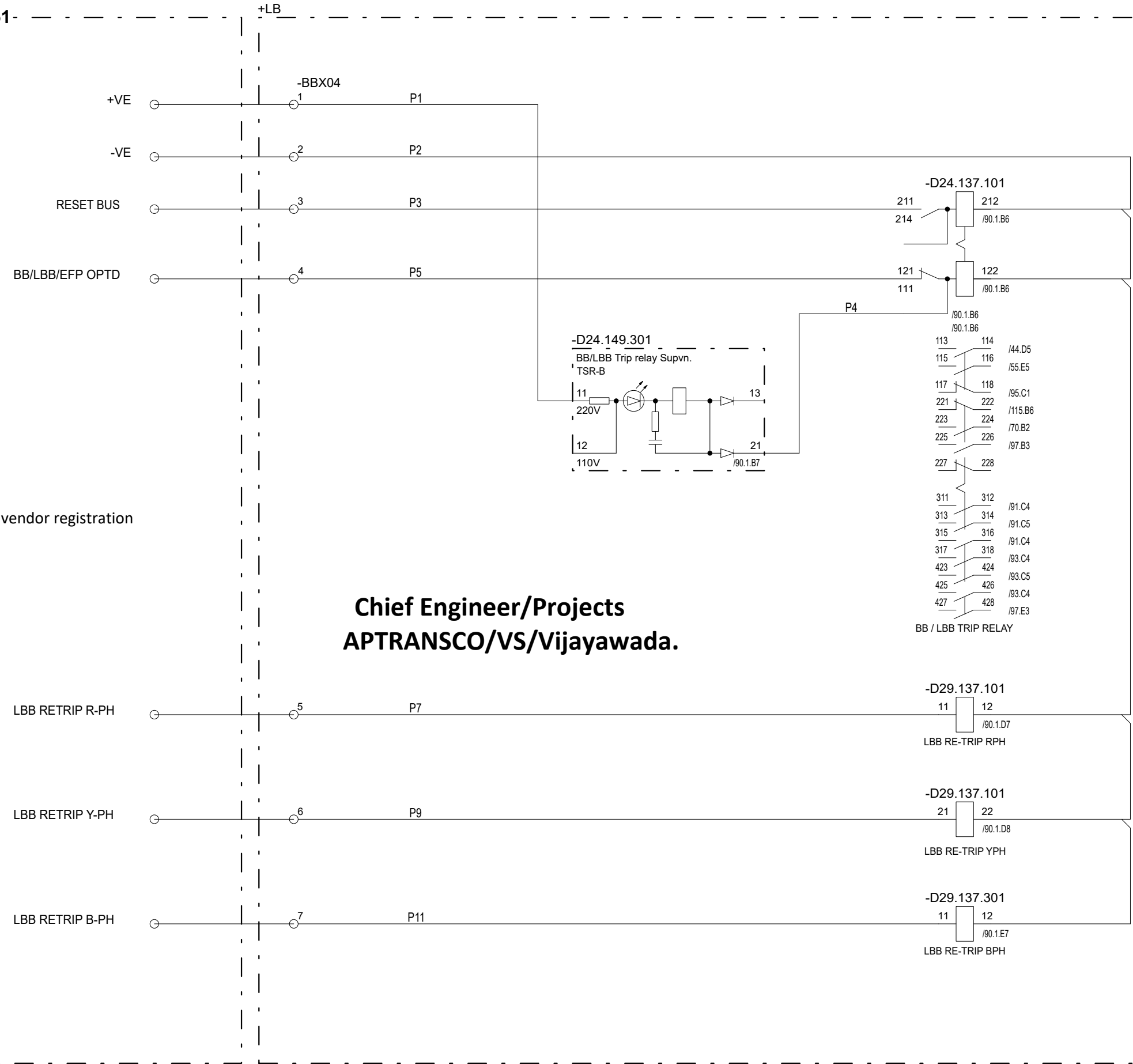
Suitable for conventional 220KV SS only

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BUSBAR PANEL



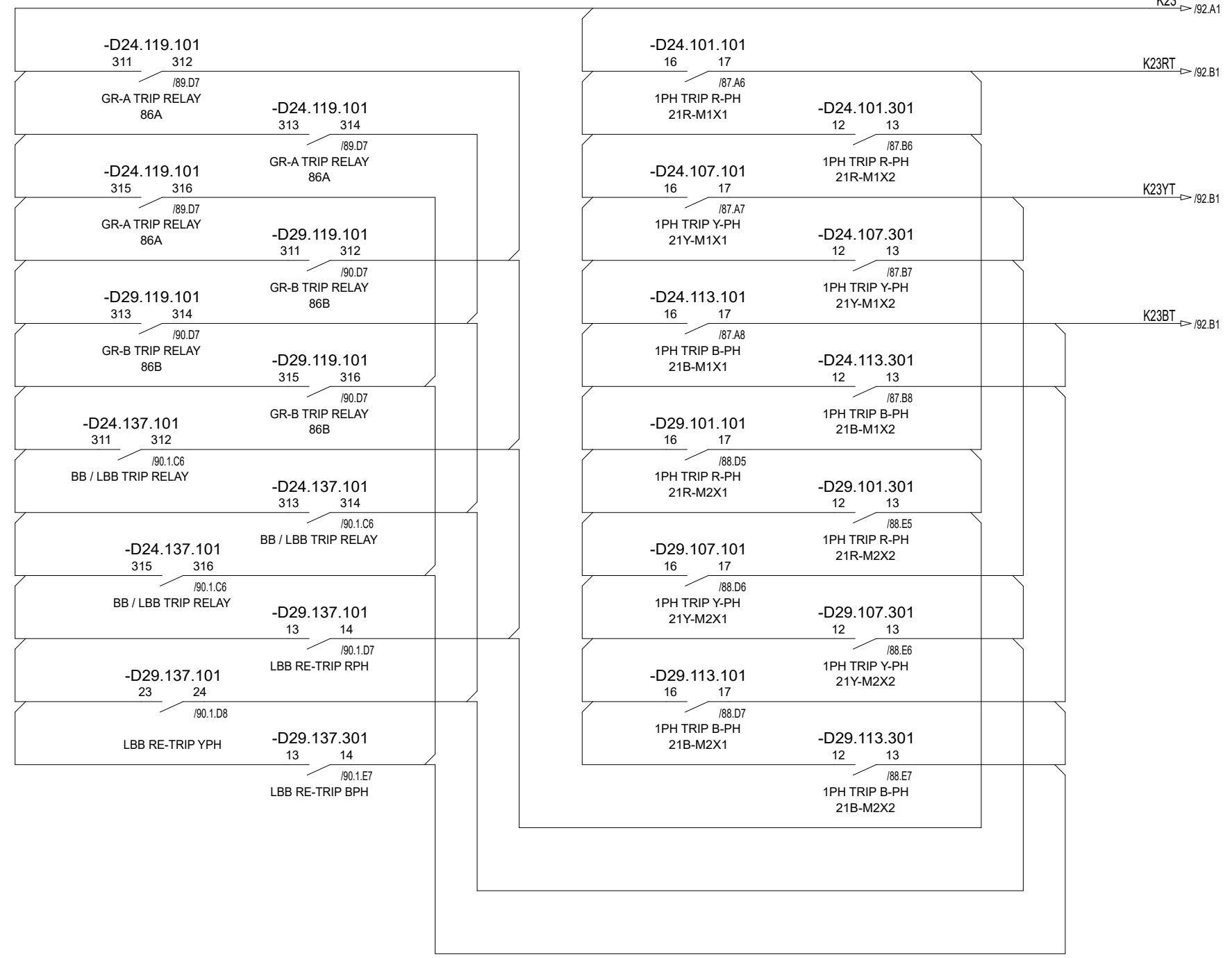
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Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 90.1
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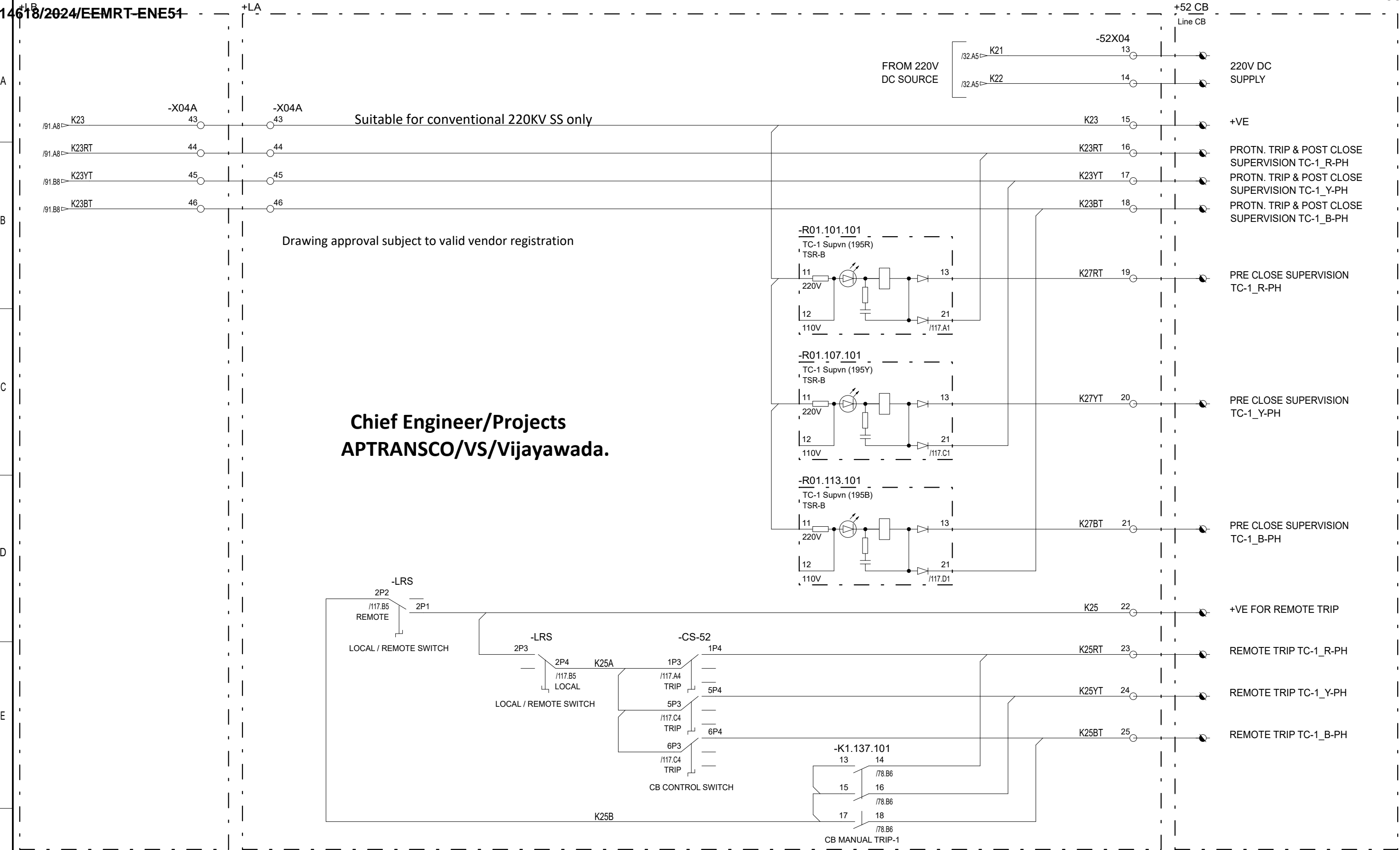


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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 91
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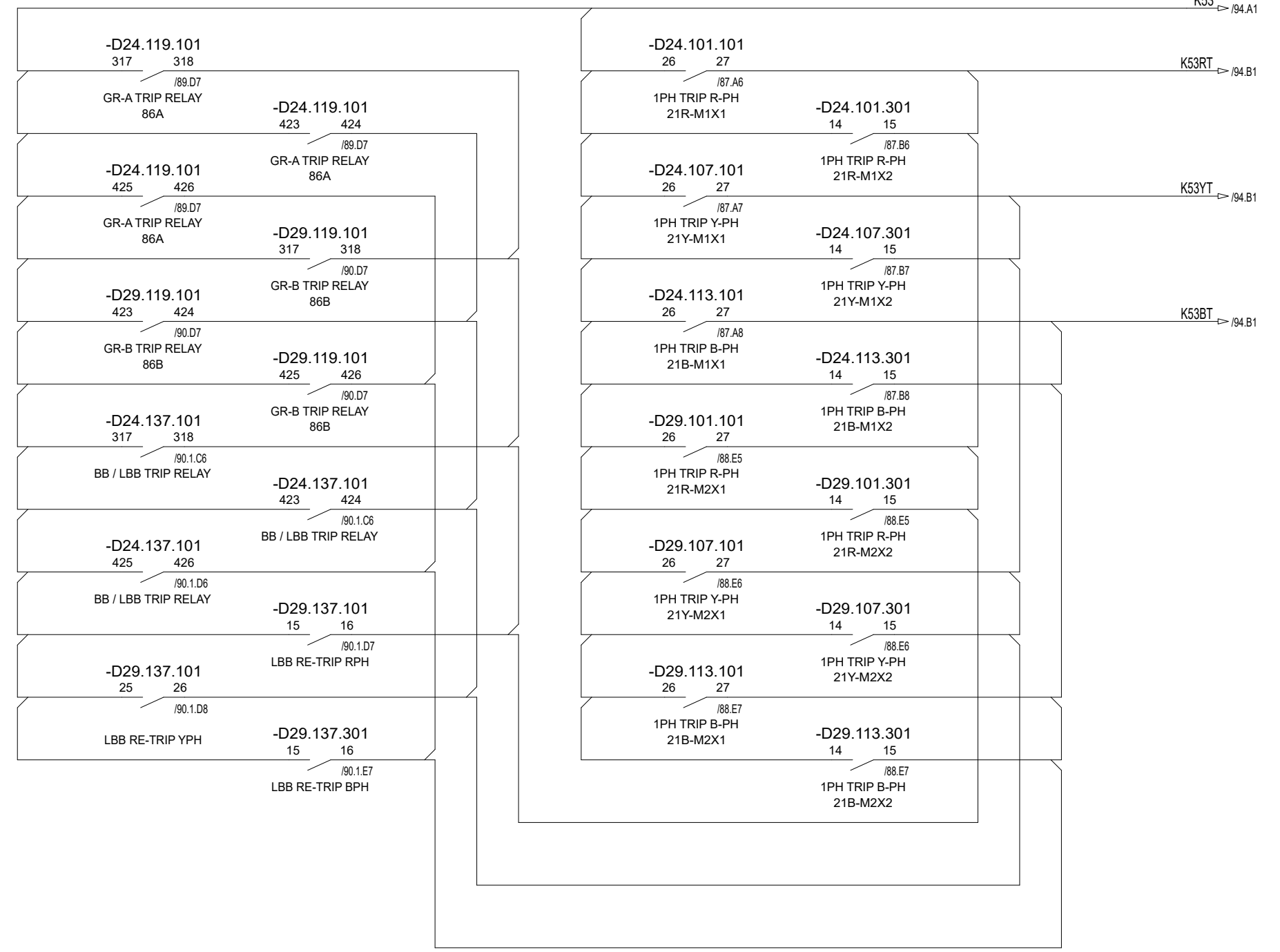
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		CB TC-1 Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 92
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		1-ph Trip to CB TC-2 Circuit	PG-GAS	Rev. ind.
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 93
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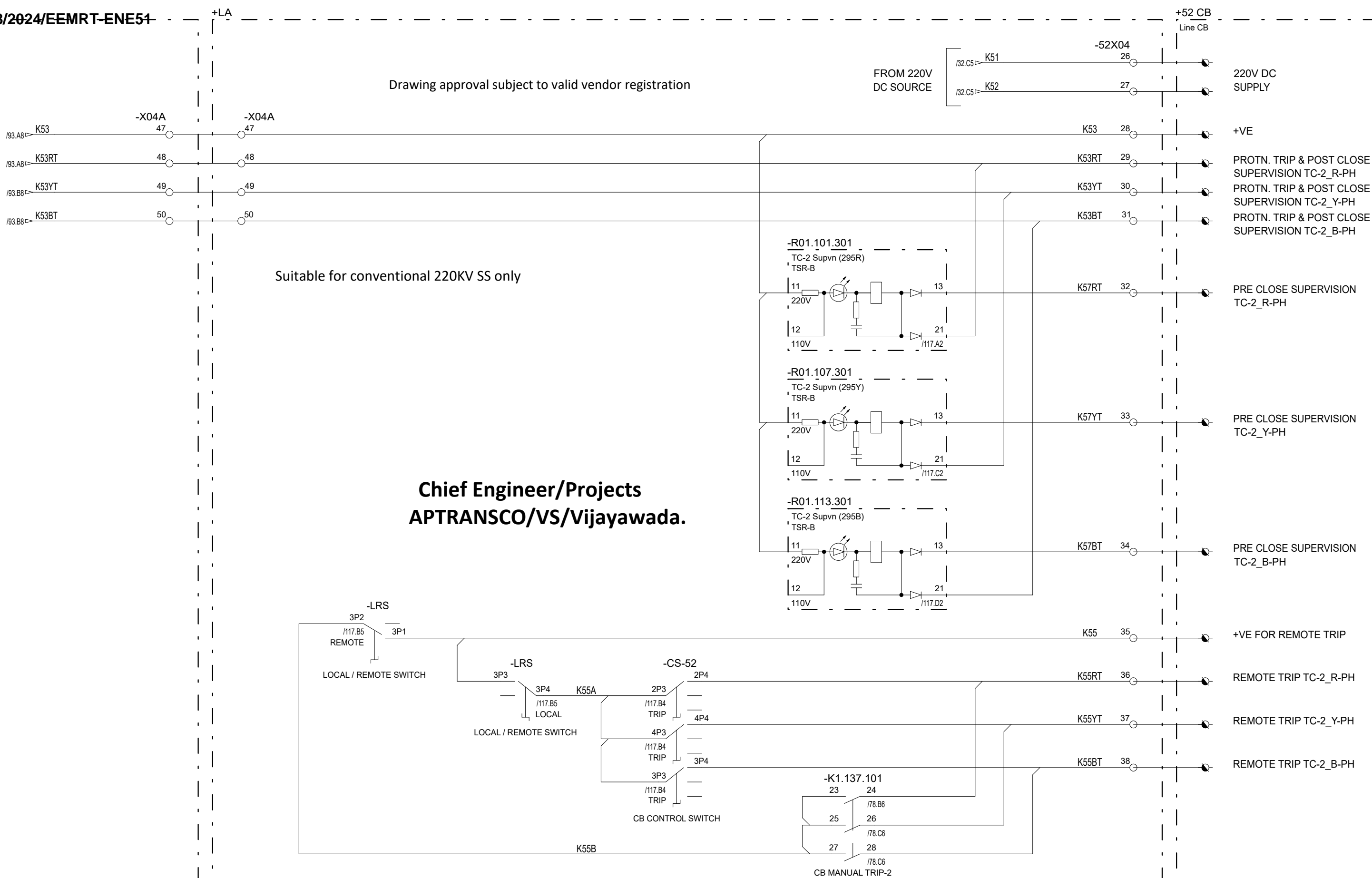
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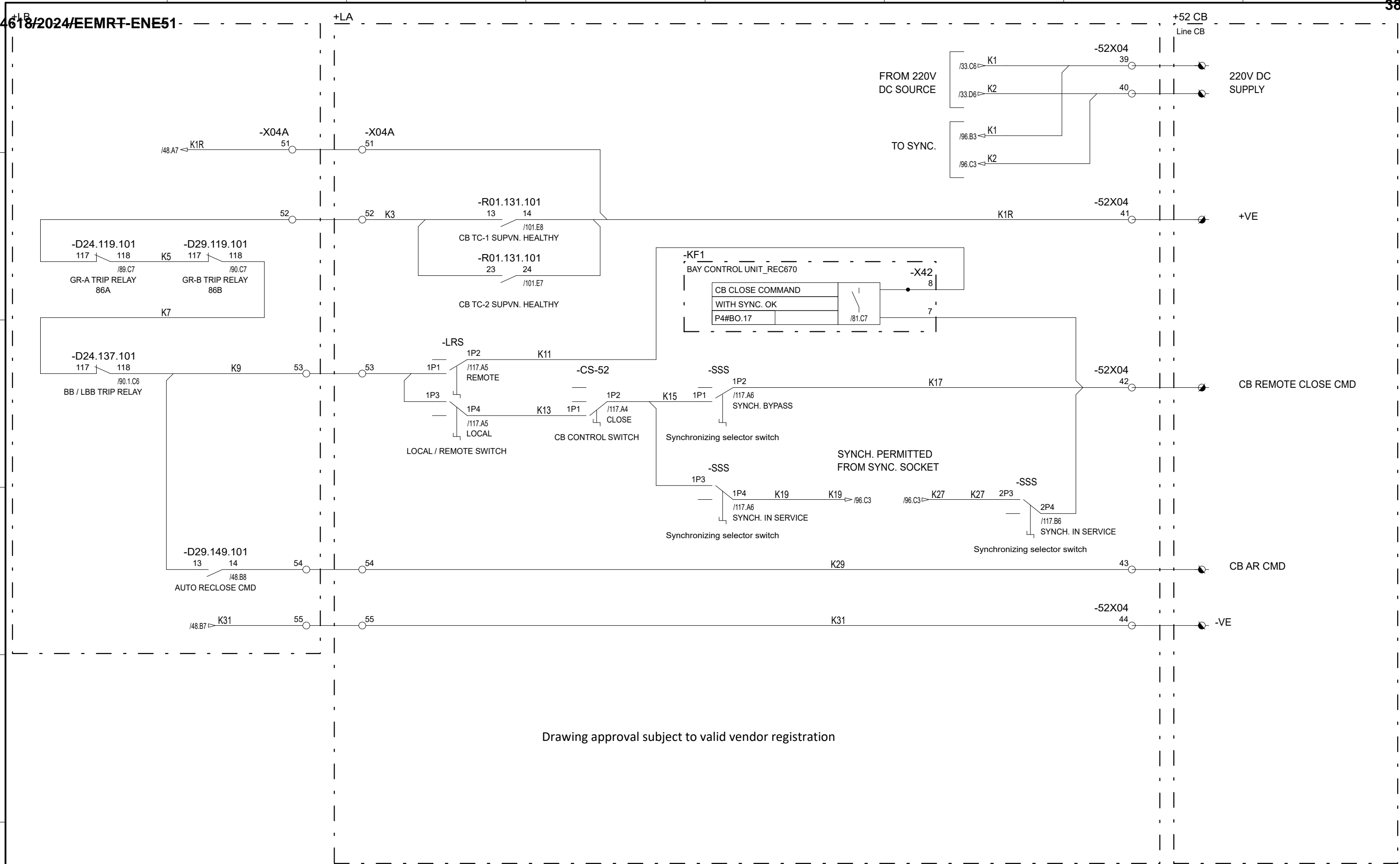
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
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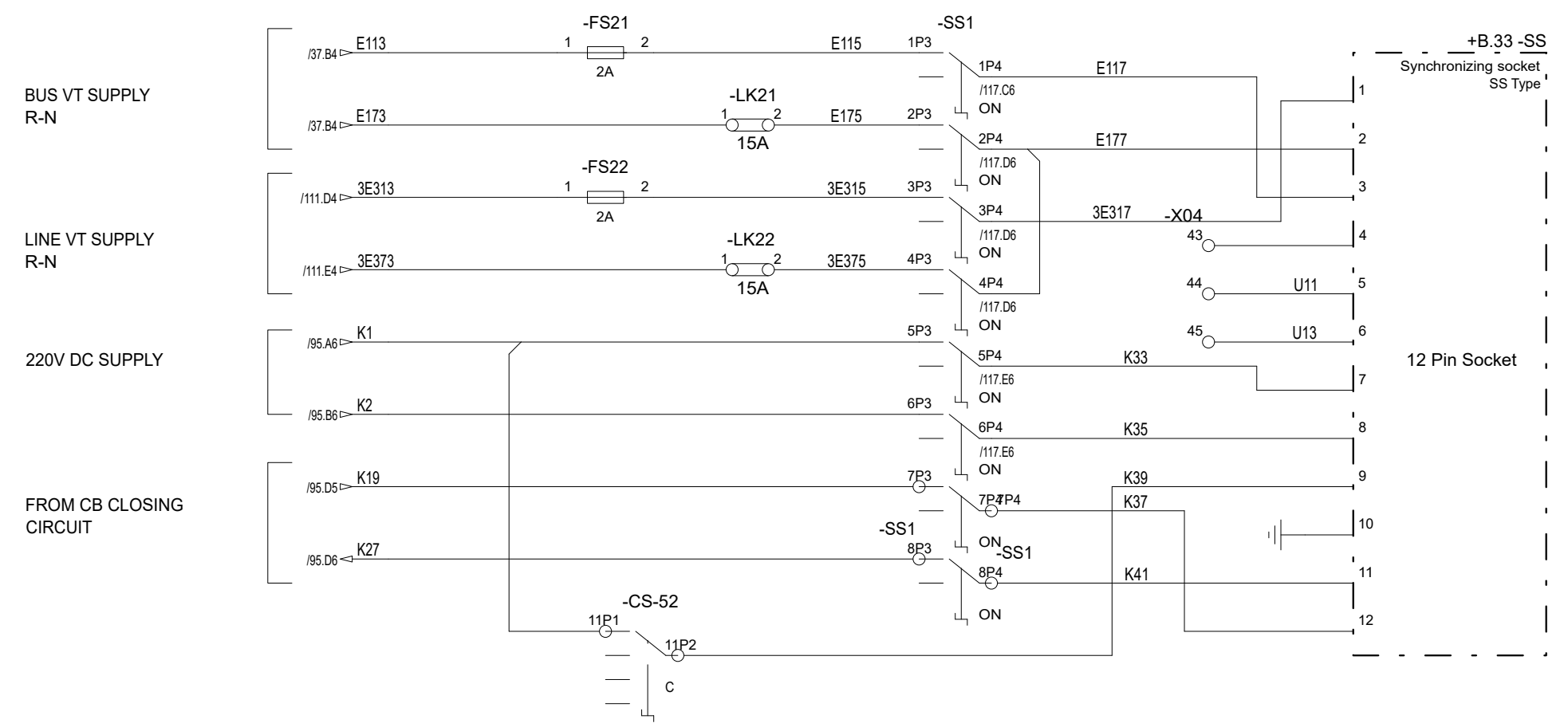
Drawing approval subject to valid vendor registration

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		Project	APTRANSCO STANDARD DRAWING		CB Closing Circuit			Resp. dept.	PG-GAS	Rev. ind.	Language	en
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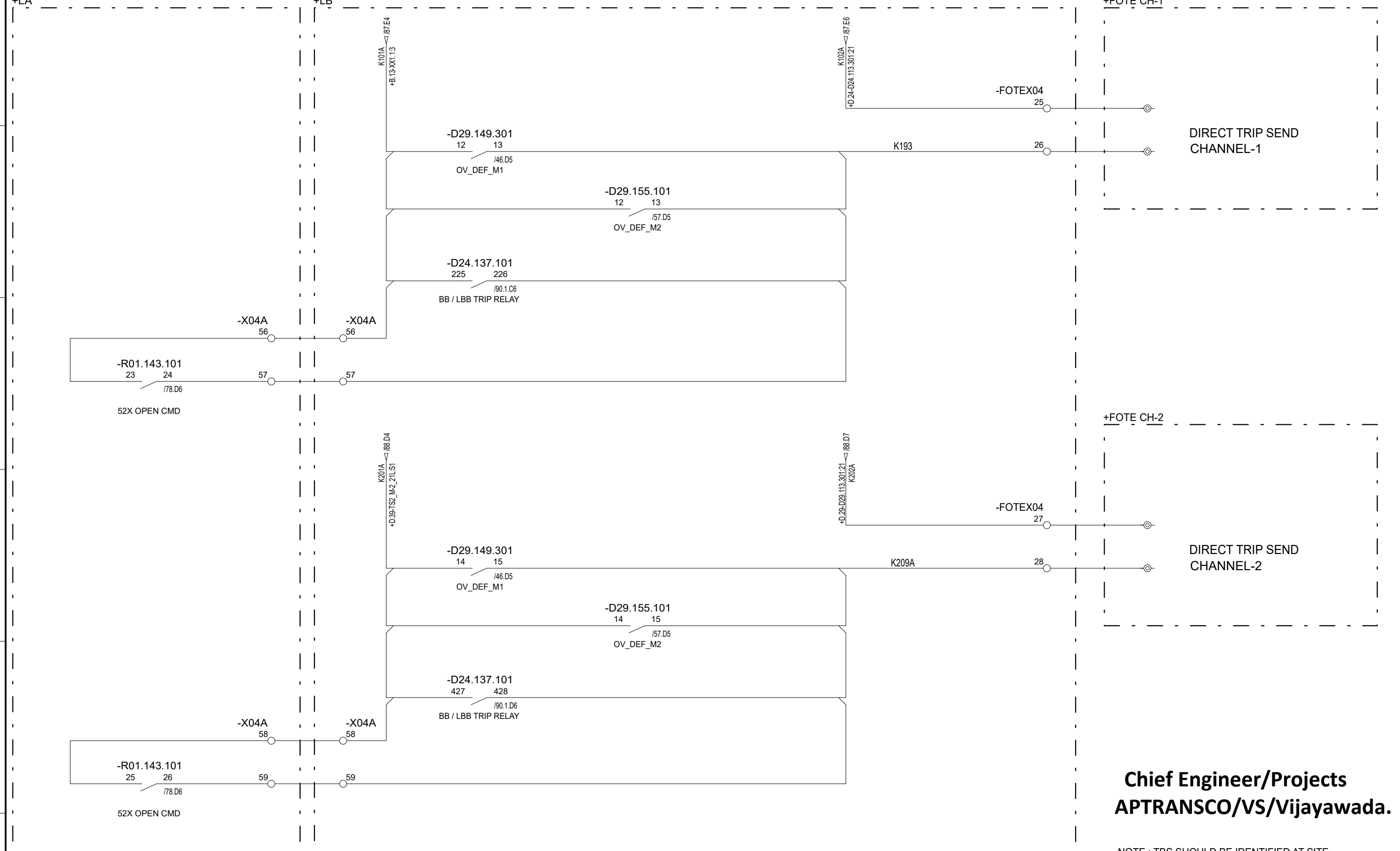
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		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 96
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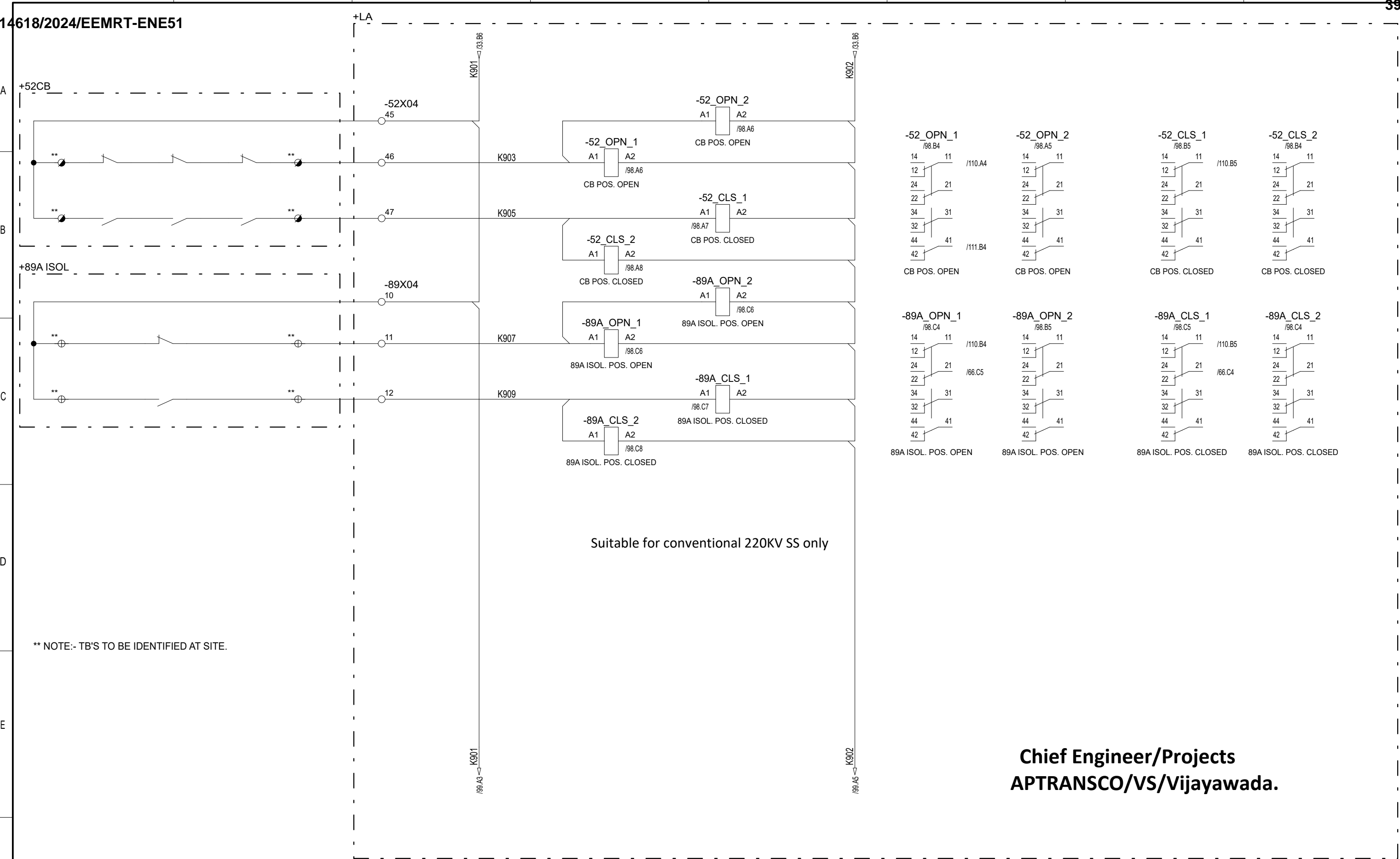
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		Project APTRANSCO STANDARD DRAWING		DT Send Ch-1 & 2 Ckt.		Resp. dept. PG-GAS		Rev. ind.	
				Hitachi Energy India Limited				Language en	
Rev.	Revision note	Date	Name	HITACHI		Doc. no. 1MNS500925-CBAA		Sheet 97	
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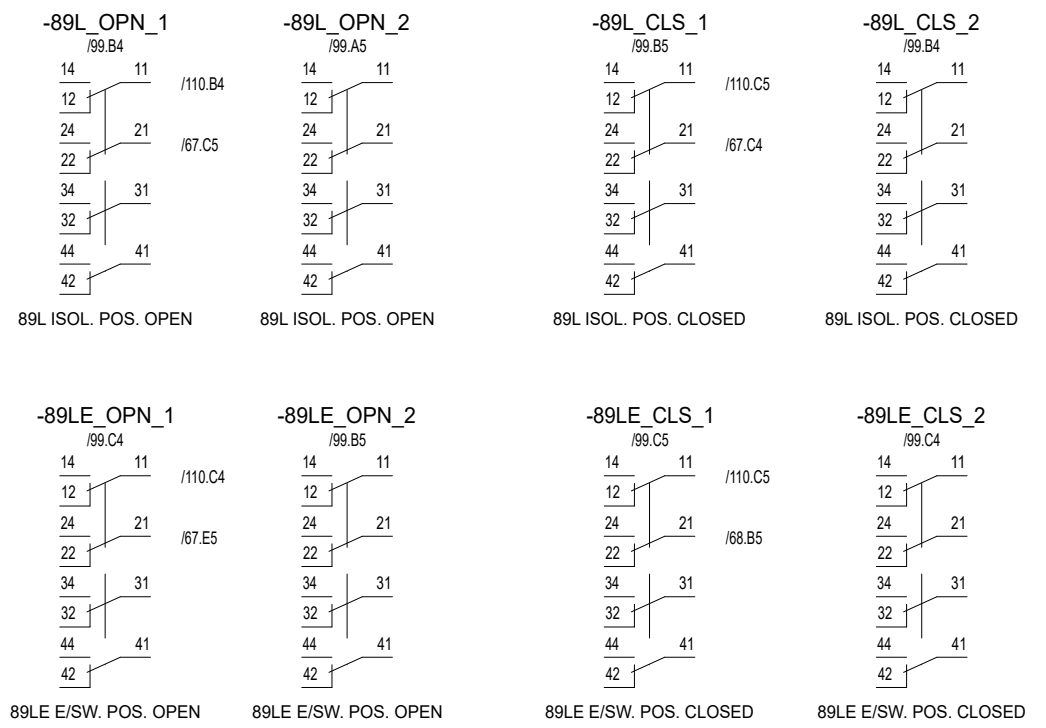
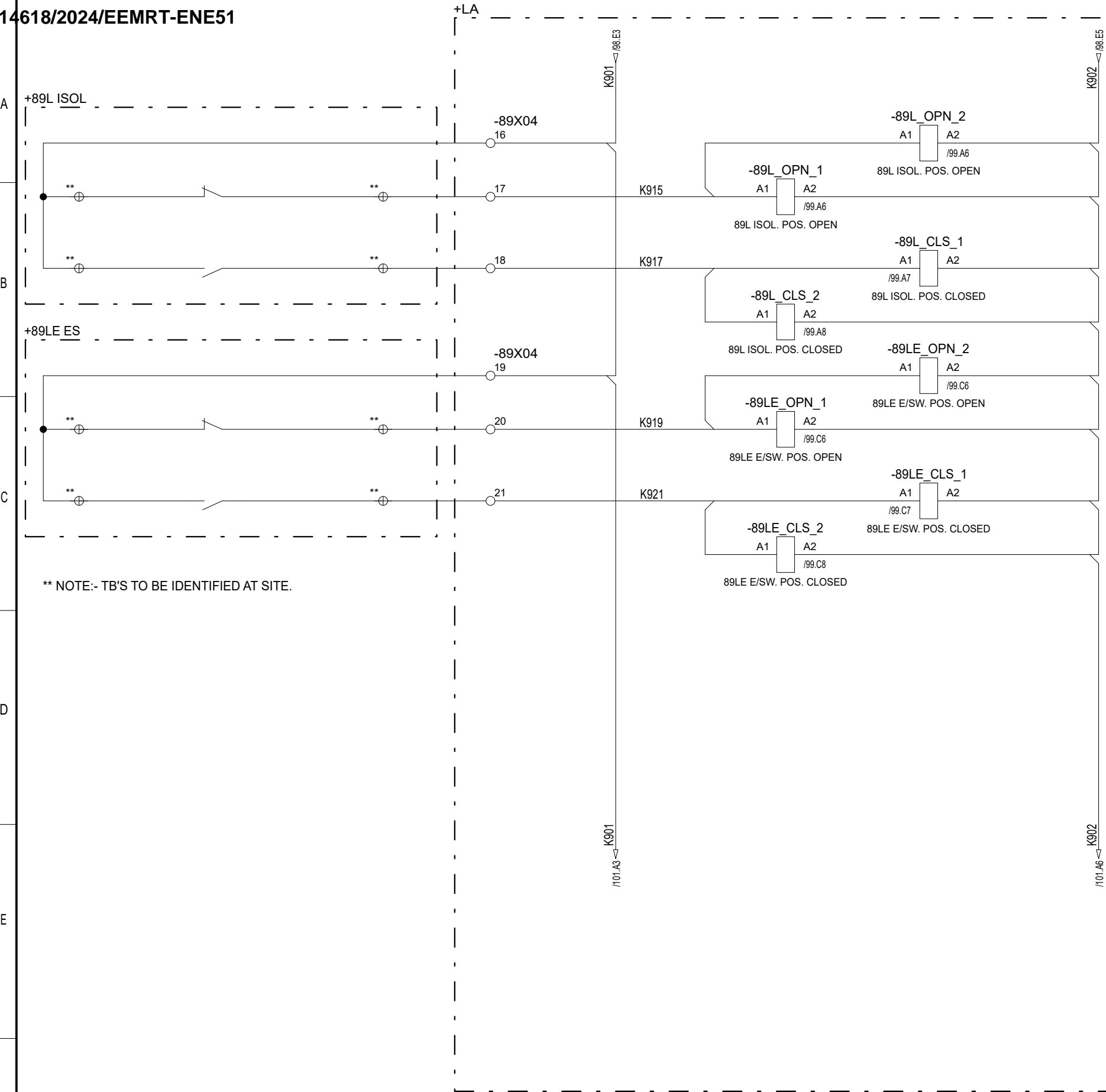


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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
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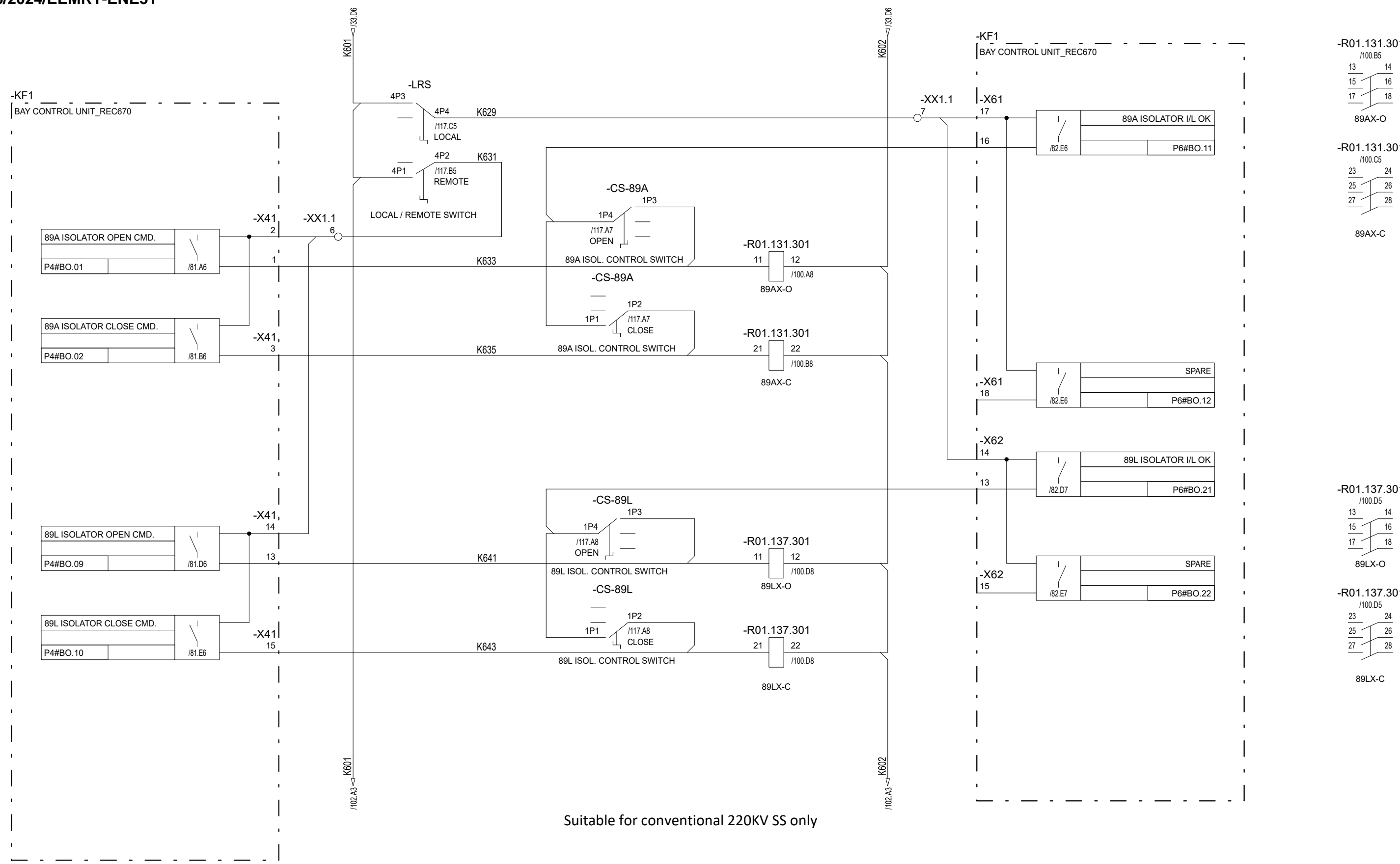
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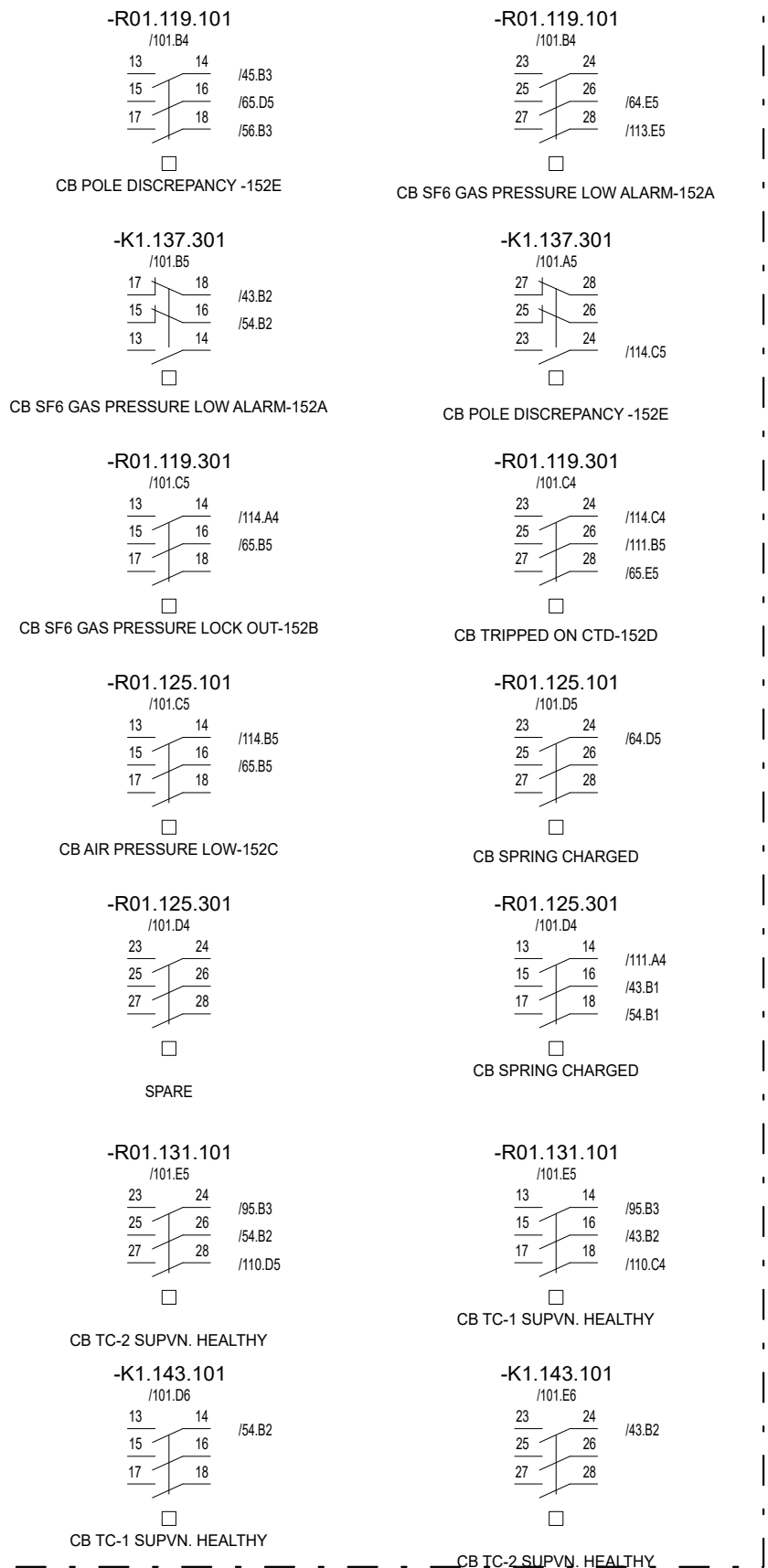
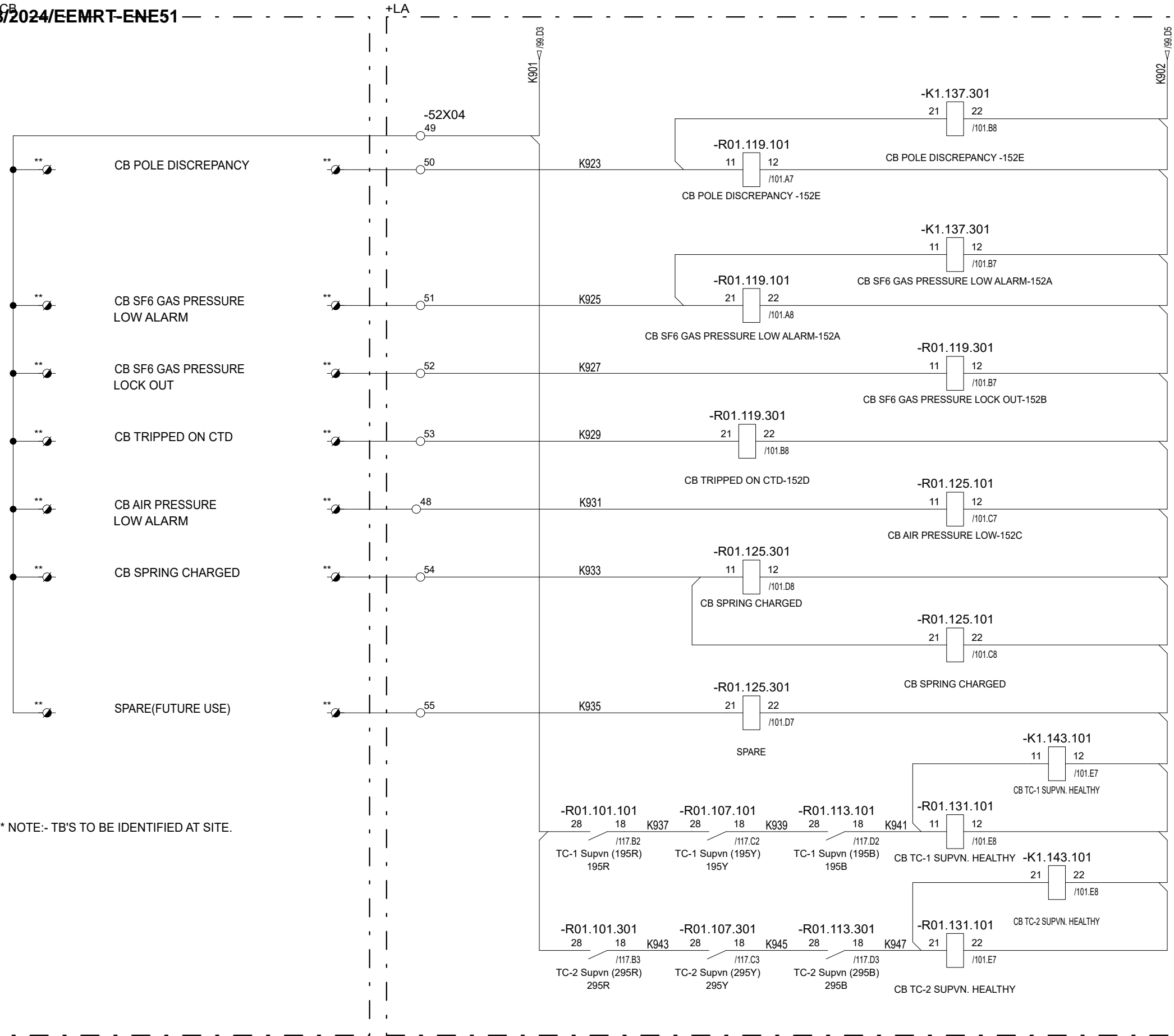
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 100
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Rev.	Revision note				Date	Name												
Doc. no.		n. sheet	102															

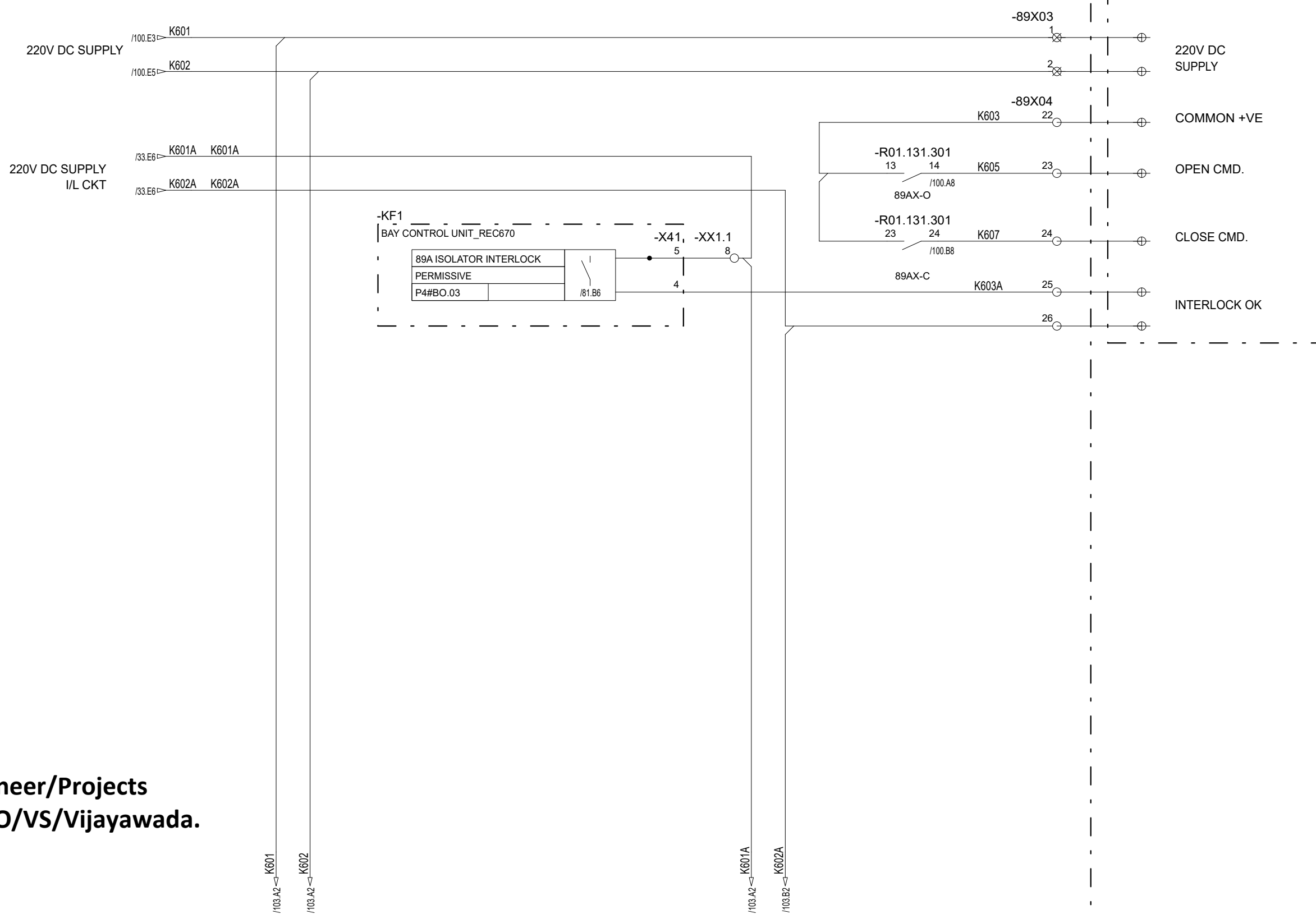
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		Project	APTRANSCO STANDARD DRAWING		89A Isol. Control Circuit		Resp. dept.	PG-GAS		Rev. ind.	Language	en	
Rev.	Revision note	Date	Name	HITACHI		Hitachi Energy India Limited		Doc. no.		1MNS500925-CBAA		Sheet	102
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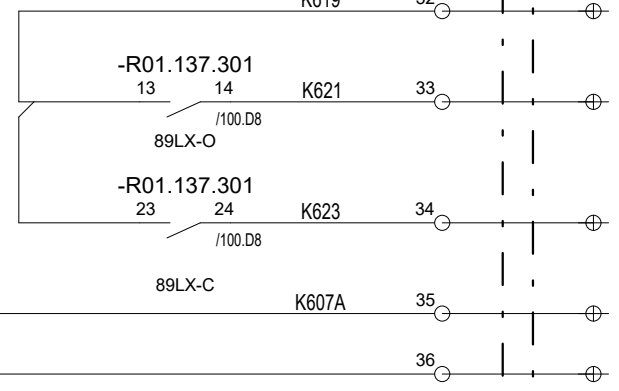
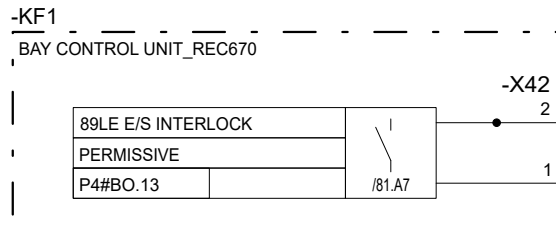
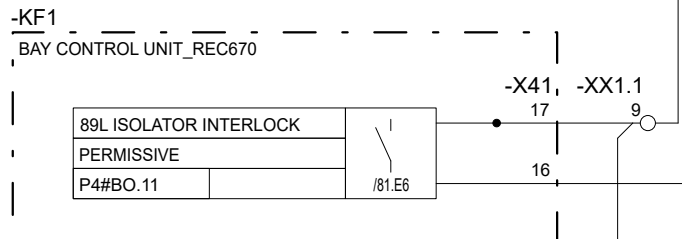
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220V DC SUPPLY

/102.E3 K601
/102.E3 K602

/102.E5 K601A
/102.E5 K602A



+89L ISOL.

-89X03 5
-89X03 6

220V DC SUPPLY

-89X04 32
COMMON +VE

COMMON +VE

OPEN CMD.

CLOSE CMD.

INTERLOCK OK

+89LE E/SW.

-89X03 7
-89X03 8

220V DC SUPPLY

-89X04 37
K609A
-89X04 38
INTERLOCK OK

INTERLOCK OK

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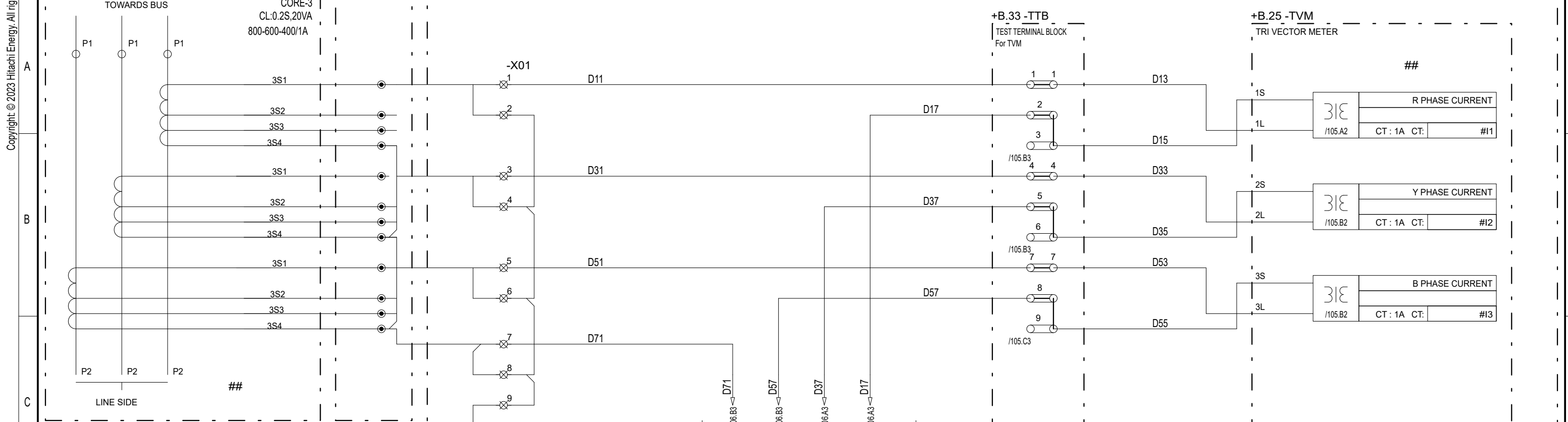
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		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS500925-CBAA		Sheet 103
1MYN691003-102(A3)REV01						n. sheet 104

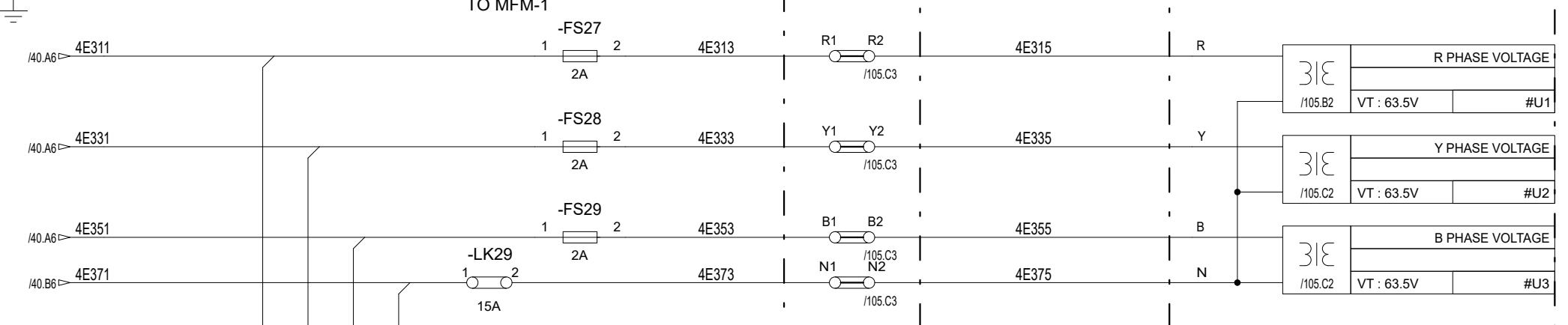
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Note: +ve reading is import & -ve reading is export active/reactive energy.

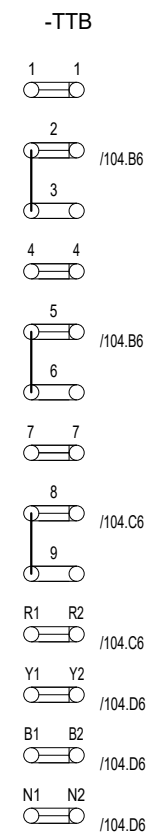
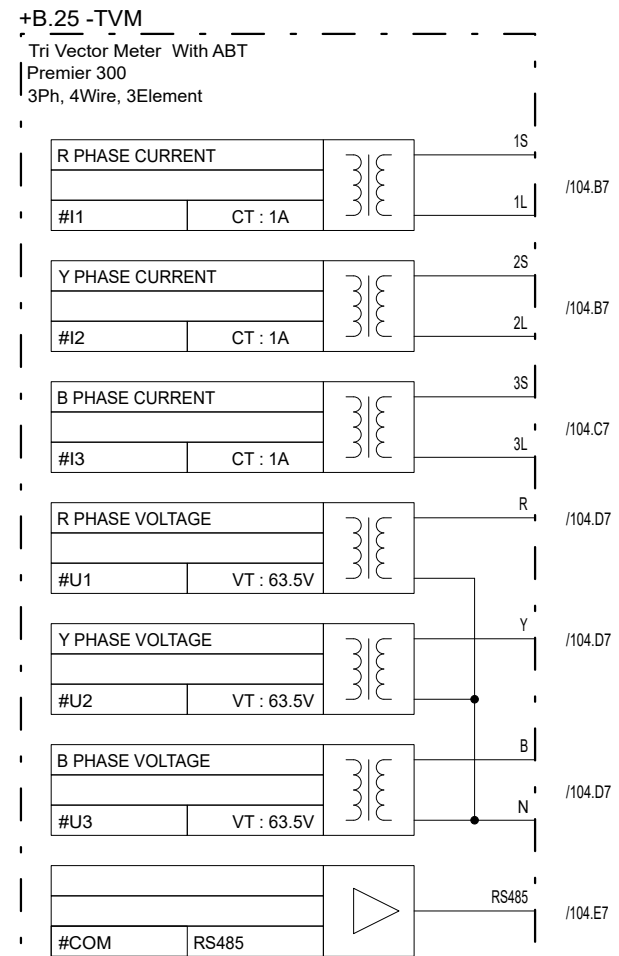
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		Project APTRANSCO		Metering Circuit- TVM	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited	Language en	
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 104
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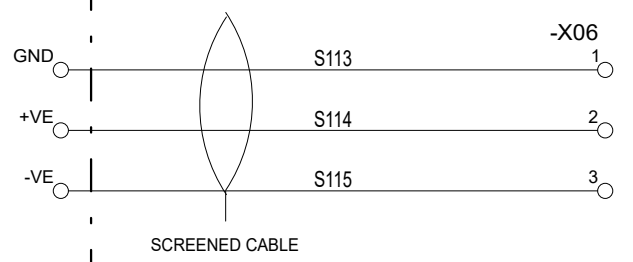
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		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Metering Circuit- TVM	Resp. dept. PG-GAS	Rev. ind. Language en
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS500925-CBAA	
Rev.	Revision note	Date	Name			Sheet 105
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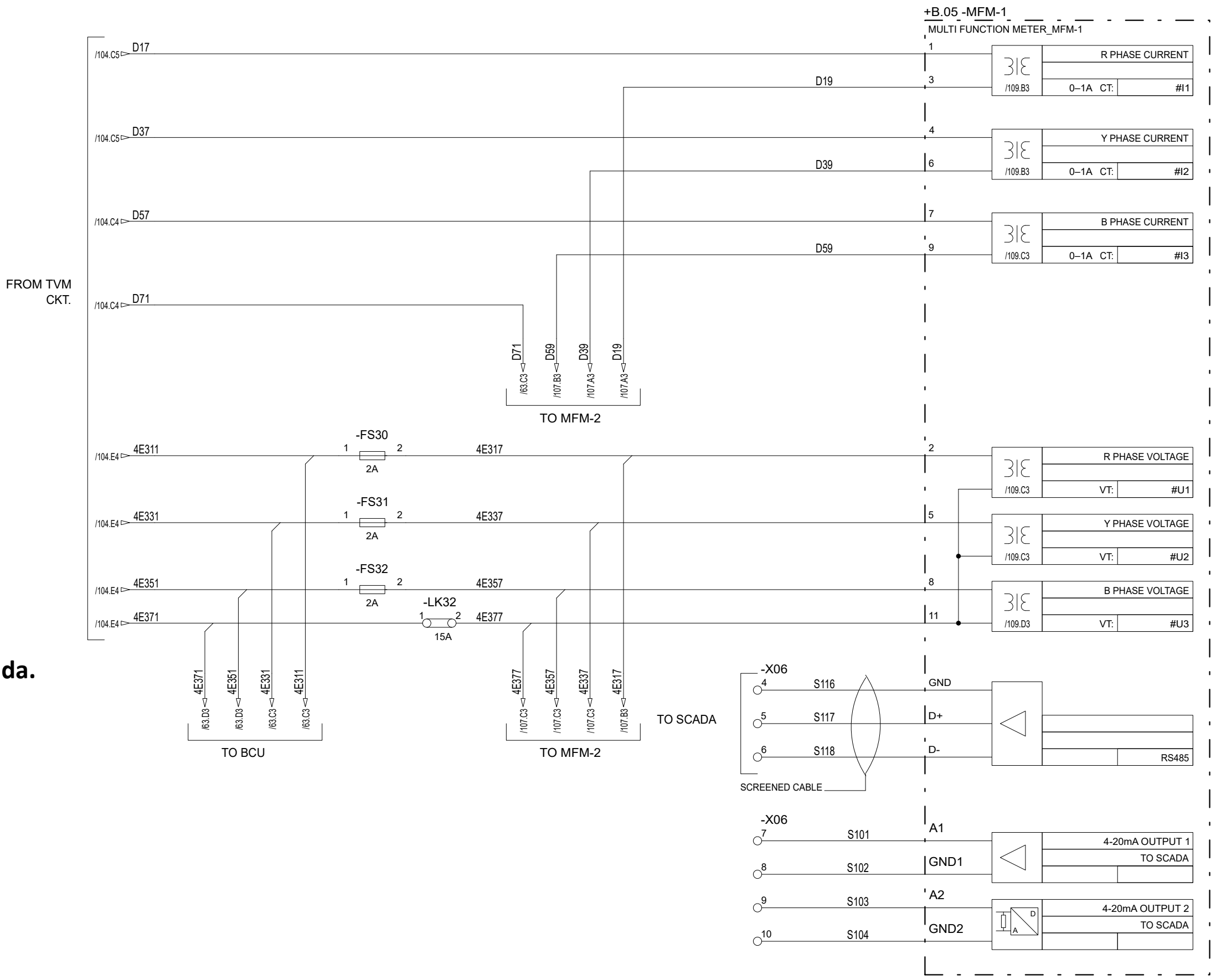
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** DEPENDING ON THE SITE CONDITIONS, EARTHING SHALL BE DONE AT ONE POINT.



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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 106
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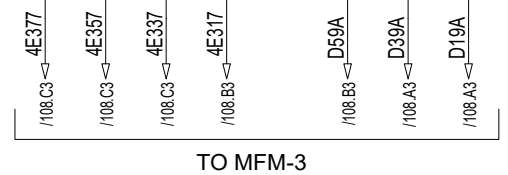
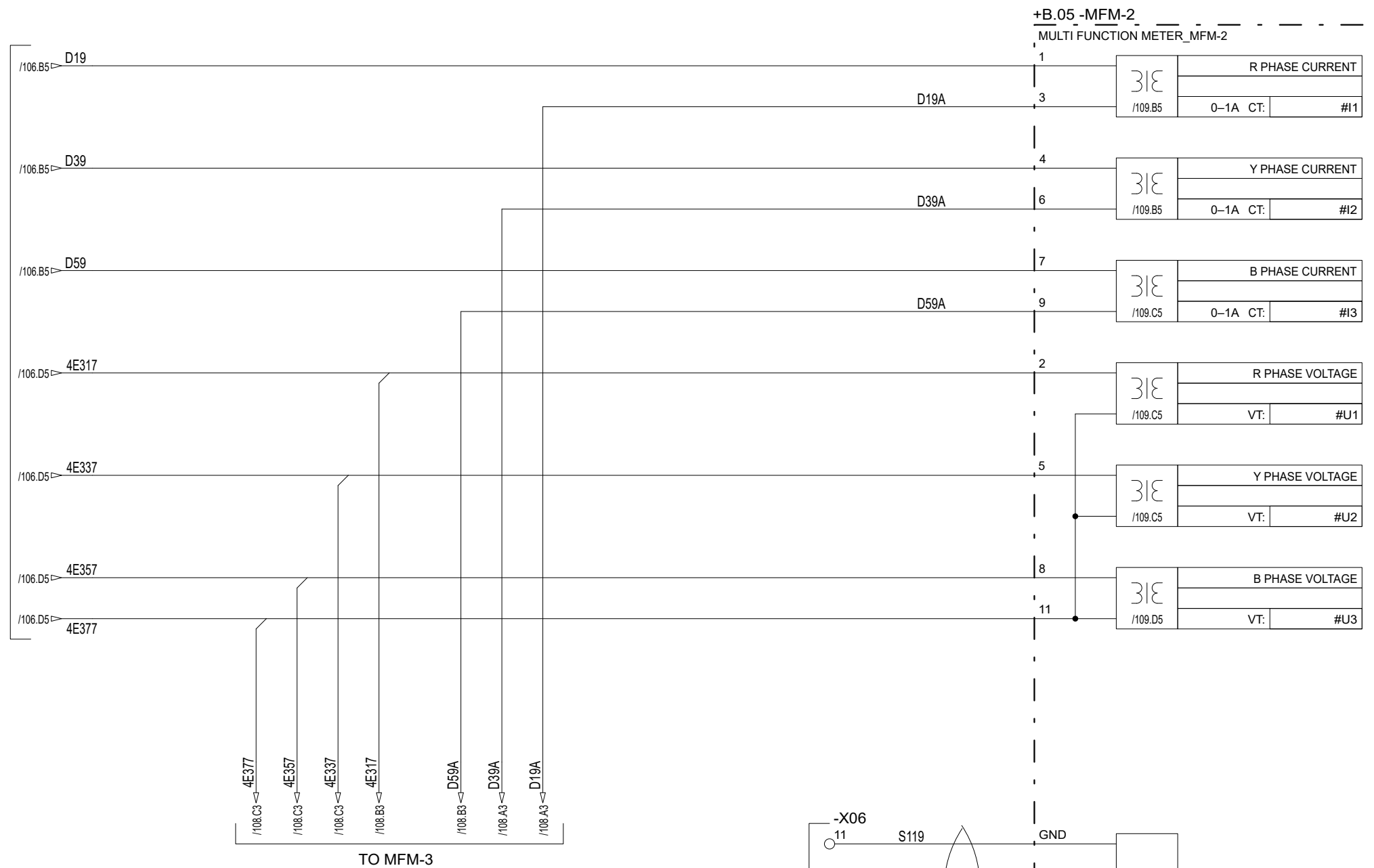
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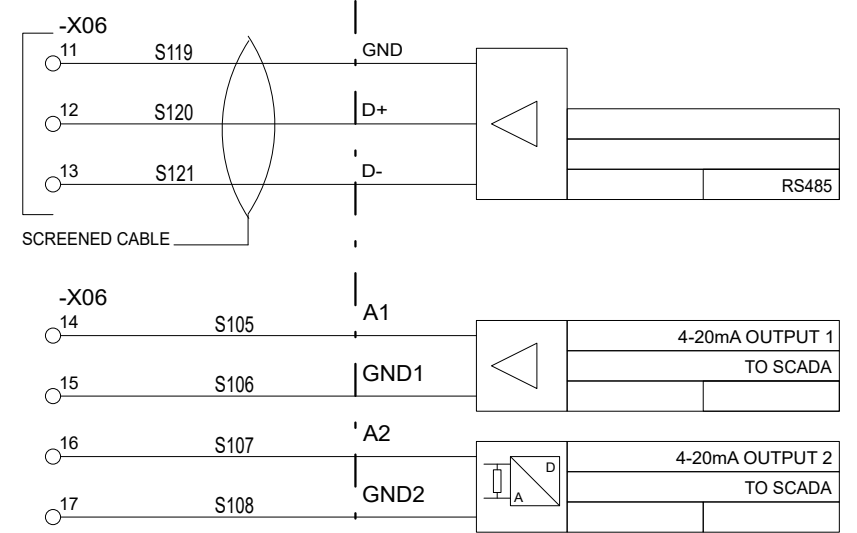
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FROM MFM-1
CKT.



TO SCADA



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Drawing approval subject to valid vendor registration

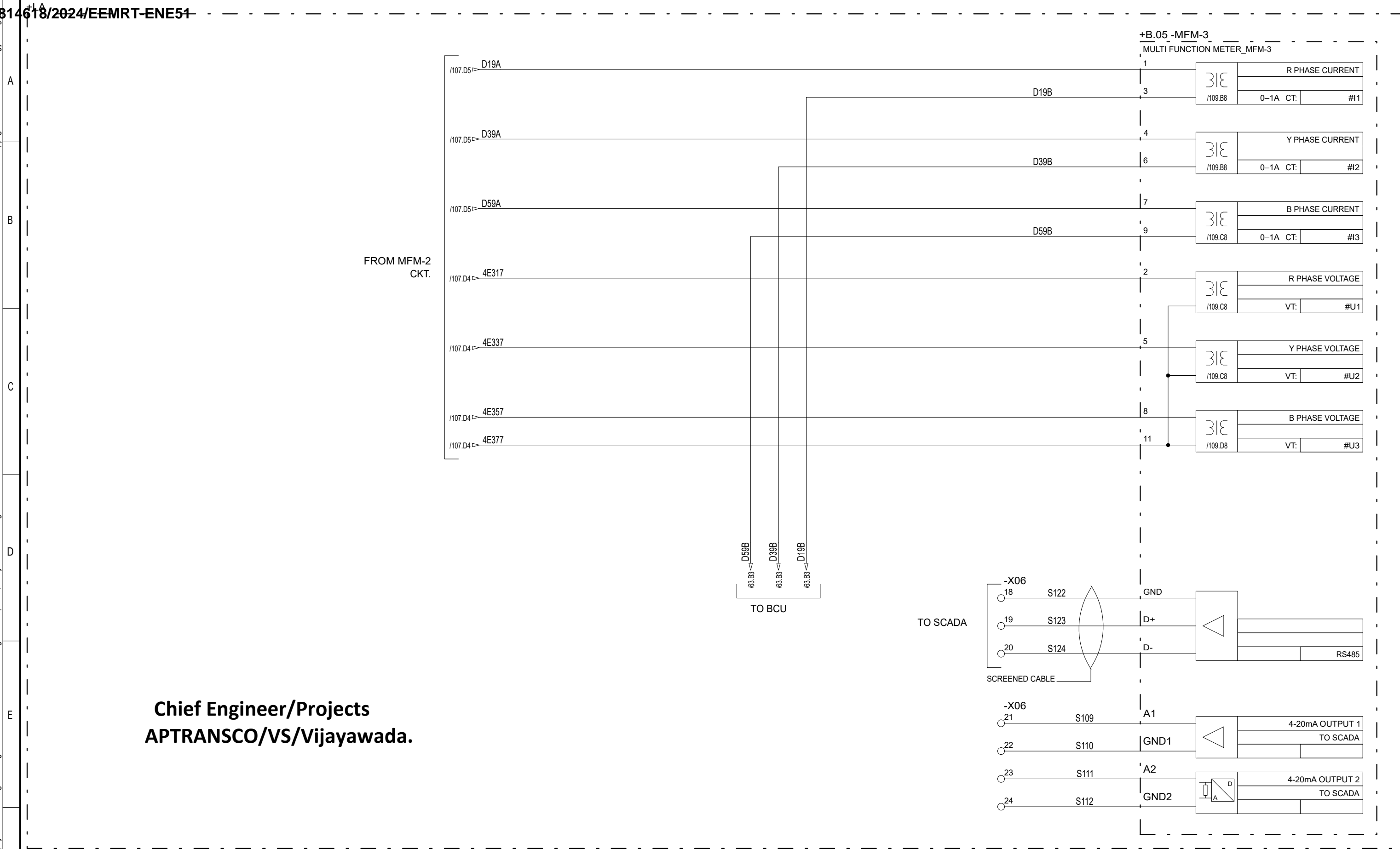
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Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 107
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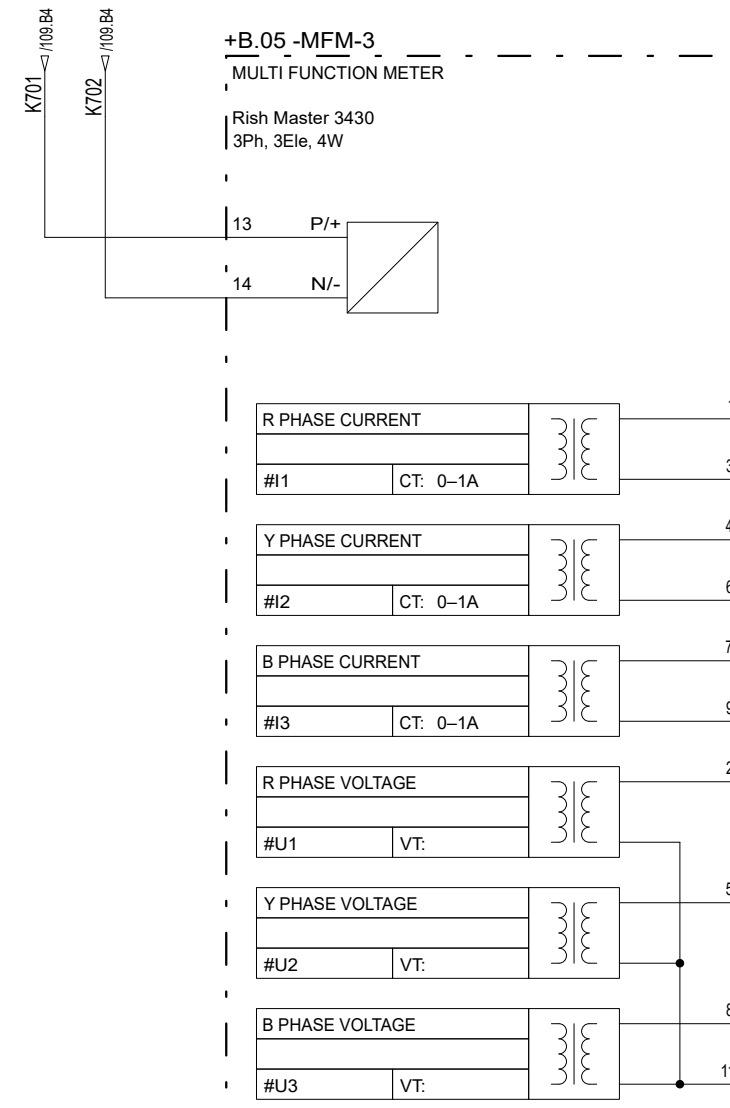
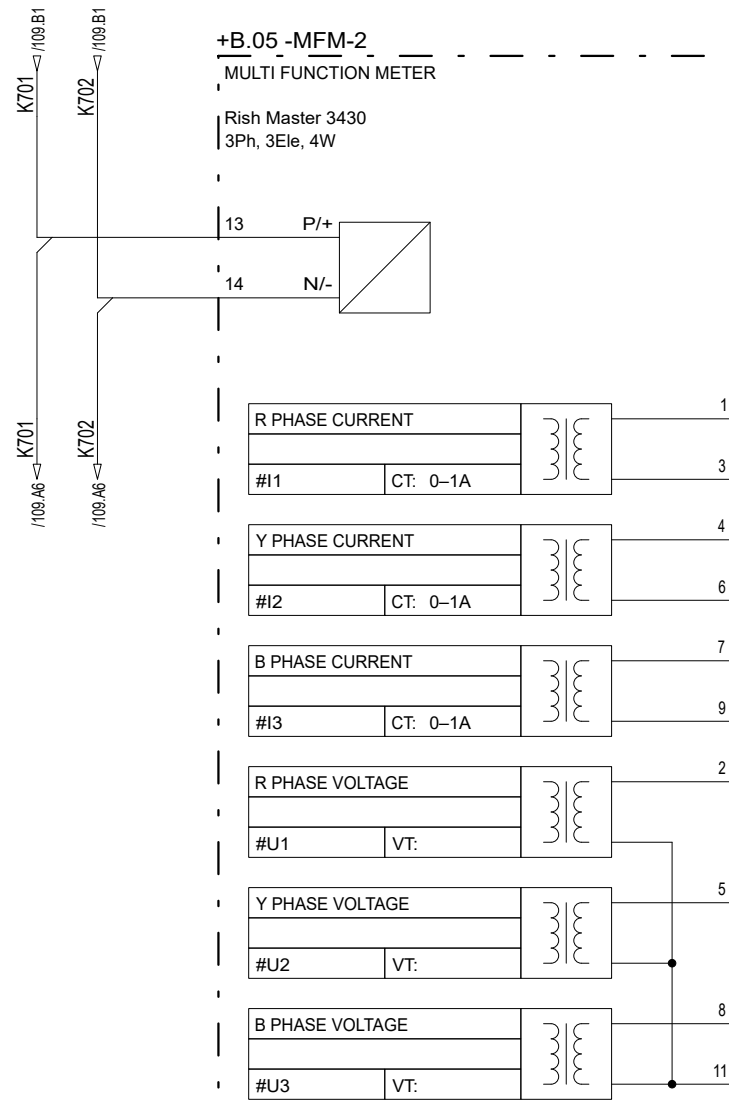
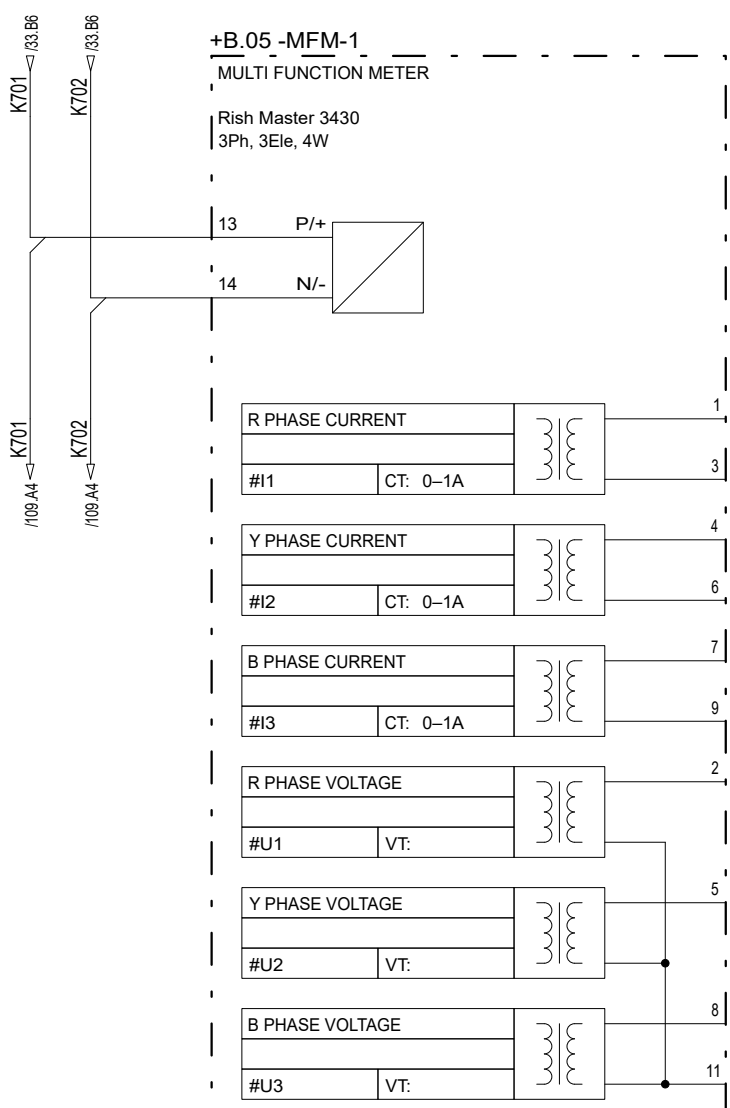
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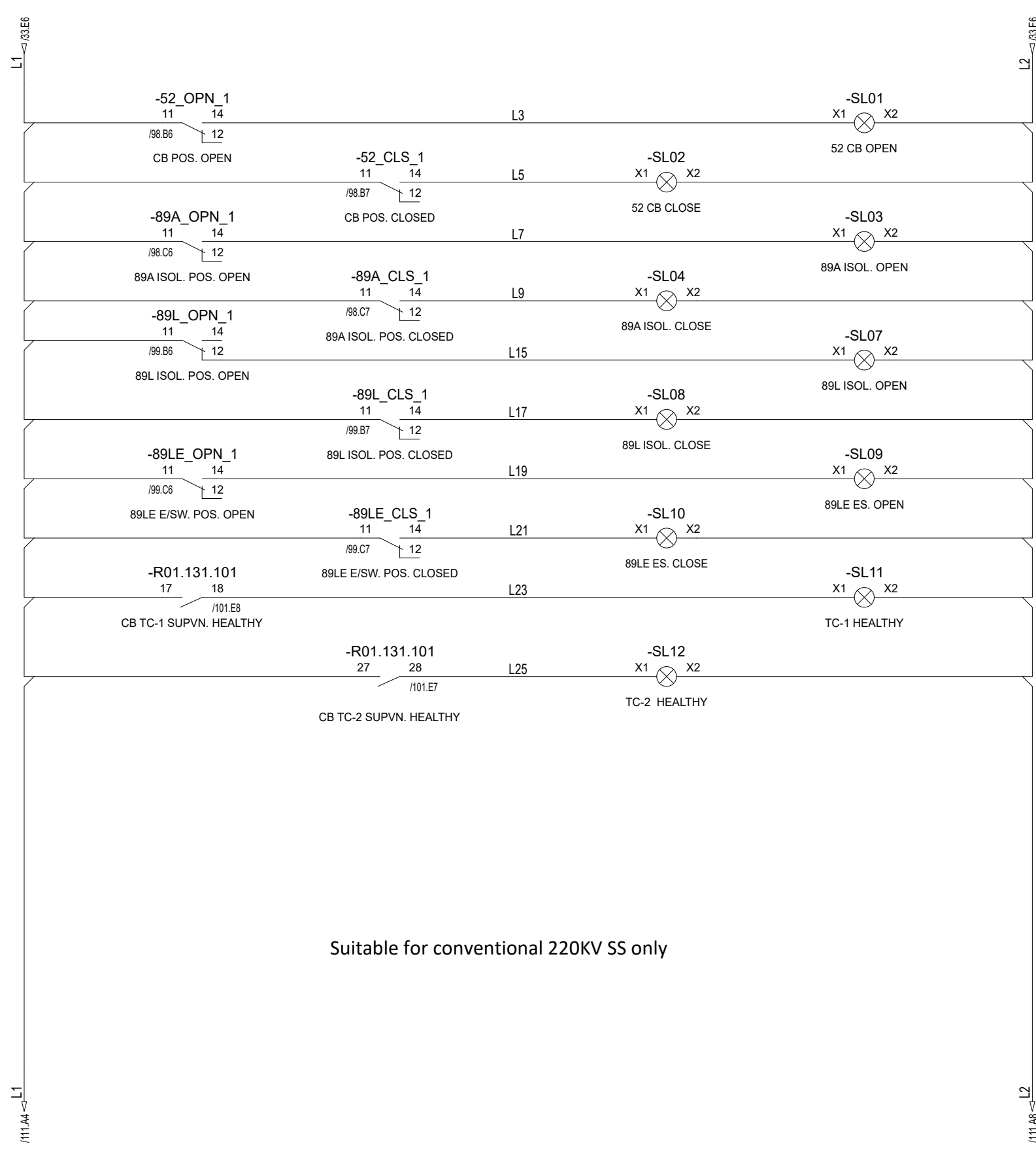
B

C

D

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F



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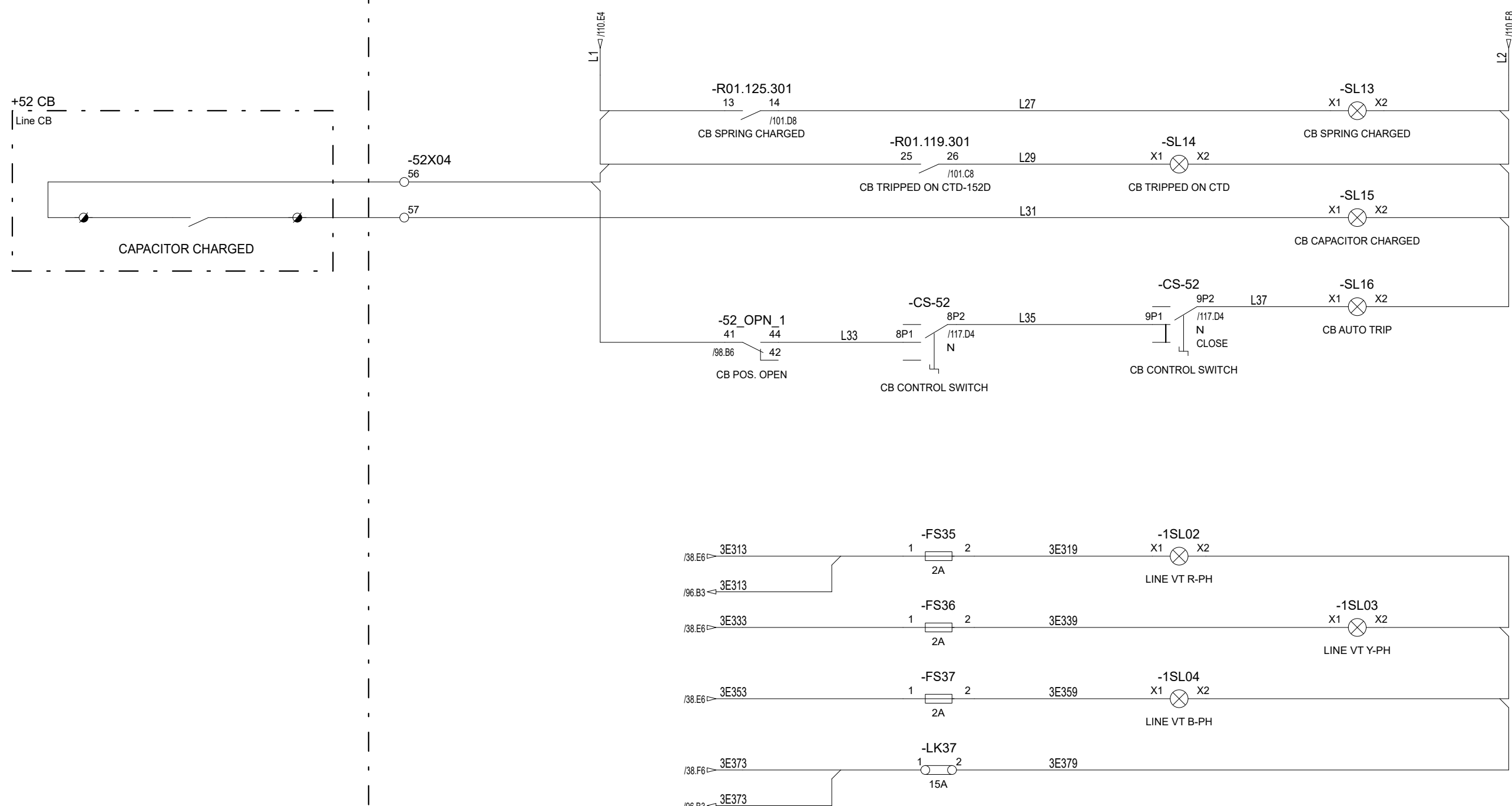
Suitable for conventional 220KV SS only

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		Indication Circuit		PG-GAS		Rev. ind.	Language		en
				STANDARD DRAWING	Hitachi Energy India Limited		1MNS500925-CBAA		Sheet		110	
Rev.	Revision note	Date	Name		HITACHI		Doc. no.		n. sheet		111	
1MYN691003-102(A3)REV01												

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+LA



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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-CBAA	Sheet 111
1MYN691003-102(A3)REV01						n. sheet 112

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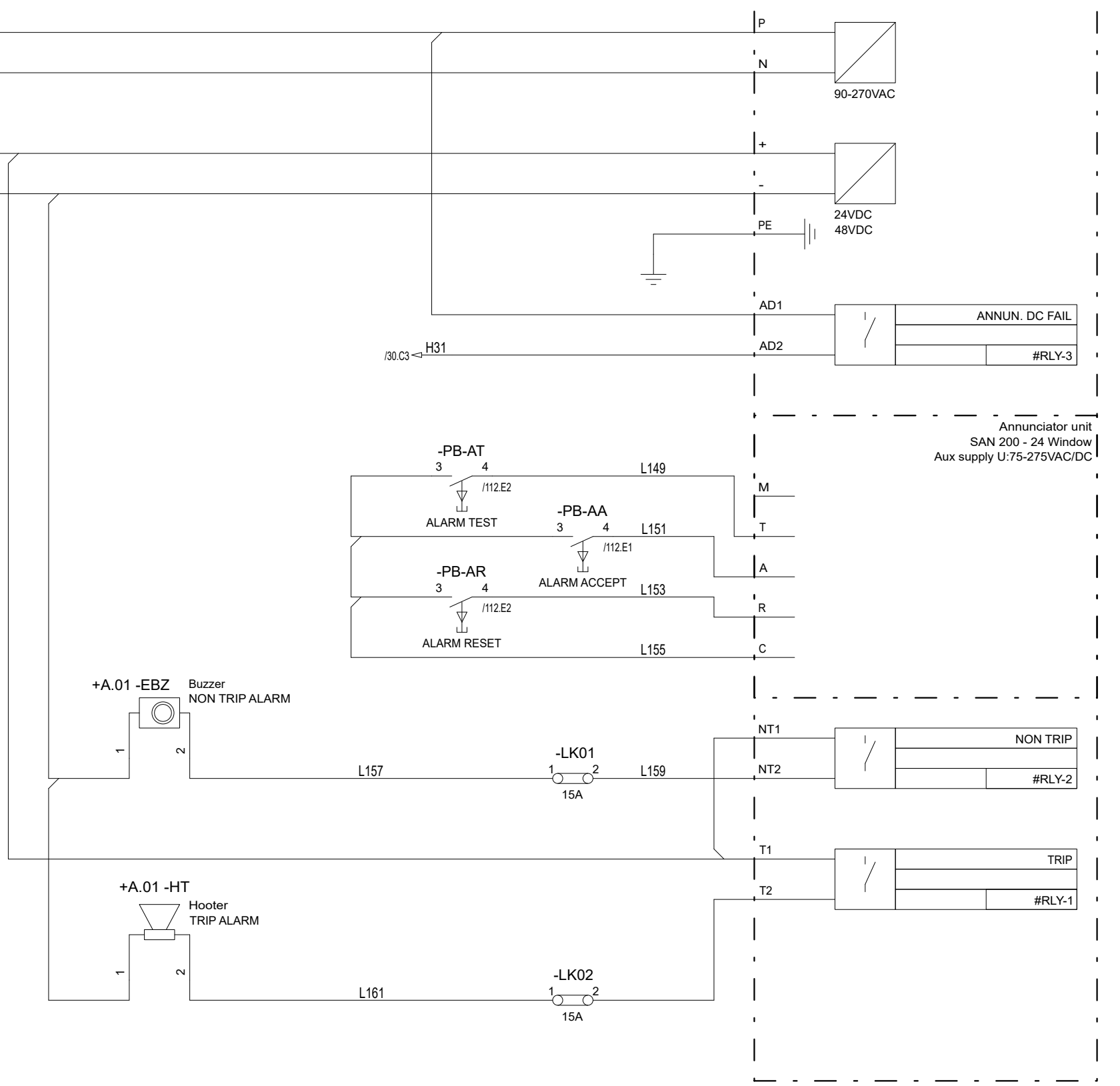
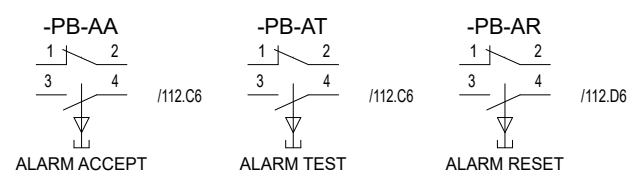
Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

FROM 230V
AC SOURCE

FROM 220V
DC SOURCE

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

Annunciator unit
SAN 200 - 24 Window
Aux supply U:75-275VAC/DC

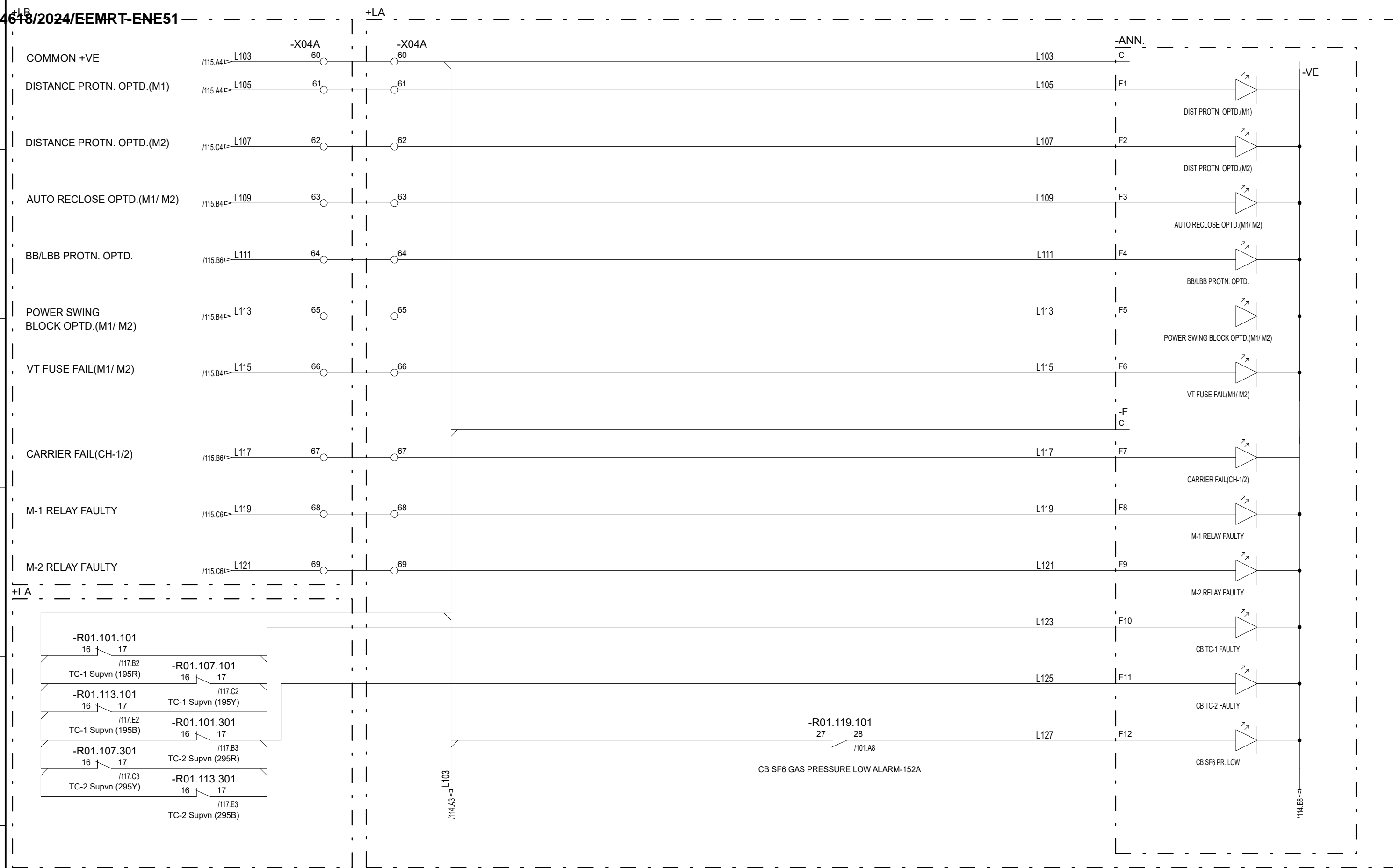


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		HITACHI Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name		Doc. no. 1MNS500925-CBAA	Sheet 112
						n. sheet 113

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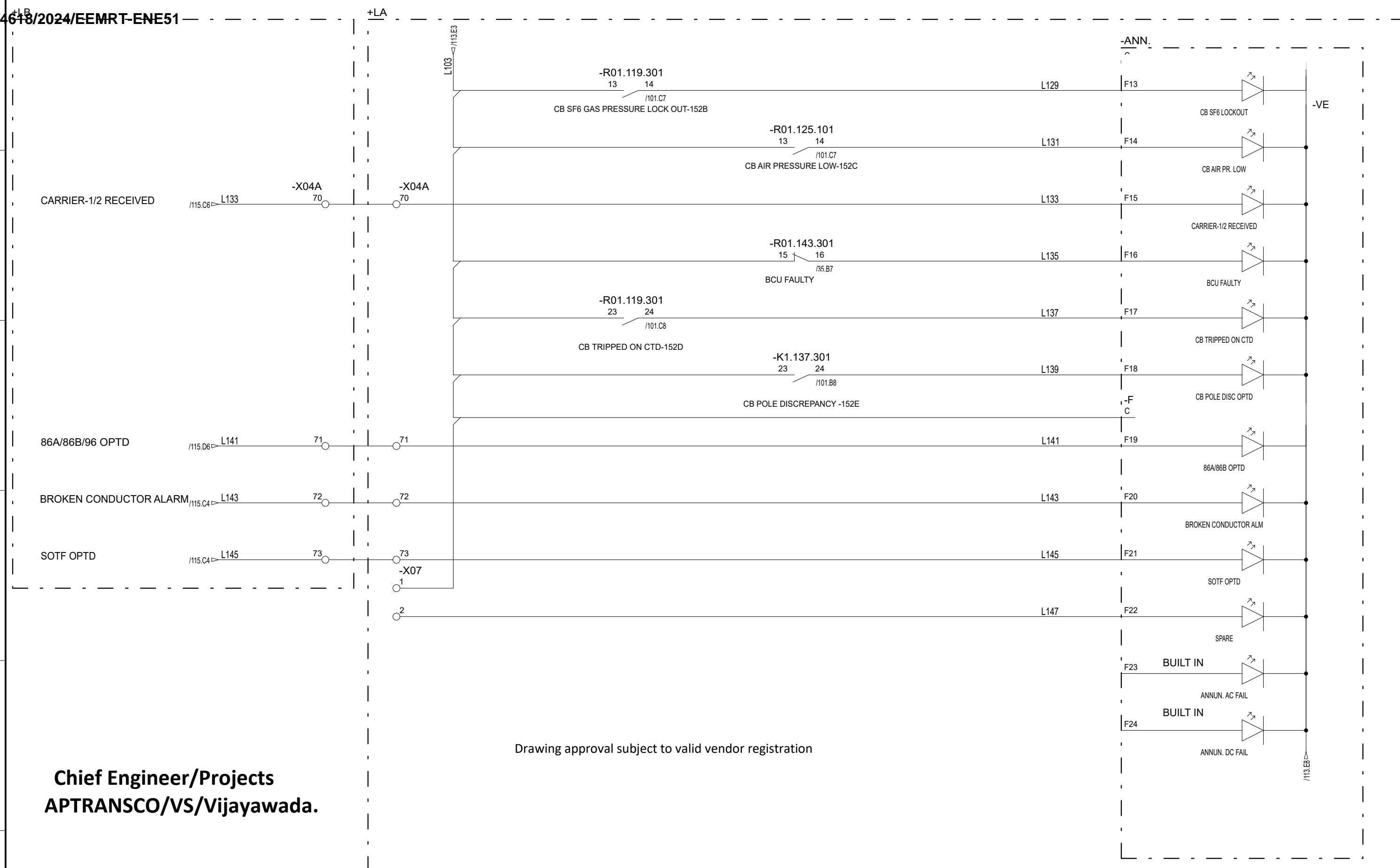


Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision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

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

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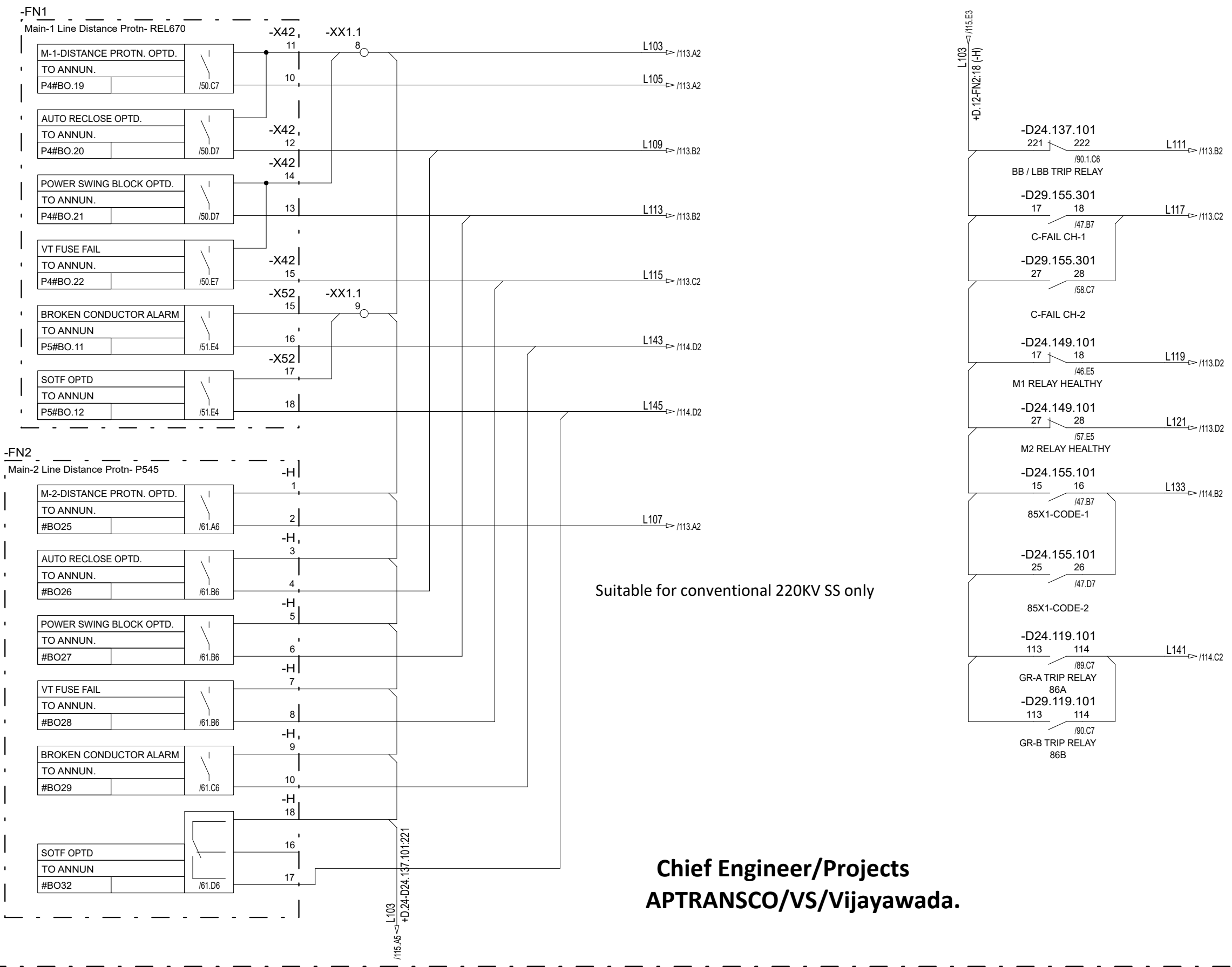
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Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Annunciation Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING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

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ANNUNCIATION INSCRIPTION DETAILS

ANN.

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

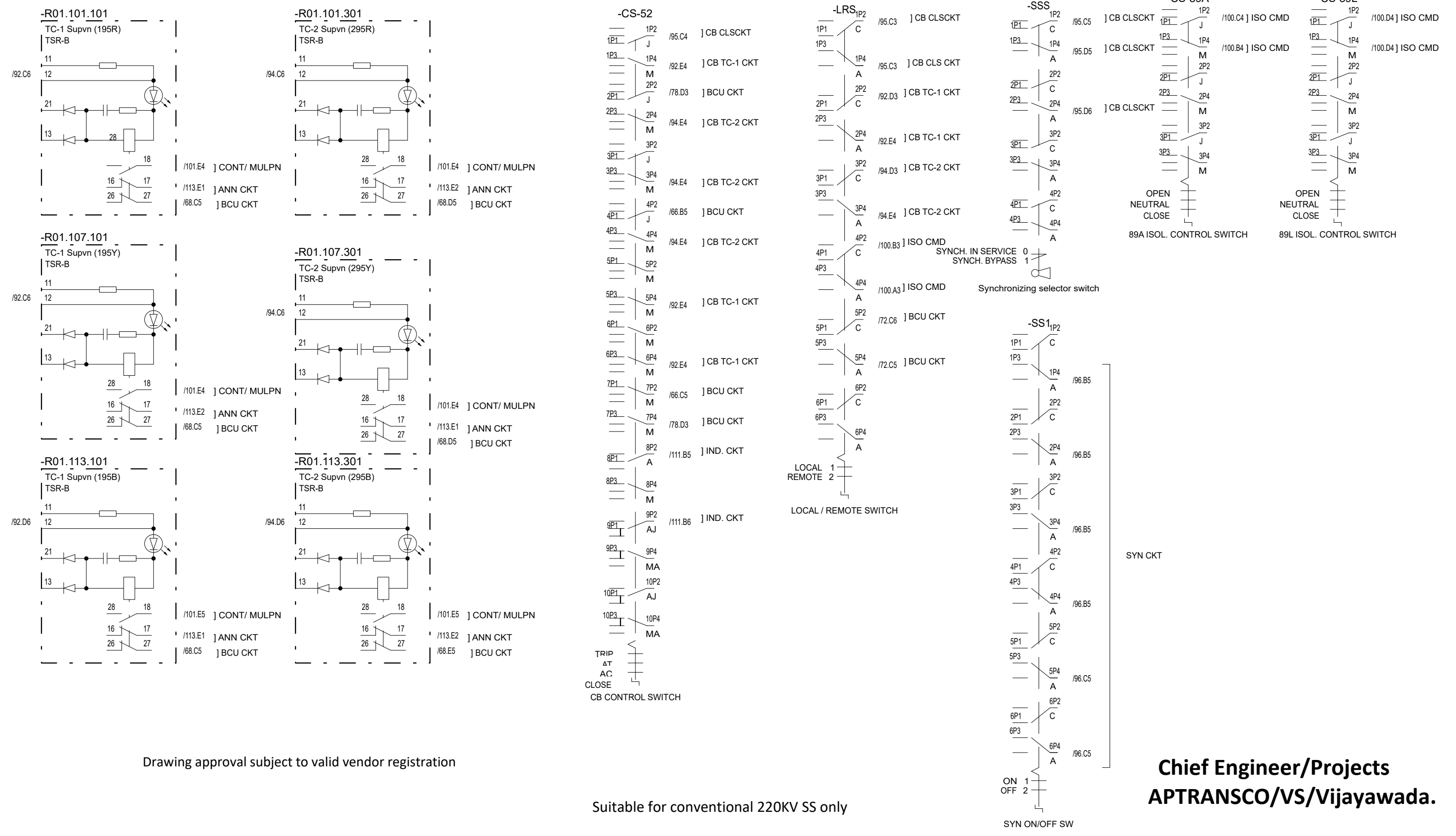
NOTE:-

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

Based on		Prepared 13.12.2023	VINOD G	Title 220kV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		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-CBAA		Sheet 116
1MYN691003-102(A3)REV01						n. sheet 117

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Suitable for conventional 220KV SS only

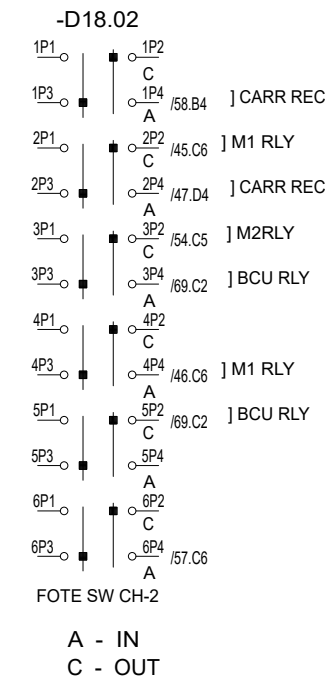
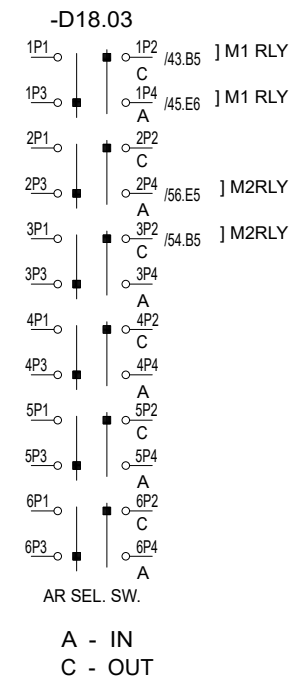
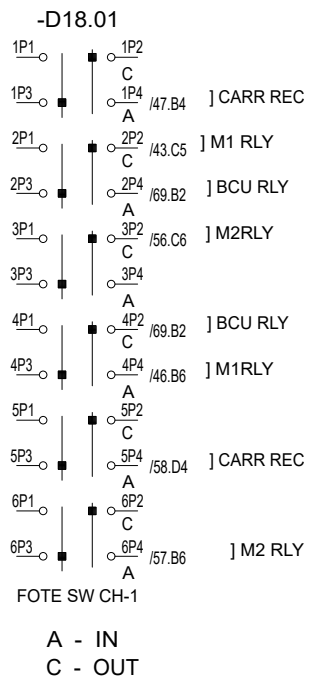
Chief Engineer/Projects
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Based on		Prepared 13.12.2023	VINOD G	Title 220KV LINE FEEDER	Doc. kind. Circuit diagram	Ref.Des. =2KR
		Approved 20.12.2023	GOURISH HEGDE	Control & Relay Panel	DCC EFS	
		Project APTRANSCO		Contact Distribution Circuit	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	Sheet 117
1MYN691003-102(A3)REV01						n. sheet 118

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

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DISTURBANCE / EVENT RECORDED SIGNALS

EXTERNAL TRIGGERING	-21M1	-REL670	INTERNAL TRIGGERING
	ANALOUGE CHANNEL		
R-Ph CURRENT	▶	◀	GENERAL TRIP
Y-Ph CURRENT	▶	◀	TRIP-R Ph
B-Ph CURRENT	▶	◀	TRIP-Y Ph
NU CURRENT	▶	◀	TRIP-B Ph
R-Ph VOLTAGE	▶	◀	ZONE-1 TRIP
Y-Ph VOLTAGE	▶	◀	ZONE-1 START
B-Ph VOLTAGE	▶	◀	ZONE-2 TRIP
	DIGITAL CHANNEL		
CB R-Ph OPEN	▶	◀	ZONE-2 START
CB Y-Ph OPEN	▶	◀	ZONE-3 TRIP
CB B-Ph OPEN	▶	◀	ZONE-3 START
CB R-Ph CLOSE	▶	◀	ZONE-4 TRIP
CB Y-Ph CLOSE	▶	◀	ZONE-4 START
CB B-Ph CLOSE	▶	◀	ZONE-5 TRIP
			ZONE-5 START
3-Ph TRIP GR A/B	▶	◀	ZCOM TRIP (Z-2 + CARR. REC)
MAIN-2 RELAY OPTD.	▶	◀	CARRIER RECEIVE
BB/LBB OPTD.	▶	◀	CARRIER SEND
CB READY	▶	◀	CARRIER FAIL/ CARR. SW. OUT
1-Ph LBB INITIATION	▶	◀	AR START
3-Ph LBB INITIATION	▶	◀	AR OPERATED
DT RECEIVE CH-1/2	▶	◀	AR BLOCK
A/R SW POS OUT	▶	◀	SOTF TRIP
CB CLOSE CMD(SOTF INI)	▶	◀	PSB OPERATED
			DEF OPERATED
O/V START	▶	◀	FUSE FAIL
O/V STAGE-1 TRIP	▶	◀	BROKEN COND TPIR
O/V STAGE-2 TRIP	▶	◀	DT SEND CH-1/2

NO. OF ANALOG CHANNEL-8
NO. OF DIGITAL CHANNEL-24
NO. OF DR/FAULT RECORDS-200

DISTURBANCE / EVENT RECORDED SIGNALS

EXTERNAL TRIGGERING	-21M2	-MICOM P545	INTERNAL TRIGGERING
	ANALOUGE CHANNEL		
R-Ph CURRENT	▶	◀	GENERAL TRIP
Y-Ph CURRENT	▶	◀	TRIP-R Ph
B-Ph CURRENT	▶	◀	TRIP-Y Ph
NU CURRENT	▶	◀	TRIP-B Ph
R-Ph VOLTAGE	▶	◀	ZONE-1 TRIP
Y-Ph VOLTAGE	▶	◀	ZONE-1 START
B-Ph VOLTAGE	▶	◀	ZONE-2 TRIP
	DIGITAL CHANNEL		
CB R-Ph OPEN	▶	◀	ZONE-2 START
CB Y-Ph OPEN	▶	◀	ZONE-3 TRIP
CB B-Ph OPEN	▶	◀	ZONE-3 START
CB R-Ph CLOSE	▶	◀	ZONE-4 TRIP
CB Y-Ph CLOSE	▶	◀	ZONE-4 START
CB B-Ph CLOSE	▶	◀	ZONE-5 TRIP
			ZONE-5 START
3-Ph TRIP GR A/B	▶	◀	ZCOM TRIP (Z-2 + CARR. REC)
MAIN-1 RELAY OPTD.	▶	◀	CARRIER RECEIVE
BB/LBB OPTD.	▶	◀	CARRIER SEND
CB READY	▶	◀	CARRIER FAIL/ CARR. SW. OUT
1-Ph LBB INITIATION	▶	◀	AR START
3-Ph LBB INITIATION	▶	◀	AR OPERATED
DT RECEIVE CH-1/2	▶	◀	AR BLOCK
A/R SW POS OUT	▶	◀	SOTF TRIP
CB CLOSE CMD(SOTF INI)	▶	◀	PSB OPERATED
			DEF OPERATED
O/V START	▶	◀	FUSE FAIL
O/V STAGE-1 TRIP	▶	◀	BROKEN COND TPIR
O/V STAGE-2 TRIP	▶	◀	DT SEND CH-1/2

NO. OF ANALOG CHANNEL-8
NO. OF DIGITAL CHANNEL-24
NO. OF DR RECORDS-20 @ 10.5sec
NO. OF FAULT RECORDS-5

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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		DISTURBANCE RECORDER MAIN-1/2	PG-GAS	Rev. ind.
		STANDARD DRAWING		Hitachi Energy India Limited		Language en
Rev.	Revision note	Date	Name	HITACHI	Doc. no. 1MNS500925-CBAA	
1MYN691003-102(A3)REV01						Sheet 118.1
						n. sheet 119

-X04

46 47 48 49 50 51 52

Used:	47
(20%)Spare:	7
Total:	54

-DCX03

9 10

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

-XX1.2

15 16 17

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

-X01

10 11

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

-ACX03

7 8

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

-X07

3 4

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

-52X04

58 59 60 61 62 63 64

65 66 67 68 69

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

-TVM

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

-X06

25 26 27 28 29

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

-89X04

39 40 41 42 43 44 45

46

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

-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

-X04A

77 78 79 80

81 82 83 84 85

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

-XX1.1

10 11

Used:	9
(20%)Spare:	1
Total:	11

Suitable for conventional 220KV SS only

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

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

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

3

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

13 14 15

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

14 15 16

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

13 14 15

-XX1.1
Used: 9
(20%)Spare: 3
Total: 12

10 11 12

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

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

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

5

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

6

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

29 30 31 32 33 34

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

2

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

15 16 17

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

78 80 82 84 85
77 79 81 83

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

27 28 29 30 31 32

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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		SPARE TERMINALS		DCC EFS		+LB	
		Project APTRANSCO				SPARE TERMINALS		Resp. dept. PG-GAS		Rev. ind. en	
		STANDARD DRAWING				HITACHI Hitachi Energy India Limited		Doc. no. 1MNS500925-CBAA		Language en	
Rev.	Revision note	Date	Name							Sheet 120	
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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/28,68		
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/112		
	+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/112		
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/112			
D	+A.01	-LK02	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1			
			Neutral link	NL	15A		ABB/EATON(cooper Bussmann) /Schneider/L&T		1	1MNS500925-CBAA/112			
	+A.01	-PS	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			
				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		PG-GAS		Rev. ind.	
				STANDARD DRAWING				Hitachi Energy India Limited		Rev. ind.		Language en	
Rev. Revision note				Date		Name		HITACHI		Doc. no. 1MNS500925-BAA		Sheet 1001	
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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/63
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
14	+A.03	-FS27	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/104
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
15	+A.03	-FS28	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/104
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
16	+A.03	-FS29	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/104
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
17	+A.03	-FS35	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/111
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
18	+A.03	-FS36	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/111
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
19	+A.03	-FS37	Fuse	-	2A	Chief Engineer/Projects APTRANSCO/VS/Vijayawada.	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/111
			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			Resp. dept.		PG-GAS		Rev. ind.		Language en	
							HITACHI Hitachi Energy India Limited			Doc. no.		1MNS500925-BAA		Sheet		1002	
Rev.				Revision note						Date				Name		n. sheet	

1		2		3		4		5		6		7		8	
Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	20	+A.03	-LK12	Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1					
				Neutral link	NL	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/63				
B	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/104				
C	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/111				
C	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/31,72				
D	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/32,72				
D	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/31,72				
E	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/32,72				
E	27	+A.05	-FS22	Fuse	-	2A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/96				
				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				Resp. dept. PG-GAS		Rev. ind. Language en	
				STANDARD DRAWING				HITACHI				Doc. no. 1MNS500925-BAA		Sheet 1003	
Rev. Revision note				Date		Name								n. sheet 1004	
1MYN691003-102(A3)REV01															

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
28	+A.05	-FS30	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/106
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
29	+A.05	-FS31	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/106
			Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
30	+A.05	-FS32	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/106
			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	1MNS500925-CBAA/96
			Neutral link	15A	15A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
32	+A.05	-LK32	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/106
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	
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/33,73
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/33,73
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/33,73

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

1		2		3		4		5		6		7		8		
Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet					
A	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/33,73				
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/33,73				
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/33,73				
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/33,73				
D	40	+A.07	-MCB08	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33	D			
				Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/33,73				
D	41	+A.09	-89X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		48	1MNS500925-CBAA/66,67,98,99,102,103,119	D			
	42	+A.09	-X07	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		4	1MNS500925-CBAA/114,119				
	43	+A.09	-XX1.2	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		17	1MNS500925-CBAA/64,65,66,67,68,69,70,71,72,73,74,75,76,77,119				
	44	+A.10	-52X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		69	1MNS500925-CBAA/64,65,92,94,95,98,101,111,119				
E	45	+A.11	-ACX03	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		8	1MNS500925-CBAA/28,29,30,119	E			
	46	+A.11	-X01	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		11	1MNS500925-CBAA/104,119				
	47	+A.11	-X02	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		48	1MNS500925-CBAA/37,38,42,53,119				
F	48	+B.01	-DS	Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	1MNS500925-CBAA/28	F			
Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER			Doc. kind. Parts list		Ref.Des. =2KR			
				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA			DCC EPB				+LA	
				Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited			Resp. dept. PG-GAS		Rev. ind.		Language en	
Rev.				Revision note		Date		Name		HITACHI			Doc. no. 1MNS500925-BAA		Sheet 1005	
1MYN691003-102(A3)REV01													n. sheet 1006			

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																												
49	+B.01	-LED	LED Lamp	LED	240VAC, 9.08W			SPECTRUM TECHVISION (P) LTD		1	1MNS500925-CBAA/28																																																												
50	+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	1MYN900017-723	1	1MNS500925-CBAA/ 112,113,114																																																												
51	+B.05	-MFM-1	MULTI FUNCTION METER_MFM-1	Rish Master 3430	3Ph, 3Ele, 4W; 4-20mA Output-2nos	CTR: TO BE DEFINED; ADOPTED CTR:TO BE DEFINED, PTR: 220kV/110V;CL:0.2 RS485 PORT	1MNS500925-MAAA	Rishab	1MNS500925-MAAA	1	1MNS500925-CBAA/106,109																																																												
52	+B.05	-MFM-2	MULTI FUNCTION METER_MFM-2	Rish Master 3430	3Ph, 3Ele, 4W; 4-20mA Output-2nos	CTR: TO BE DEFINED; ADOPTED CTR:TO BE DEFINED, PTR: 220kV/110V;CL:0.2 RS485 PORT	1MNS500925-MAAA	Rishab	1MNS500925-MAAA	1	1MNS500925-CBAA/107,109																																																												
53	+B.05	-MFM-3	MULTI FUNCTION METER_MFM-3	Rish Master 3430	3Ph, 3Ele, 4W; 4-20mA Output-2nos	CTR: TO BE DEFINED; ADOPTED CTR:TO BE DEFINED, PTR: 220kV/110V;CL:0.2 RS485 PORT	1MNS500925-MAAA	Rishab	1MNS500925-MAAA	1	1MNS500925-CBAA/108,109																																																												
54	+B.09	-1SL01	Indicator light	-	230V AC, 7mA	WHITE	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/30																																																												
55	+B.09	-1SL02	Indicator light	-	60VDC/60VAC, 7mA	RED	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/111																																																												
56	+B.09	-1SL03	Indicator light	-	60VDC/60VAC, 7mA	YELLOW	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/111																																																												
57	+B.09	-1SL04	Indicator light	-	60VDC/60VAC, 7mA	BLUE	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/111																																																												
58	+B.09	-PB01	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/36																																																												
59	+B.09	-PB02	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/36																																																												
60	+B.09	-PB03	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/36																																																												
61	+B.09	-PB04	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/36																																																												
<table border="1"> <tr> <td colspan="4">Based on</td> <td colspan="2">Prepared 13.12.2023 VINOD G</td> <td colspan="3">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 GOURISH HEGDE</td> <td colspan="3">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 STANDARD DRAWING</td> <td colspan="3">Hitachi Energy India Limited</td> <td colspan="2">Resp. dept. PG-GAS</td> <td colspan="2">Rev. ind. Language en</td> </tr> <tr> <td colspan="4">Rev. Revision note</td> <td colspan="2">Date Name</td> <td colspan="3" rowspan="2">HITACHI</td> <td colspan="2" rowspan="2">Doc. no. 1MNS500925-BAA</td> <td colspan="2">Sheet 1006</td> </tr> <tr> <td colspan="4">1MYN691003-102(A3)REV01</td> <td colspan="2"></td> <td colspan="2">n. sheet 1007</td> </tr> </table>												Based on				Prepared 13.12.2023 VINOD G		Title 220kV LINE FEEDER			Doc. kind. Parts list		Ref.Des. =2KR +LA						Approved 20.12.2023 GOURISH HEGDE		Parts list =2KR+LA			DCC EPB								Project APTRANSCO STANDARD DRAWING		Hitachi Energy India Limited			Resp. dept. PG-GAS		Rev. ind. Language en		Rev. Revision note				Date Name		HITACHI			Doc. no. 1MNS500925-BAA		Sheet 1006		1MYN691003-102(A3)REV01						n. sheet 1007	
Based on				Prepared 13.12.2023 VINOD G		Title 220kV LINE FEEDER			Doc. kind. Parts list		Ref.Des. =2KR +LA																																																												
				Approved 20.12.2023 GOURISH HEGDE		Parts list =2KR+LA			DCC EPB																																																														
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8814618/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	421				
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet		
A	62	+B.09	-PB05	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/36	A
	63	+B.09	-PB06	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/36	
	64	+B.09	-PB-AA	Push button	-	1NO, 1NC	Red, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/112	
B	65	+B.09	-PB-AR	Push button	-	1NO, 1NC	Black, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/112	B
	66	+B.09	-PB-AT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/112	
	67	+B.09	-PB-DC1-FT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/31	
	68	+B.09	-PB-DC2-FT	Push button	-	1NO, 1NC	Yellow, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/31	
C	69	+B.09	-PB-DCFA	Push button	-	1NO, 1NC	Red, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/30	C
	70	+B.13	-CS-89A	Rotary Switch	6-3-pos. contacts with 0 position	32A, 660V	Spring return with Pistol grip handle 45 degree Switching	1MYN910008-AAAA	Switron	1MYN910008-AAAA	1	1MNS500925-CBAA/100,117	
	71	+B.13	-SL03	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	
D	72	+B.13	-SL04	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	D
	73	+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/66,78,92,94,95,111,117	
	74	+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/72,92,94,95,100,117	
E	75	+B.17	-SL01	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	E
	76	+B.17	-SL02	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	
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-BAA		Sheet 1007	
	Rev. Revision note			Date		Name						n. sheet 1008	
	1MYN691003-102(A3)REV01												
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8814618/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	422				
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet		
A	77	+B.17	-SL11	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	A
	78	+B.17	-SL12	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	
	79	+B.17	-SL13	Indicator light	-	220VDC, 7mA	BLUE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
B	80	+B.17	-SL14	Indicator light	-	220VDC, 7mA	AMBER	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	B
	81	+B.17	-SL15	Indicator light	-	220VDC, 7mA	WHITE	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
	82	+B.17	-SL16	Indicator light	-	220VDC	AMBER	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/111	
C	83	+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/100,117	C
	84	+B.19	-SL07	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	
	85	+B.19	-SL08	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	
D	86	+B.19	-SL09	Indicator light	-	220VDC, 7mA	GREEN	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	D
	87	+B.19	-SL10	Indicator light	-	220VDC, 7mA	RED	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/110	
	88	+B.19	-SS1	Feed-through terminal Rotary Switch	CAT M4 16-2-pos. contacts	800V, 45A 32A, 660V	2.5-6mm ² , grey Wing knob type stayput with 90 Degree switching angle	IN2662-3001-3 1MNS500925-NAAB	Elmex Switron	1MNS500925-NAAB	4 1	1MNS500925-CBAA/96 1MNS500925-CBAA/96,117	
F	89	+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/95,117	E
Chief Engineer/Projects APTRANSCO/VIS/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		STANDARD DRAWING		Hitachi Energy India Limited		Resp. dept. PG-GAS		Rev. ind. Language en	
Rev. Revision note				Date		Name		HITACHI		Doc. no. 1MNS500925-BAA		Sheet 1008 n. sheet 1009	
1MYN691003-102(A3)REV01													
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8814618/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	423				
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet		
A	90	+B.25	-KF1	Numerical bay control IED	REC670	90-250VDC 220-250VDC	50/60Hz 16 inputs	ABB	1MNS500925-XCAC	1	1MNS500925-CBAA/35,62,80 1MNS500925-CBAA/ 64,65,66,67,68,69,70, 71,72,73,74,75,76,77, 81,82,83,84,85		
					Power supply module					PSM		1	
					Binary input module					BIM		7	
					Binary output module					BOM		2	1MNS500925-CBAA/ 36,78,79,81,82,89,90, 95,100,102,103
					Ethernet module					SFP		1	1MNS500925-CBAA/80
					Transformer input module					TRM		1	1MNS500925-CBAA/63,80
					Rack casing					1/1x19" rack casing		1	
B	15 LED indication module	LED	15 LED indication module	LED	14xI/O, 1xTRM	1/1x19", Version 2.2 Normal size	ABB	ABB	ABB	1			
										1			
										3	1MNS500925-CBAA/62		
C	91	+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/104,105	
Chief Engineer/Projects APTRANSCO/VIS/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		HITACHI		Doc. no. 1MNS500925-BAA		n. sheet 1010	
1MYN691003-102(A3)REV01													
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8814618/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	424					
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet			
A	92	+B.33	-R01	Terminal base	RX4	4U12C	Rack mounting	ABB	5619499-A	5	1MNS500925-CBAA/ 68,92,101,113,117			
			-R01.101.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1		
			-R01.101.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1		
			-R01.107.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1		
			-R01.107.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1		
			-R01.113.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1		
			-R01.113.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A		1		
			-R01.119.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK271-018-AS		1		
			-R01.119.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK271-018-AS		1		
			-R01.125.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK271-018-AS		1		
			-R01.125.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS		1		
			-R01.131.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS		1		
			-R01.131.301	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS		1		
			-R01.137.301	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						
B	92	+B.33	-R01.149.101	Auxiliary relay	RXMA1	230VAC, 50-60Hz	2NO, 2NC	ABB	RK 211052-BS	1	1MNS500925-CBAA/30			
			-R01.149.301	Auxiliary relay	RXMA1	230VAC, 50-60Hz	2NO, 2NC	ABB	RK 211052-BS	1	1MNS500925-CBAA/28,68			
			-R01.155.101	DC-1 Supervision Relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	1MNS500925-CBAA/30,31,72		
			-R01.155.301	DC-2 Supervision Relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	1MNS500925-CBAA/30,31,72		
C	93	+B.33	-R01.143.301	Auxiliary relay	RXSF1	220-250VDC	2NO, 4NC	ABB	RK271-019-AS	1	1MNS500925-CBAA/ 35,45,56,114			
			94	+B.33	-SS	Synchronizing socket	SS Type	500VAC/DC	Panel mounting socket	IN 5381 3001-1	BCH Electric limited	1	1MNS500925-CBAA/96	
			95	+B.33	-TS_BCU	Test block	MPG	10NC		1MYN900012-TA	GE	1MNS500925-NXAA	1	1MNS500925-CBAA/62,63
			96	+B.33	-TTB	Test Terminal Block for TVM	TTB	1100V, 50A	Compact, Flush mounting	1MYN266015-003	Deepl		1	1MNS500925-CBAA/104,105
D	97	+B.41	-SH	Heating	SPHT	230V AC, 50W		IN6677-3001-2	KWK RESISTORS / TGS	1	1MNS500925-CBAA/28			
E	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		Hitachi Energy India Limited		HITACHI	PG-GAS	Rev. ind.	Language	en	
				STANDARD DRAWING						Doc. no.	1MNS500925-BAA		Sheet	1010
F	Rev.	Revision note	Date	Name								n. sheet	1011	
	1MYN691003-102(A3)REV01													

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
98	+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		
99	+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		
100	+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		
101	+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		
102	+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		
103	+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	
104	+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		

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		Resp. dept. PG-GAS	Rev. ind.	Language en
				STANDARD DRAWING		HITACHI		Doc. no. 1MNS500925-BAA		Sheet 1011
Rev.	Revision note	Date	Name							n. sheet 1012

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
105	+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		
106	+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		
107	+C.03	-FS10	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/63
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
108	+C.03	-FS11	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/63
			Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
109	+C.03	-LK03	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Neutral link	NL	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
110	+C.03	-LK06	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			Neutral link	NL	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		
111	+C.03	-LK09	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/38
			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 +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-BAA		Sheet 1012 n. sheet 1013	
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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet																																																						
A	+C.05	-1LK06	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/37																																																						
			Neutral link	NL	15A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1																																																								
B	+C.05	-FS13	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/63																																																						
			Control Fuse Base	-	32A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1																																																								
C	+C.05	-FS21	Fuse	-	2A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/96																																																						
			Control Fuse Base	-	32A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1																																																								
C	+C.05	-LK13	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/63																																																						
			Neutral link	NL	15A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1																																																								
D	+C.05	-LK21	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/96																																																						
			Neutral link	15A	15A		ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1																																																								
E	+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/98,110																																																						
			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																																																							
			Retaining bracket	ECOR-RH-2L	-	-	1MNS500579-CRMD	Phoenix contact	1051972	1																																																							
<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">Resp. dept. PG-GAS</td> <td colspan="1">Rev. ind. Language en</td> </tr> <tr> <td colspan="3">Rev. Revision note</td> <td colspan="1">Date</td> <td colspan="1">Name</td> <td colspan="2" rowspan="2">HITACHI</td> <td colspan="2" rowspan="2">Hitachi Energy India Limited</td> <td colspan="2" rowspan="2">Doc. no. 1MNS500925-BAA</td> <td colspan="1">Sheet 1014</td> </tr> <tr> <td colspan="3"></td> <td colspan="1"></td> <td colspan="1"></td> <td colspan="1">n. sheet 1015</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		Resp. dept. PG-GAS		Rev. ind. Language en	Rev. Revision note			Date	Name	HITACHI		Hitachi Energy India Limited		Doc. no. 1MNS500925-BAA		Sheet 1014						n. sheet 1015
Based on			Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR																																																						
			Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB		+LA																																																						
			Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited		Resp. dept. PG-GAS		Rev. ind. Language en																																																						
Rev. Revision note			Date	Name	HITACHI		Hitachi Energy India Limited		Doc. no. 1MNS500925-BAA		Sheet 1014																																																						
											n. sheet 1015																																																						

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8814618/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	429						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	125	+C.07	-52_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
B	126	+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/98,110,111				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
C	127	+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/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
D	128	+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/66,98,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
E	129	+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/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1					
Based on				Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER	Doc. kind.	Parts list	Ref.Des.	=2KR		
				Approved	20.12.2023	GOURISH HEGDE	Parts list			DCC	EPB		+LA		
				Project	APTRANSCO		=2KR+LA		Resp. dept.	PG-GAS		Rev. ind.	Language	en	
				STANDARD DRAWING			HITACHI		Hitachi Energy India Limited		Doc. no.		1MNS500925-BAA	Sheet	1015
Rev.	Revision note	Date	Name									n. sheet	1016		
1MYN691003-102(A3)REV01															

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8814618/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	430						
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	130	+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/66,98,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
B	131	+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/98				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
C	132	+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/67,99,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
D	133	+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/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	134	+C.07	-89L_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4CO, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/67,99,110				
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1					
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1						
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972	1						
Based on				Prepared	13.12.2023	VINOD G	Title		220kV LINE FEEDER	Doc. kind.	Parts list	Ref.Des.	=2KR		
				Approved	20.12.2023	GOURISH HEGDE	Parts list			DCC	EPB		+LA		
				Project	APTRANSCO		=2KR+LA		Resp. dept.	PG-GAS		Rev. ind.	Language	en	
				STANDARD DRAWING			HITACHI		Hitachi Energy India Limited		Doc. no.		1MNS500925-BAA	Sheet	1016
Rev.	Revision note		Date	Name								n. sheet	1017		
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8814618/2024/EEMRT-ENE51	1	2	3	4	5	6	7	8	431										
Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet								
A	135	+C.07	-89L_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, 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	136	+C.07	-89LE_CLS_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/68,99,110								
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1									
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1										
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1									
C	137	+C.07	-89LE_CLS_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, 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									
D	138	+C.07	-89LE_OPN_1	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, screw connection, test button, mechanical indicator	Phoenix Contact	1109562	1	1MNS500925-CBAA/67,99,110								
				Diode module	DP-12-220 DC	6-230VDC	-	Phoenix contact	2907517	1									
				Relay Socket	ECOR-2-BSC3/4X21 (Screw connection & DIN rail mounting)	-	Phoenix contact	2907521	1										
			Retaining bracket	ECOR-RH-2L	-	1MNS500579-CRMD	Phoenix contact	1051972		1									
E	139	+C.07	-89LE_OPN_2	Relay	REL-IR-BL/L-220DC/4X21	220VDC	4C0, 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									
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		Hitachi Energy India Limited		PG-GAS		Rev. ind.	Language		en			
Rev.	Revision note			Date	Name			Doc. no.		1MNS500925-BAA		Sheet		1017		n. sheet		1018	
1MYN691003-102(A3)REV01																			

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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet	
A	+C.07	-K1	Terminal base	RXZ 4	4U12C	Rail mounting	1MRK000893-D	ABB	1MRK000893-D	4		
		-K1.113.101	Bistable relay	RXMFV 21	220VDC	7NO, 7NC	1MRK030401-AS	ABB	1MRK030401-AS	1	1MNS500925-CBAA/ 36,39,70,71	
		-K1.113.301	Bistable relay	RXMFV 21	220VDC	7NO, 7NC	1MRK030401-AS	ABB	1MRK030401-AS	1	1MNS500925-CBAA/36,39,71	
		-K1.125.101	Bistable relay	RXMFV 21	220VDC	7NO, 7NC	1MRK030401-AS	ABB	1MRK030401-AS	1	1MNS500925-CBAA/36,40,71	
		-K1.125.301	Auxiliary relay	RXMH2	220VDC	4NO, 4NC, without flag	RK 223069-AS	ABB	RK 223069-AS	1	1MNS500925-CBAA/31	
		-K1.137.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	1MNS500925-CBAA/78,92,94	
		-K1.137.301	Auxiliary relay	RXSF1	220-250VDC	4NC, 2NO	RK271-009-AS	ABB	RK271-009-AS	1	1MNS500925-CBAA/ 43,54,101,114	
B		-K1.143.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBAA/43,54,101	
B		141	+C.10	-X04A	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex	85	1MNS500925-CBAA/ 43,45,54,56,68,69,70, 71,72,74,75,86,89,90, 92,94,95,97,113,114, 119
C		142	+C.10	-X06	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex	29	1MNS500925-CBAA/ 105,106,107,108,119
C		143	+C.10	-XX1.1	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex	11	1MNS500925-CBAA/ 35,36,78,100,102,103, 119
C		144	+C.11	-89X03	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex	10	1MNS500925-CBAA/ 102,103,119
C		145	+C.11	-DCX03	Disconnect terminal	CATD M4	1100V, 41A	2.5-6mm ²	1MYN266003-002	Elmex	10	1MNS500925-CBAA/31,34,119
D		146	+C.11	-X04	Feed-through terminal	CAT M4	1100V, 57A	2.5-6mm ² , grey	IN2662-3001-3	Elmex	54	1MNS500925-CBAA/ 70,71,75,76,77,79,96, 119

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. Parts list		Ref.Des. =2KR	
				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LA		DCC EPB		+LA	
				Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited		Resp. dept. PG-GAS		Rev. ind. Language en	
Rev. Revision note				Date		Name		HITACHI		Doc. no. 1MNS500925-BAA		Sheet 1018	
1MYN691003-102(A3)REV01												n. sheet 1021	

1	2	3	4	5	6	7	8							
Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet			
A	+A.01	-AC MCB01	Miniature circuit breaker	-	16A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/29			
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/29,68			
B	+A.01	-HS	On/off Switch		1-2 pos on/off switch, 5A, Flush mounting		1MYN533014-001	Switron		1	1MNS500925-CBAA/29			
B	+A.01	-PS	AC Socket with Switch	SW	230VAC, 05-15A	Box type, Indian standard	1MYN538103-001	Anchor		1	1MNS500925-CBAA/29			
			Thermostat	TH	250VAC, 15A, 50 Hz	Range : 25-85°C	IN7635-3001	GIRISH EGO		1	1MNS500925-CBAA/29			
C	+A.10	-BBX04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		16	90.1 1MNS500925-CBAA/86,120			
			Disconnect terminal	CATD M4	800V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		32	1MNS500925-CBAA/42,53,120			
C	+A.10	-X02	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		15	1MNS500925-CBAA/42,53,120			
			Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	1MNS500925-CBAA/29			
D	+B.01	-LED	LED Lamp	LED	240VAC, 9.08W			SPECTRUM TECHVISION (P) LTD		1	1MNS500925-CBAA/29			
			Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/42			
D	+B.05	-FS21	Control Fuse Base	-	32A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
			Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/42			
E	+B.05	-FS22	Control Fuse Base	-	32A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
			Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/42			
E	+B.05	-FS23	Control Fuse Base	-	32A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
			Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/42			
F	+B.05	-FS24	Control Fuse Base	-	32A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1				
			Fuse	-	2A			ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/53			
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.	Language	en
				STANDARD DRAWING		HITACHI		1MNS500925-BAB				Sheet	1021	
Rev.				Revision note	Date	Name			Doc. no.		n. sheet		1022	
1MYN691003-102(A3)REV01														
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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet				
A	14	+B.05	-FS25	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/53	A			
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1					
B	15	+B.05	-FS26	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/53	B			
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1					
C	16	+B.05	-FS27	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/53	C			
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1					
C	17	+B.05	-FS28	Fuse	-	2A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/42	C			
				Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1					
D	18	+B.05	-LK23	Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		D			
				Neutral link	NL	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/42				
F	19	+B.05	-LK26	Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		F			
				Neutral link	NL	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/53				
F	20	+B.05	-LK27	Control Fuse Base	-	32A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1		F			
				Neutral link	NL	15A	-	ABB/EATON(cooper Bussmann) /Schneider/L&T	-	1	1MNS500925-CBAA/53				
Based on				Prepared 13.12.2023		VINOD G		Title 220kV LINE FEEDER				Doc. kind. Parts list		Ref.Des. =2KR	
				Approved 20.12.2023		GOURISH HEGDE		Parts list =2KR+LB				DCC EPB		+LB	
				Project APTRANSCO		STANDARD DRAWING		Hitachi Energy India Limited				Resp. dept. PG-GAS		Rev. ind. Language en	
Rev. Revision note				Date		Name		HITACHI				Doc. no. 1MNS500925-BAB		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
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-CBAA/42	
22	+B.09	-1MCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
23	+B.09	-1MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
24	+B.09	-1MCB03	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
25	+B.09	-1MCB04	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
26	+B.09	-2MCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
27	+B.09	-2MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
28	+B.09	-2MCB03	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
29	+B.09	-2MCB04	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/Siemens	-	1	1MNS500925-CBAA/34,74
30	+B.13	-XX1.1	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		12	1MNS500925-CBAA/46,54,72,87,115,120

Based on				Prepared 13.12.2023 VINOD G		Title 220kV LINE FEEDER		Doc. kind. Parts list		Ref.Des. =2KR	
				Approved 20.12.2023 GOURISH HEGDE		Parts list =2KR+LB		DCC EPB		+LB	
				Project APTRANSCO		Hitachi Energy India Limited		Resp. dept. PG-GAS		Rev. ind.	
				STANDARD DRAWING		HITACHI				Language en	
Rev.	Revision note	Date	Name					Doc. no. 1MNS500925-BAB		Sheet 1023	
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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet			
31	+B.13	-XX1.2	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		5	1MNS500925-CBAA/ 43,44,45,120			
32	+B.13	-XX2.1	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		6	1MNS500925-CBAA/57,120			
33	+B.13	-XX2.2	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		2	1MNS500925-CBAA/120			
34	+B.17	-X04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		45	1MNS500925-CBAA/ 45,48,56,59,89,90,120			
35	+B.21	-X04A	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		85	1MNS500925-CBAA/ 43,45,54,56,68,69,70, 71,72,74,75,86,89,90, 92,94,95,97,113,114, 120			
36	+B.33	-FOTEX04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		34	1MNS500925-CBAA/ 46,47,57,58,97,120			
37	+B.37	-52X04	Feed-through terminal	CAT M4	800V, 45A	2.5-6mm ² , grey	IN2662-3001-3	Elmex		17	1MNS500925-CBAA/44,55,120			
38	+B.37	-ACX03	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		3	1MNS500925-CBAA/29,120			
39	+B.37	-DCX03	Disconnect terminal	CATD M4	800V, 41A	2.5-6mm ²	1MYN266003-002	Elmex		15	1MNS500925-CBAA/34,120			
40	+B.41	-HT	Heating	SPHT	240V AC, 50W		IN6677-3001-2	KWK RESISTORS / TGS		1	1MNS500925-CBAA/29			
41	+D.04	-FN1	Numerical line distance protection IED Power supply module Binary input module Binary output module Binary input/output module Ethernet module Transformer input module Rack casing 15 LED indication module	REL670 PSM BIM BOM IOM SFP TRM 1/2x19" REX670 rack casing LED	 90-250VDC 220-250VDC, 50ma 220-250VDC 100Base-FX, LC connectors 1A, 0-340V, 50/60Hz 3xI/O, 1xTRM	 50/60Hz 16 inputs 24 output relays 8 inputs, 12 outputs Version 2.2 6I+6U 1/2x19", Version 2.2 Normal size, Rex670 V2.2	1MNS500925-XLAA . - - - - - - - .	ABB ABB ABB ABB ABB ABB ABB ABB	1MNS500925-XLAA . - - - - - - - .	1 1 1 1 1 1 3	 1MNS500925-CBAA/41,46,49 1MNS500925-CBAA/43,44,50 1MNS500925-CBAA/ 46,48,50,54,72,87,89, 90,115 1MNS500925-CBAA/ 45,48,51,115 1MNS500925-CBAA/49 1MNS500925-CBAA/42,49 1MNS500925-CBAA/41			
42	+D.12	-FN2	M2 Protn relay	Micom P545	110-250VDC, 100-240VAC	With fiber optic converter	1MNS500925-XLAB	Schneider / GE	P54531QB6M0K58M	1	1MNS500925-CBAA/ 43,48,52,53,54,55,56, 57,59,60,61,72,88,89, 90,115			
43	+D.18	-86A -PB	Push button	-	1NO, 1NC	Green, Compact, momentary	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	1MNS500925-CBAA/89			
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		HITACHI	Resp. dept.	PG-GAS	Rev. ind.	Language	en
Rev.	Revision note		Date	Name		Doc. no.		1MNS500925-BAB		Sheet	1024		n. sheet	1025
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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	44	+D.18	-86B -PB	Push button	-	1NO, 1NC	Green, Compact, momentary	-	ABB/L&T/Teknic/Schneider/SECO	-	1	1MNS500925-CBAA/90	A				
	45	+D.18	-D18.01	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	1MNS500925-CBAA/43,46,47,56,57,58,69,118					
B	46	+D.18	-D18.02	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	1MNS500925-CBAA/45,46,47,54,57,58,69,118	B				
	47	+D.18	-D18.03	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	1MNS500925-CBAA/43,45,54,56,118					
C	48	+D.24	-D24	Terminal base	RX4	4U12C	Rack mounting	5619499-A	ABB	5619499-A	5	1MNS500925-CBAA/87,91,93	C				
			-D24.101.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1		1MNS500925-CBAA/56,86,87,91,93				
			-D24.101.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1		1MNS500925-CBAA/56,86,87,91,93				
			-D24.107.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1		1MNS500925-CBAA/87,91,93				
			-D24.107.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1		1MNS500925-CBAA/56,86,87,91,93				
			-D24.113.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1		1MNS500925-CBAA/87,91,93				
			-D24.113.301	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK 216063-AS	ABB	RK 216063-AS	1		1MNS500925-CBAA/56,86,87,91,93				
			-D24.119.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1		1MNS500925-CBAA/44,55,69,86,89,91,93,95,115				
D			-D24.131.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1		1MNS500925-CBAA/71,89	D			
			-D24.137.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1		90.1 1MNS500925-CBAA/44,55,70,91,93,95,97,115				
	-D24.149.101	Auxiliary relay	RXSF1	220-250VDC	2NO, 4NC	RK271-019-AS	ABB	RK271-019-AS	1	1MNS500925-CBAA/45,46,56,57,69,115							
	-D24.149.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	90.1 1MNS500925-CBAA/75							
E	-D24.155.101	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBAA/43,47,115	E						
	-D24.155.301	Auxiliary relay	RXSF1	220-250VDC	6NO	RK271-018-AS	ABB	RK 271018-AS	1	1MNS500925-CBAA/54,58							
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				Resp. dept. PG-GAS		Rev. ind. Language en			
Rev. Revision note				Date		Name		HITACHI				Doc. no. 1MNS500925-BAB		Sheet 1025			
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Pos.	Location	ENE51 Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet		
A	+D.29	-D29 -D29.101.101 -D29.101.301 -D29.107.101 -D29.107.301 -D29.113.101 -D29.113.301 -D29.119.101 -D29.131.301 -D29.137.101 -D29.137.301 -D29.143.101 -D29.143.301 -D29.149.101 -D29.149.301 -D29.155.101 -D29.155.301	Terminal base Auxiliary relay High speed trip relay	RX4 RXME18 RXMS1	4U12C 220-250VDC 220VDC	Rack mounting 2NO 6NO, Variant B	5619499-A RK221-825-AS RK 216063-AS	ABB ABB ABB	5619499-A RK221-825-AS RK 216063-AS	5 1 1	1MNS500925-CBAA/88,91,93 1MNS500925-CBAA/ 45,86,88,91,93		
			Auxiliary relay High speed trip relay	RXME18 RXMS1	220-250VDC 220VDC	2NO 6NO, Variant B	RK221-825-AS RK 216063-AS	ABB ABB	RK221-825-AS RK 216063-AS	1 1	1MNS500925-CBAA/88,91,93 1MNS500925-CBAA/ 45,86,88,91,93		
			Auxiliary relay High speed trip relay	RXME18 RXMS1	220-250VDC 220VDC	2NO 6NO, Variant B	RK221-825-AS RK 216063-AS	ABB ABB	RK221-825-AS RK 216063-AS	1 1	1MNS500925-CBAA/88,91,93 1MNS500925-CBAA/ 45,86,88,91,93		
			Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	1MNS500925-CBAA/ 44,55,69,86,90,91,93, 95,115		
			Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	1MNS500925-CBAA/71,90		
			Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	90.1 1MNS500925-CBAA/91,93		
			Auxiliary relay	RXMM1	220-250VDC	6NO	RK214-003-AS	ABB	RK214-003-AS	1	90.1 1MNS500925-CBAA/91,93		
			High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBAA/ 43,47,56,70,89,90		
			High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216-063-AS	ABB	RK216-063-AS	1	1MNS500925-CBAA/ 45,54,58,70,89,90		
			Auxiliary relay High speed trip relay High speed trip relay Auxiliary relay	RXMM1 RXMS1 RXMS1 RXSF1	220-250VDC 220VDC 220VDC 220-250VDC	6NO 6NO, Variant B 6NO, Variant B 6NO	RK214-003-AS RK216-063-AS RK216-063-AS RK271-018-AS	ABB ABB ABB ABB	RK214-003-AS RK216-063-AS RK216-063-AS RK 271018-AS	1 1 1 1	1MNS500925-CBAA/48,70,95 1MNS500925-CBAA/46,97 1MNS500925-CBAA/57,97 1MNS500925-CBAA/ 43,45,47,54,56,58,115		
D	+D.39	-TS1_M-1_21L -TS1_M-2_21L -TS2_M-1_21L -TS2_M-2_21L	Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBAA/41,42		
			Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBAA/52,53		
			Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBAA/ 41,48,87,89,90		
			Test block	MPG	10NC		1MNS500925-NXAA	GE	1MNS500925-NXAA	1	1MNS500925-CBAA/ 52,59,88,89,90		
<p>Suitable for conventional 220KV SS only</p> <p>Chief Engineer/Projects APTRANSCO/VS/Vijayawada.</p> <p>1No.Spare Trip relay RXMVB4 and 1No spare supervision relay TSR-B shall be supplied as loose and fixed in the panel.</p>													
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				=2KR+LB		PG-GAS		Rev. ind.	
				STANDARD DRAWING				Hitachi Energy India Limited		Rev. ind.		Language en	
Rev. Revision note				Date		Name		HITACHI		Doc. no. 1MNS500925-BAB		Sheet 1026	
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