

CUSTOMER : POWER GRID CORPORATION OF INDIA LTD.

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HE REF.NO : 3100137898 , IN-56323017

SUBSTATION : 400/220kV KOLAR SUBSTATION

EQUIPMENT : 400kV BUSBAR PROTECTION RETROFITTING

DRAWING REF. : General Arrangement : 1MNS801837-AGCA
Schematic Drawings : 1MNS801837-CGCA

STANDARD BAY REF. : =4R

IN CONTINUATION WITH EXISTING SCHEME YN1M300439-CZA

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Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY Title page	Doc. kind. Circuit diagram	Ref.Des. =4R	
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				Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
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90	91	RETROFIT OF REB670 RELAY	M1-BUS 4 BINARY INPUTS	01	REVISED AS PER CUSTOMER COMMENTS	119	120	RETROFIT OF REB670 RELAY	M2-BUS 2 CT CIRCUITS	01	REVISED AS PER CUSTOMER COMMENTS		
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138	139	RETROFIT OF REB670 RELAY	M2-BUS 3 PSM & COM	01	REVISED AS PER CUSTOMER COMMENTS	167	168	RETROFIT OF REB670 RELAY	M2-BUS 4 OVERVIEW	01	REVISED AS PER CUSTOMER COMMENTS			
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145	146	RETROFIT OF REB670 RELAY	M2-BUS 3 BINARY OUTPUTS	01	REVISED AS PER CUSTOMER COMMENTS	173.1	173.2	RETROFIT OF REB670 RELAY	ANNUNCIATOR CIRCUIT	01	REVISED AS PER CUSTOMER COMMENTS			
146	147	RETROFIT OF REB670 RELAY	M2-BUS 3 BINARY OUTPUTS	01	REVISED AS PER CUSTOMER COMMENTS	173.2	174	RETROFIT OF REB670 RELAY	ANNUNCIATOR CIRCUIT	01	REVISED AS PER CUSTOMER COMMENTS			
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151	152	RETROFIT OF REB670 RELAY	M2-BUS 3 OVERVIEW	01	REVISED AS PER CUSTOMER COMMENTS									
152	153	RETROFIT OF REB670 RELAY	M2-BUS 4 CT CIRCUITS	01	REVISED AS PER CUSTOMER COMMENTS									
153	154	RETROFIT OF REB670 RELAY	M2-BUS 4 CT CIRCUITS	01	REVISED AS PER CUSTOMER COMMENTS									
154	155	RETROFIT OF REB670 RELAY	M2-BUS 4 CT CIRCUITS	01	REVISED AS PER CUSTOMER COMMENTS									
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156	157	RETROFIT OF REB670 RELAY	M2-BUS 4 PSM & COM	01	REVISED AS PER CUSTOMER COMMENTS									
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158	159	RETROFIT OF REB670 RELAY	M2-BUS 4 BINARY INPUTS	01	REVISED AS PER CUSTOMER COMMENTS									
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TERMINAL BLOCK DESIGNATION FOR EXTERNAL WIRING	
X01	CT CIRCUITS
X02	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

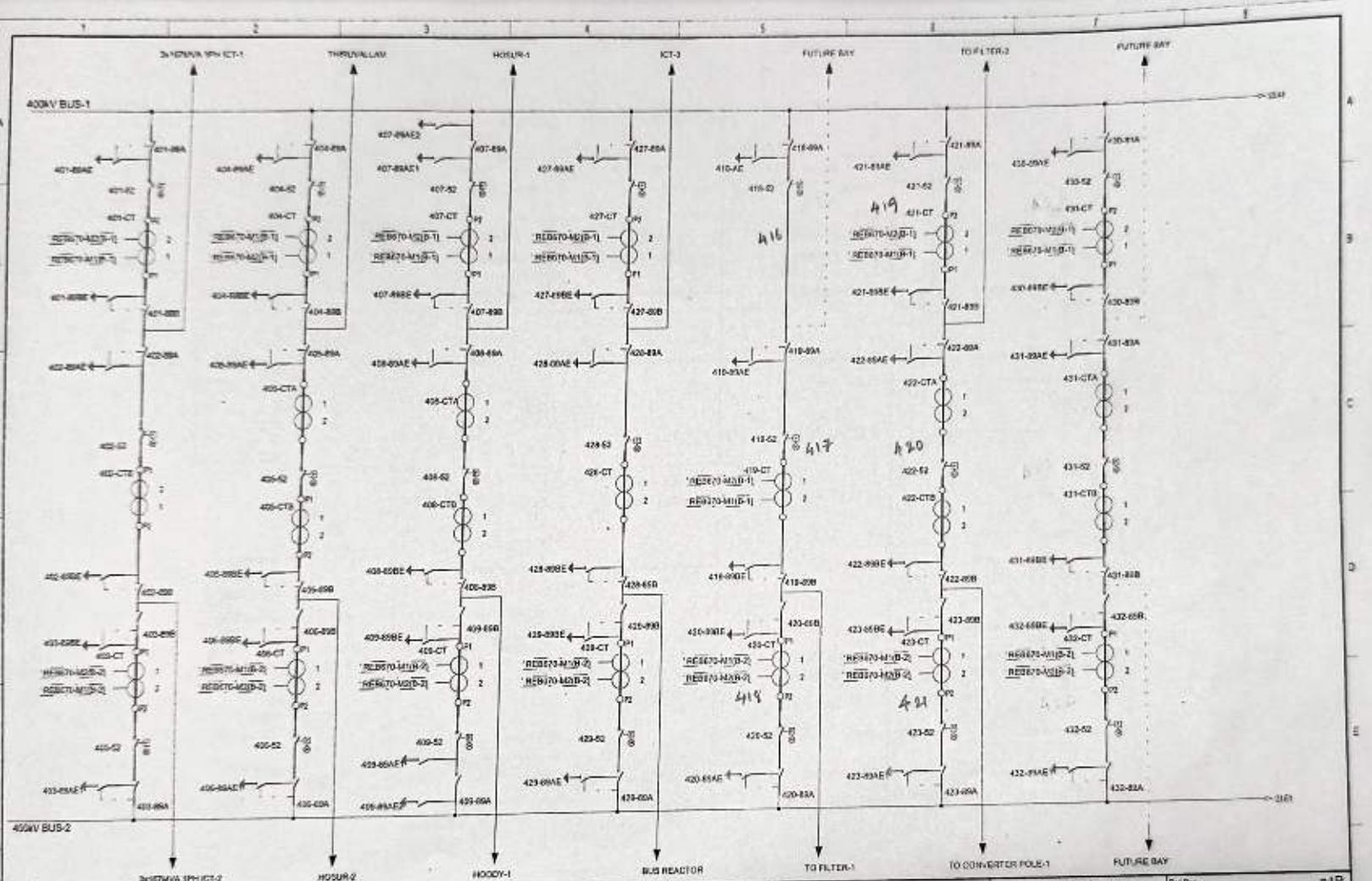
TERMINAL BLOCKS	
	NON DISCONNECTING TB
	DIS CONNECTING TB
	CT/CVT JUNCTION BOX TERMINAL
	BREAKER TERMINAL
	ISOLATOR TERMINAL
	MARSHALLING KIOSK TB
	PLCC/FOTE TERMINALS
	ACDB/DCDB TERMINALS

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

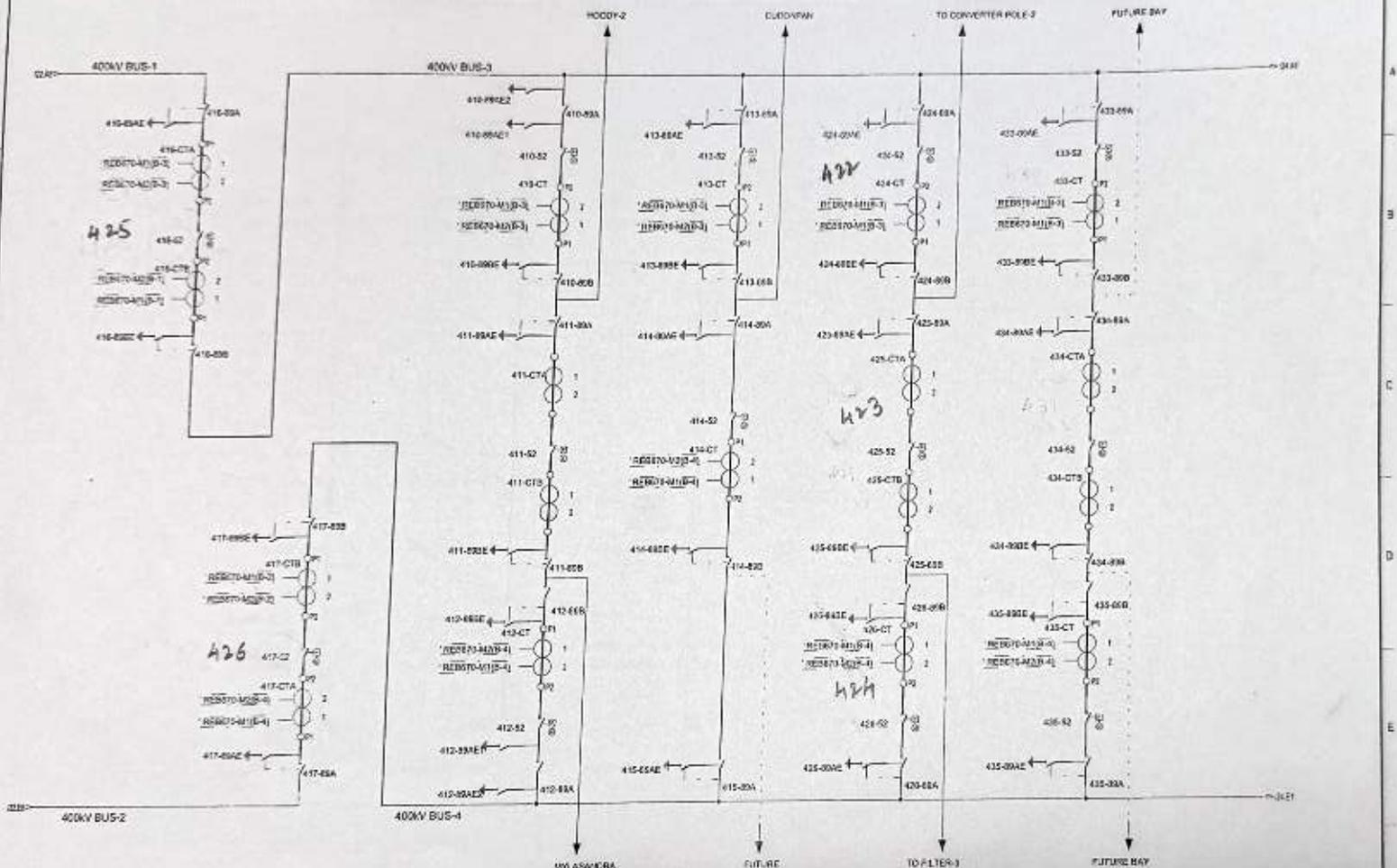
SYMBOL LIST	
	BINARY INPUT
	BINARY OUTPUT
	CHANGE OVER OUTPUT
	CT/PT INPUT
	mA INPUT
	POWER SUPPLY INPUT
	FO COMM. PORT
	RS232/485 COMM. PORT
	RJ45 COMM. PORT
	CURRENT TRANSFORMER
	CVT
	PT
	CIRCUIT BREAKER
	ISOLATOR EARTH SWITCH
	TRANSFORMER
	REACTOR/WAVE TRAP
	LIGHTNING ARRESTOR

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' : AUXILLARY AC CKTS	
FERRULE 'J' : AUXILLARY DC CKTS	FERRULE 'K' : CONTROL CKTS	FERRULE 'L' : INDICATION CKTS	
FERRULE 'P' : DC CKT- BUSBAR PROTECTION	FERRULE 'U' : SPARE CONTACTS		

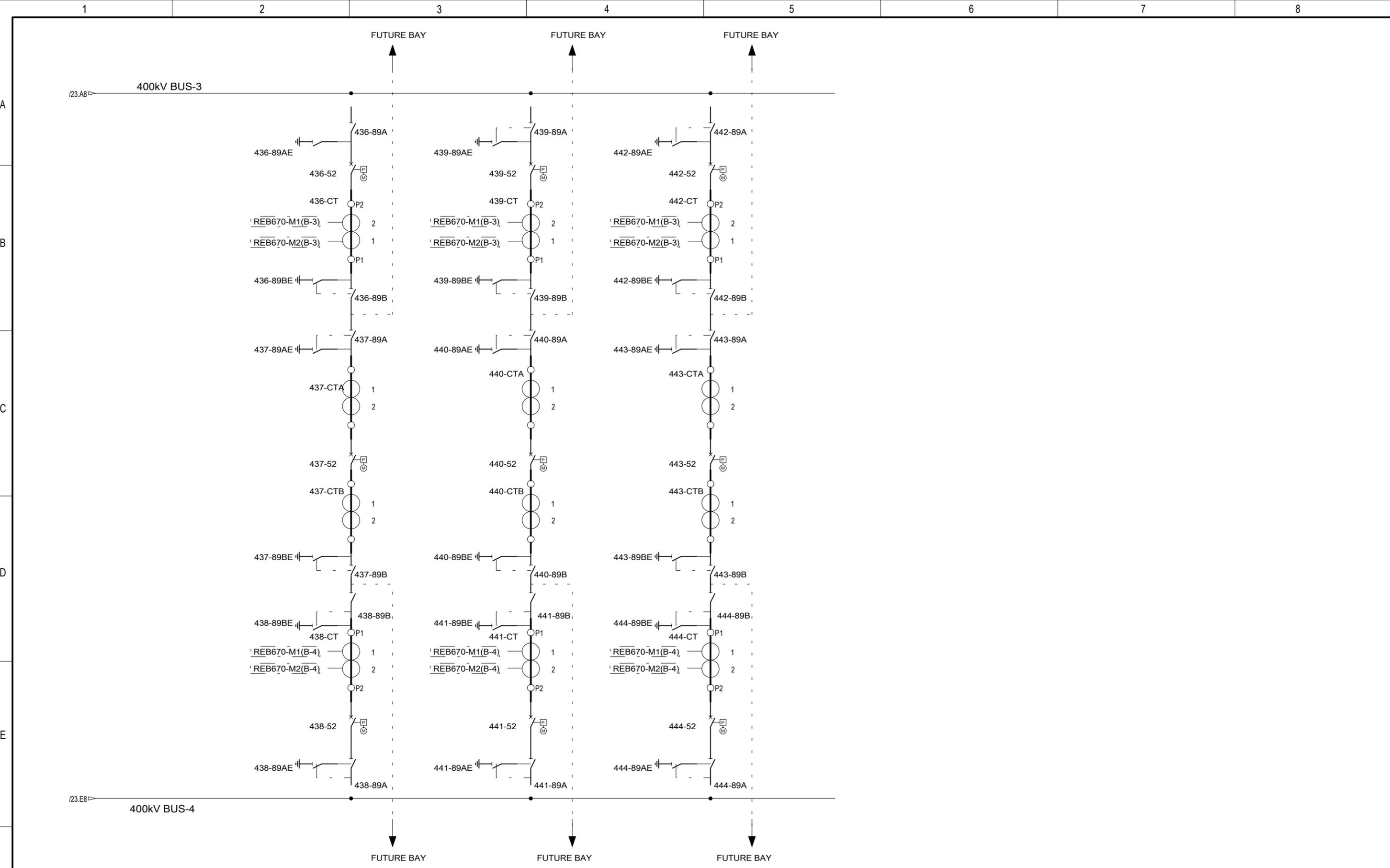
Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL	Title 400kV BUSBAR PROTECTION	Doc. kind. Circuit diagram	Ref.Des. =4R
01	REVISED AS PER CUSTOMER COMMENTS	20.10.2024 DUR	Approved 20.04.2023 DEENADAYALAN A	DCC EFS	
		Project POWER GRID CORPORATION OF INDIA LTD.	LIST OF SYMBOLS	Resp. dept. PG-GAS	Rev. ind. 01
		400/220kV KOLAR SUBSTATION	LIST OF SYMBOLS	Language en	
Rev.	Revision note	Date	Name	Doc. no. 1MNS801837-CGCA	Sheet 21
1MYN691003-102(A3)REV01		3100137898			n. sheet 22



Sheet no: 3100137893	Prepared	18.04.2023	PANKAJ PATIL	Rev	400kV BUSBAR PROTECTION	Rev. No.	00	Language	en	
	Approved	20.04.2023	DEENADAYALAN A		RETROFIT OF RES670 RELAY	Sheet	22	1. Issue	23	
	Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898			SLD	PG-GAS	Rev. No.	00	Language	en
Rev. / Revision No.	Date	Name			HITACHI	Doc. No.	1MNS801837-CGCA			



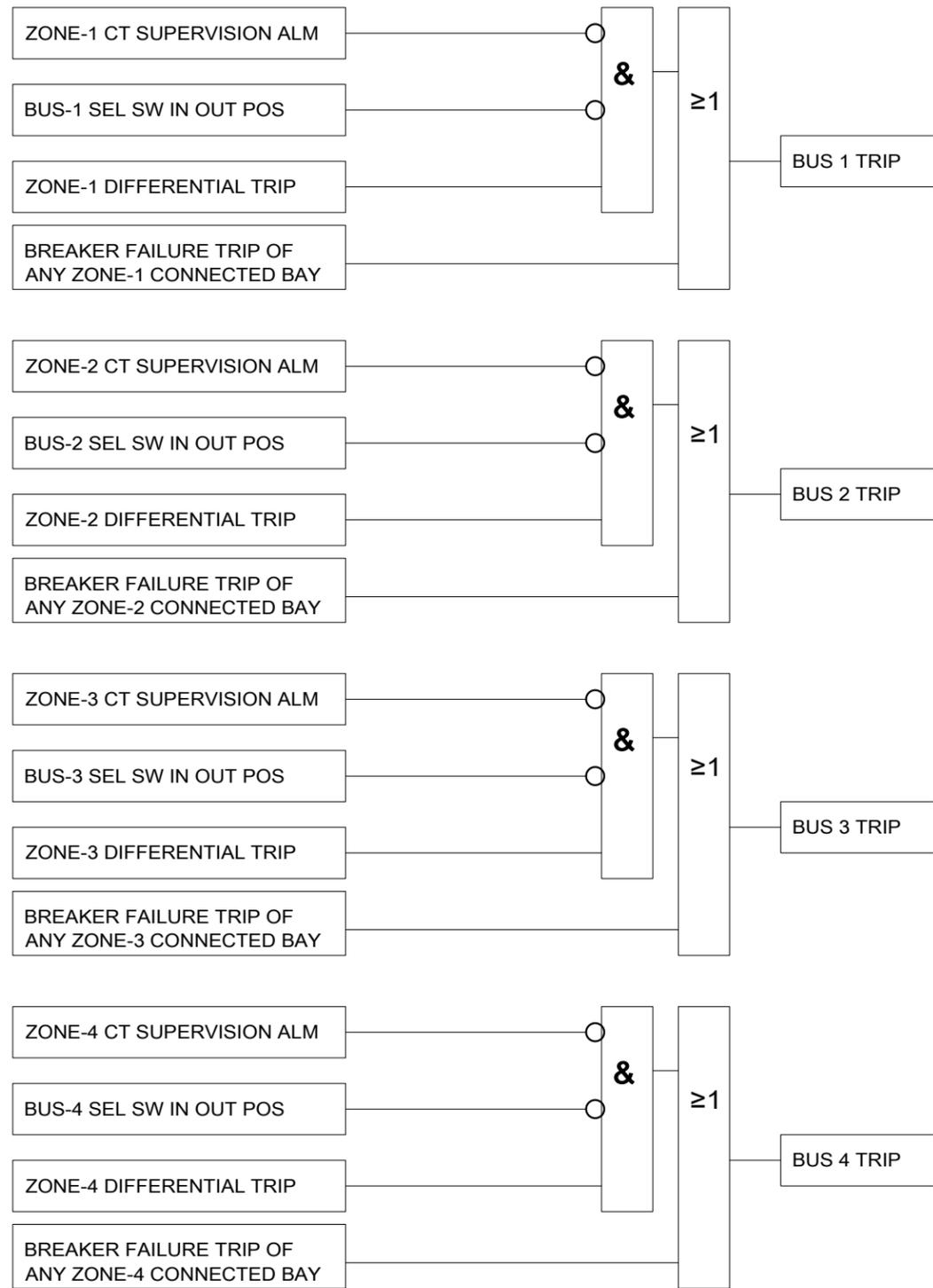
Rev. / Proposed Date / Name	Project 3100137896	Approved 18.04.2023 PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF RE8670 RELAY SLD	Drawn Circuit diagram	Rel. Des. =4R
		Approved 20.04.2023 DEENADAYALAN A		Resg. Des. DCC EFS PG-GAS	Rev. No. 00
Project POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION		Hitachi Energy India Limited 35, Indira Nagar, 4th Floor, Power Products and Systems India Limited	Doc. No. 1MNS801837-CGGA	Sheet 23	1 sheet 24



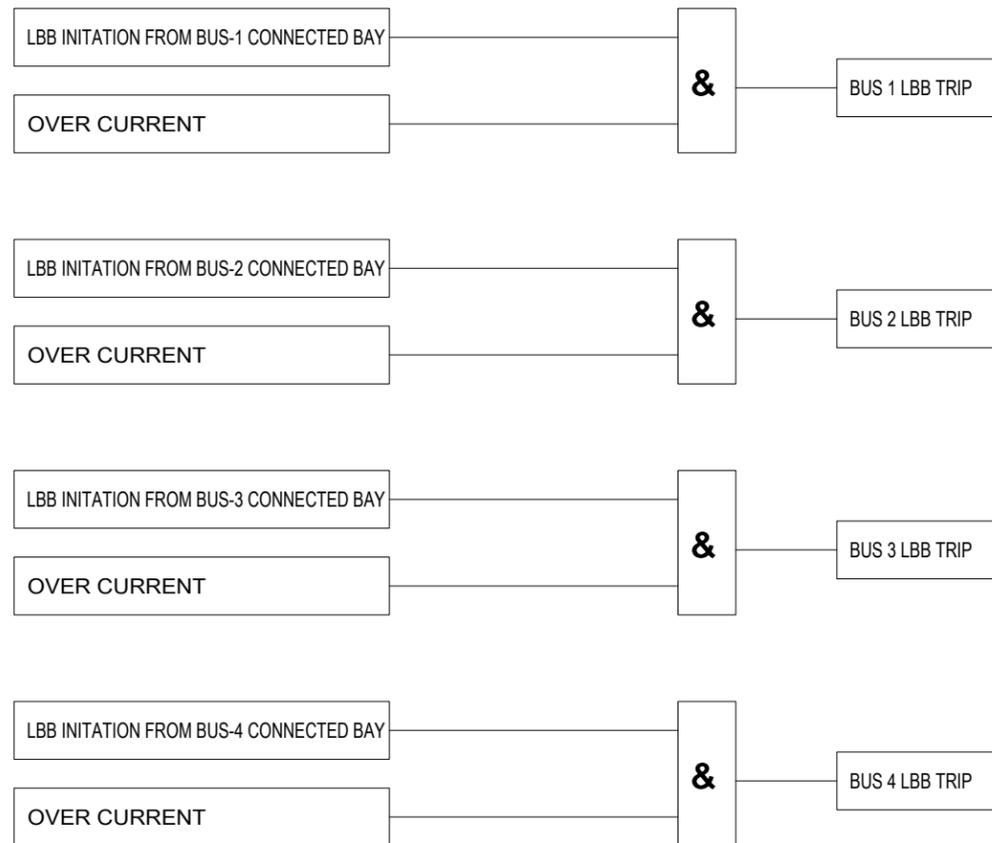
Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY SLD	Doc. kind. Circuit diagram	Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS		
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA	Sheet 24	n. sheet 25
1MYN691003-102(A3)REV01									

OVERALL BUSBAR TRIP LOGIC BUS-1/2/3/4

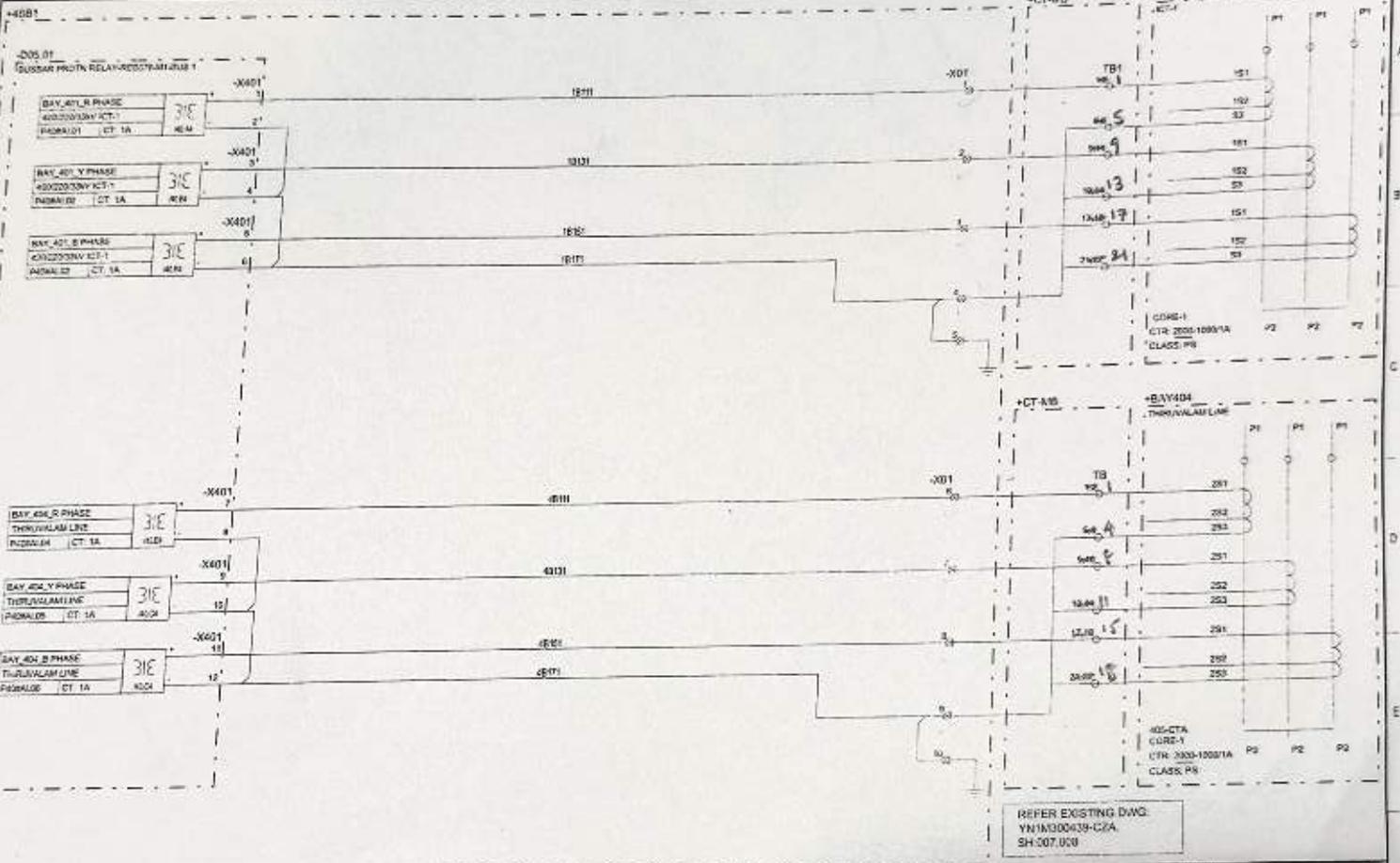
BUSBAR PROTECTION TRIP LOGIC BUS M1&M2



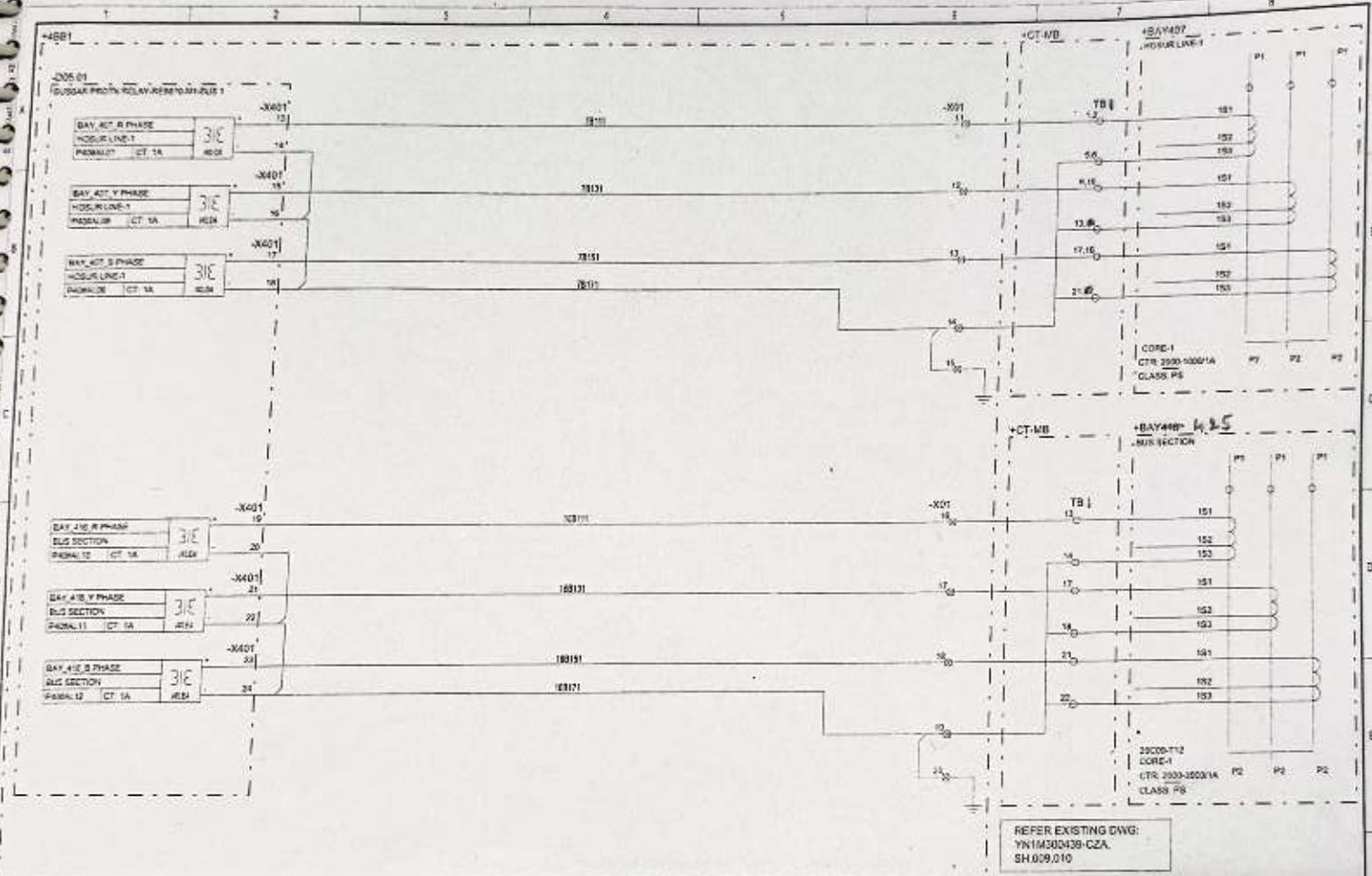
LBB PROTECTION TRIP LOGIC BUS M1&M2 (FUTURE USE)



Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY BB & LBB OPTD LOGIC	Doc. kind. Circuit diagram	Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS	Resp. dept. PG-GAS	Rev. ind. 01
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS801837-CGCA		Sheet 25
Rev.	Revision note	Date	Name				n. sheet 26		

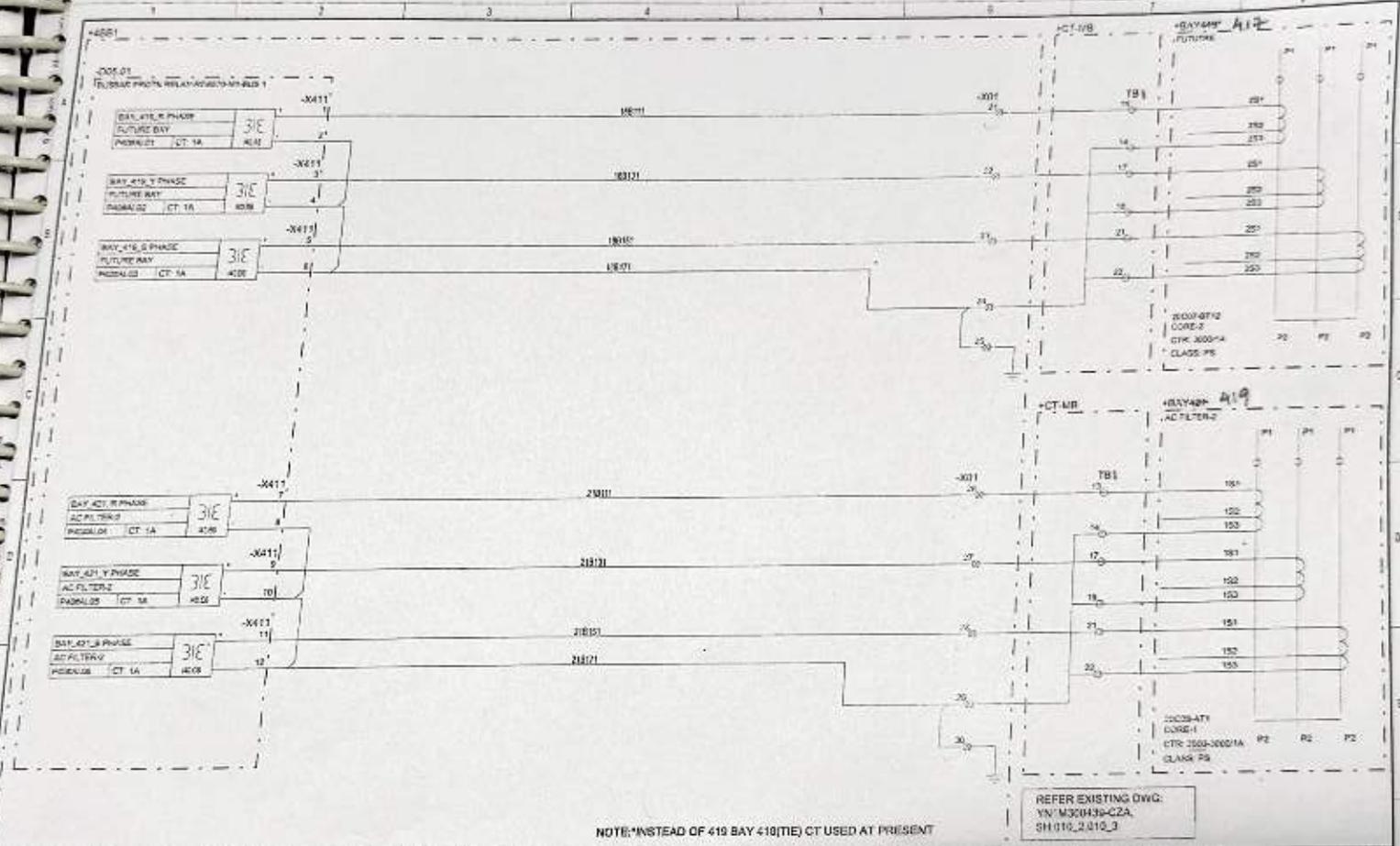


No. Revision Date Name	Project: 16.04.2023 Approved: 20.04.2023 Pankaj Patil Deenadayalan A Power Grid Corporation of India Ltd. 400/220kV Kolar Substation 3100137898	Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 CT CIRCUITS HITACHI <small>Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)</small>	Des. and: Circuit diagram Rev. No.: 00 Language: en Date: 28 Sheet: 27	Ref. No.: -4R
	Project: 16.04.2023 Approved: 20.04.2023 Pankaj Patil Deenadayalan A Power Grid Corporation of India Ltd. 400/220kV Kolar Substation 3100137898	Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 CT CIRCUITS HITACHI <small>Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)</small>	Des. and: Circuit diagram Rev. No.: 00 Language: en Date: 28 Sheet: 27	Ref. No.: -4R



Sheet No. 510212530 Date: 18/04/2023 Prepared by: PANKAJ PATIL Approved by: DEENADAYALAN A Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137886	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 CT CIRCUITS Hitachi Energy India Limited (Formerly known as ABB Power Products at a System India Limited)	Des. No.: Circuit Diagram Rev. No.: 00 Date: 20.04.2023 PG-GAS 1MNS801837-CGCA	Rev. Des.: -4R Language: en Sheet: 27 of sheet: 26
		Ref: Revision table Date: _____ Name: _____	Doc. No.: 1MNS801837-CGCA

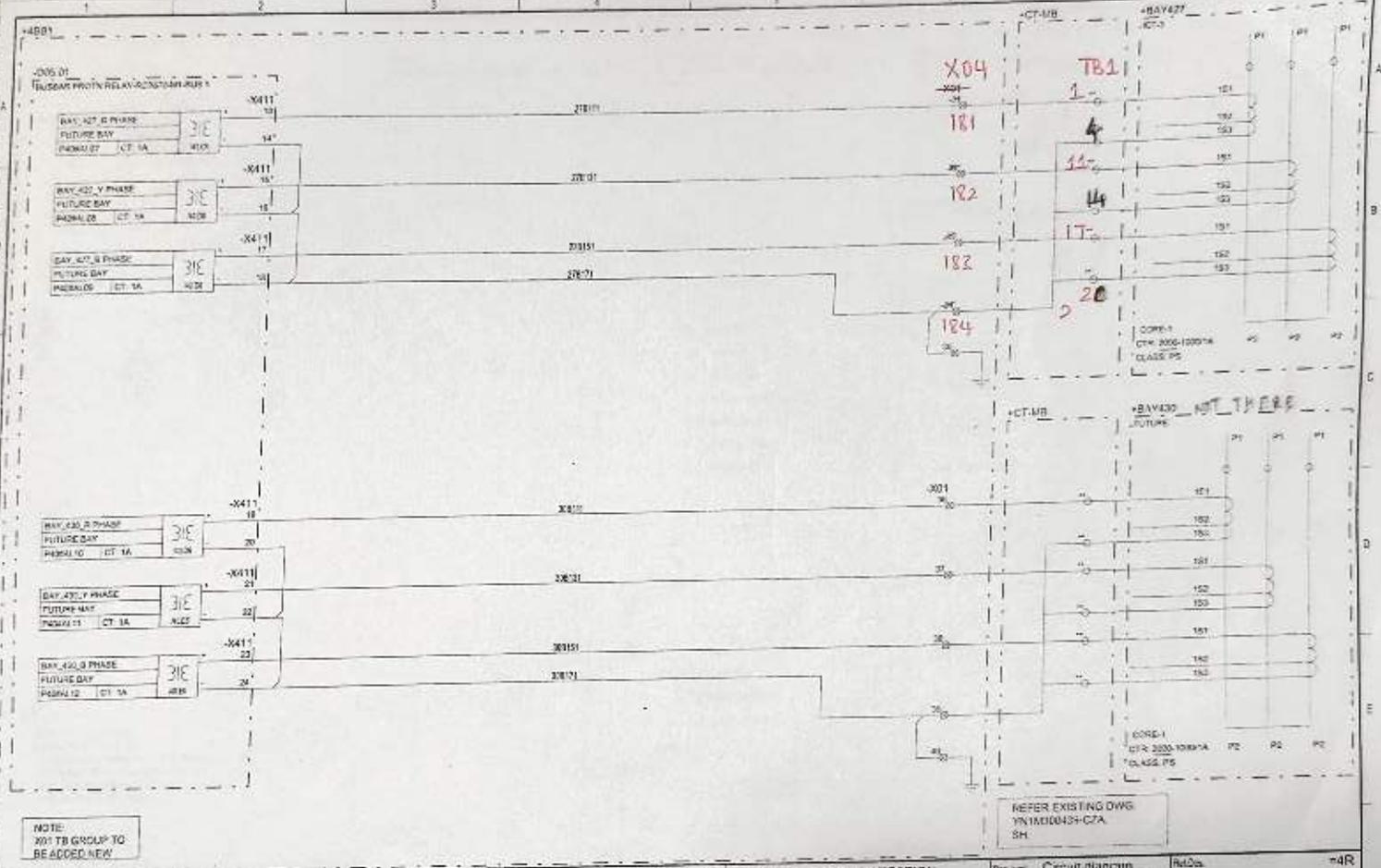
MMNS100-102A2-REV01



NOTE: *INSTEAD OF 419 BAY 4(10)(IE) CT USED AT PRESENT

REFER EXISTING DWG:
 YN/M300439-CZA,
 SH 010_2 010_3

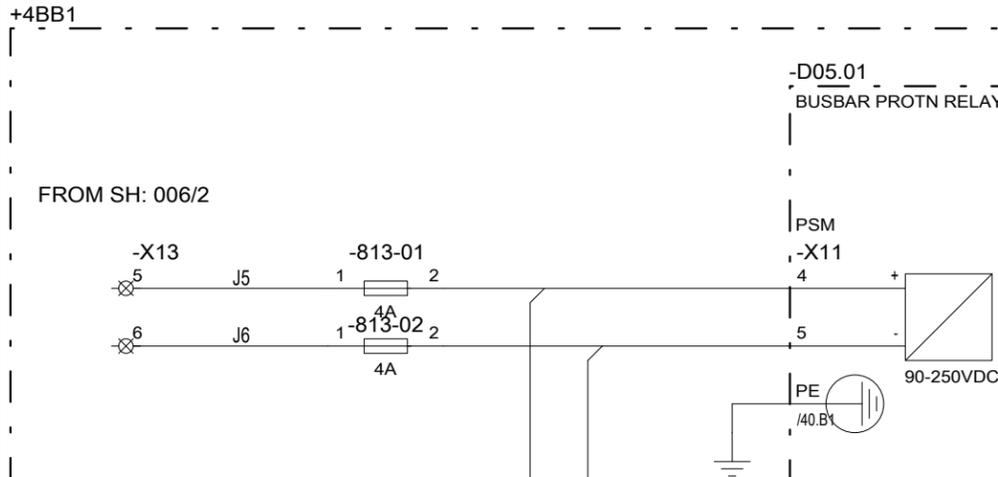
Design: 3100135925 Date: _____ Rev: 1/1	Project: 18.04.2023 Approval: 20.04.2023 Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137990	PANKAJ PATIL DEENADAYALAN A	Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 CT CIRCUITS		Drawn: Circuit diagram DCC EFS	Rev. No. 00 Language Sheet 28 of 29	-4R F
			Hitachi Energy India Limited Corporate & Manufacturing HRD Products and Systems, India Division	Date: 1MNS801837-CGCA	Rev. No. 00 Language Sheet 28 of 29		



NOTE:
X01 TB GROUP TO
BE ADDED NEW

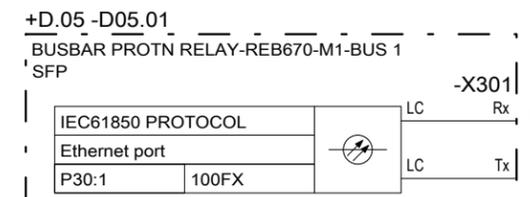
REFER EXISTING DWS
YN1A00043H-C7A
SH

No. / Revision title Date / Issue		Prepared 18.04.2023 Approved 20.04.2023 Pankaj Patil DEENADAYALAN A POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137090		PANKAJ PATIL DEENADAYALAN A 400KV BUSBAR PROTECTION RETROFIT OF REB270 RELAY XI BUS 1 CT CIRCUITS HITACHI <small>Hitachi Energy India Limited Plot No. 8, Bay 20, 400KV Power Project - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 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No. / Revision title Date / Issue		Prepared 18.04.2023 Approved 20.04.2023 Pankaj Patil DEENADAYALAN A POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137090		Rev. no. 00 Date 00/00/00 Language en Sheet 29 of sheets 30			
No. / Revision title Date / Issue		Prepared 18.04.2023 Approved 20.04.2023 Pankaj Patil DEENADAYALAN A POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137090		Rev. no. 00 Date 00/00/00 Language en Sheet 29 of sheets 30			



-D05.01
BUSBAR PROTN RELAY-REB670-M1-BUS 1

+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M1-BUS 1
LED

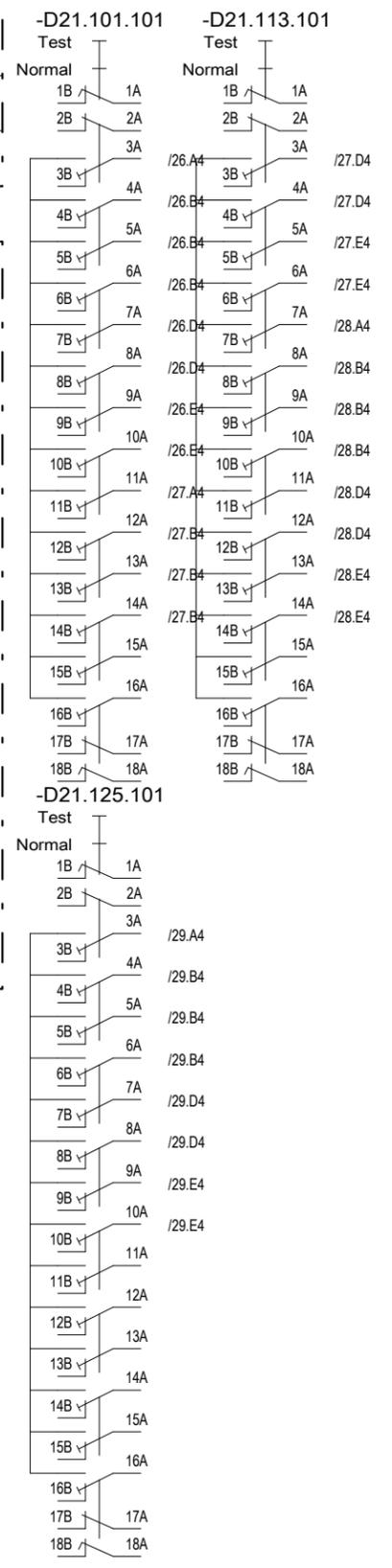


+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M1-BUS 1

- 1 DIFF OPTD.
- 2 EXT LBB OPTD
- 3 RPH TRIP
- 4 YPH TRIP
- 5 BPH TRIP
- 6 BB BLOCKED
- 7 RPH OCT ALARM
- 8 YPH OCT ALARM
- 9 BPH OCT ALARM
- 10 96A OPTD
- 11
- 12
- 13
- 14
- 15

O: Open
I: Closed
C: Cancel/Clear
E: Enter/Select/Execute
L/R: Local/Remote/off

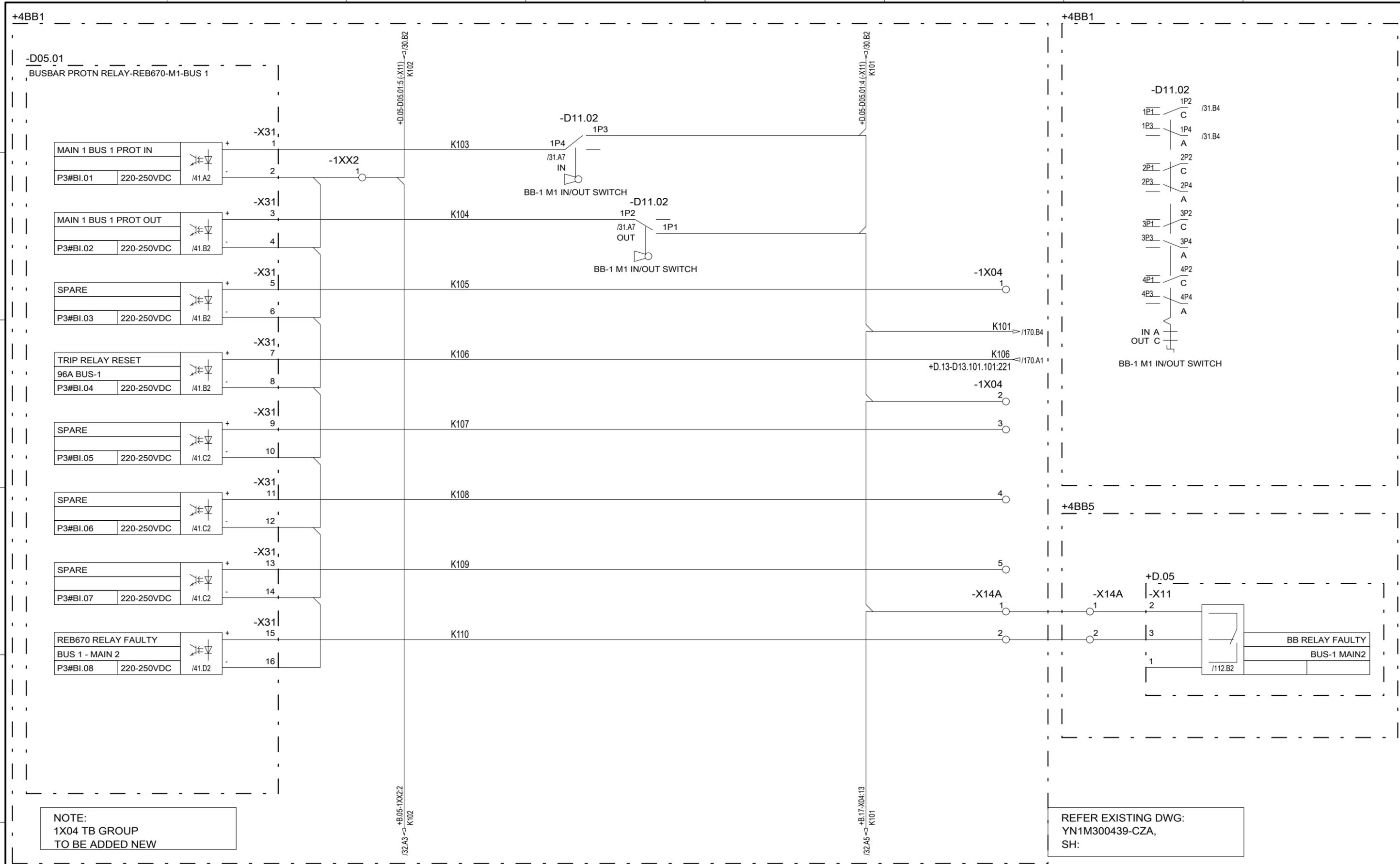
- F1 OCT RESET
- F2 SPARE
- F3 SPARE
- F4 SPARE
- F5 LED RESET



- LIST OF FUNCTIONS AVAILABLE IN RELAY**
- 1) Differential Protection (PDIF,87BB)
 - 2) Breaker Failure Protection(50LBB)
 - 3) Disturbance Recorder(RDRE)
 - 4) Event Recorder (RDRE)

REFER EXISTING DWG:
YN1M300439-CZA,
SH:012

Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION	Doc. kind. Circuit diagram	Ref.Des. =4R
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A	RETROFIT OF REB670 RELAY	DCC EFS	
				Project	POWER GRID CORPORATION OF INDIA LTD.	M1-BUS 1 PSM & COM	Resp. dept. PG-GAS	Rev. ind. 01
								Language en
Rev.	Revision note	Date	Name	3100137898				Sheet 30
1MYN691003-102(A3)REV01						HITACHI Hitachi Energy India Limited	Doc. no. 1MNS801837-CGCA	n. sheet 31

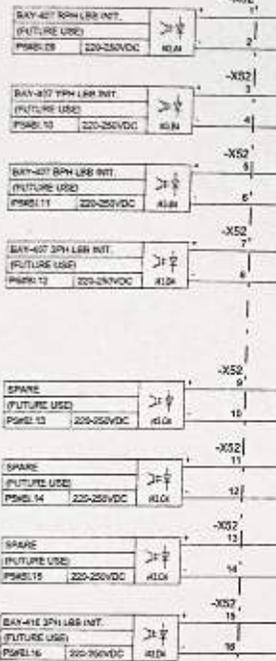


NOTE:
1X04 TB GROUP
TO BE ADDED NEW

REFER EXISTING DWG:
YN1M300439-CZA,
SH:

Based on 3100135063				Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
01 REVISED AS PER CUSTOMER COMMENTS		02.10.2024		Approved 20.04.2023 DEENADAYALAN A		Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01 Language en	
Rev. Revision note		Date		Name		HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 31 n. sheet 32	
1MYN691003-102(A3)REV01											

400V 01
BUSBAR PROTECTION RELAY-RED670-M1-BUS 1



NOTE:
7BBK04A, 16BBK04A TB GROUP
TO BE ADDED NEW

INTERNAL USE
FUNCTION
NOT USED.

REF DRG NO. ##
SHT. NO. ##

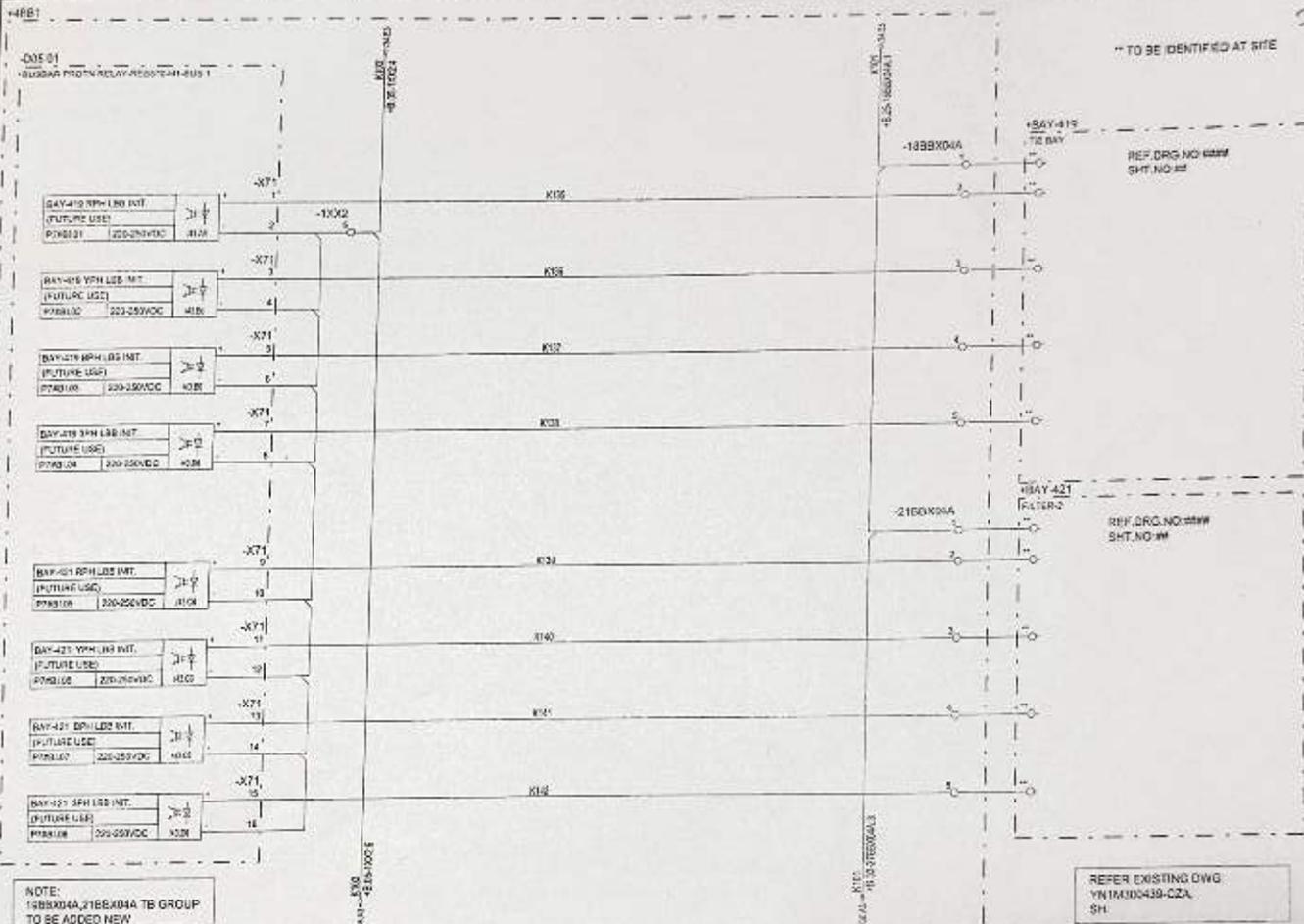
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SHT. NO. ##

REFER EXISTING DWG.
YN 14/020409-CZA
SHT.

Order: 3100125965 Rev: 01 Date: 20.04.2023 Name: PANKAJ PATIL	Approved: 20.04.2023 DEENADAYALAN A	Title: 400kV BUSBAR PROTECTION RETROFIT OF RED670 RELAY M1-BUS 1 BINARY INPUTS	Doc. No.: Circuit diagram Rev. No.: 00 Date: 20.04.2023	Ref. No.: -4R
	Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137896	Prepared: 18.04.2023 PANKAJ PATIL	Hitachi Energy India Limited Power Systems and HDB Power Products and Systems India Limited	Doc. No.: 1MNS801837-CGCA

1
2
3
4
5
6
7
8

INTERNAL C.B.
FUNCTION
NOT USED



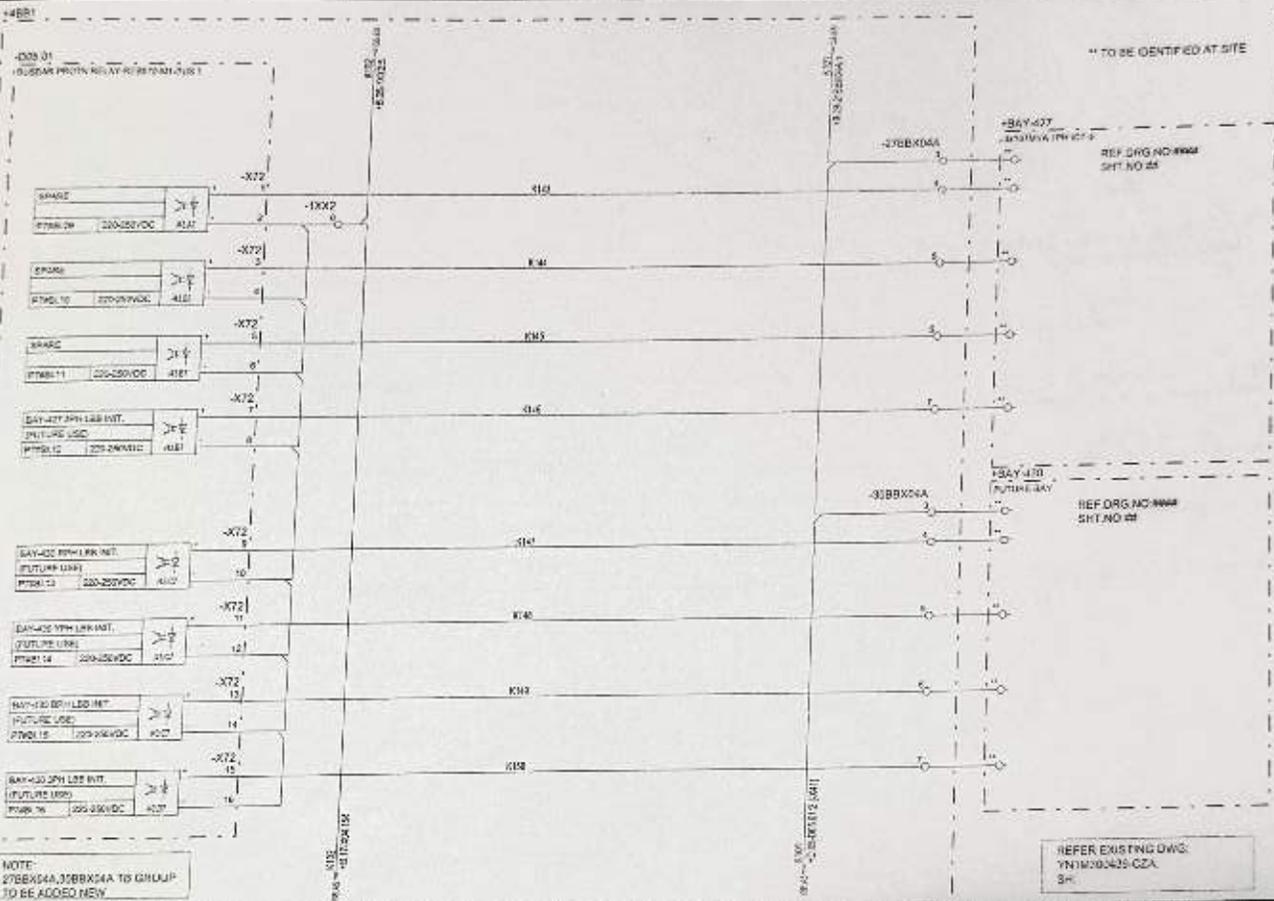
NOTE:
10BX04A, 210X04A TB GROUP
TO BE ADDED NEW

REFER EXISTING DWG.
YN1M100439-CZA,
SH.

Sheet No. 310135963	Drawn: 18.04.2023 PANKAJ PATIL	700 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 BINARY INPUTS	Doc. no. Circuit diagram	Rev. No. 00	4-R
	Approved: 20.04.2023 DEENADAYALAN A		Rev. 001 000 EFS		
	Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137998		Rev. 001 PG-GAS	Rev. no. 00	Language en
Rev. Reason/Date	Date	Value	HITACHI	Doc. No. 1MNS801837-CGCA	Sheet 35
					r. sheet 36

INTERNAL
 LBB FUNCTION
 NOT USED

** TO BE IDENTIFIED AT SITE



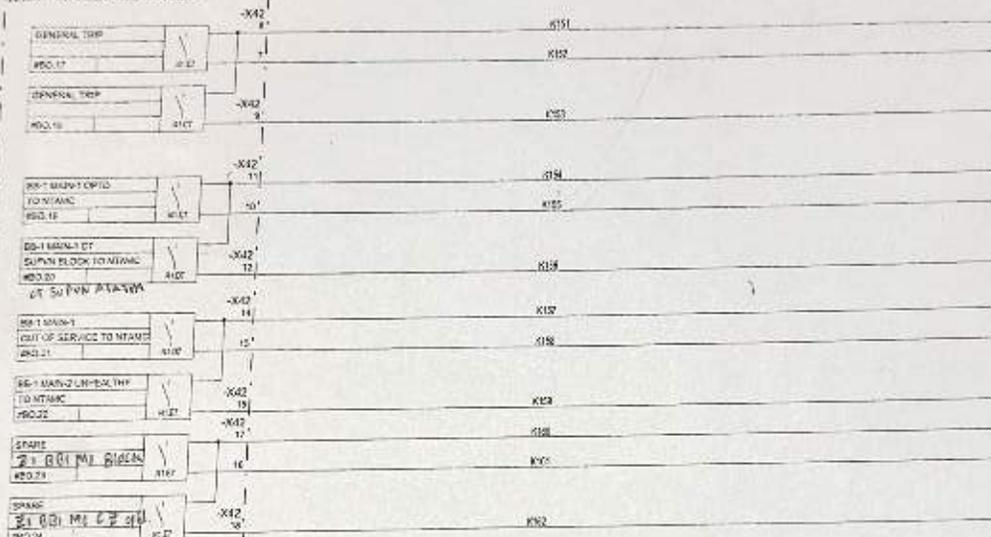
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REFER EXISTING DWG: 1MNS800435-GZA 3rd

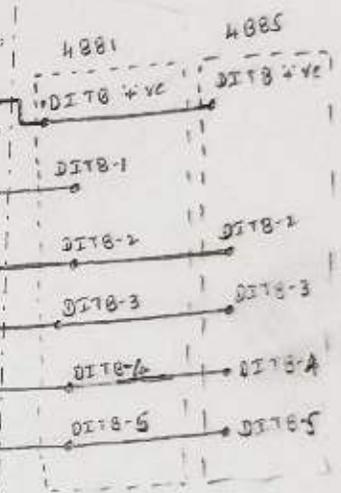
Drawn by: 21019061	Checked by:	Approved by: 16.04.2023 PANKAJ PATIL	Title: 400kV BUSBAR PROTECTION RETROFIT OF RES670 RELAY M1-BUS 1 BINARY INPUTS	Doc. No: Circuit diagram	Rev. No: 00	Scale: 1:1	Sheet: 36
		Approved by: 20.04.2023 DEENADAYALAN A		Doc. No: PG-GAS	Rev. No: 00	Scale: 1:1	Sheet: 37
		Approved by: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137888		Doc. No: 1MNS801837-CGCA			
Rev: Revision	Suk	Home	HITACHI	Product and System Sales Dept			

4881

Q25-01
BUSBAR PROTECTION RELAY (RBE70) M1-BUS 1



NOTE
1504 TS GROUP
TO BE ADDED NEW

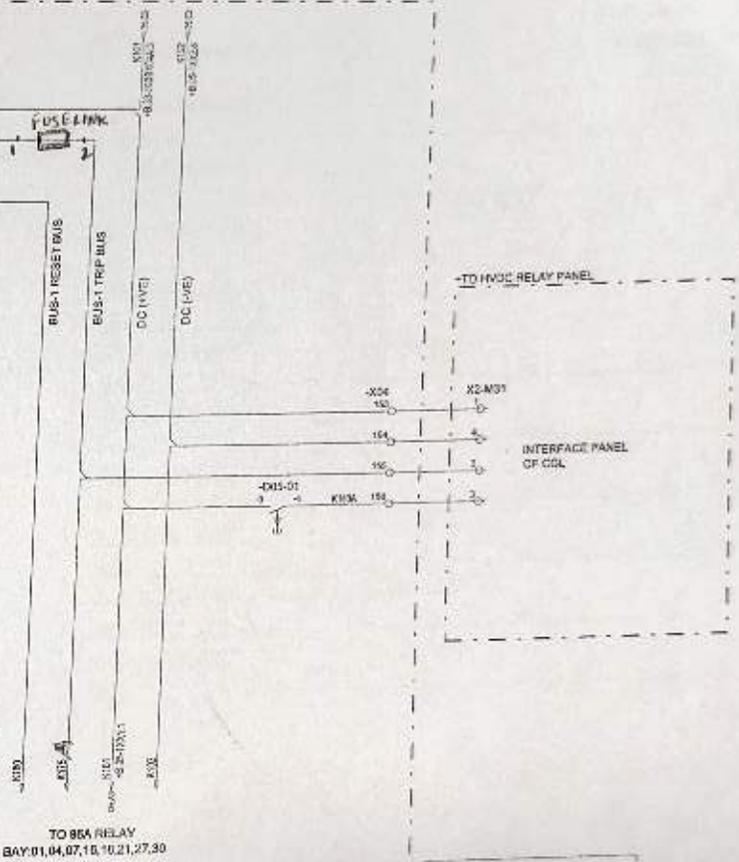
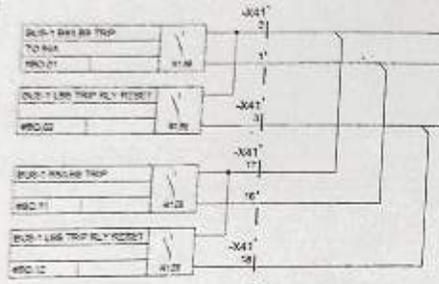


REFER EXISTING DWD:
VN 14030430-02A
SH

Based on: 310115009 Rev: / Date: / / Name:	Prepared: 18.04.2023 Approved: 20.04.2023 Project: POWER GRID CORPORATION OF INDIA LTD. 400kV/220kV KOLAR SUBSTATION 3100137898	PANKAJ PATIL DEERADAYALAN A	Title: 100KV BUSBAR PROTECTION RETROFIT OF RBE70 RELAY M1-BUS 1 BINARY OUTPUTS Hitachi <small>Hitachi Energy India Limited 37, Park Road, 6th Floor, Anna Nagar, Chennai Product Code: 94500000000000000000</small>	Doc. No.: Circuit diagram Doc. EFS PG-GAS Rev. No.: 00 Language: en Sheet: 37 of 38 1MNS801837-CGCA	Aut. Des.: -4R
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400V

-XMS-01
 400V BUSBAR PROTECT RELAY-RED8748-BUS 1



REFER EXISTING DWG:
 YAMNS08136-CGA
 SH012.013

Sheet No: 310015003

Prepared: 19.04.2023 PANKAJ PATIL
 Approved: 20.04.2023 DEENADAYALAN A

Project: POWER GRID CORPORATION OF INDIA LTD.
 400/220KV KOLAR SUBSTATION
 1400-137808

Title: 400V BUSBAR PROTECTION
 RETROFIT OF RED878 RELAY
 M1-BUS 1 BINARY OUTPUTS

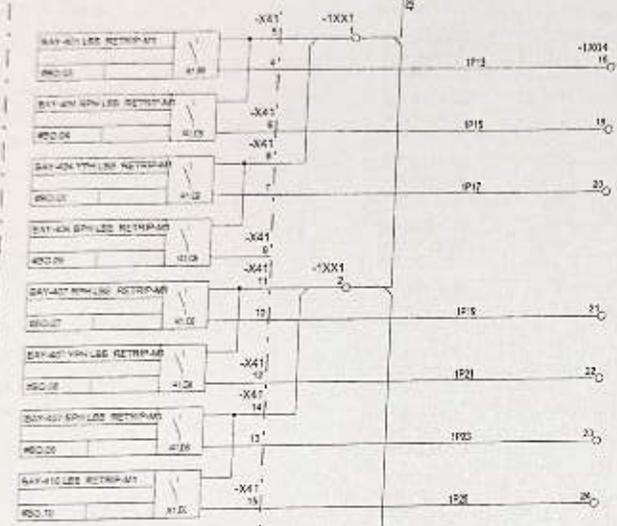
HITACHI
 Hitachi Group
 Hitachi Ltd. India
 Hitachi Ltd. India

Doc. No.	Doc. Title	Rev. No.	Rev. Date	Drawn By	Checked By
1MNS801837-CGCA	02P-EFS PG-GAS	00		SHR	SHR
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4R

4BB1

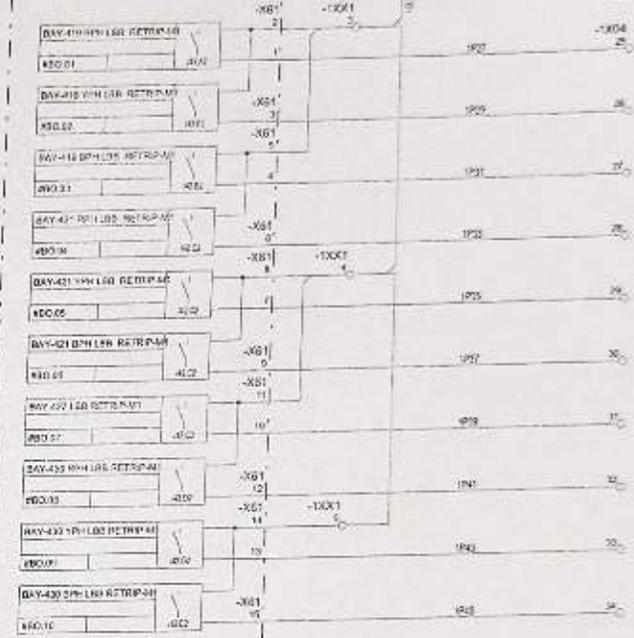
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NOTE:
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TO BE ADDED NEW

INTERNAL USE
FUNCTION NOT
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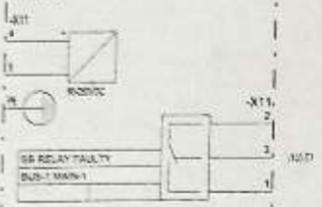
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BUSSAR PROT. REL. M1-BUS 1 GROUP 1



Revised: 21.04.2023	Prepared: 19.04.2023	PANKAJ PATIL	Rev: 400V BUSSAR PROTECTION RETROFIT OF RED670 RELAY M1-BUS 1 BINARY OUTPUTS	Doc. No.	Circuit diagram	Rev. No.	00	Language	en	-4R
	Approved: 21.04.2023	DEENADAYALAN A		Resp. Dept	PG-GAS	Rev. No.	00	Sheet	39	
Project: POWER GRID CORPORATION OF INDIA LTD, 400/220KV KOLAR SUBSTATION 3100137998	Hitachi		Project: Ganga Inbda Limited Project: 400/220KV KOLAR POWER SUBSTATION	Doc. No.	1MNS801837-CGCA		Sheet	40		

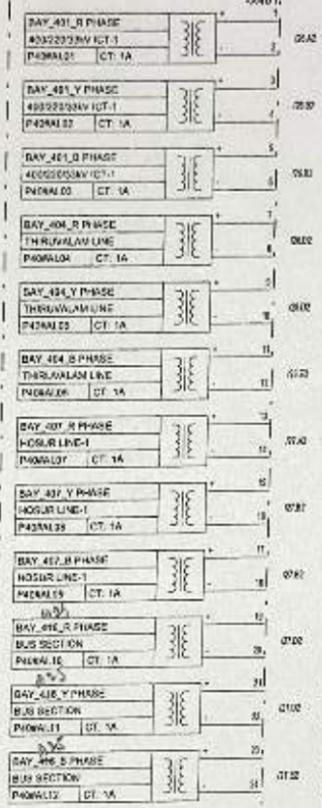
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BUSBAR PROT.N RELAY-RESDTAM-BUS 1
P00
K02K02C



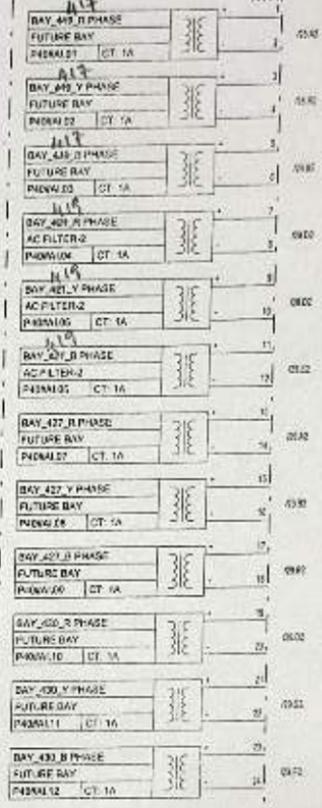
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BUSBAR PROT.N RELAY-RESDTAM-BUS 1
TRM
1A, 20000C



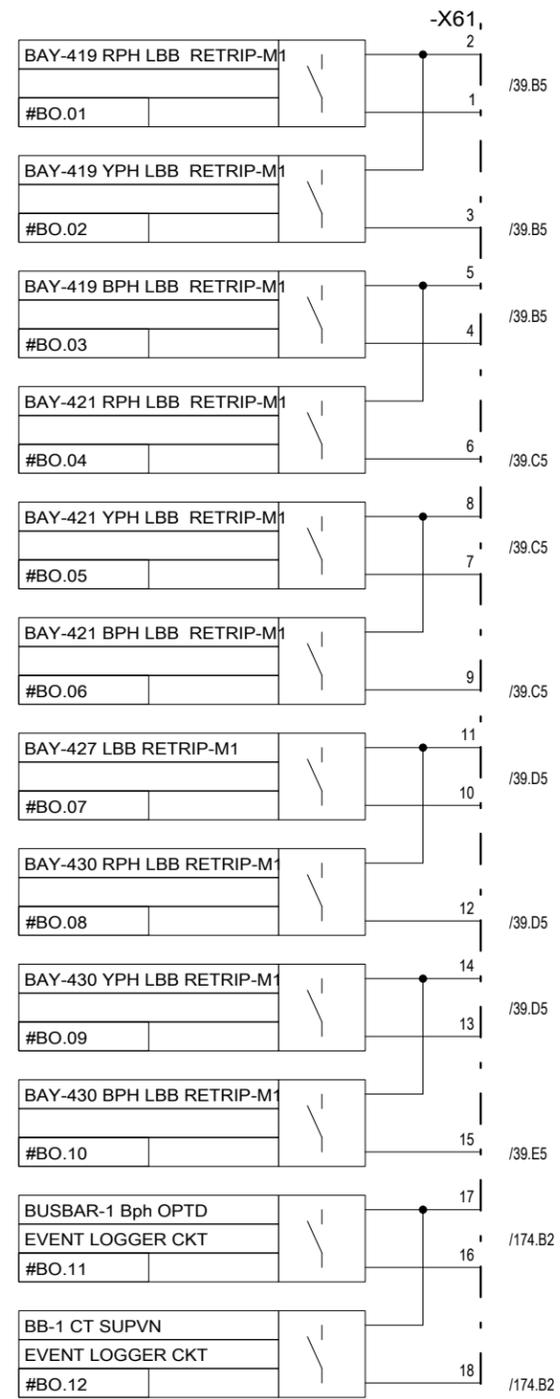
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TRM
1A, 20000C

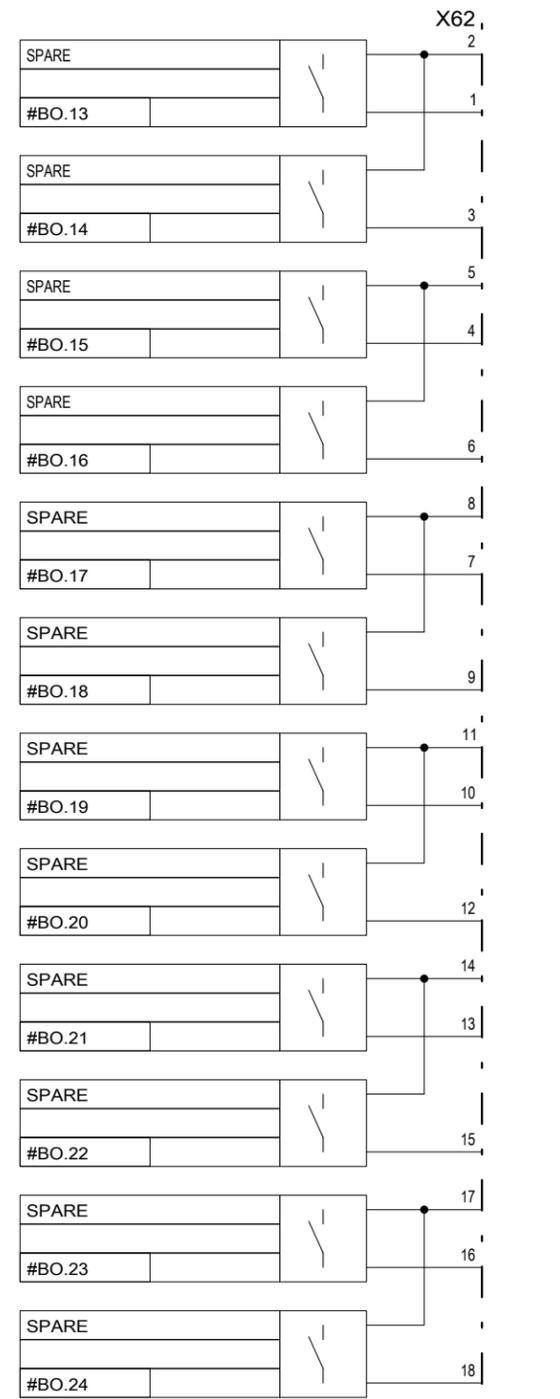


+4BB1

+D.05 -D05.01
 BUSBAR PROT N RELAY-REB670-M1-BUS 1
 BOM



+D.05 -D05.01
 BUSBAR PROT N RELAY-REB670-M1-BUS 1
 BOM

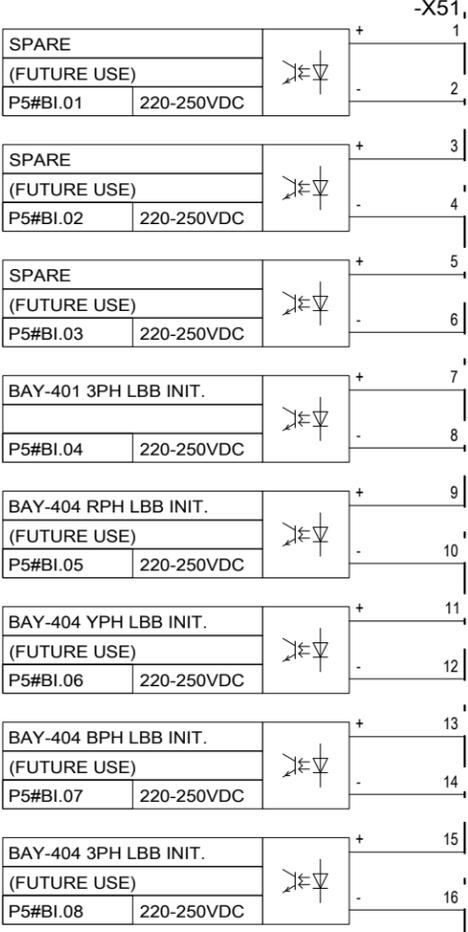


Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A	Hitachi Energy India Limited		DCC EFS		
Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898				Resp. dept. PG-GAS			Rev. ind. 01 Language en		
Rev.	Revision note	Date	Name	Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 42	
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+4BB1

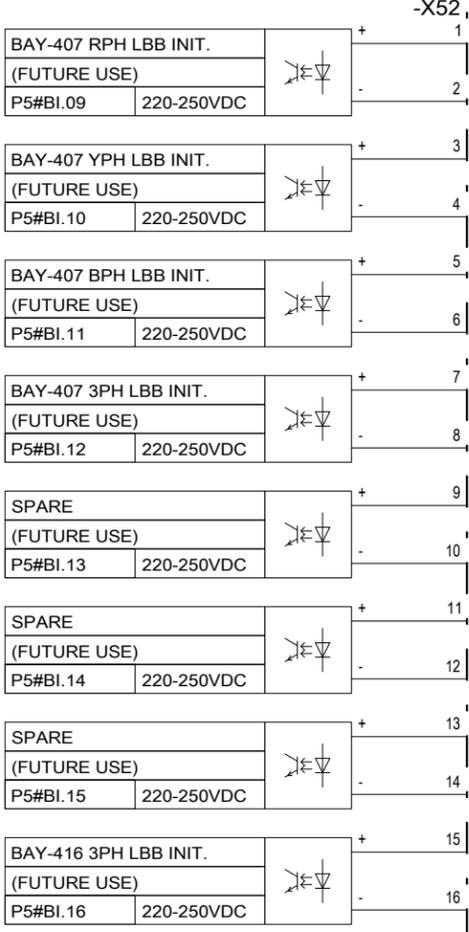
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BUSBAR PROTN RELAY-REB670-M1-BUS 1
BIM
220-250VDC



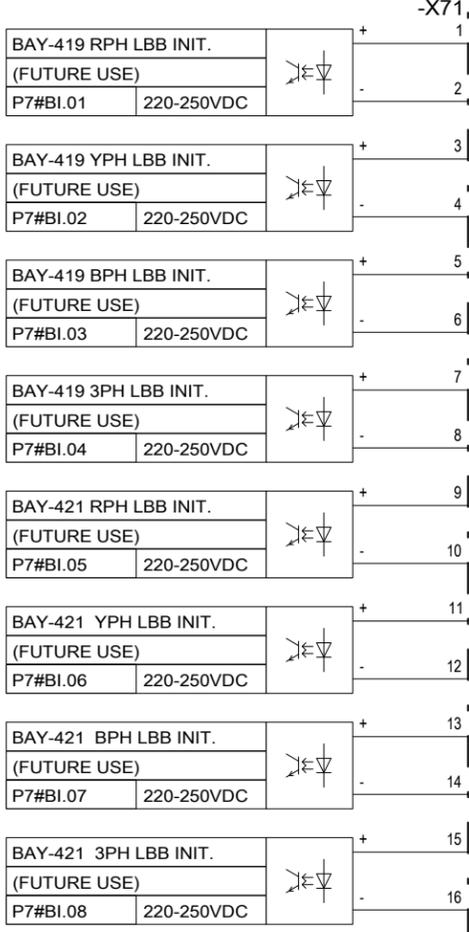
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BUSBAR PROTN RELAY-REB670-M1-BUS 1
BIM
220-250VDC



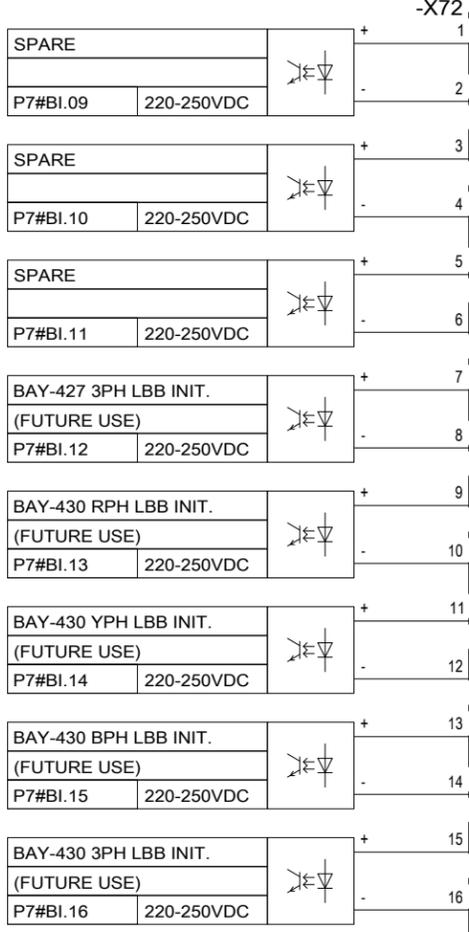
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BUSBAR PROTN RELAY-REB670-M1-BUS 1
BIM
220-250VDC

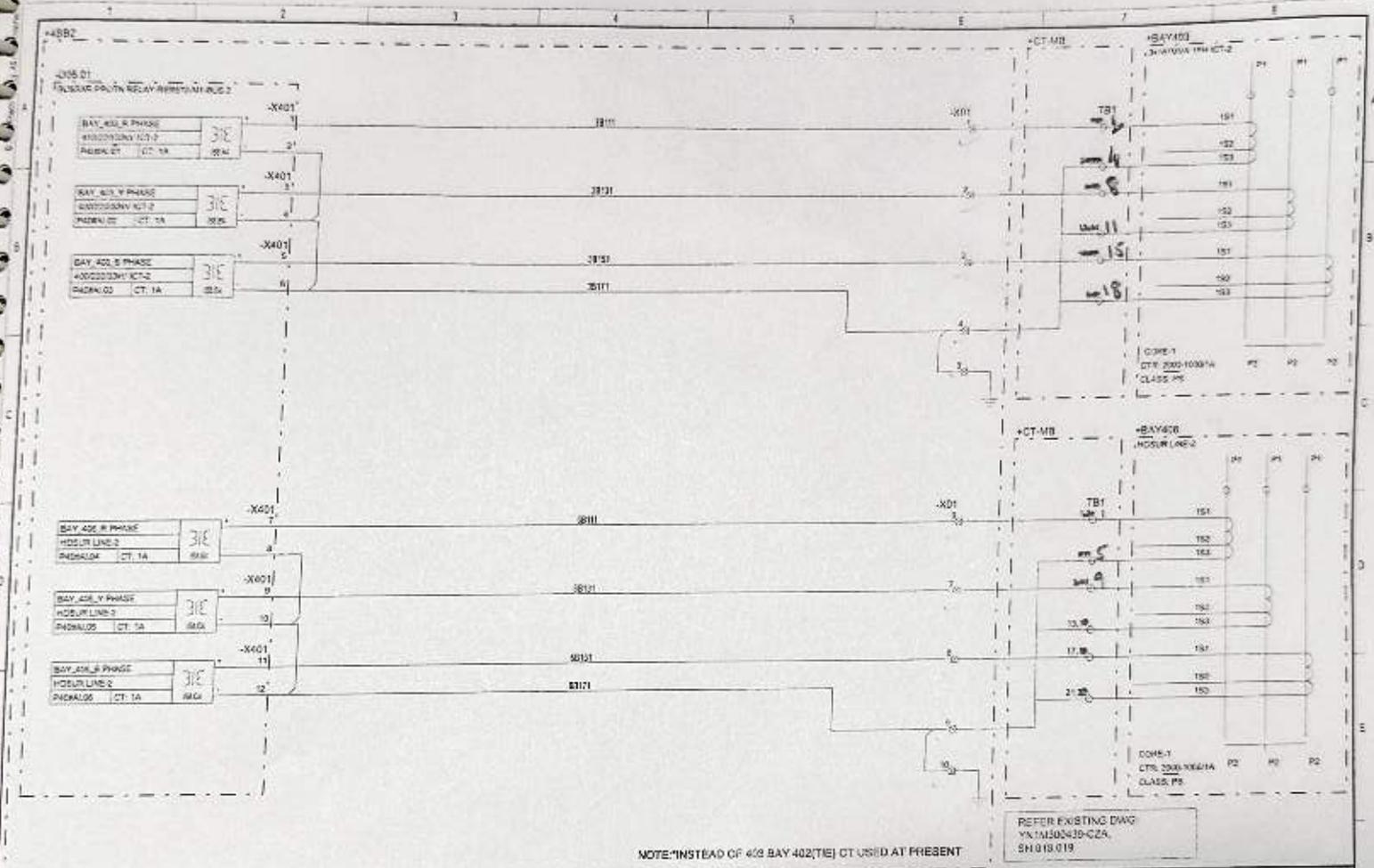


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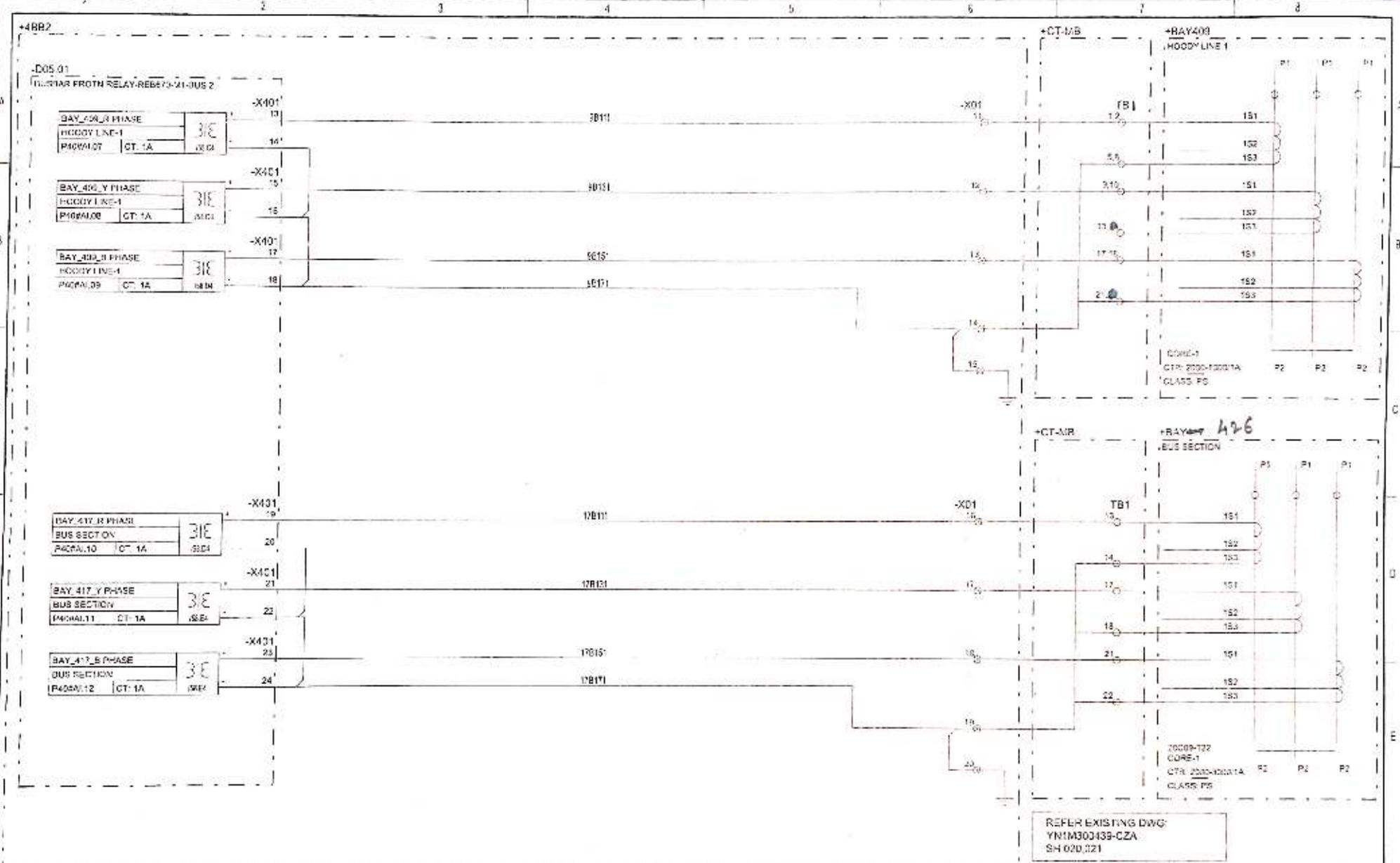
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BIM
220-250VDC



Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 1 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A		DCC EFS			
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01 Language en	
Rev.	Revision note	Date	Name	HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 43	
								n. sheet 44	
1MYN691003-102(A3)REV01									



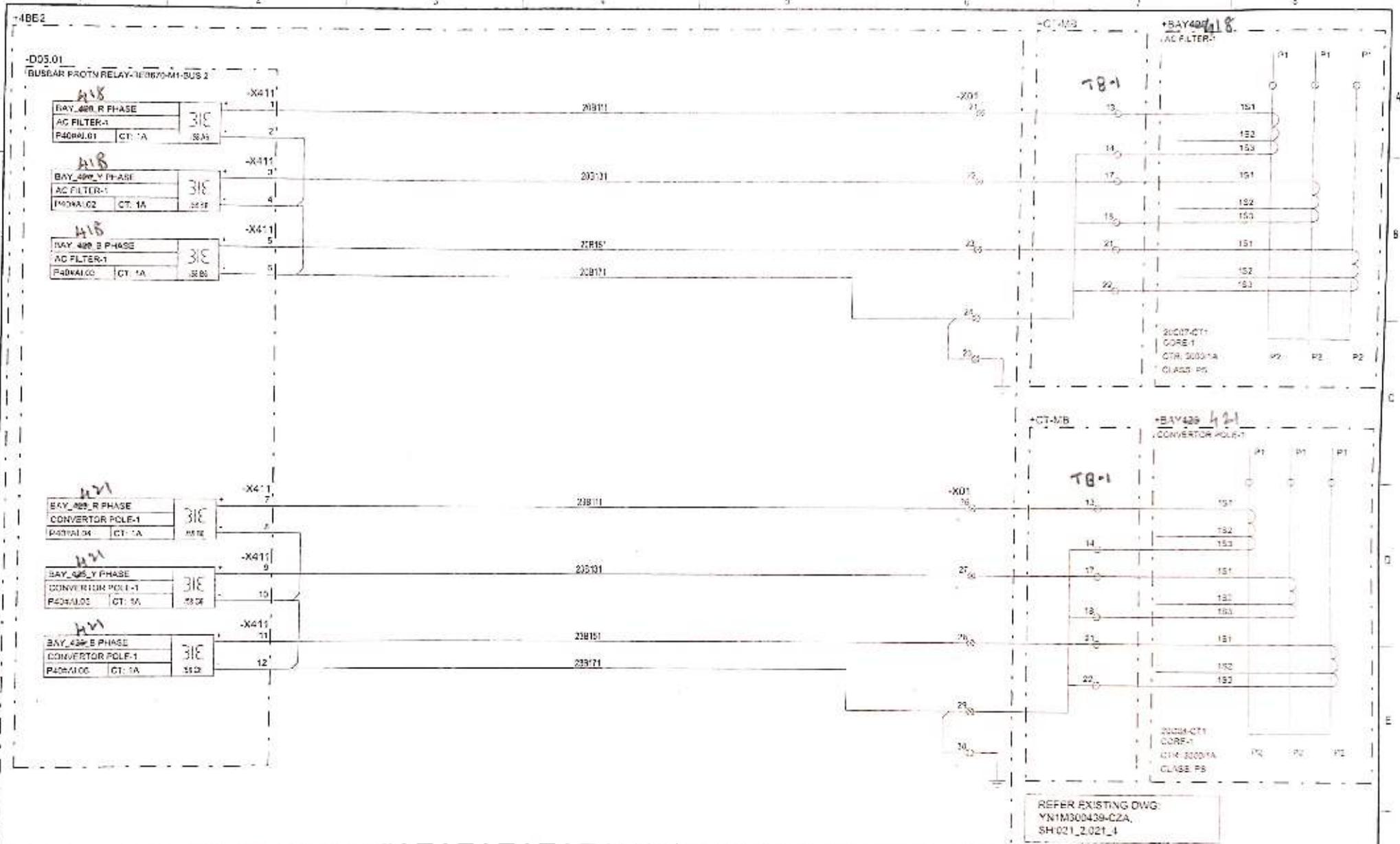
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	Approved	20.04.2023	DEENADAYALAN A						
	Project	POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898			Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Doc. no.	1MNS801837-CGCA	Sheet	44
Rev. / Amendment	Date	Note							



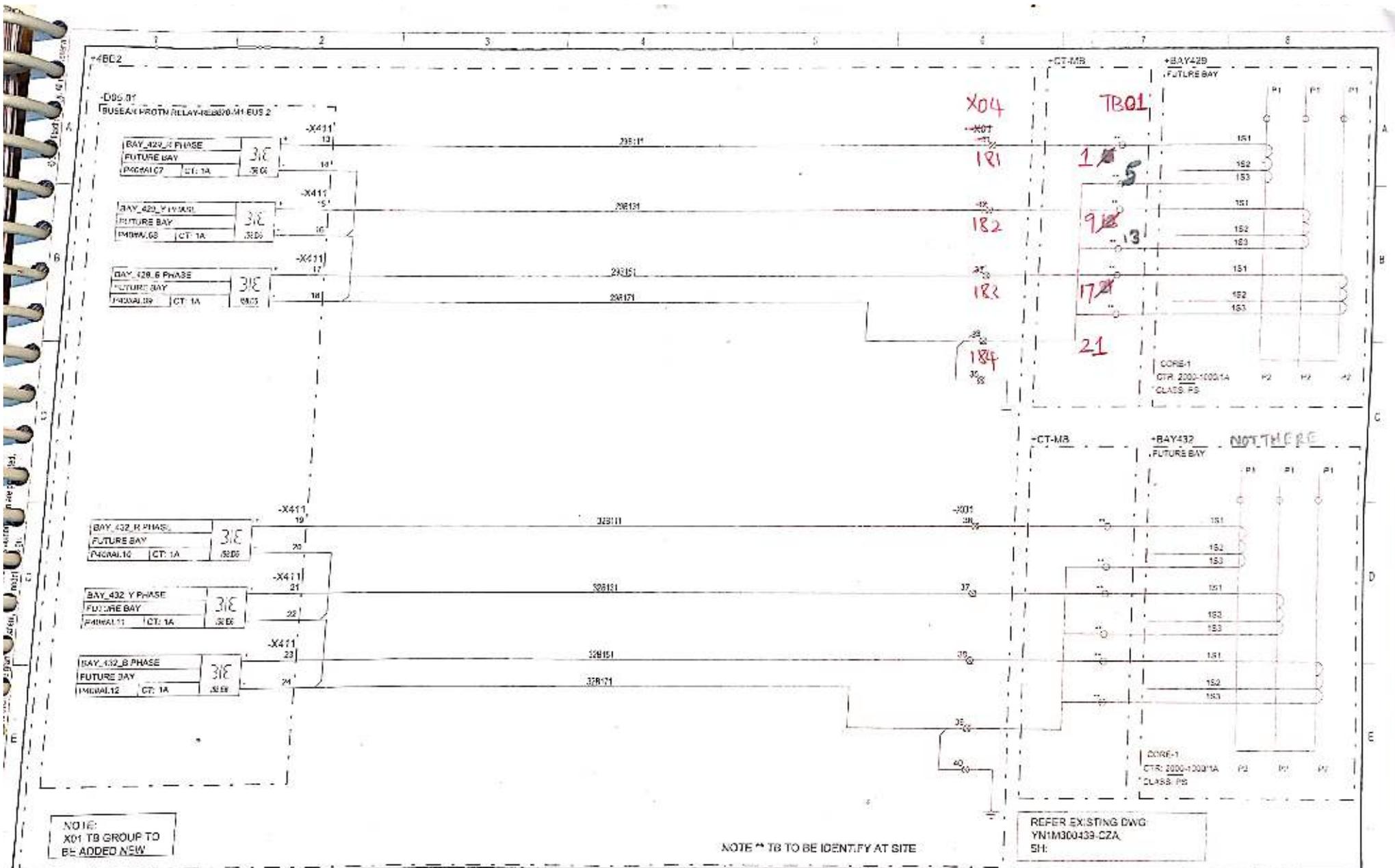
REFER EXISTING DWG:
YN1M303439-CZA
SH 020.021

Coord no: 3100135063		Prepared: 18.04.2023 Approved: 20.04.2023	PANKAJ PATIL DEENADAYALAN A	Title: 400KV BUSBAR PROTECTION RETROFIT OF RED670 RELAY M1-BUS 2 CT CIRCUITS	Doc. No.: Circuit diagram Rev. No.: DC EFS PG-GAS	Ref. No.: DC DC	-4R
Rev. / Revision / Date / Name		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137896		HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Doc. No.: 1MNS801837-CGCA	Rev. No.: DC DC	Lang. / Type / Sheet / of sheet 45 / 46

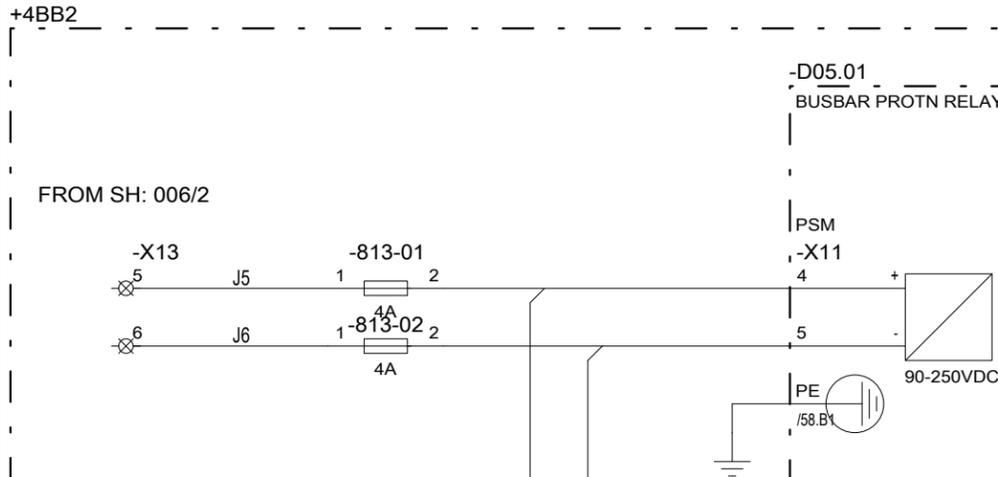
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Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL	Title 400KV BUSBAR PROTECTION RETROFIT OF RFB670 RELAY M1-BUS 2 CT CIRCUITS		Doc No. Circuit diagram	Ref Des =4R
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		Project POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137858			Rev Desc PG-GAS	Rev no. 00
Rev. Revs on hold		Date	Name		Lang. ISO	SP
1MNS80-037-IC21A3IREV01					Sheet 46	
			HITACHI		Doc No. 1MNS801837-CGCA	n. sheet 47



Based on 3139135/93		Prepared 18.04.2023 PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REE670 RELAY M1-BUS 2 CT CIRCUITS		Doc. kind. Circuit diagram	Ref. Des.	=4R
		Approved 20.04.2023 DEENADAYALAN A	Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resc. dep. PG-GAS	Rev. ind. 00	Language en
Rev. Revision no.		Date	Name	HITACHI	1MNS801837-CGCA		Sheet 47
1MNS801837-1B2(A)REV01				Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)			n. 5/16 48



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/49.A3 ← K302
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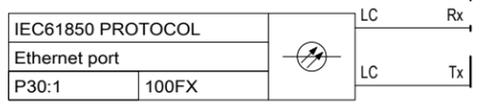
-D05.01
BUSBAR PROTN RELAY-REB670-M1-BUS 2

+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M1-BUS 2
LED

+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M1-BUS 2
SFP

-D21.131.101
Test

-D21.143.101
Test

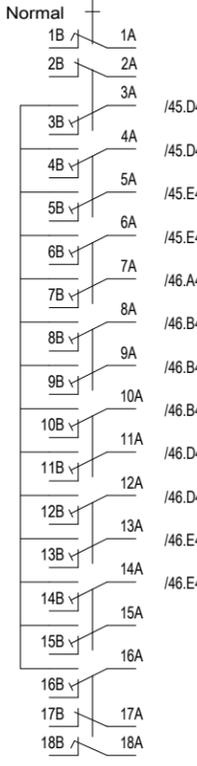
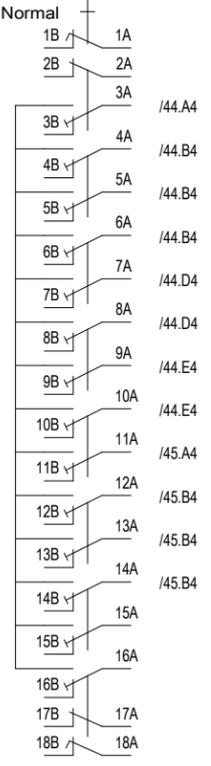


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BUSBAR PROTN RELAY-REB670-M1-BUS 2

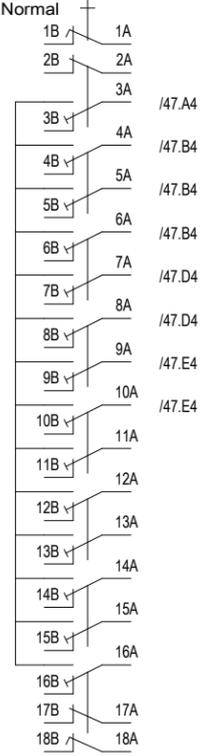
- 1 DIFF OPTD.
- 2 EXT LBB OPTD
- 3 RPH TRIP
- 4 YPH TRIP
- 5 BPH TRIP
- 6 BB BLOCKED
- 7 RPH OCT ALARM
- 8 YPH OCT ALARM
- 9 BPH OCT ALARM
- 10 96A OPTD
- 11
- 12
- 13
- 14
- 15

O: Open
I: Closed
C: Cancel/Clear
E: Enter/Select/Execute
L/R: Local/Remote/off

- F1 OCT RESET
- F2 SPARE
- F3 SPARE
- F4 SPARE
- F5 LED RESET



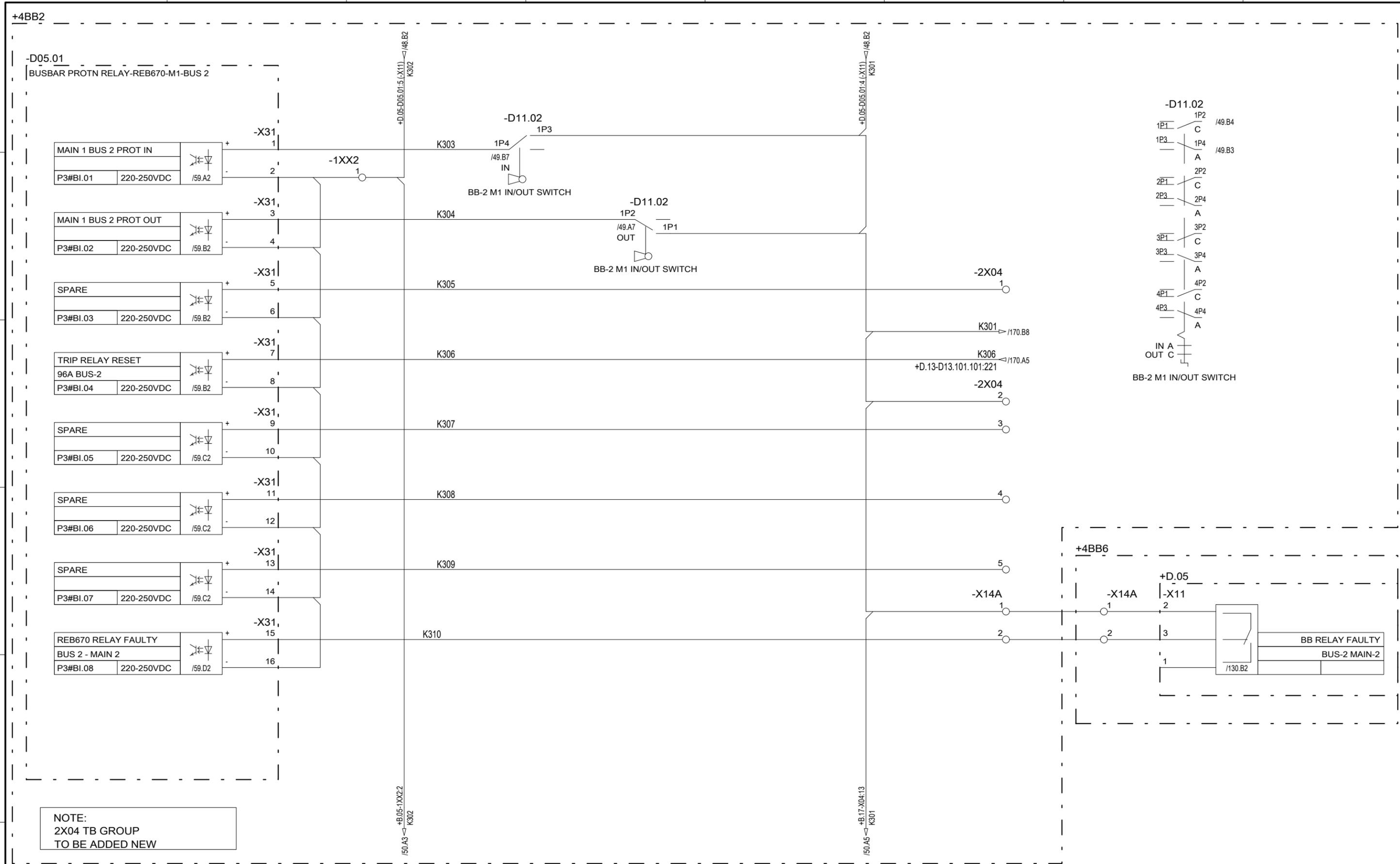
-D21.155.101
Test



- LIST OF FUNCTIONS AVAILABLE IN RELAY**
- 1) Differential Protection (PDIF,87BB)
 - 2) Breaker Failure Protection(50LBB)
 - 3) Disturbance Recorder(RDRE)
 - 4) Event Recorder (RDRE)

REFER EXISTING DWG:
YN1M300439-CZA,
SH: 023

Based on 3100135063			Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION	Doc. kind. Circuit diagram	Ref.Des. =4R
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A	DCC EFS	
			Project	POWER GRID CORPORATION OF INDIA LTD.	M1-BUS 2 PSM & COM	PG-GAS	Rev. ind. 01
			400/220kV KOLAR SUBSTATION		HITACHI Hitachi Energy India Limited	Rev. ind. 01	Language en
			3100137898			Doc. no. 1MNS801837-CGCA	Sheet 48
Rev.	Revision note	Date	Name				n. sheet 49
1MYN691003-102(A3)REV01							



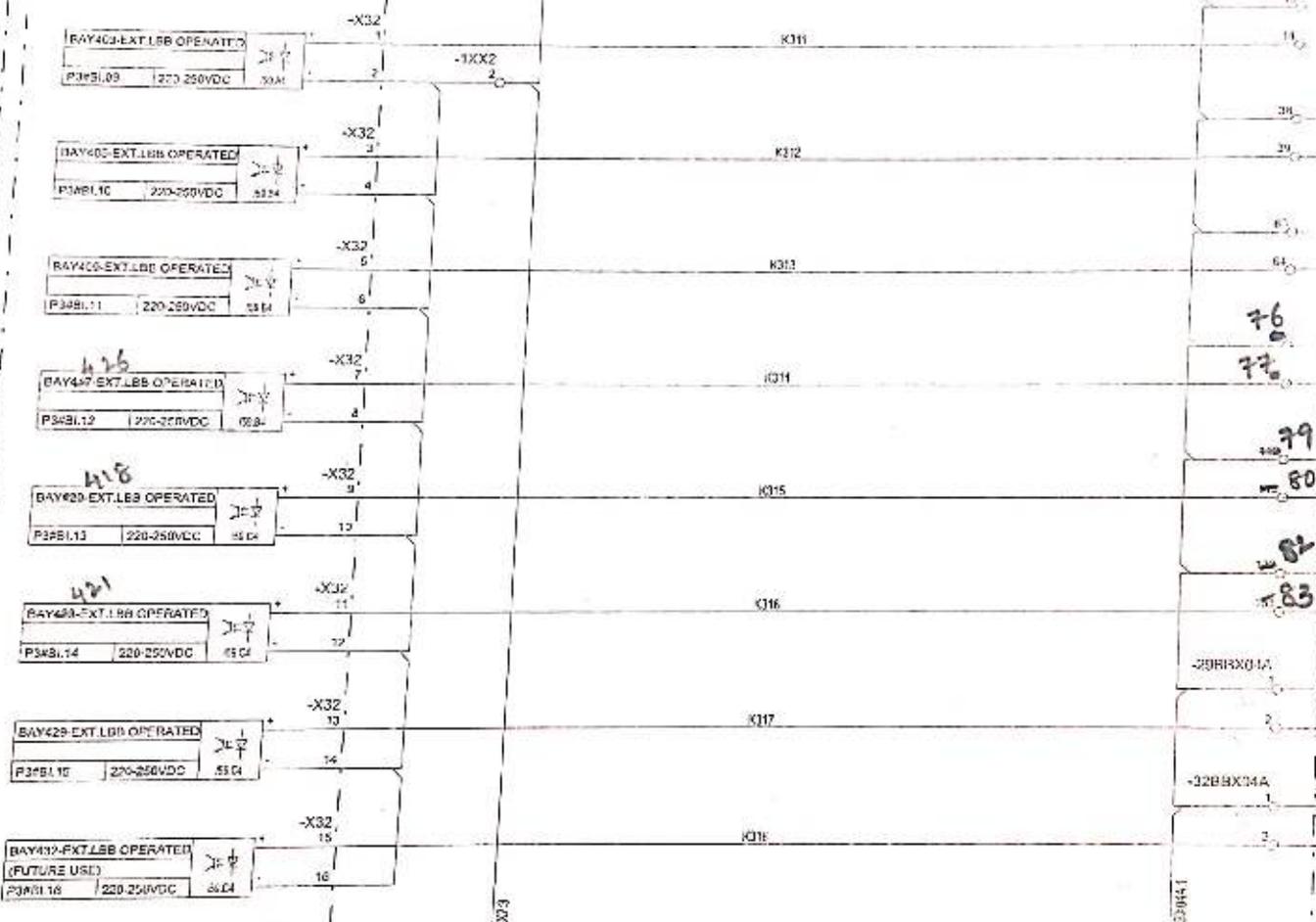
NOTE:
2X04 TB GROUP
TO BE ADDED NEW

Based on 3100135063			Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 2 BINARY INPUTS	Doc. kind. Circuit diagram	Ref.Des. =4R	
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Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA	Sheet 49	n. sheet 50
1MYN691003-102(A3)REV01								

+JEB2

-D05.01
BUSBAR PROT N RELAY-REB670-VI-BUS 2

** TO BE IDENTIFIED AT SITE



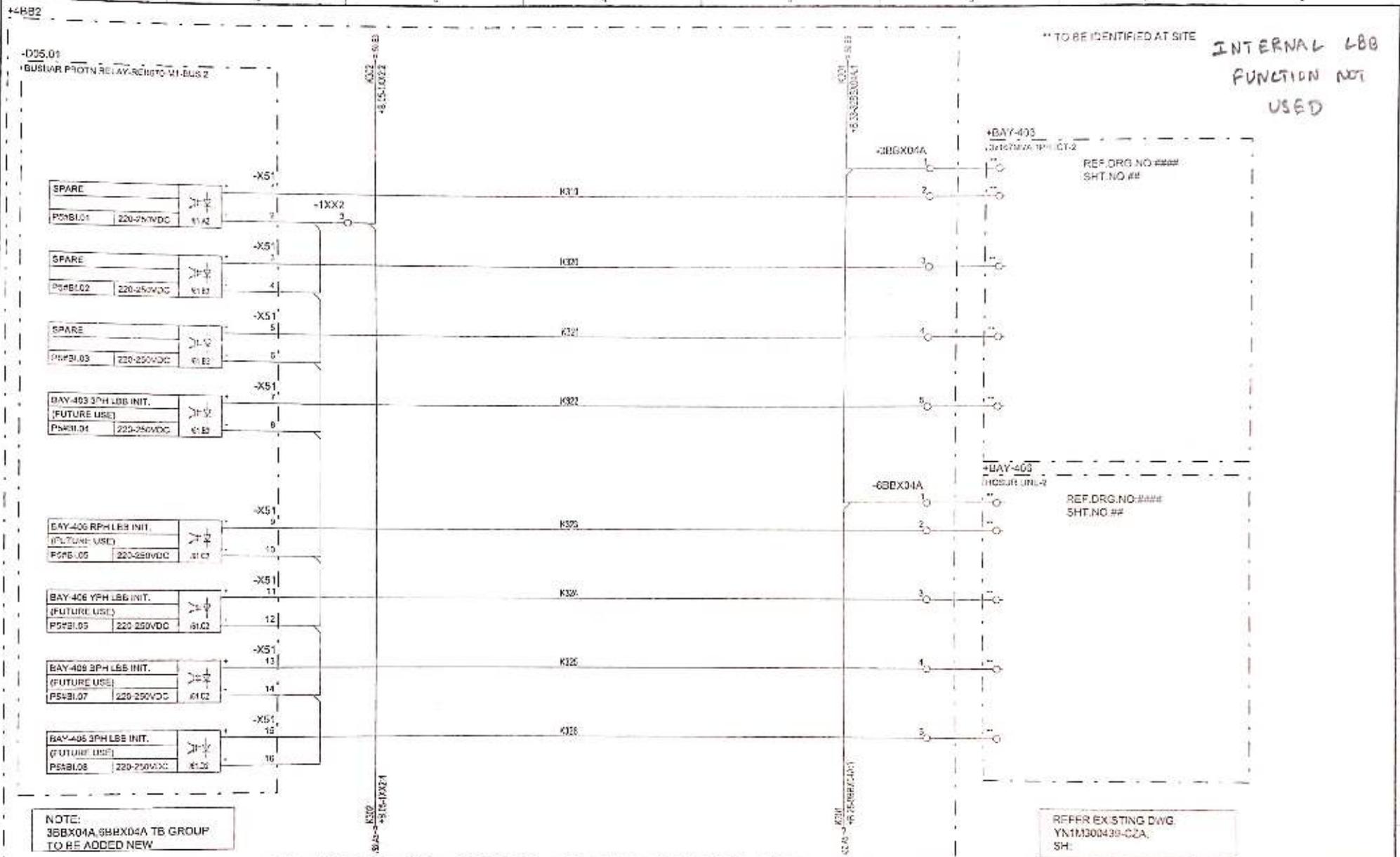
- BAY-403 R3L
32BX04A TB GROUP
- TB04-07
- TB04-08
- BAY-406 R3D
HOSUR LINE 2
- TB3-15
- TB3-16
- BAY-407 R9D
HOODY (INF-1)
- TB3-15
- TB3-16
- BAY-408 42E
BUS SECTION
- TBAY-409 41E
AC FILTER 1
- BAY-409 431
CONVERTOR POLE 1
- BAY-429 RA29.A
FUTURE BAY
- TB04-02
- TB04-03
- BAY-432
FUTURE BAY

76
77
79
80
81
82
83

NOT THERE

REFER EXISTING DWG:
YN1M300439-CZA,
SH: 024.025.026.027_1,027_2, 1273

Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 2 BINARY INPUTS	Doc. int. Circuit diagram	Ref. Des. =4R
		Approved 20.04.2023 DEENADAYALAN A	HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	200 EFS	
		Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 31J0137898		PG-GAS	Rev. int. 00
Rev.	Rev. int. no.	Date	Name	Doc. no. 1MNS801837-CGCA	Sheet 50 n. sheet 51
1MNS801837-102(43)REV01					



INTERNAL LBB
FUNCTION NOT
USED

REFER EXISTING DWG
YN1M300439-C2A
SH.

NOTE:
3BBX04A, 4BBX04A TB GROUP
TO BE ADDED NEW

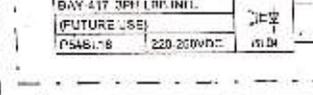
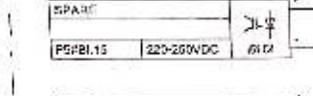
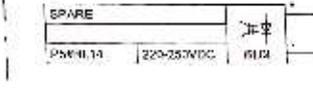
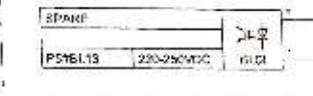
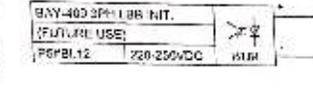
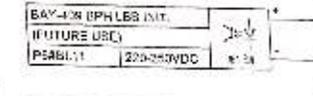
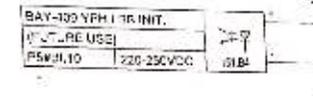
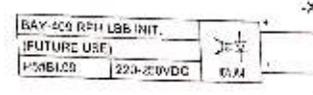
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	Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898			Rev. desc: PG-GAS	Rev. no: 00
				Language: en	
Rev. / Revision name	Date	Name	HITACHI	Doc. no: 1MNS801837-CGCA	Sheet: 51
1MNS801837-102(A3)REV01			Hitachi Energy India Limited Hitachi Energy India Pvt. Ltd. Products and Systems India Limited		52

+4BB2

INTERNAL LBB

** TO BE IDENTIFIED AT SITE
FUNCTION NOT USED

035.01
BUSBAR PROTN RELAY-REB670-V1-BUS 2



NOTE:
8BBX04A, 17BBX04A TB GROUP
TO BE ADDED NEW

K306
K307
K308
K309
K310
K311
K312
K313
K314

8BBX04A TB GROUP
17BBX04A TB GROUP

K301
K302
K303
K304
K305
K306
K307
K308
K309
K310
K311
K312
K313
K314

8BBX04A TB GROUP
17BBX04A TB GROUP

+BAY-409
HOODY LINE-1

+BAY-417
BUS SECTION

REF.DWG.NO.###
SHT.NO.##

REF.DWG.NO.###
SHT.NO.##

REFER EXISTING DWG:
YN1M300435-C/A,
SH

Based on 3100130263

Prepared 18.04.2023 PANKAJ PATIL
 Approved 20.04.2023 DEENADAYALAN A
 Project POWER GRID CORPORATION OF INDIA LTD.
 400/220KV KOLAR SUBSTATION
 3100137608

400KV BUSBAR PROTECTION
 RETROFIT OF REB670 RELAY
 M1-BUS 2 BINARY INPUTS

HITACHI

Hitachi Energy India Limited
(Formerly known as ABB Power
Products and Systems India Limited)

Doc. no.	Circuit diagram	Rev. Des.	=4R
	PC-EFS		
Base. Dept.	PC-GAS	Rev. no.	00
		Lang. code	EN
Doc. no.	1MNS801837-CGCA	Sheet	52
		c. sheet	53

Rev.	Revision/Date	Date	Name
1	1MNS801837-CGCA		

INTERNAL LBB

" TO BE IDENTIFIED AT SITE FUNCTION NOT USED.

+4ES2

-DUS.01
BUSBAR PROT.N RELAY-RE3670-M1-BUS 2

BAY-420 RPH LBS INT.
(FUTURE USE)
P79BL01 220-250VDC 01/4

BAY-420 YPH LBS INT.
(FUTURE USE)
P79BL02 220-250VDC 01/3

BAY-420 BPH LBS INT.
(FUTURE USE)
P79BL03 220-250VDC 01/2

BAY-420 3PH LBS INT.
(FUTURE USE)
P79BL04 220-250VDC 01/8

BAY-420 1PH LBS INT.
(FUTURE USE)
P79BL05 220-250VDC 01/3

BAY-420 YPH LBS INT.
(FUTURE USE)
P79BL06 220-250VDC 01/3

BAY-420 BPH LBS INT.
(FUTURE USE)
P79BL07 220-250VDC 01/2

BAY-420 3PH LBS INT.
(FUTURE USE)
P79BL08 220-250VDC 01/3

NOTE:
220BX04A, 2355X04A TB GROUP
TO BE ADDED NFW

-200BX04A

BAY-420
CONVERTER POLE-1

REF.DRG.NO:AWW
SHT.NO:##

-2355X04A

BAY-420
CONVERTER POLE-2

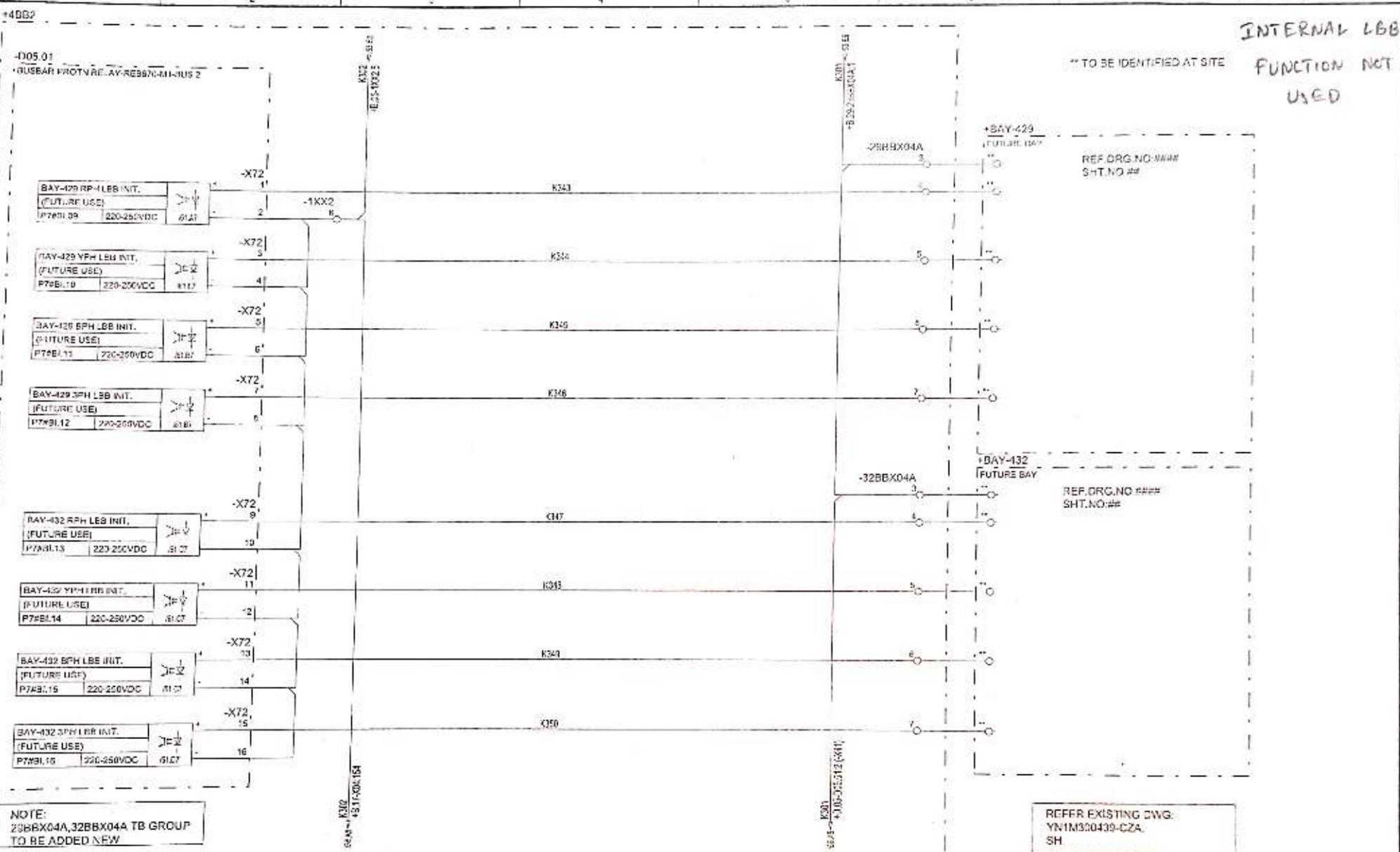
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	Approved: 20.04.2023 DEENADAYALAN A		Doc. EFS	
	Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137890		Stand. Code: PG-GAS	Rev. No: 00
		HITACHI	Language: en	Sheet: 53
			Doc. No: 1MNS801837-CGCA	Total Sheet: 54

INTERNAL LBB
FUNCTION NOT
USED

** TO BE IDENTIFIED AT SITE



NOTE:
2BBX04A, 32BBX04A TB GROUP
TO BE ADDED NEW

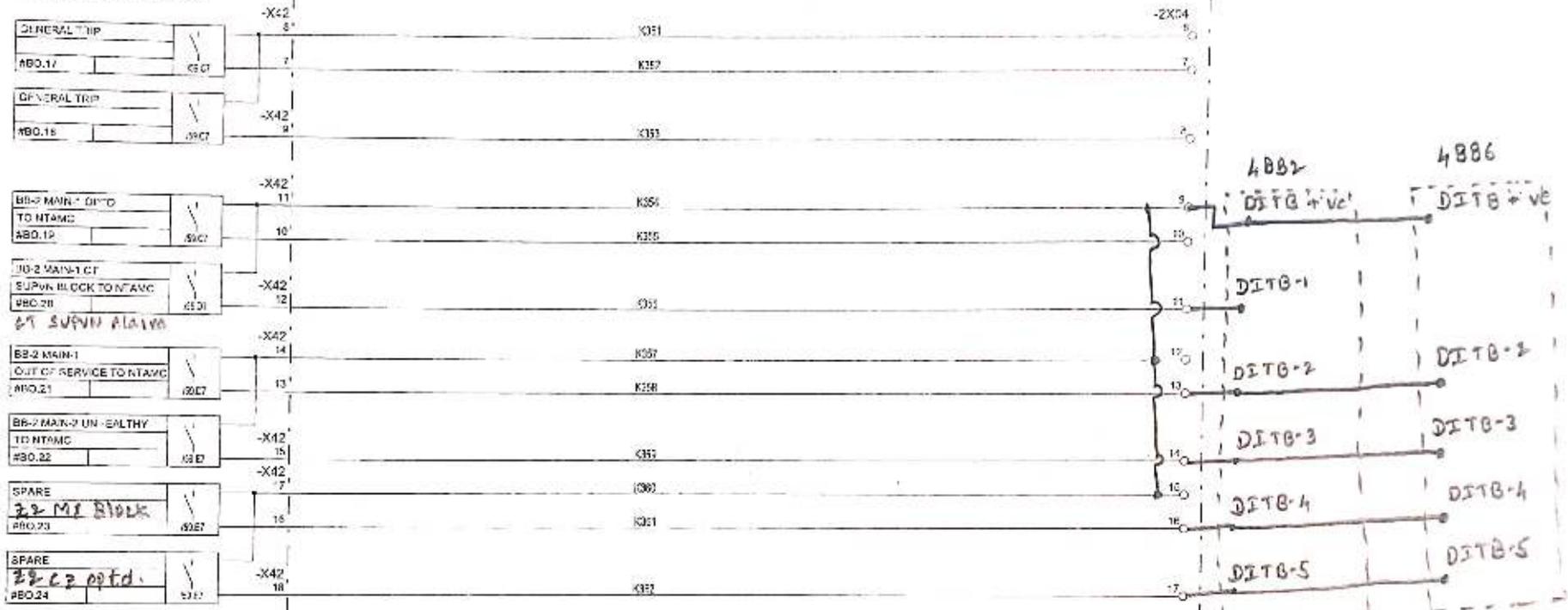
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		Approved: 20.04.2023	DEENADAYALAN A.		Doc. EFS		
		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Res. dep.: PG-GAS	Rev. ind.: 00	Language: en
Rev.	Rev. description	Date	Name		Doc. no.: 1MNS801837-CGCA	Sheet: 54	n. sheet: 55

1MYNE01003-1-02(A3)REV01

48862

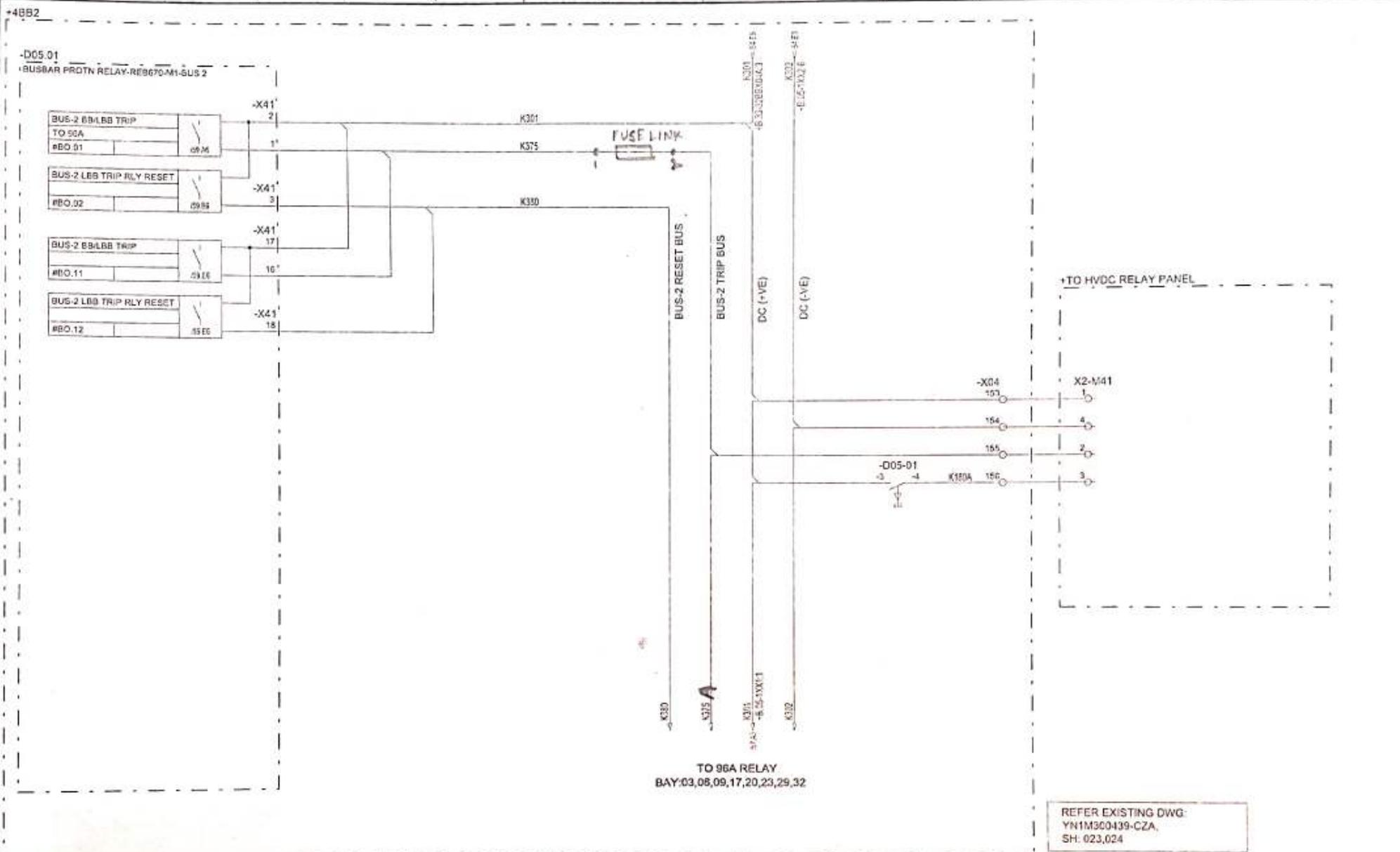
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BUSBAR PROTA RELAY-483070 M1-BUS 2



NOTE:
2X04 TB GROUP
TO BE ADDED NEW

REFER EXISTING DWG.
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5H

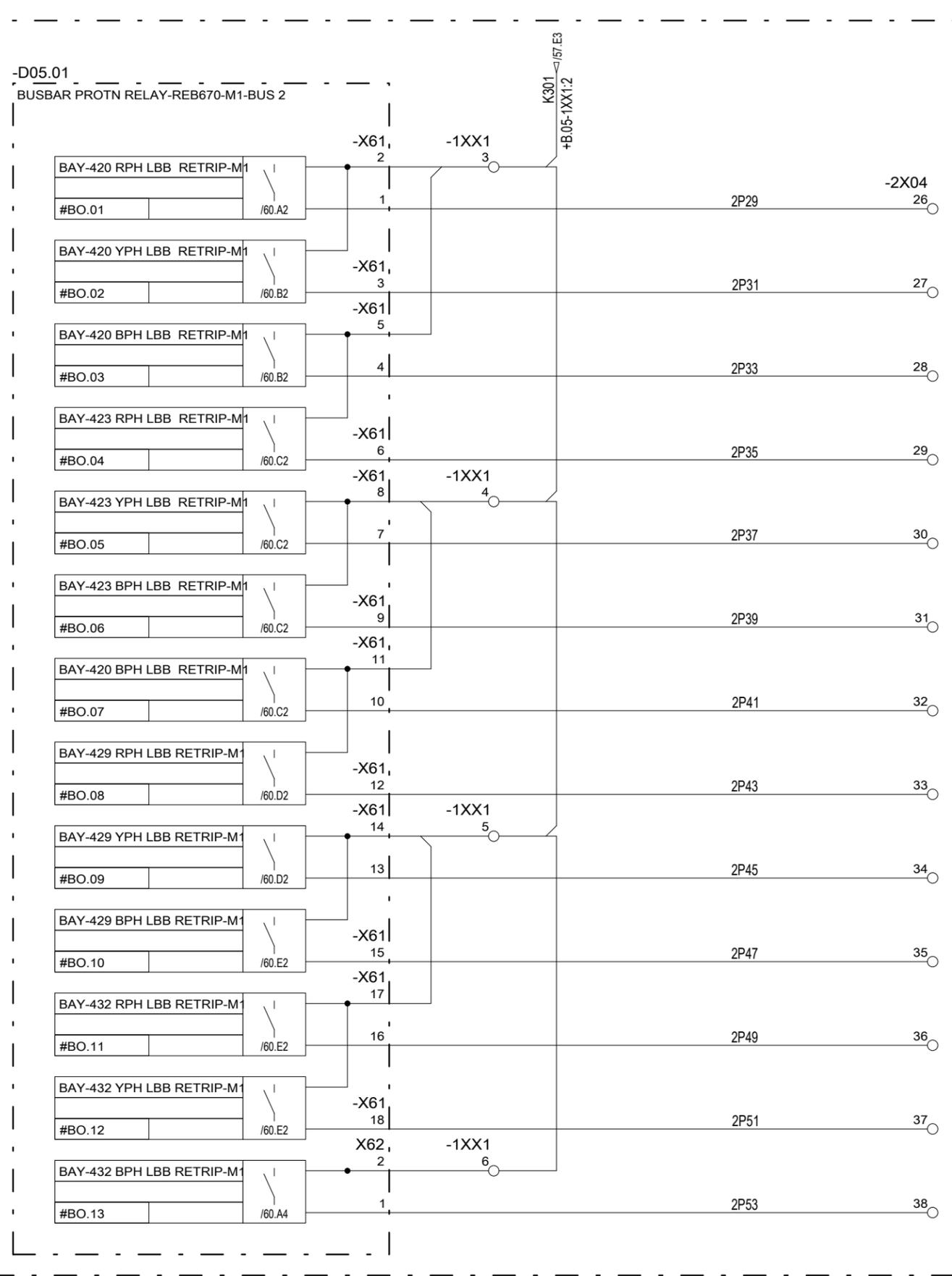
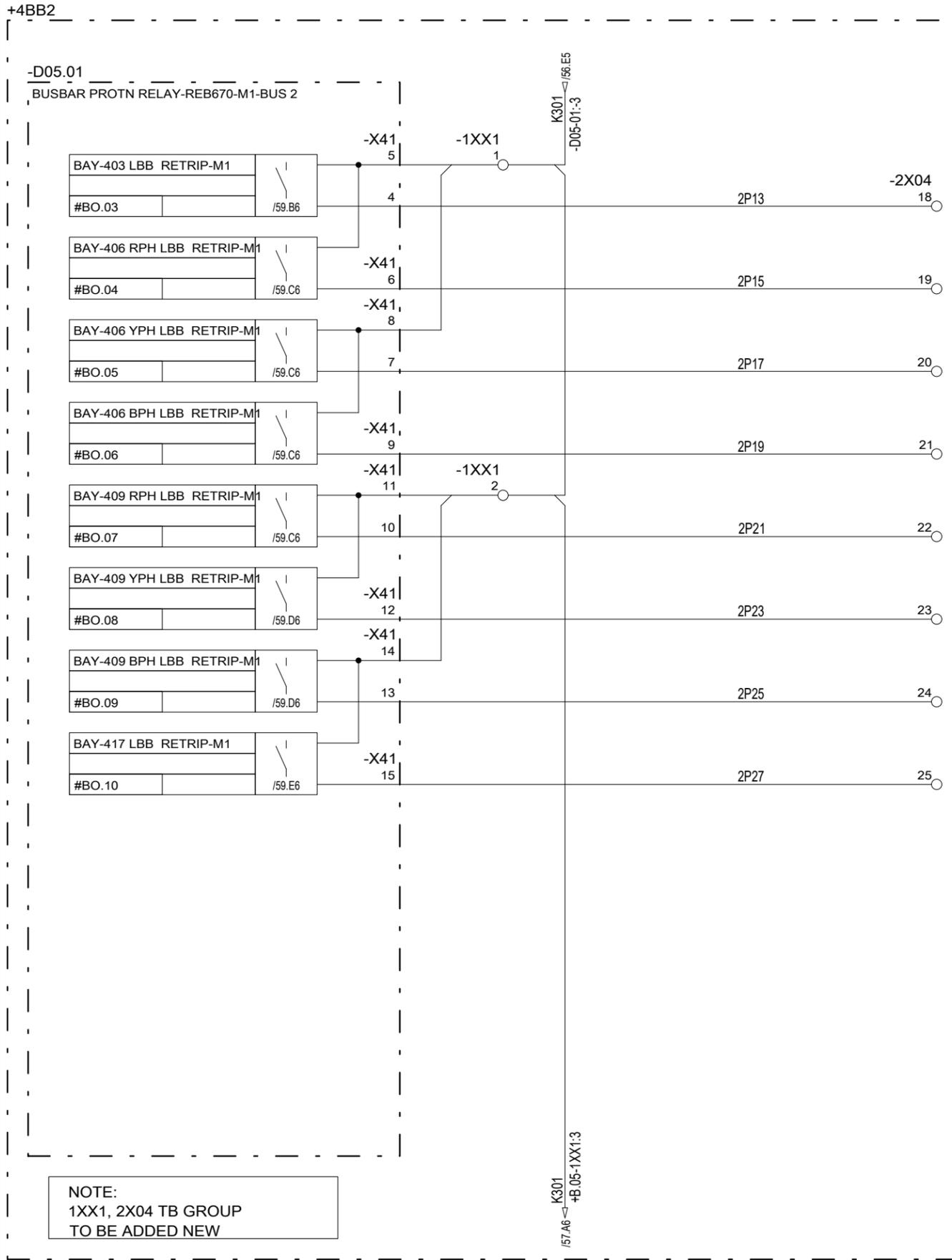
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		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898		Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Rev. No.: PG-GAS Rev. ed.: 00	Language: en Sheet: 55 n. sheet: 58
Rev. Reason: Date Name			HITACHI		Doc. no. 1MNS801837-CGCA	
1MNS801837-100/23/REV01						



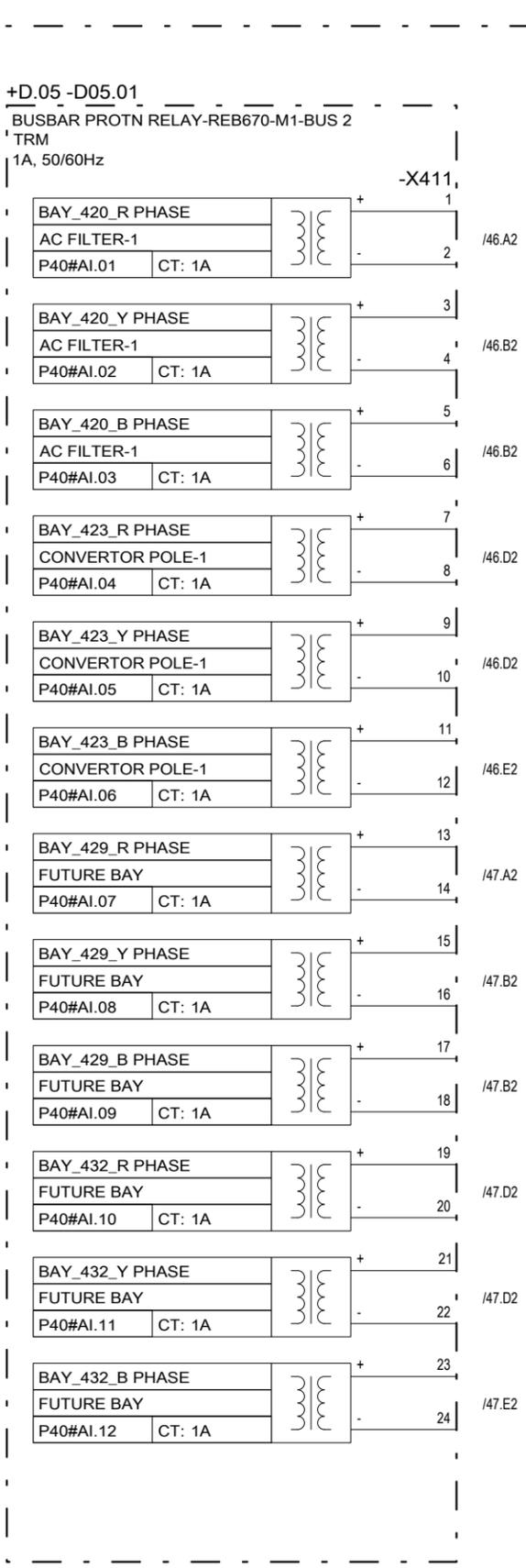
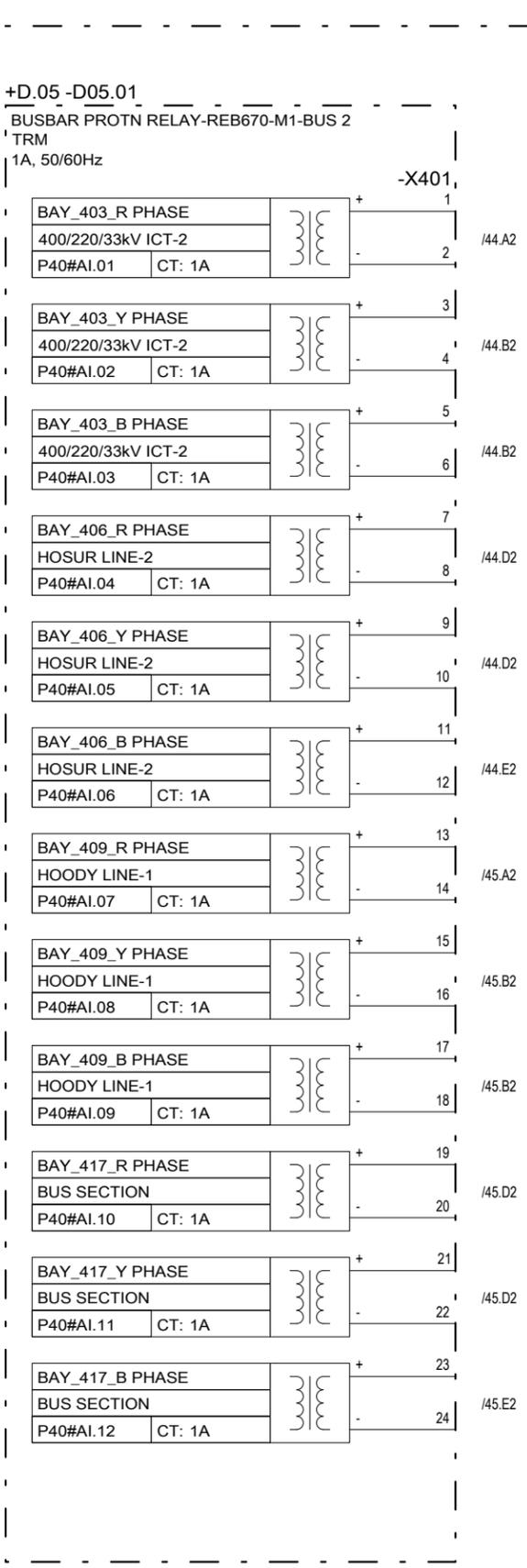
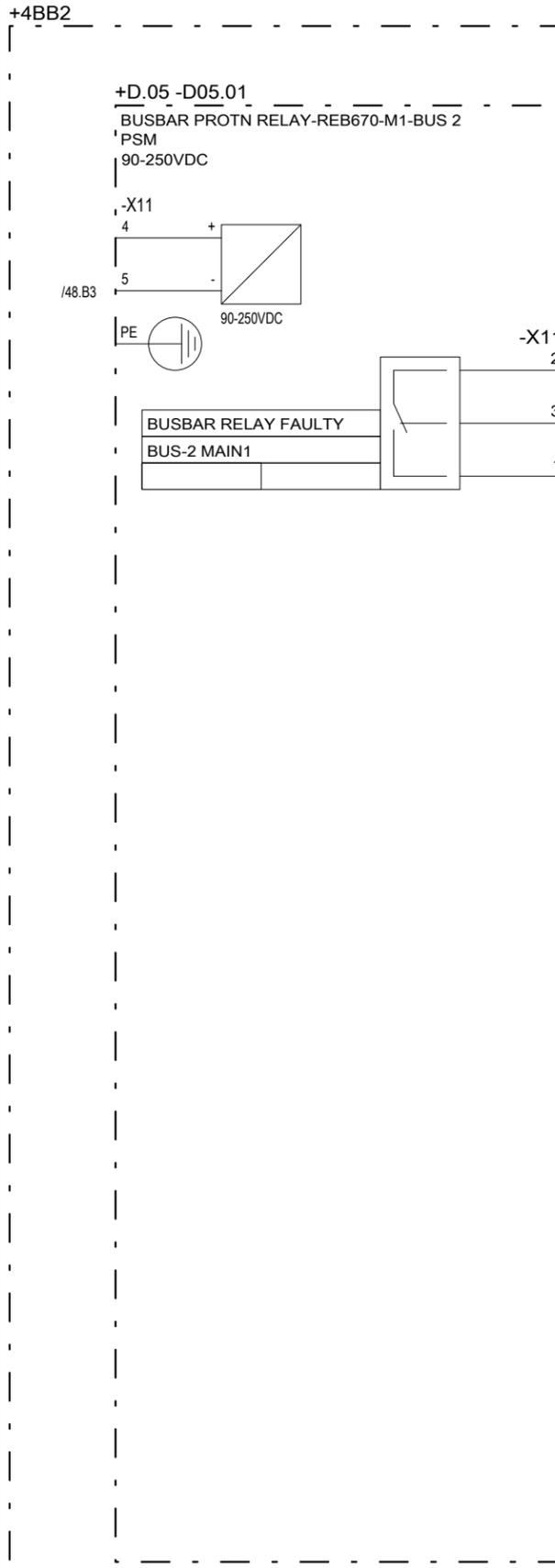
TO 96A RELAY
BAY:03,08,09,17,20,23,29,32

REFER EXISTING DWG:
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SH: 023,024

Based on 3100135083		Prepared 18.04.2023 PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 2 BINARY OUTPUTS		Doc. kind Circuit diagram	Ref Des =4R	
		Approved 20.04.2023 DEENADAYALAN A	Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Respt. dept. PG-GAS	Rev. ind. 00	Language en
Rev. Revision note		Date	Name	HITACHI	Doc. no. 1MNS801837-CGCA		Sheet 56
1MNS801837-CGCA				Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)			n. sheet 57

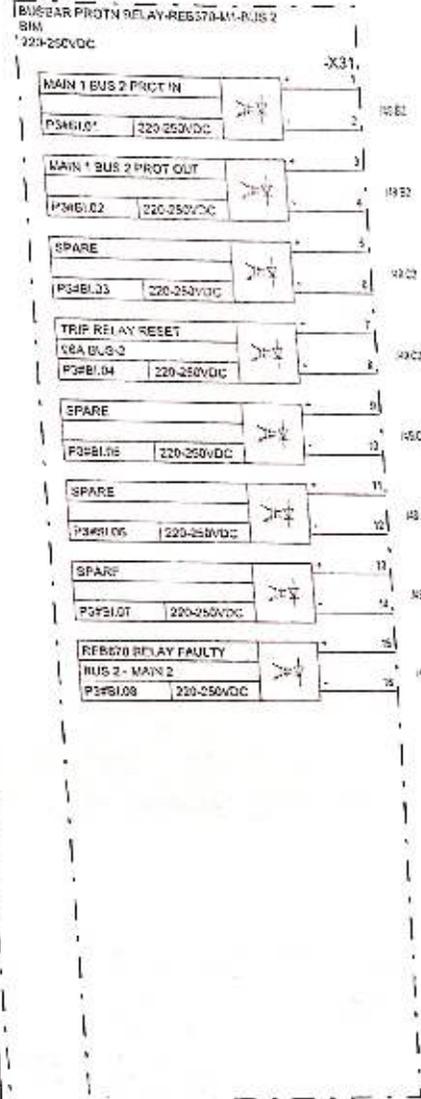


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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS			
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01		Language en
Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 57		n. sheet 58
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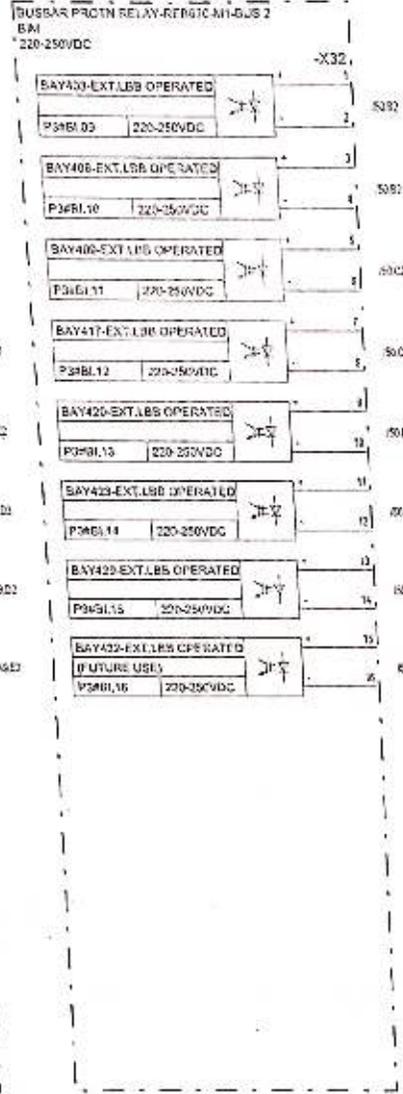


Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 2 OVERVIEW	Doc. kind. Circuit diagram	Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A				
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA	Sheet 58	n. sheet 59
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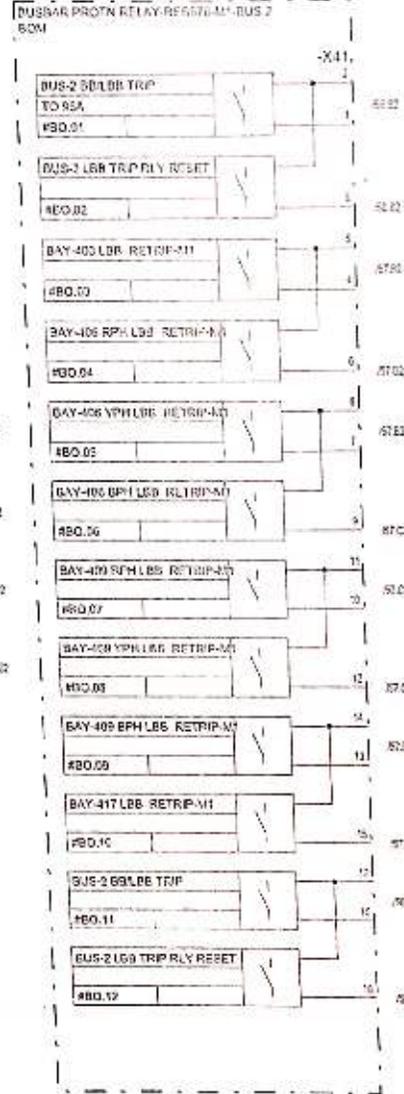
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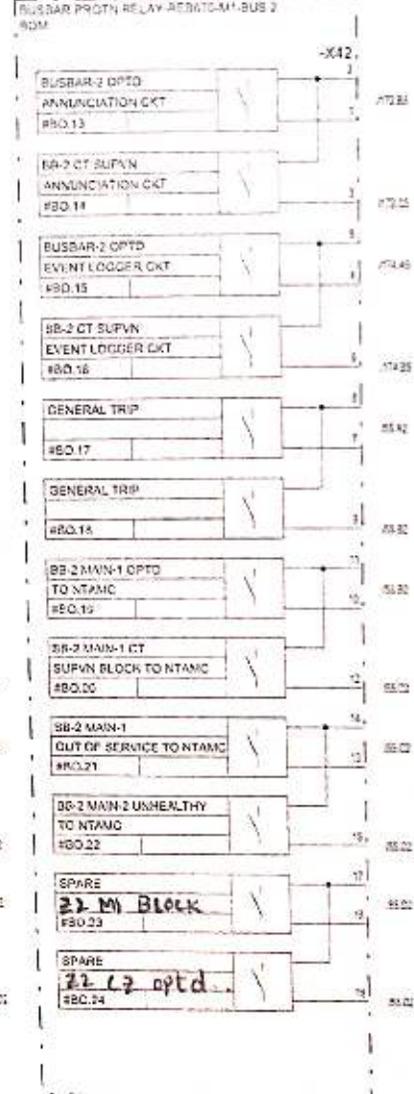
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+D.05 -D05.01



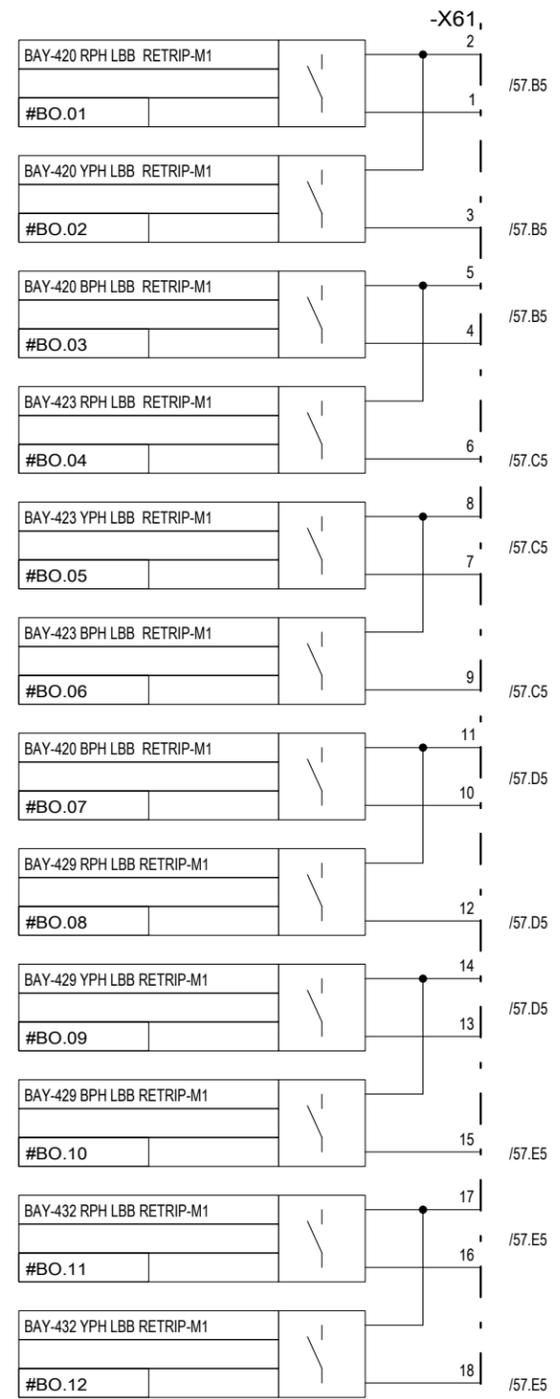
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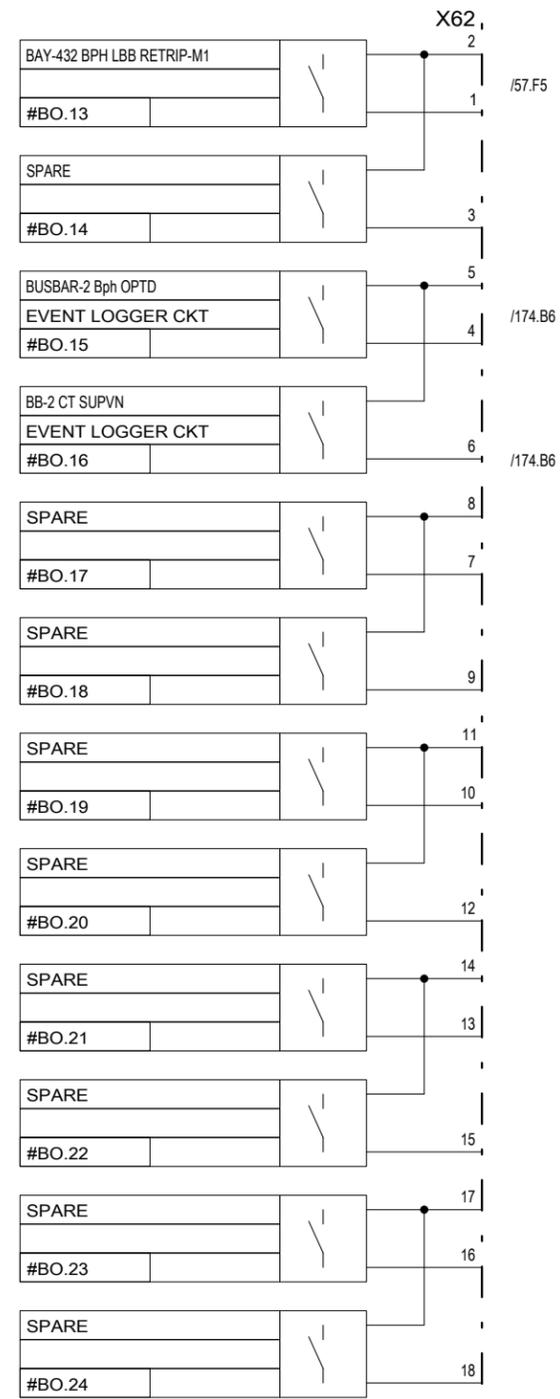
<p>Revised on 3100135093</p> <p>Rev. Revision note Date Name</p> <p>1MNS801837-1201A3/REV01</p>	<p>Prepared 18.04.2023 PANKAJ PATIL</p> <p>Approved 20.04.2023 DEENADAYALAN A</p> <p>Project POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137890</p>	<p>1th 400KV BUSBAR PROTECTION RETROFIT OF REB70 RELAY M1-BUS 2 OVERVIEW</p> <p>HITACHI Hitachi Energy India Limited Formerly known as ABB Power Products and Systems India Limited</p>	<p>Doc. Vint. Circuit diagram</p> <p>Doc. EFS</p> <p>Resp. des. PG-GAS</p> <p>Doc. no. 1MNS801837-CGCA</p>	<p>Ref. Des. =4R</p> <p>Rev. Int. 00</p> <p>Language en</p> <p>Sheet 59</p> <p>Tot. sheet 60</p>
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+4BB2

+D.05 -D05.01
 BUSBAR PROTN RELAY-REB670-M1-BUS 2
 BOM



+D.05 -D05.01
 BUSBAR PROTN RELAY-REB670-M1-BUS 2
 BOM



Based on 3100135063		Prepared 18.04.2023	PANKAJ PATIL
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Approved 20.04.2023	DEENADAYALAN A
Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898

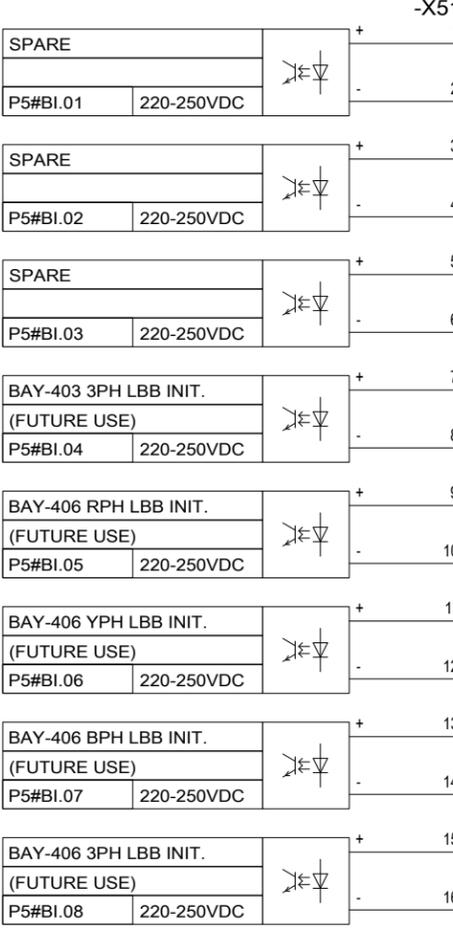
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HITACHI Hitachi Energy India Limited	

Doc. kind.	Circuit diagram	Ref.Des.	=4R
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Resp. dept.	PG-GAS	Rev. ind.	01
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Doc. no.	1MNS801837-CGCA	Sheet	60
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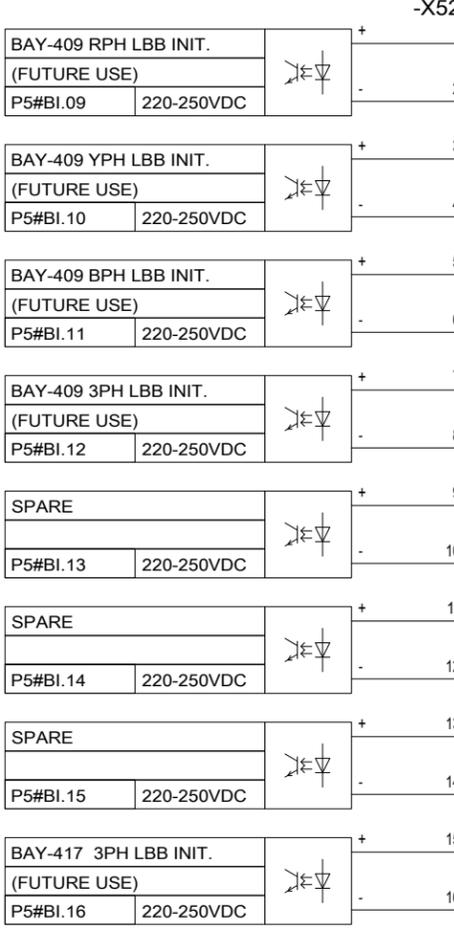
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BUSBAR PROTN RELAY-REB670-M1-BUS 2
BIM
220-250VDC



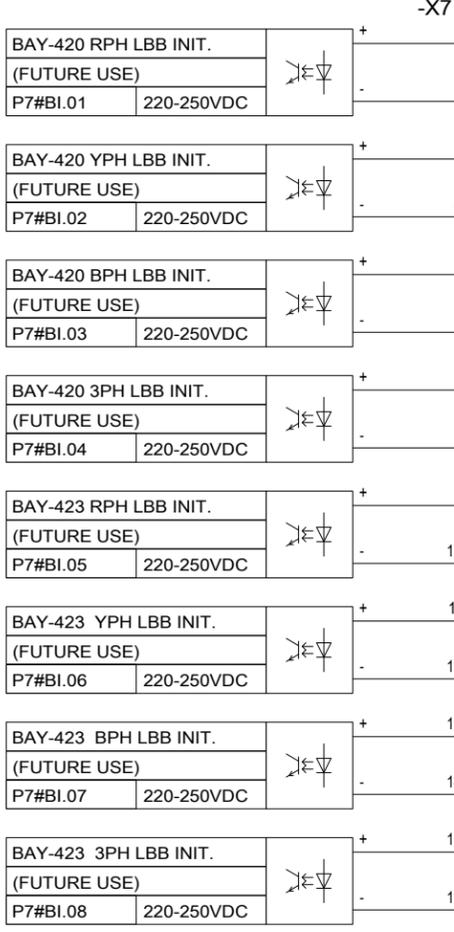
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BUSBAR PROTN RELAY-REB670-M1-BUS 2
BIM
220-250VDC



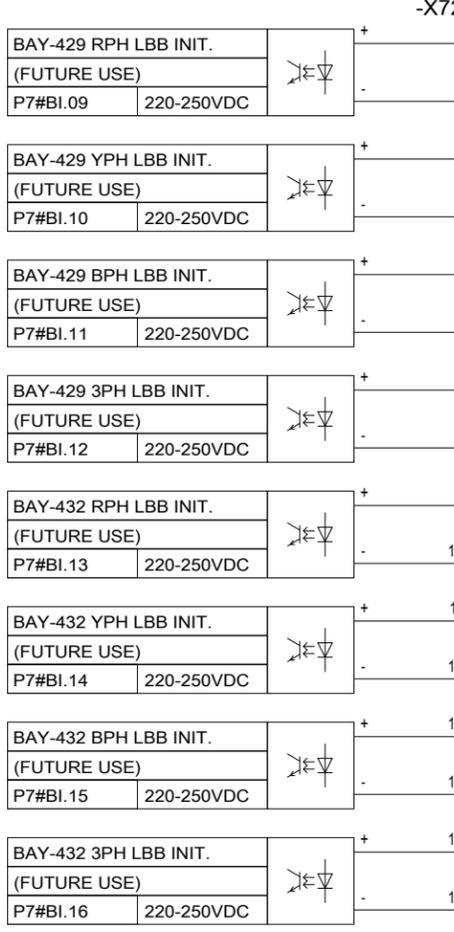
+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M1-BUS 2
BIM
220-250VDC



+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M1-BUS 2
BIM
220-250VDC

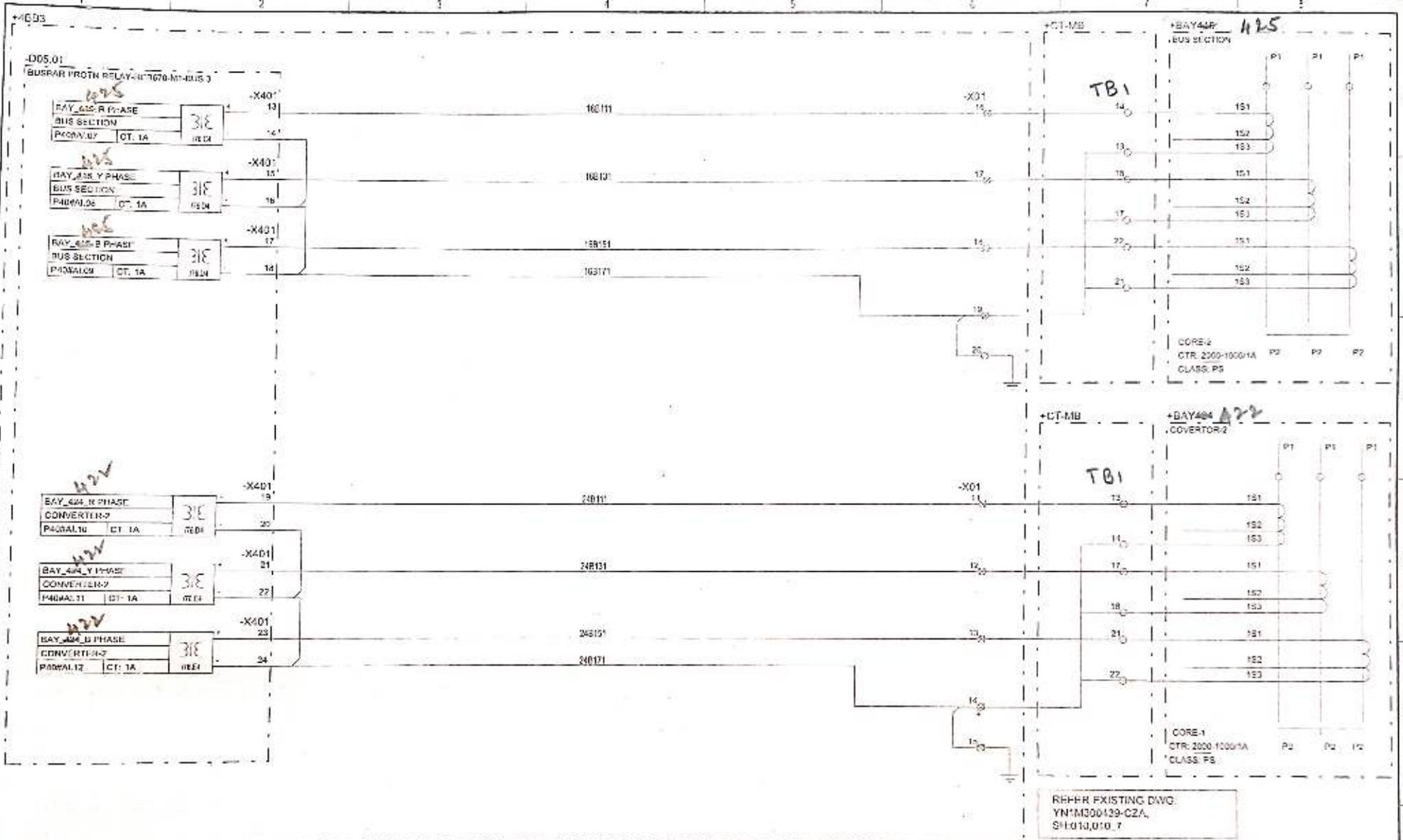


Based on 3100135063		Prepared 18.04.2023	PANKAJ PATIL
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR
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Project		POWER GRID CORPORATION OF INDIA LTD.	
Rev.		Date	Name
1MYN691003-102(A3)REV01		3100137898	

Title		400kV BUSBAR PROTECTION	
Doc. kind.		Circuit diagram	
Ref.Des.		=4R	
Resp. dept.		PG-GAS	
Rev. ind.		01	
Language		en	
Doc. no.		1MNS801837-CGCA	
Sheet		61	
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Title		400kV BUSBAR PROTECTION	
Doc. kind.		Circuit diagram	
Ref.Des.		=4R	
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Rev. ind.		01	
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Doc. no.		1MNS801837-CGCA	
Sheet		61	
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Title		400kV BUSBAR PROTECTION	
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Resp. dept.		PG-GAS	
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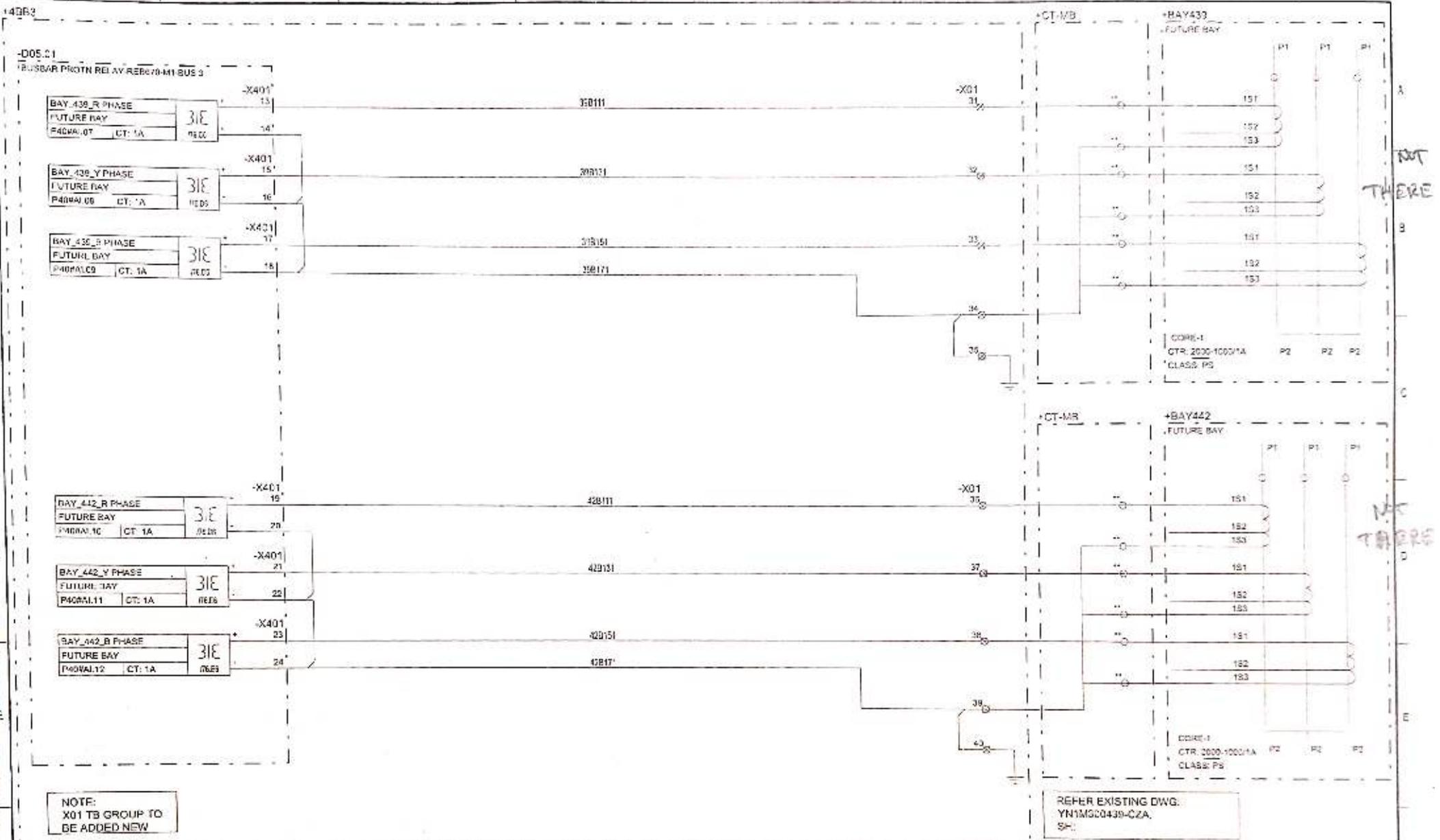


CORE 2
CTR: 2000/1000/1A
CLASS: F5

CORE 1
CTR: 2000/1000/1A
CLASS: F5

REFER EXISTING DWG.
YN1M300139-CZA,
SH1014,010.7

Based on: 3100135053	Prepared: 18.04.2023 Approved: 20.04.2023	PANKAJ PATIL DEENADAYALAN A	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB67U RELAY M1-BUS 3 CT CIRCUITS	Doc. kind: Circuit diagram DCC EFS PG-GAS	Rev. no: 00	Ref. Des. =4R
Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898	HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Doc. no. 1MNS801837-CGCA	Language: en	Sheet: 63	n. sheet: 64

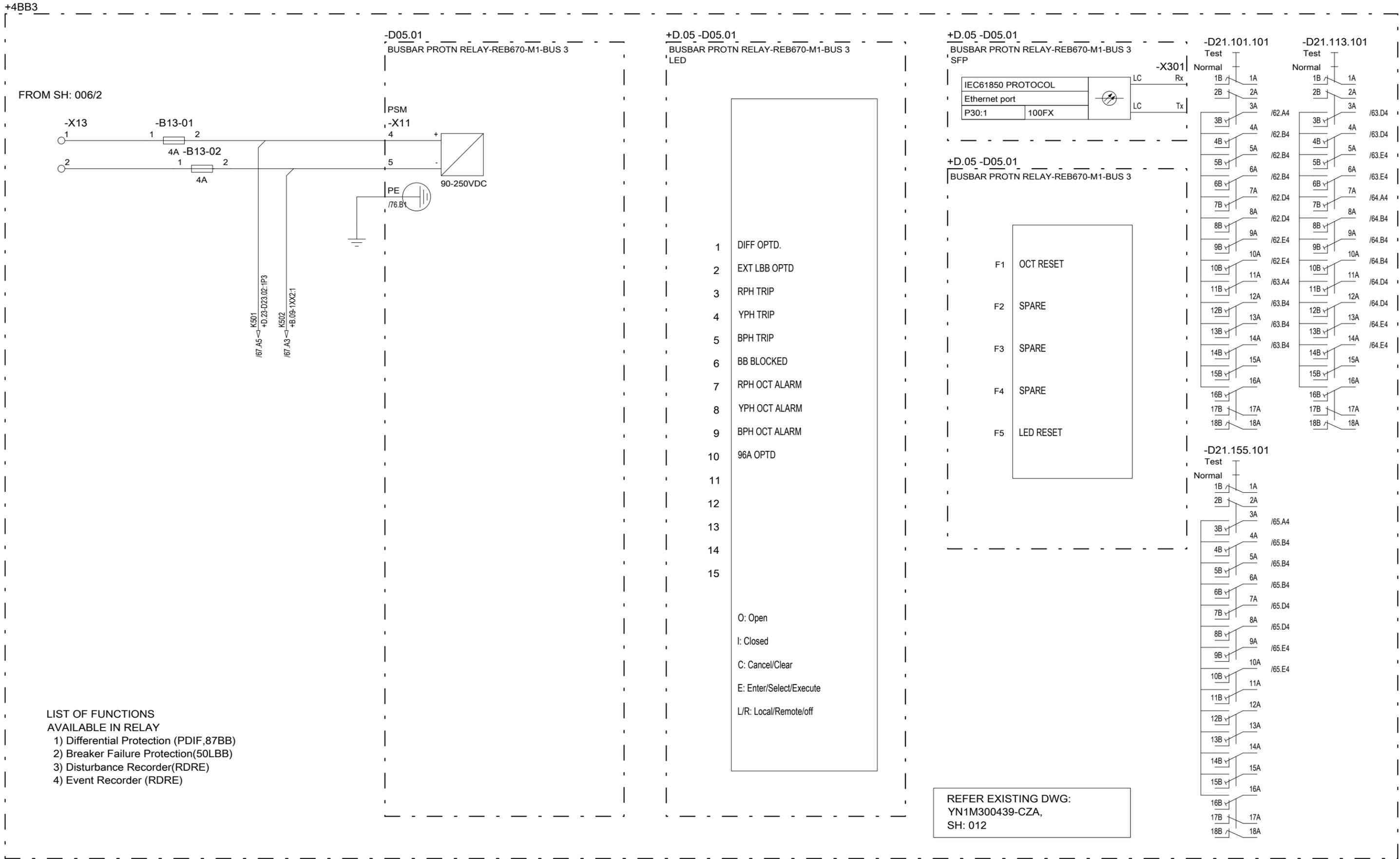


NOTE:
X01 TB GROUP TO
BE ADDED NEW

REFER EXISTING DWG.
YN1MNS00439-CZA.
SH-

Based on: 3100135053		Prepared: 18.04.2023 PANKAJ PATIL		Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 CT CIRCUITS		Doc. kind: Circuit diagram		Ref. Des. =4R	
		Approved: 20.04.2023 DEENADAYALAN A		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 31C0137898		Res. Dept. JCC EFS		Language en	
				HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Rev. Ind. 00		Sheet 65	
Rev. Revision No.		Date		Name		Doc. no. 1MNS801837-CGCA		n. sheet 66	
1MNS801837-02/03/REV01									

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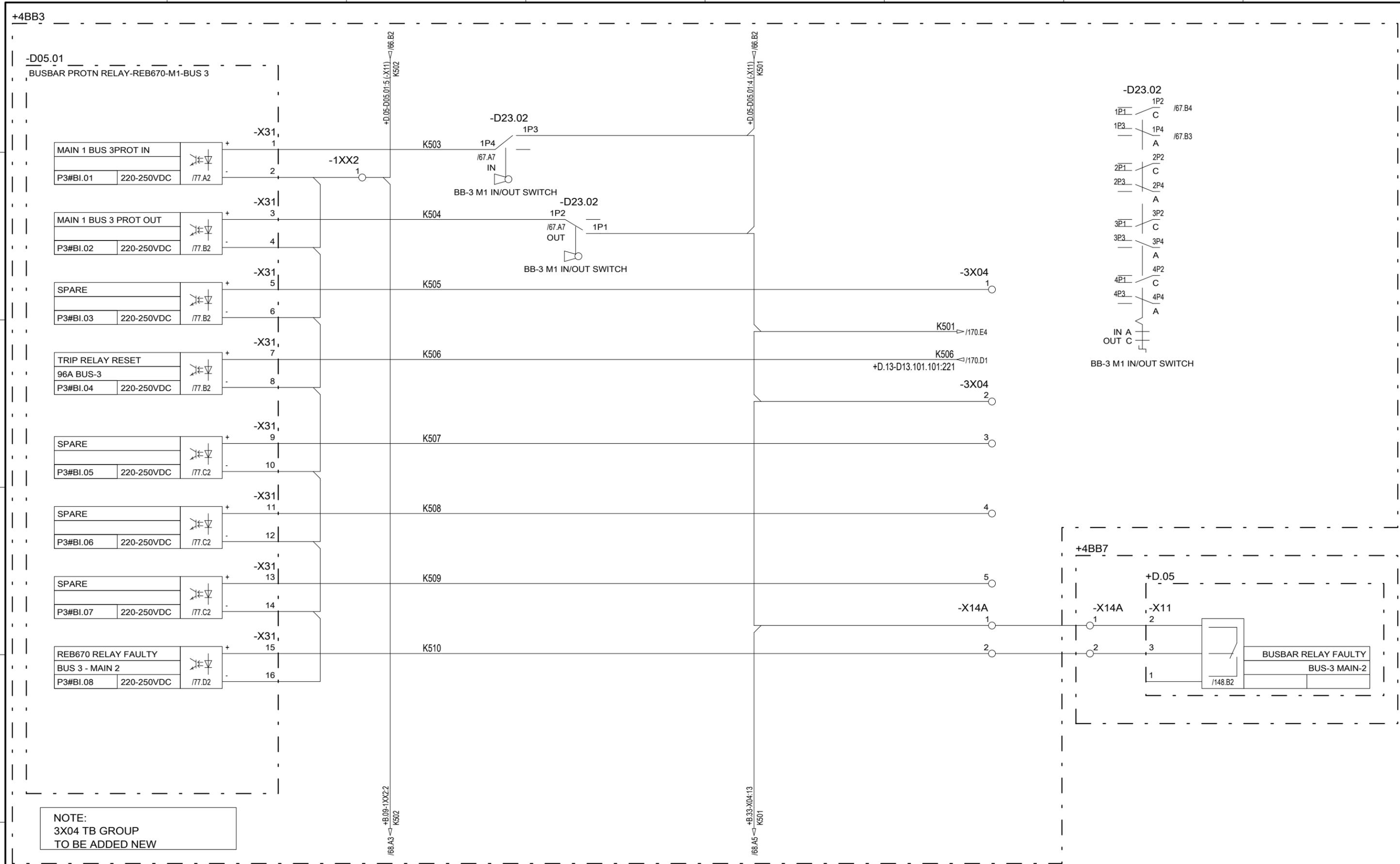


- LIST OF FUNCTIONS AVAILABLE IN RELAY**
- 1) Differential Protection (PDIF,87BB)
 - 2) Breaker Failure Protection(50LBB)
 - 3) Disturbance Recorder(RDRE)
 - 4) Event Recorder (RDRE)

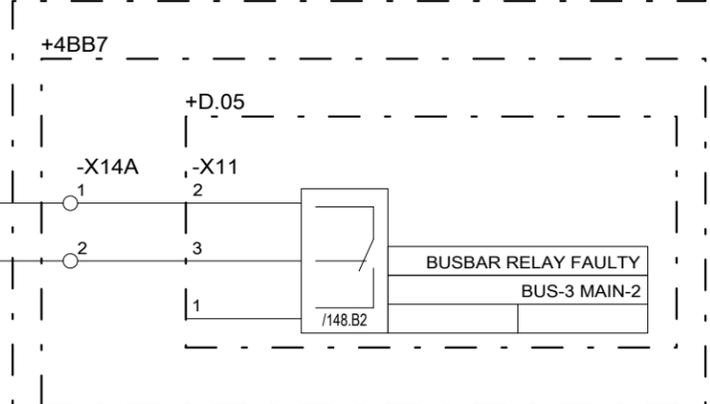
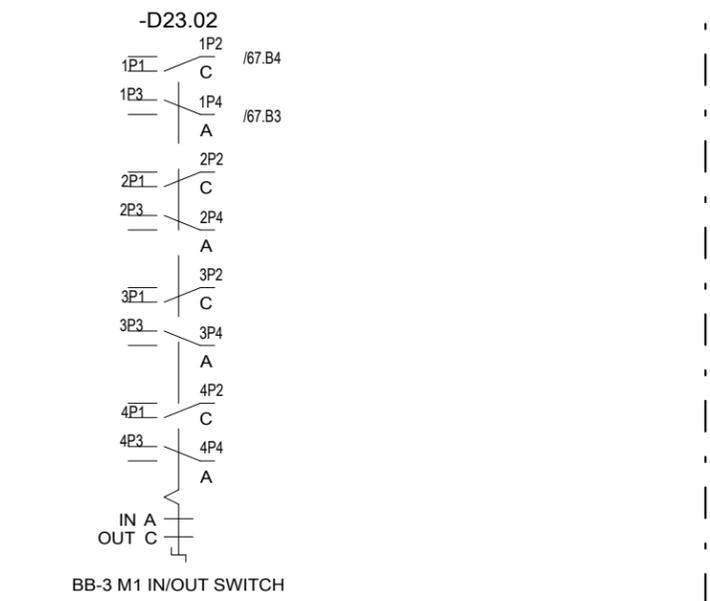
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Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION	Doc. kind. Circuit diagram	Ref.Des. =4R
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A	RETROFIT OF REB670 RELAY	DCC EFS	
				Project	POWER GRID CORPORATION OF INDIA LTD.	M1-BUS 3 PSM & COM	Resp. dept. PG-GAS	Rev. ind. 01
				400/220kV KOLAR SUBSTATION		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS801837-CGCA	Language en
Rev.	Revision note	Date	Name	3100137898				Sheet 66
1MYN691003-102(A3)REV01								n. sheet 67

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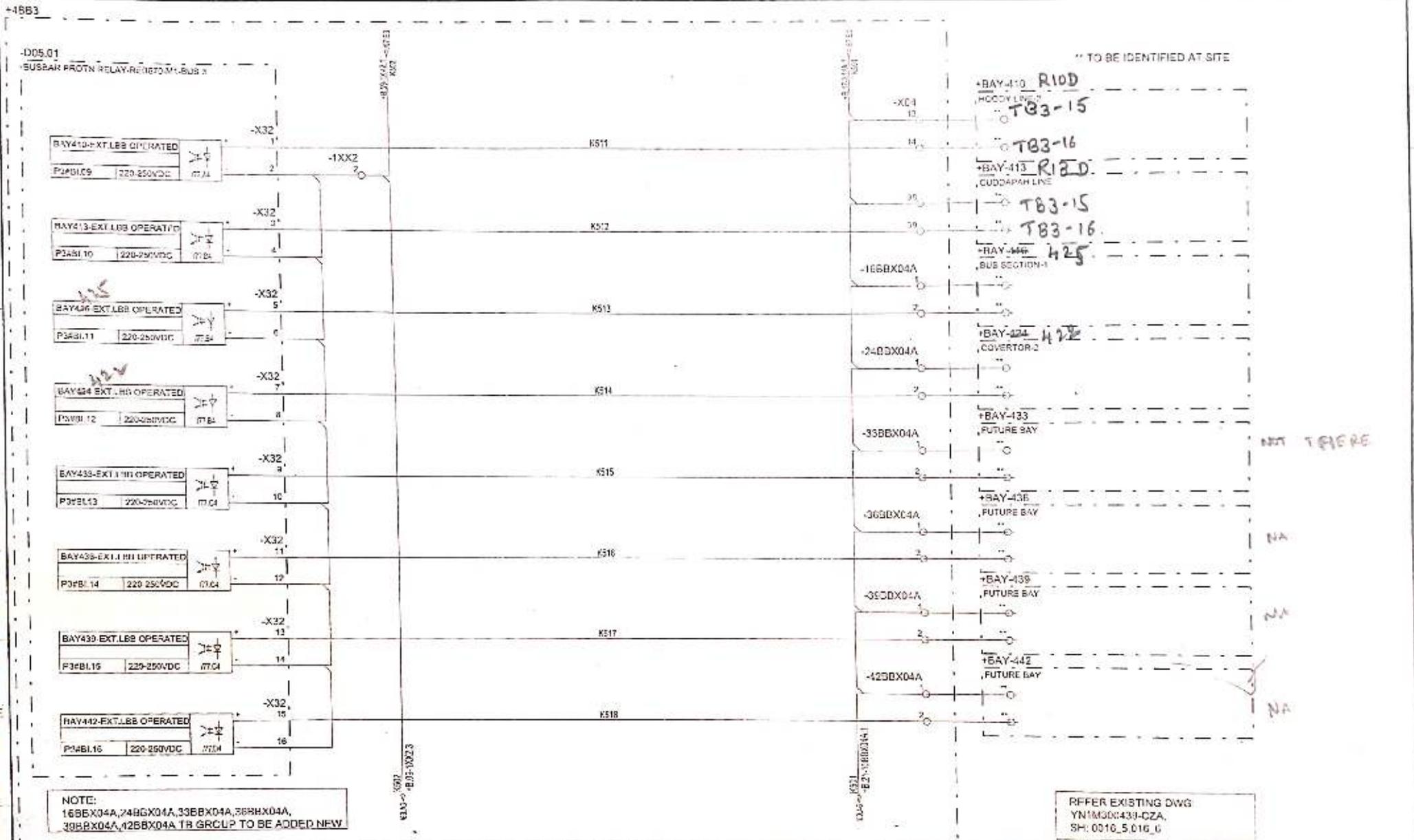


NOTE:
3X04 TB GROUP
TO BE ADDED NEW

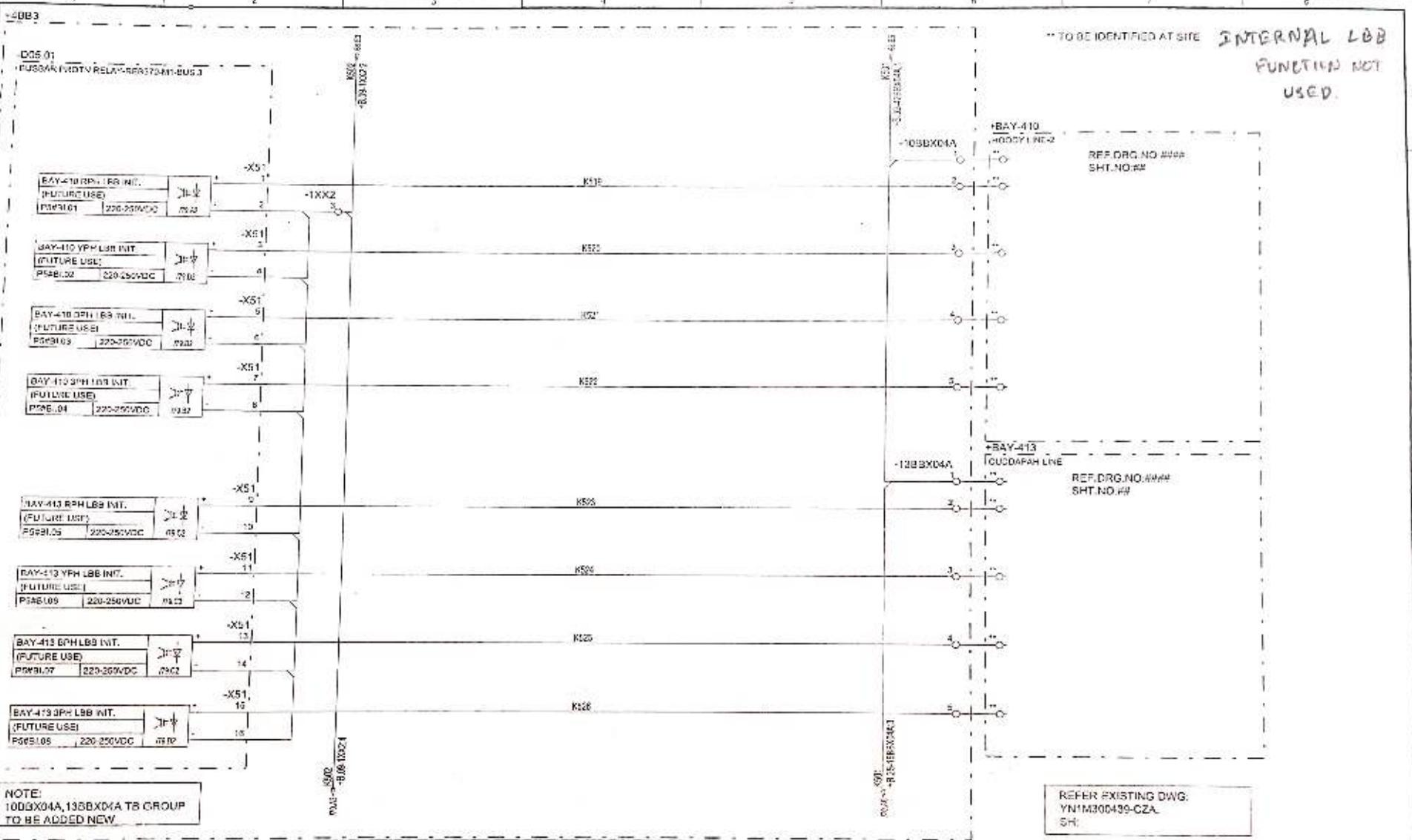


Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R		
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS			
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01		Language en
Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 67		n. sheet 68
1MYN691003-102(A3)REV01										

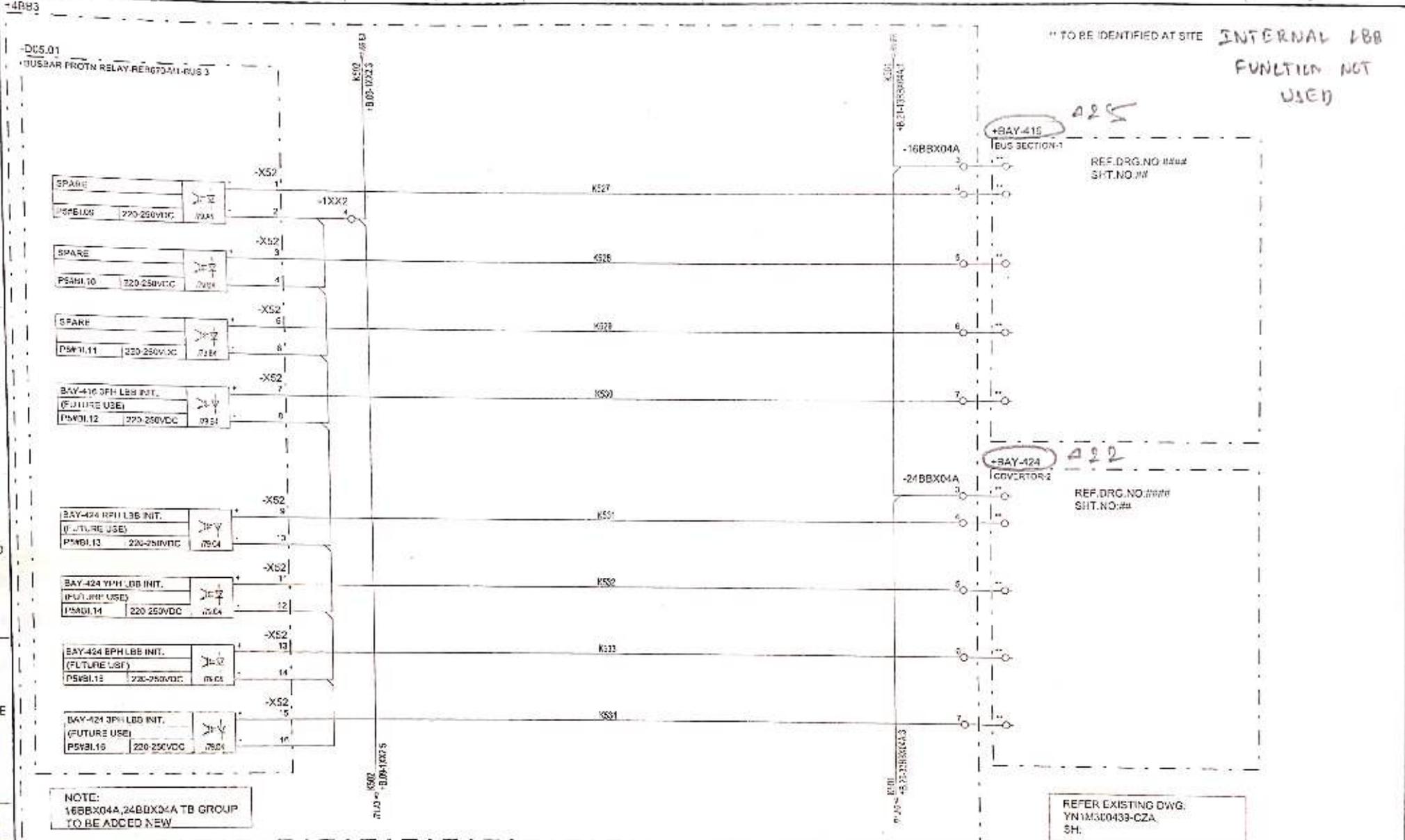
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Based on 3100/2503		Prepared 18.04.2023 PANKAJ PATIL	Title 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 BINARY INPUTS		Doc. kind. Circuit diagram	Ref. Dwg. -4R
		Approved 20.04.2023 DEENADAYALAN A	Project POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898		Doc. EFS	
			HITACHI Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Res. Dept. PG-GAS	Rev. no. 00
Rev. Revision no.		Date	None		Language: en	
1444N801023-102(A3)REV01					Sheet 68	
					n. sheet 89	



Based on 3*00136063			Prepared 18.04.2023 PANKAJ PATIL	TJ: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY	Doc. no. Circuit diagram	Rev. Des.	F=4R
			Approved 20.04.2023 DEENADAYALAN A	M1-BUS 3 BINARY INPUTS	DCC EFS		
			Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898	HITACHI	PG-GAS	Rev. no. 00	Language en
Rev. Drawn/checked			Date	Name	Hitachi Energy India Limited (Formerly known as ABB Power Electronics and Systems India Limited)	1MNS801837-CGCA	Sheet 69
1MNS03-033-102(A3)REV01							n. draw 70



Project No: 31001350E3 Date: 18.04.2023 Prepared by: PANKAJ PATIL Approved by: DEENADAYALAN A Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137856		Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY MI-BUS 3 BINARY INPUTS Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Doc. No: 1MNS801837-CGCA Rev. No: 00 Sheet: 70 of 71	
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-4RB3

-D05.01
BUSBAR PROT. RELAY-REB670-M1-BUS 3

** TO BE IDENTIFIED AT SITE

INTERNAL LBB
FUNCTION NOT
USED.

BAY-433 RPH LBB INIT.
(FUTURE USE)
P7#B.01 220-250VDC 08A8

BAY-433 YPH LBB INIT.
(FUTURE USE)
P7#B.02 220-250VDC 08C8

BAY-433 BPH LBB INIT.
(FUTURE USE)
P7#B.03 220-250VDC 08E8

BAY-433 3PH LBB INIT.
(FUTURE USE)
P7#B.04 220-250VDC 08F8

BAY-436 RPH LBB INIT.
(FUTURE USE)
P7#B.05 220-250VDC 09C8

BAY-436 YPH LBB INIT.
(FUTURE USE)
P7#B.06 220-250VDC 09E8

BAY-436 BPH LBB INIT.
(FUTURE USE)
P7#B.07 220-250VDC 09F8

BAY-436 3PH LBB INIT.
(FUTURE USE)
P7#B.08 220-250VDC 09G8

NOTE:
33BX04A, 36BX04A TB GROUP
TO BE ADDED NEW

K57
803-001

K50
4306-0026

K50
4315-000243

K50
4313-0000443

+BAY-433
FUTURE BAY

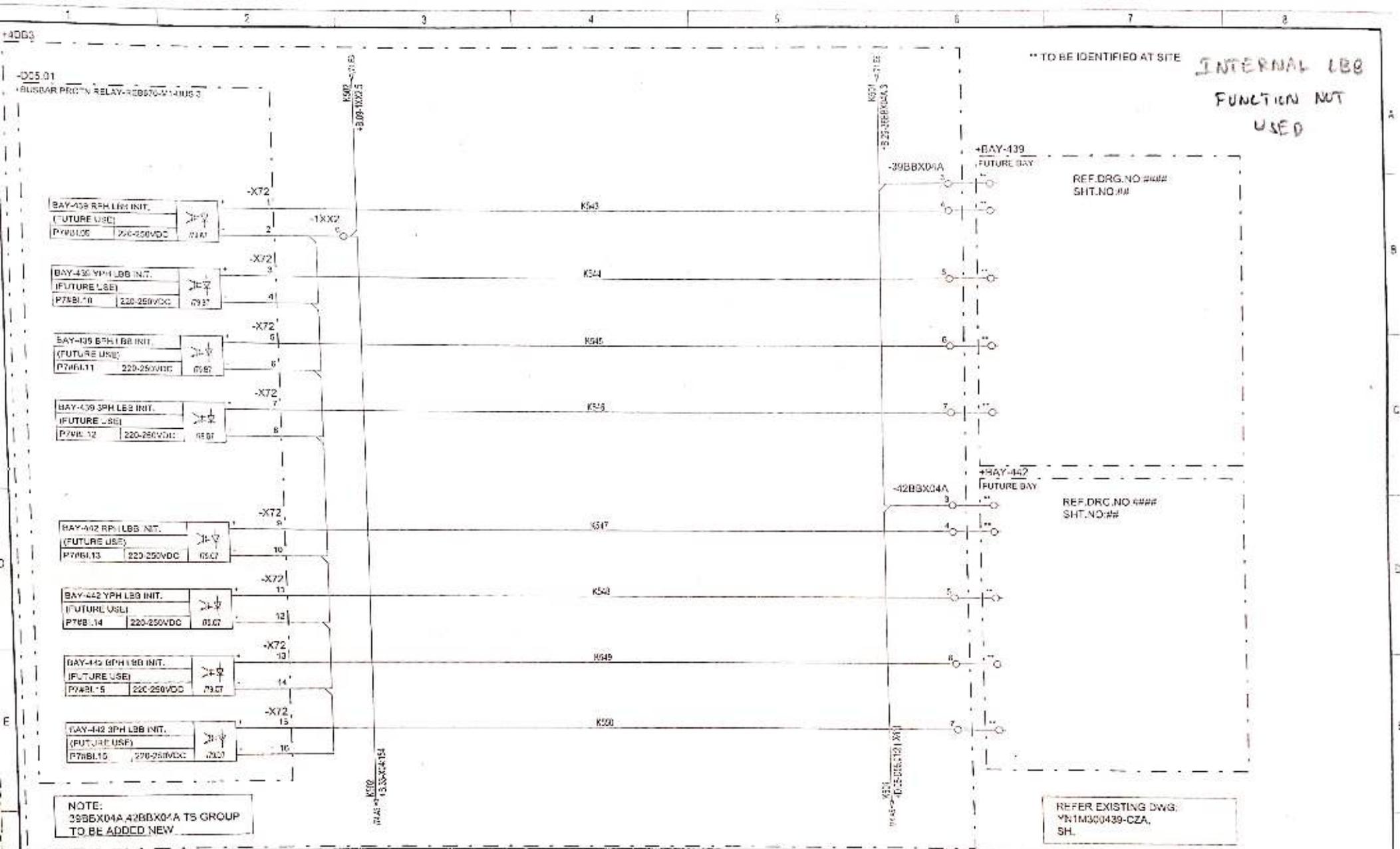
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REF.DRG NO.###
SHT.NO.##

REF.DRG NO.###
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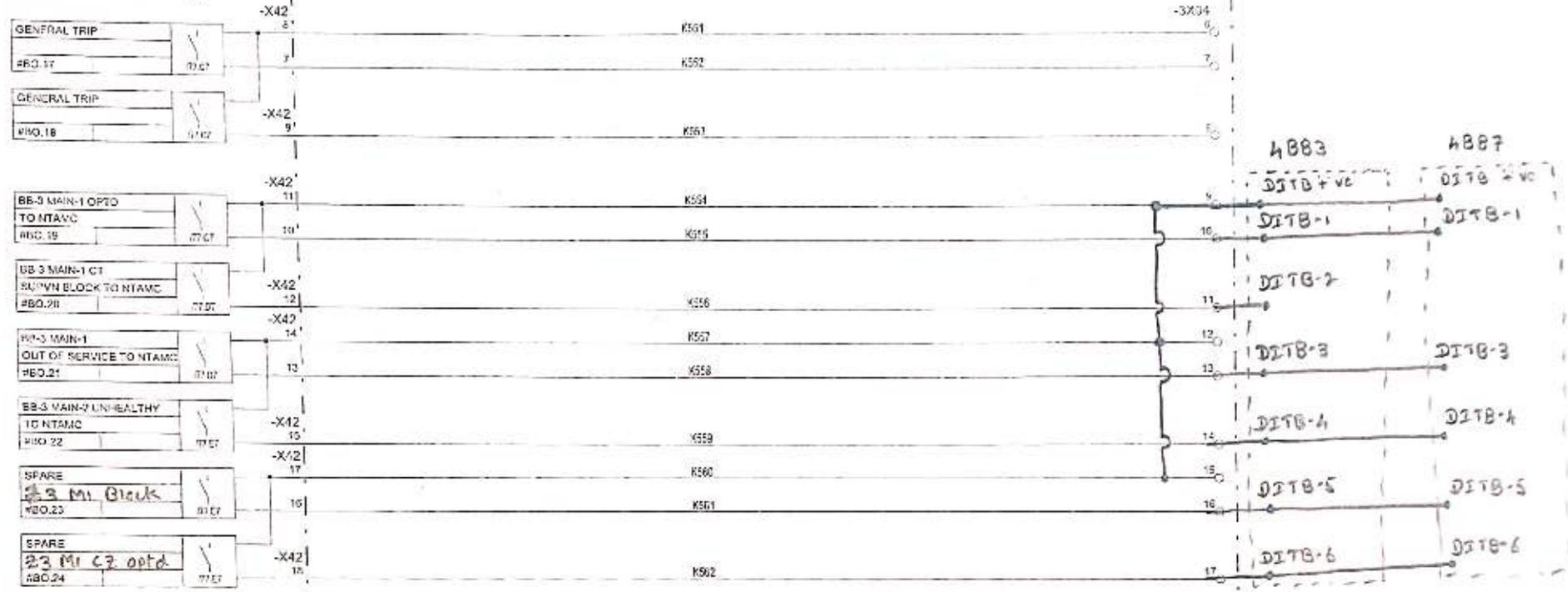
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YN1M300-139-CZA,
SH.

Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 BINARY INPUTS		Doc. Vnt. Circuit diagram		Ref. Des.		=4R	
		Approved 20.04.2023 DEENADAYALAN A				Doc. EFS					
		Project POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898				Resp. Dept. PG-3AS		Rev. no. 00		Language en	
Rev. Revision no.		Date Name		HITACHI Hitachi Energy India Limited (formerly known as ABB Power Products and Systems India Limited)		Doc. no. 1MNS801837-CGCA		Sheet 71		n. sheet 72	
1MNS801837-102(A2)/REV01											



Based on: 3100135083		Prepared: 18.04.2023	PANKAJ PATIL	Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY W/1-BUS 3 BINARY INPUTS	Doc. No.: Circuit diagram	Rev. Des: =4R
		Approved: 20.04.2023	DEENADAYALAN A		Doc. EFS	
		Project: POWER GRID CORPORATION OF INDIA LTD, 400/220KV KOLAR SUBSTATION 3100137898			Res. dpt.: PG-GAS	Rev. no: 00
Rev. Revision Code		Date	Name	HITACHI	Doc. No.: 1MNS801837-CGCA	Language: en
MYN01KCS-132(A)/REV01				Hitachi Energy India Limited (Formerly known as ABB Power Products and System India Limited)		Sheet: 72
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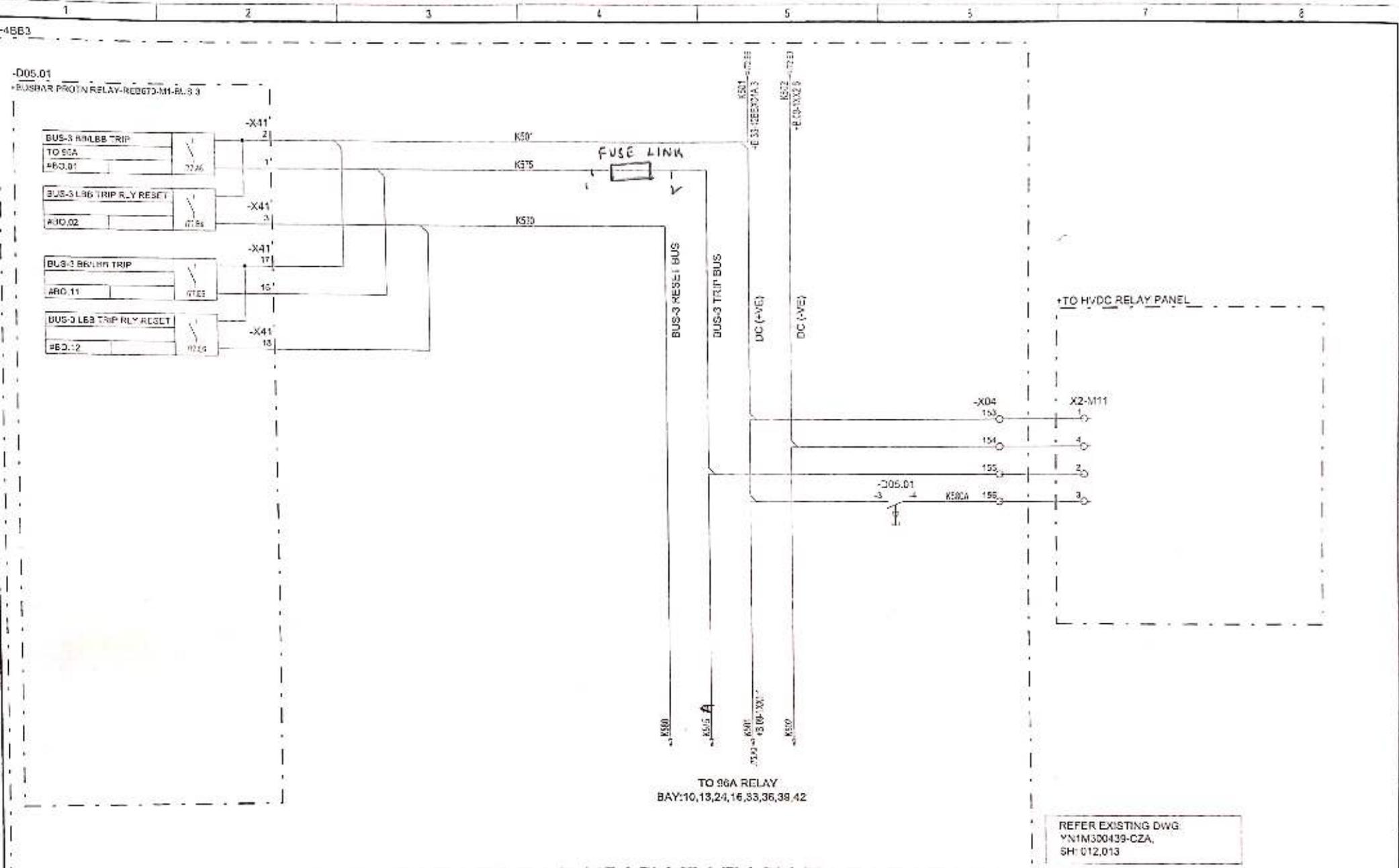
405.01
 BUSBAR PROTIN RELAY-REB670-M1-BUS 3



NOTE:
 3X04 TB GROUP
 TO BE ADDED NEW

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 SH:

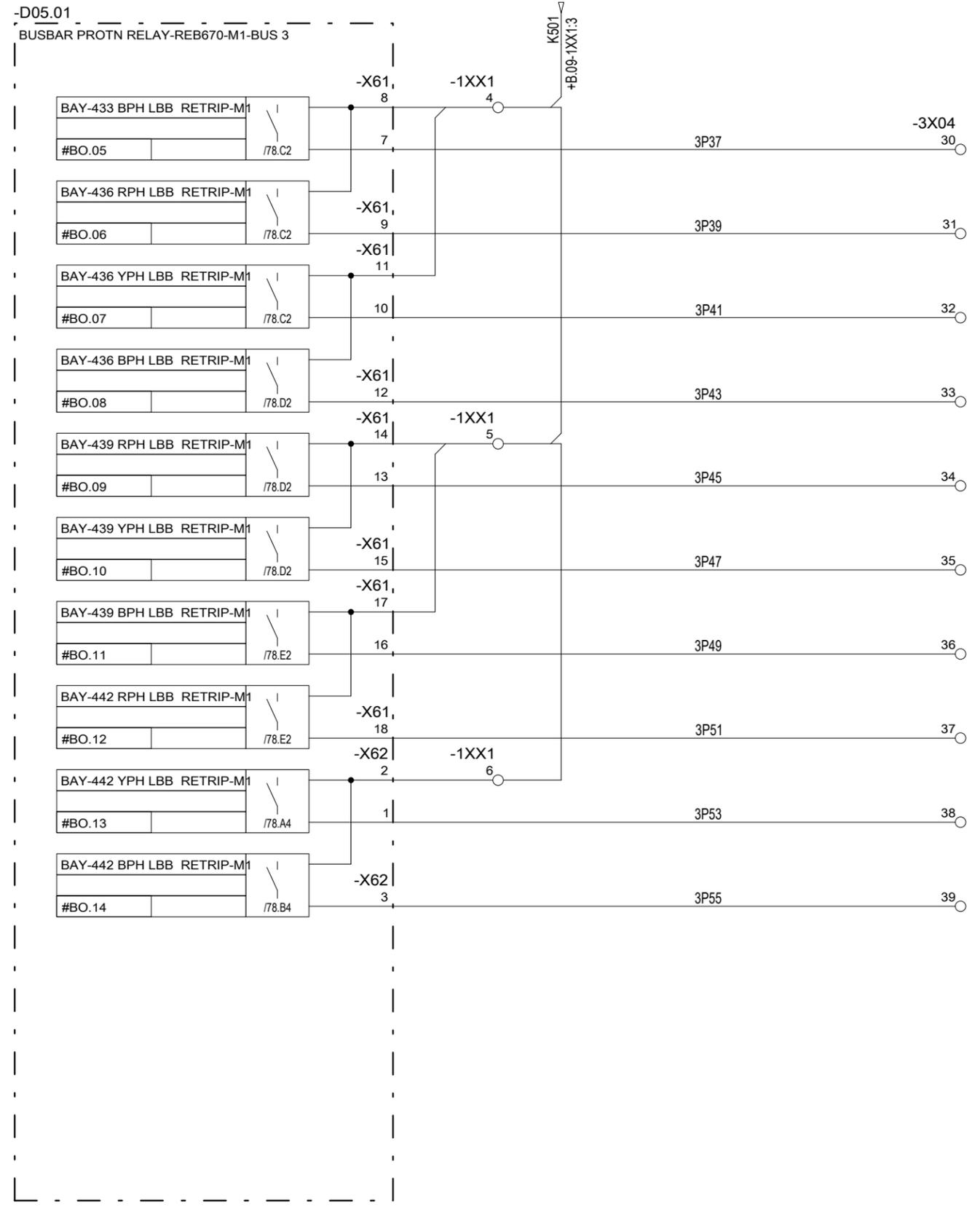
Based on: 3100135083	Prepared: 18.04.2023 PANKAJ PATIL	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 BINARY OUTPUTS	Doc. Kind: Circuit diagram	Ref. Des. =4R
	Approved: 20.04.2023 DEENADAYALAN A		Doc. EFS	
	Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137896	HITACHI Hitachi Energy India Limited (formerly known as ABB Power Products and Systems India Limited)	Resp. Dept: PG-GAS	Rev. no: 00
Rev. Revision No	Date		Name	Language: en
1MYNG1003-1C2(A3)REV01			Doc. no: 1MNS801837-CGCA	In sheet: 74



TO 96A RELAY
BAY:10,13,24,16,33,36,39,42

REFER EXISTING DWG
YN1M300439-CZA,
SH: 012,013

Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL	Title 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 BINARY OUTPUTS		Doc. No. C:rcuit diagram	Ref.Des. =AR	
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Rev.	Revision note	Date	Name				
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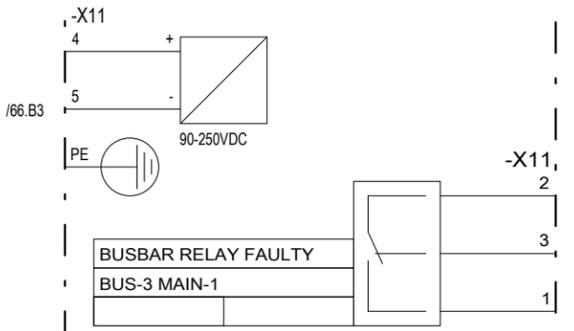


NOTE:
1XX1, 3X04 TB GROUP
TO BE ADDED NEW

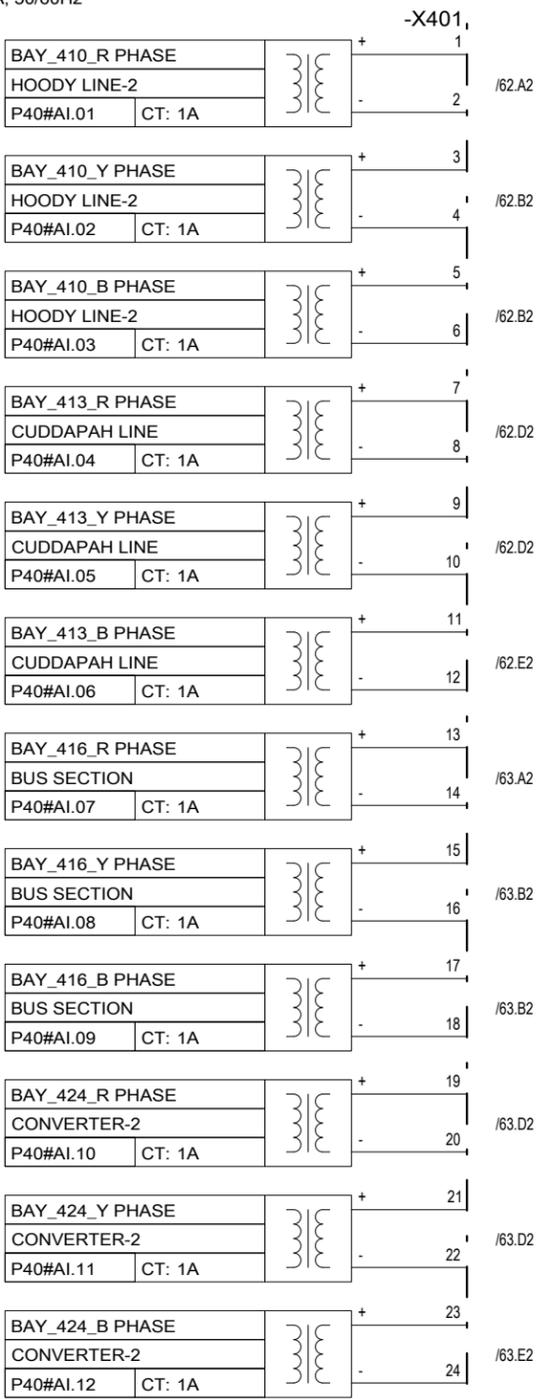
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01 REVISED AS PER CUSTOMER COMMENTS		02.10.2024		Approved 20.04.2023 DEENADAYALAN A		M1-BUS 3 BINARY OUTPUTS		DCC EFS			
Project POWER GRID CORPORATION OF INDIA LTD.				400/220kV KOLAR SUBSTATION		M1-BUS 3 BINARY OUTPUTS		PG-GAS		Rev. ind. 01	
3100137898								Language en			
Rev. Revision note		Date		Name		HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 75	
										n. sheet 76	
1MYN691003-102(A3)REV01											

+4BB3

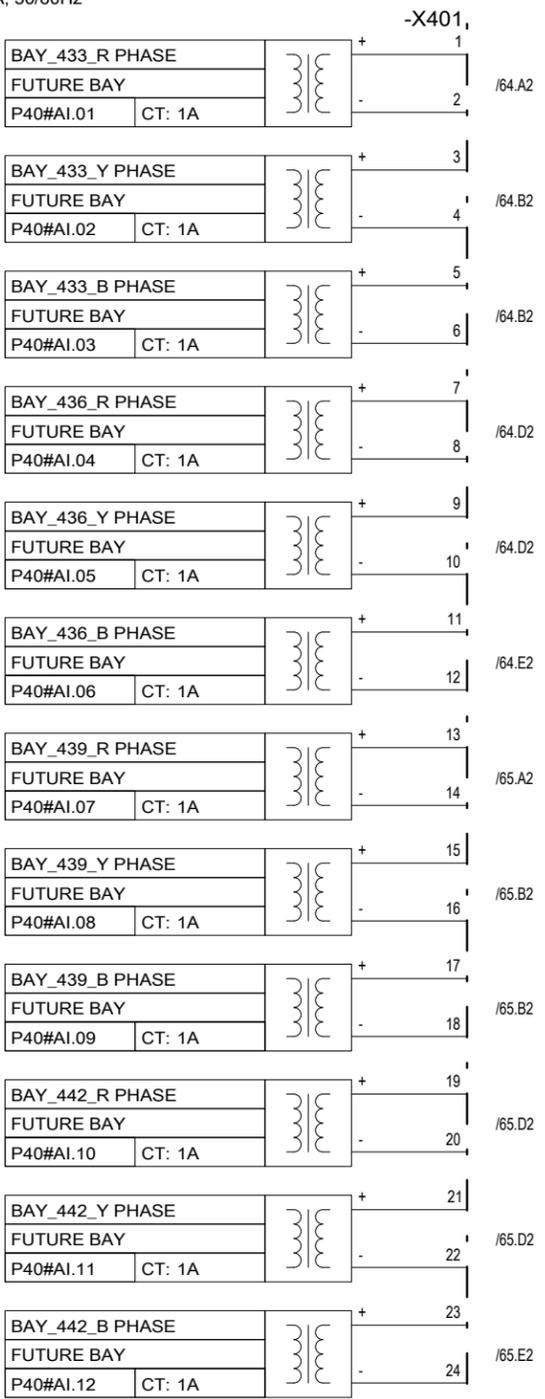
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 BUSBAR PROTN RELAY-REB670-M1-BUS 3
 PSM
 90-250VDC



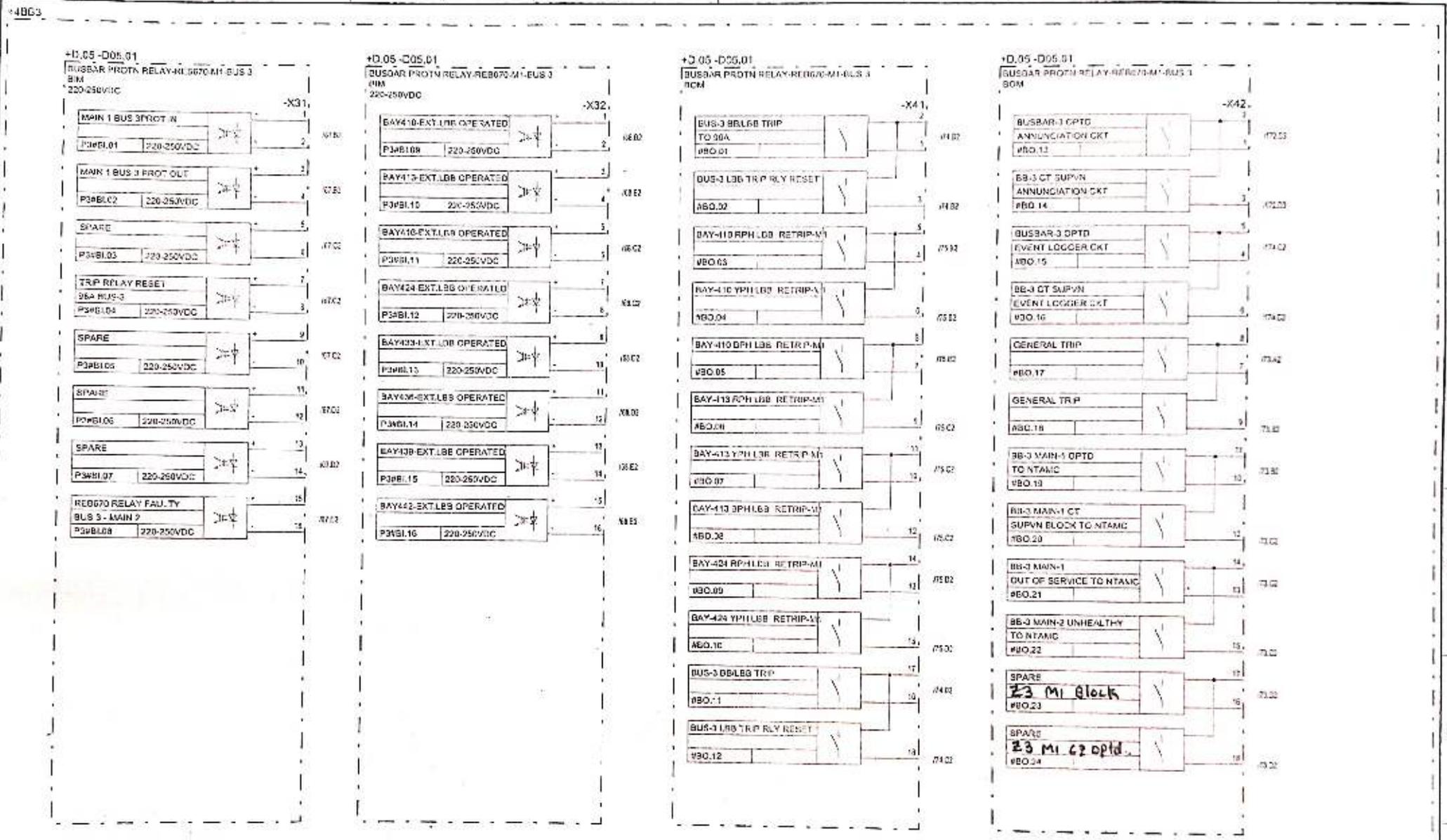
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 BUSBAR PROTN RELAY-REB670-M1-BUS 3
 TRM
 1A, 50/60Hz



+D.05 -D05.01
 BUSBAR PROTN RELAY-REB670-M1-BUS 3
 TRM
 1A, 50/60Hz



Based on 3100135063			Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 OVERVIEW	Doc. kind. Circuit diagram	Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023		DEENADAYALAN A	DCC EFS	
			Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA	Sheet 76 n. sheet 77
1MYN691003-102(A3)REV01								



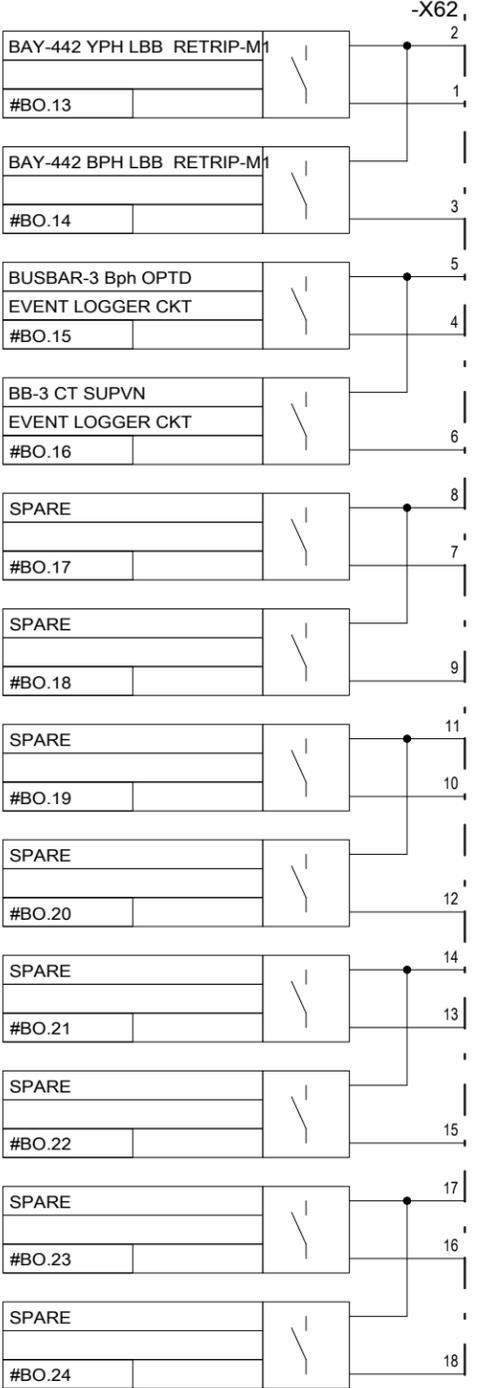
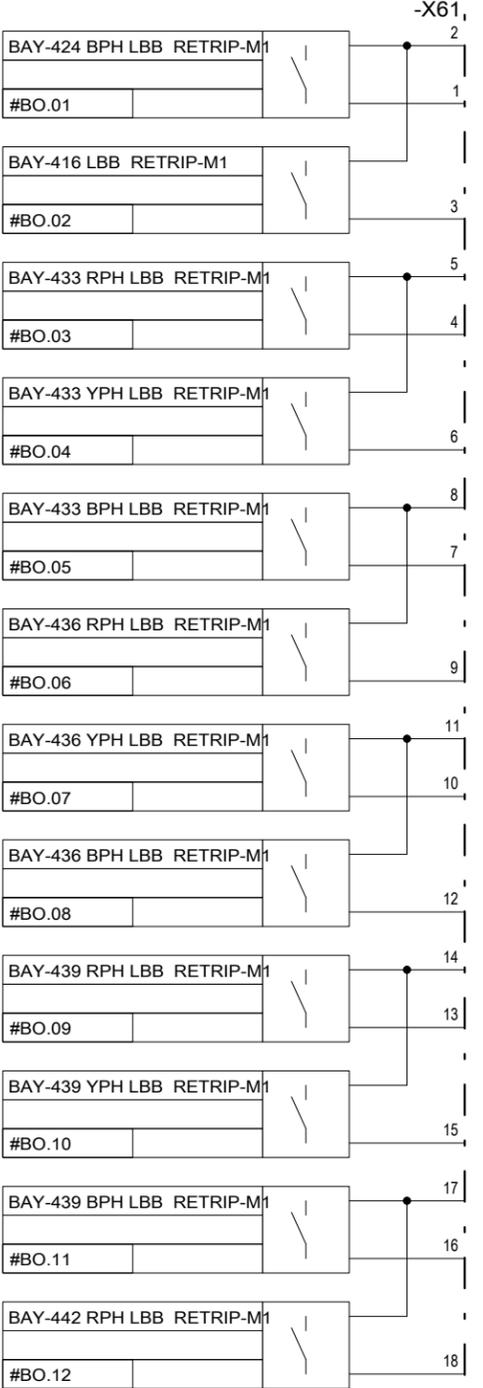
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Rev. Revision note		Date	Name				n. sheet	78

1MNS801837-CGCA(AS)REV01

+4BB3

+D.05 -D05.01
 BUSBAR PROTN RELAY-REB670-M1-BUS 3
 BOM

+D.05 -D05.01
 BUSBAR PROTN RELAY-REB670-M1-BUS 3
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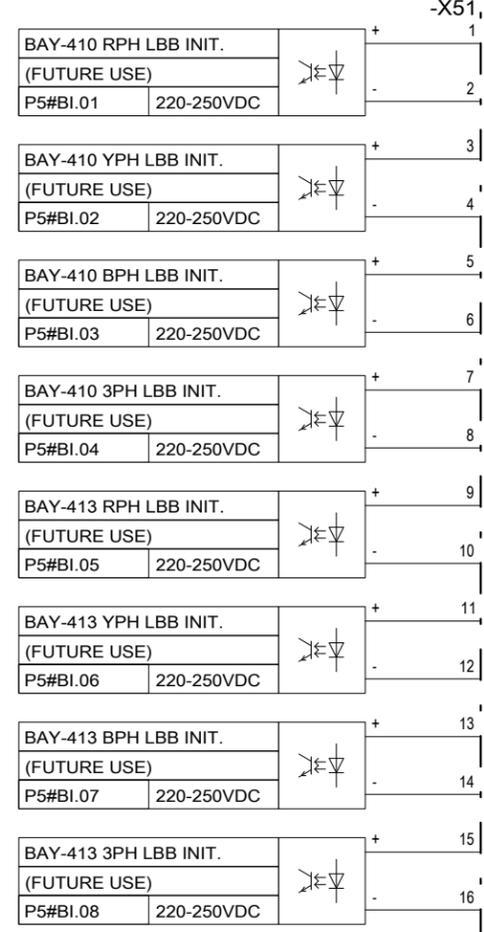


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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A				
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1MYN691003-102(A3)REV01									

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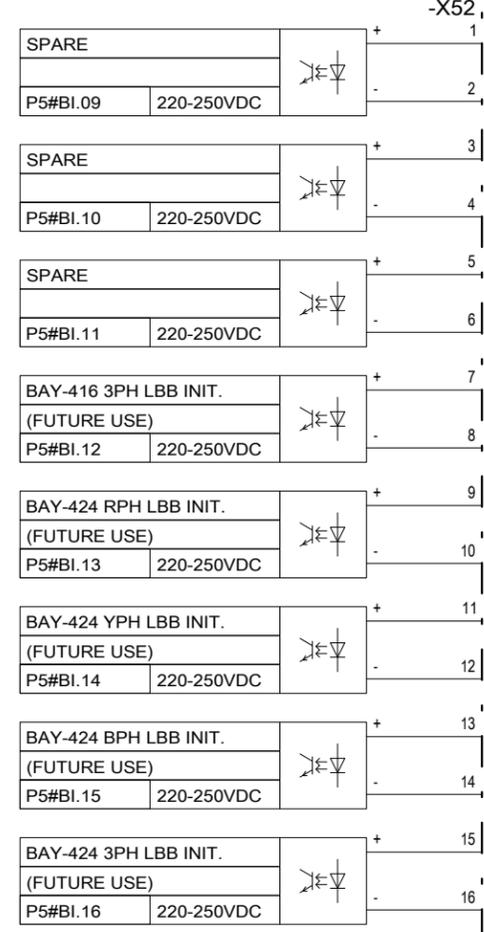
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BUSBAR PROTN RELAY-REB670-M1-BUS 3
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220-250VDC



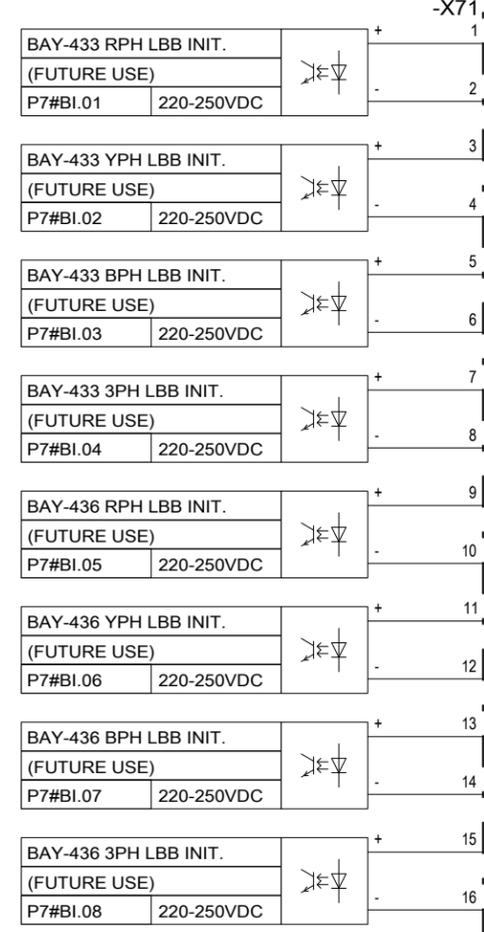
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BUSBAR PROTN RELAY-REB670-M1-BUS 3
BIM
220-250VDC



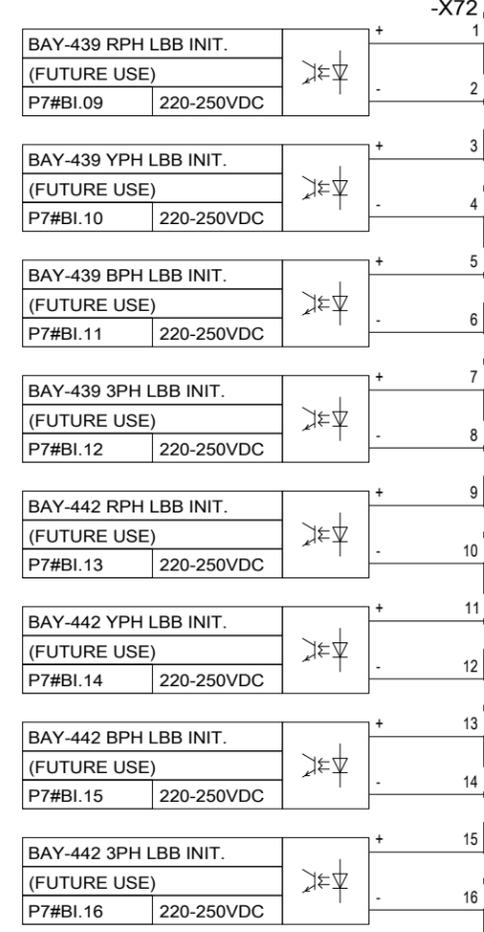
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BIM
220-250VDC



+D.05 -D05.01

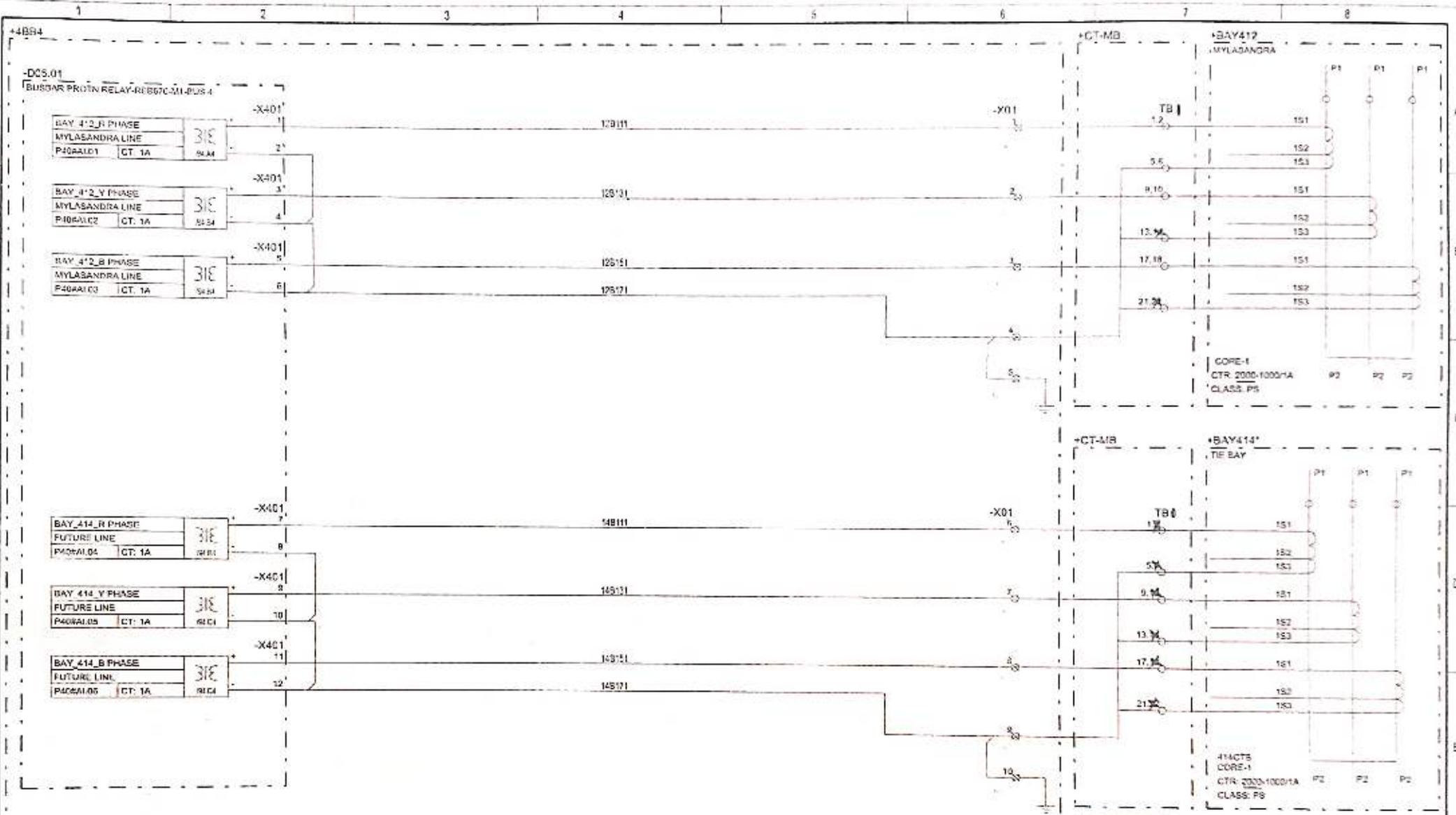
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BIM
220-250VDC



Based on 3100135063		Prepared 18.04.2023	PANKAJ PATIL
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01		Approved 20.04.2023	DEENADAYALAN A
		Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898

Title		400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 3 OVERVIEW	
Doc. kind.		Circuit diagram	
Resp. dept.		PG-GAS	
Doc. no.		1MNS801837-CGCA	
Ref.Des.		=4R	
Rev. ind.		01	
Language		en	
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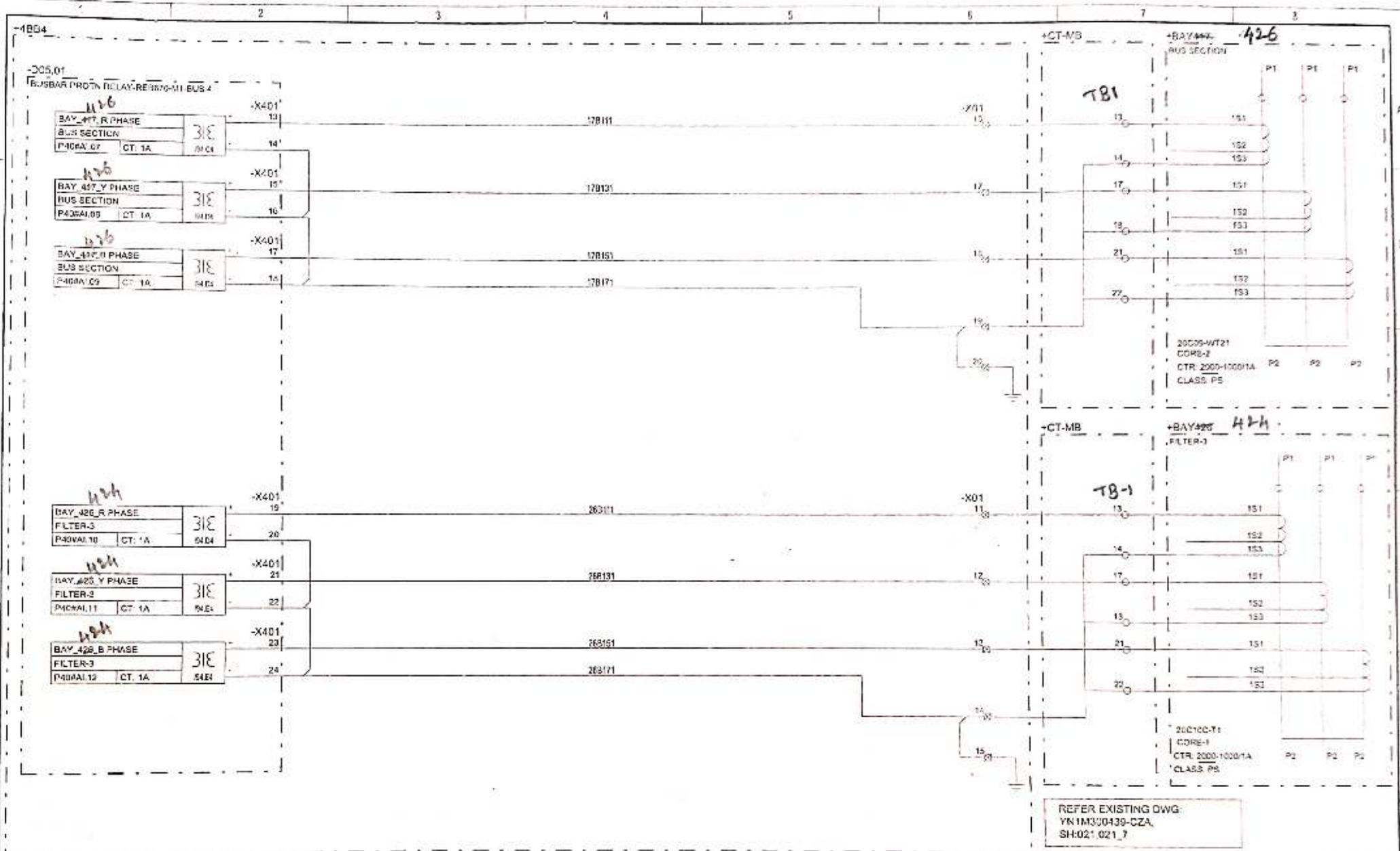
Hitachi Energy India Limited	
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NOTE: INSTEAD OF 415 BAY 414 (TIE) CT USED AT PRESENT

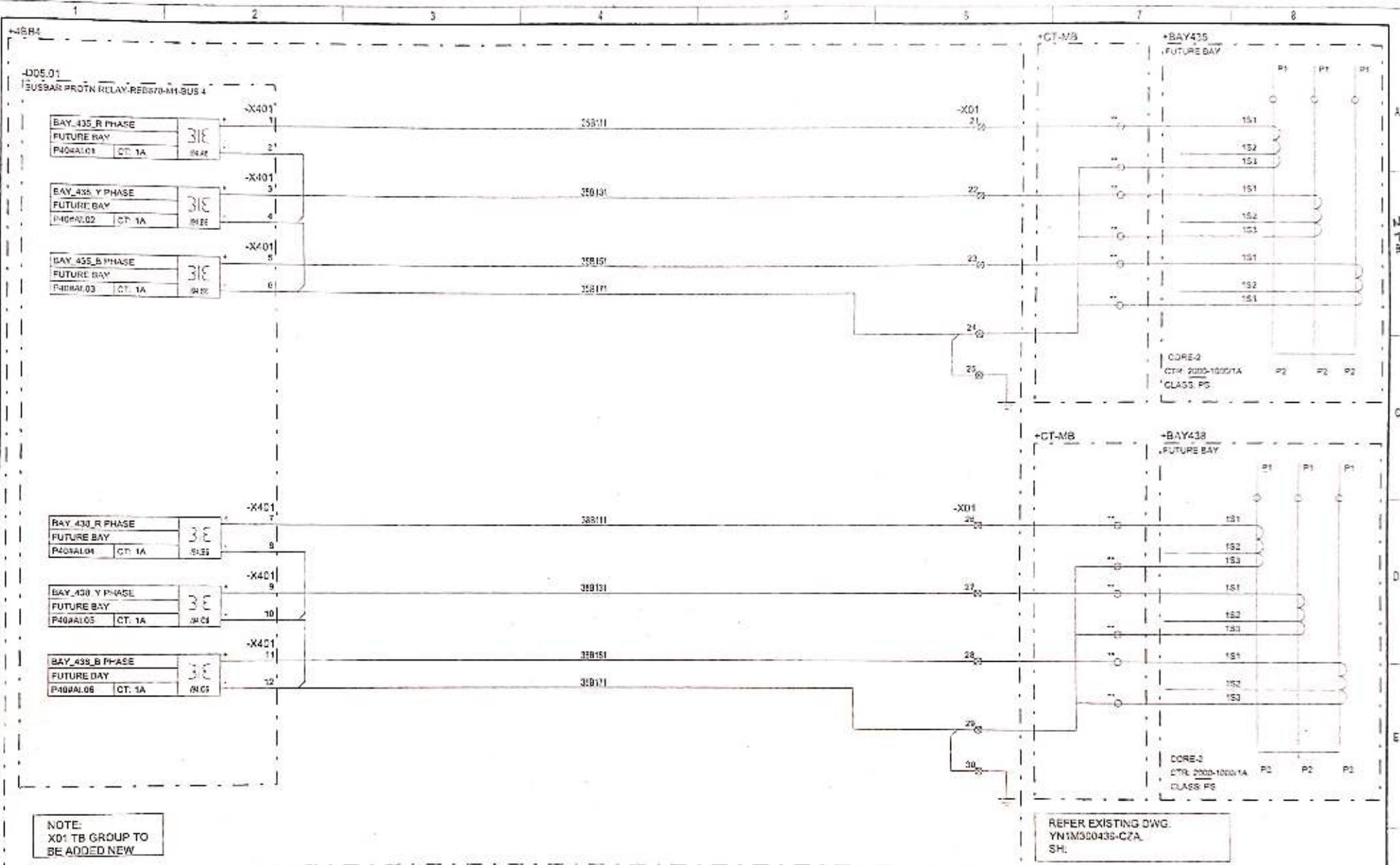
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YN1M300439-CZA,
SH.021, 5.021_5

Based on 3100135003		Prepared 18.04.2023 PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 CT CIRCUITS		Doc. kind. Circuit diagram	Ref. Des.	=4R
		Approved 20.04.2023 DEENADAYALAN A			Rev. 00	EFS	
		Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898			Reso. Dept. PG-GAS	Rev. no. 00	Language en
Rev. Version note		Date	Name	HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Doc. no. 1MNS801837-CGCA	Sheet 80
1MNS801837-102(A3)REV01							n. sheet 81



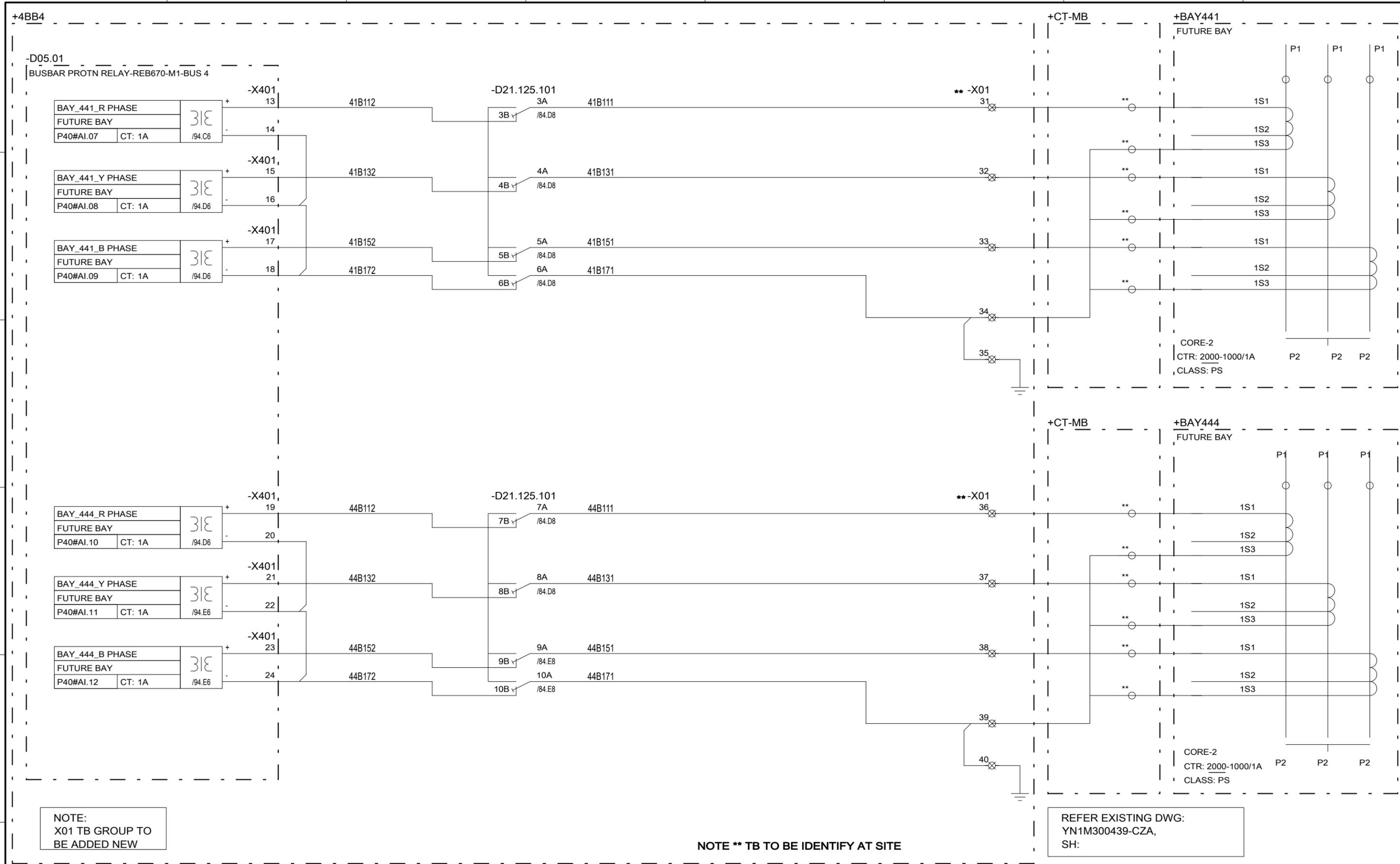
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Based on: 2100135363 Rev. Revision no/0 1MYN631003-1021A31REV01	Prepared: 18.04.2023 Approved: 20.04.2023 Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137895	PANKAJ PATIL DEENADAYALAN A	Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 CT CIRCUITS HITACHI Hitachi Energy India Limited (Formerly known as AEG Power Products and Systems India Limited)	Doc. kind: Circuit diagram DCC EFS Resp. dept: PG-GAS Doc. no: 1MNS801837-CGCA	Ref. Des.: =4R Rev. ind. 00 Language: en Sheet: 81 of sheet: 82
	1MYN631003-1021A31REV01				



Based on	3100135063	Prepared	18.04.2023	PANKAJ PATIL	Title	Doc. kind.	Circuit diagram	Ref. Des.	=4R		
Approved		20.04.2023	DEENADAYALAN A	400kV BUSBAR PROTECTION RETROFIT OF REB570 RELAY M1-BUS 4 CT CIRCUITS						Doc. EFS	
Project			POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION							Resp. dept.	PG-GAS
Rev.	Revision no.	Date	Name	3100137898	HITACHI	Mitsubishi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Doc. no.	1MNS801837-CGCA	Sheet	52
1MYN681032-102(A3)REV01										n. sheet	53

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NOTE:
X01 TB GROUP TO
BE ADDED NEW

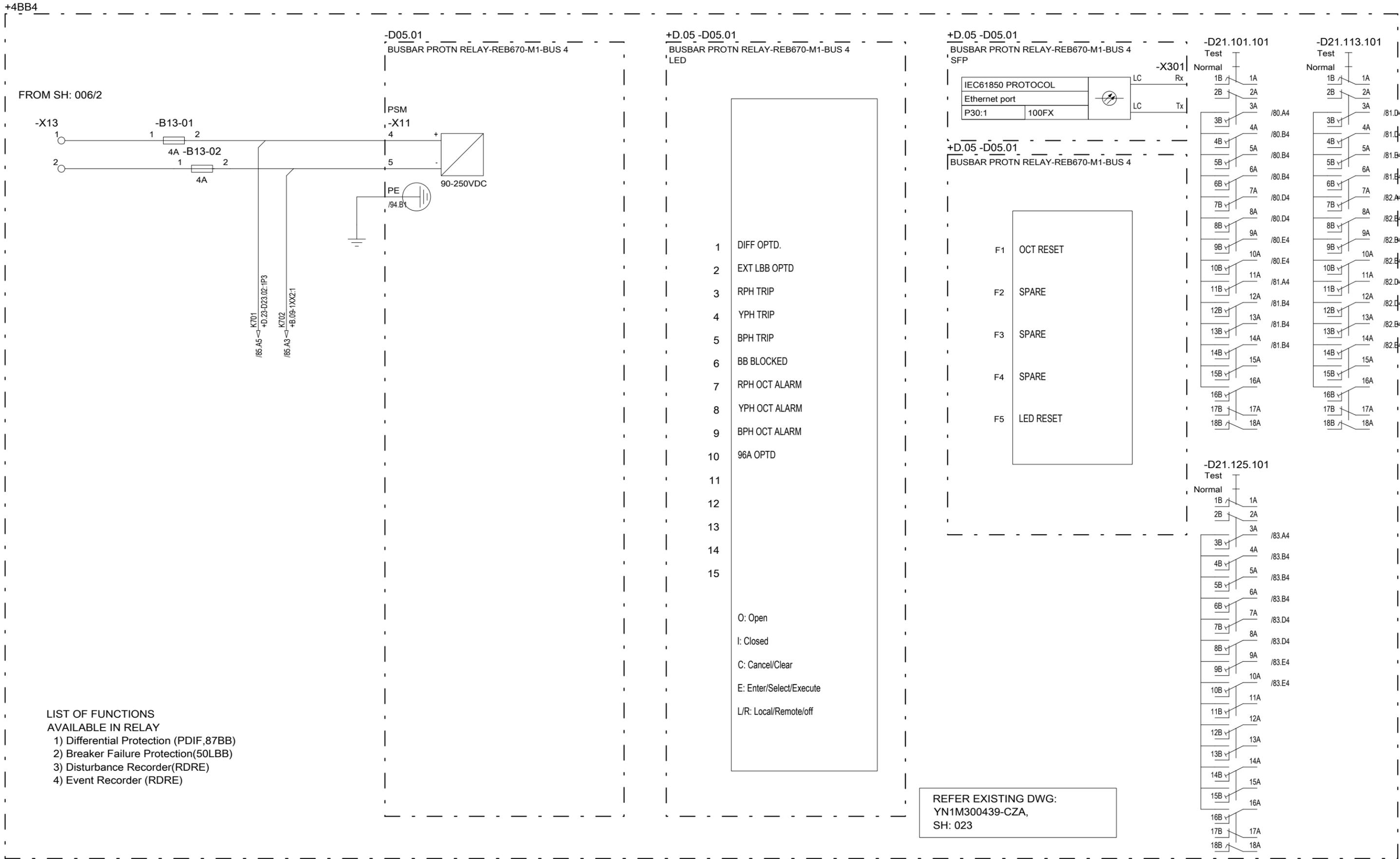
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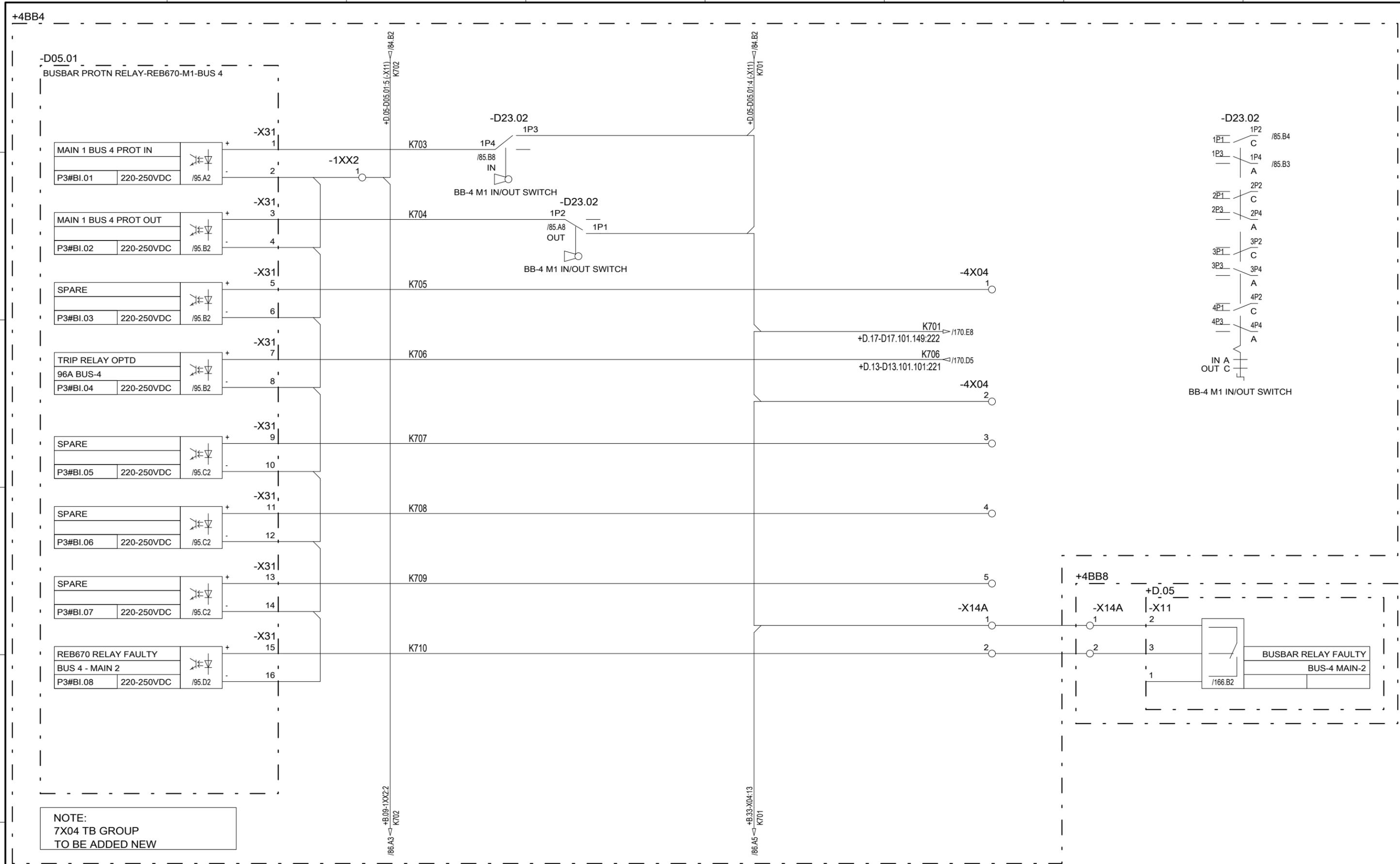
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023		DEENADAYALAN A	DCC EFS	
			Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA	Sheet 83	n. sheet 84
1MYN691003-102(A3)REV01								

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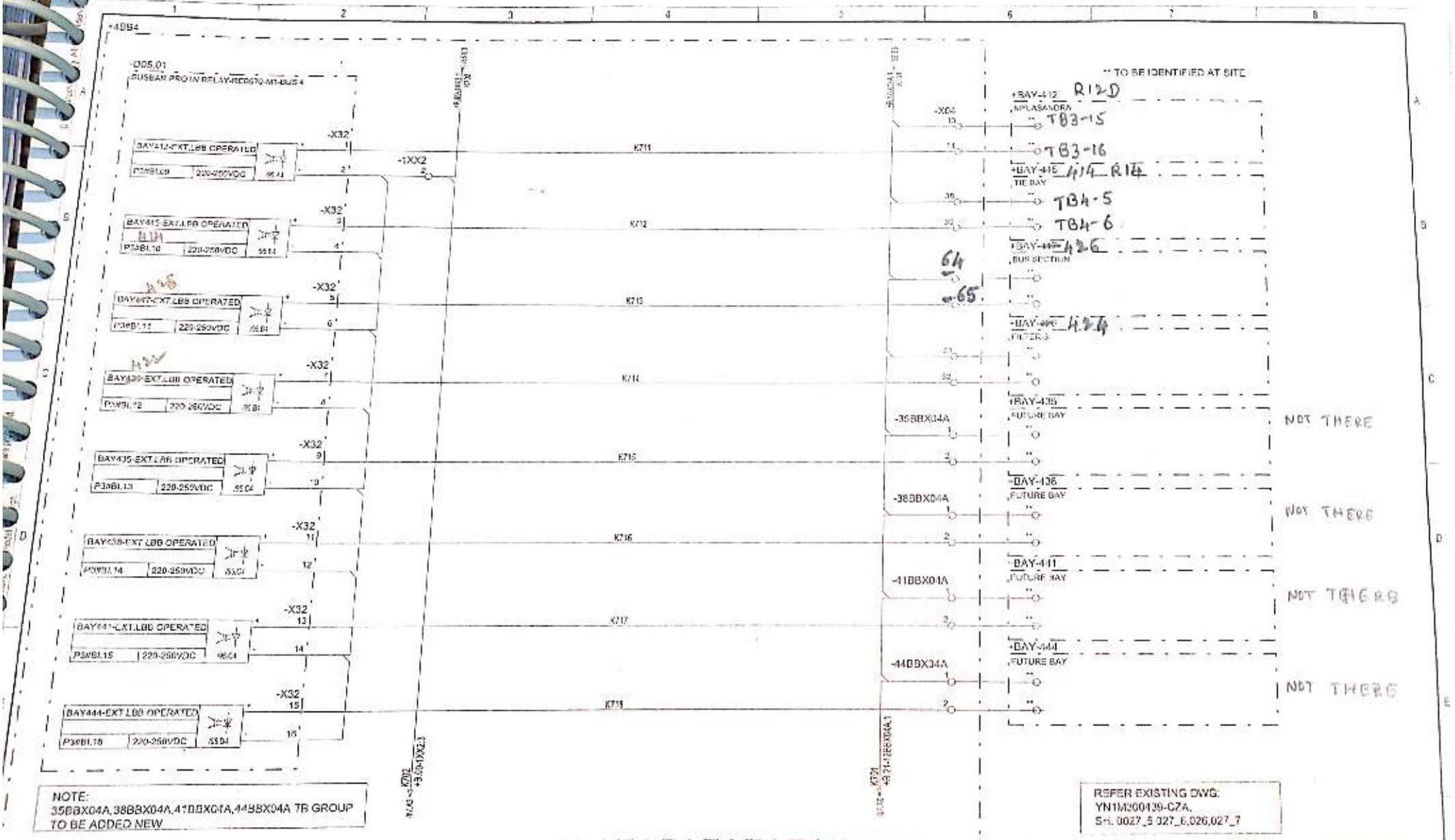


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				Project	POWER GRID CORPORATION OF INDIA LTD.	M1-BUS 4 PSM & COM	Resp. dept. PG-GAS	Rev. ind. 01
				400/220kV KOLAR SUBSTATION		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS801837-CGCA	Language en
Rev.	Revision note	Date	Name	3100137898				Sheet 84
1MYN691003-102(A3)REV01								n. sheet 85



NOTE:
7X04 TB GROUP
TO BE ADDED NEW

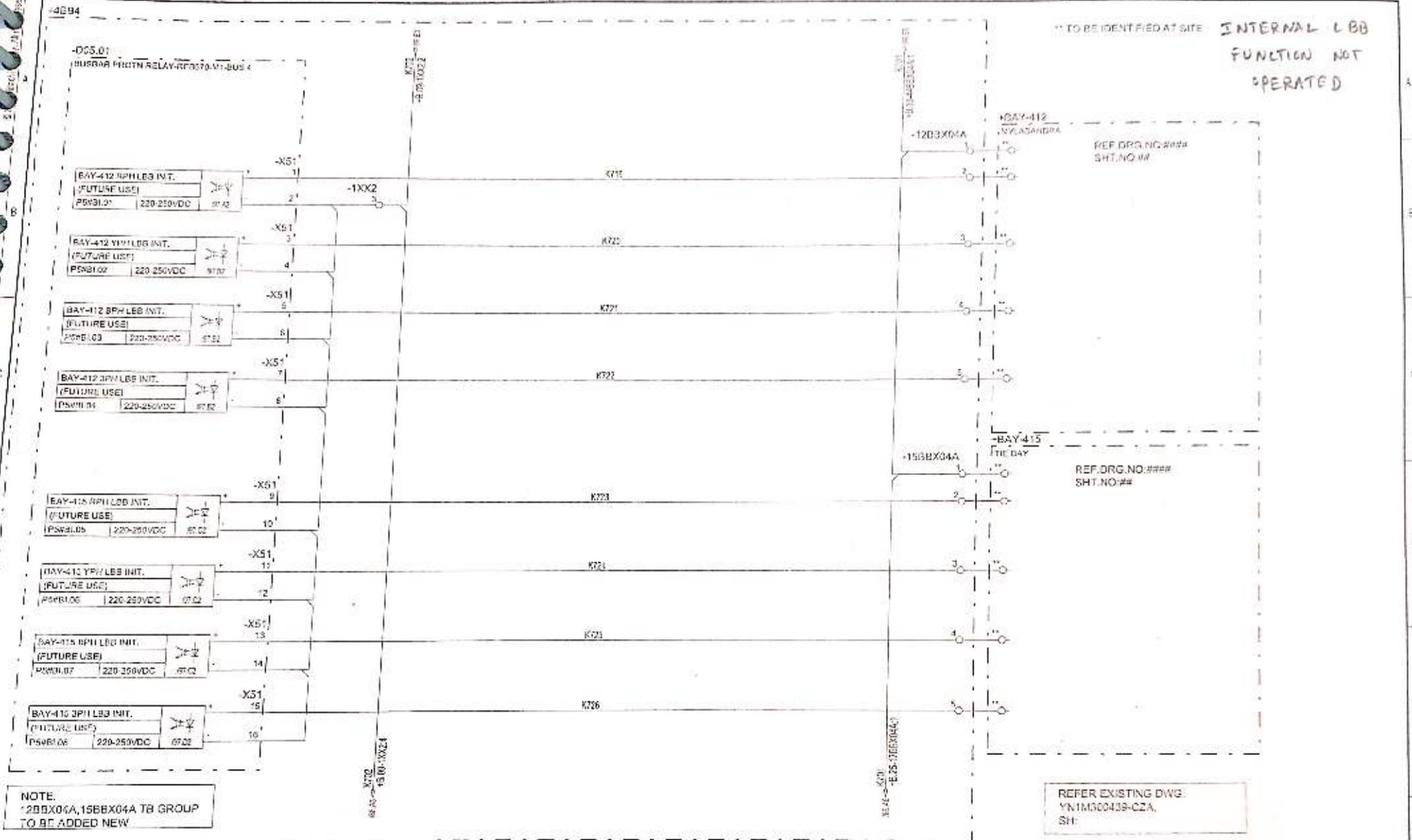
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS		
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Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA	Sheet 85	n. sheet 86
1MYN691003-102(A3)REV01									



Issued on: 3100135063 Revision note: _____ Date: _____ Name: _____	Prepared: 18.04.2023 PANKAJ PATIL	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 BINARY INPUTS HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Doc. Kind: Circuit diagram	Ref. Des: =4R
	Approved: 20.04.2023 DEENADAYALAN A		Resp. Dept: PG-GAS	Language: en
Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898		Doc. No. 1MNS801837-CGCA	Rev. ed: 00	Sheet: 86 n. sheet: 87

YN091003-102(A3)/REV01

TO BE IDENTIFIED AT SITE: INTERNAL LBB
FUNCTION NOT OPERATED

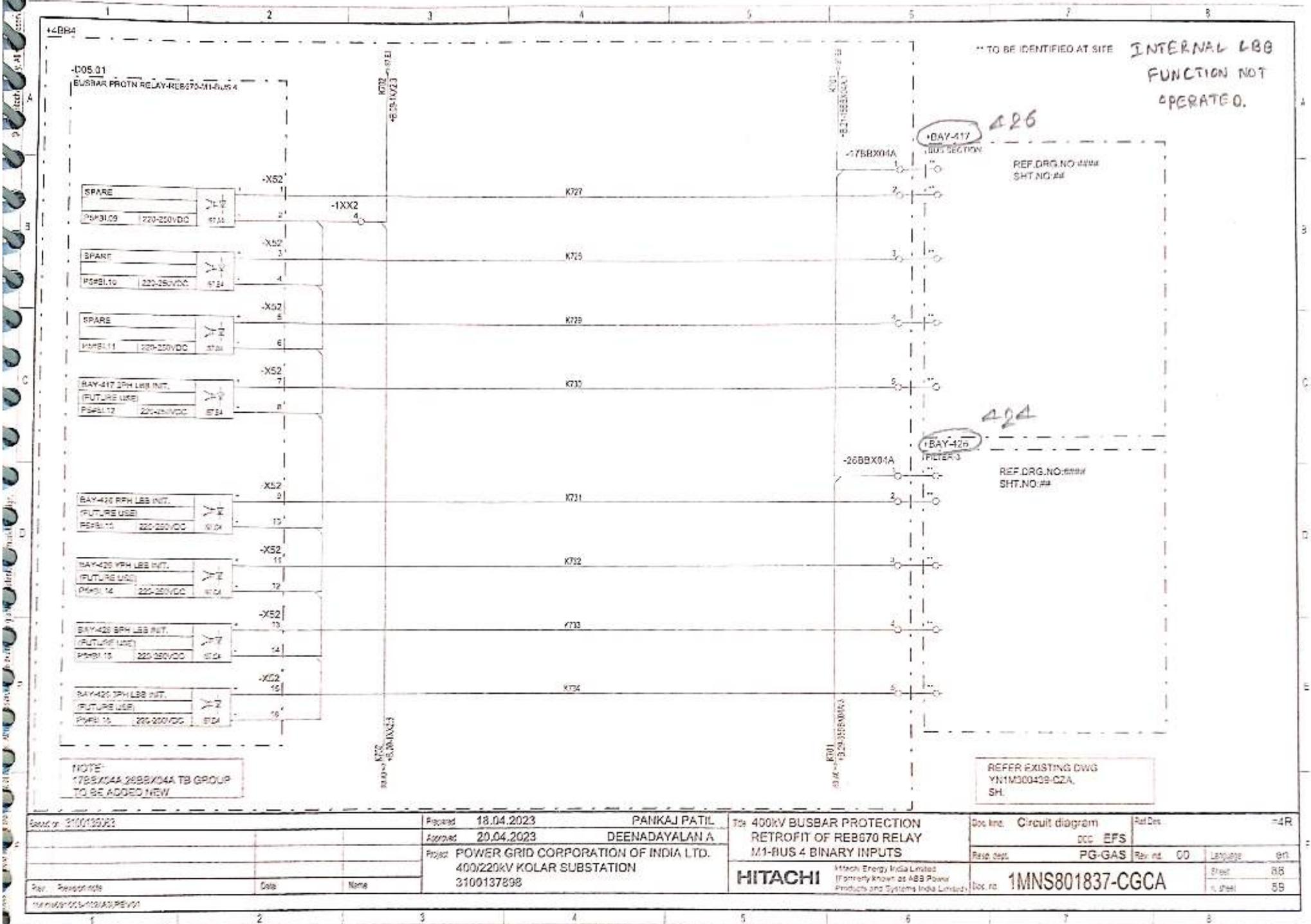


NOTE:
2BX04A, 15BX04A TB GROUP
TO BE ADDED NEW

REFER EXISTING DWG:
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SH:

Based on: 3100137898		Prepared: 18.04.2023 PANKAJ PATIL	The 400kV BUSBAR PROTECTION RETROFIT OF RE3670 RELAY M1-BUS 4 BINARY INPUTS		Doc. kind: Circuit diagram	Ref. Des: =4R
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		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898			Resp. dept: PG-GAS	Rev. rd: 00
					Doc. no: 1MNS801837-CGCA	Language: en
Rev.	Revision note	Date	Name			Sheet: 87
						n. sheet: 88

1MNS801837-CGCA/REV.01



Sheet no. 310013723	Prepared 18.04.2023 PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 BINARY INPUTS	Doc. line. Circuit diagram	Ref. Des. -4R
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Rev. Description	Date	Name	Language en	
			Sheet 88	
HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)			Doc. no. 1MNS801837-CGCA	Sheet 59

4RB4

TO BE IDENTIFIED AT SITE

INTERNAL LBB
FUNCTION NOT
OPERATED.

-D05.01
BUSBAR PROT.N RELAY-R11370-M1-BUS 4

BAY-435 RPH LBB INIT.
(FUTURE USE)
P77B101 220-250VDC 87.45

BAY-436 YPH LBB INIT.
(FUTURE USE)
P77B102 220-250VDC 87.55

BAY-437 BPH LBB INIT.
(FUTURE USE)
P77B103 220-250VDC 87.65

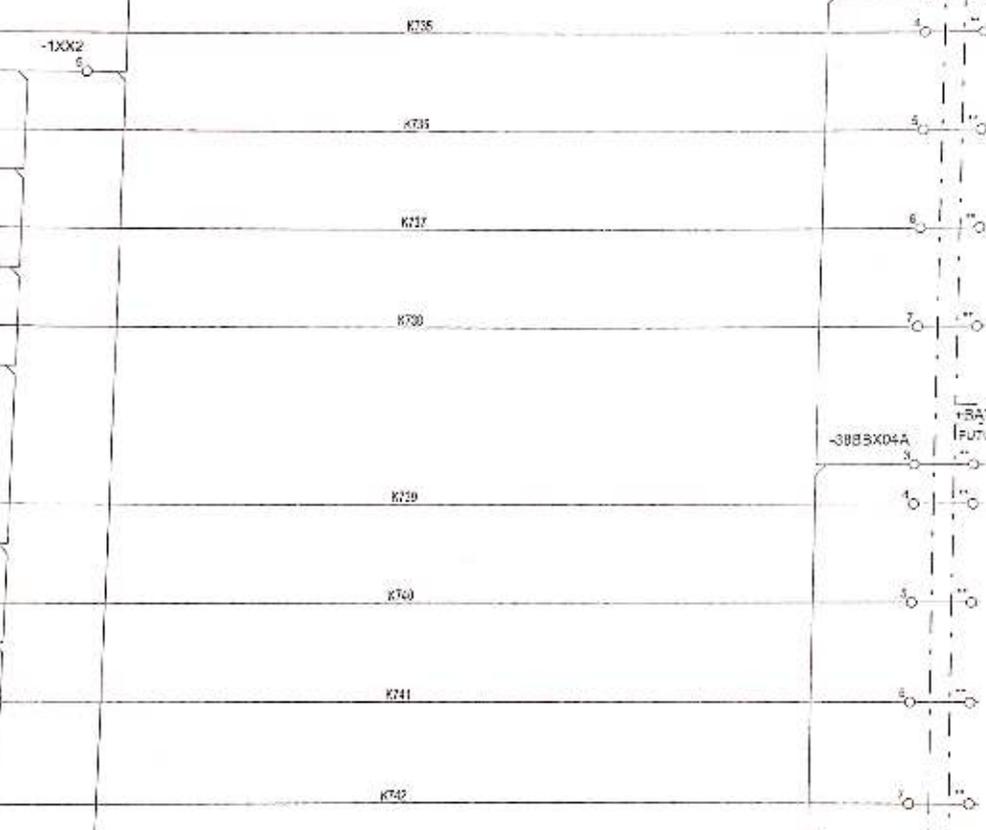
BAY-438 3PH LBB INIT.
(FUTURE USE)
P77B104 220-250VDC 87.85

BAY-439 RPH LBB INIT.
(FUTURE USE)
P77B105 220-250VDC 87.95

BAY-438 YPH LBB INIT.
(FUTURE USE)
P77B106 220-250VDC 87.05

BAY-438 BPH LBB INIT.
(FUTURE USE)
P77B107 220-250VDC 87.08

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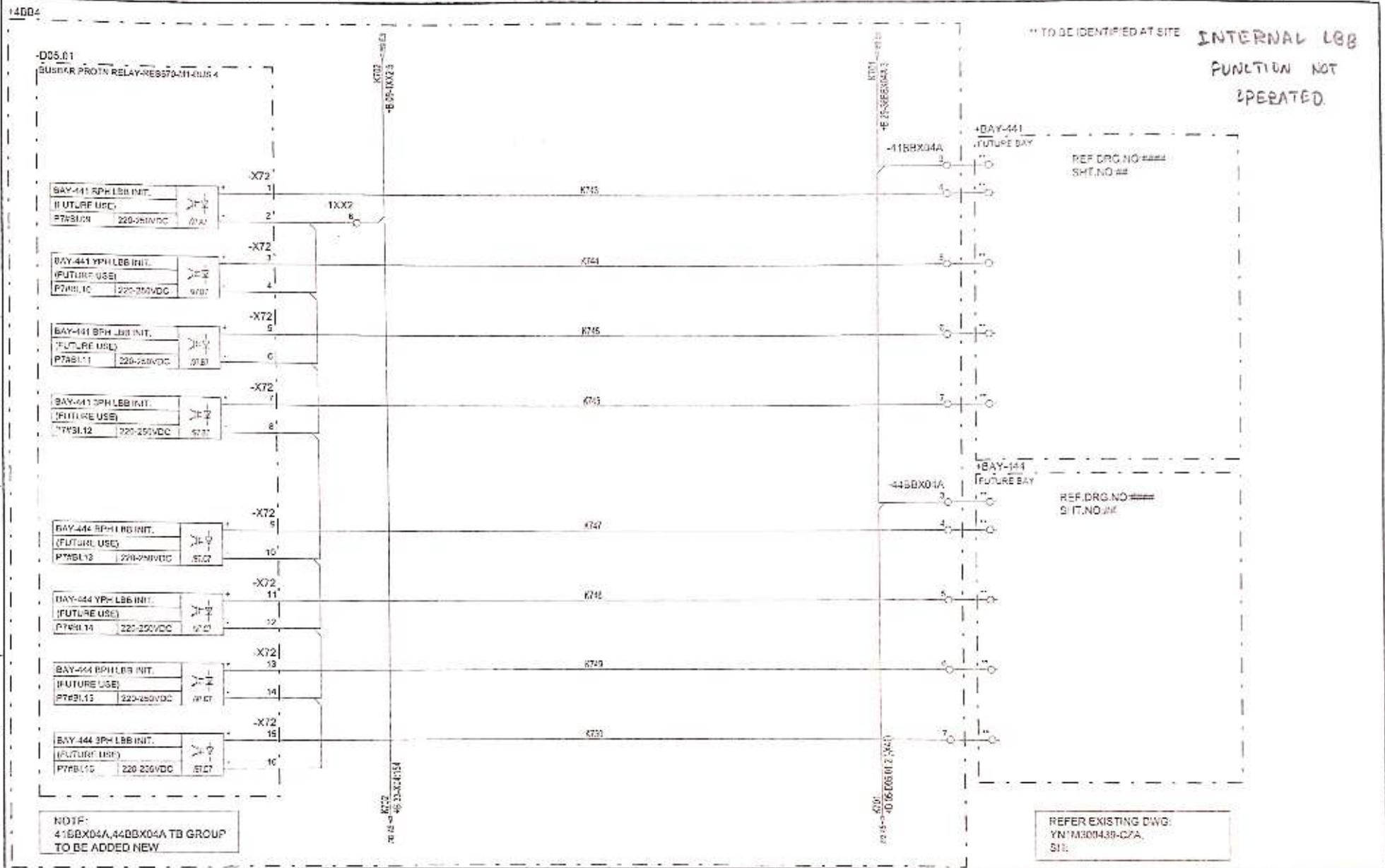
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NOTE:
35BBX04A, 36BBX04A TB GROUP
TO BE ADDED NEW

REFER EXISTING DWG:
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		Approved 20.04.2023 DEENADAYALAN A			Doc. EFS	
		Project POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898			Ratio. dept. PG-GAS	Rev. ind. 00
			HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Protection and Systems India Limited)		Doc. no. 1MNS801837-CGCA	Language en
Rev.	Revision note	Date	Name			Sheet 89
						n. sheet 80

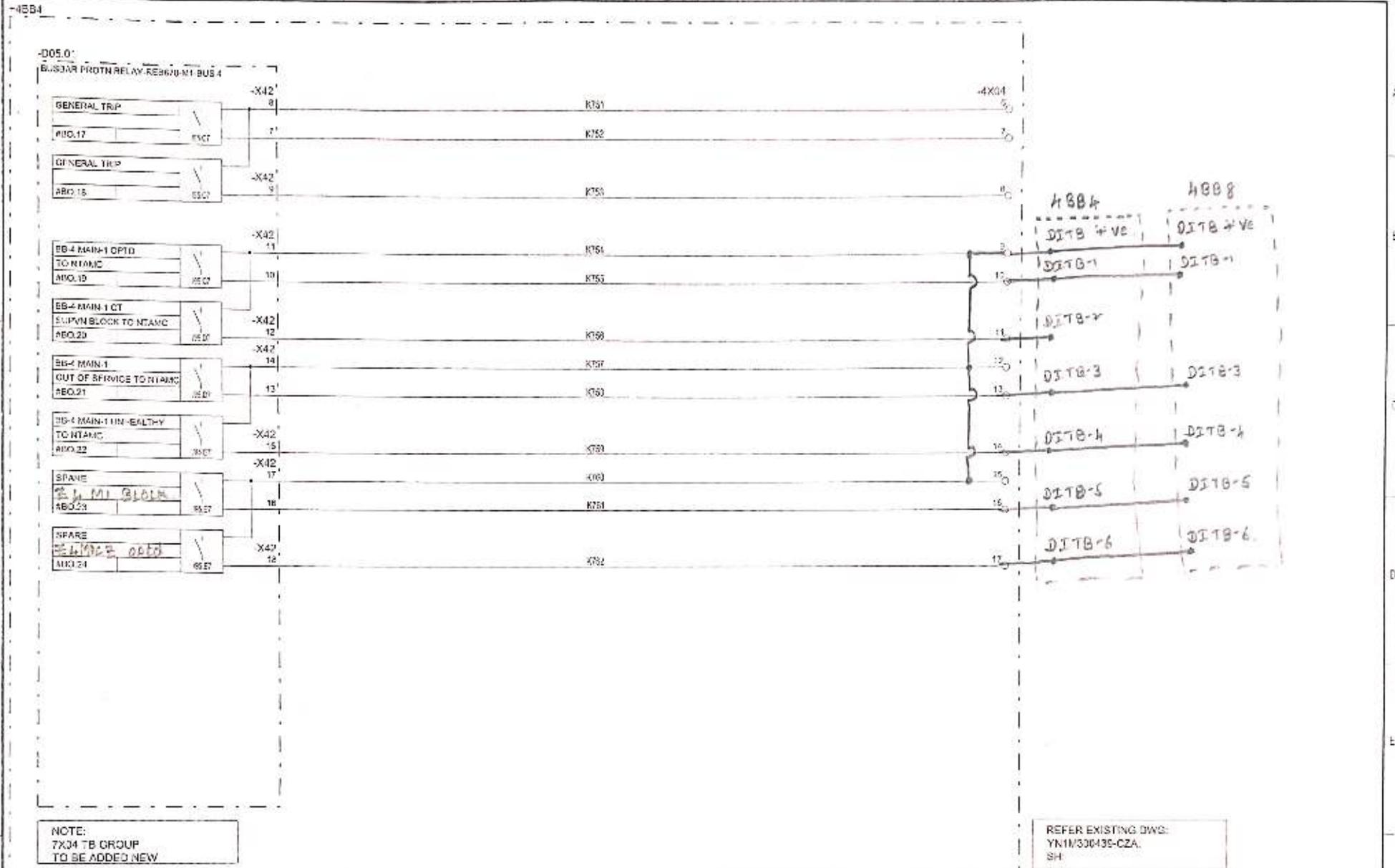
102 YN091003-102(A7)REV01



NOTE:
415BX04A, 445BX04A TO GROUP
TO BE ADDED NEW

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YN/M300439-C/A,
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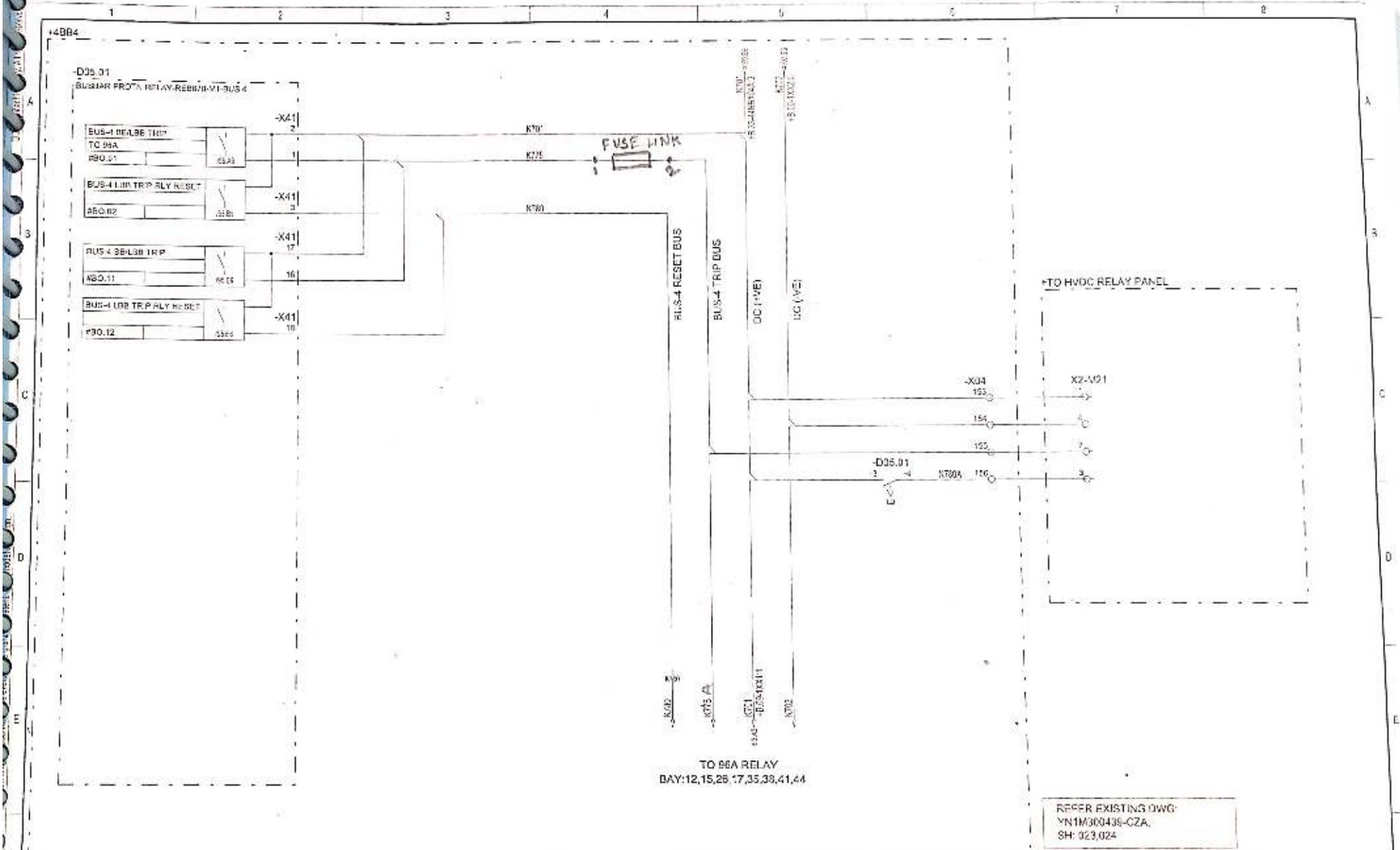
Based on: 3100135953		Prepared: 18.04.2023	PANKAJ PATIL	Int: 400kV BUSBAR PROTECTION		Doc. No: Circuit diagram	Rel. Des: =4R
		Approved: 20.04.2023	DEENADAYALAN A	RETROFIT OF RED670 RELAY		Iss: EFS	
		Project: POWER GRID CORPORATION OF INDIA LTD.		M1-BUS 4 BINARY INPUTS		Resp. dep.: PG-GAS	Rev. no: 00
		3100137898		HITACHI		Product and Systems India Limited	Language: en
Rev: Person/Date		Name		Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Doc. No: 1MNS801837-CGCA	Sheet: 90
13/04/2023-10/04/2023		REV 01					Number: 91



NOTE:
7X34 TB GROUP
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Based on: 3100135353		Prepared: 18.04.2023	PANKAJ PATIL	Tb: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 BINARY OUTPUTS		Doc. No.: Circuit diagram	Ref. Des: =4R
		Approved: 20.04.2023	DEENADAYALAN A			Doc. EFS	
		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898		HITACHI		Resp. Des: PG-GAS	Rev. no: 00
				Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		Languse: en	Sheet: 01
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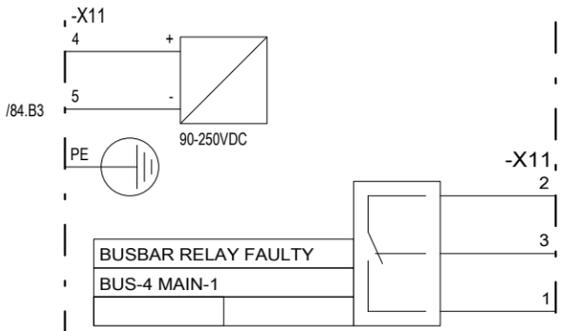
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Sched no: 3100135063		Prepared: 18.04.2023	PANKAJ PAIL	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 BINARY OUTPUTS	Doc. kind: Circuit diagram	Re. Des: =4R
		Approved: 20.04.2023	DEENADAYALAN A		DCC EFS	
		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137895		HITACHI <small>Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)</small>	Resp. dept: PG-GAS	Rev. ind: 00
Rev.	Revised on:	Date	Name		Doc. no: 1MNS801837-CGCA	Sheet: 92
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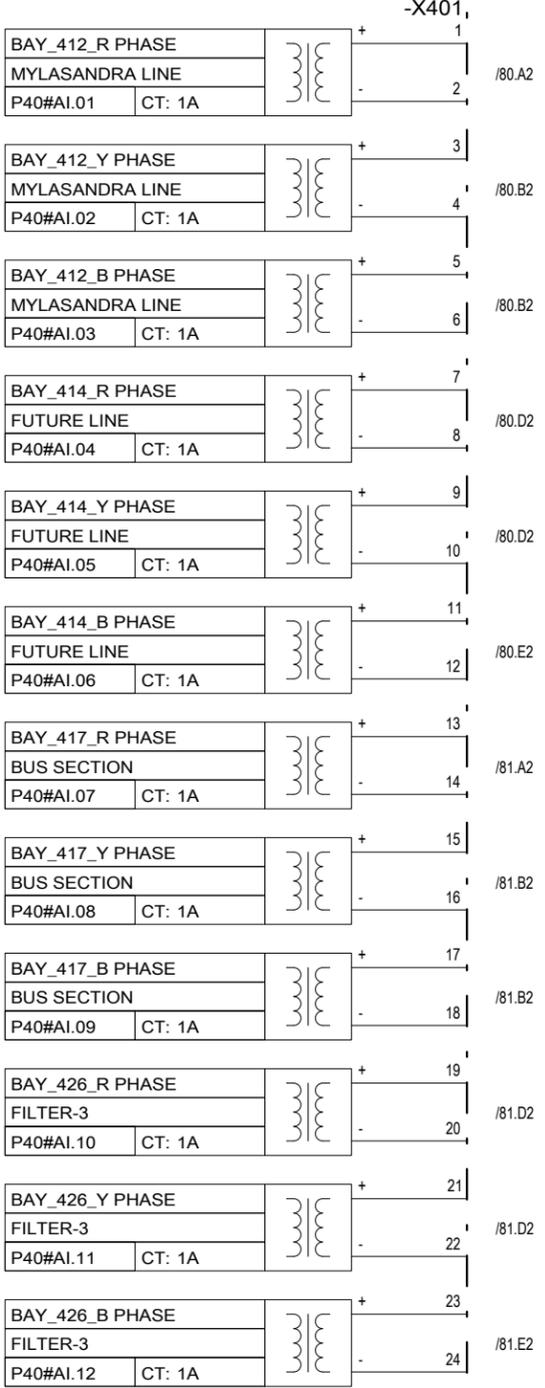
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BUSBAR PROTN RELAY-REB670-M1-BUS 4
PSM
90-250VDC



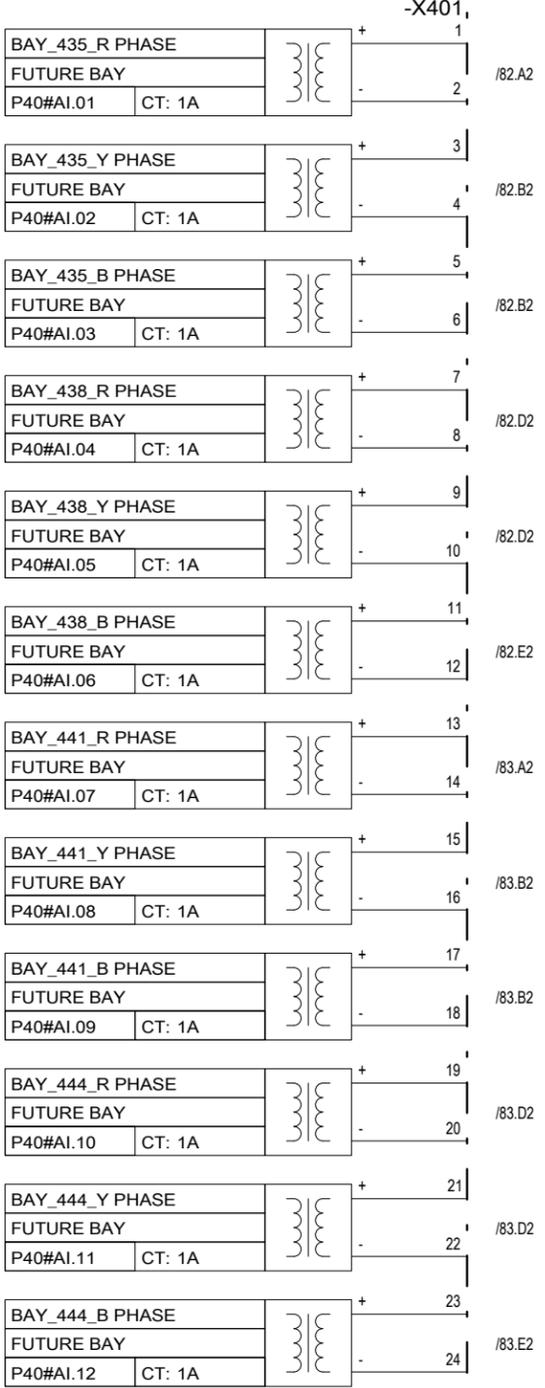
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BUSBAR PROTN RELAY-REB670-M1-BUS 4
TRM
1A, 50/60Hz

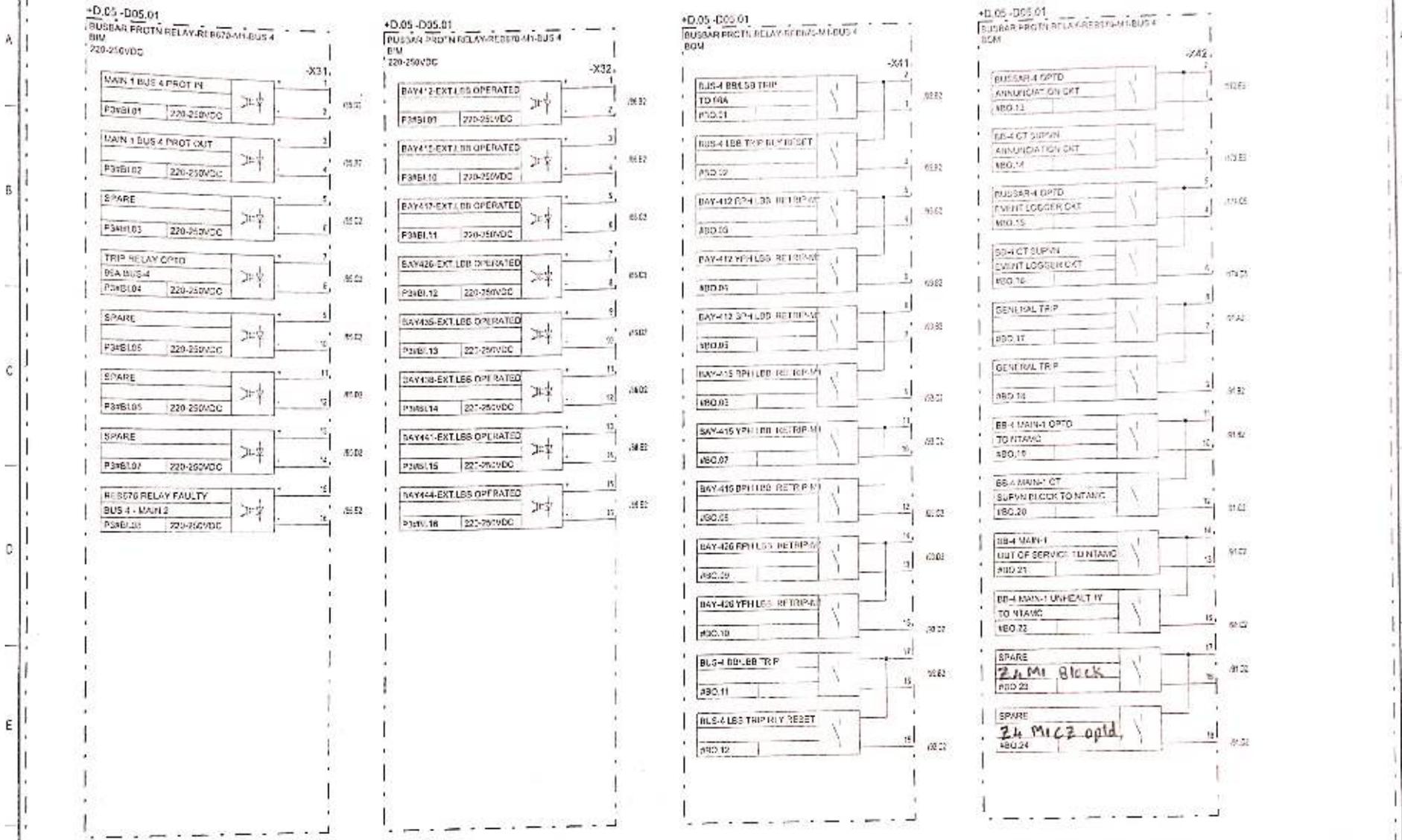


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BUSBAR PROTN RELAY-REB670-M1-BUS 4
TRM
1A, 50/60Hz



Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A	Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		DCC EFS		Language en
Rev.	Revision note	Date	Name	Hitachi Energy India Limited			PG-GAS		Rev. ind. 01
1MYN691003-102(A3)REV01						Doc. no. 1MNS801837-CGCA		n. sheet 95	

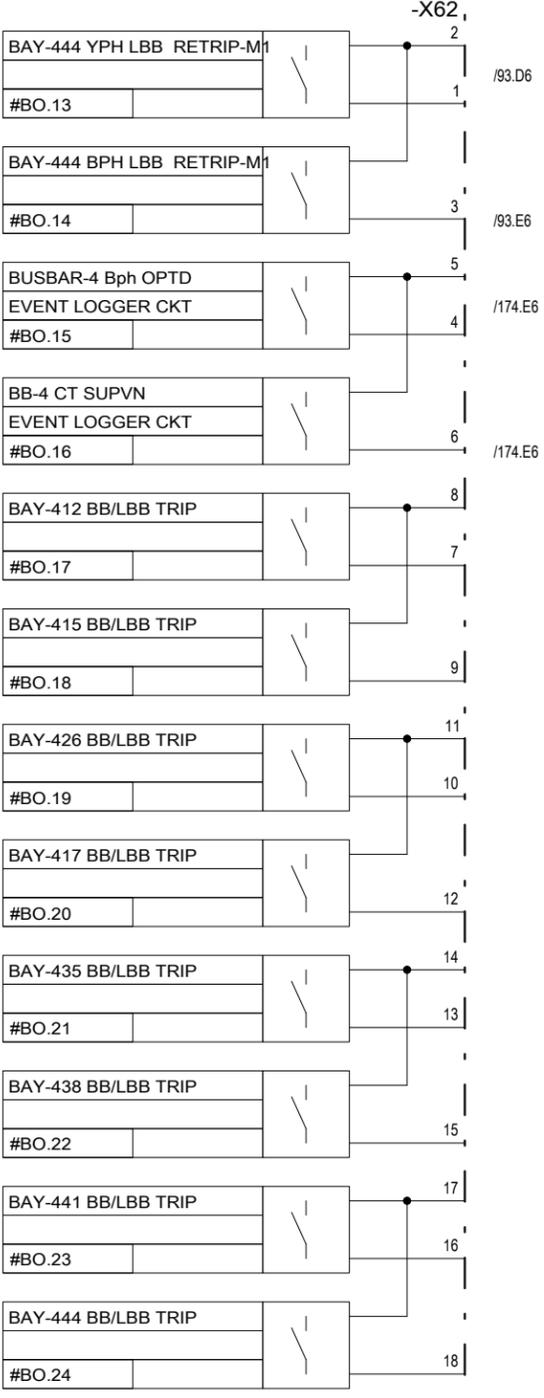
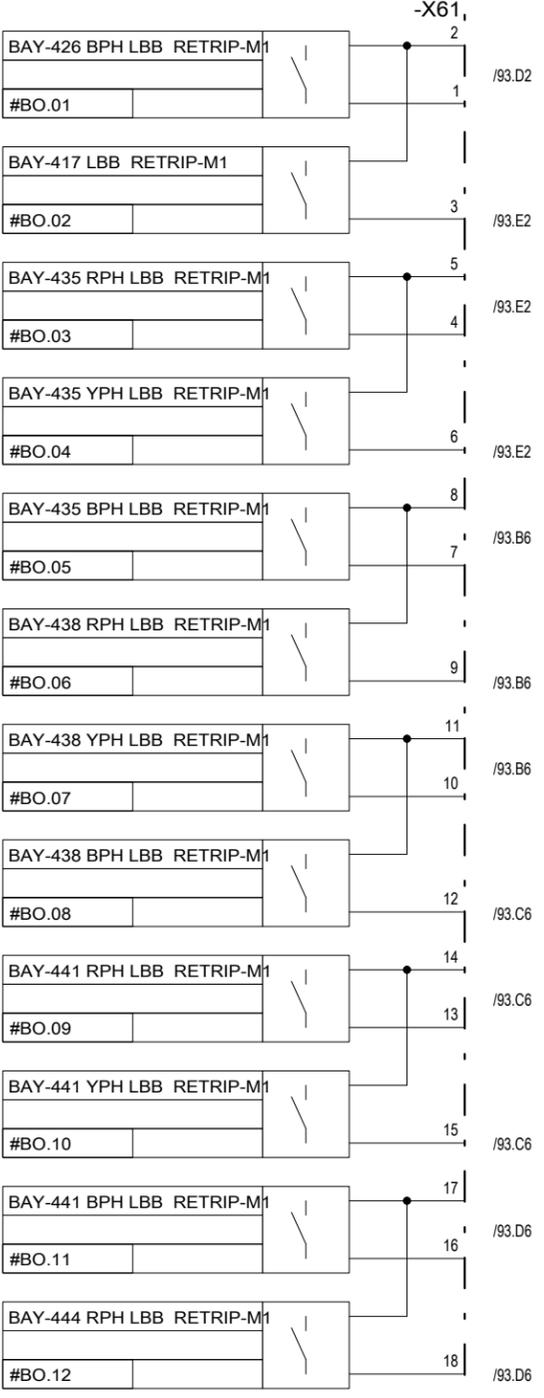


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	Approved: 20.04.2023	DEENADAYALAN A		Doc. Rev.:	002 EFS	Rev. No.:	00
	Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited Formerly known as ABB Power Products and Systems India Limited	Resp. Dept.:	PG-GAS	Language:	en
Rev. / Revision No.	Date	Name		Doc. No.:	1MNS801837-CGCA	Sheet:	95
1MNS801837-102(AS)REV01					Sheet:	96	

+4BB4

+D.05 -D05.01
 BUSBAR PROT N RELAY-REB670-M1-BUS 4
 BOM

+D.05 -D05.01
 BUSBAR PROT N RELAY-REB670-M1-BUS 4
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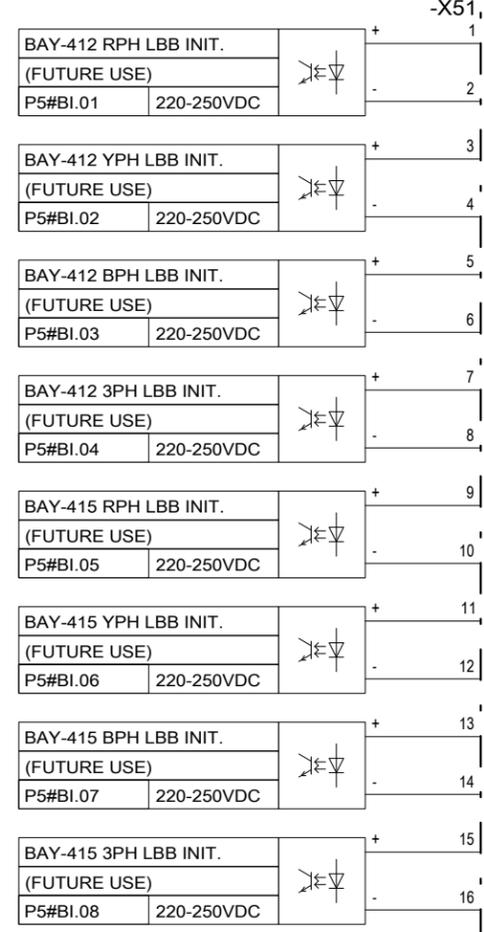


Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A	HITACHI Hitachi Energy India Limited		DCC EFS		Language en
Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898				Resp. dept. PG-GAS			Rev. ind. 01	Sheet 96	
Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		n. sheet 97	
1MYN691003-102(A3)REV01									

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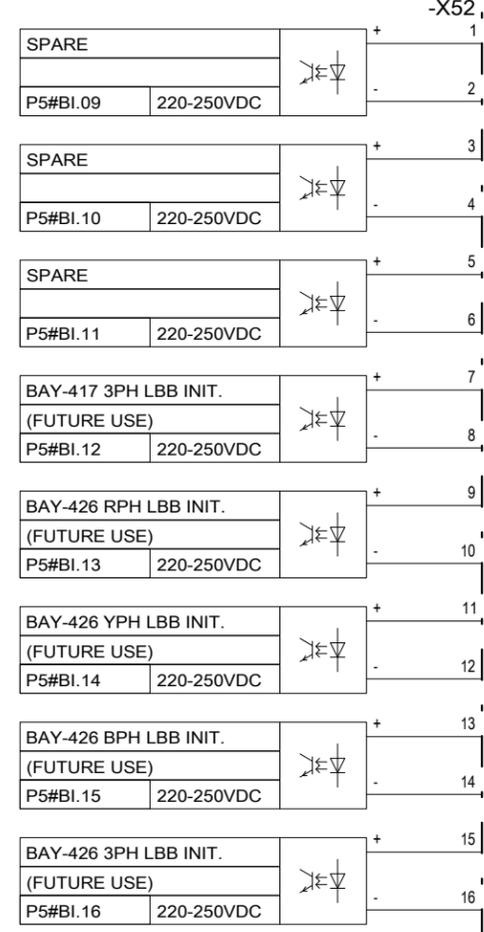
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BUSBAR PROTN RELAY-REB670-M1-BUS 4
BIM
220-250VDC



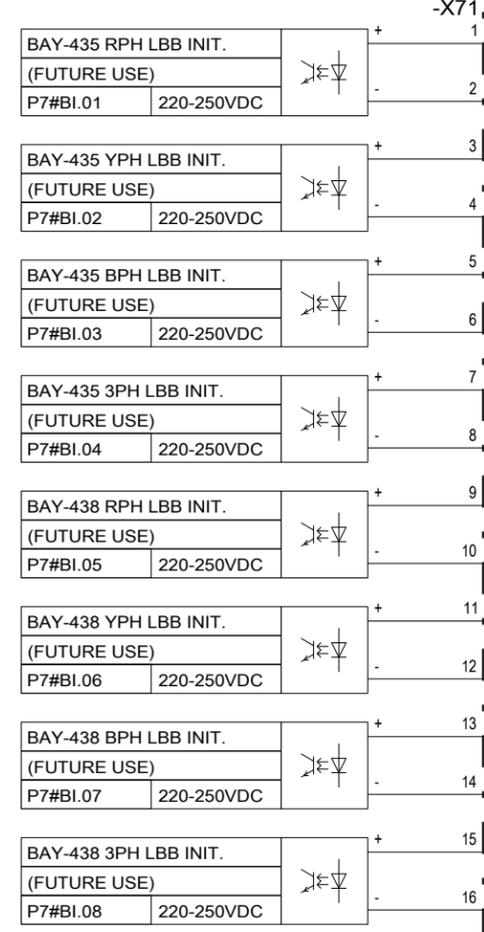
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BUSBAR PROTN RELAY-REB670-M1-BUS 4
BIM
220-250VDC



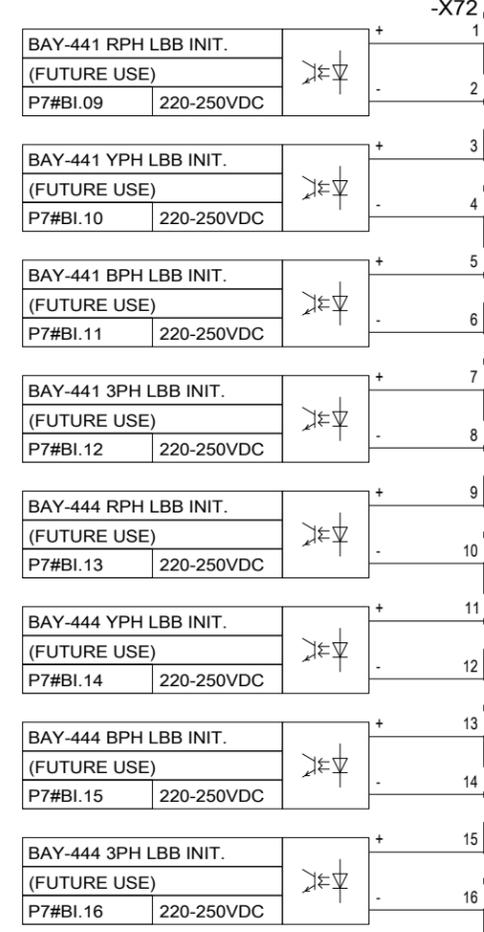
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BUSBAR PROTN RELAY-REB670-M1-BUS 4
BIM
220-250VDC



+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M1-BUS 4
BIM
220-250VDC

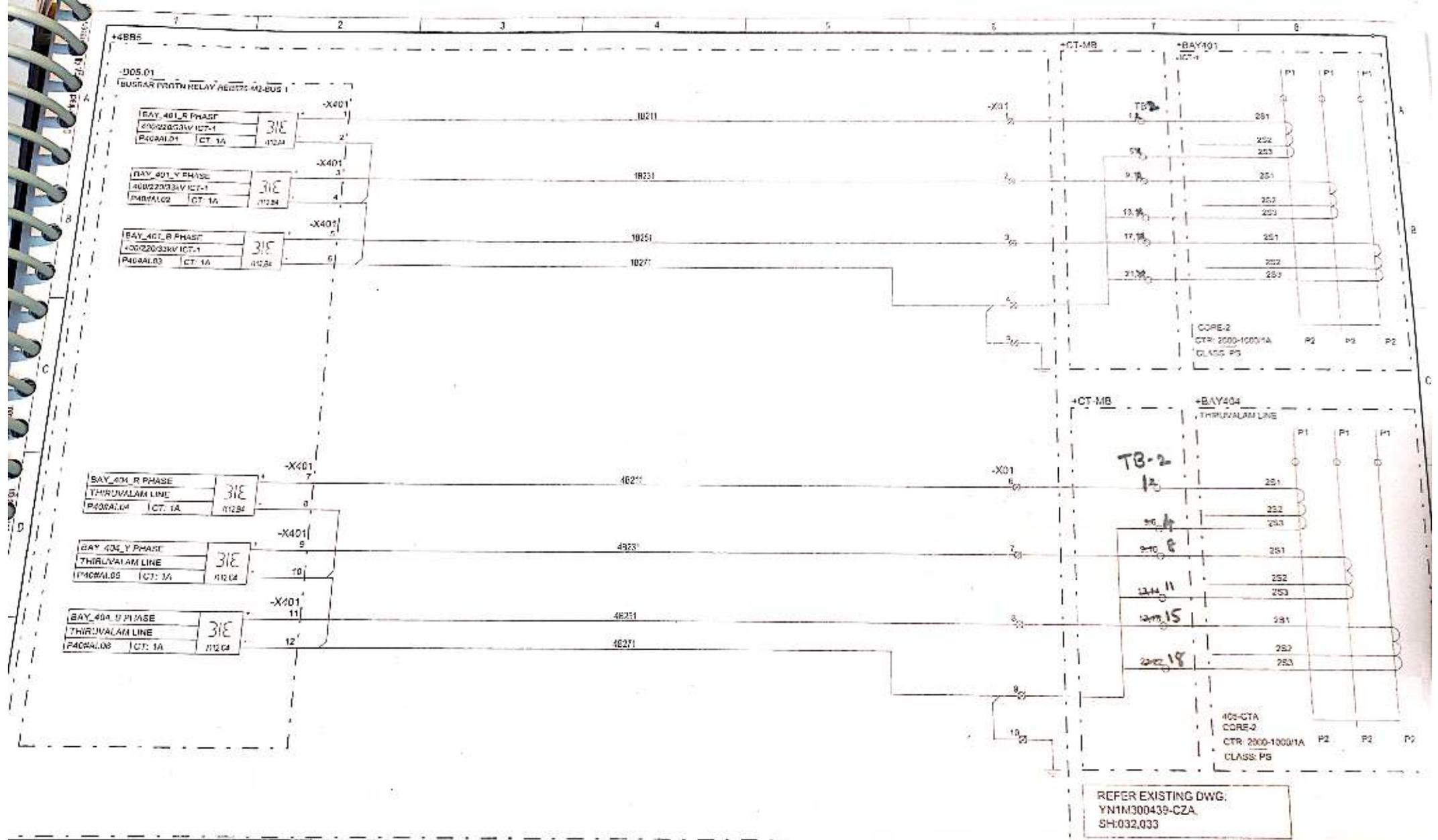


Based on 3100135063		Prepared 18.04.2023	PANKAJ PATIL
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Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

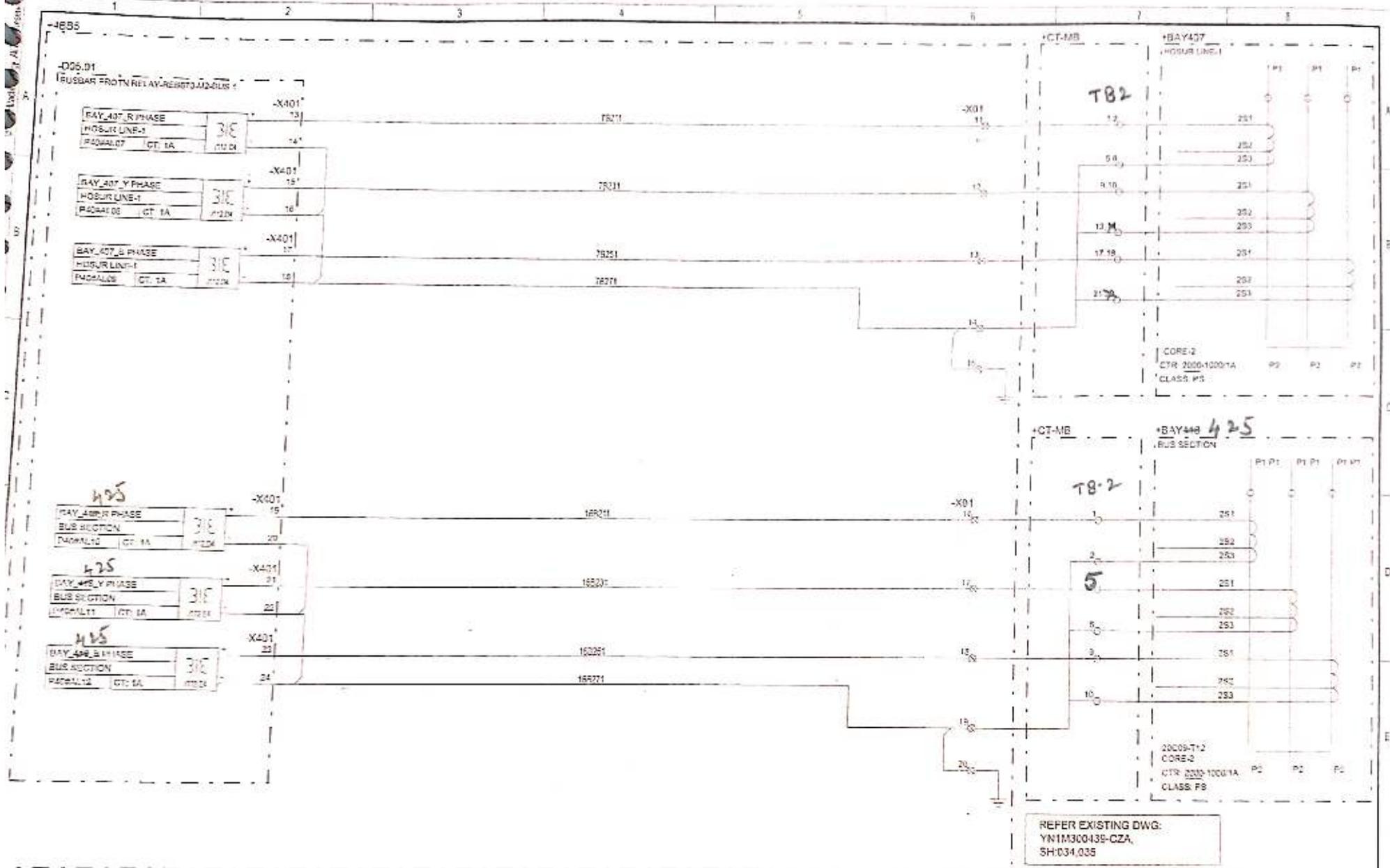
Approved 20.04.2023	DEENADAYALAN A
Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898

Title	400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M1-BUS 4 OVERVIEW
HITACHI Hitachi Energy India Limited	

Doc. kind.	Circuit diagram	Ref.Des.	=4R
	DCC EFS		
Resp. dept.	PG-GAS	Rev. ind.	01
		Language	en
Doc. no.	1MNS801837-CGCA	Sheet	97
		n. sheet	98

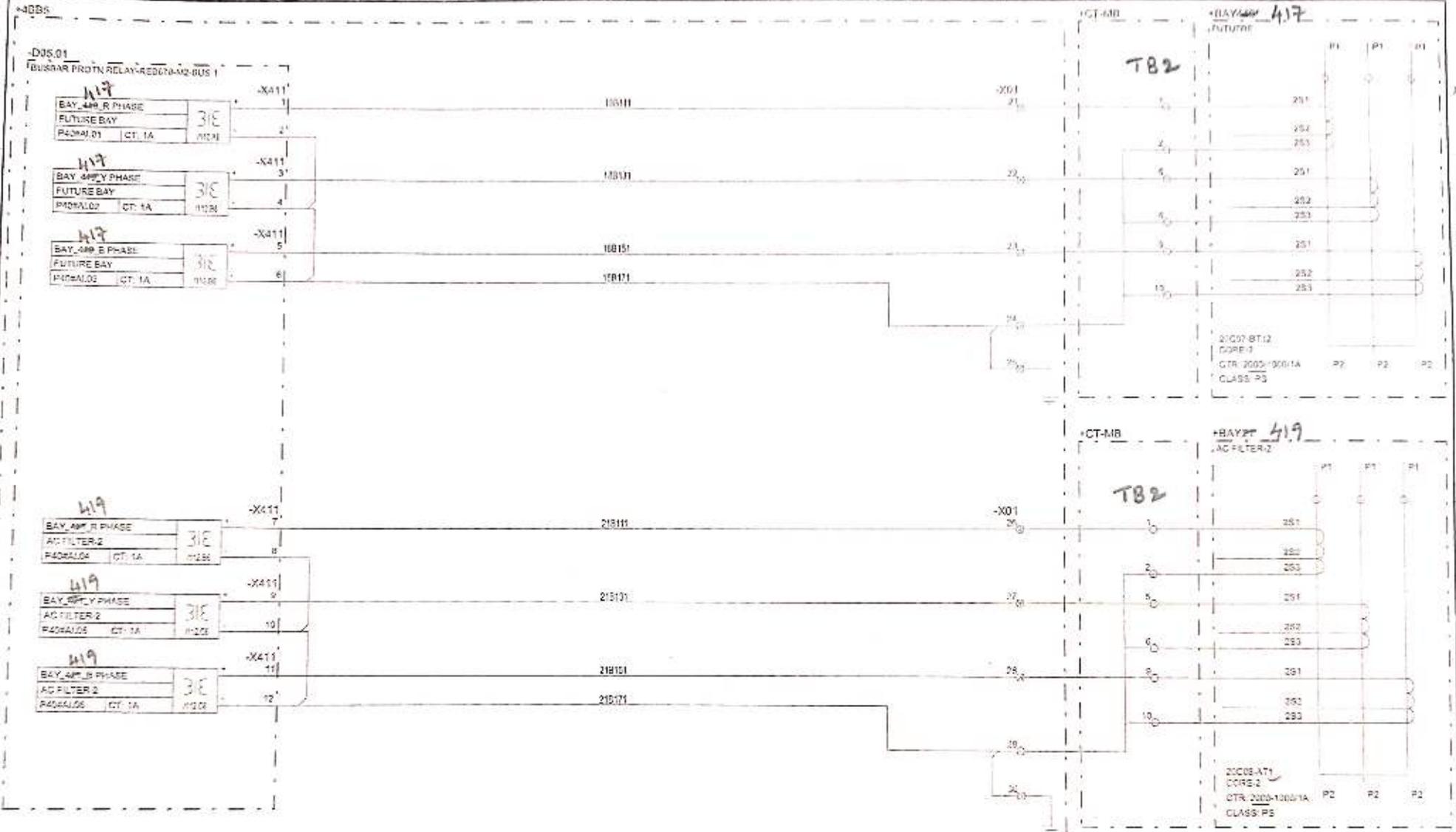


3100135083 Revision note 11003-102/A3/REV01	Prepared 18.04.2023 Approved 20.04.2023 Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	PANKAJ PATIL DEENADAYALAN A	Title 400kV BUSBAR PROTECTION RETROFIT OF RE3670 RELAY M2-BUS 1 CT CIRCUITS HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Doc. no. Circuit diagram DCC EFS Resp. Dept. PG-GAS Rev. Ind. 00 Doc. No. 1MNS801837-CGCA	Ref. Des. Language n. sheet
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REFER EXISTING DWG:
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SH:034,035

Doc No.	3100137898	Prepared	18.04.2023 PANKAJ PATIL	Title	400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 1 CT CIRCUITS	Doc kind	Circuit diagram	Ref Desc	-4R
Approved	20.04.2023 DEENADAYALAN A.	Project	POWER GRID CORPORATION OF INDIA LTD, 400/220kV KOLAR SUBSTATION 3100137898	Hitachi Energy India Limited (formerly known as ABB Power Products and Systems India Limited)	Doc No.	1MNS801837-CGCA	Doc Desc	4R	
Revision date	Date	Name			Doc Desc	4R	Doc Desc	4R	
08/10/2023	08/10/2023	08/10/2023	08/10/2023	08/10/2023	08/10/2023	08/10/2023	08/10/2023	08/10/2023	

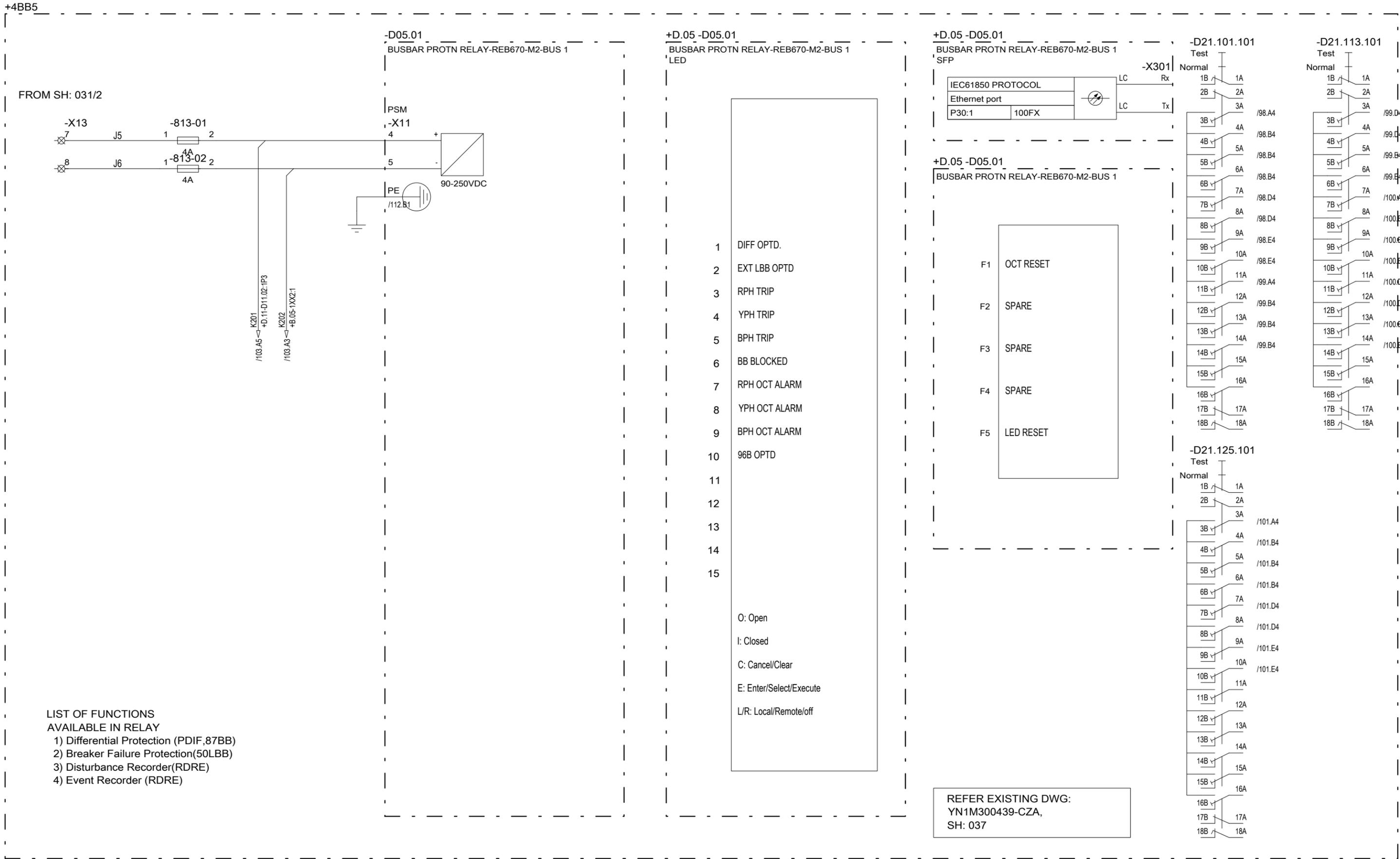


NOTE: *INSTEAD OF 418 BAY 419(TIE) CT USED AT PRESENT

REFER EXISTING DWG.
YN1M0R439-CZA,
SH-035 2 035_3

Based on: 3100130053 Prepared: 18.04.2023 PANKAJ PATIL Approved: 20.04.2023 DEENADAYALAN A Project: POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3100137298	Title: 400KV BUSBAR PROTECTION RETROFIT OF REB67D RELAY M2-BUS 1 CT CIRCUITS HITACHI <small>HITACHI Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)</small>	Des. No.: Circuit diagram Rev. No.: 001 EFS PG-GAS Rev. No.: 00 Language: en Sheet: 100 n. free: 101	Ref. Des.: =4R Doc. No.: 1MNS801837-CGCA
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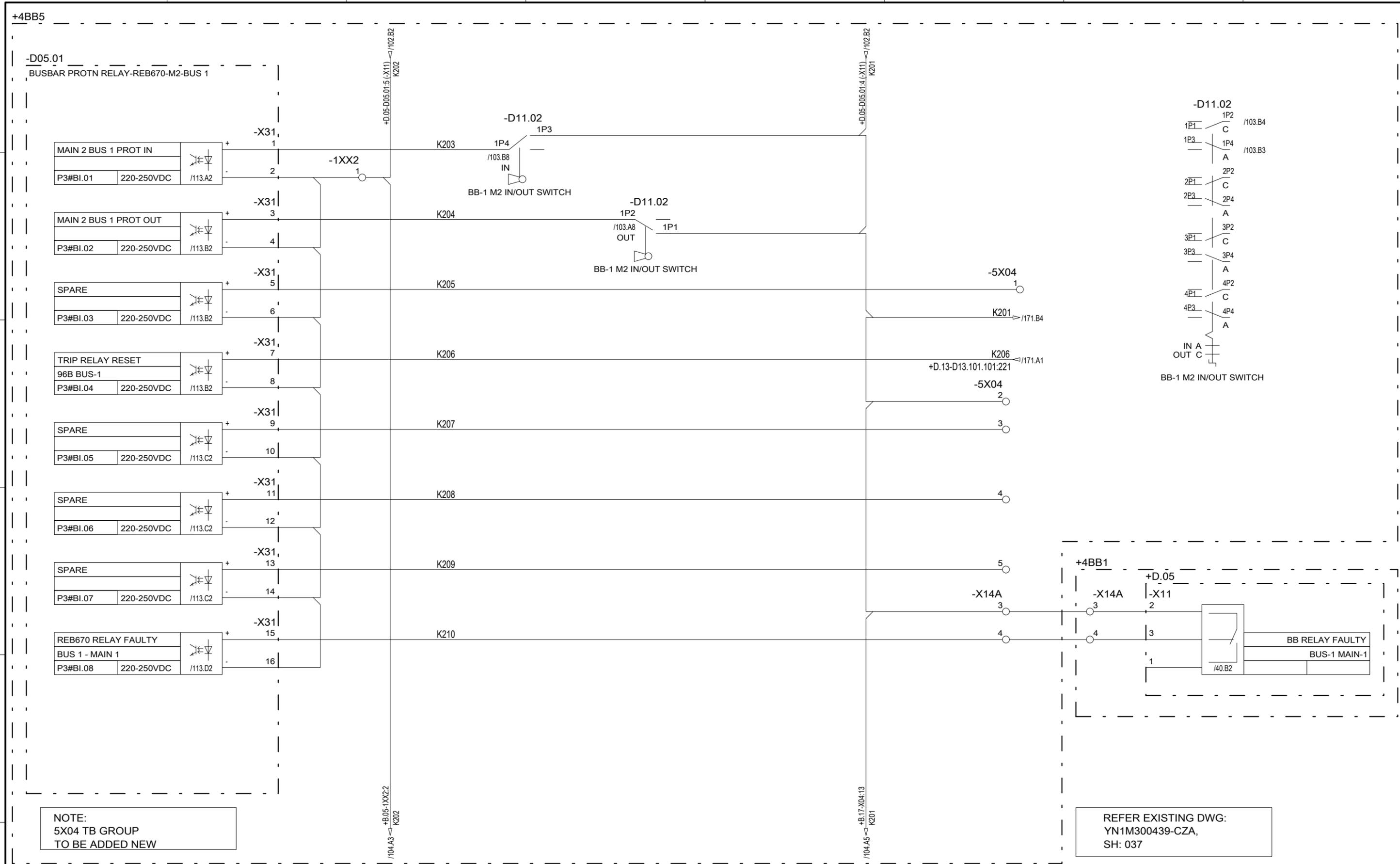
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- LIST OF FUNCTIONS AVAILABLE IN RELAY**
- 1) Differential Protection (PDIF,87BB)
 - 2) Breaker Failure Protection(50LBB)
 - 3) Disturbance Recorder(RDRE)
 - 4) Event Recorder (RDRE)

Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION	Doc. kind. Circuit diagram	Ref.Des. =4R
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A	RETROFIT OF REB670 RELAY	DCC EFS	
				Project	POWER GRID CORPORATION OF INDIA LTD.	M2-BUS 1 PSM & COM	Resp. dept. PG-GAS	Rev. ind. 01
				400/220kV KOLAR SUBSTATION		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS801837-CGCA	Language en
Rev.	Revision note	Date	Name	3100137898				Sheet 102
1MYN691003-102(A3)REV01								n. sheet 103

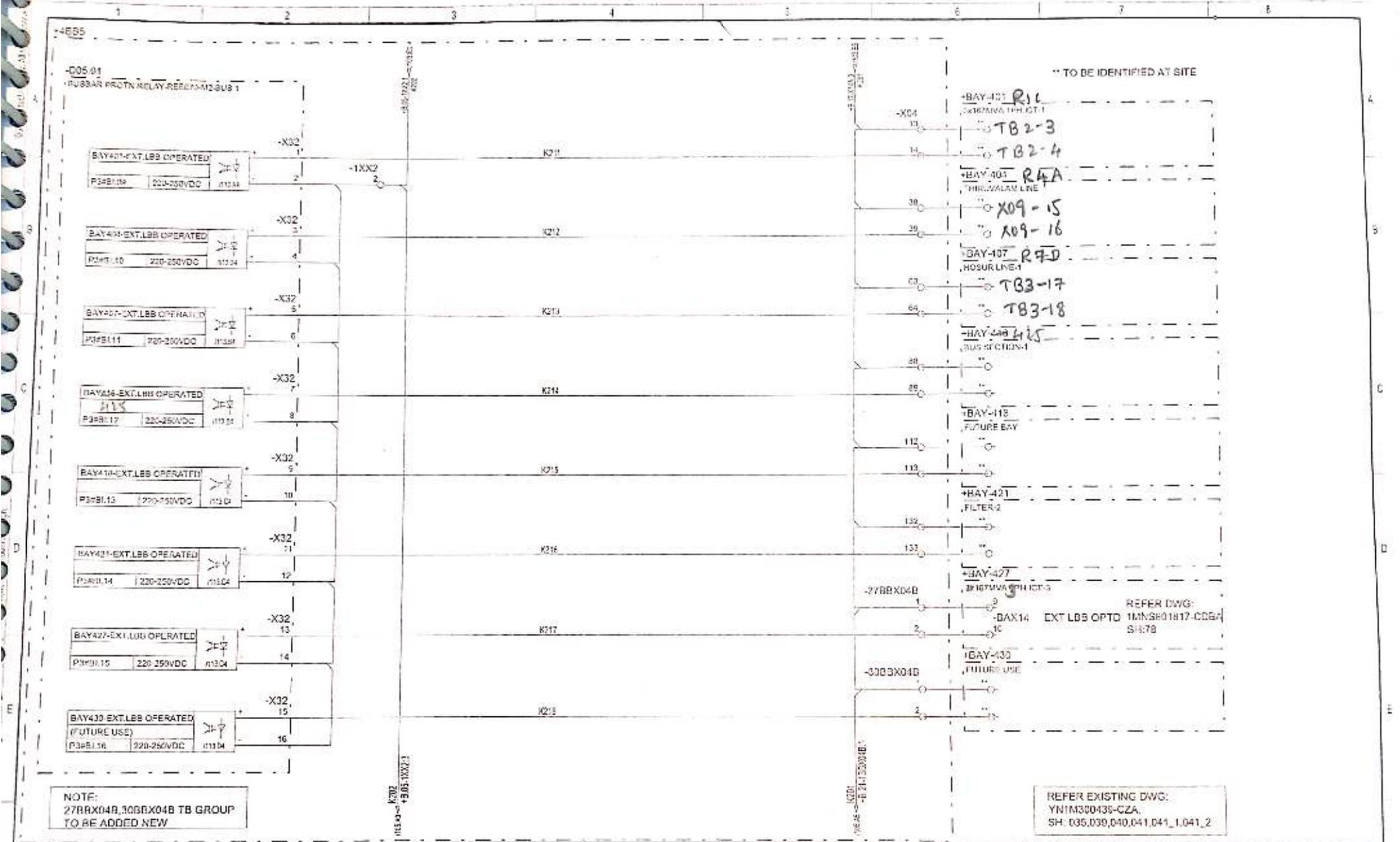
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NOTE:
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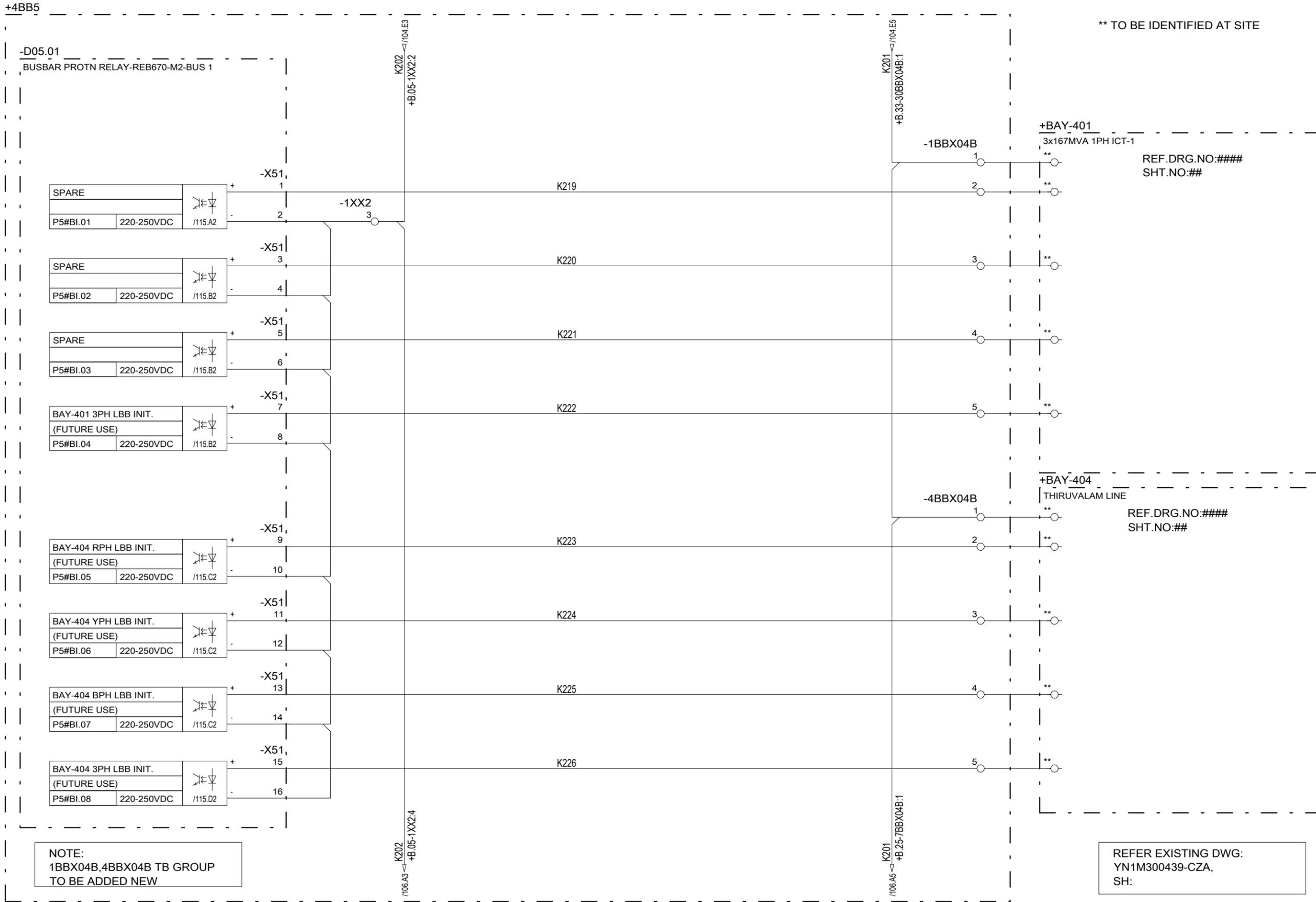
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Rev. Revision note		Date		Name				Resp. dept. PG-GAS		Language en	
1MYN691003-102(A3)REV01						HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 103 n. sheet 104	



NOTE:
27BRX04B, 30BRX04B TB GROUP
TO BE ADDED NEW

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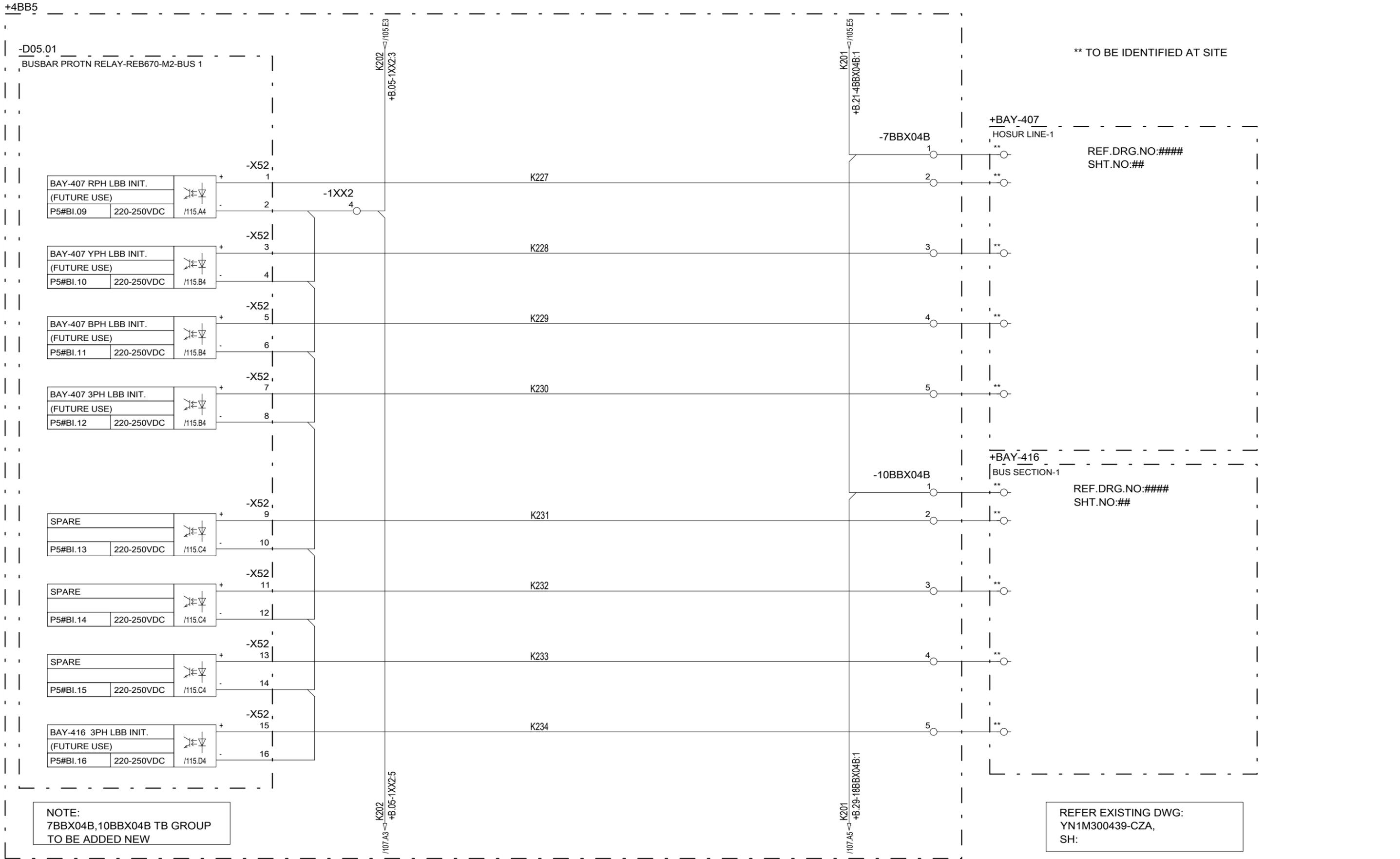
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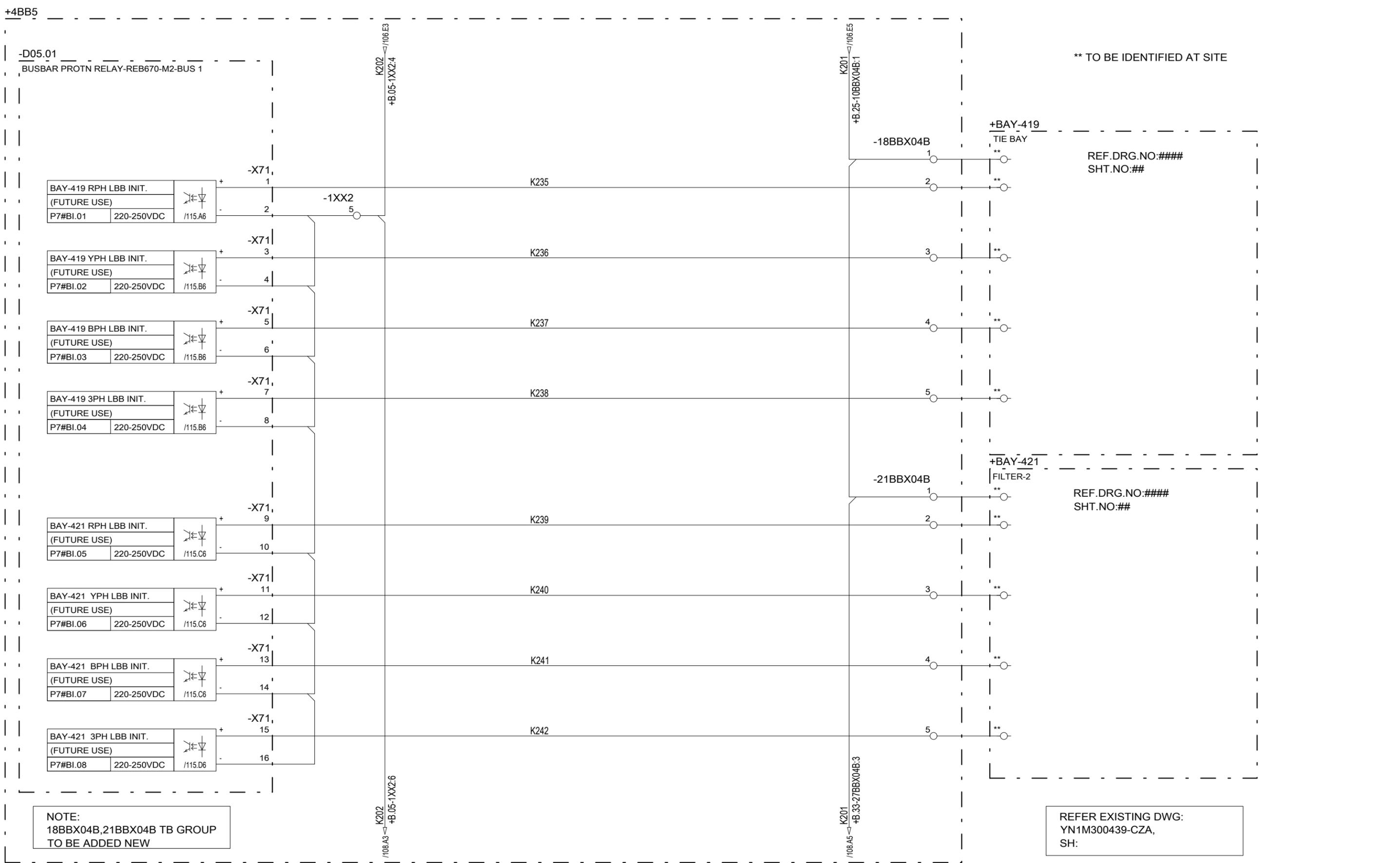
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Rev. Revision note		Date		Name		HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 105	
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1MYN691003-102(A3)REV01											



Based on 3100135063				Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 1 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
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Rev. Revision note		Date		Name		HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 106	
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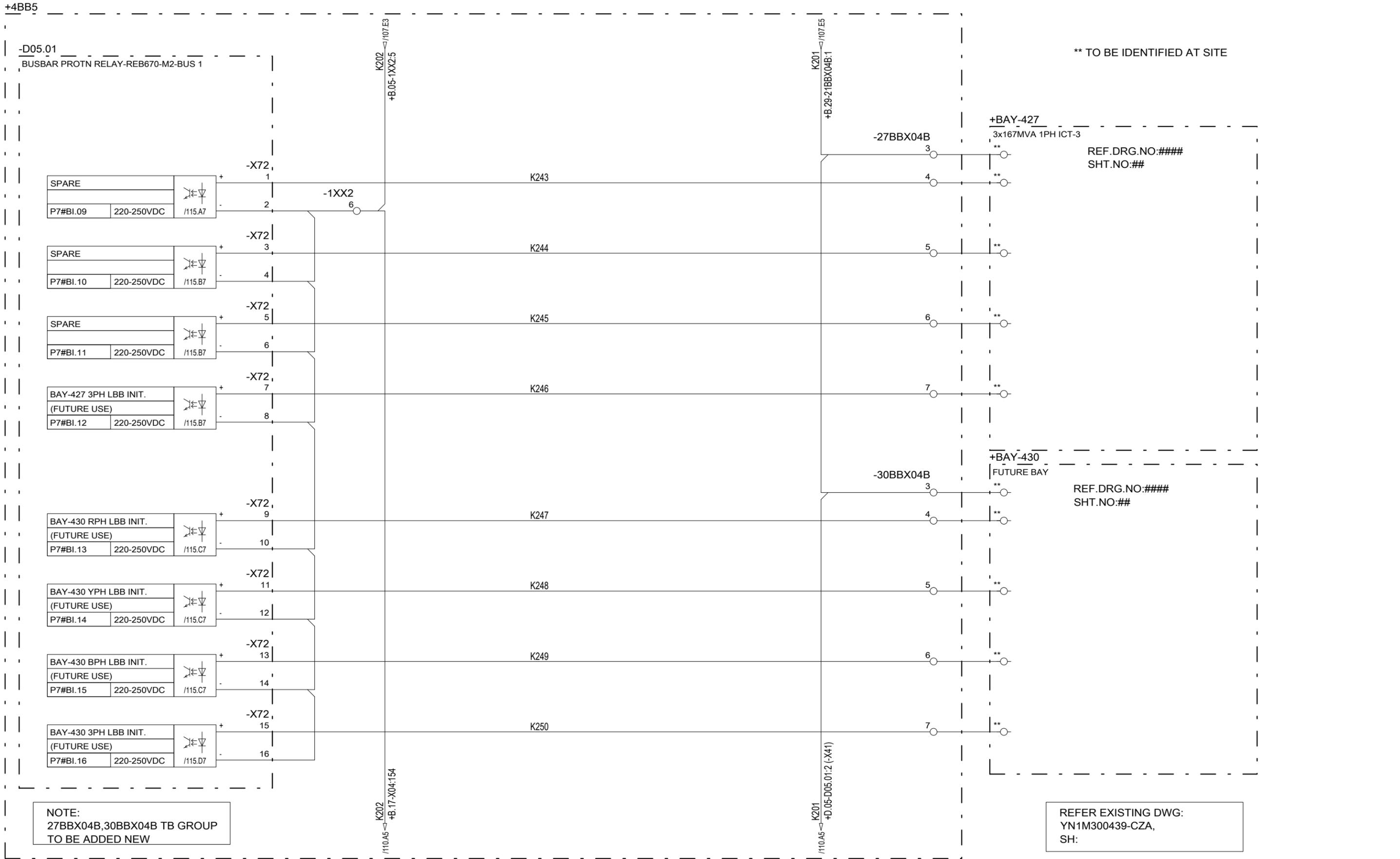
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NOTE:
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Based on 3100135063				Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 1 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
01 REVISED AS PER CUSTOMER COMMENTS		02.10.2024		Approved 20.04.2023 DEENADAYALAN A				DCC EFS			
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				400/220kV KOLAR SUBSTATION						Language en	
				3100137898		HITACHI Hitachi Energy India Limited				Sheet 107	
Rev. Revision note		Date		Name				Doc. no. 1MNS801837-CGCA		n. sheet 108	
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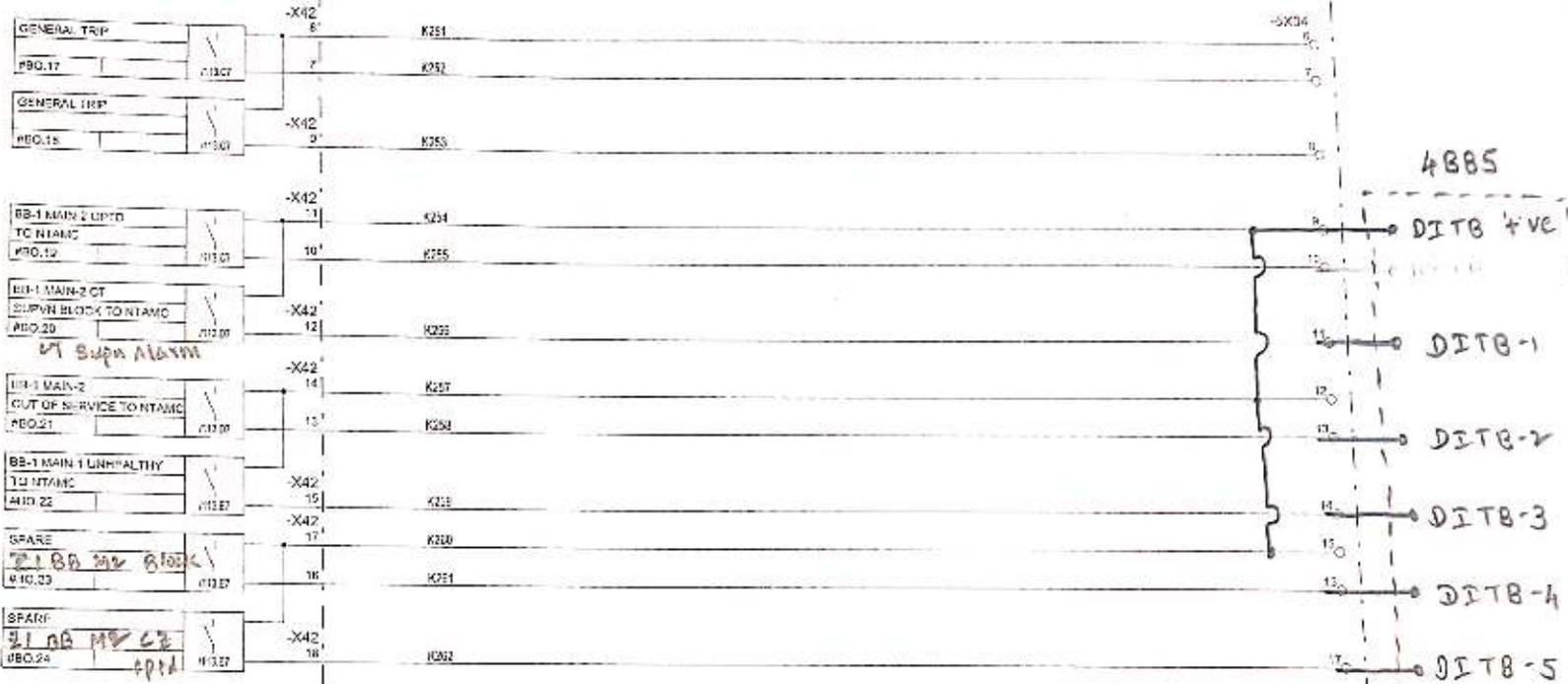
NOTE:
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS		
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Rev.	Revision note	Date	Name					Sheet 108	
							Doc. no. 1MNS801837-CGCA	n. sheet 109	

4GBR5

-D05.01
400KV BUSBAR PROTN RELAY-REB670-M2-BUS 1



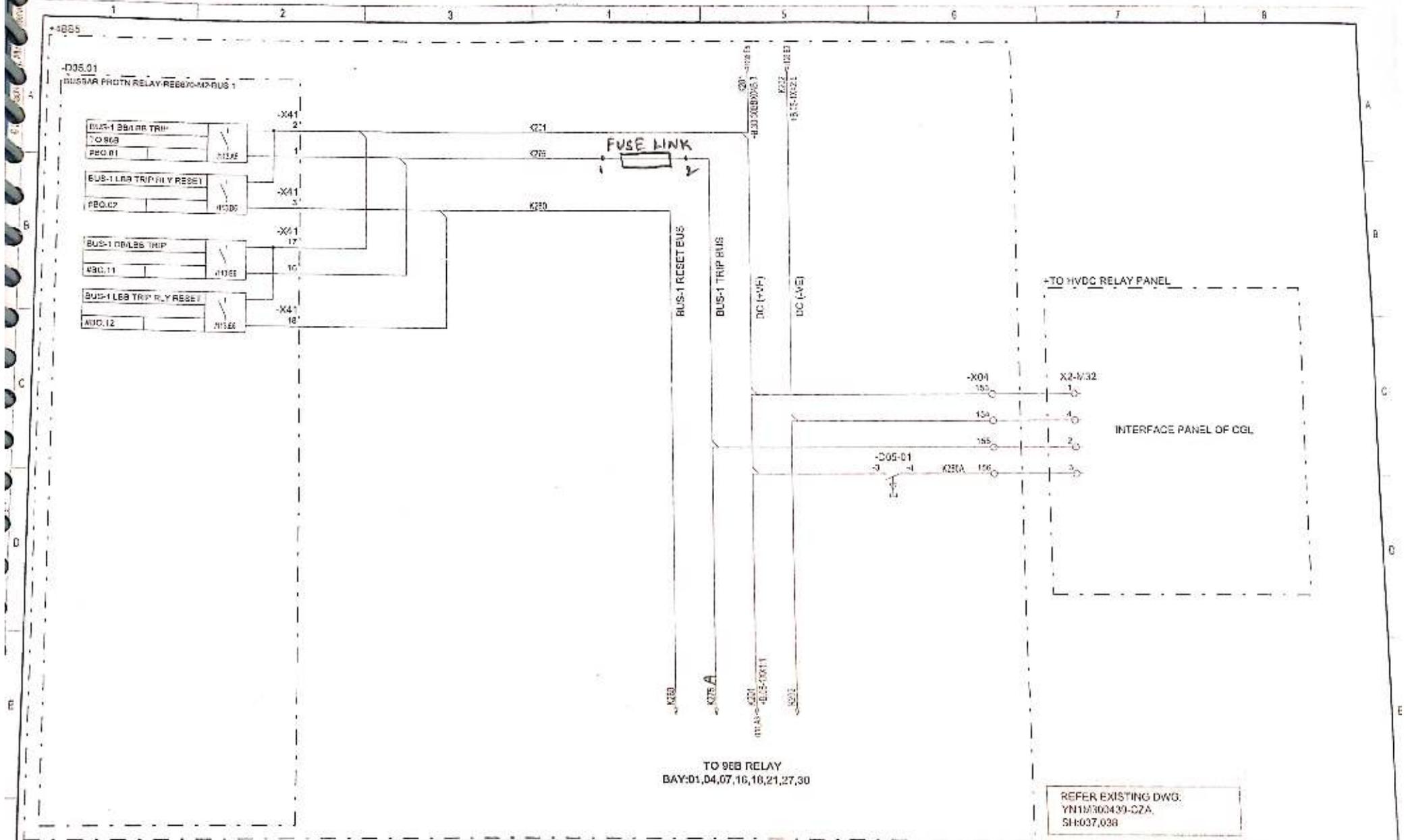
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DITB +ve
DITB-1
DITB-2
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NOTE:
5X04 TD GROUP
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Rev. Revision note	Date	Name	Language: 10	
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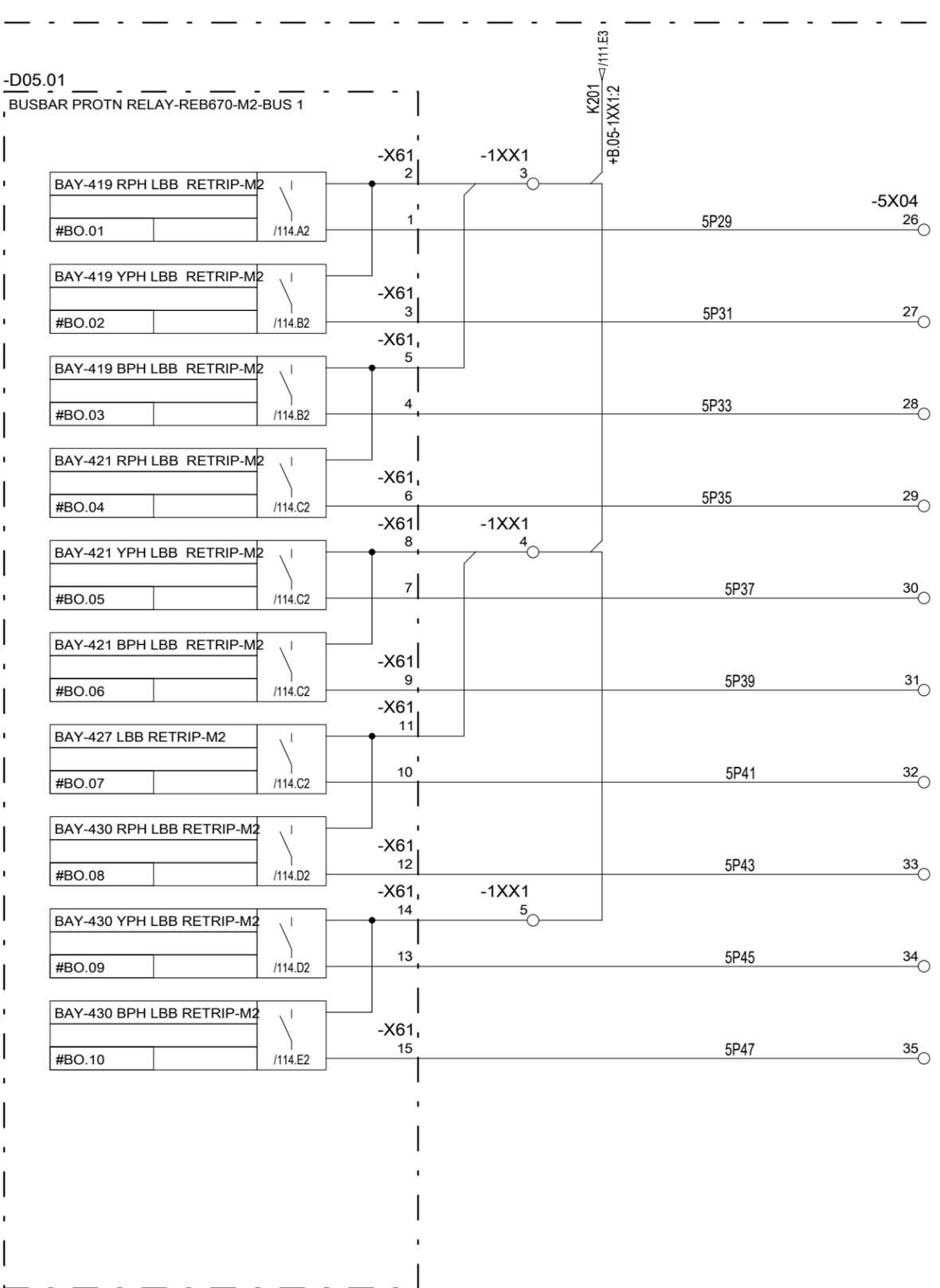
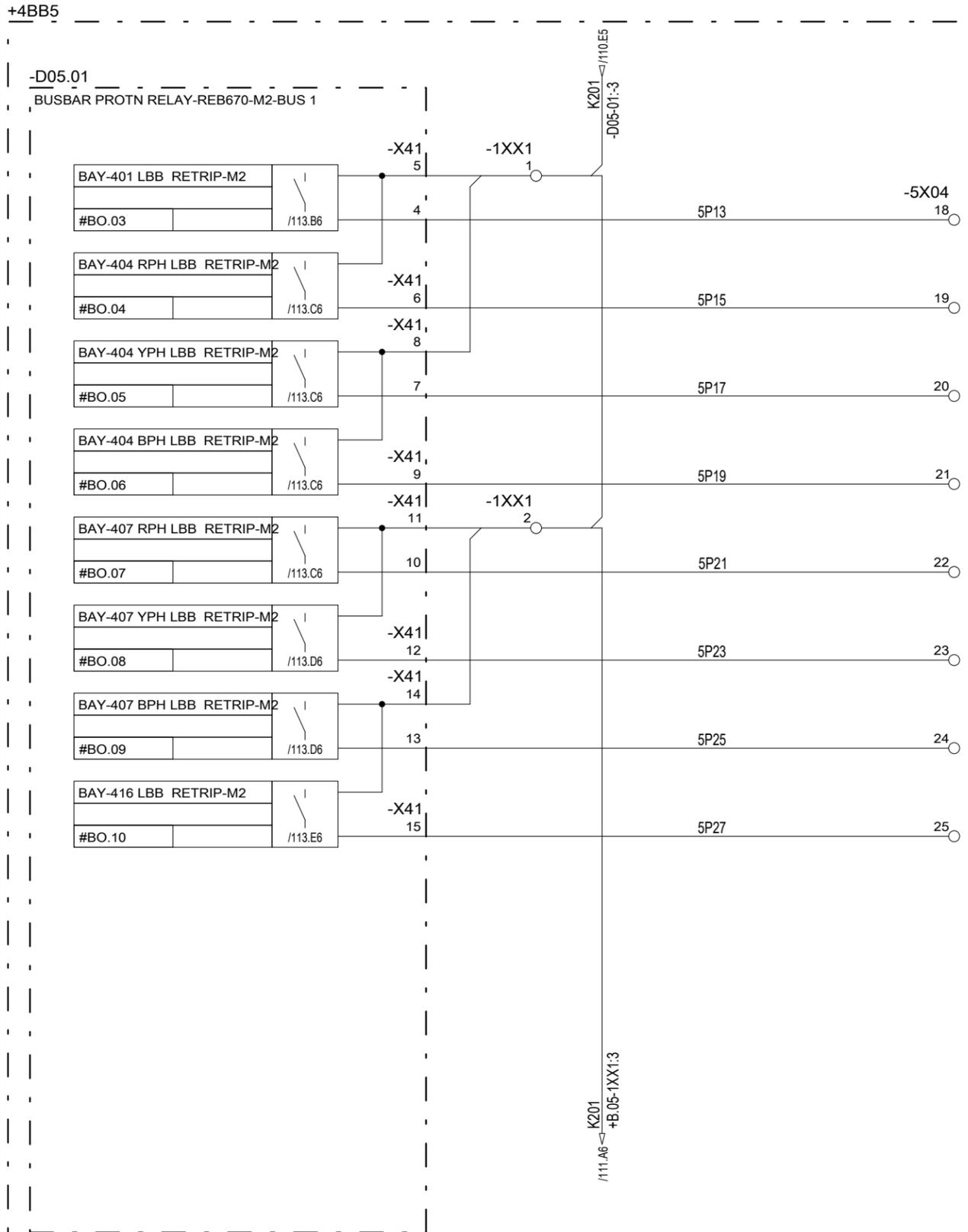


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Prepared:	18.04.2023 PANKAJ PATIL
Approved:	20.04.2023 DEENADAYALAN A
Project:	POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION S100137898
Rev.	Revision note
Case	Name

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Doc. no.	1MNS801837-CGCA	Rev. no.	00
Language:	en	Sheet:	110
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HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	
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REFER EXISTING DWD:
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SH037.038



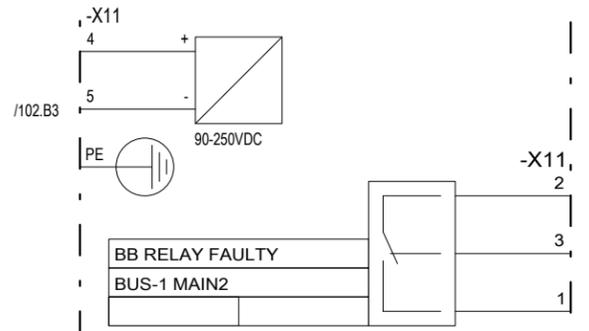
NOTE:
1XX1, 5X04 TB GROUP
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Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 1 BINARY OUTPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS		
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01 Language en	
Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 111 n. sheet 112	
1MYN691003-102(A3)REV01									

+4BB5

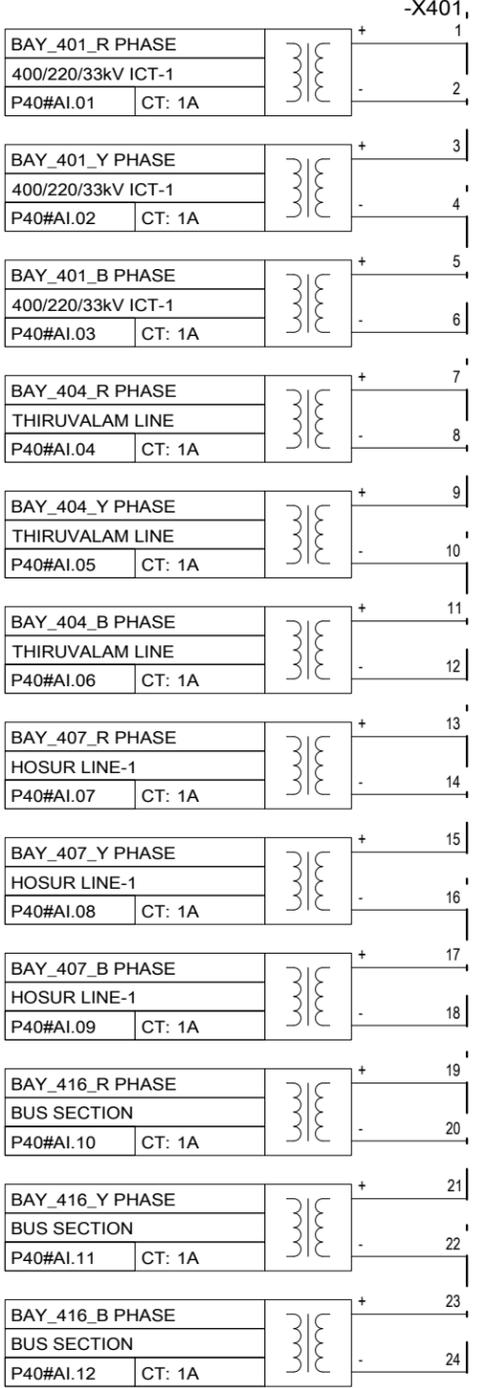
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BUSBAR PROTN RELAY-REB670-M2-BUS 1
PSM
90-250VDC



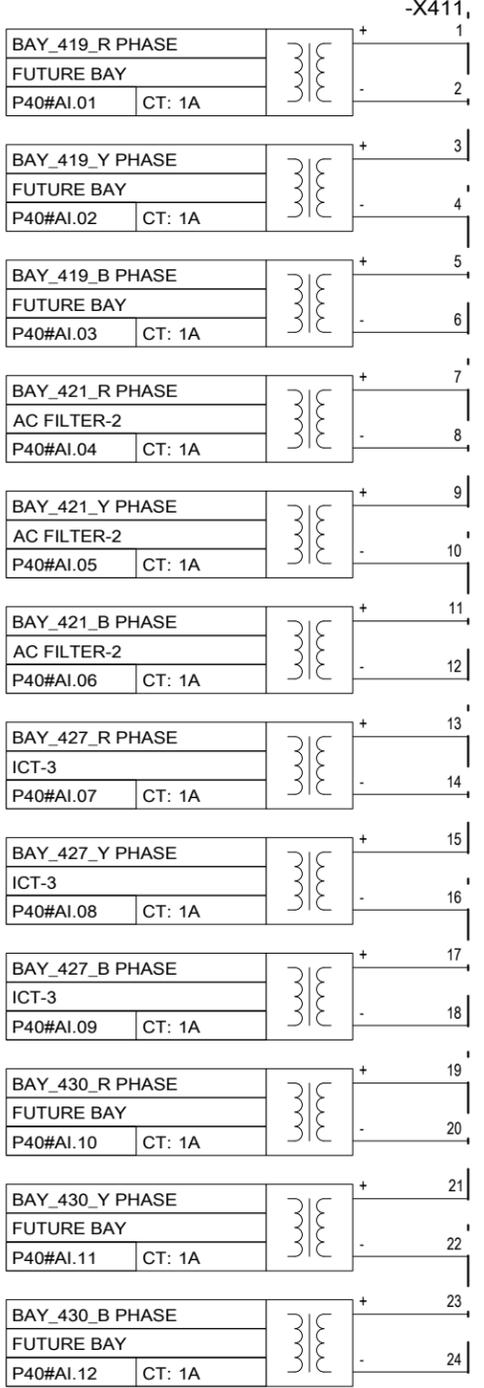
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BUSBAR PROTN RELAY-REB670-M2-BUS 1
TRM
1A, 50/60Hz



+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M2-BUS 1
TRM
1A, 50/60Hz



Based on 3100135063			
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Prepared	18.04.2023	PANKAJ PATIL
Approved	20.04.2023	DEENADAYALAN A
Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	

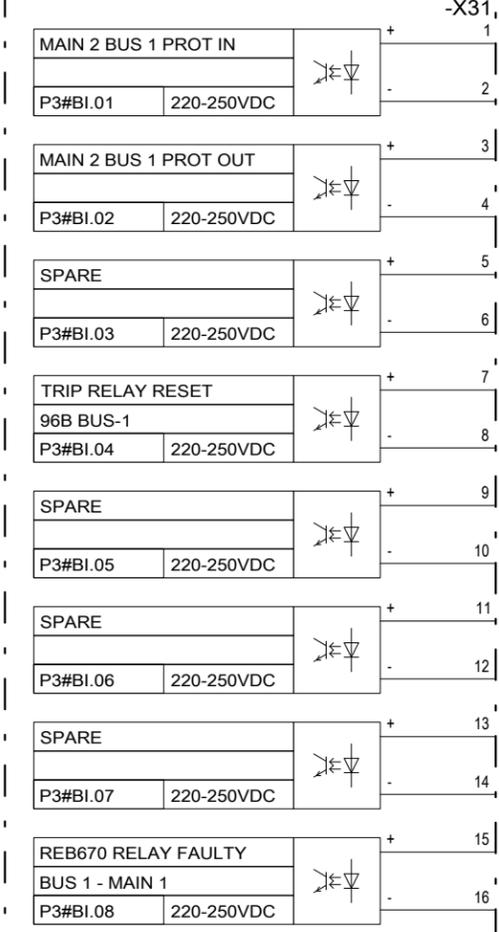
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HITACHI Hitachi Energy India Limited	

Doc. kind.	Circuit diagram	Ref.Des.	=4R
	DCC EFS		
Resp. dept.	PG-GAS	Rev. ind.	01
		Language	en
Doc. no.	1MNS801837-CGCA	Sheet	112
		n. sheet	113

+4BB5

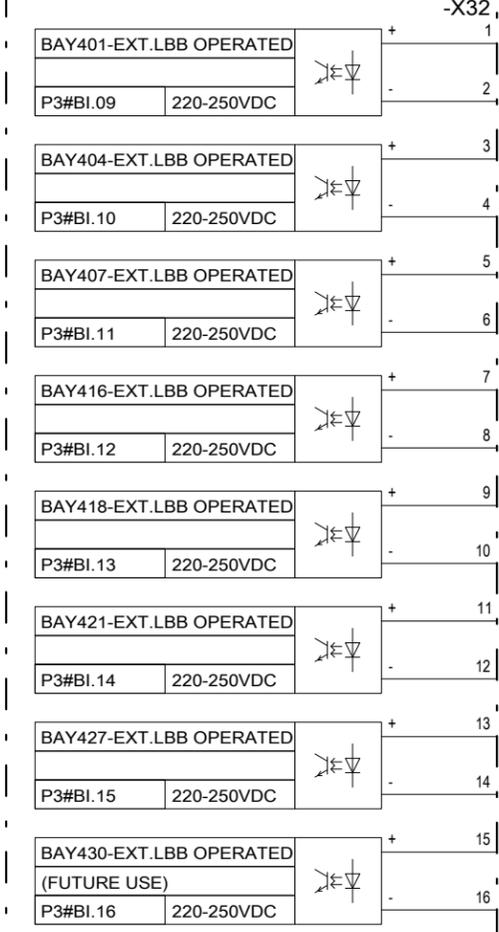
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BUSBAR PROTN RELAY-REB670-M2-BUS 1
BIM
220-250VDC



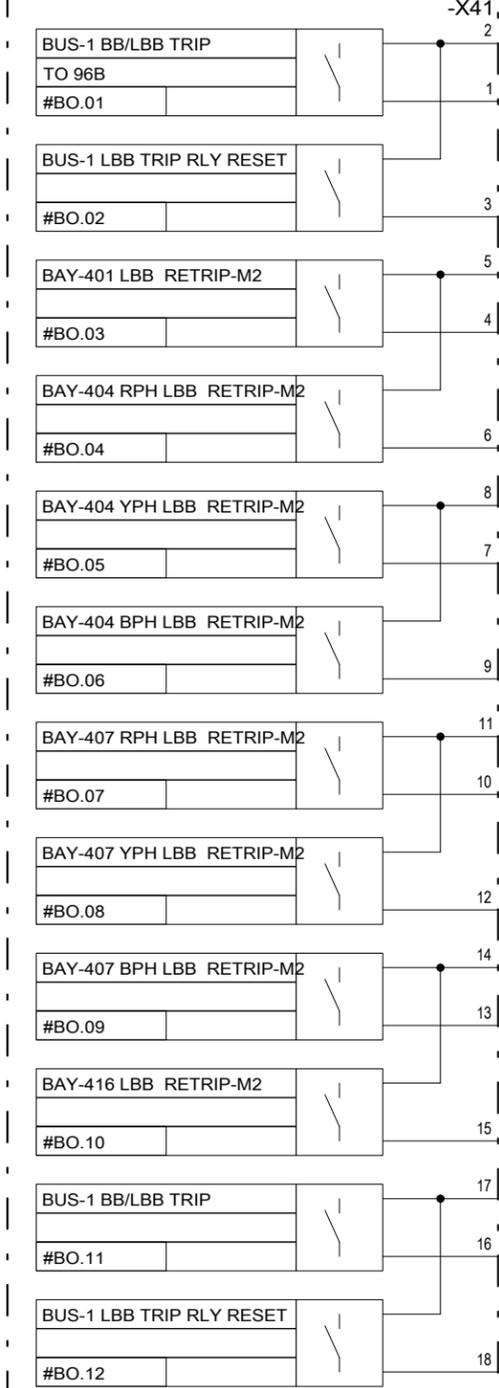
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BUSBAR PROTN RELAY-REB670-M2-BUS 1
BIM
220-250VDC



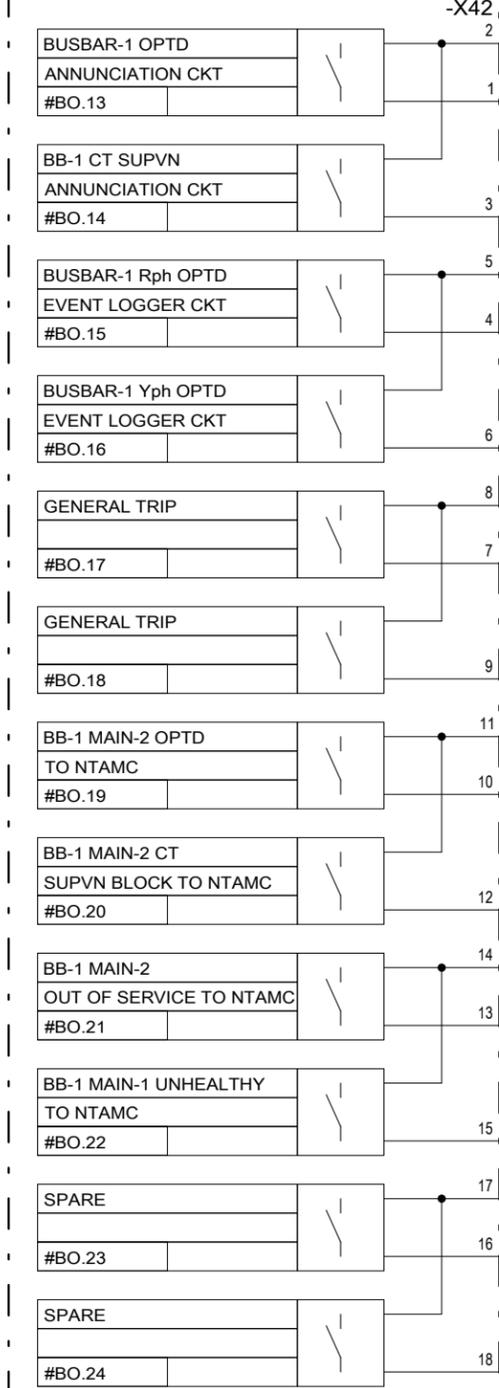
+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M2-BUS 1
BOM



+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M2-BUS 1
BOM

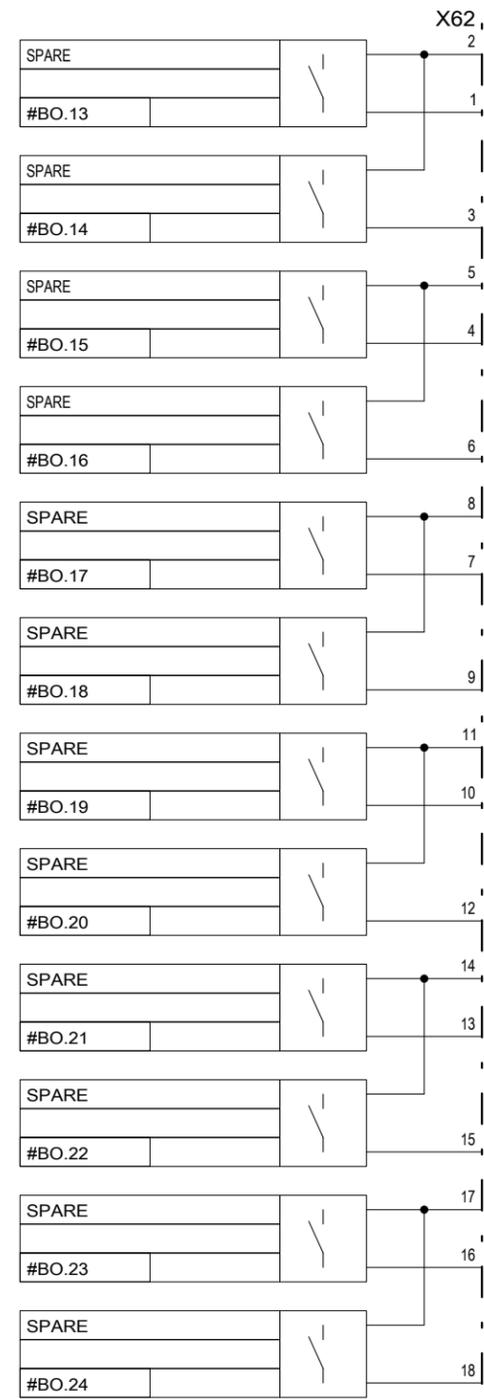
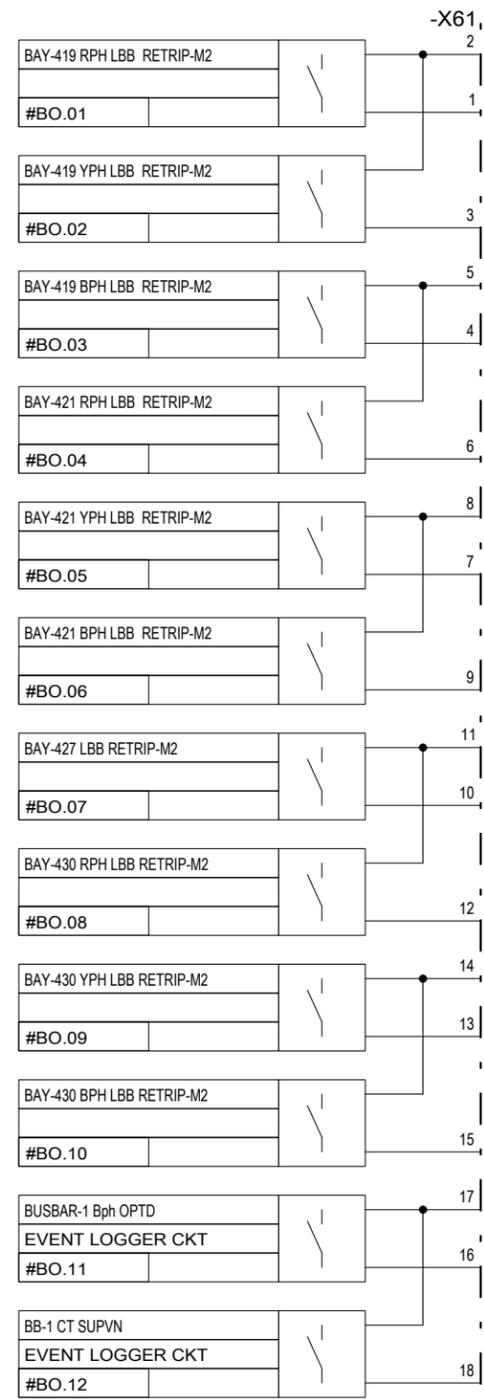


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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A	Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		DCC EFS		Language en
Rev.	Revision note	Date	Name	Resp. dept. PG-GAS			Rev. ind. 01	Sheet 113	
1MYN691003-102(A3)REV01				HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		n. sheet 114	

+4BB5

+D.05 -D05.01
 BUSBAR PROT N RELAY-REB670-M2-BUS 1
 BOM

+D.05 -D05.01
 BUSBAR PROT N RELAY-REB670-M2-BUS 1
 BOM



Based on 3100135063			
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Prepared	18.04.2023	PANKAJ PATIL
Approved	20.04.2023	DEENADAYALAN A
Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	

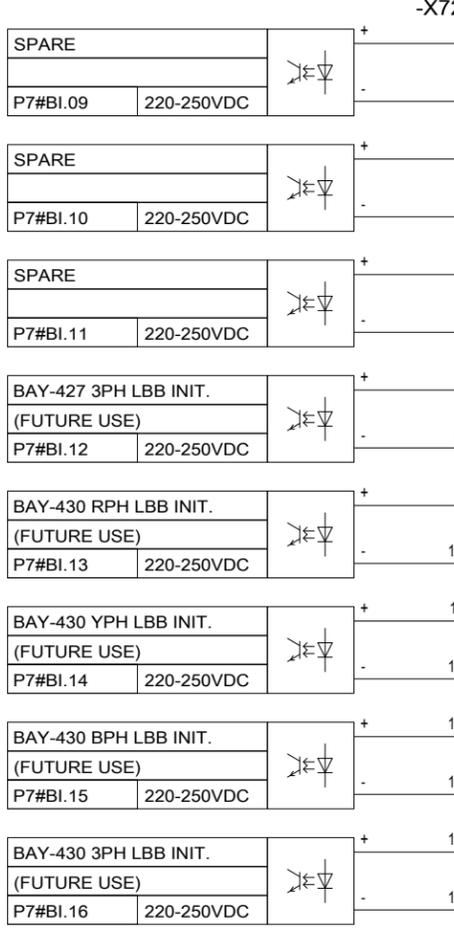
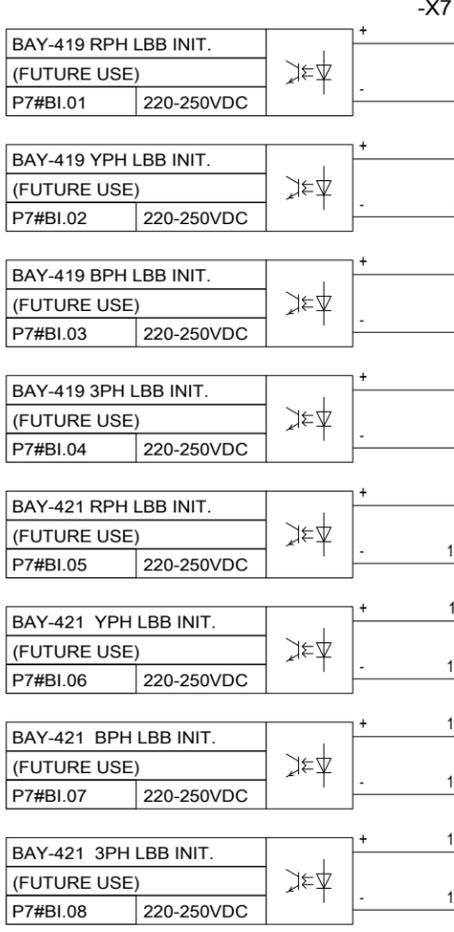
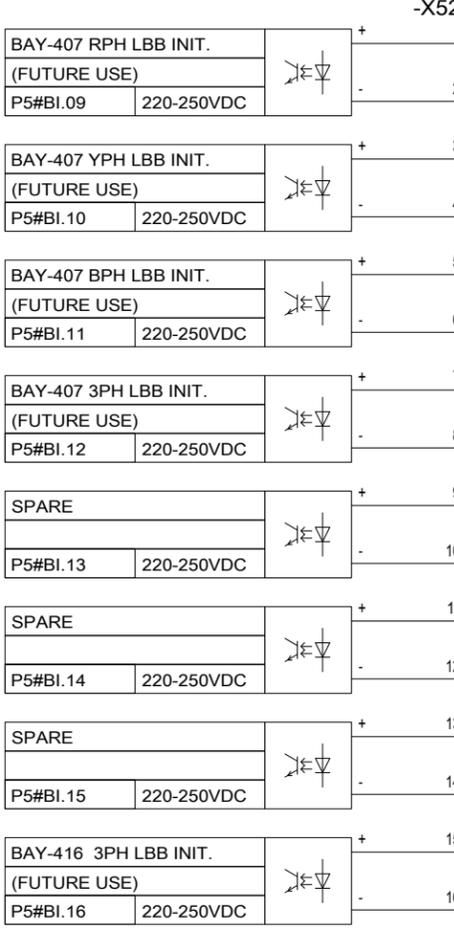
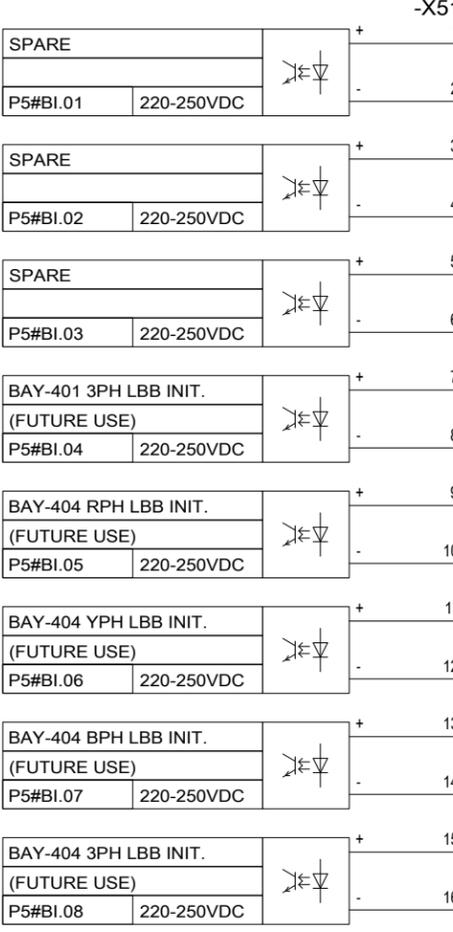
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Hitachi Energy India Limited	

Doc. kind.	Circuit diagram	Ref.Des.	=4R
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Resp. dept.	PG-GAS	Rev. ind.	01
		Language	en
Doc. no.	1MNS801837-CGCA		Sheet 114 n. sheet 115

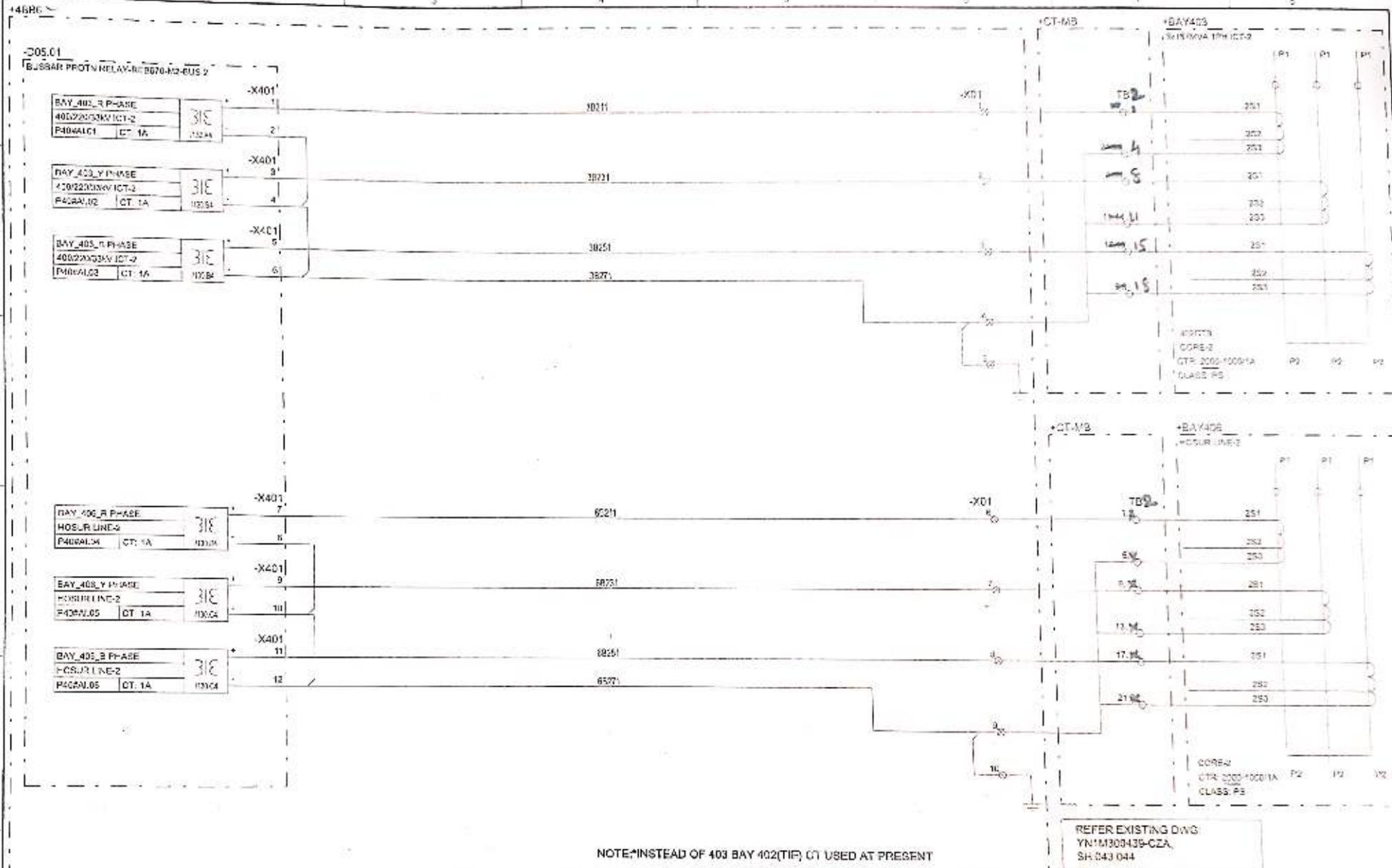
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+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M2-BUS 1
BIM
220-250VDC



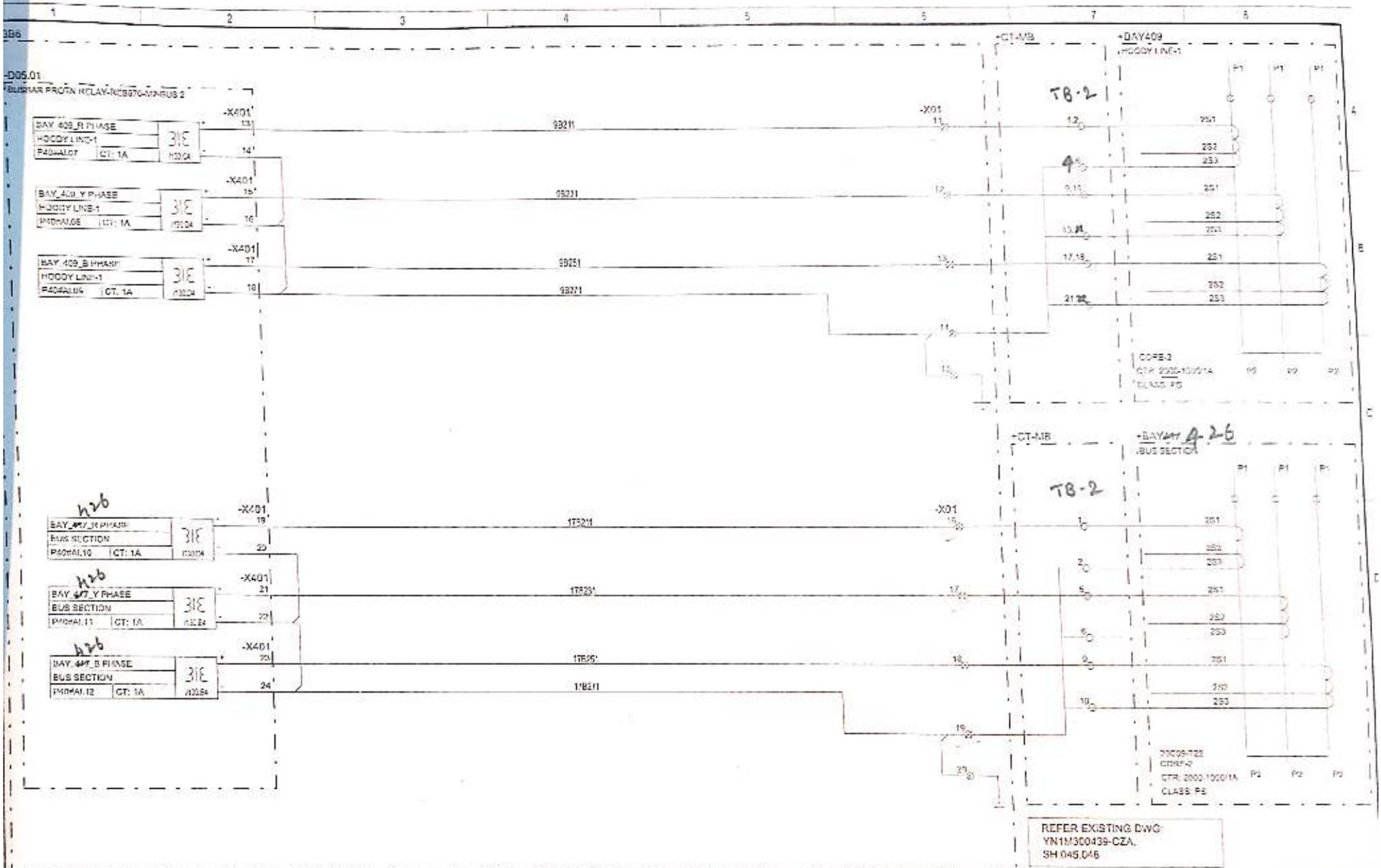
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A		DCC EFS			
Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898				Hitachi Energy India Limited		Resp. dept. PG-GAS		Rev. ind. 01 Language en	
Rev.	Revision note	Date	Name	HITACHI		Doc. no. 1MNS801837-CGCA		Sheet 115 n. sheet 116	
1MYN691003-102(A3)REV01									



NOTE: INSTEAD OF 403 BAY 402 (TIE) CT USED AT PRESENT

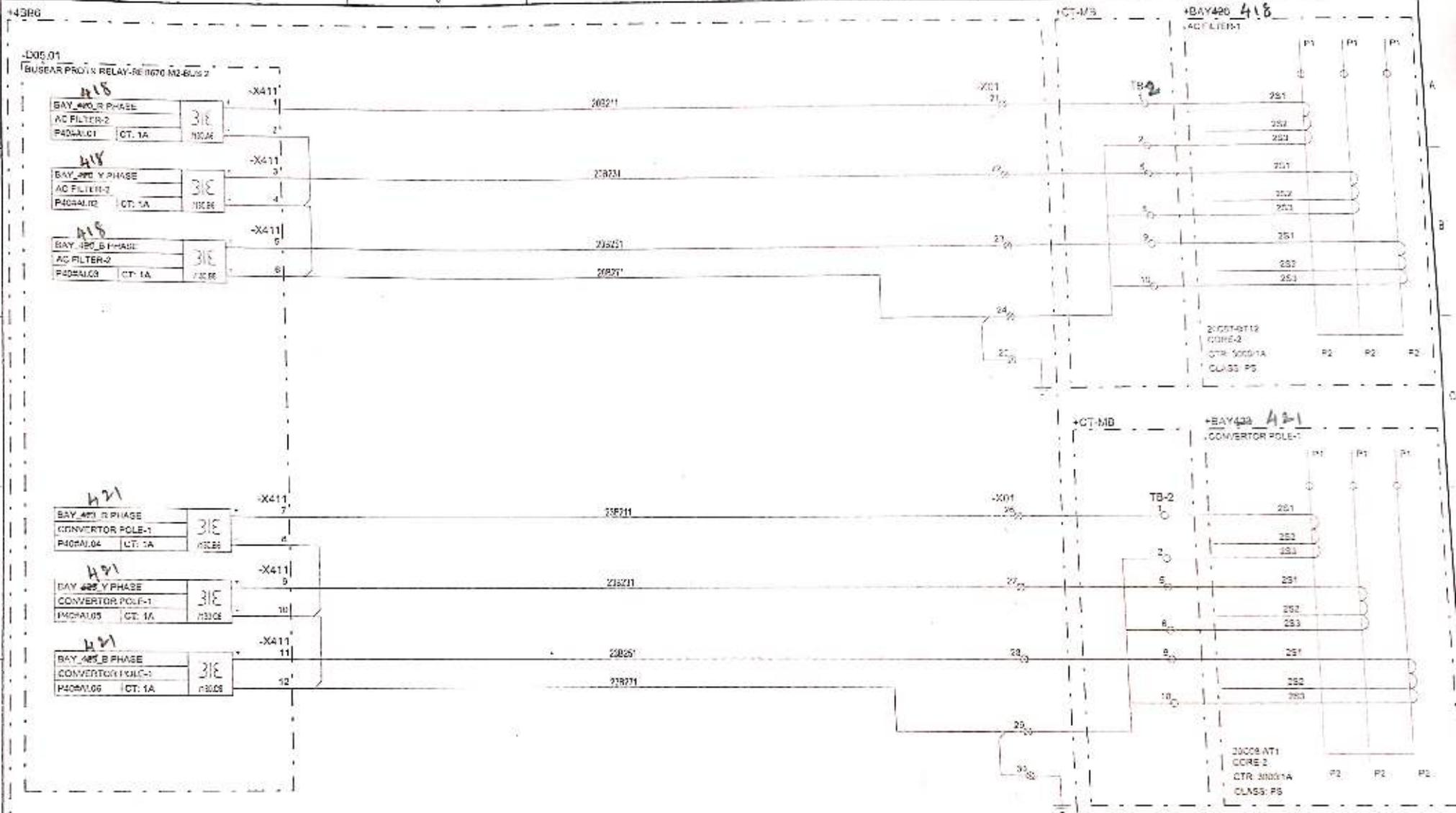
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SH 043 044

Based on 3100135033 Rev. 1 Rev/SMT 109 TMY/EN1008-162/AS/REV01	Prepared 18.04.2023 Approved 20.04.2023 PANKAJ PATIL DEENADAYAN A	Title 400KV BUSBAR PROTECTION RETROFIT OF REB370 RELAY M2-BUS 2 CT CIRCUITS	Doc. No. Circuit diagram Rev. No. 00 Date PG GAS Rev. Ind. CO Language en	Ref. No. #4R Sheet 116 1. sheet 117
	Project POWER GRID CORPORATION OF INDIA LTD, 400/220KV KOLAR SUBSTATION 3100137898	Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Doc. No. 1MNS801837-CGCA	



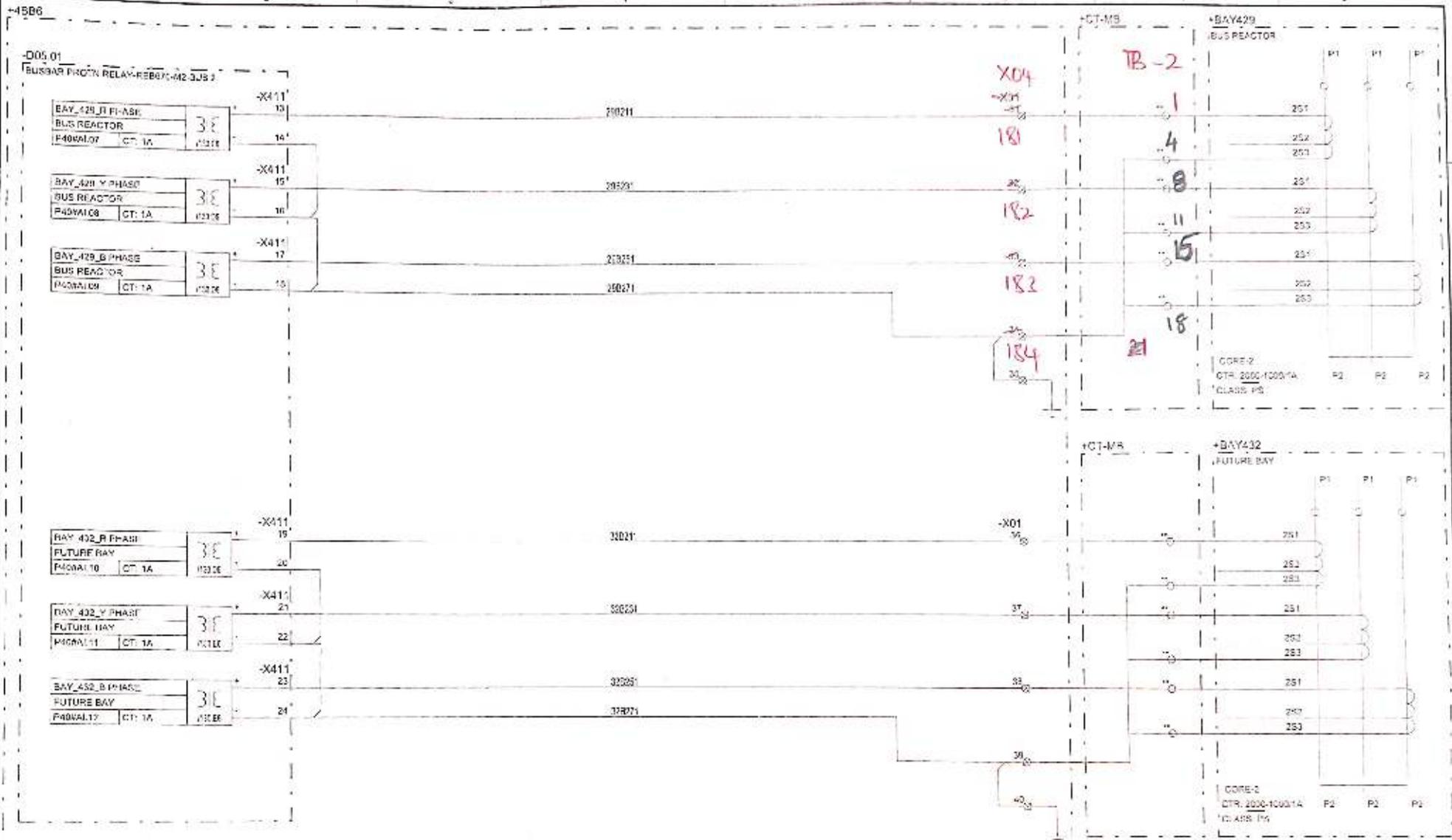
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SH.045.046

Based on: 3100135063	Prepared: 18.04.2023 PANKAJ PATIL	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 CT CIRCUITS	Doc. kind: Circuit diagram	Ref. Des.: =4R
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Rev. Revision no.	Date	Notes	Hitachi Energy India Limited (formerly known as ABB Power Products and Systems India Limited)	
1MNS801837-1029(A3)R1-V01			Doc. no: 1MNS801837-CGCA	Sheet: 117 n. sheet: 118



REFER EXISTING DWG.
YN1M300439-CZA,
SH-SH-046_2_046_4

Based on	3100135063	Prepared	18.04.2023	PANKAJ PATIL	Title	400kV BUSBAR PROTECTION RETROFIT OF RE5670 RELAY M2-BUS 2 CT CIRCUITS	Doc.knd	Circuit diagram	Rel.Des.	=4
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Rev.	Revision rate	Date	Name		HITACHI	HITACHI Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Doc. no.	1MNS801837-CGCA	Language	0
11/01/2023-102/243/REV01									Sheet	1/1
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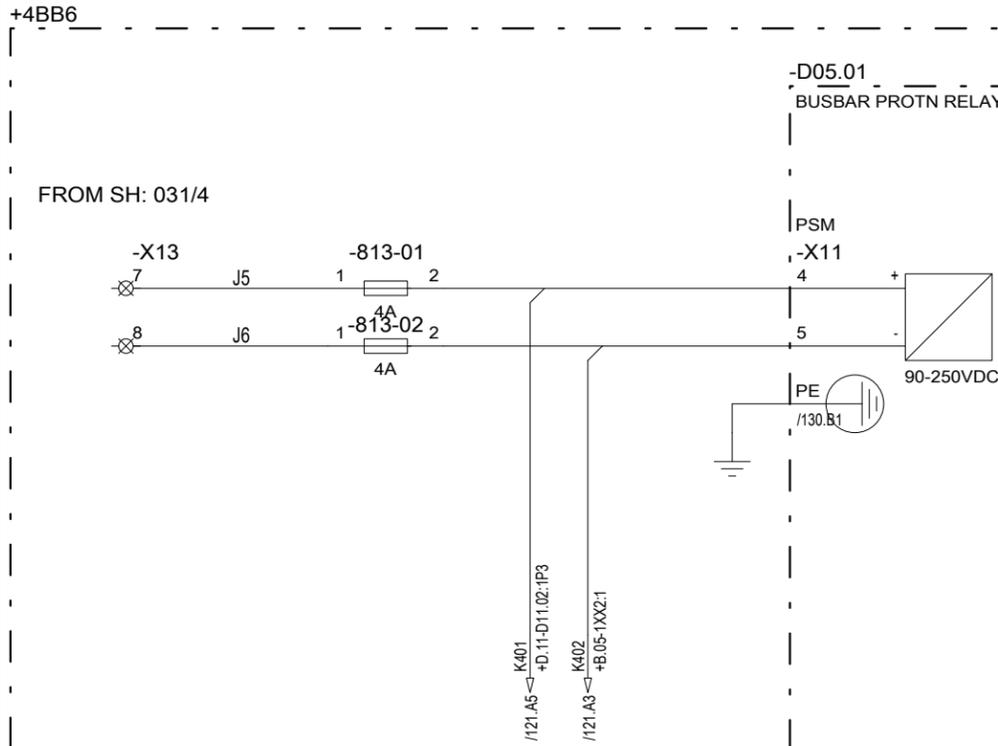


NOTE:
X01 TB GROUP TO
BE ADDED NEW

REFER EXISTING CWC
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SH.

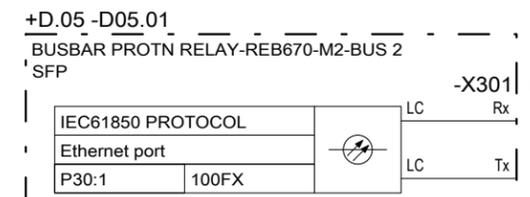
NOTE ** TB TO BE IDENTIFY AT SITE

Based on 3'00135063	Prepared 18.04.2023 PANKAJ PATIL	Title 400KV BUSBAR PROTECTION RETROFIT OF RCB670 RELAY M2-BUS 2 CT CIRCUITS	Doc.knd. Circuit diagram	Rel.Dwg. =4R
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	Project POWER GRID CORPORATION OF INDIA LTD. 400/220KV KOLAR SUBSTATION 3' 00137898	HITACHI Hitachi Energy India Limited (Formerly Vector Inc) High Power Products and Systems Division, India	Res. Dept. PG-GAS	Rev. rd. 00
Rev. / Revision no.	Date		Date no. 1MNS801837-CGCA	Language en
1MNS801837-02(A3)REV01				n. sheet 120



-D05.01
BUSBAR PROTN RELAY-REB670-M2-BUS 2

+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M2-BUS 2
LED



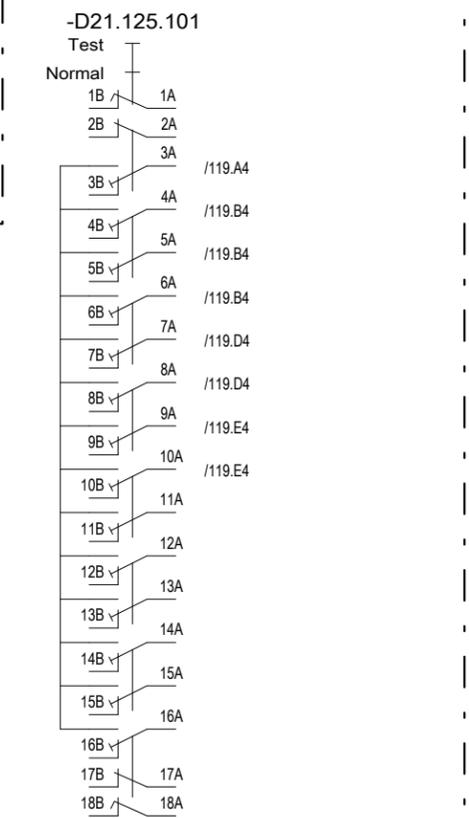
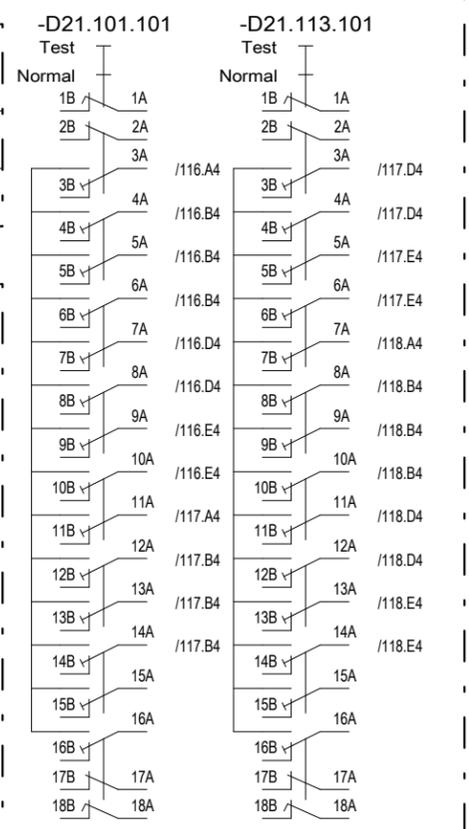
+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M2-BUS 2

- 1 DIFF OPTD.
- 2 EXT LBB OPTD
- 3 RPH TRIP
- 4 YPH TRIP
- 5 BPH TRIP
- 6 BB BLOCKED
- 7 RPH OCT ALARM
- 8 YPH OCT ALARM
- 9 BPH OCT ALARM
- 10 96B OPTD
- 11
- 12
- 13
- 14
- 15

O: Open
I: Closed
C: Cancel/Clear
E: Enter/Select/Execute
L/R: Local/Remote/off

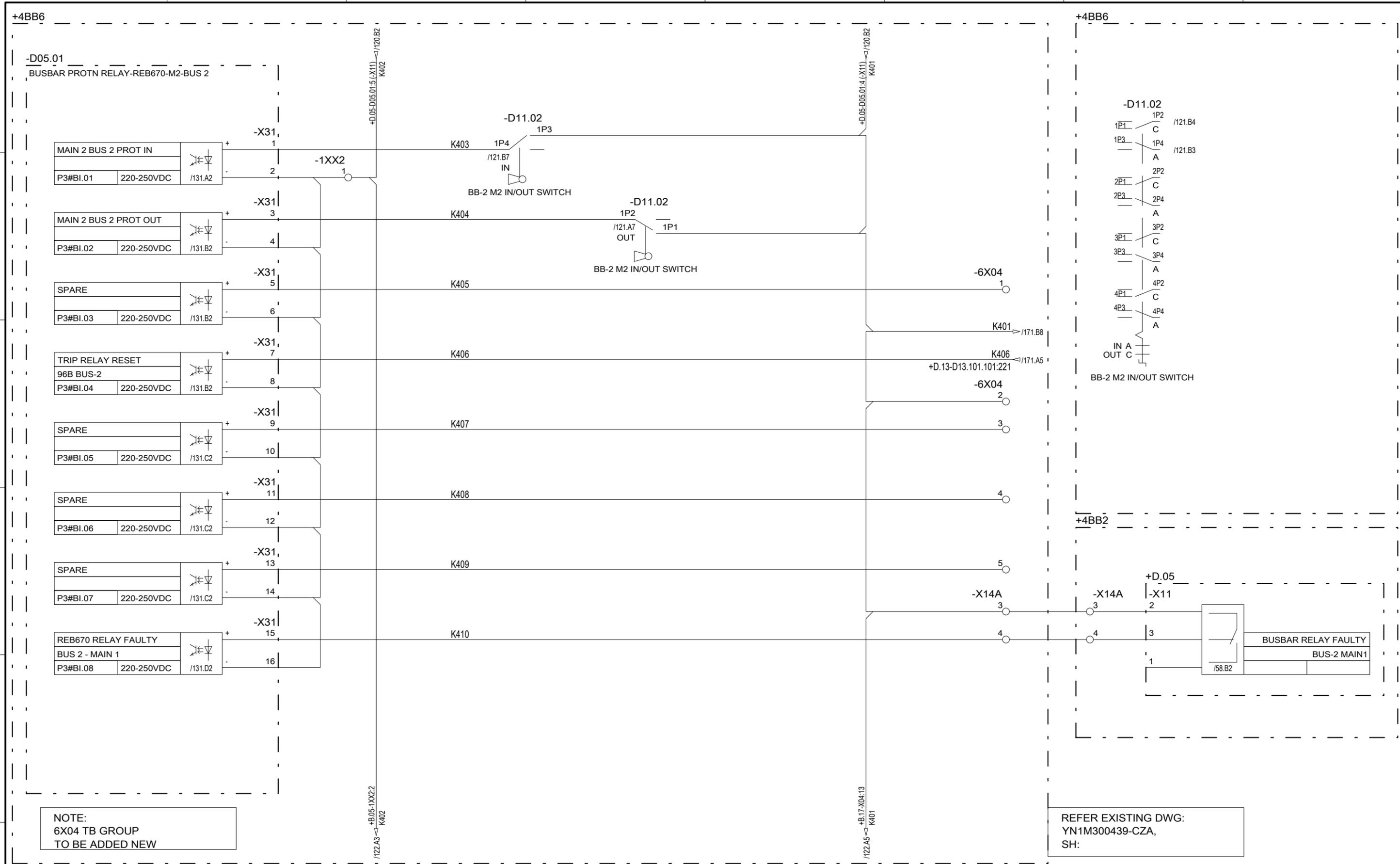
- F1 OCT RESET
- F2 SPARE
- F3 SPARE
- F4 SPARE
- F5 LED RESET

REFER EXISTING DWG:
YN1M300439-CZA,
SH: 048



- LIST OF FUNCTIONS AVAILABLE IN RELAY**
- 1) Differential Protection (PDIF,87BB)
 - 2) Breaker Failure Protection(50LBB)
 - 3) Disturbance Recorder(RDRE)
 - 4) Event Recorder (RDRE)

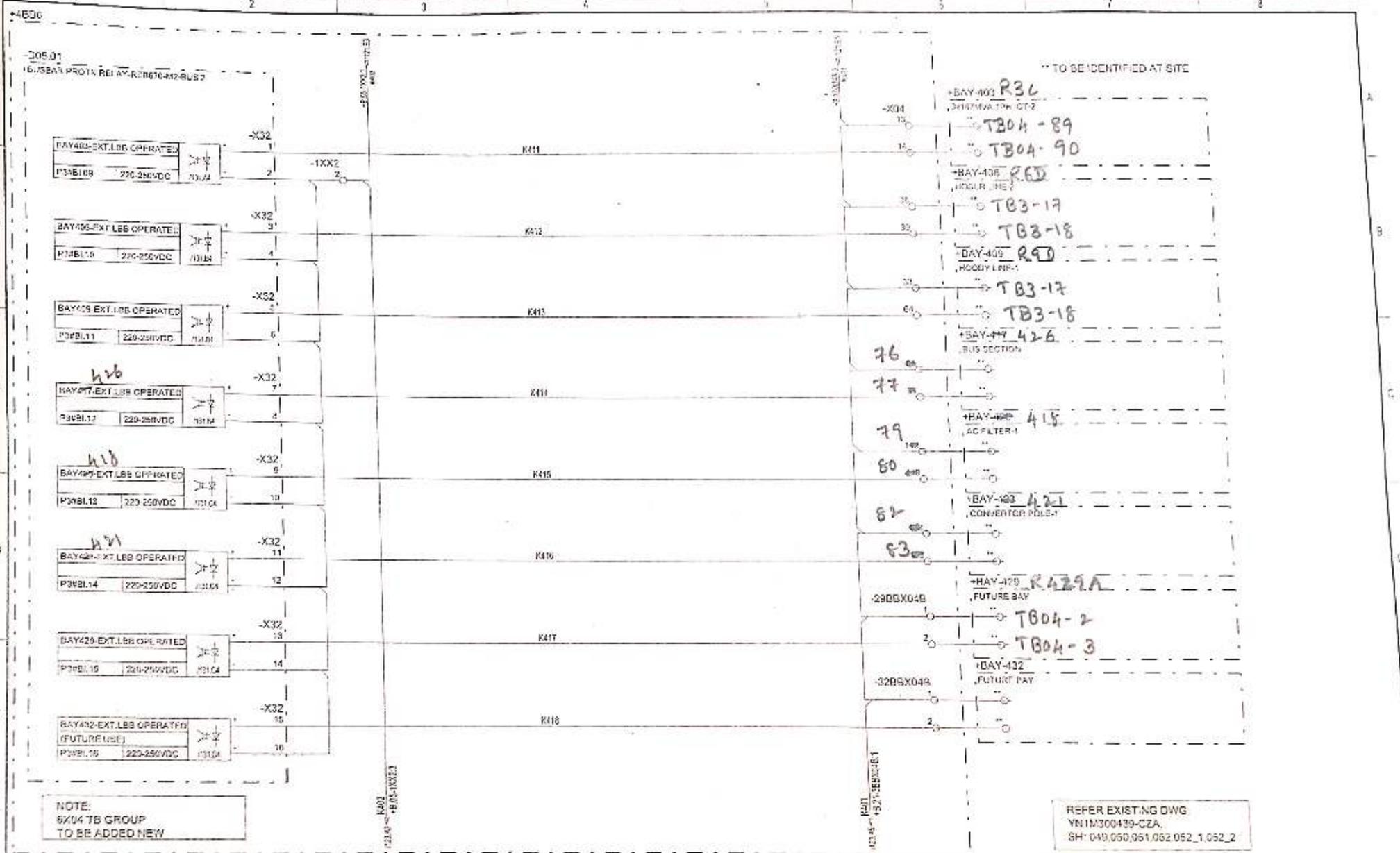
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A	RETROFIT OF REB670 RELAY	DCC EFS	
				Project	POWER GRID CORPORATION OF INDIA LTD.	M2-BUS 2 PSM & COM	Resp. dept. PG-GAS	Rev. ind. 01
				400/220kV KOLAR SUBSTATION		HITACHI Hitachi Energy India Limited	Doc. no. 1MNS801837-CGCA	Language en
Rev.	Revision note	Date	Name	3100137898				Sheet 120
1MYN691003-102(A3)REV01								n. sheet 121



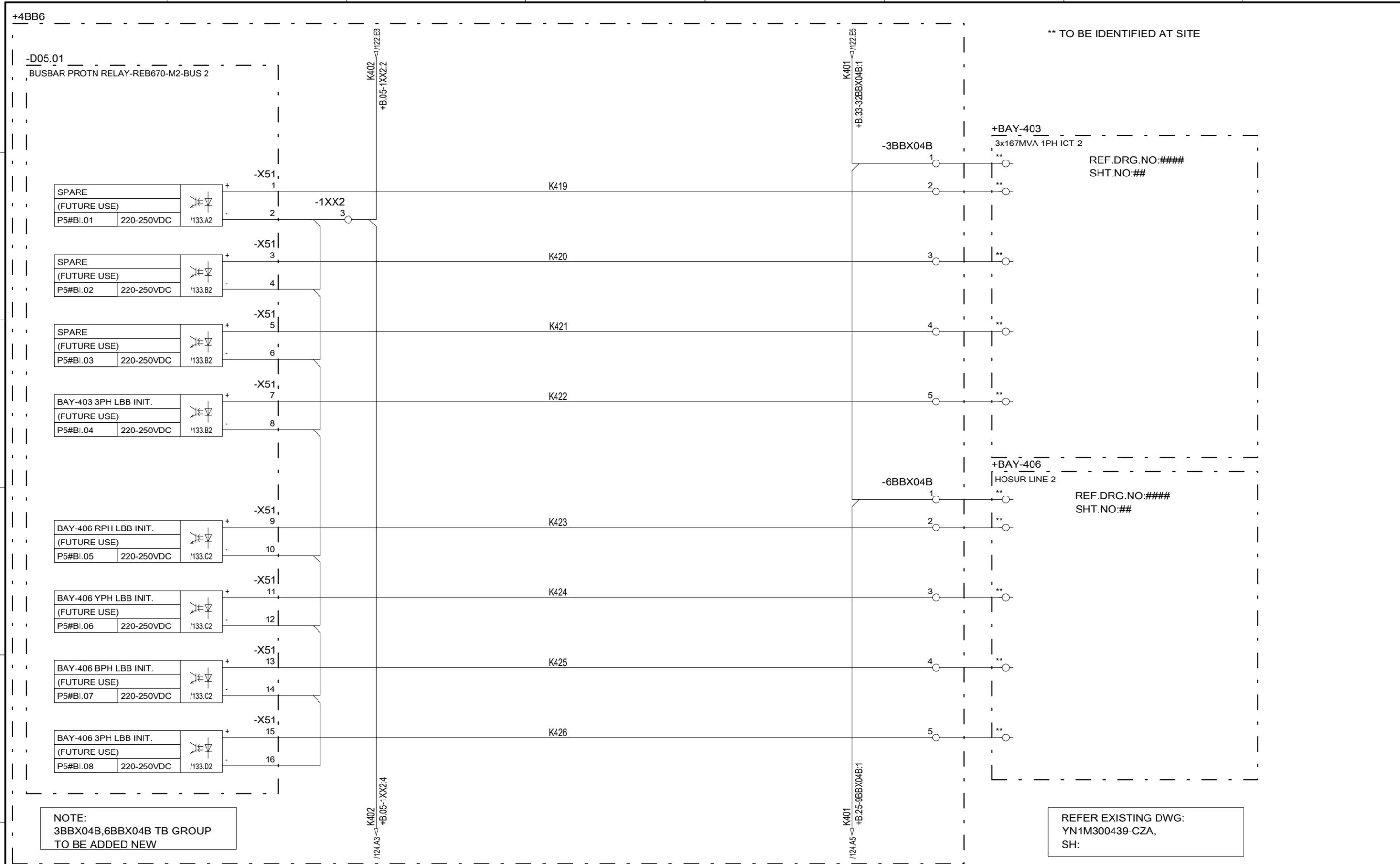
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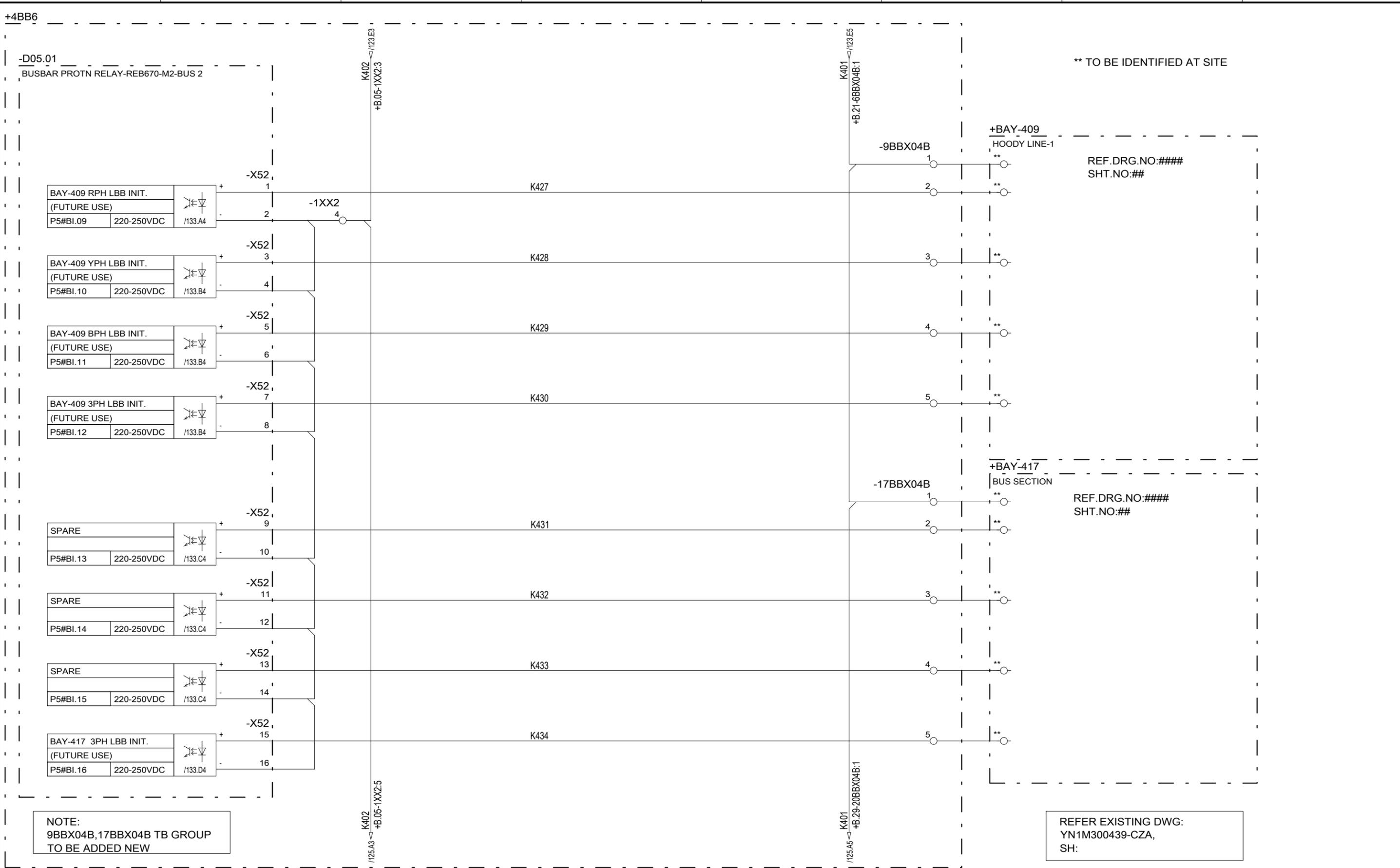
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A				DCC EFS			
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Rev.	Revision note	Date	Name					Doc. no. 1MNS801837-CGCA		Sheet 121 n. sheet 122	
1MYN691003-102(A3)REV01											



Based on: 3100135963		Prepared: 18.04.2023	PANKAJ PATIL	Tb: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 BINARY INPUTS	Doc. no: Circuit diagram	Ref. Des: =4R
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		Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137893		HITACHI <small>Hitachi Energy India Limited Formerly known as ABB Power Products and Systems India Limited.</small>	Resp. cont: PG-GAS	Rev. no: 00
Rev.:	Revised date	Date	Name		Doc. no: 1MNS801837-CGCA	Language: en
1MNS801837-002(A3).REV01						n. sheet: 123



Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 BINARY INPUTS	Doc. kind. Circuit diagram	Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS		
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Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA	Sheet 123	n. sheet 124
1MYN691003-102(A3)REV01									



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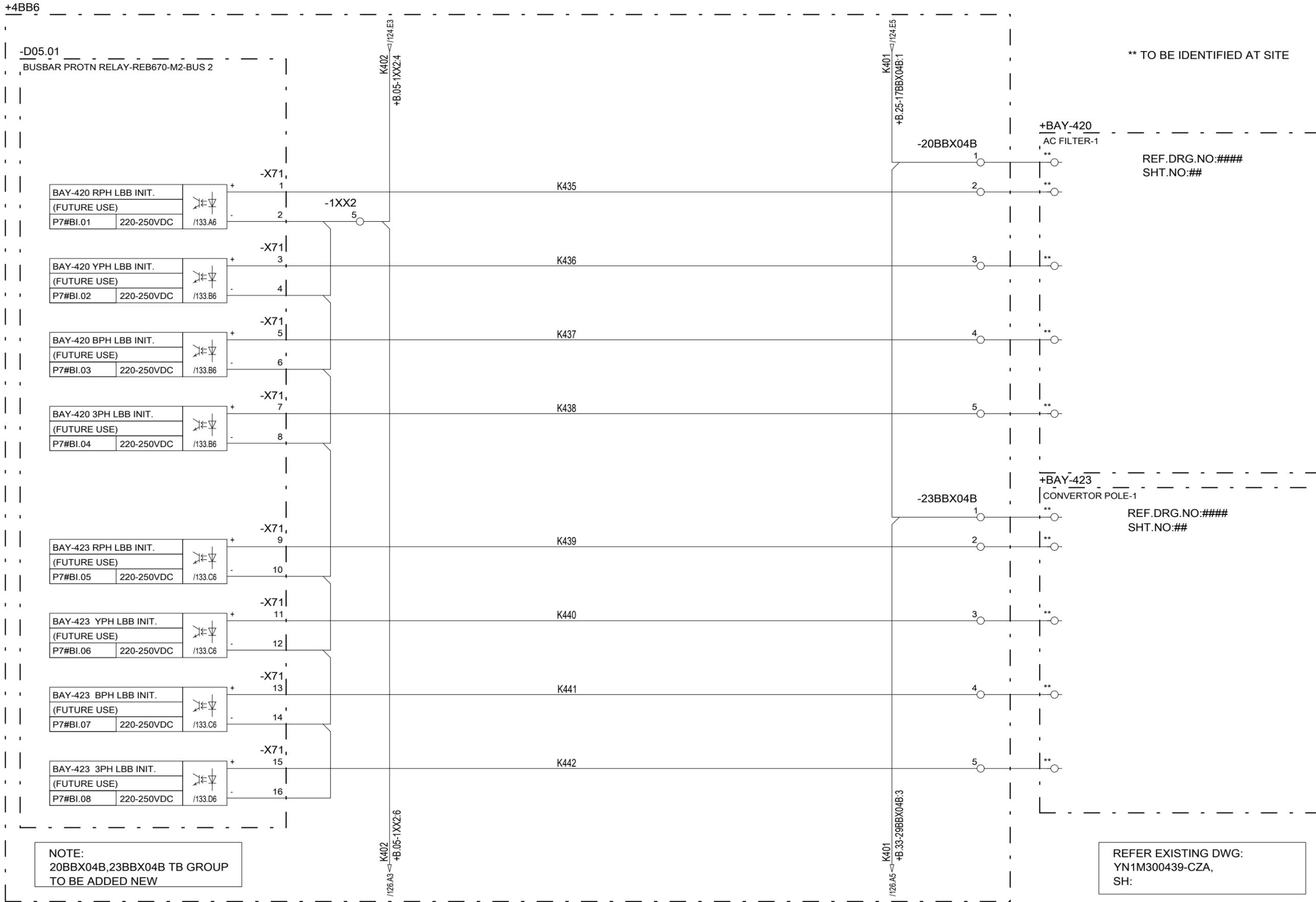
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NOTE:
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REFER EXISTING DWG:
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Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS		
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Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 124 n. sheet 125	
1MYN691003-102(A3)REV01									



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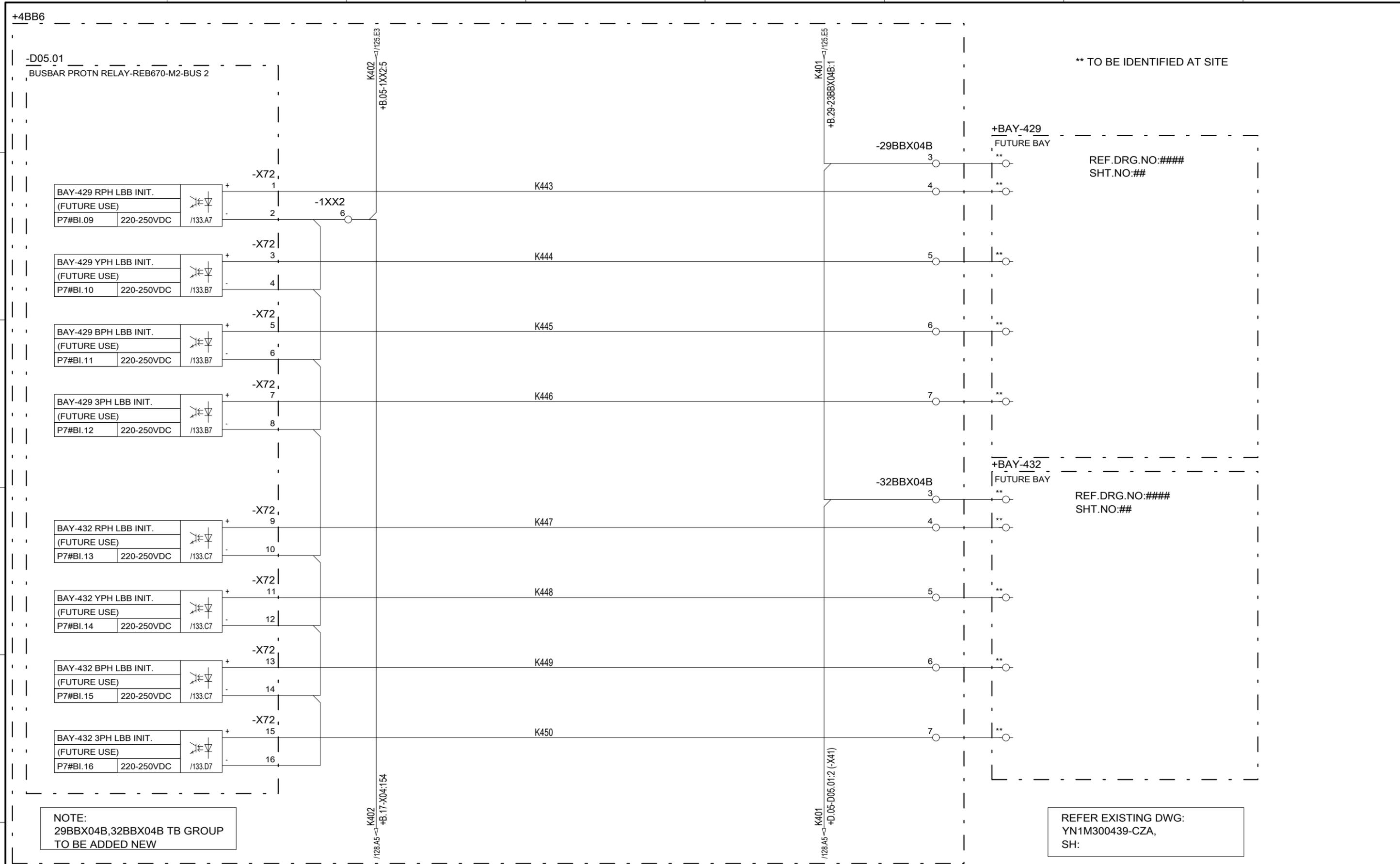
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NOTE:
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Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS		
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Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 125 n. sheet 126	
1MYN691003-102(A3)REV01									



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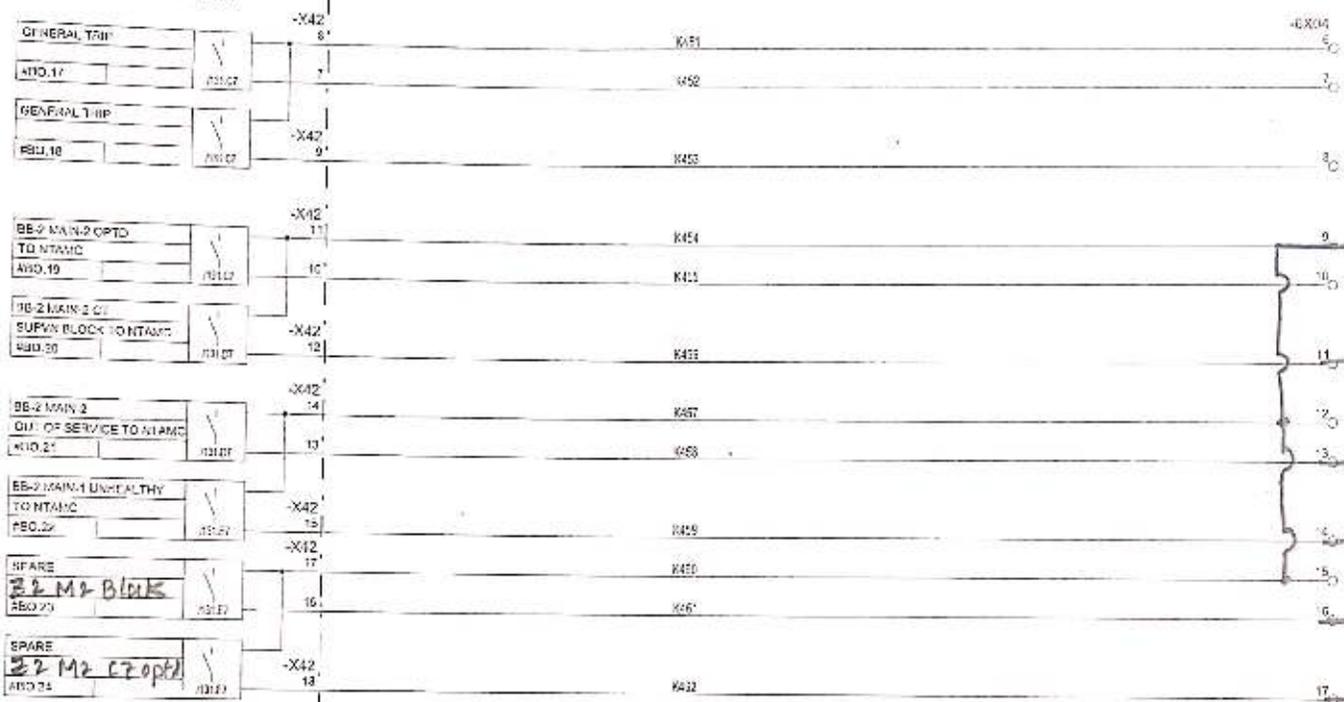
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NOTE:
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS		
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01	
Language en		Sheet 126		Hitachi Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		n. sheet 127	
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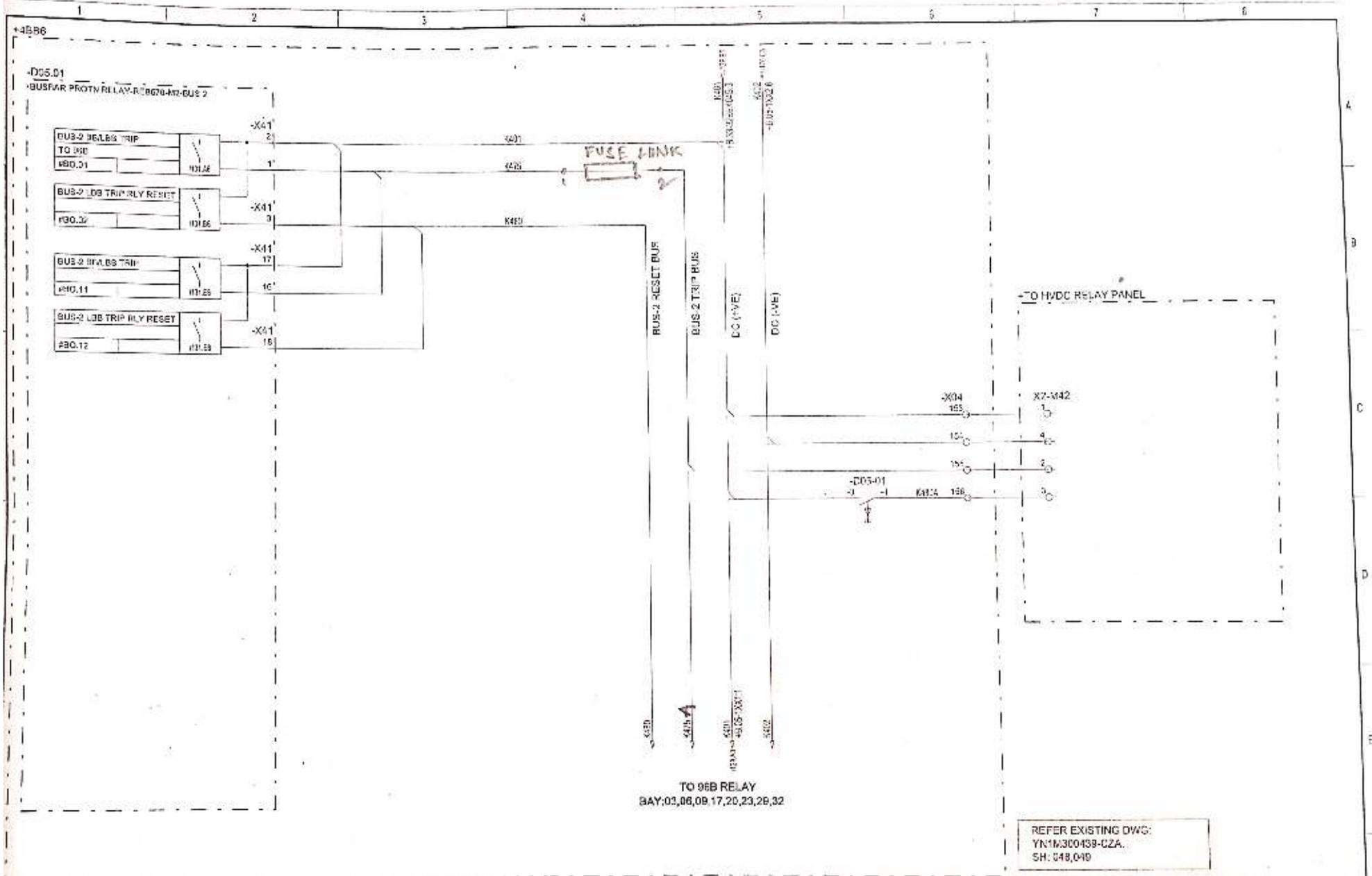
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BUSBAR PROTN RELAY RE-1070-M2-BUS2



NOTE:
BX04 TB GROUP
TO BE ADDED NEW

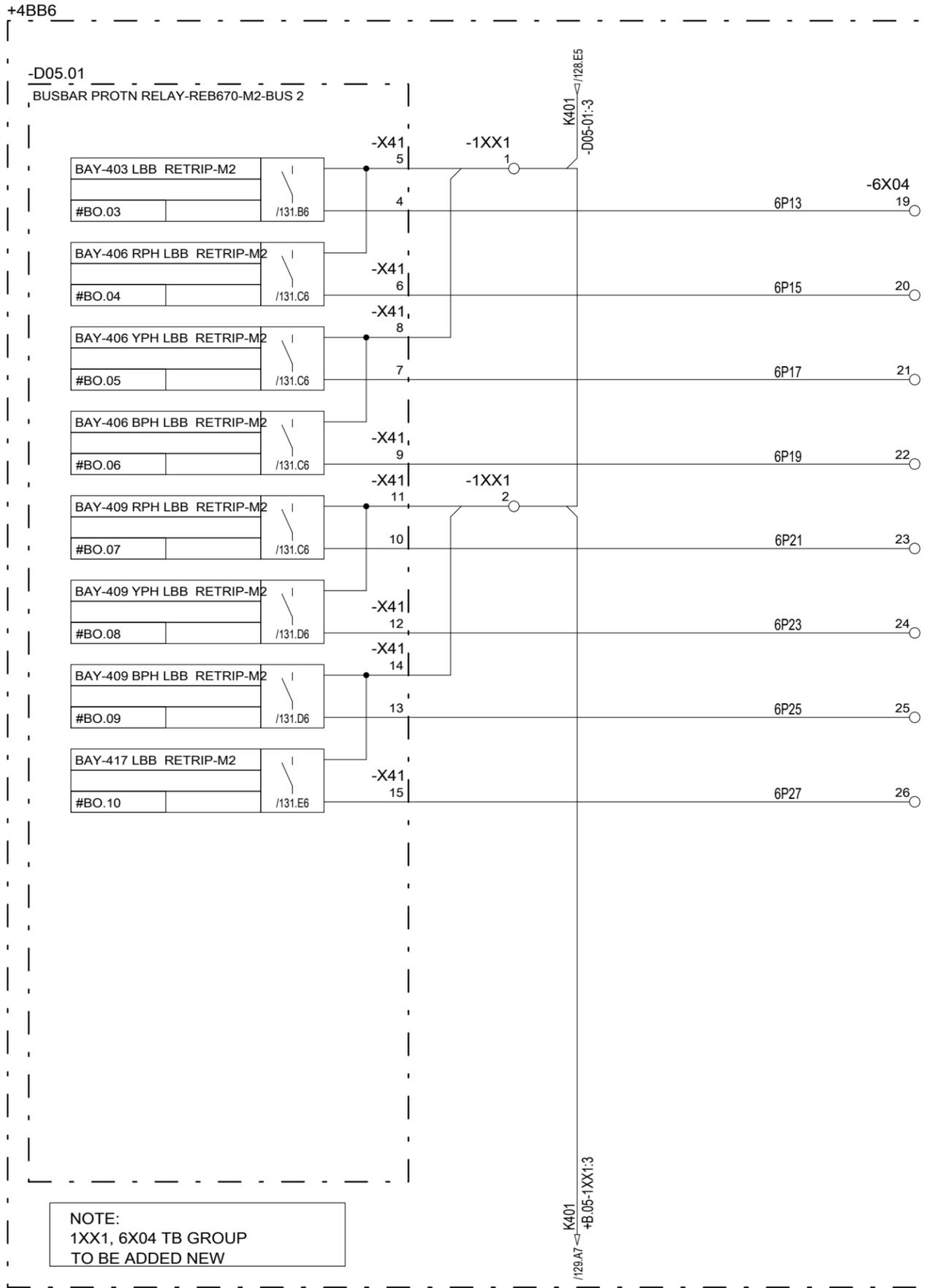
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Rev. Reason/Date		Name		HITACHI		Hitachi Energy India Limited (formerly known as ABB Power Products and Systems India Private)		Language en	
1MNS801020-1021A3,REV01						Doc. No. 1MNS801837-CGCA		Sheet 127	
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REFER EXISTING DWG:
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Based on: 3100135053	Prepared: 18.04.2023 PANKAJ PATIL	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 BINARY OUTPUTS	Doc. kind: Circuit diagram	Ref. Des: =4R
	Approved: 20.04.2023 DEENADAYALAN A		DCG EFS	
	Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	HITACHI Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	Res. org.: PG-GAS	Rev. no: 00
Rev. / Revision note	Date	Name	Doc. no: 1MNS801837-CGCA	Language: en
			Sheet: 123	Page: 129



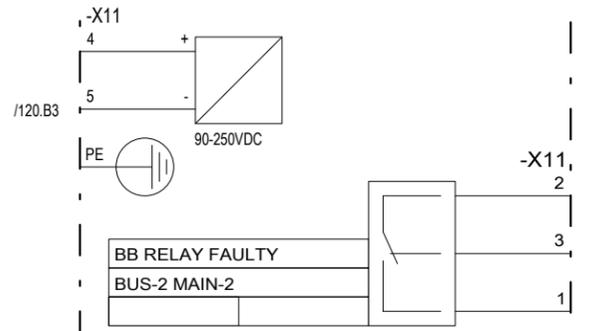
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Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 BINARY OUTPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R		
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS			
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01		Language en
Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 129		n. sheet 130
1MYN691003-102(A3)REV01										

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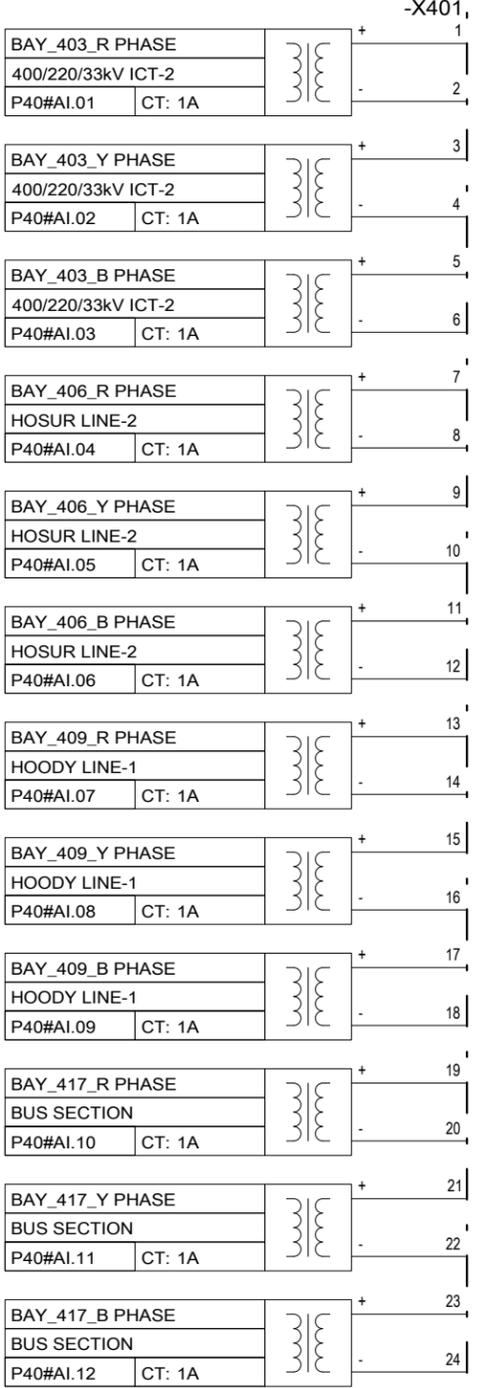
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BUSBAR PROTN RELAY-REB670-M2-BUS 2
PSM
90-250VDC



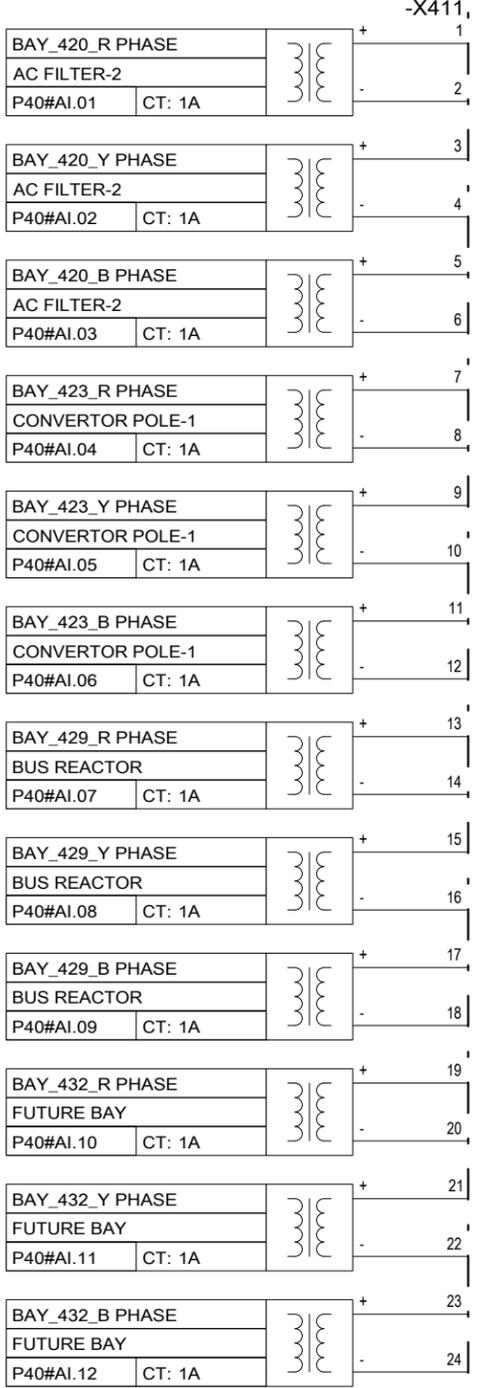
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BUSBAR PROTN RELAY-REB670-M2-BUS 2
TRM
1A, 50/60Hz



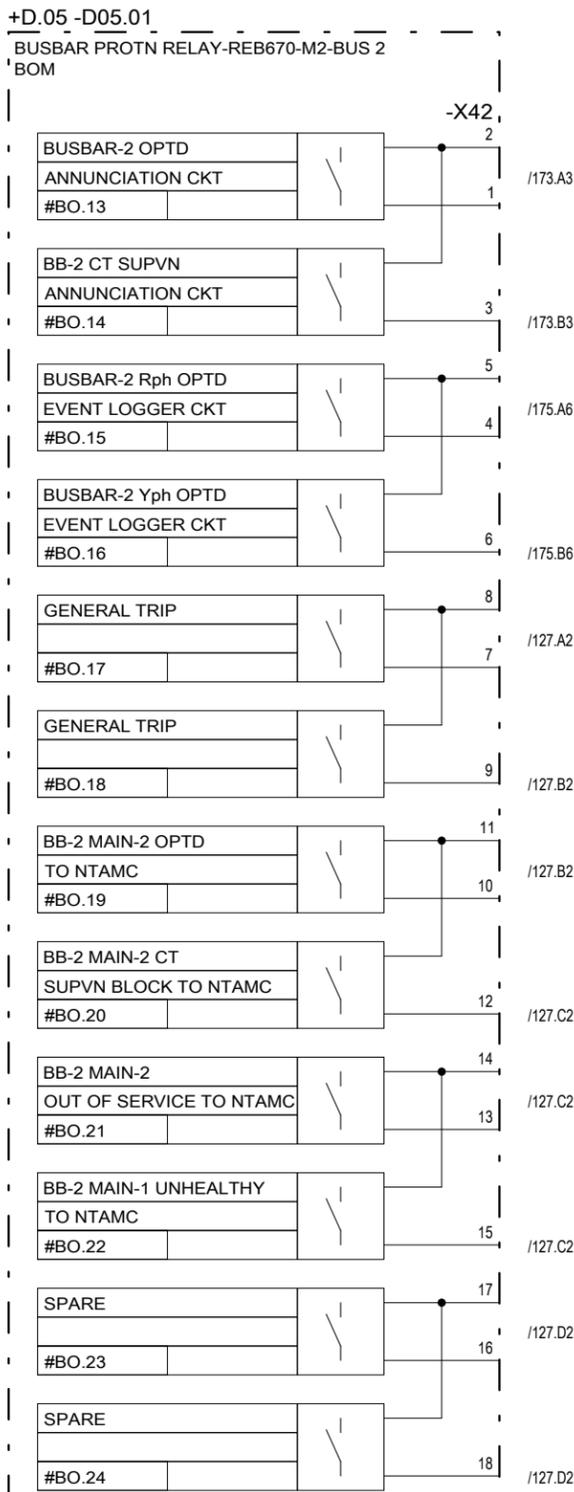
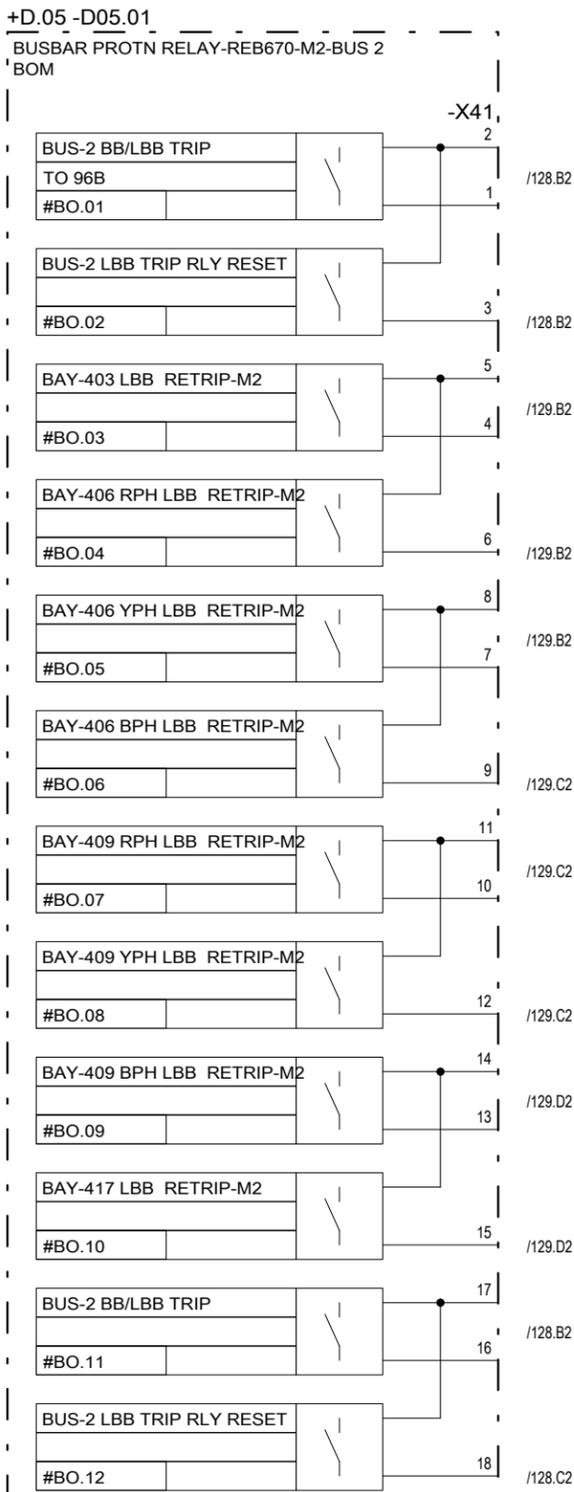
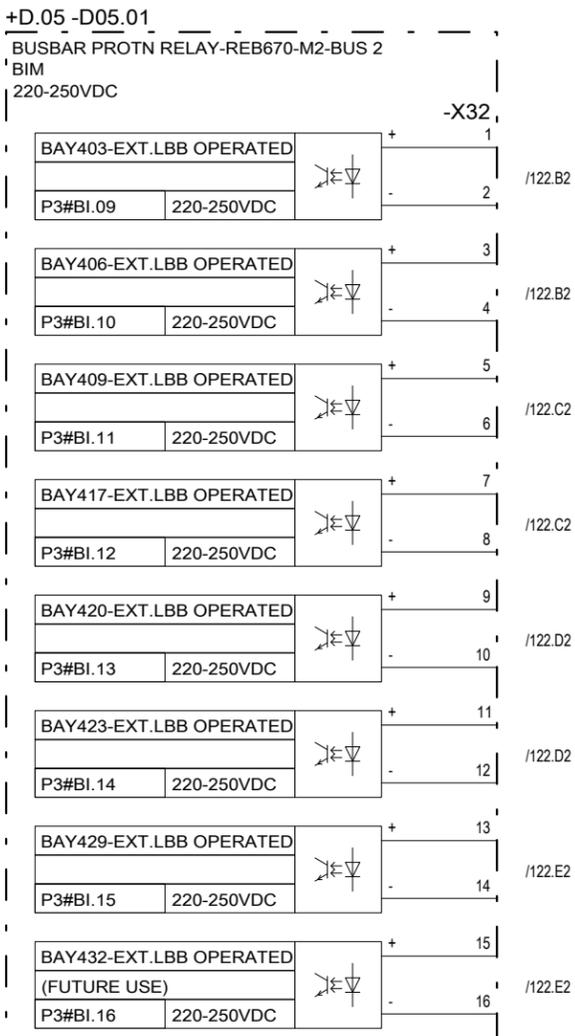
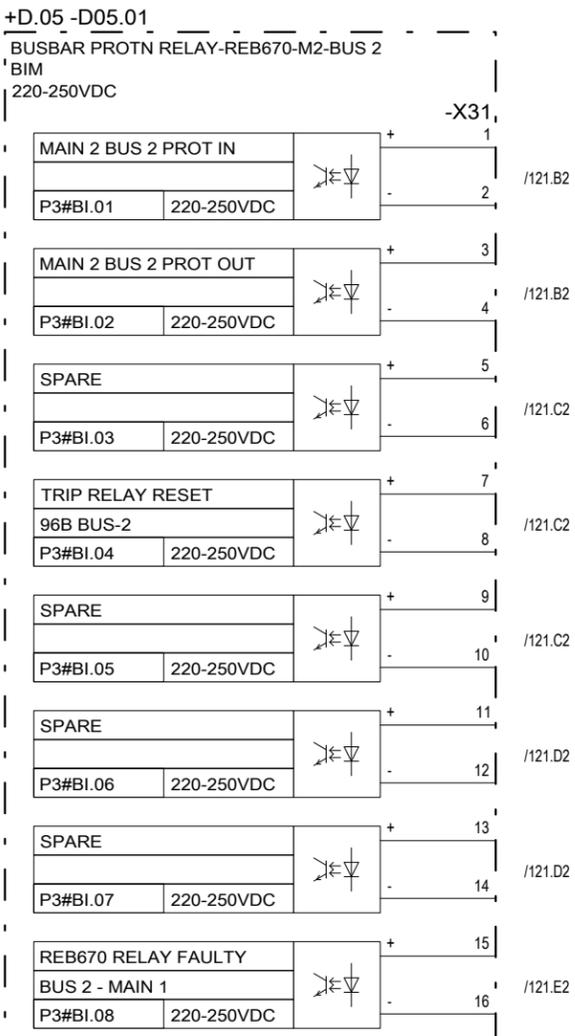
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BUSBAR PROTN RELAY-REB670-M2-BUS 2
TRM
1A, 50/60Hz



Based on 3100135063				Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
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1MYN691003-102(A3)REV01								Doc. no. 1MNS801837-CGCA		Sheet 130 n. sheet 131	

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Based on 3100135063		Prepared 18.04.2023	PANKAJ PATIL
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR
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3100137898			
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

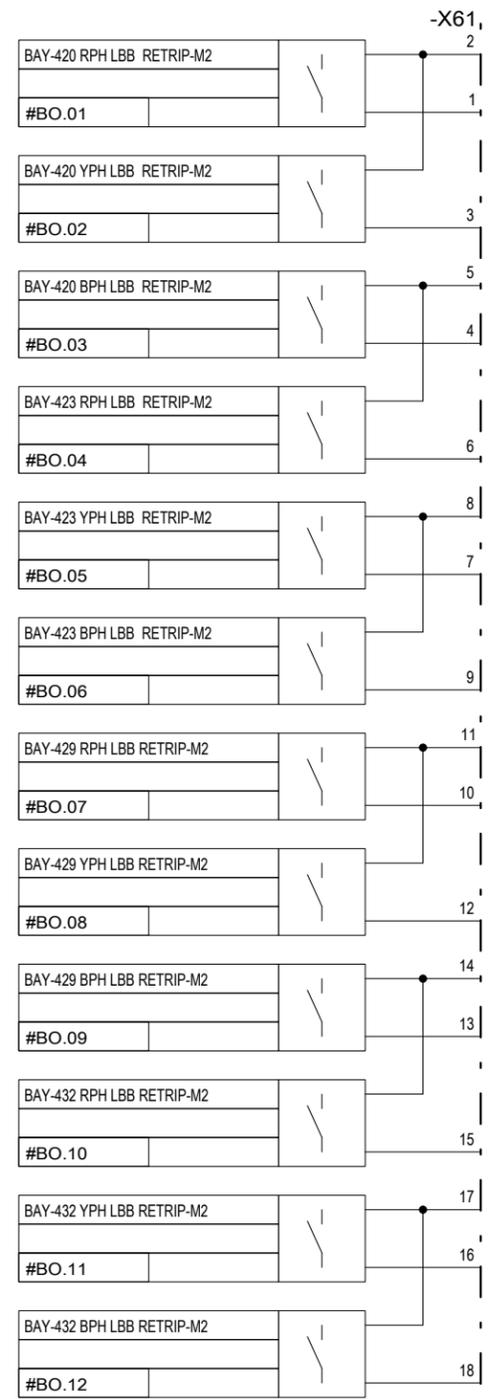
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HITACHI Hitachi Energy India Limited	

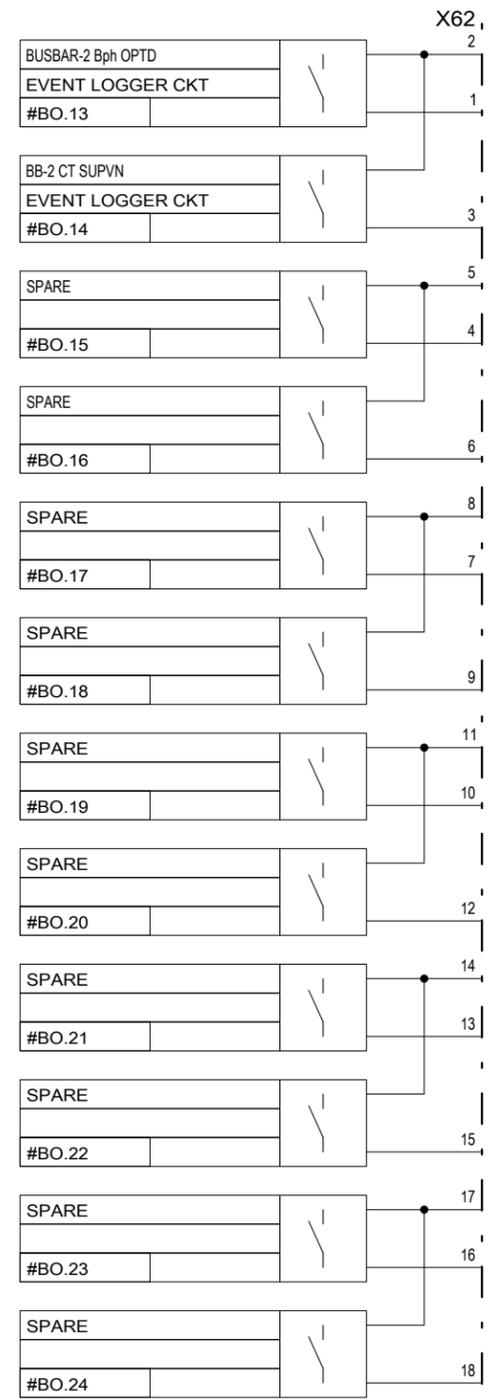
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+D.05 -D05.01
 BUSBAR PROT N RELAY-REB670-M2-BUS 2
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 BUSBAR PROT N RELAY-REB670-M2-BUS 2
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Based on 3100135063		Prepared 18.04.2023	PANKAJ PATIL
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Rev.	Revision note	Date	Name
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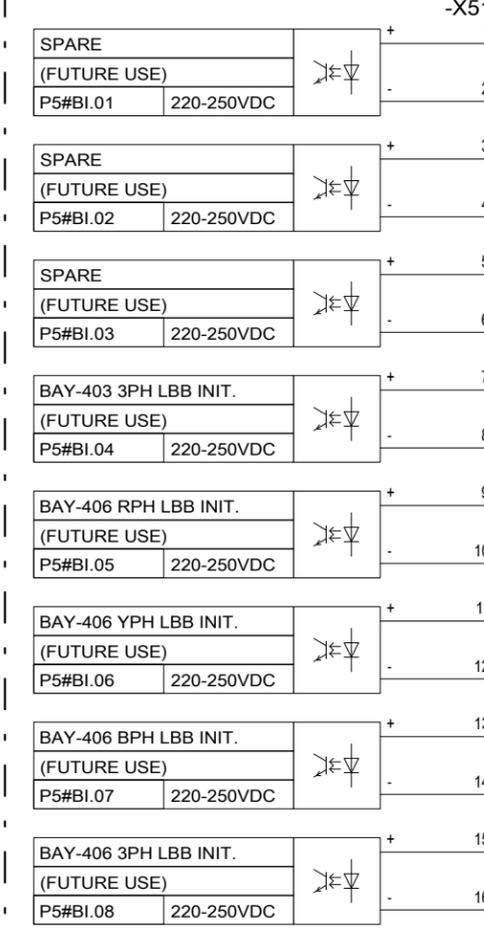
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HITACHI Hitachi Energy India Limited	

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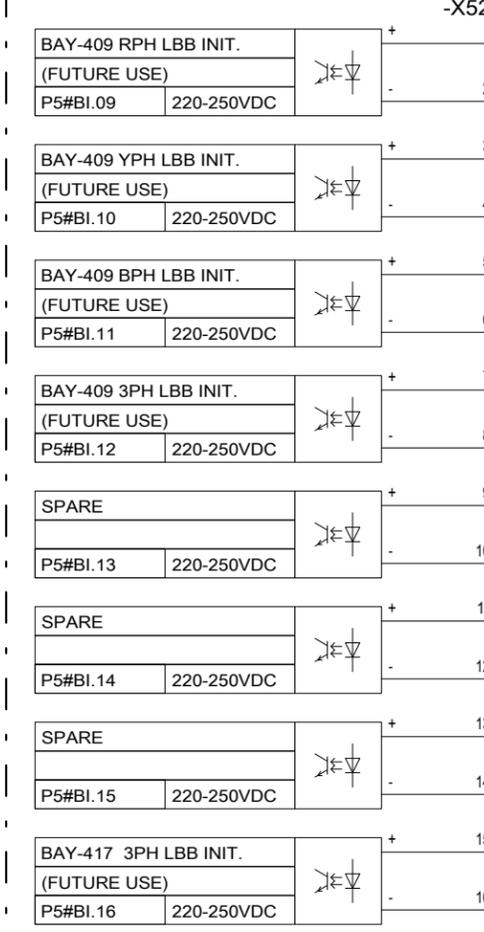
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BUSBAR PROTN RELAY-REB670-M2-BUS 2
BIM
220-250VDC



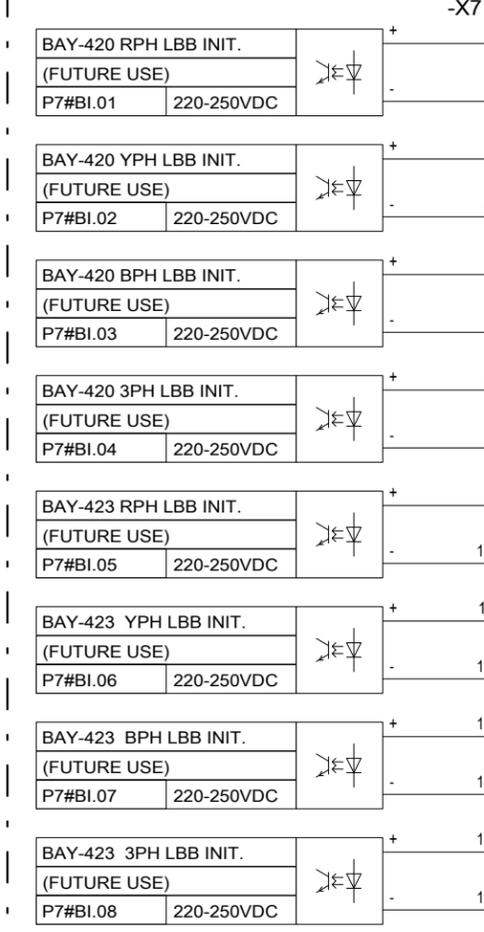
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BIM
220-250VDC



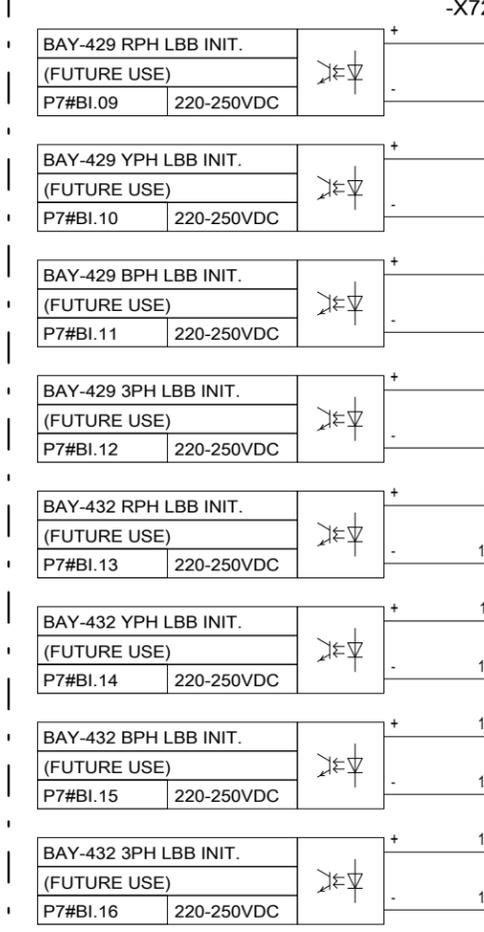
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BUSBAR PROTN RELAY-REB670-M2-BUS 2
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220-250VDC



+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M2-BUS 2
BIM
220-250VDC

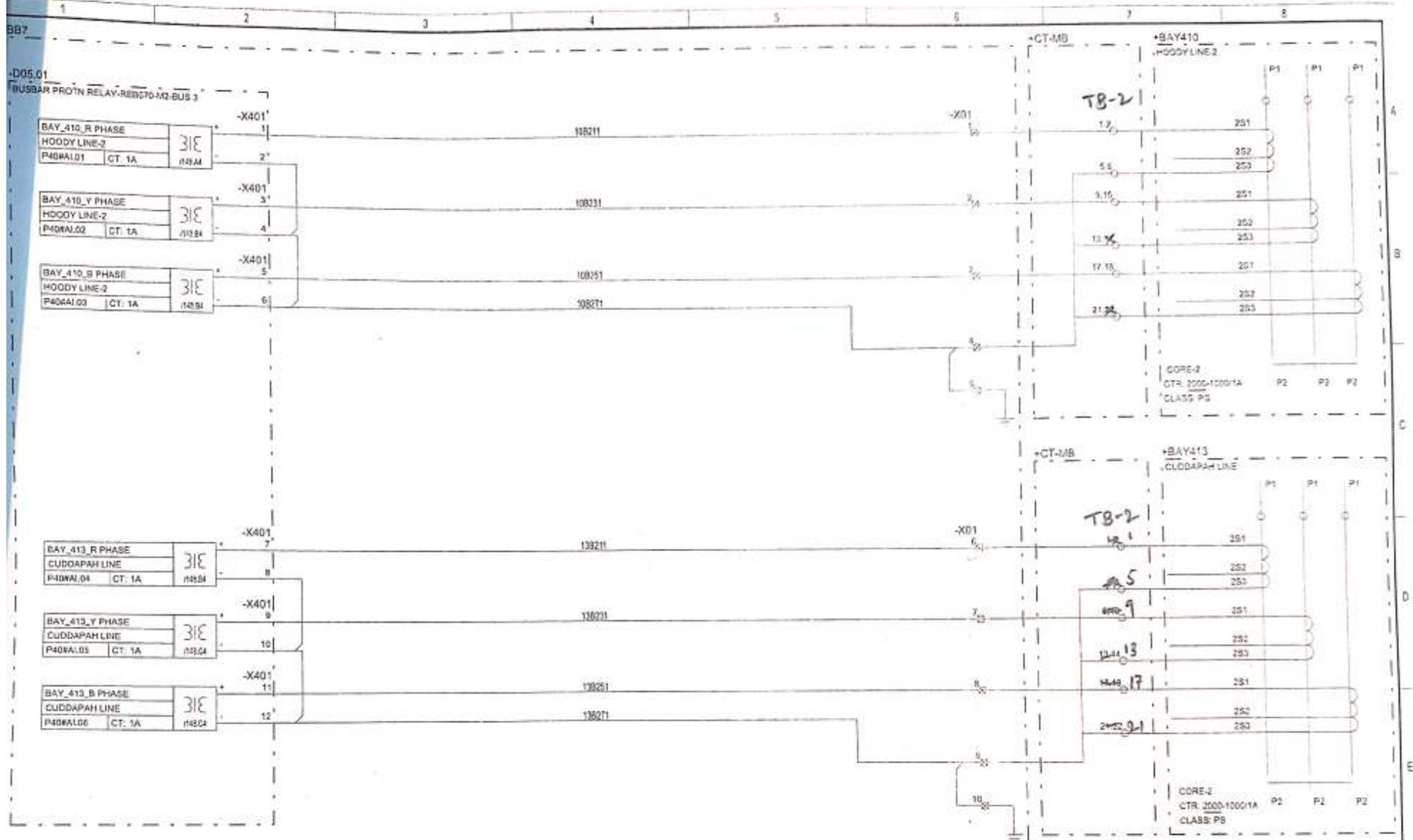


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Rev.	Revision note	Date	Name
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Approved 20.04.2023	DEENADAYALAN A
Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898

Title	400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 2 OVERVIEW
HITACHI Hitachi Energy India Limited	

Doc. kind.	Circuit diagram	Ref.Des.	=4R
Resp. dept.	DCC EFS PG-GAS	Rev. ind.	01
Doc. no.	1MNS801837-CGCA	Language	en
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 SH.035_5,035_6

Id no: 3100135063	Prepared	18.04.2023	PANKAJ PATIL	Title	400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 3 CT CIRCUITS	Doc.knd	Circuit diagram		Ref.Des.	=4R		
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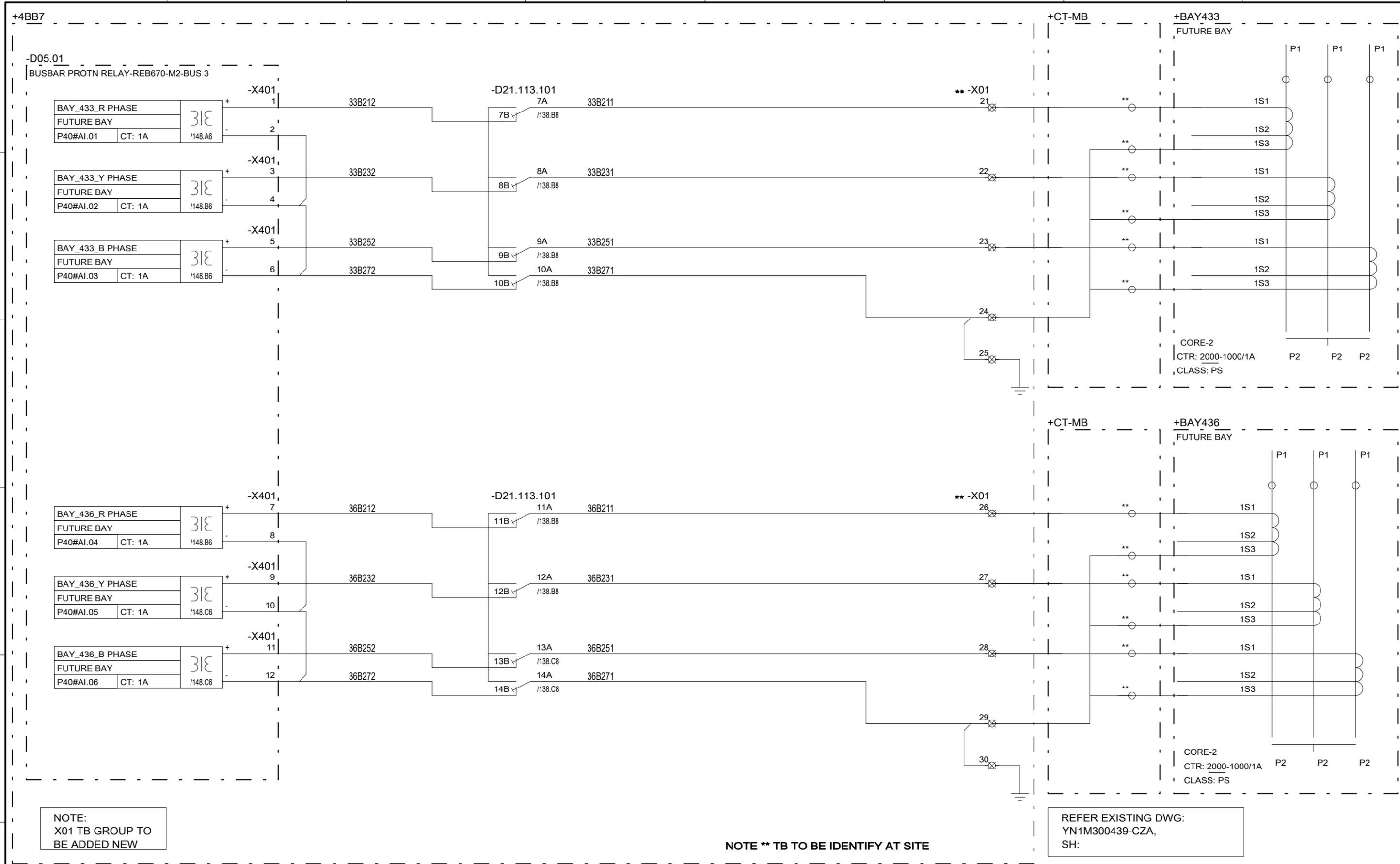


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Revision table	Date	Name	Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	HITACHI	Resp. Dept.	PG-GAS	Rev. No.	00	Language	en
						Doc. No.	1MNS801837-CGCA	Sheet	135	n. sheet	136

603-102(A2)REV01

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NOTE:
X01 TB GROUP TO
BE ADDED NEW

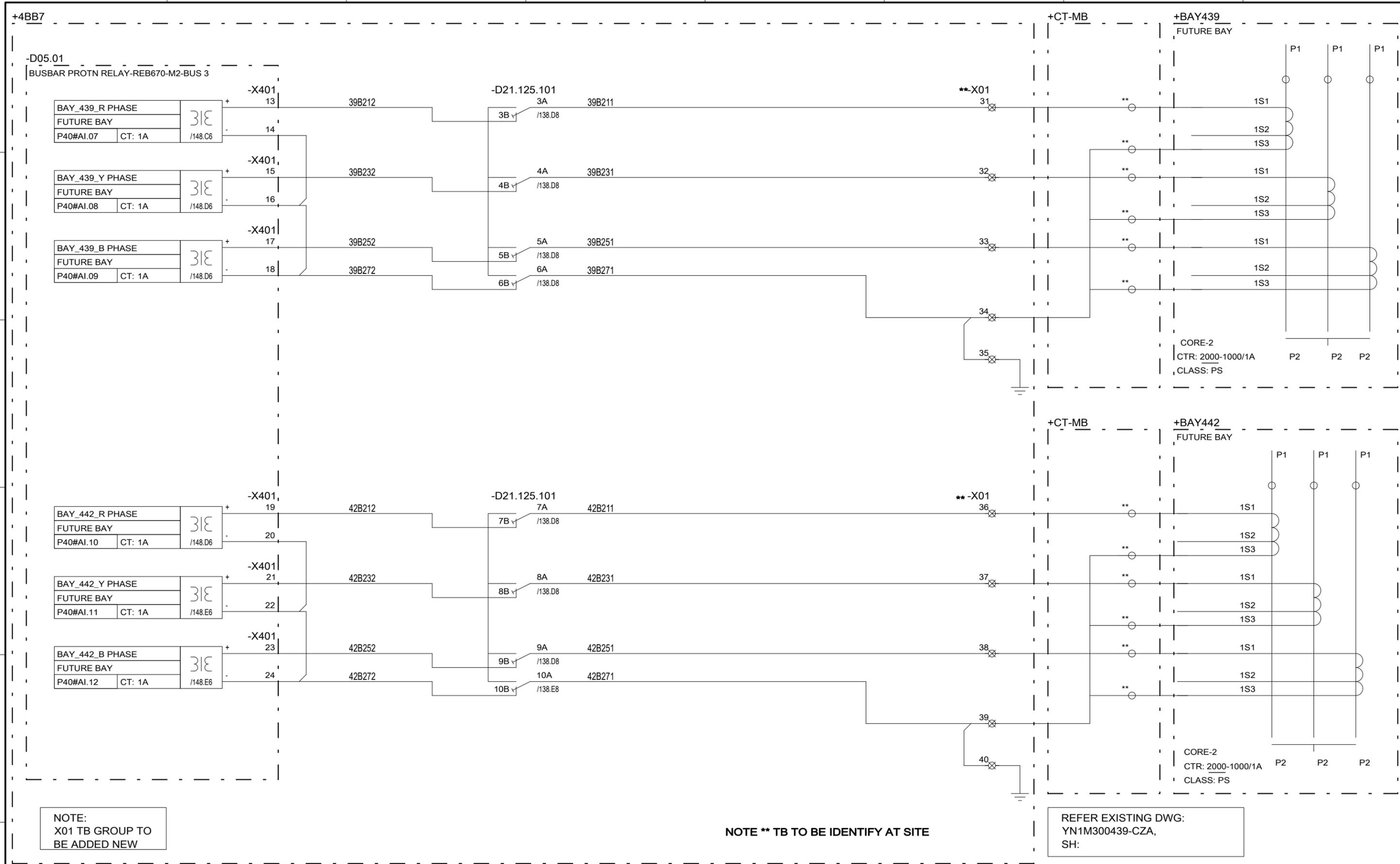
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023		DEENADAYALAN A	DCC EFS	
			Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
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1MYN691003-102(A3)REV01								

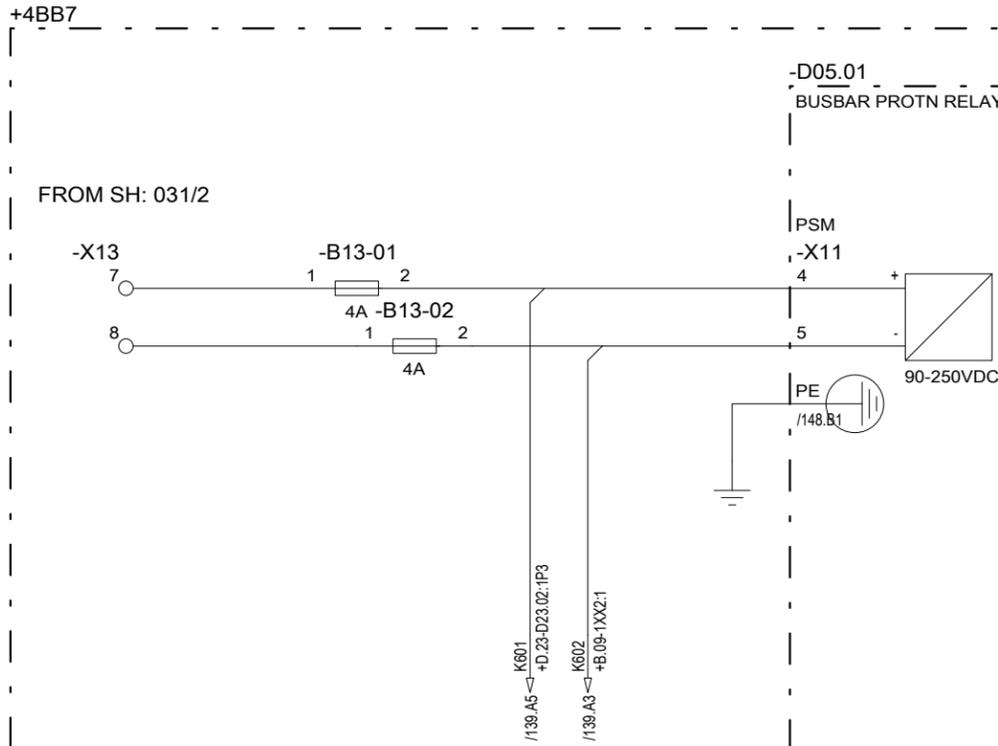
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Rev. Revision note		Date		Name					
1MYN691003-102(A3)REV01									

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-D05.01
BUSBAR PROTN RELAY-REB670-M2-BUS 3

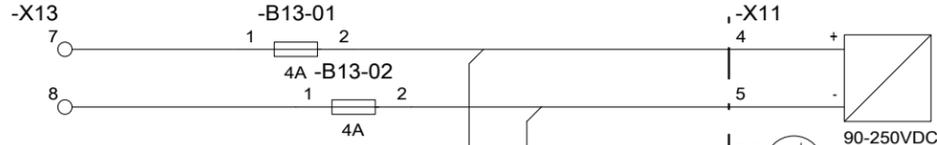
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LED

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BUSBAR PROTN RELAY-REB670-M2-BUS 3
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-D21.101.101
Test

-D21.113.101
Test

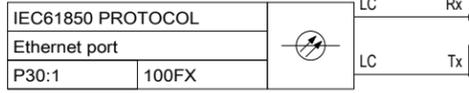
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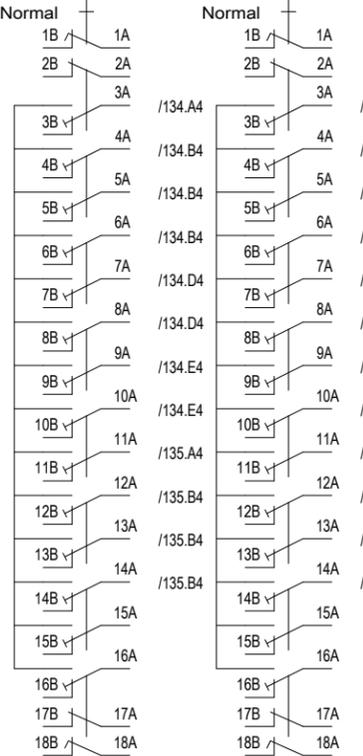
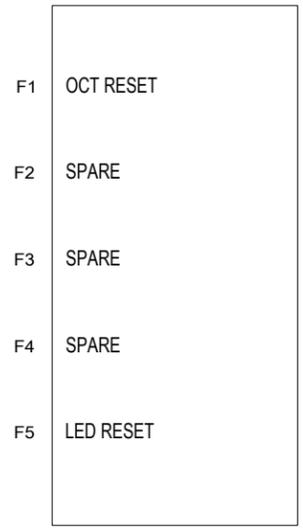
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+D.23-D23.02:1P3
K602
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- 1 DIFF OPTD.
- 2 EXT LBB OPTD
- 3 RPH TRIP
- 4 YPH TRIP
- 5 BPH TRIP
- 6 BB BLOCKED
- 7 RPH OCT ALARM
- 8 YPH OCT ALARM
- 9 BPH OCT ALARM
- 10 96B OPTD
- 11
- 12
- 13
- 14
- 15

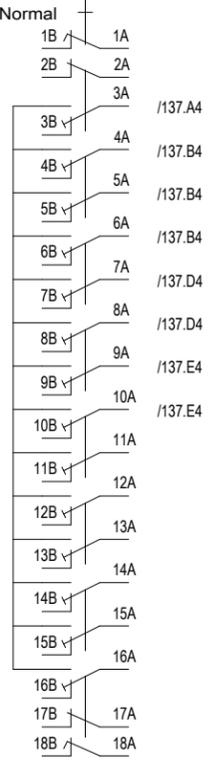
O: Open
I: Closed
C: Cancel/Clear
E: Enter/Select/Execute
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BUSBAR PROTN RELAY-REB670-M2-BUS 3



-D21.125.101
Test

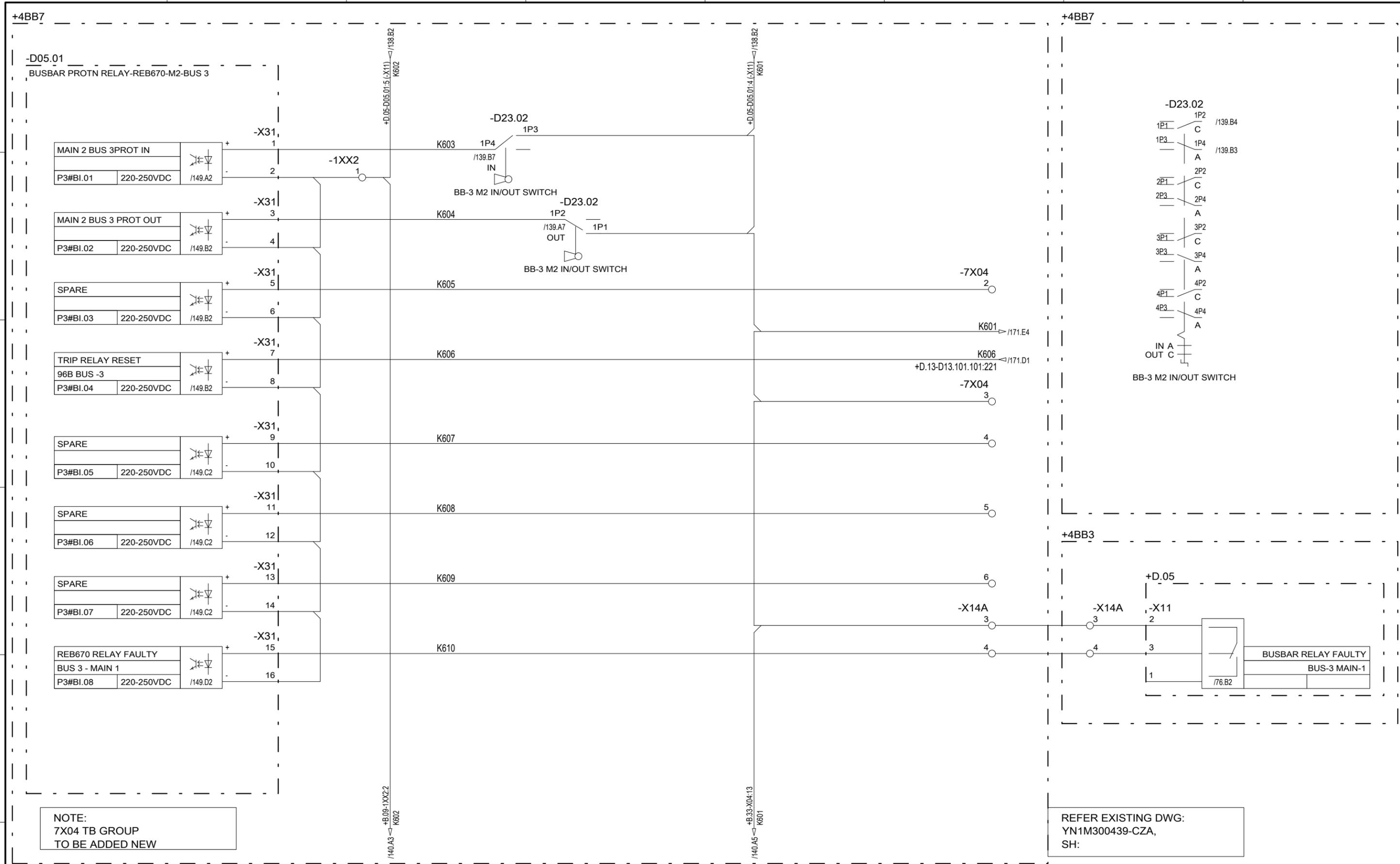


LIST OF FUNCTIONS
AVAILABLE IN RELAY

- 1) Differential Protection (PDIF,87BB)
- 2) Breaker Failure Protection(50LBB)
- 3) Disturbance Recorder(RDRE)
- 4) Event Recorder (RDRE)

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SH: 037

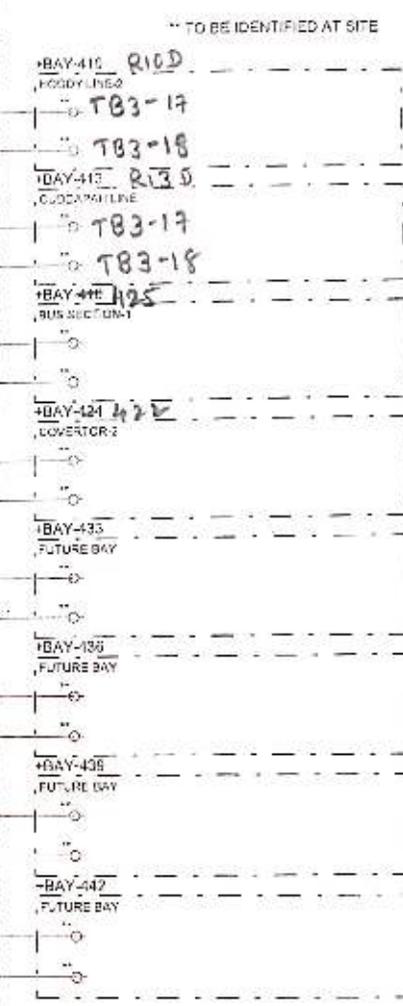
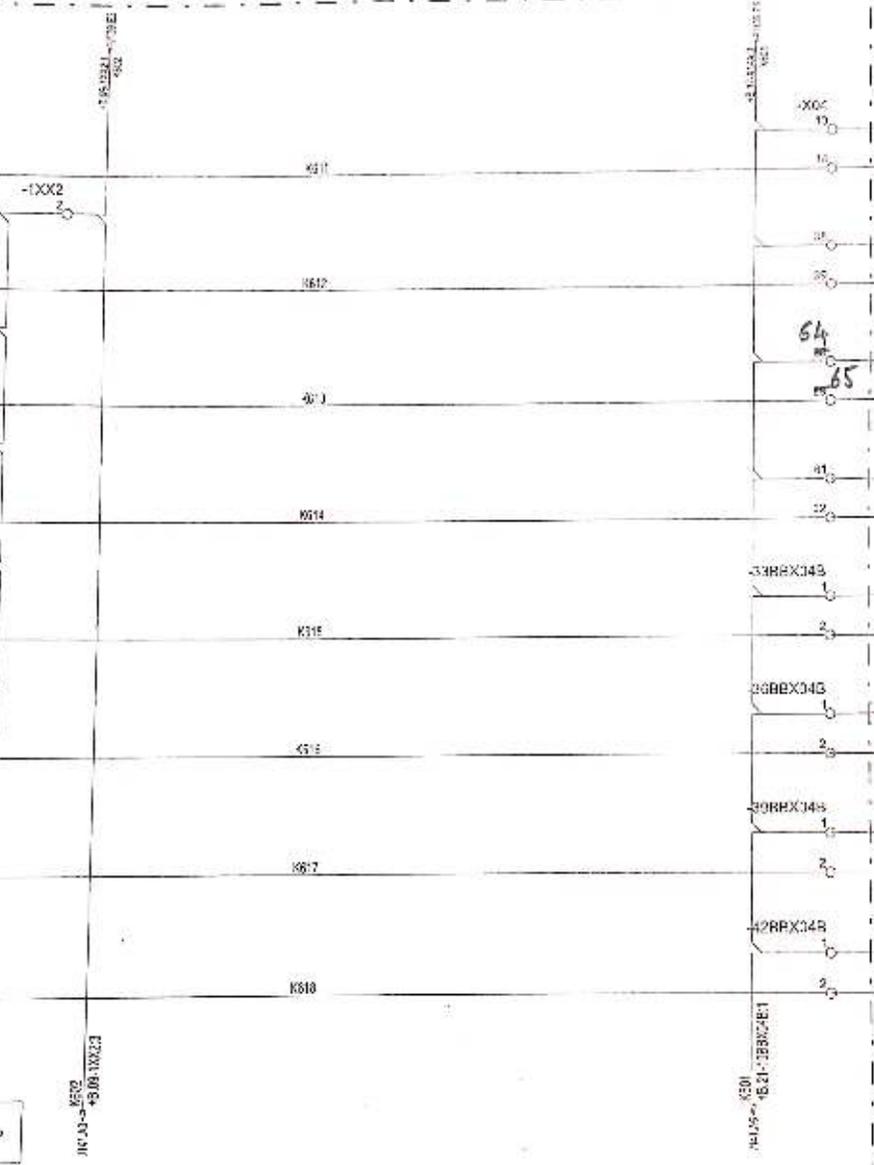
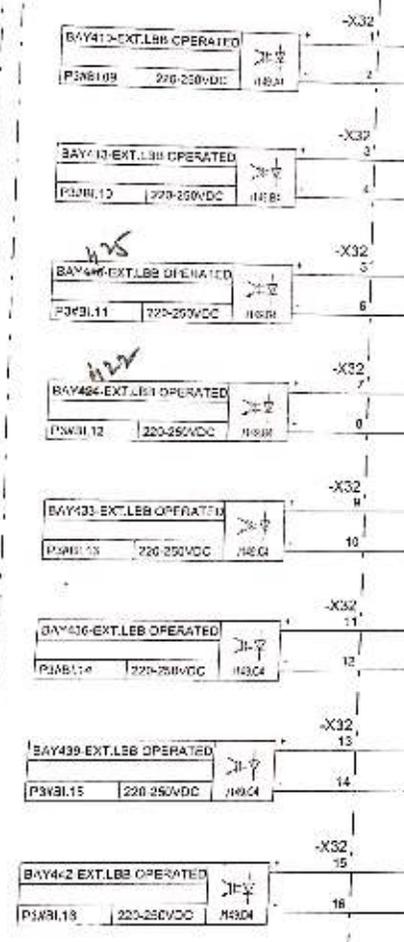
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01 REVISED AS PER CUSTOMER COMMENTS		02.10.2024		Approved 20.04.2023 DEENADAYALAN A		Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		DCC EFS		Rev. ind. 01	
Rev. Revision note		Date		Name				Resp. dept. PG-GAS		Language en	
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Based on 3100135063				Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 3 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
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4-MBR7

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BUSBAR PROT. RELAY-REB670-M2-BUS 3

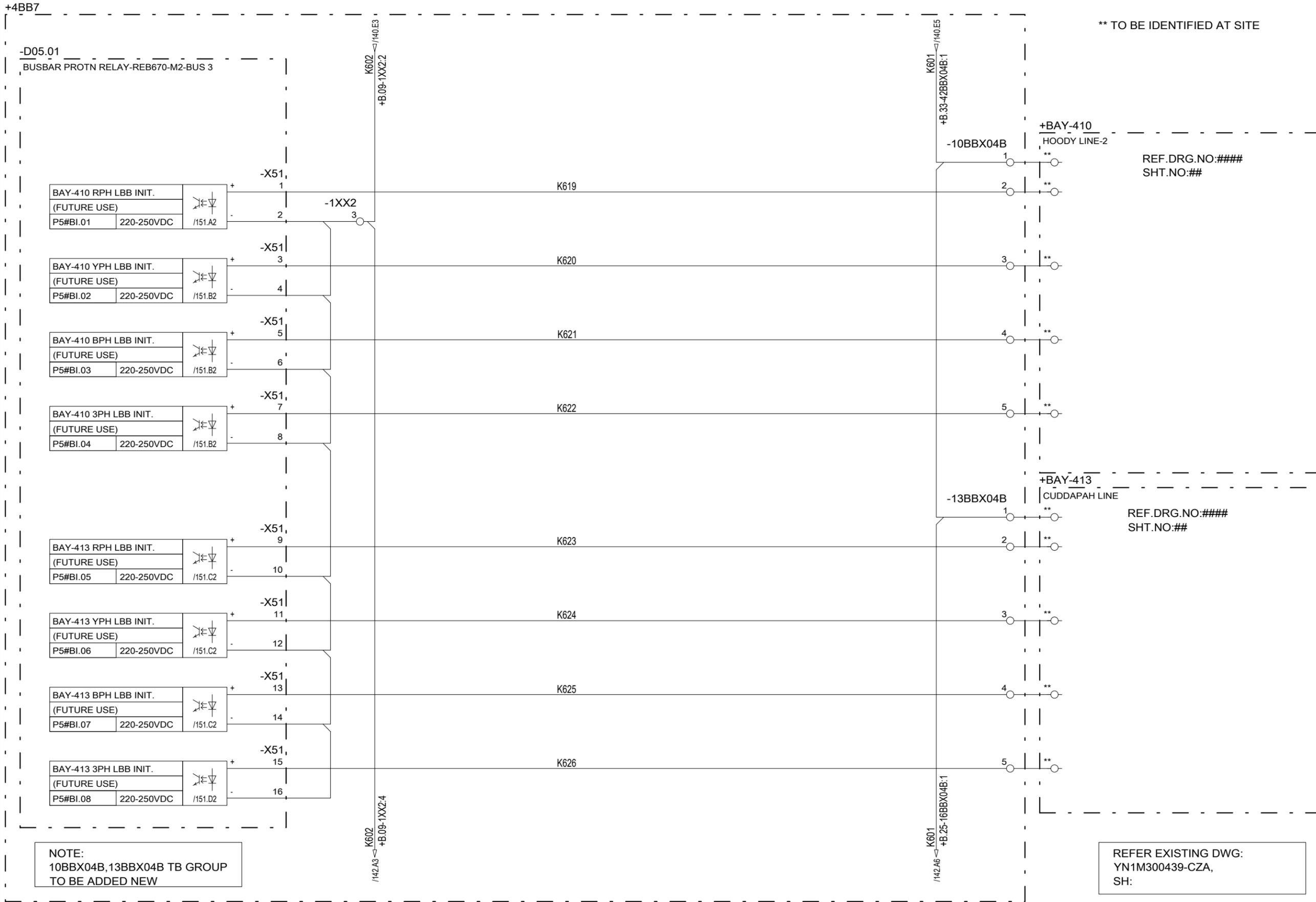


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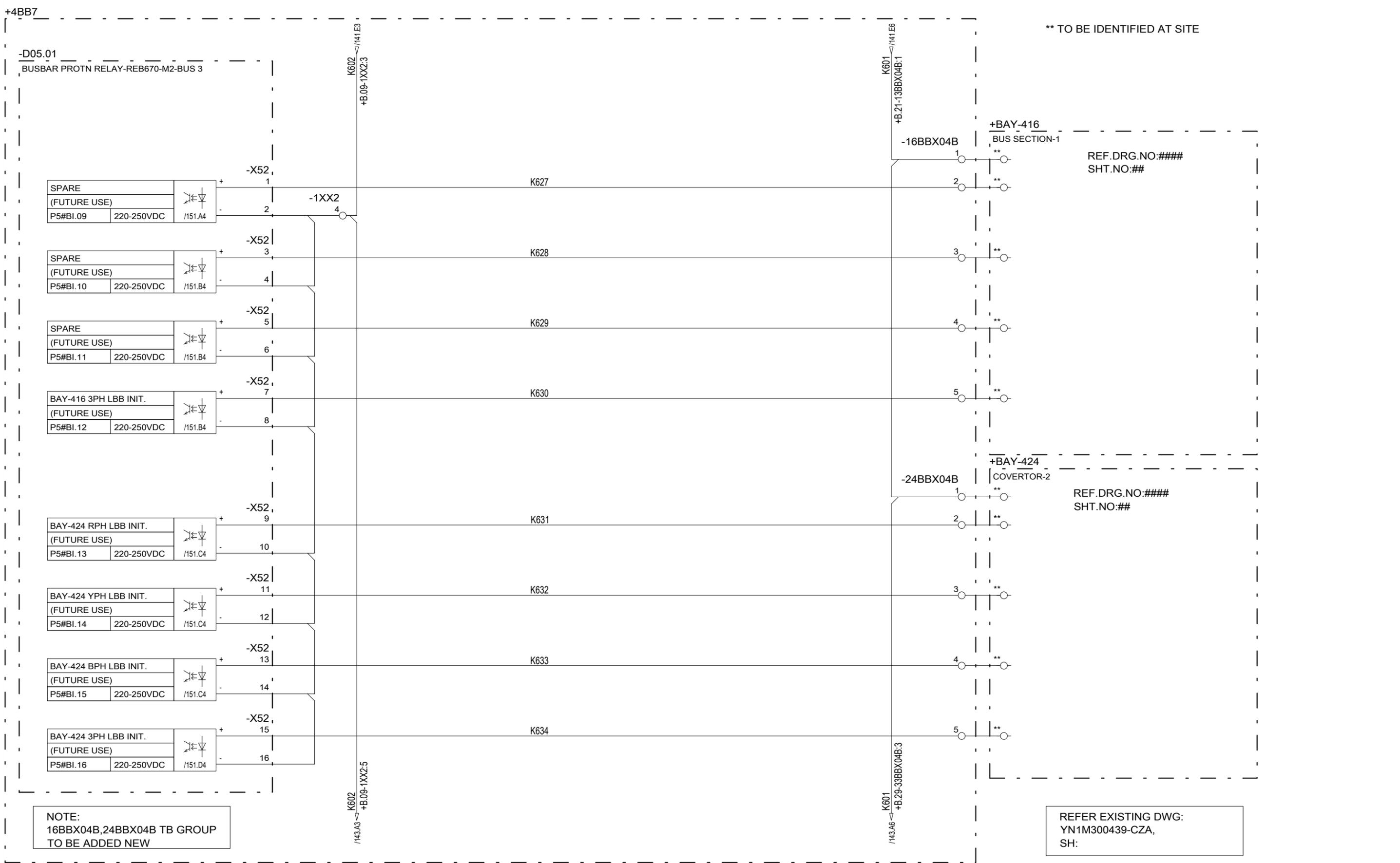
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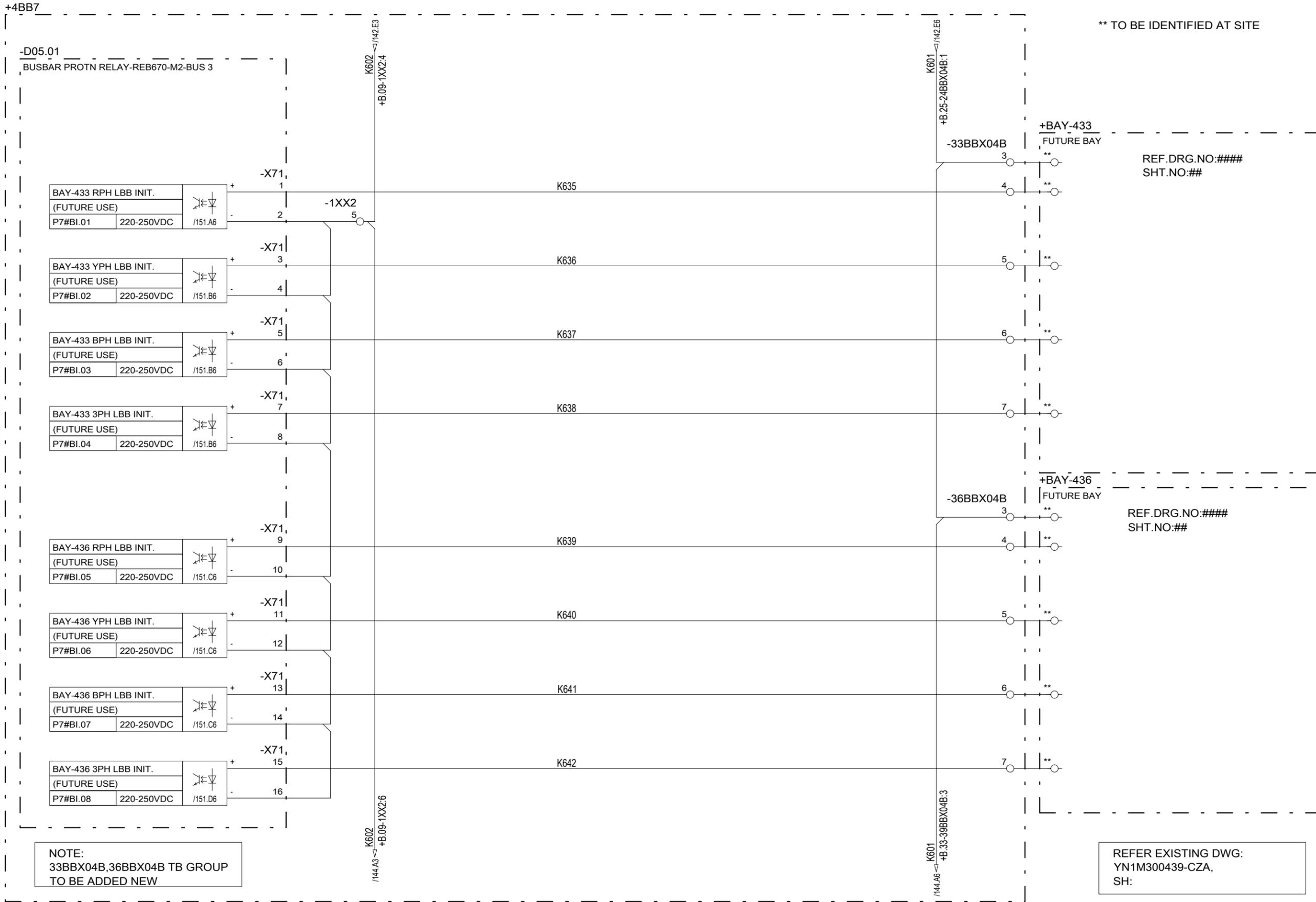
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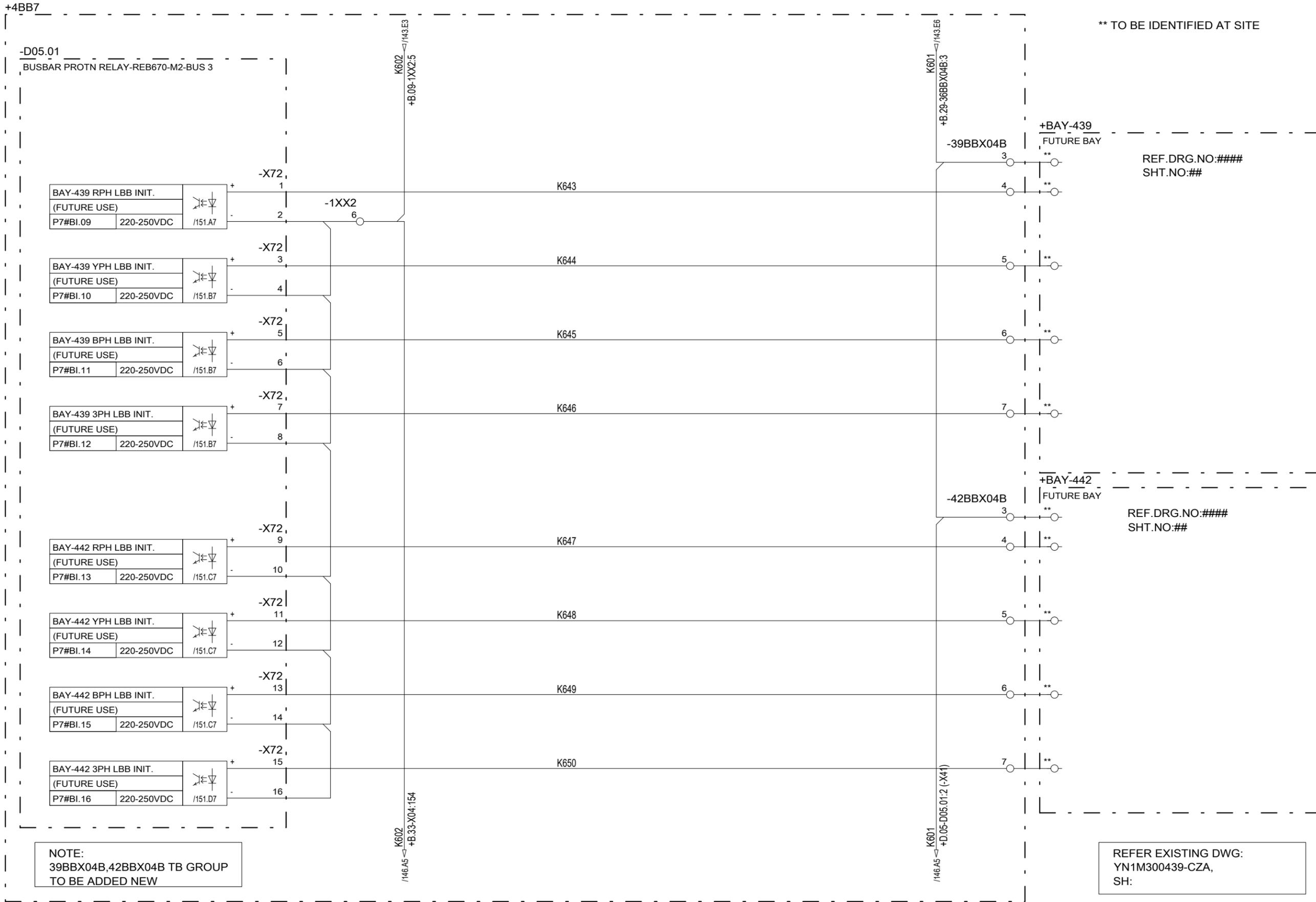
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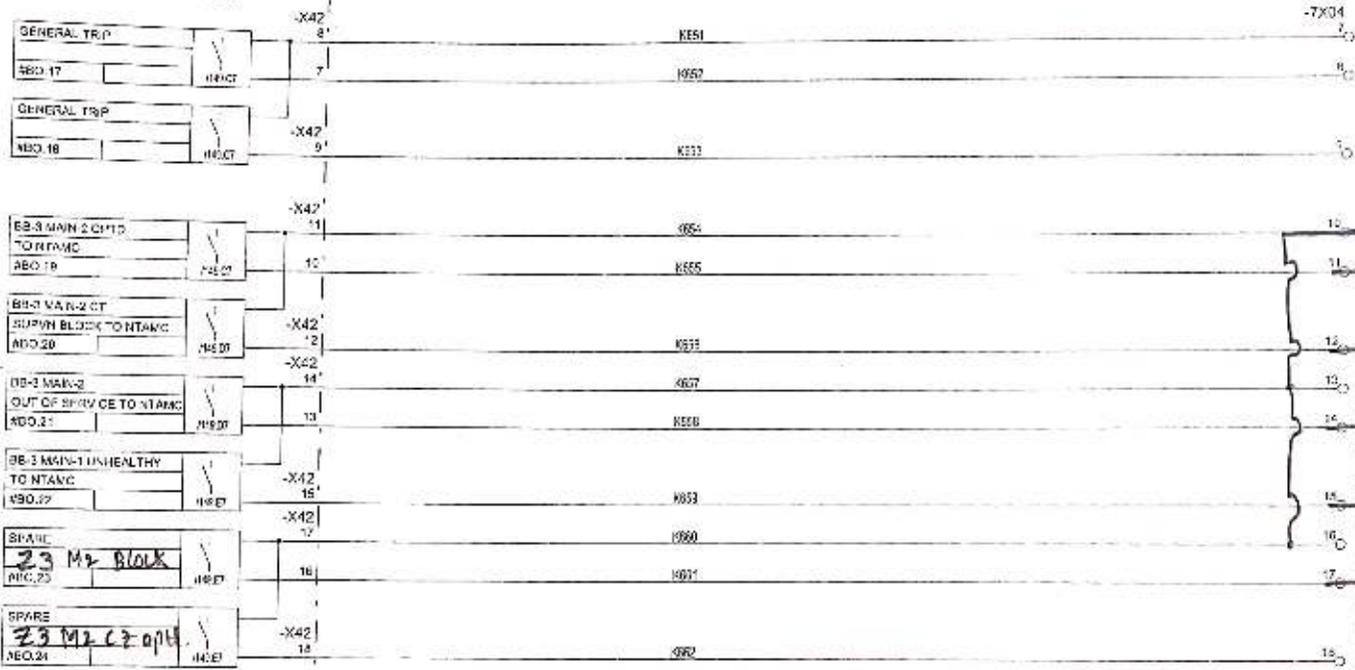
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Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 3 BINARY INPUTS	Doc. kind. Circuit diagram	Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS		
				Project	POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	HITACHI Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA	Sheet 144	n. sheet 145
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4BB7

009.01
BUSBAR PROTN RELAY-REB670-2-BUS 3



4BB7

DITB-1ve
DITB-1
DITB-2
DITB-3
DITB-4
DITB-5

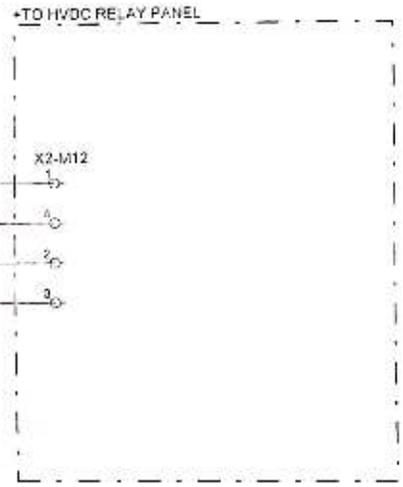
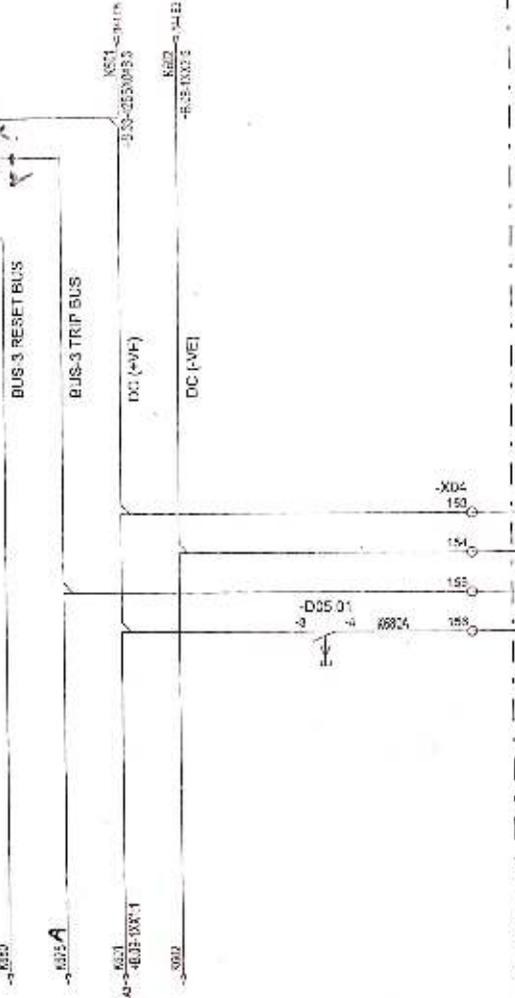
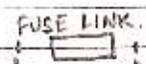
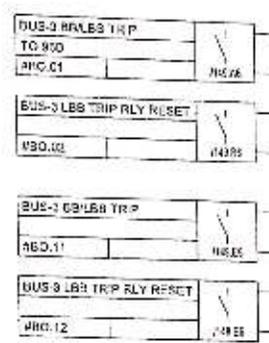
NOTE:
7X04 TB GROUP
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	20.04.2023 DEENADAYALAN A		
Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION	Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)	PG-GAS Rev. Int: 00 Language: 011	Sheet: 145 n. sheet: 146

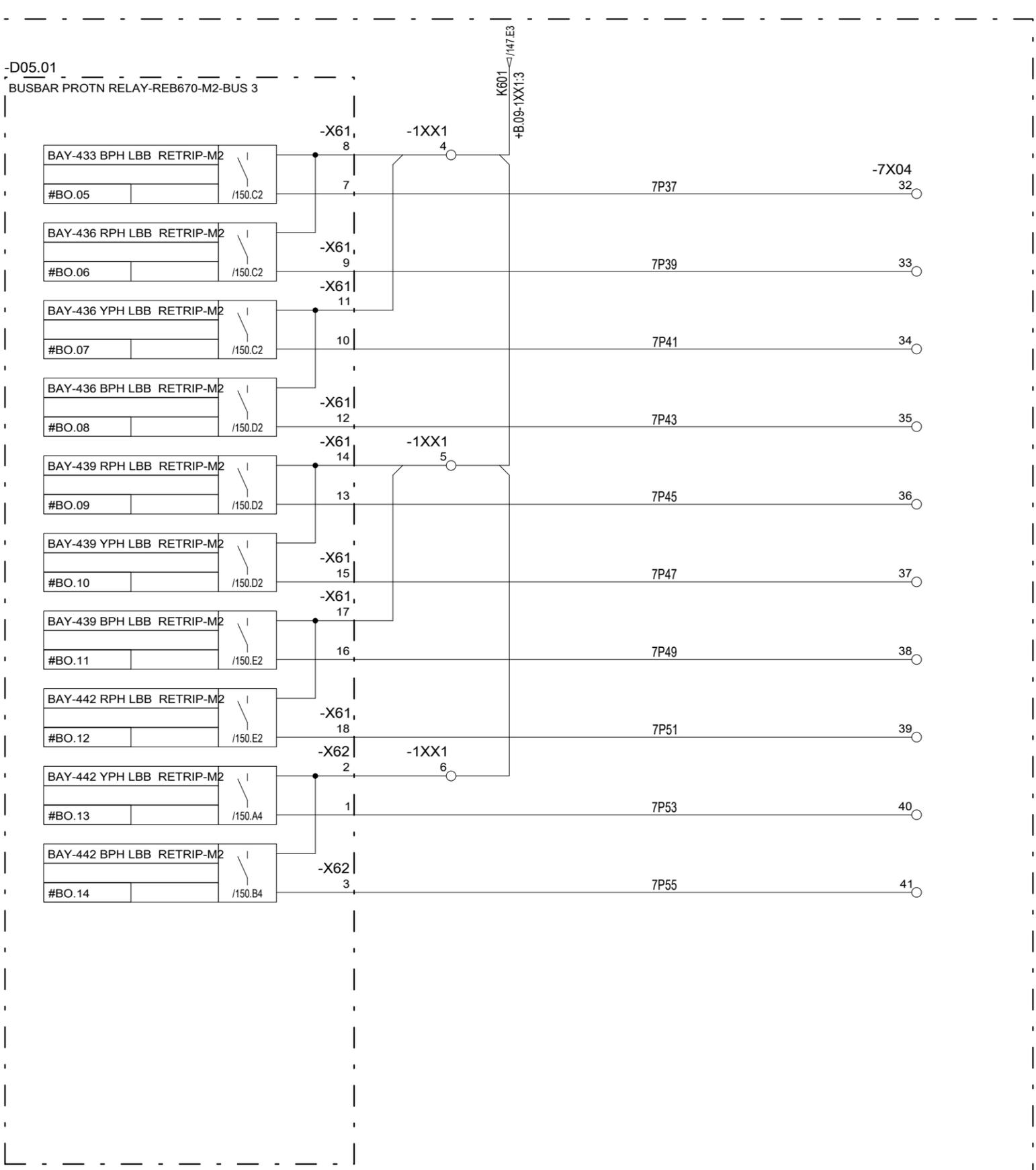
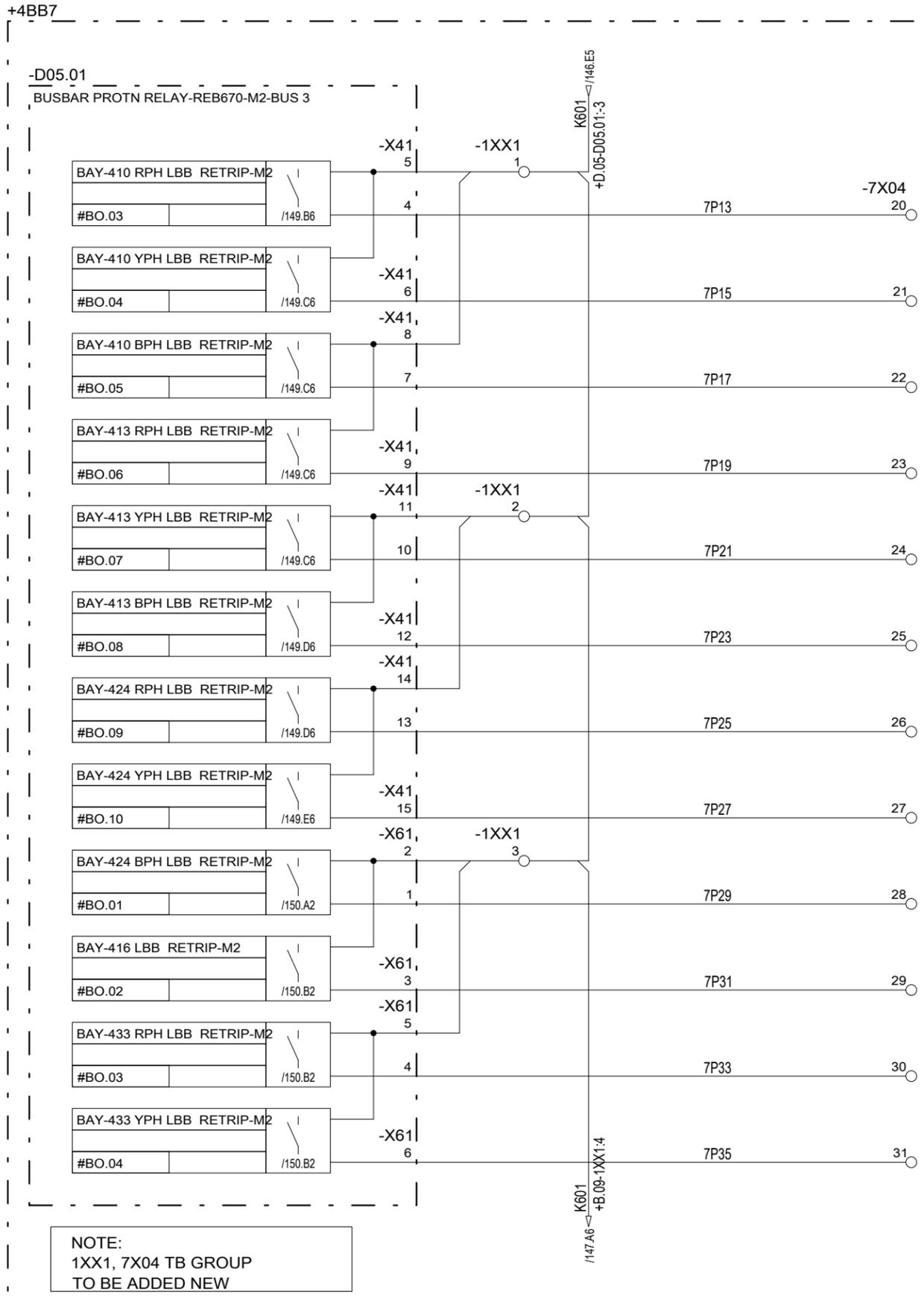
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D05.01
BUSBAR PROT.N RELAY-RE3670-M2-BUS 3



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Based on: 3100135063		Prepared: 18.04.2023	PANKAJ PATIL	Title: 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 3 BINARY OUTPUTS	Doc. kind: Circuit diagram	Ref. Des. =4R
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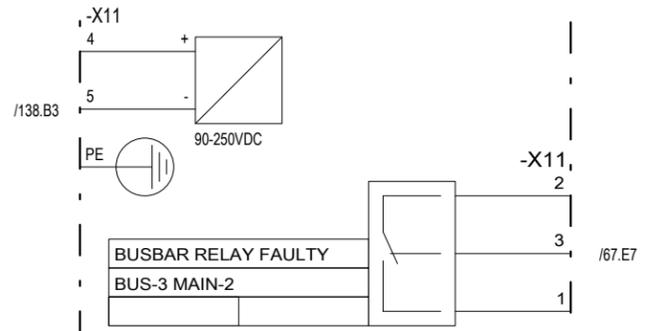
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A		DCC EFS			
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								n. sheet 148	
1MYN691003-102(A3)REV01									

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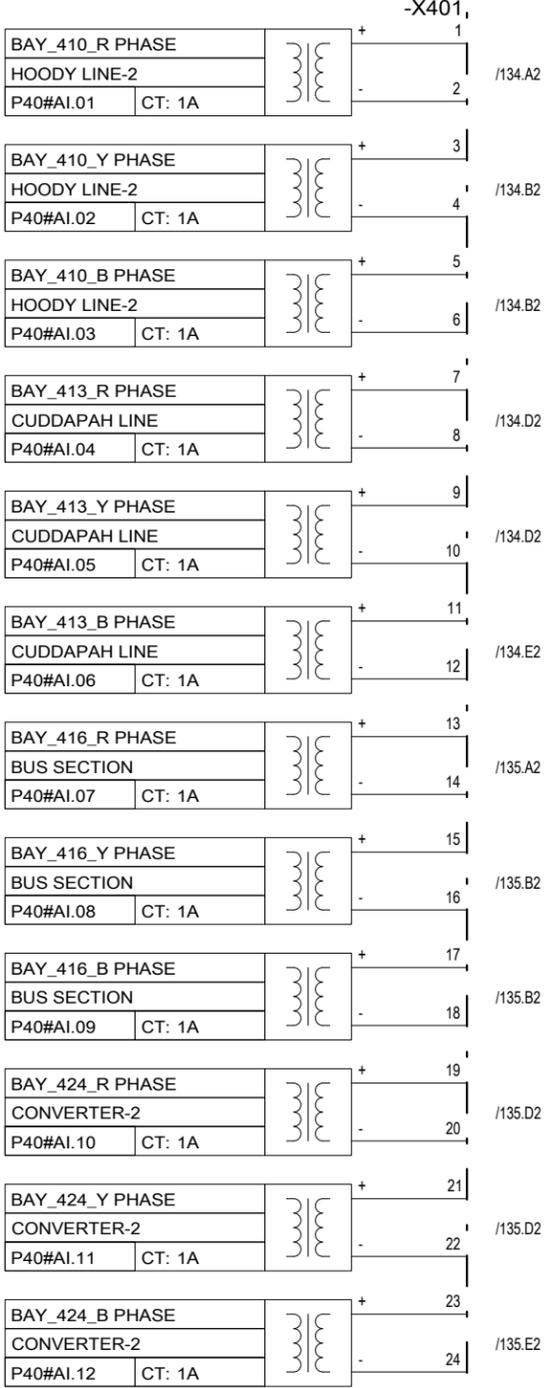
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BUSBAR PROTN RELAY-REB670-M2-BUS 3
PSM
90-250VDC



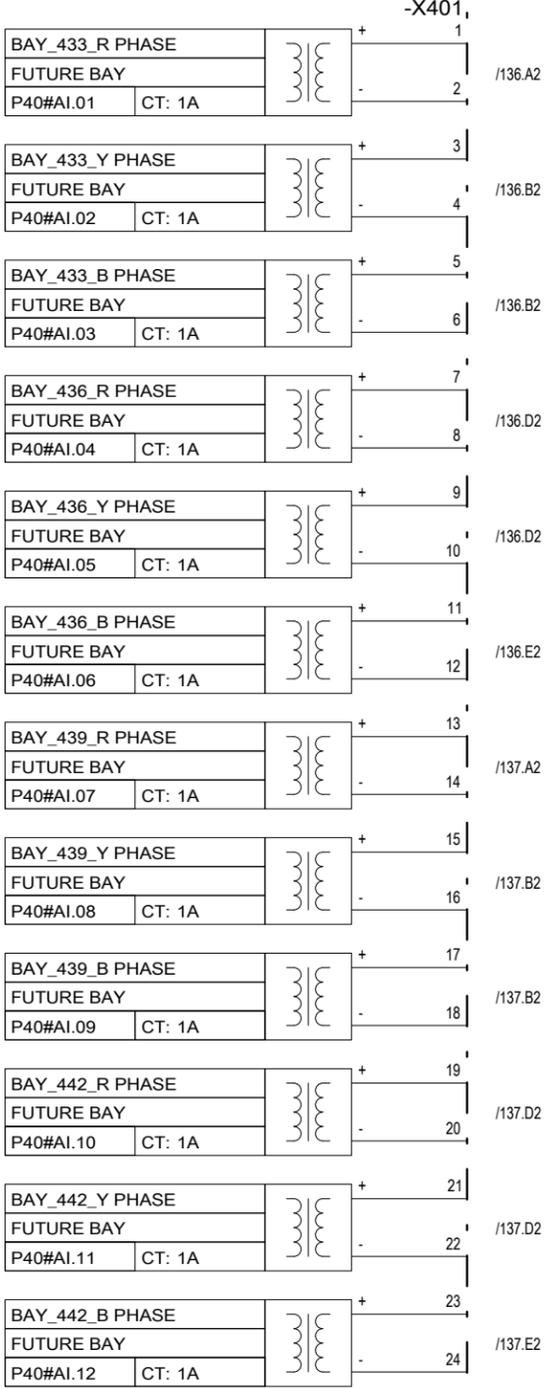
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BUSBAR PROTN RELAY-REB670-M2-BUS 3
TRM
1A, 50/60Hz



+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M2-BUS 3
TRM
1A, 50/60Hz

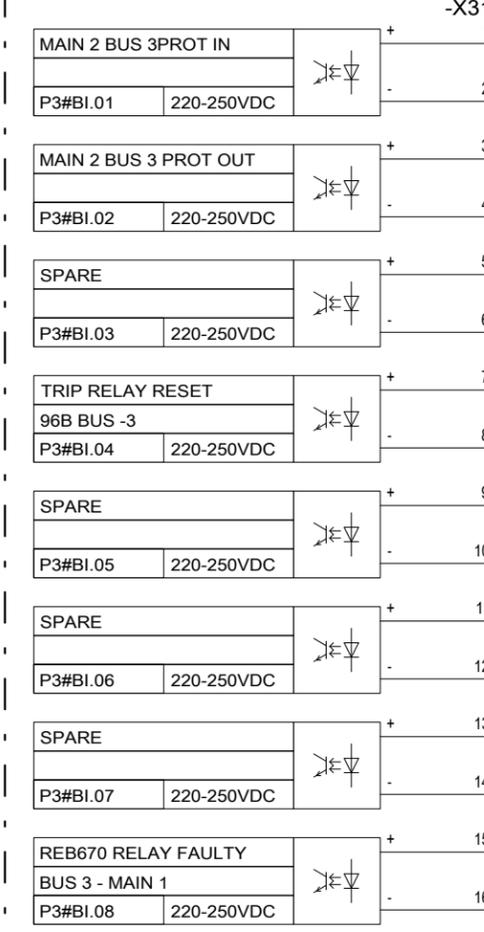


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1MYN691003-102(A3)REV01									

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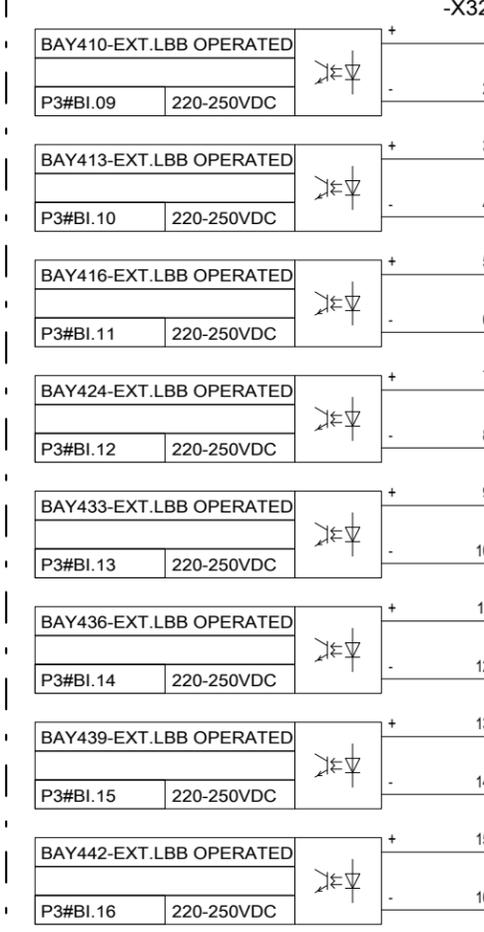
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BUSBAR PROTN RELAY-REB670-M2-BUS 3
BIM
220-250VDC



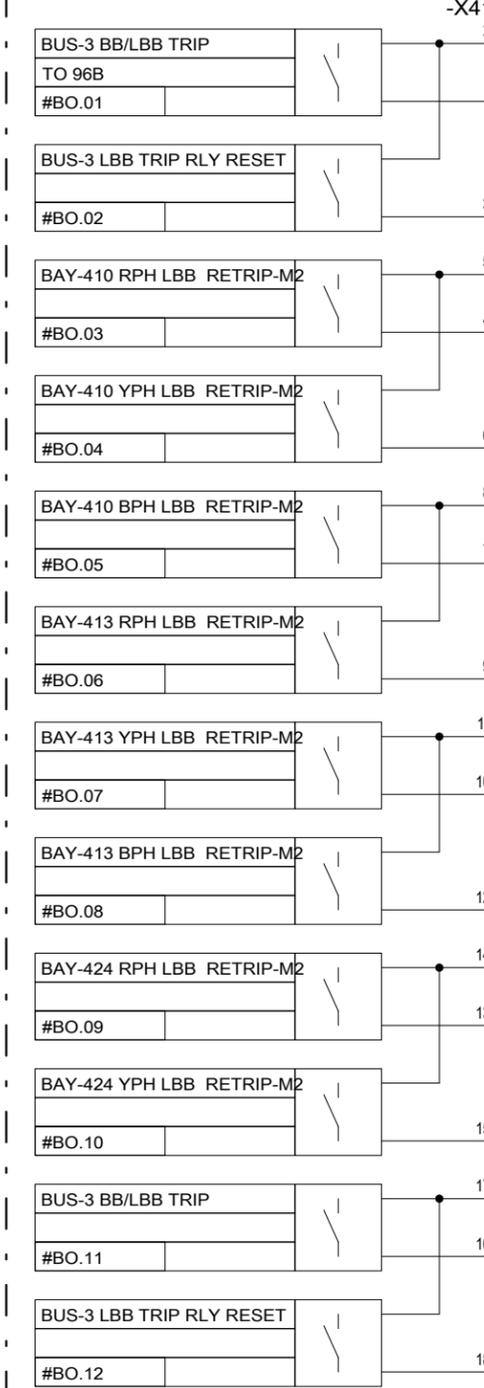
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BIM
220-250VDC



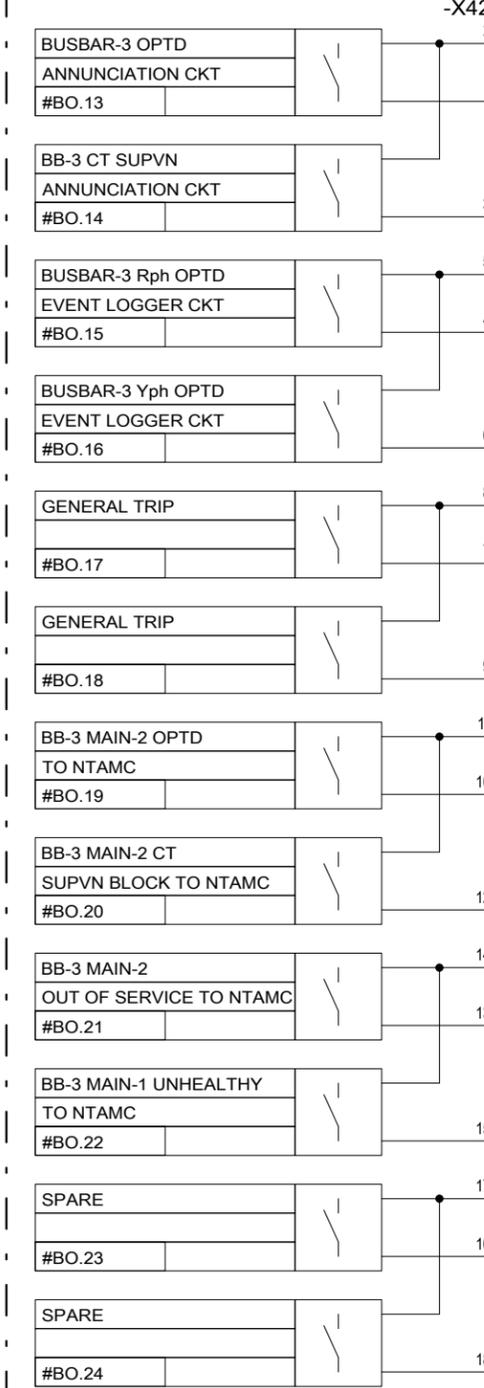
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BUSBAR PROTN RELAY-REB670-M2-BUS 3
BOM
220-250VDC



+D.05 -D05.01

BUSBAR PROTN RELAY-REB670-M2-BUS 3
BOM
220-250VDC

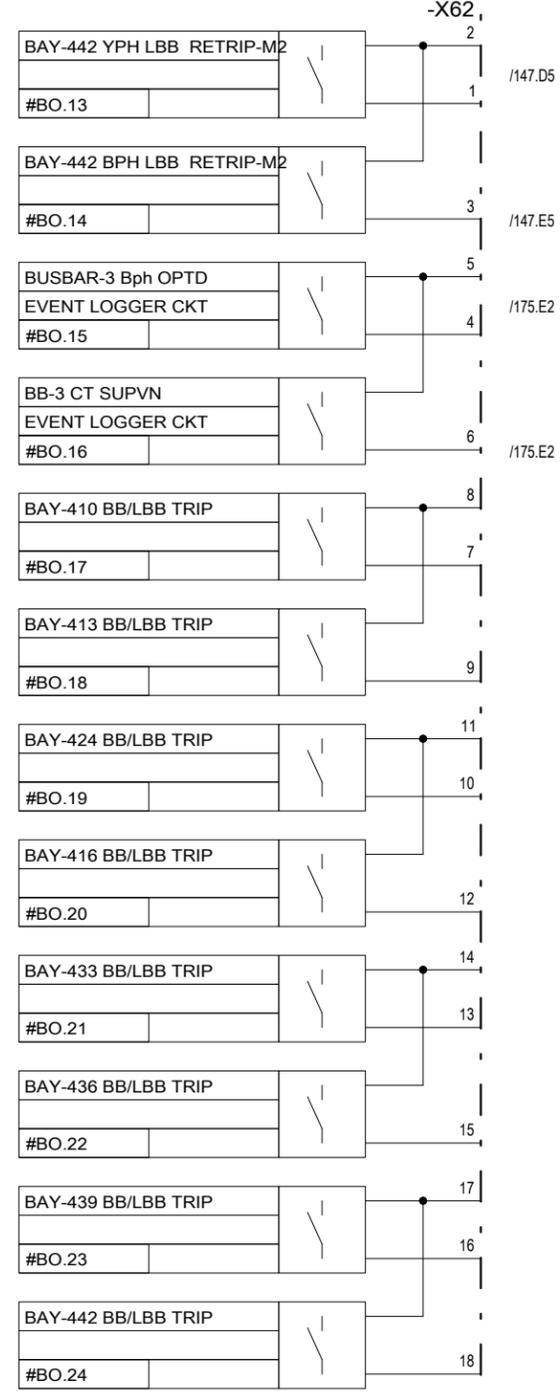
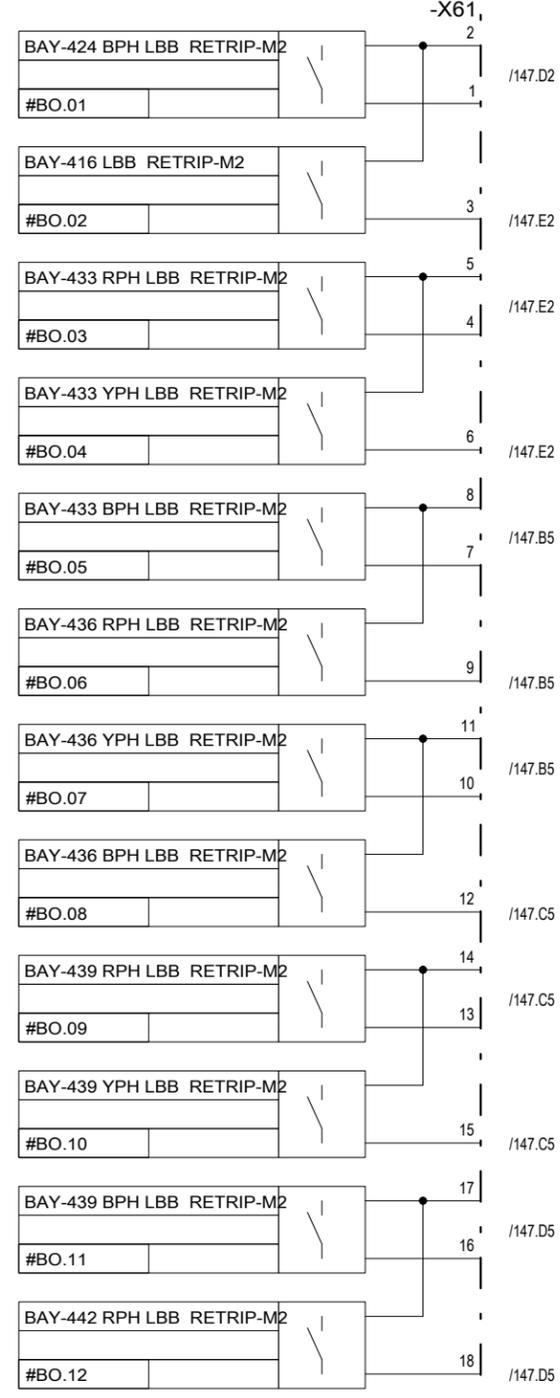


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1MYN691003-102(A3)REV01				HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		n. sheet 150	

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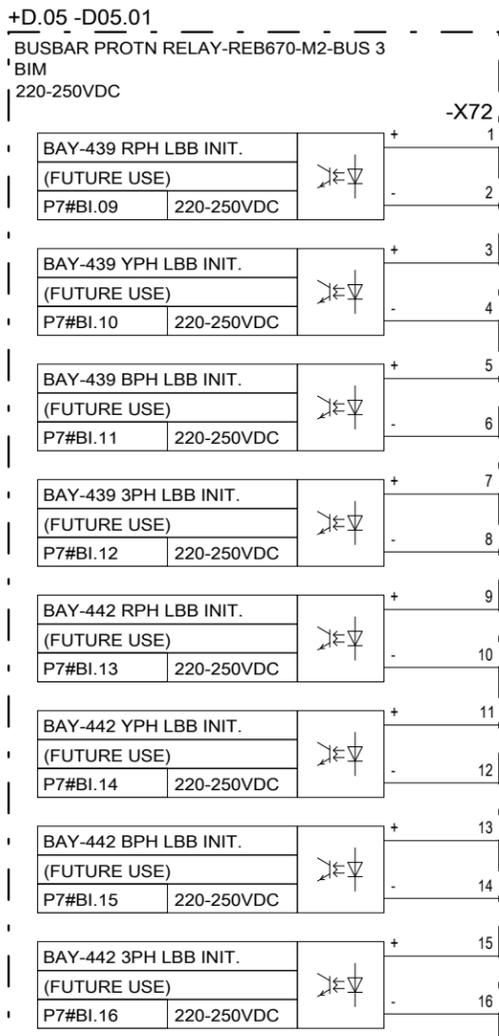
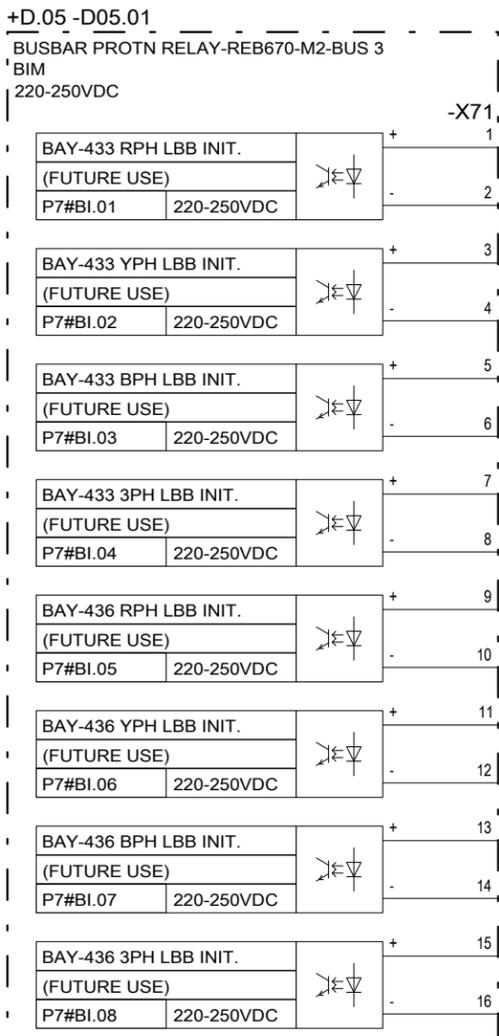
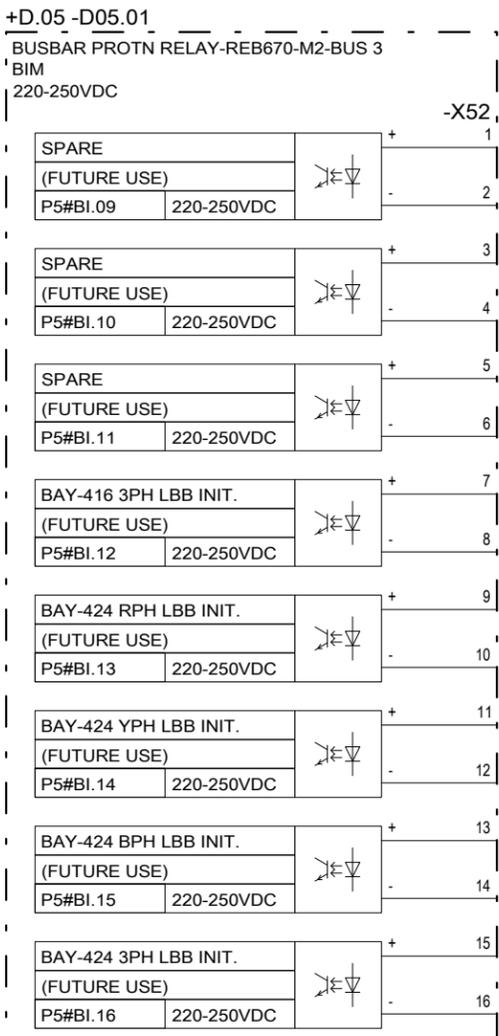
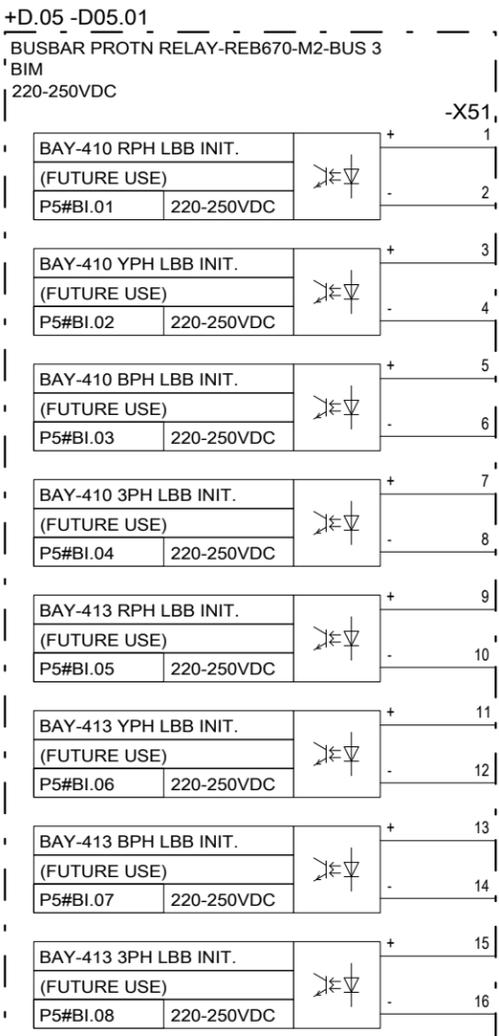
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 BUSBAR PROTN RELAY-REB670-M2-BUS 3
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+D.05 -D05.01
 BUSBAR PROTN RELAY-REB670-M2-BUS 3
 BOM



Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 3 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A	HITACHI Hitachi Energy India Limited		DCC EFS		Language en
Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898				Resp. dept. PG-GAS			Rev. ind. 01	Sheet 150	
Rev.	Revision note	Date	Name	Doc. no. 1MNS801837-CGCA		n. sheet 151			
1MYN691003-102(A3)REV01									

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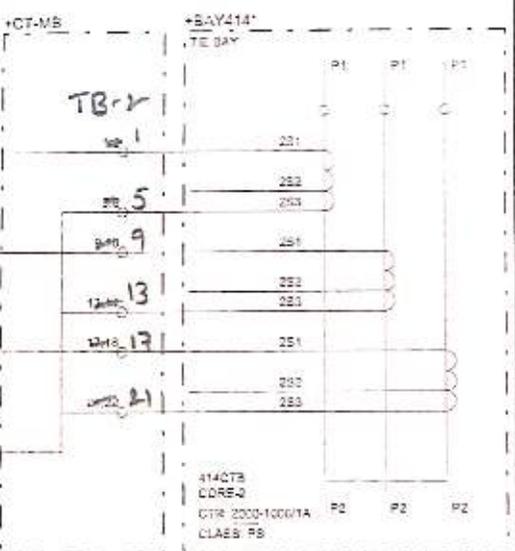
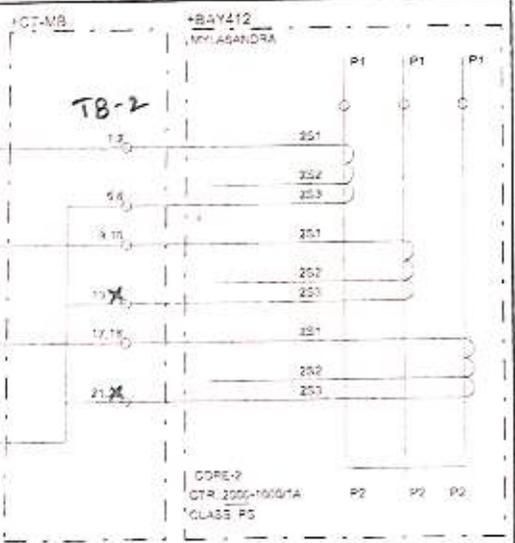
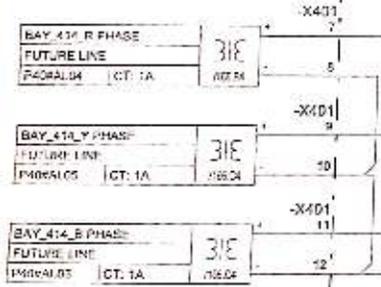
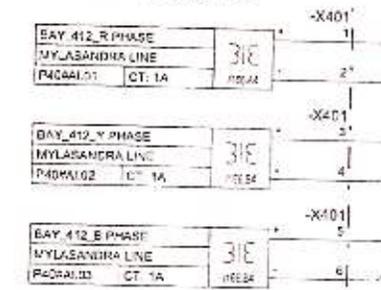
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Approved 20.04.2023		DEENADAYALAN A	
Project POWER GRID CORPORATION OF INDIA LTD.		400/220kV KOLAR SUBSTATION	
3100137898			
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Title 400kV BUSBAR PROTECTION		Doc. kind. Circuit diagram	Ref.Des. =4R
RETROFIT OF REB670 RELAY		DCC EFS	
M2-BUS 3 OVERVIEW		Resp. dept. PG-GAS	Rev. ind. 01
Language en		Sheet 151	
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HITACHI Hitachi Energy India Limited	
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-D05.01
BUSBAR PROT N RELAY REB670-M2 BUS A

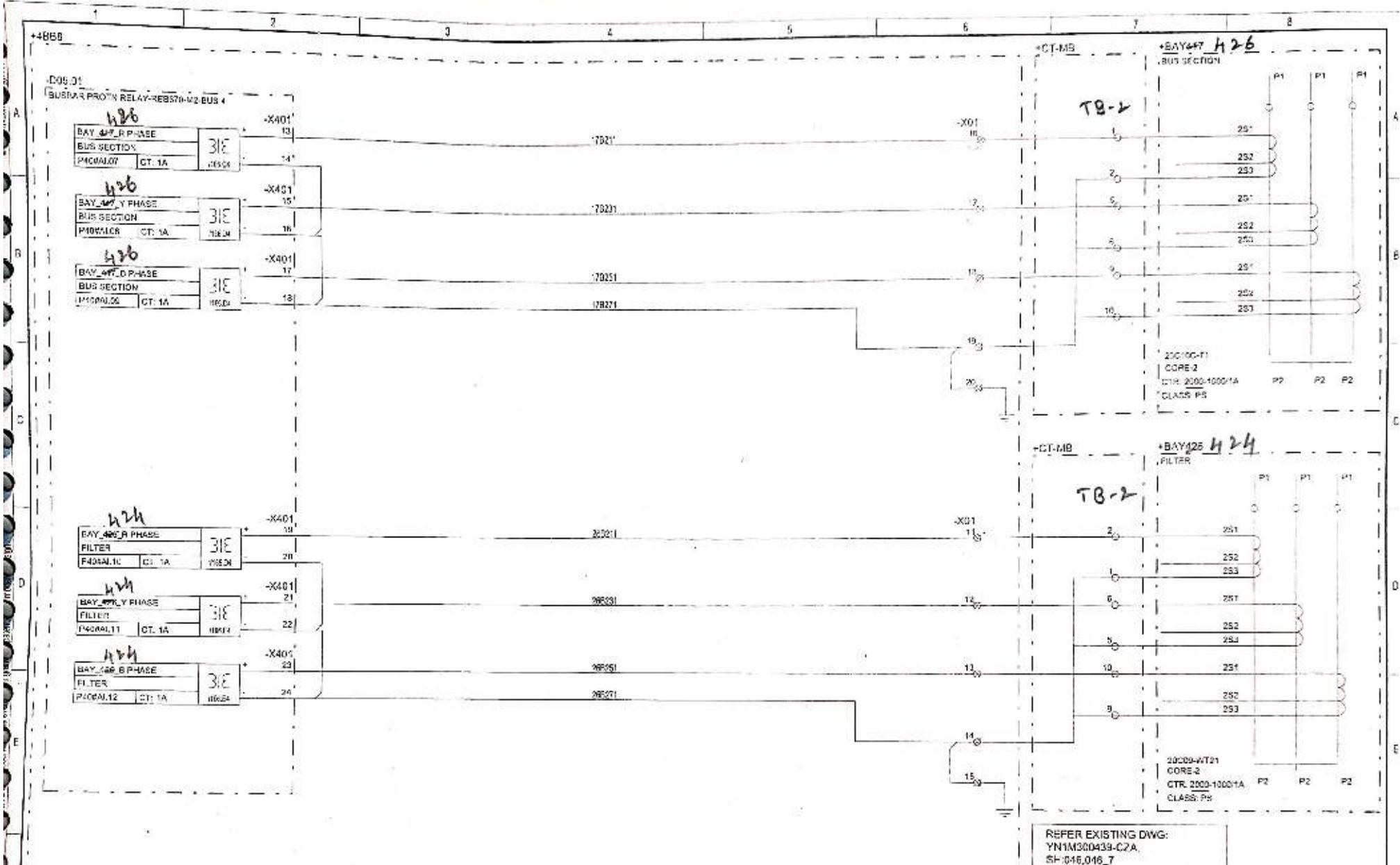


NOTE: *INSTEAD OF #15 BAY 414(TIE) CT USED AT PRESENT

REFER EXISTING DWG:
YN1M300139-CZA,
SH:016_5_04E_6

No. 3100135053	Prepared 18.04.2023 PANKAJ PATIL	Title 400KV BUSBAR PROTECTION RETROFIT OF REB670 M2-BUS 4 CT CIRCUITS	Doc. No. 1MNS801837-CGCA	Rev. No. 00	Language	Sheet 152	Total 153	
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Revision No.	Date	Name	HITACHI Energy India Limited (Formerly known as ABB Power Products and Systems (India) Limited)					

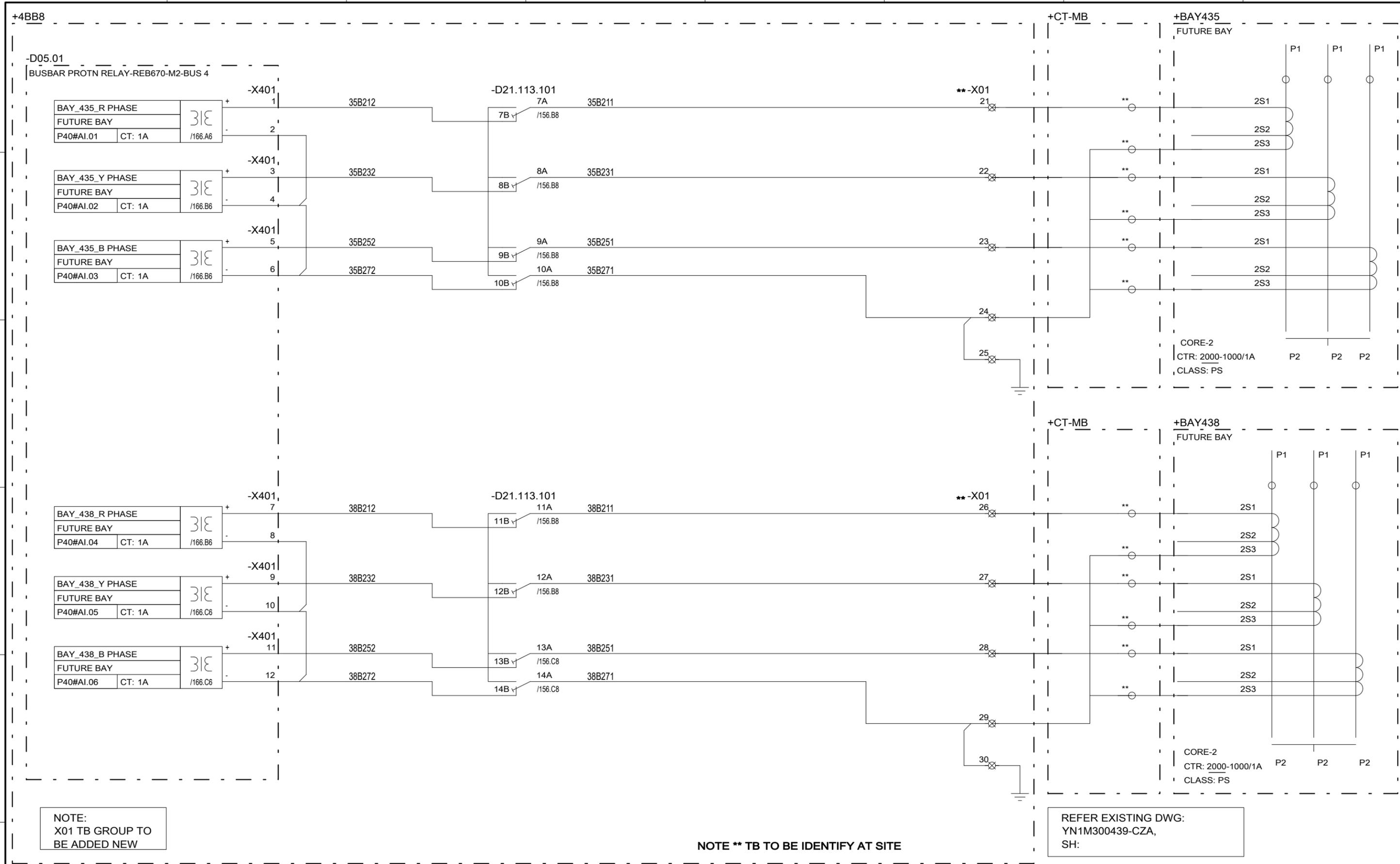
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YN1M300439-C7A,
SH-046,046_7

Based on: 3100135063		Param: 18.04.2023	PANKAJ PATIL	TIT: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 4 CT CIRCUITS		Doc. No: Circuit diagram	Revised: =4R
		Approved: 20.04.2023	DEENADAYALAN A			Doc. EFS	
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Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)		HITACHI		Doc. No: 1MNS801837-CGCA		Language: en	Sheet: 153
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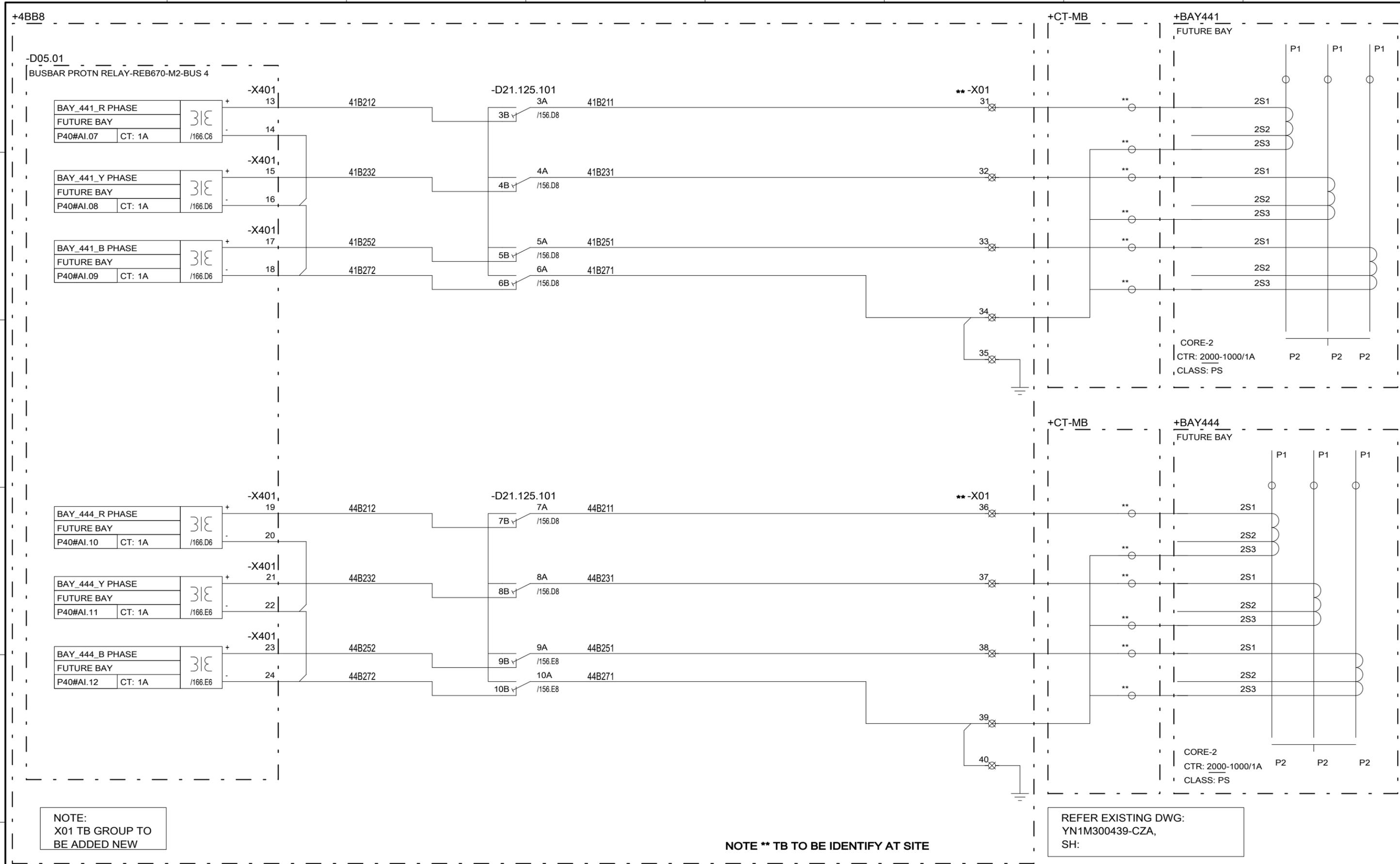
NOTE:
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NOTE ** TB TO BE IDENTIFY AT SITE

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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023		DEENADAYALAN A	DCC EFS	
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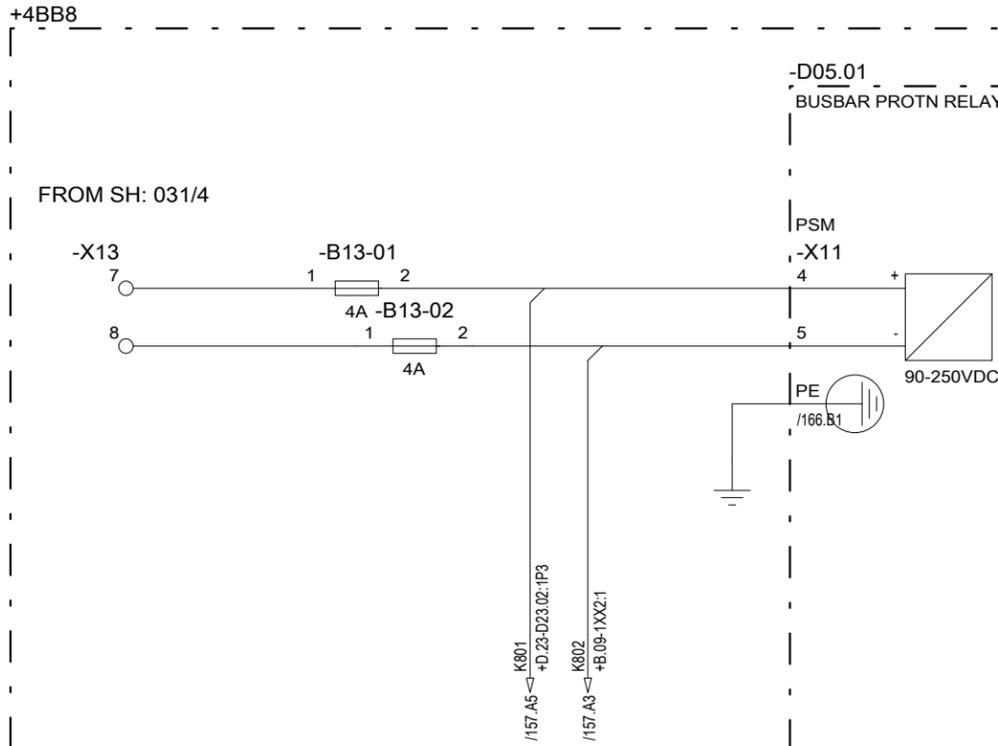


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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A		DCC EFS			
Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898				Hitachi Energy India Limited		PG-GAS		Rev. ind. 01	Language en
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-D05.01
BUSBAR PROTN RELAY-REB670-M2-BUS 4

+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M2-BUS 4
LED

+D.05 -D05.01
BUSBAR PROTN RELAY-REB670-M2-BUS 4
SFP

-D21.101.101
Test
Normal

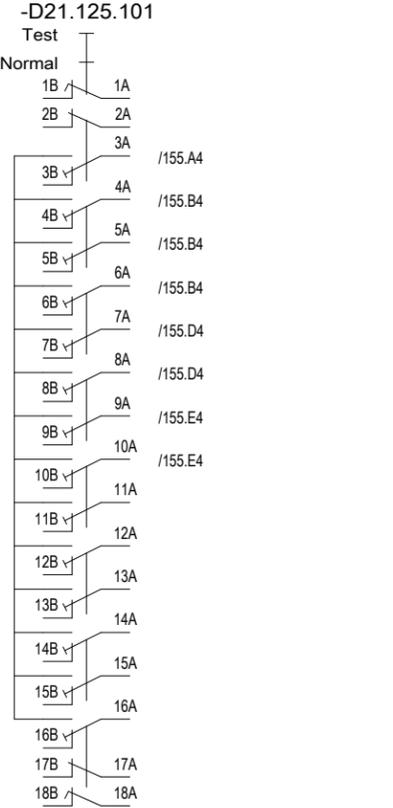
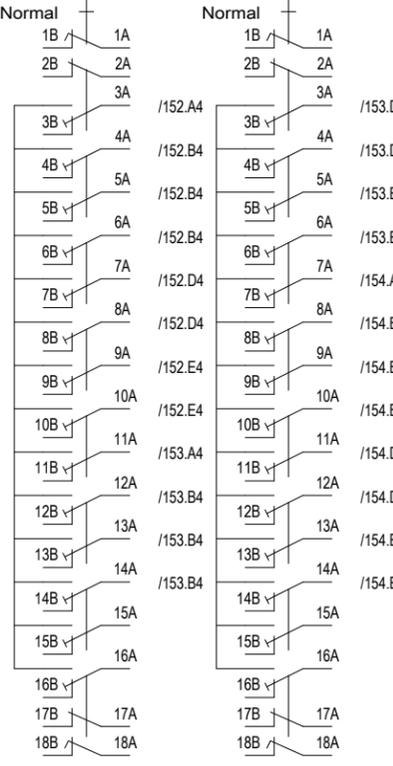
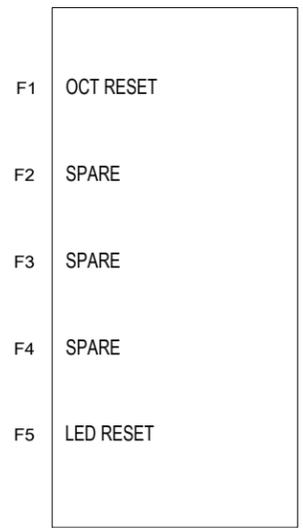
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Test
Normal

- 1 DIFF OPTD.
- 2 EXT LBB OPTD
- 3 RPH TRIP
- 4 YPH TRIP
- 5 BPH TRIP
- 6 BB BLOCKED
- 7 RPH OCT ALARM
- 8 YPH OCT ALARM
- 9 BPH OCT ALARM
- 10 96B OPTD
- 11
- 12
- 13
- 14
- 15

O: Open
I: Closed
C: Cancel/Clear
E: Enter/Select/Execute
L/R: Local/Remote/off



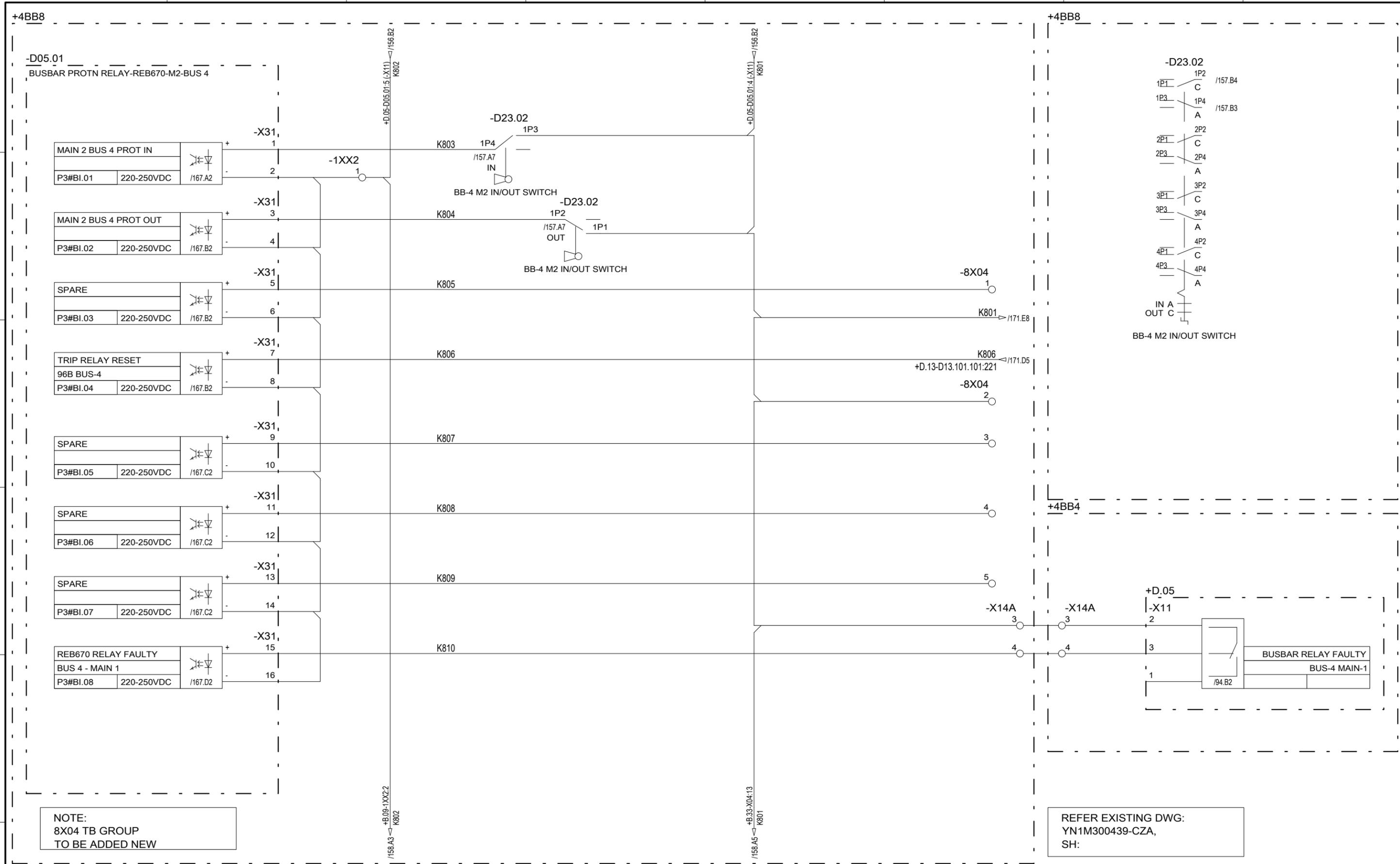
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BUSBAR PROTN RELAY-REB670-M2-BUS 4



REFER EXISTING DWG:
YN1M300439-CZA,
SH: 048

- LIST OF FUNCTIONS AVAILABLE IN RELAY**
- 1) Differential Protection (PDIF,87BB)
 - 2) Breaker Failure Protection(50LBB)
 - 3) Disturbance Recorder(RDRE)
 - 4) Event Recorder (RDRE)

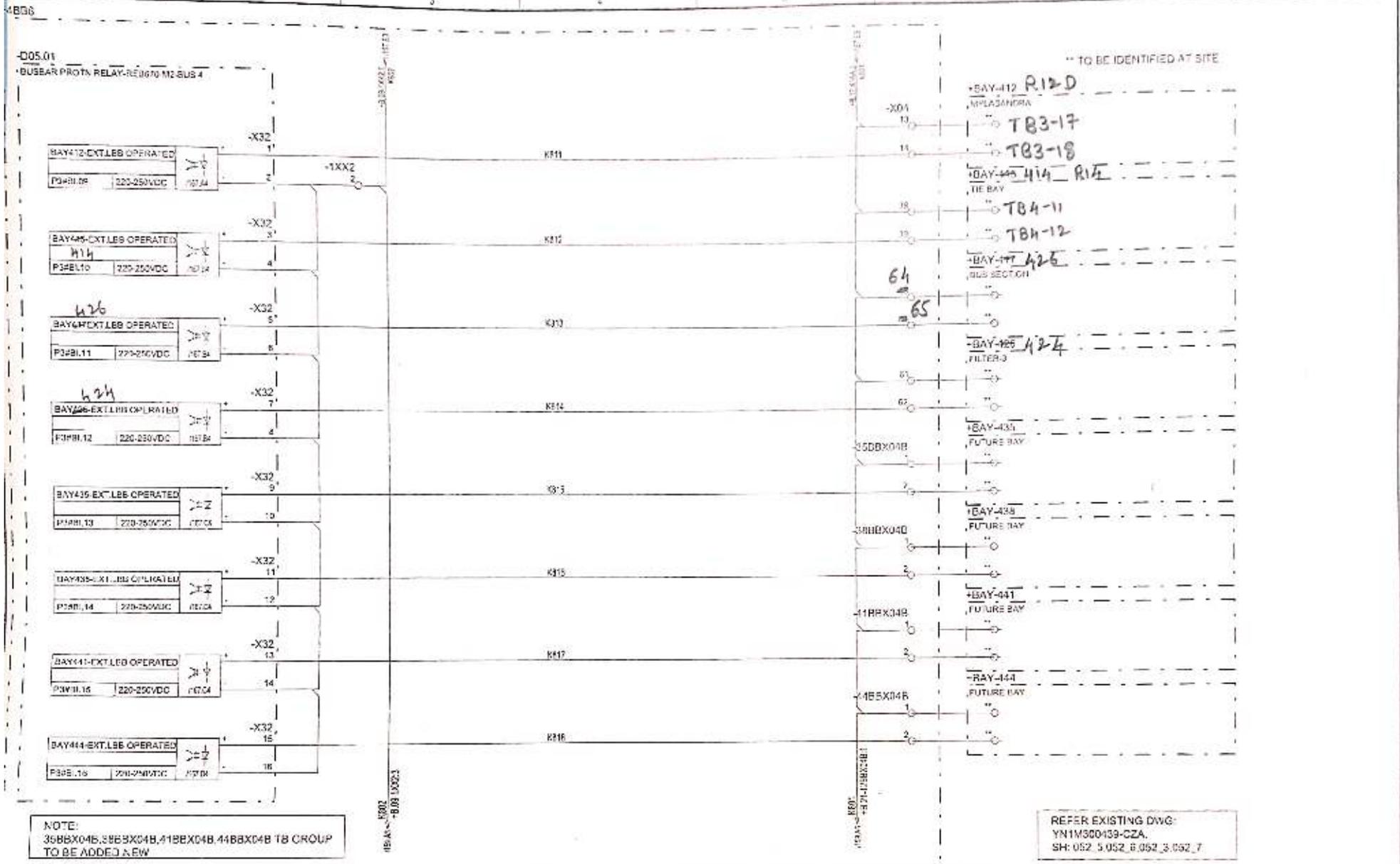
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				Project	POWER GRID CORPORATION OF INDIA LTD.	M2-BUS 4 PSM & COM	Resp. dept. PG-GAS	Rev. ind. 01
								Language en
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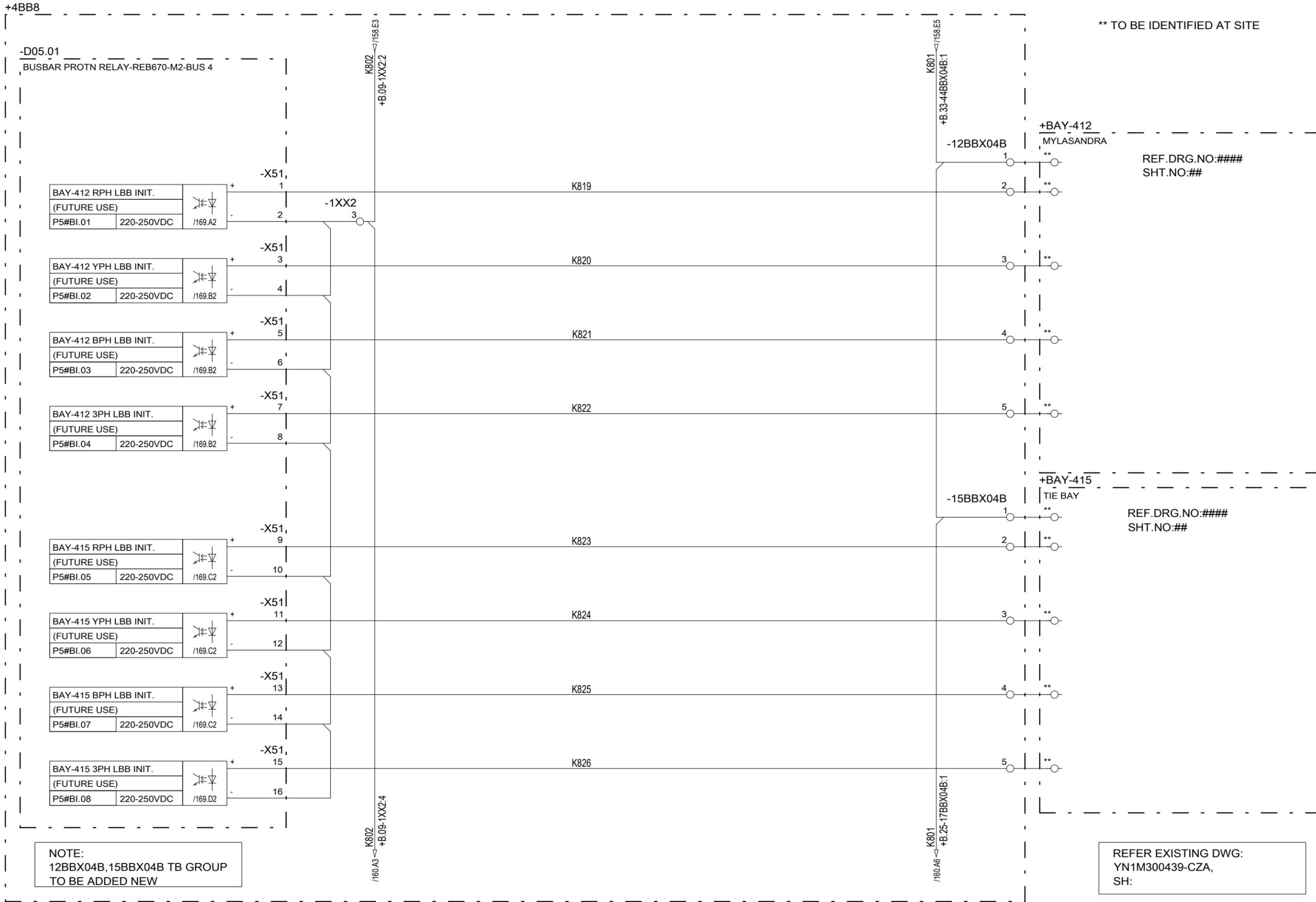
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01 REVISED AS PER CUSTOMER COMMENTS		02.10.2024		Approved 20.04.2023 DEENADAYALAN A		Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		DCC EFS		Rev. ind. 01	
Rev. Revision note		Date		Name				PG-GAS		Language en	
1MYN691003-102(A3)REV01						HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 157 n. sheet 158	



3100135003 Reason note Date Name	Prepared: 18.04.2023 Approved: 20.04.2023 Project: POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898	PANKAJ PATIL DEENADAYALAN A	Title: 400KV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 4 BINARY INPUTS HITACHI <small>Hitachi Energy India Limited (Formerly known as ABB Power Products and Systems India Limited)</small>	Doc. No.: Circuit diagram DCC EFS PG-GAS 1MNS801837-CGCA	Rev. No.: 00 Language: en Sheet: 158 Total: 159	Ref. No.: 04R
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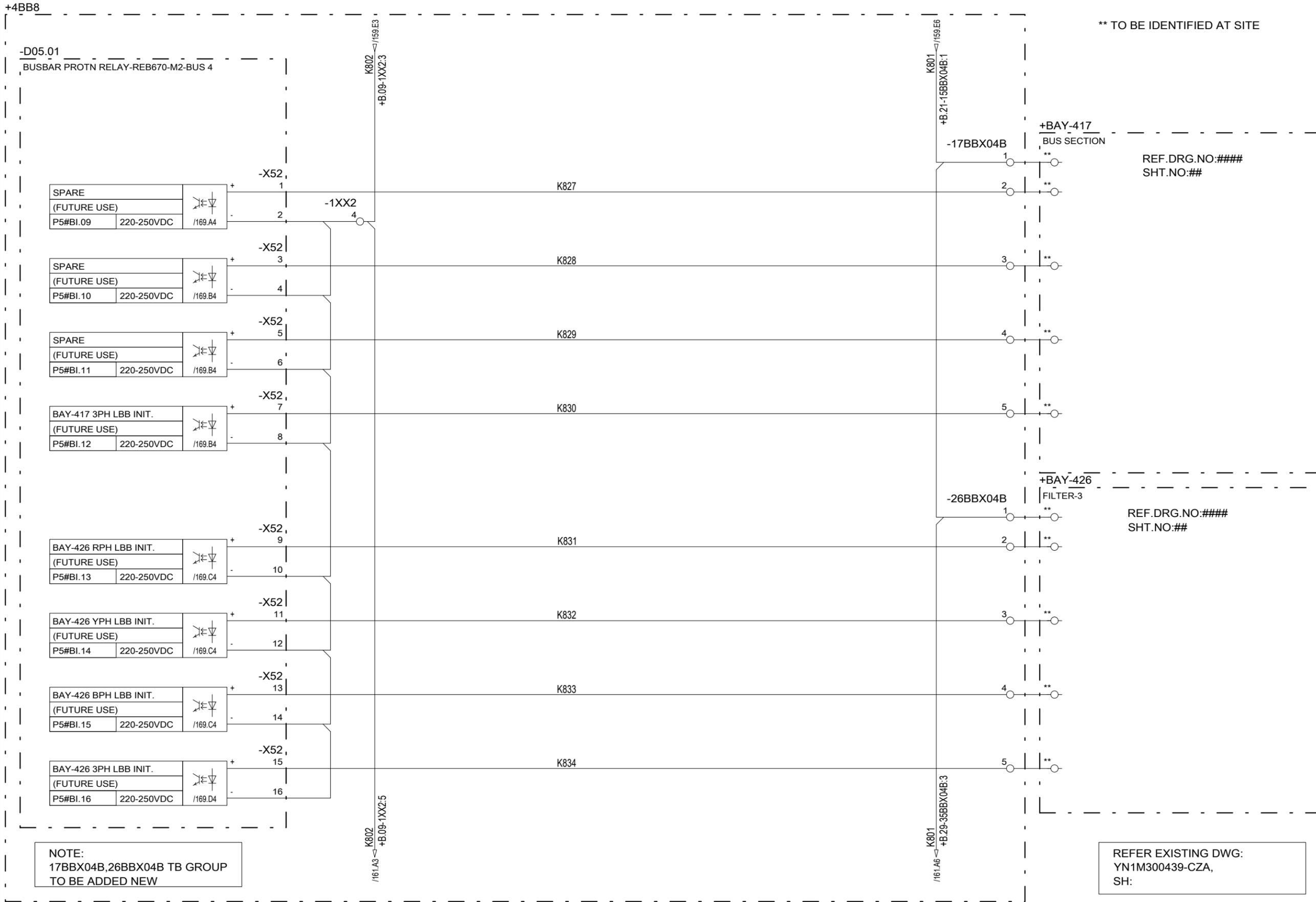
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NOTE:
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Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 159		n. sheet 160
1MYN691003-102(A3)REV01										



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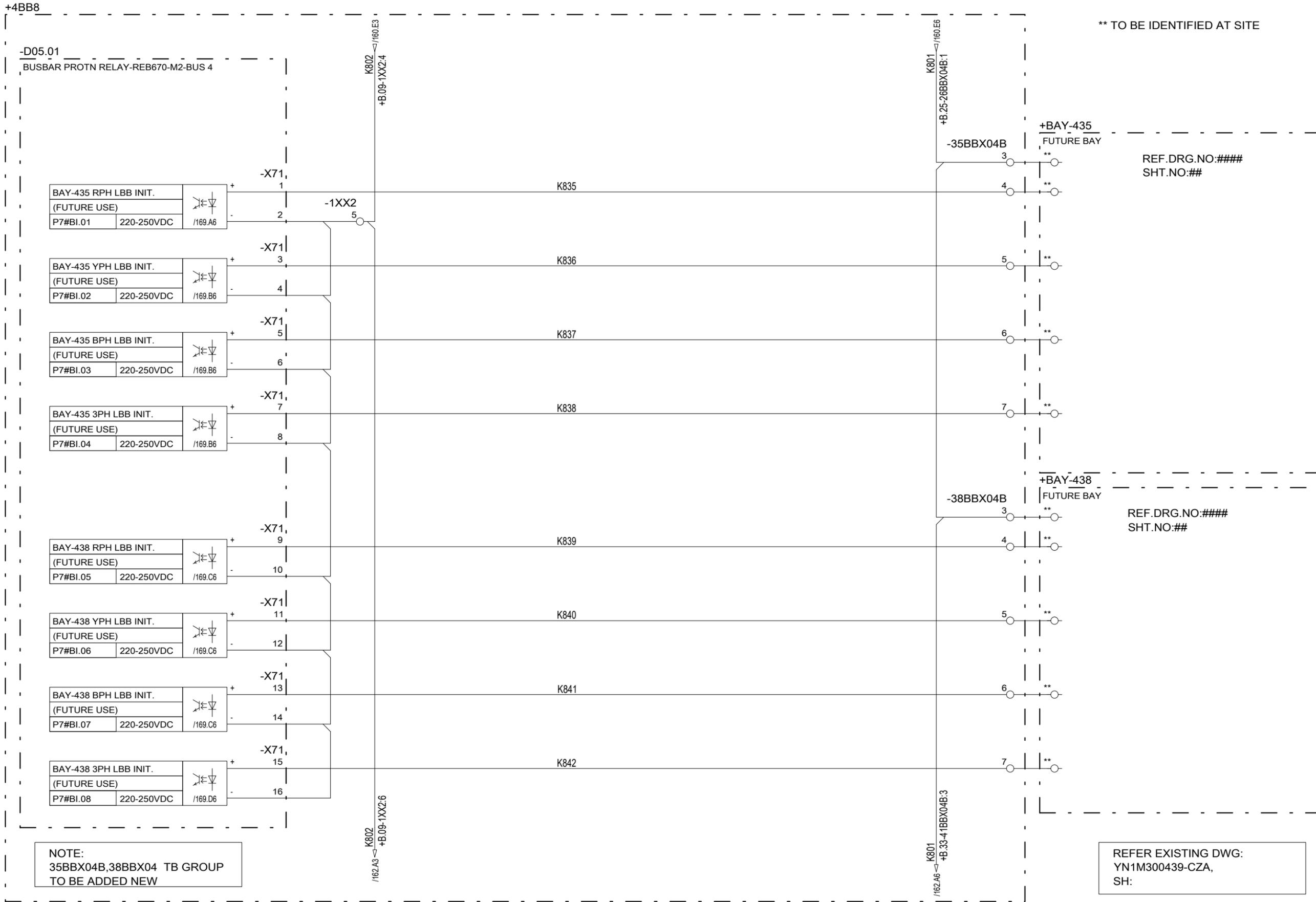
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NOTE:
17BBX04B, 26BBX04B TB GROUP
TO BE ADDED NEW

REFER EXISTING DWG:
YN1M300439-CZA,
SH:

Based on 3100135063				Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 4 BINARY INPUTS		Doc. kind. Circuit diagram		Ref.Des. =4R	
01 REVISED AS PER CUSTOMER COMMENTS		02.10.2024		Approved 20.04.2023 DEENADAYALAN A		Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		DCC EFS		Rev. ind. 01	
								PG-GAS		Language en	
Rev. Revision note		Date		Name		HITACHI Hitachi Energy India Limited		Doc. no. 1MNS801837-CGCA		Sheet 160	
										n. sheet 161	
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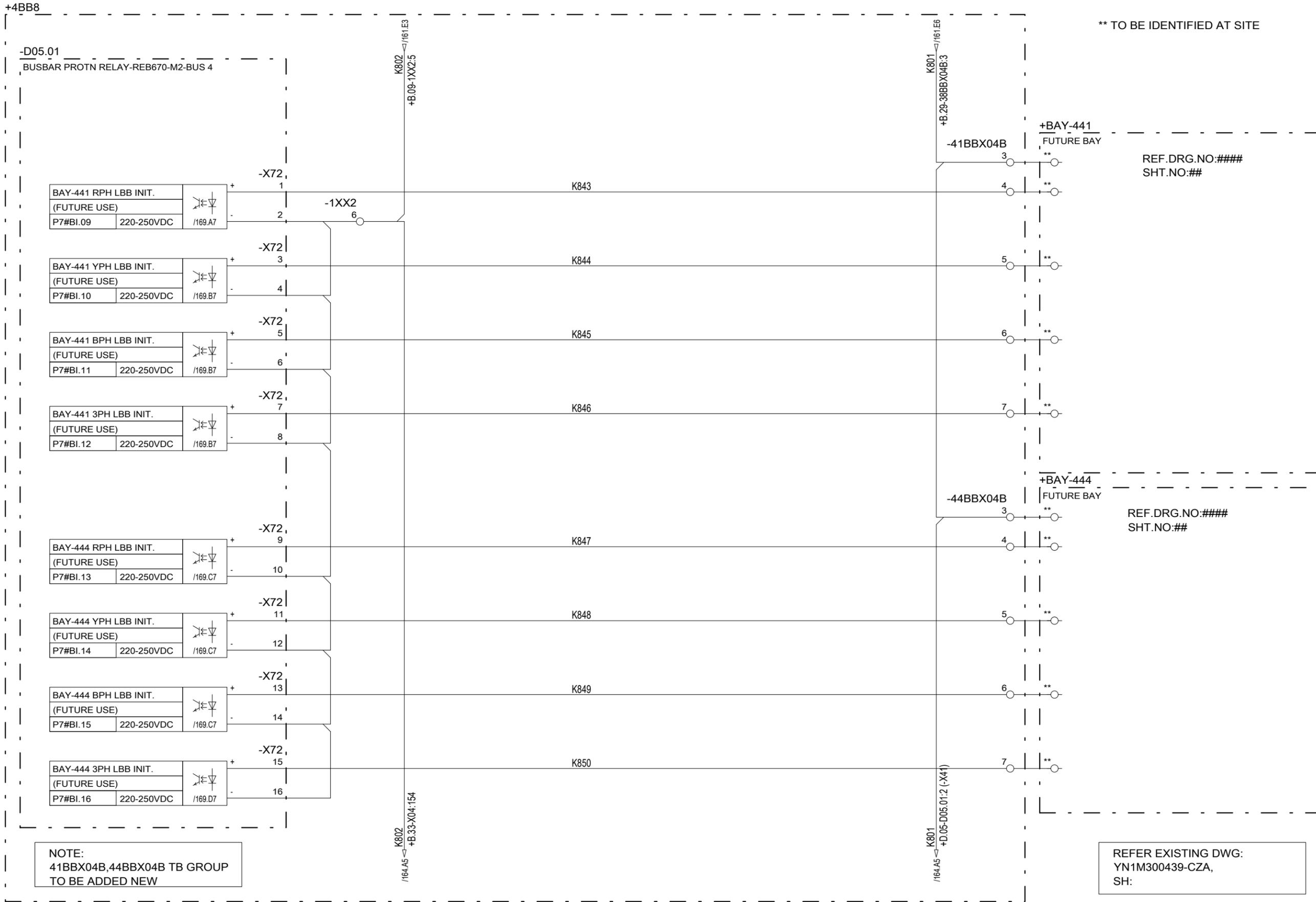
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NOTE:
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A			DCC EFS		
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Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 161 n. sheet 162	
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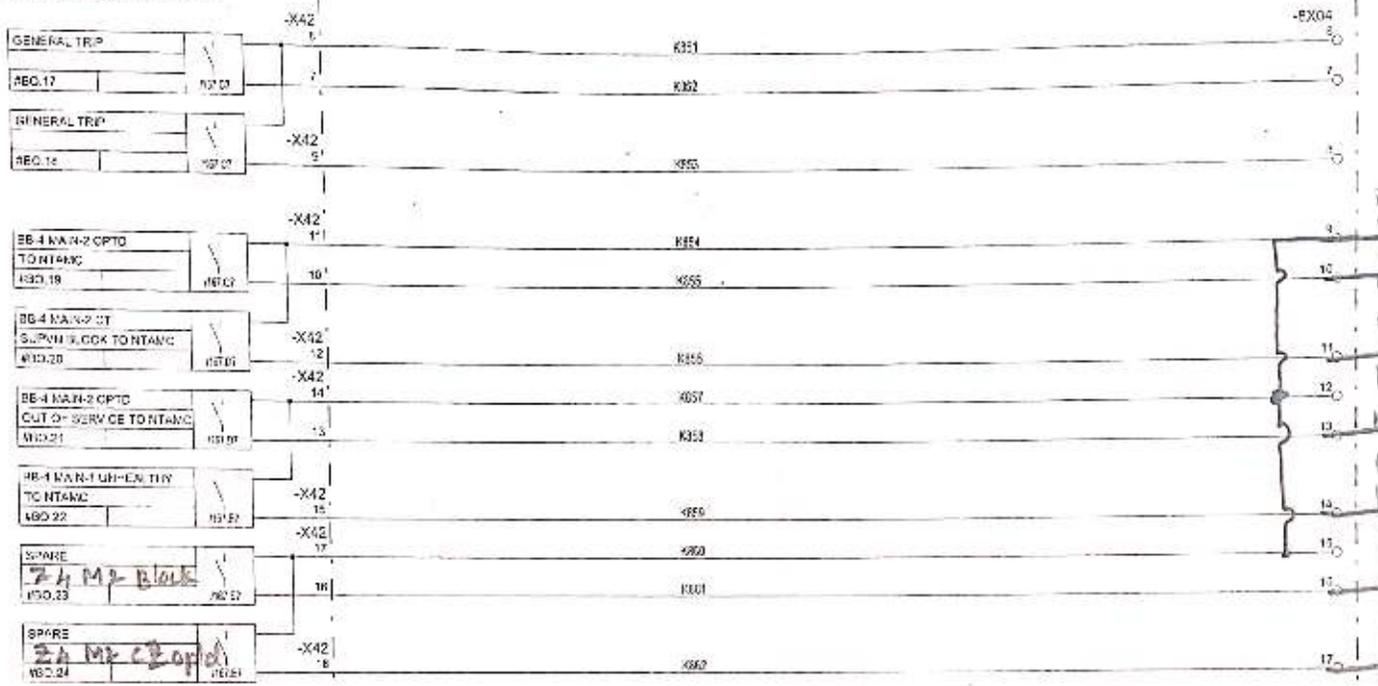
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400B

-D05 01
BUSBAR PROT N RELAY-RE3670-M2-BUS 4



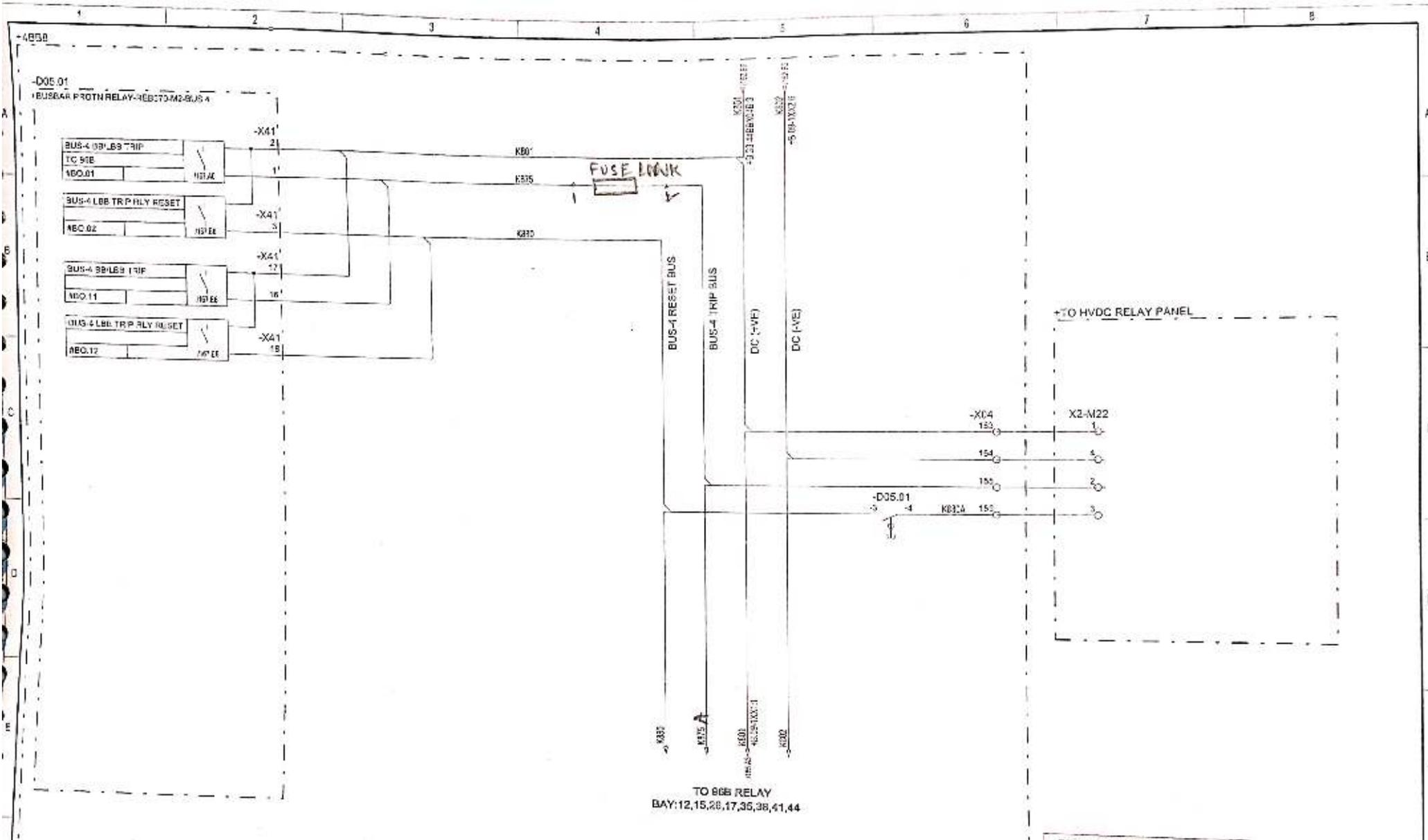
400B

DI TB +ve
DI TB-1
DI TB-2
DI TB-3
DI TB-4
DI TB-5
DI TB-6

NOTE:
BX04 TB GROUP
TO BE ADDED NEW

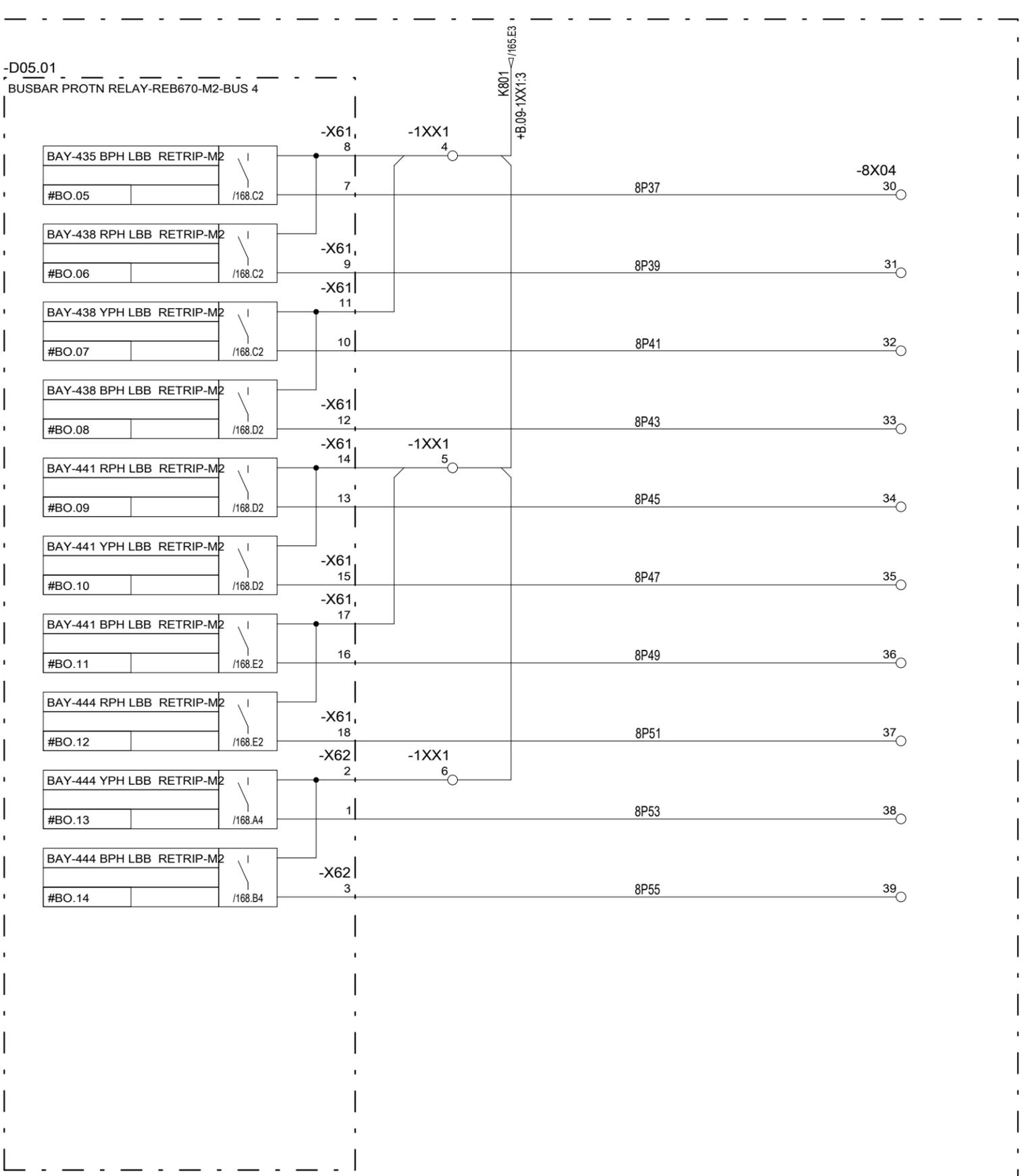
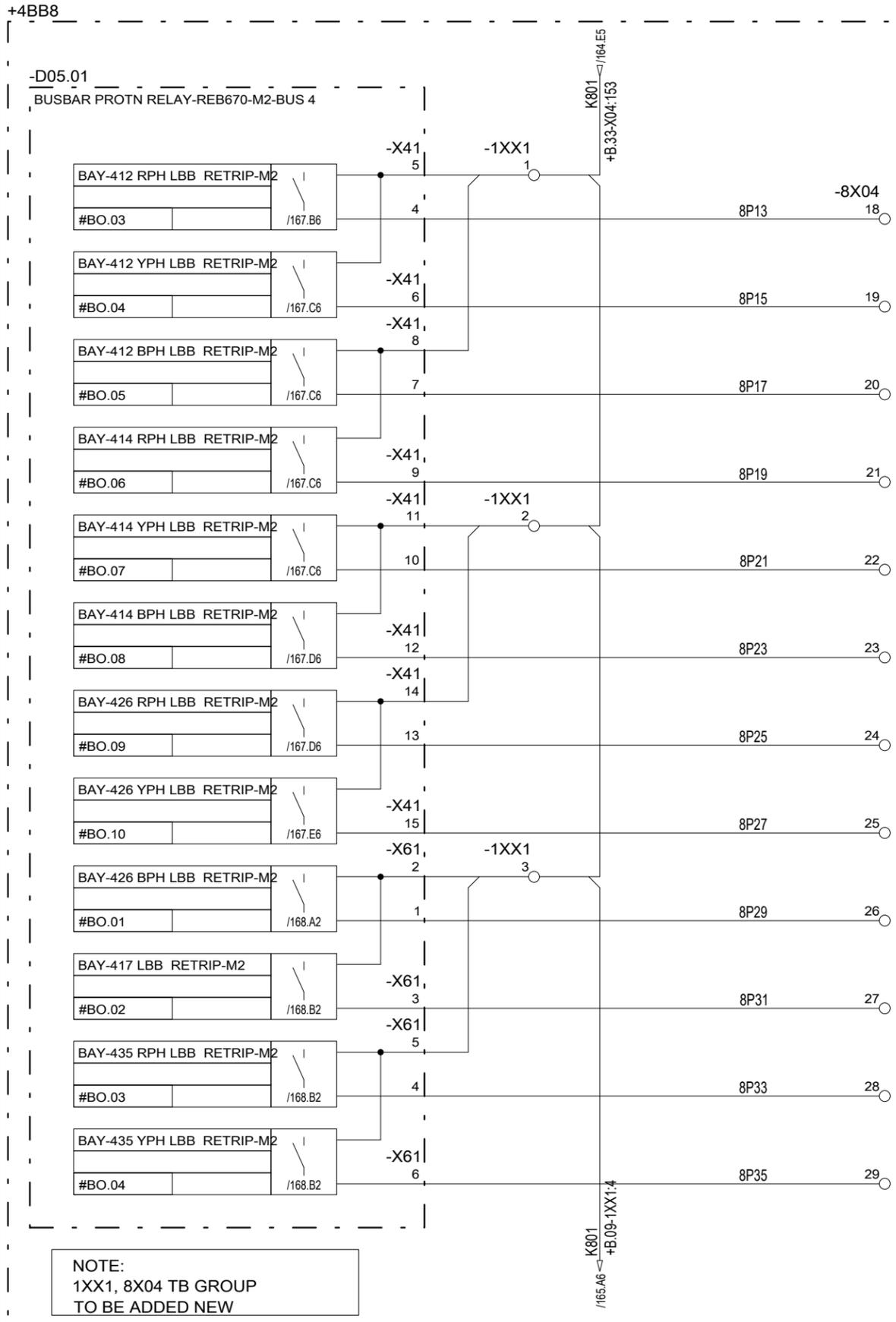
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Rev:	Revision note:	Date:	Name:	HITACHI <small>HITACHI Energy India Limited (Formerly known as ABB Power Protection and Systems India Limited)</small>		



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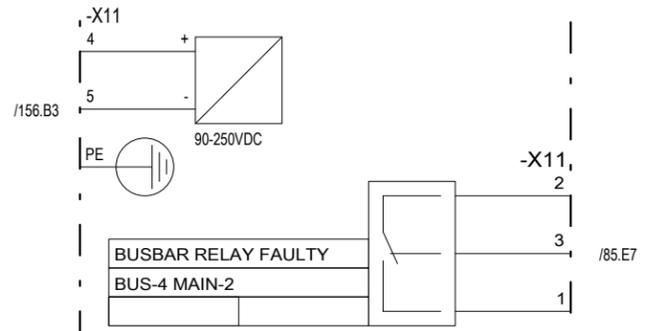


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				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Resp. dept. PG-GAS		Rev. ind. 01		Language en
Rev.	Revision note	Date	Name			Doc. no. 1MNS801837-CGCA		Sheet 165		n. sheet 166
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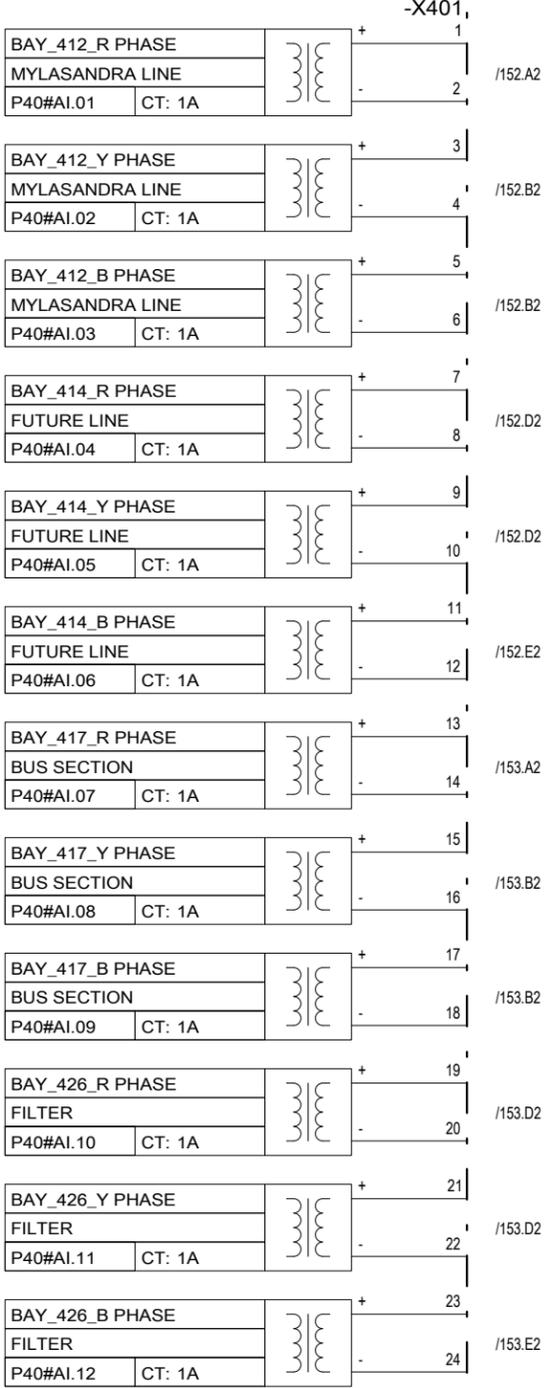
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BUSBAR PROTN RELAY-REB670-M2-BUS 4
PSM
90-250VDC



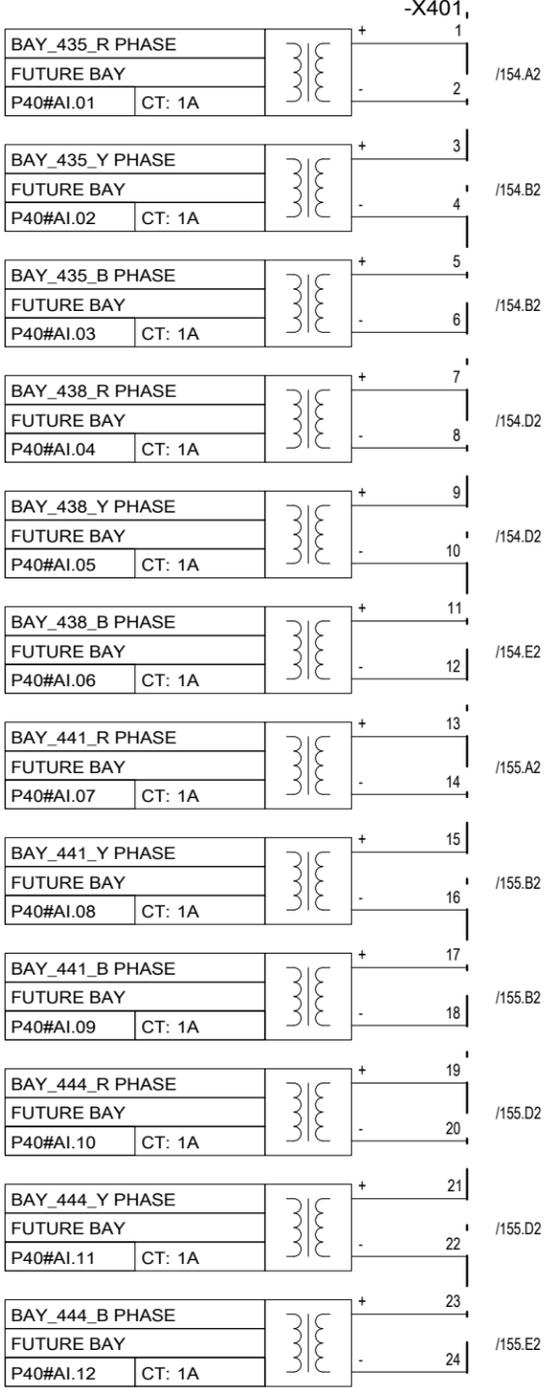
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BUSBAR PROTN RELAY-REB670-M2-BUS 4
TRM
1A, 50/60Hz



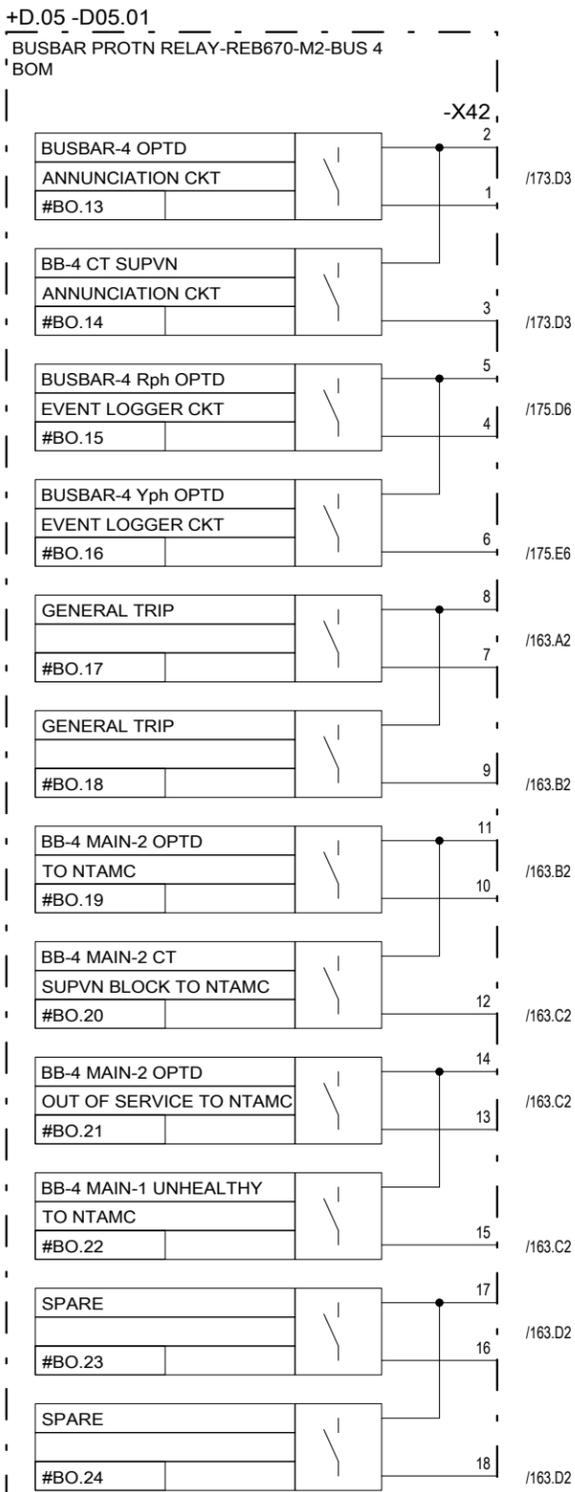
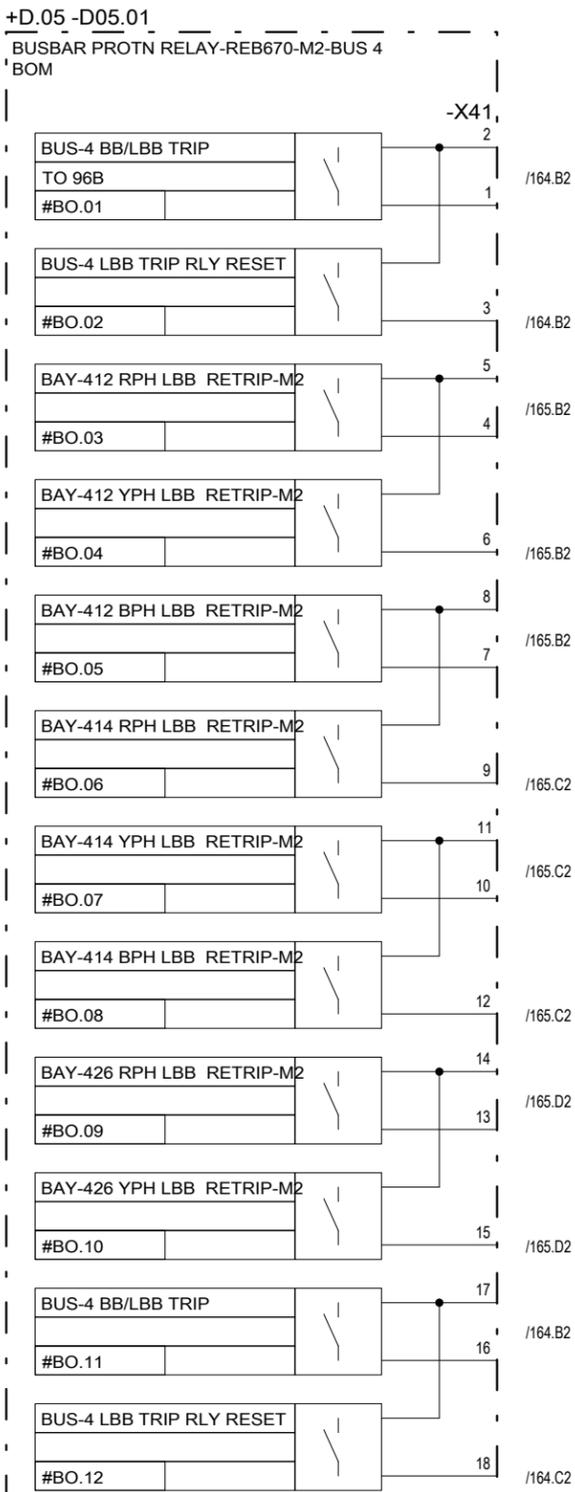
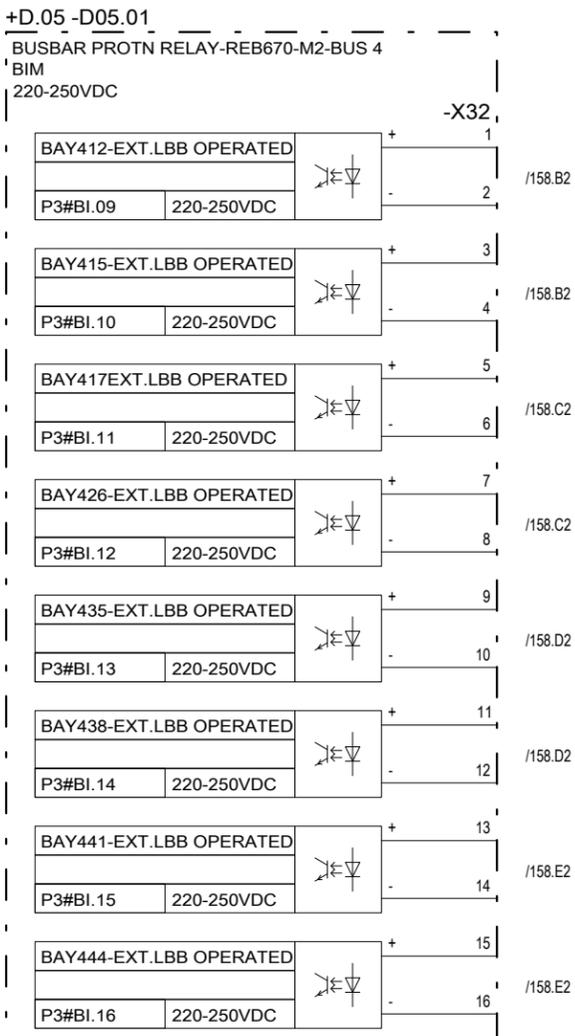
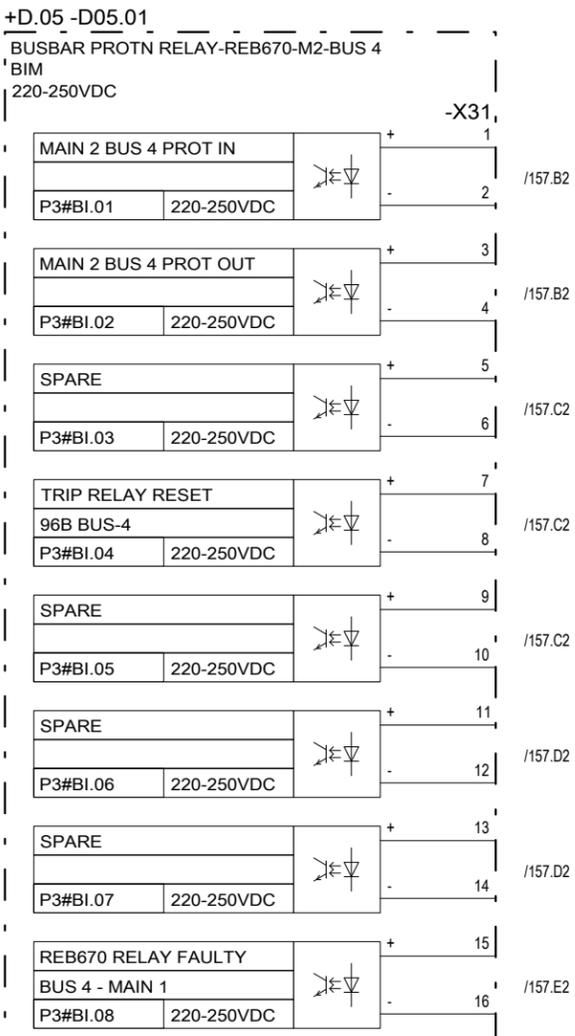
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BUSBAR PROTN RELAY-REB670-M2-BUS 4
TRM
1A, 50/60Hz



Based on 3100135063			Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 4 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
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Rev.	Revision note	Date	Name	Hitachi Energy India Limited			PG-GAS		Rev. ind. 01	
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Based on 3100135063		Prepared 18.04.2023	PANKAJ PATIL
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR
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Project		POWER GRID CORPORATION OF INDIA LTD.	
Rev.		Date	Name
1MYN691003-102(A3)REV01		3100137898	

Title		400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 4 OVERVIEW	
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Resp. dept.		PG-GAS	
Hitachi		Hitachi Energy India Limited	

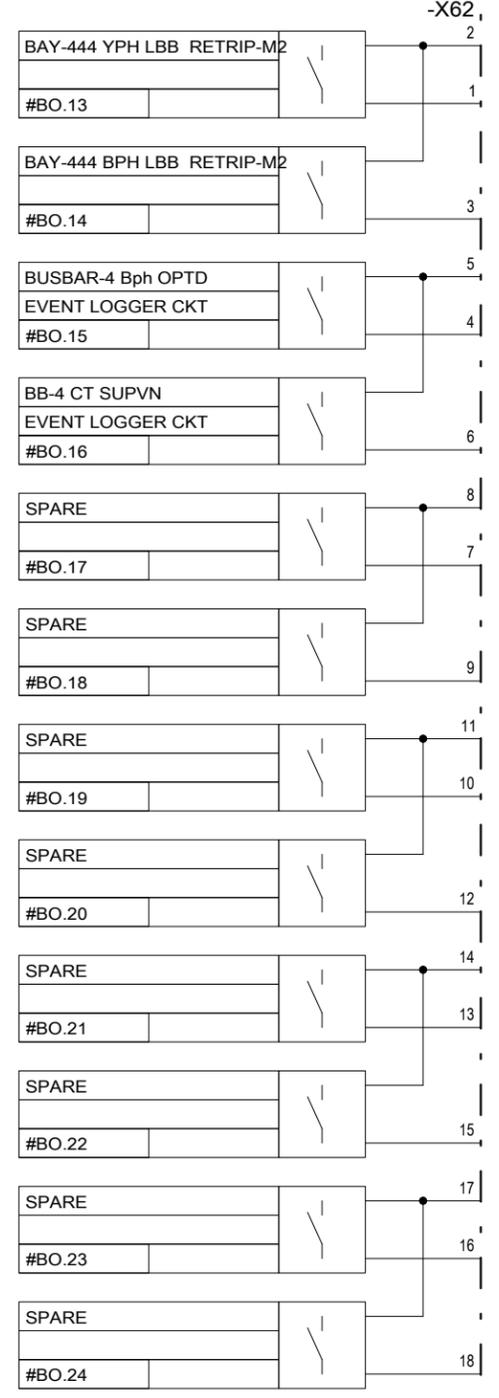
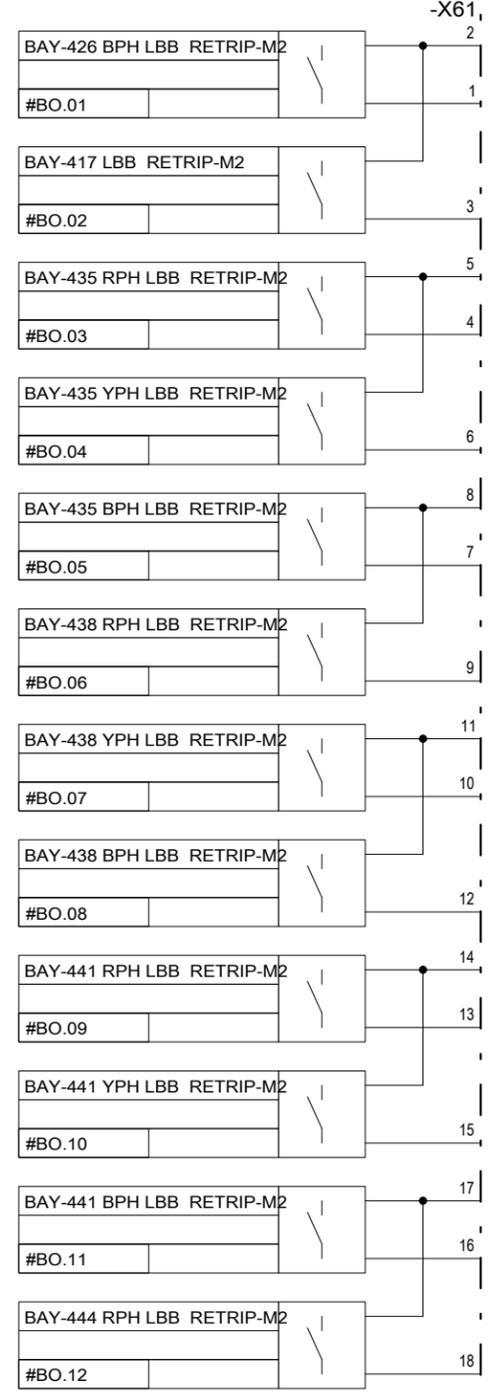
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Rev. ind.		01	
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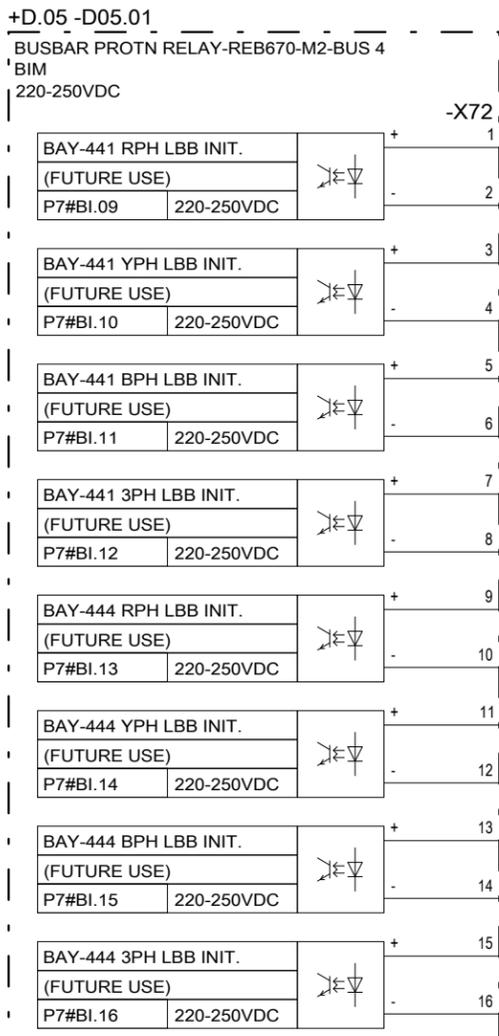
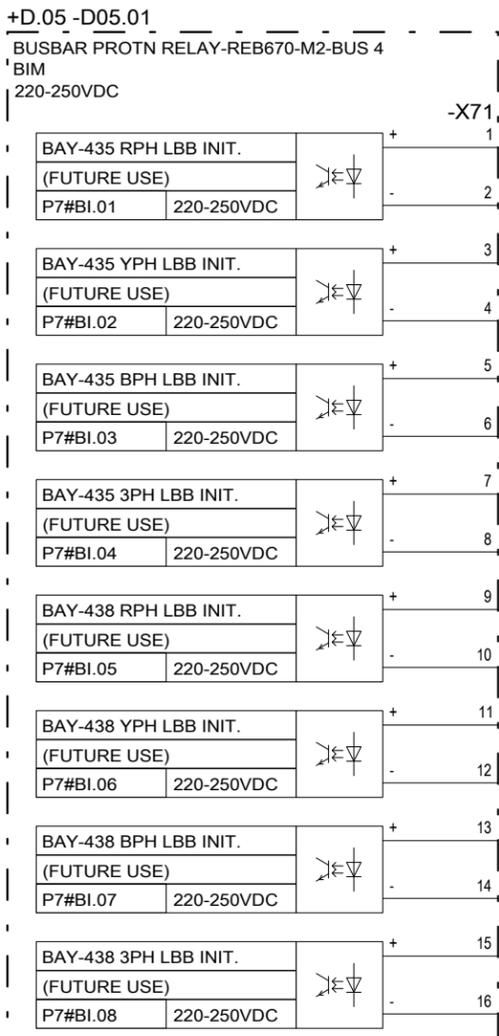
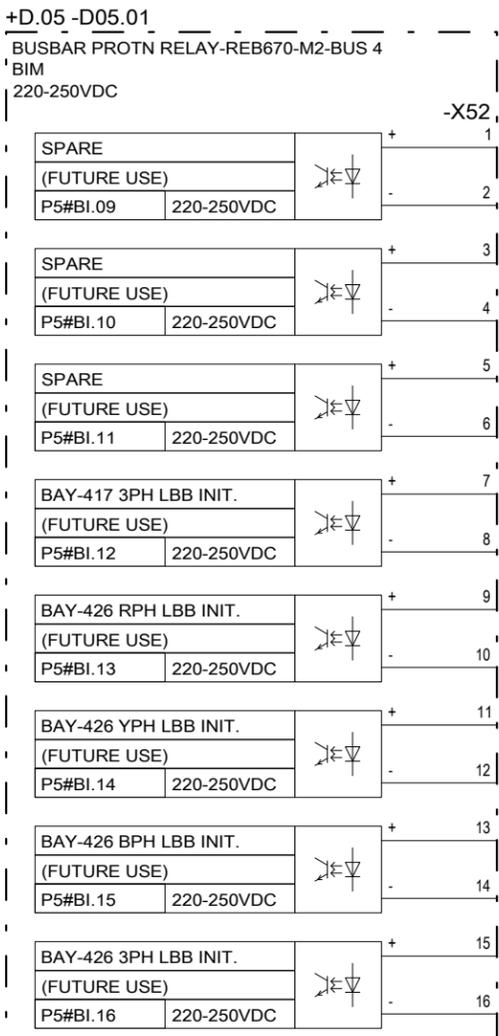
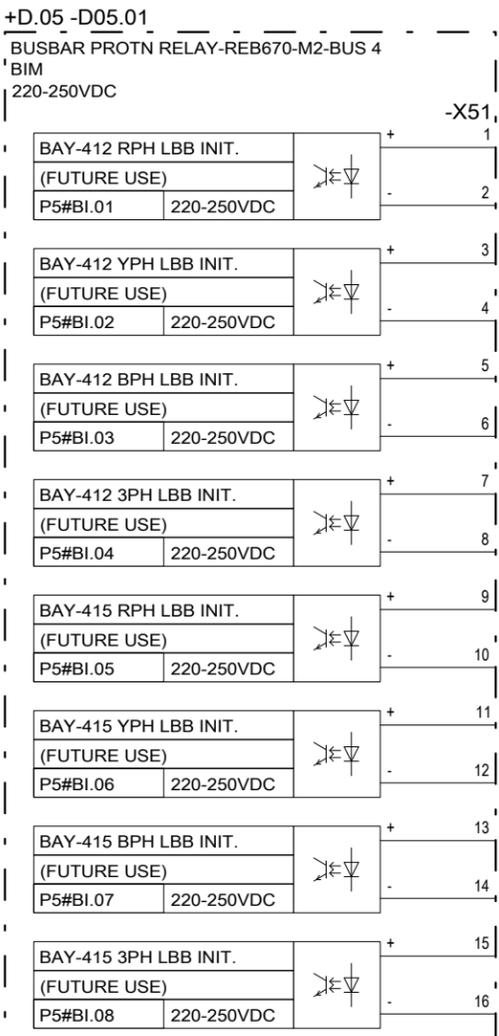
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 BUSBAR PROTN RELAY-REB670-M2-BUS 4
 BOM

+D.05 -D05.01
 BUSBAR PROTN RELAY-REB670-M2-BUS 4
 BOM



Based on 3100135063		Prepared 18.04.2023 PANKAJ PATIL		Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY M2-BUS 4 OVERVIEW		Doc. kind. Circuit diagram		Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023 DEENADAYALAN A	Hitachi Energy India Limited		DCC EFS		Language en
Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898				Resp. dept. PG-GAS			Rev. ind. 01	Sheet 168	
Rev.	Revision note	Date	Name	Hitachi		Doc. no. 1MNS801837-CGCA		n. sheet 169	
1MYN691003-102(A3)REV01									

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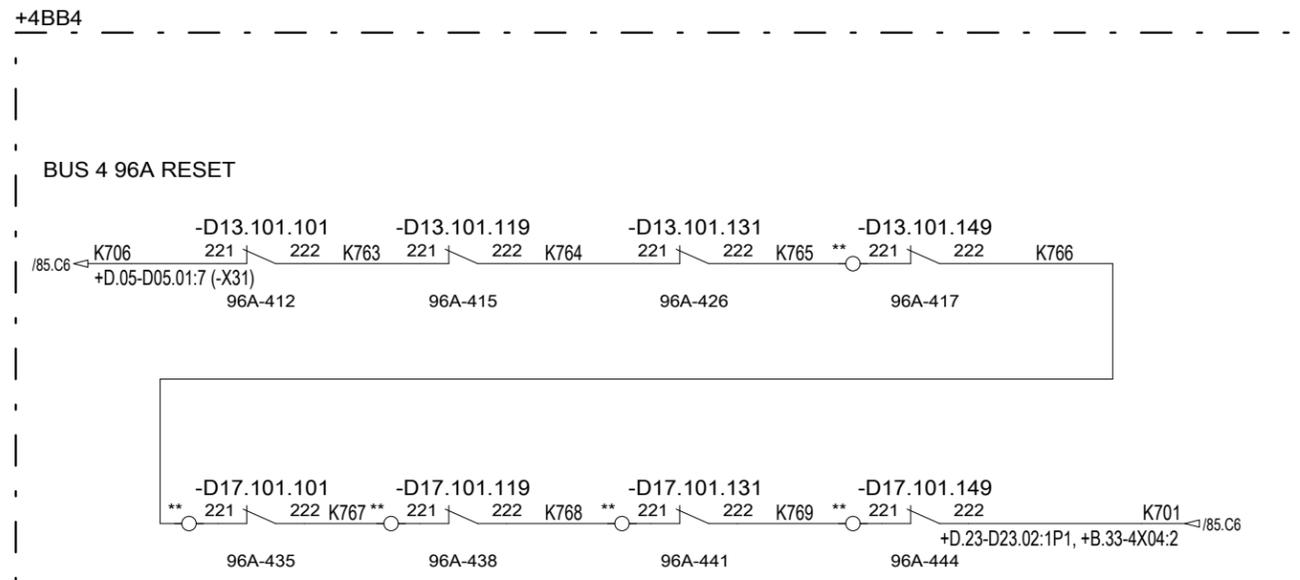
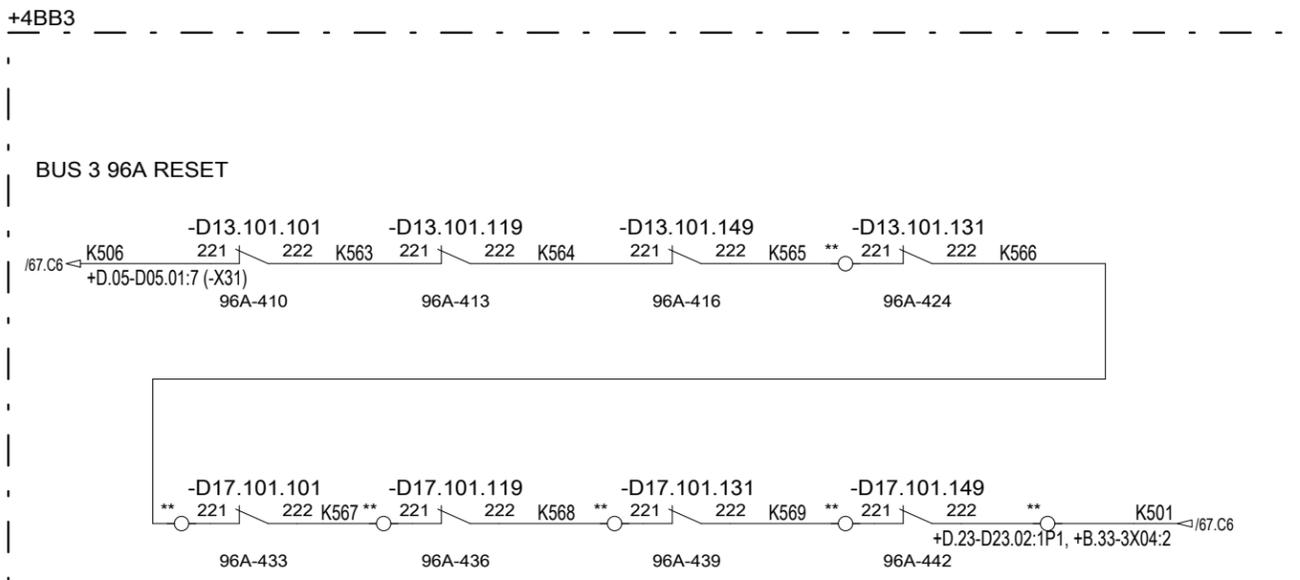
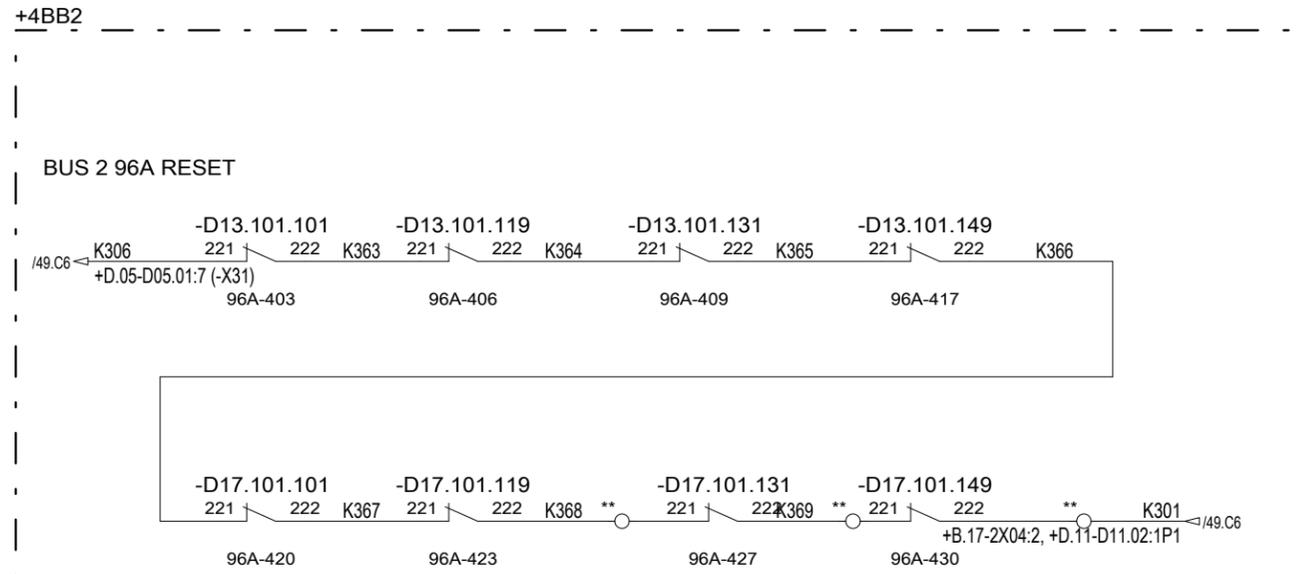
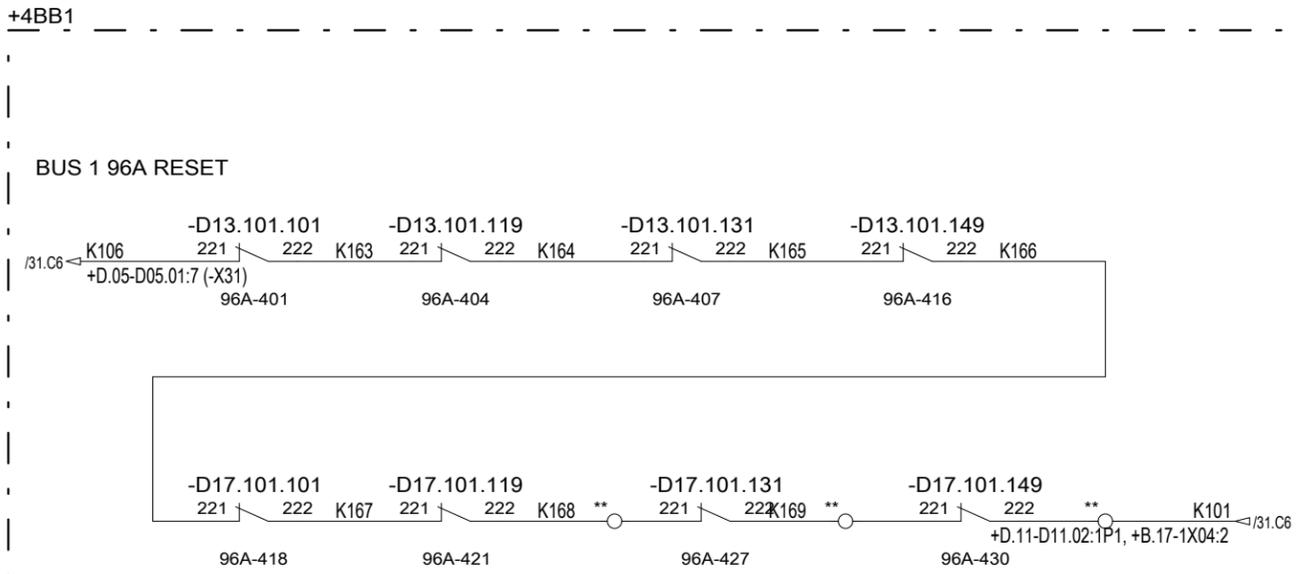


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Project POWER GRID CORPORATION OF INDIA LTD.		400/220kV KOLAR SUBSTATION	
3100137898			
Rev.	Revision note	Date	Name
1MYN691003-102(A3)REV01			

Title 400kV BUSBAR PROTECTION		Doc. kind. Circuit diagram	Ref.Des. =4R
RETROFIT OF REB670 RELAY		DCC EFS	
M2-BUS 4 OVERVIEW		Resp. dept. PG-GAS	Rev. ind. 01
Language en		Sheet 169	
Doc. no. 1MNS801837-CGCA		n. sheet 170	

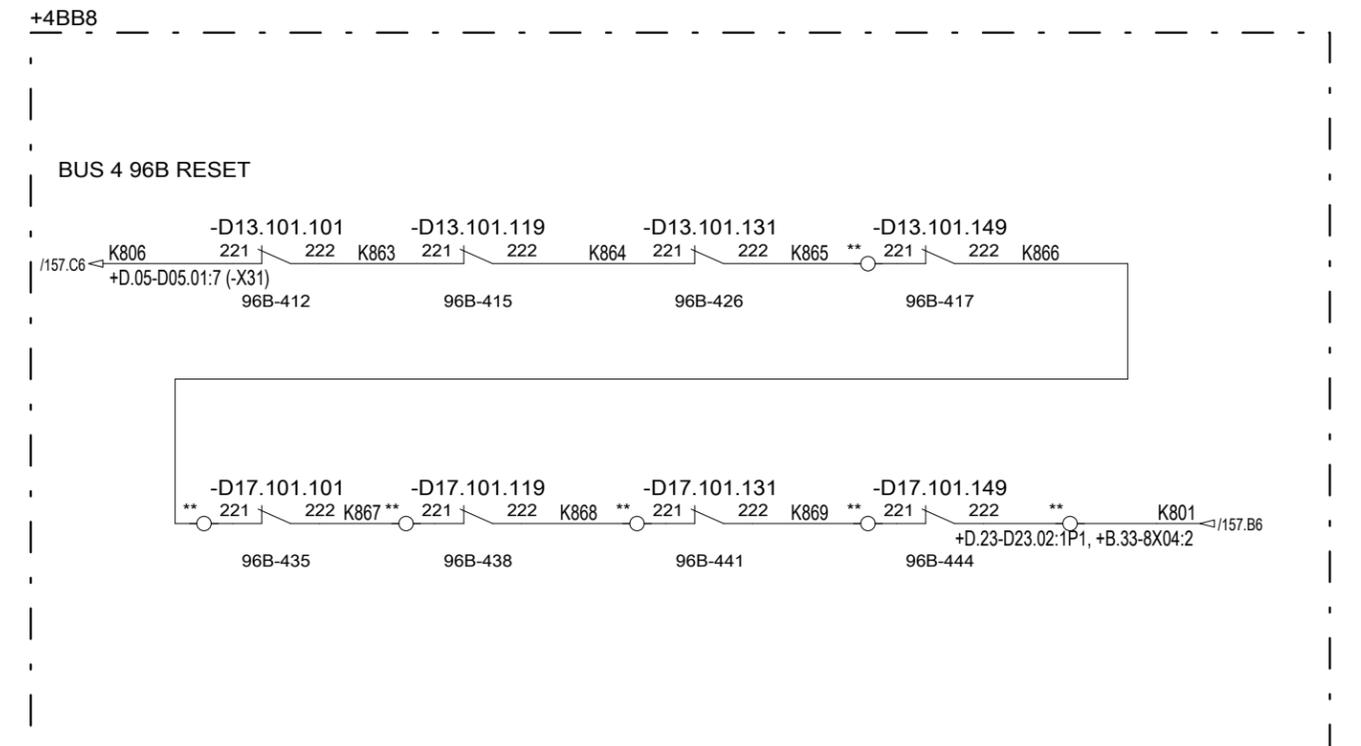
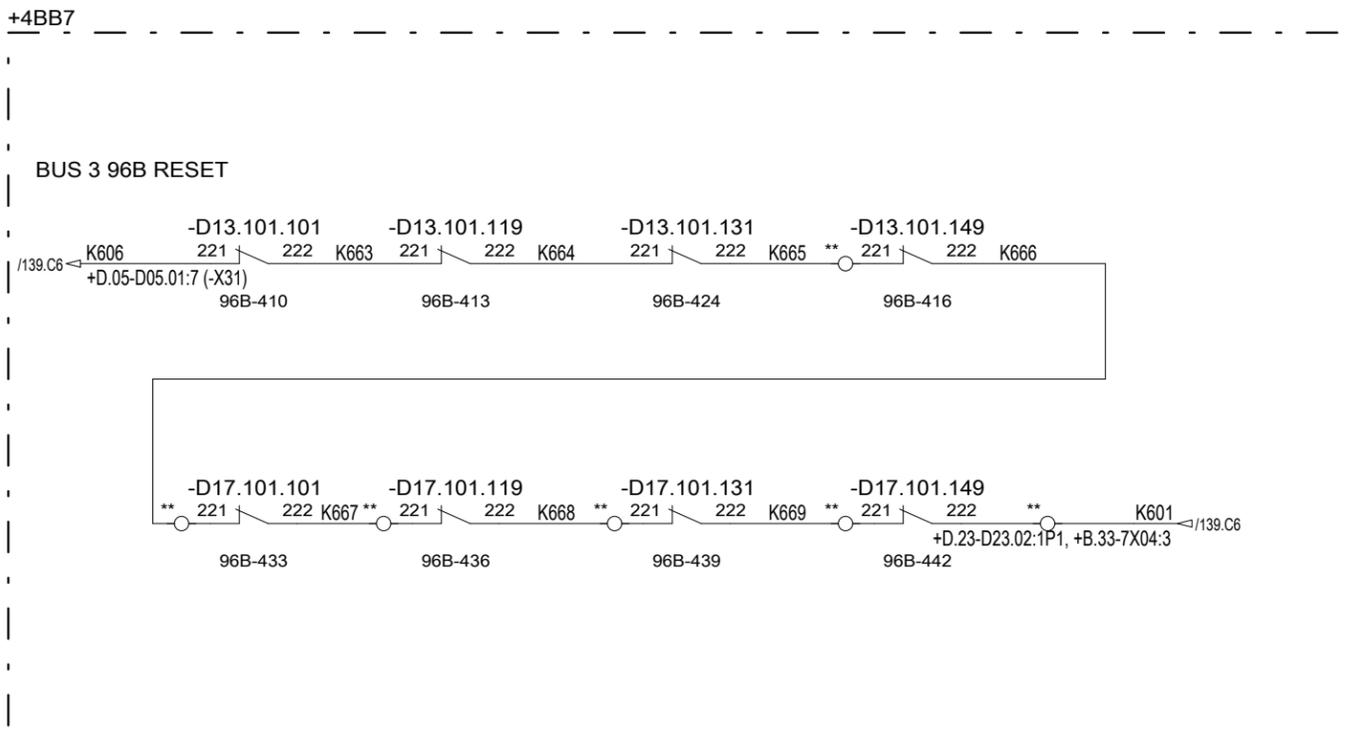
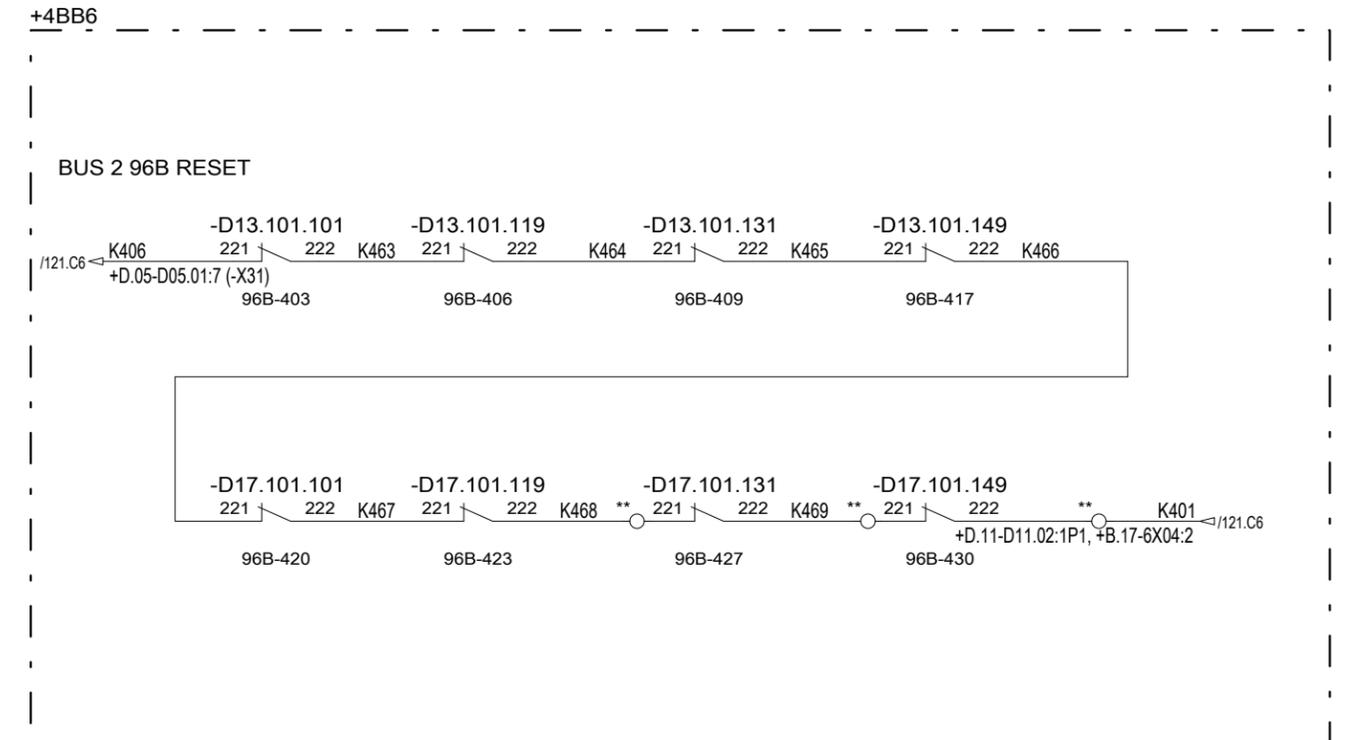
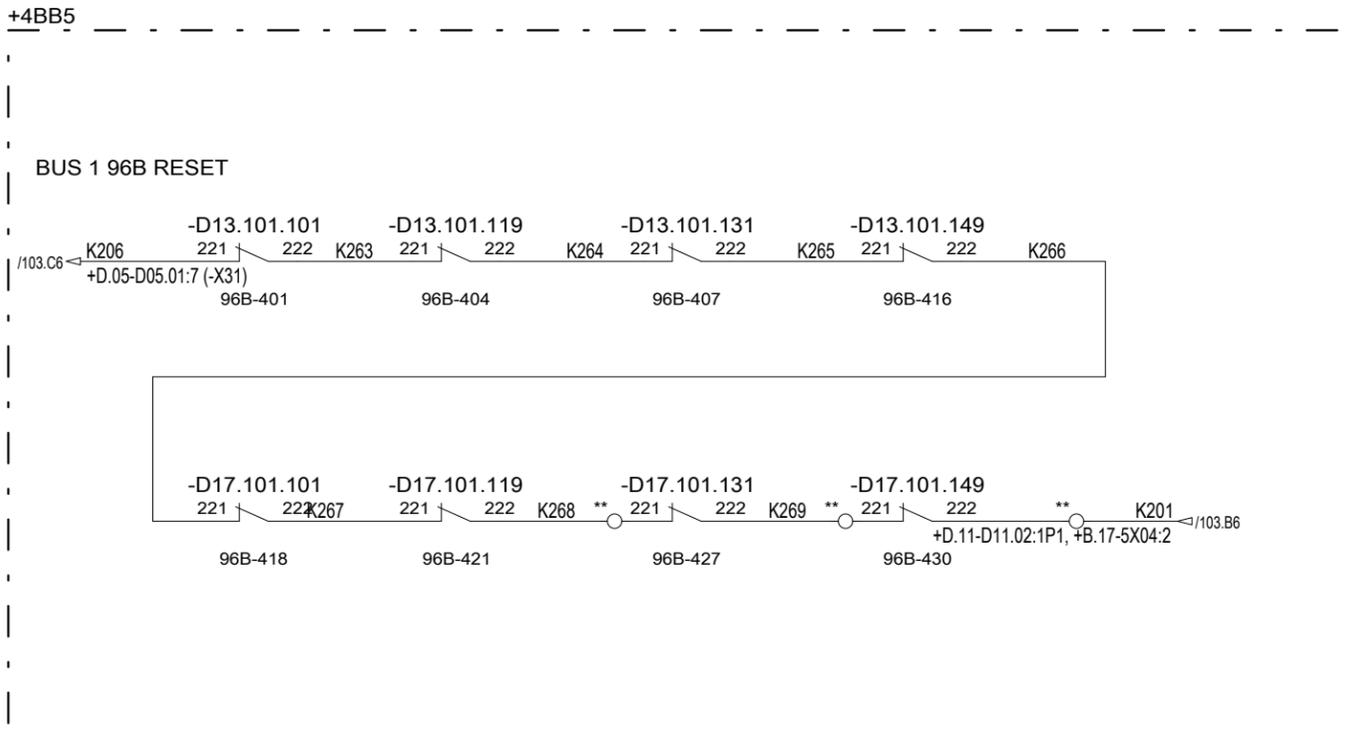
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Title 400kV BUSBAR PROTECTION		Doc. kind. Circuit diagram	Ref.Des. =4R
RETROFIT OF REB670 RELAY		DCC EFS	
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Language en		Sheet 169	
Doc. no. 1MNS801837-CGCA		n. sheet 170	



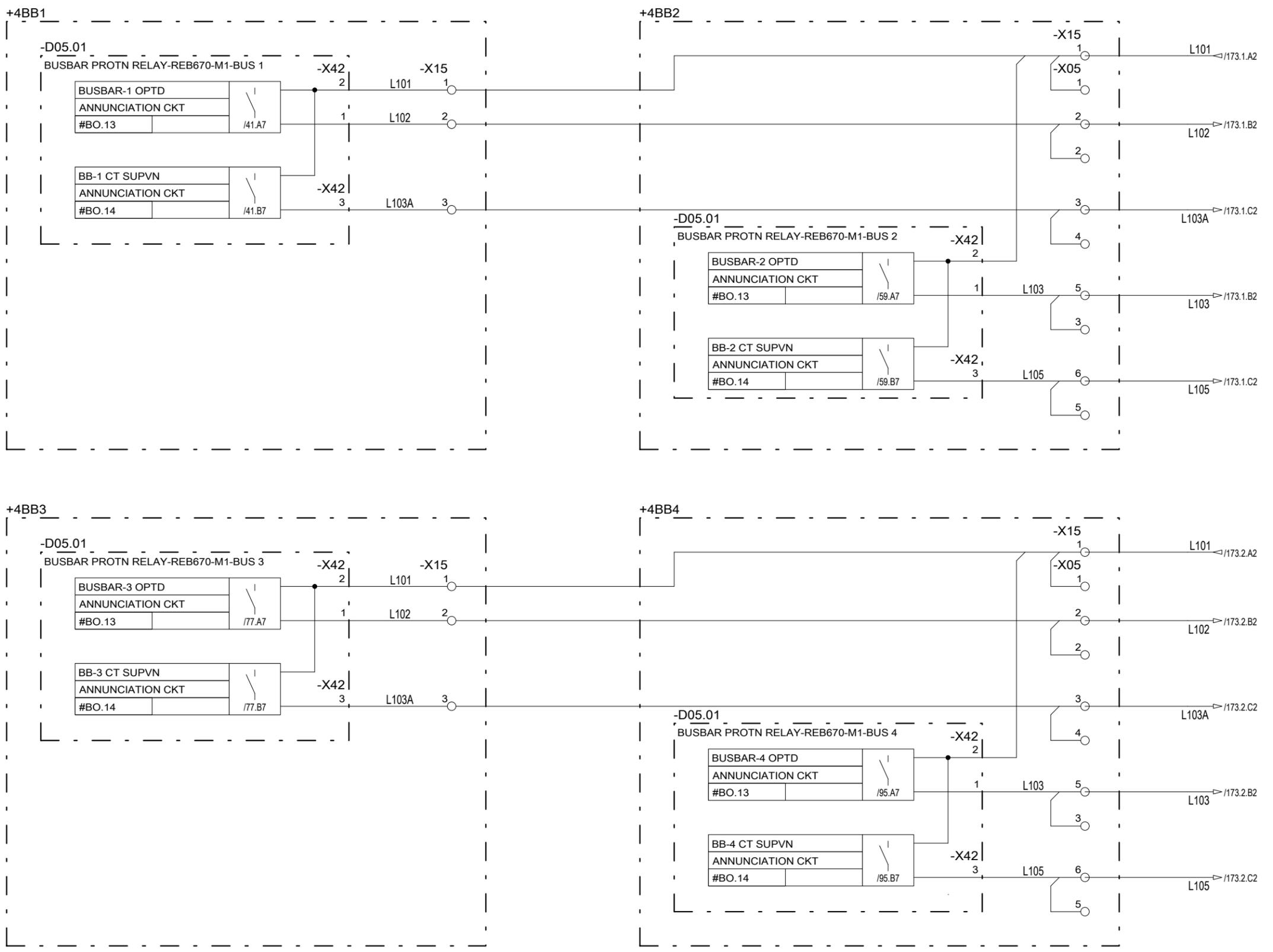
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01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS		
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Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA	Sheet 170	n. sheet 171
1MYN691003-102(A3)REV01									



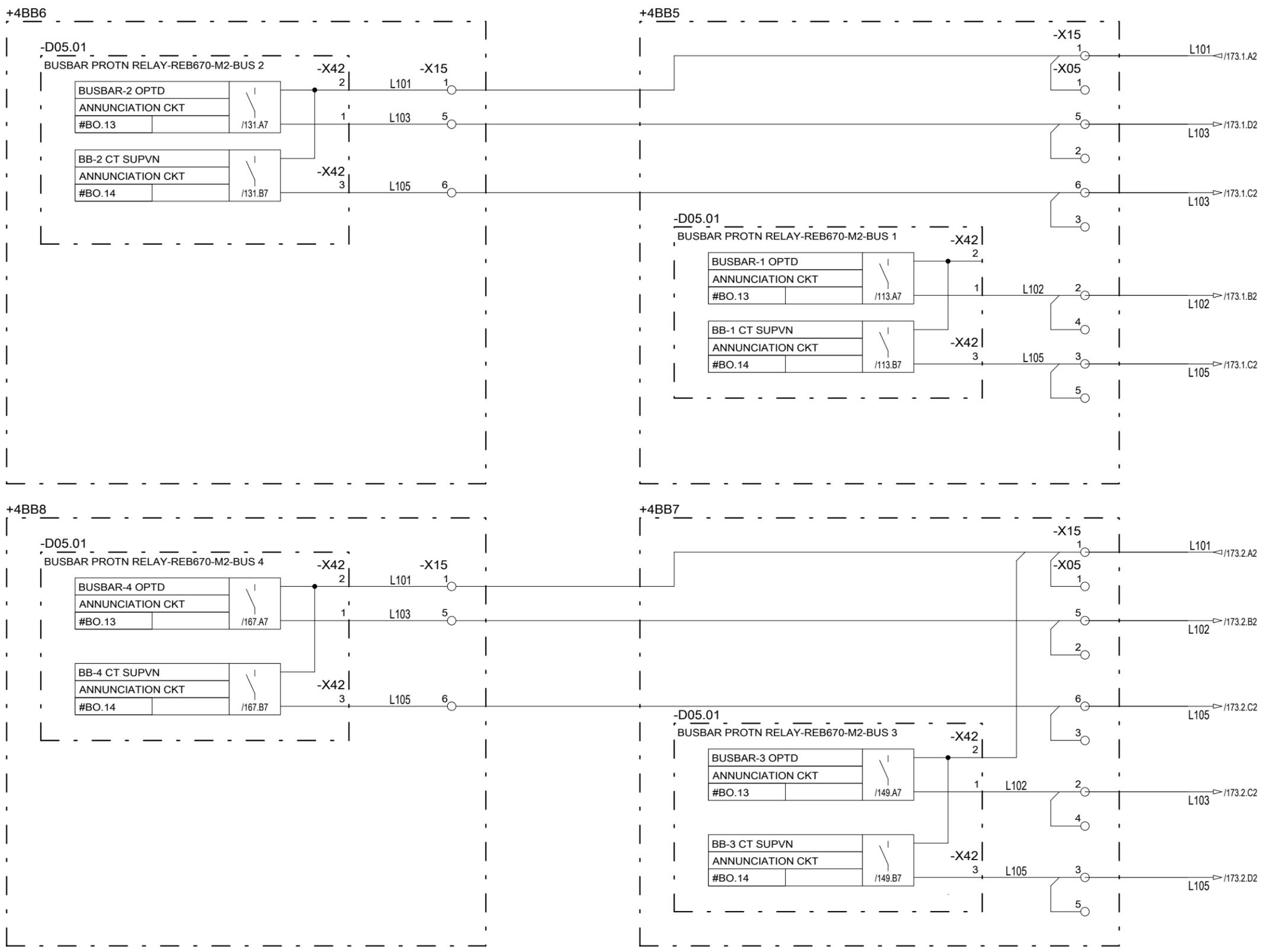
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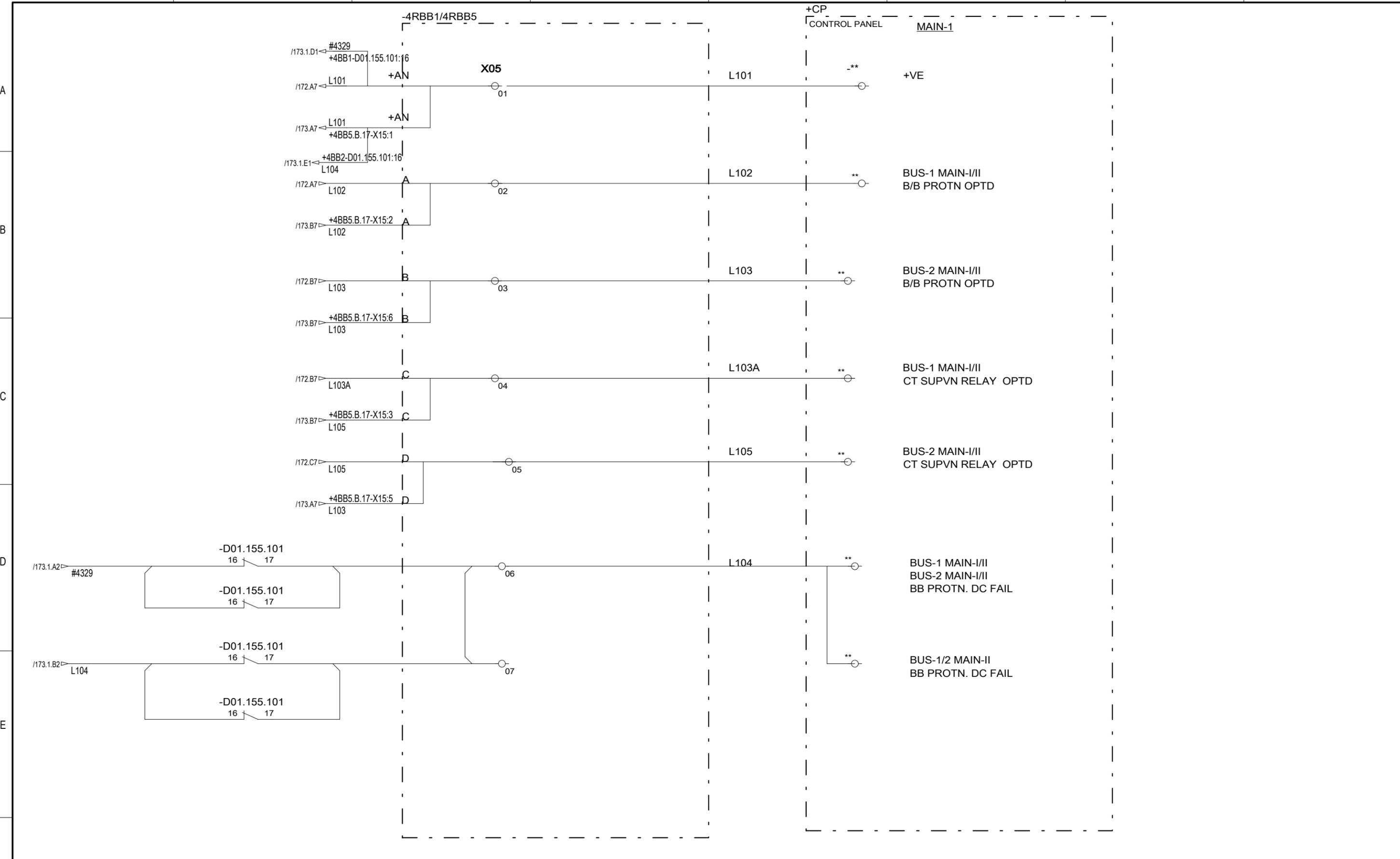
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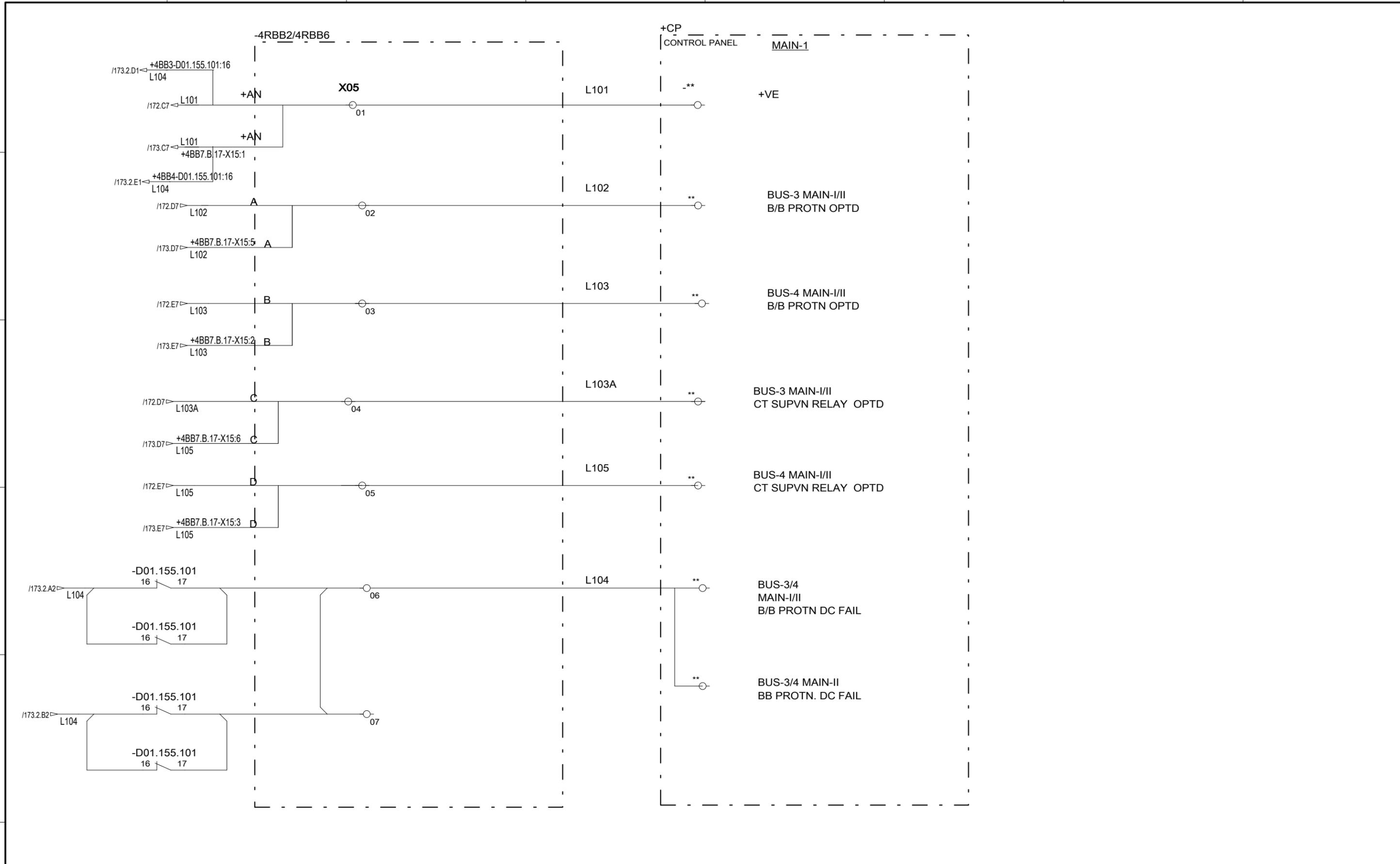
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1MYN691003-102(A3)REV01									

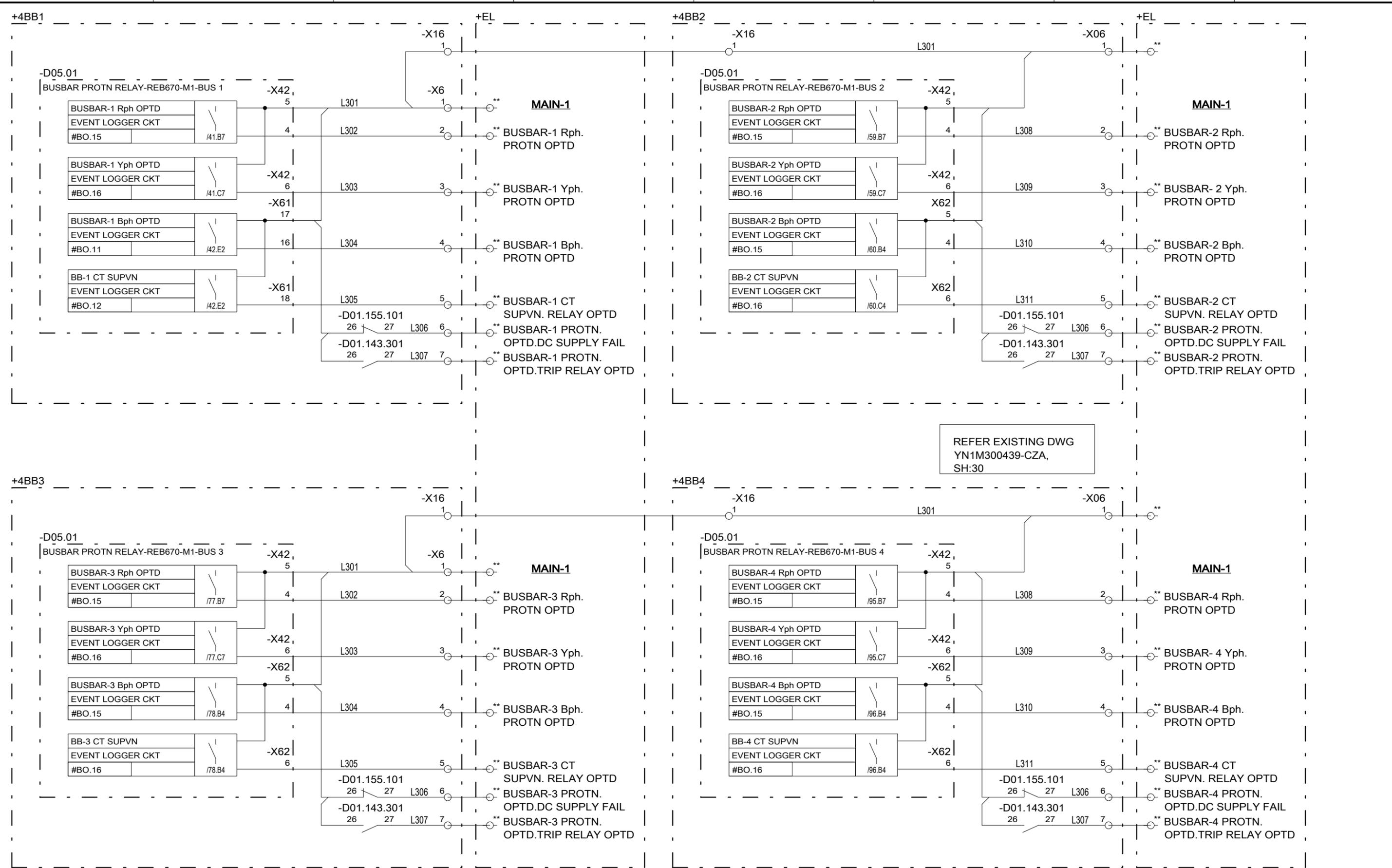
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Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY ANNUNCIATOR CIRCUIT	Doc. kind. Circuit diagram	Ref.Des. =4R	
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1MYN691003-102(A3)REV01									

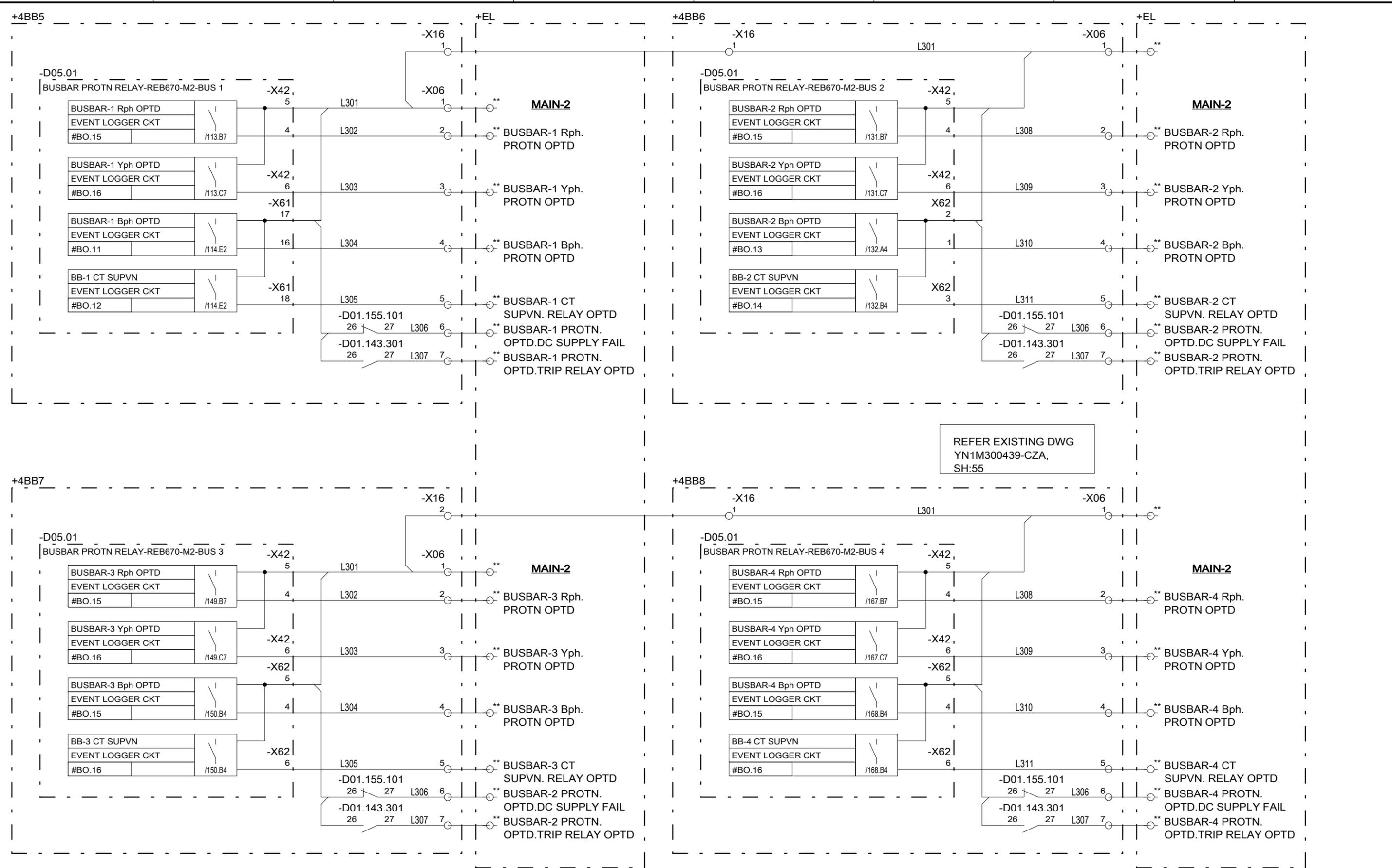


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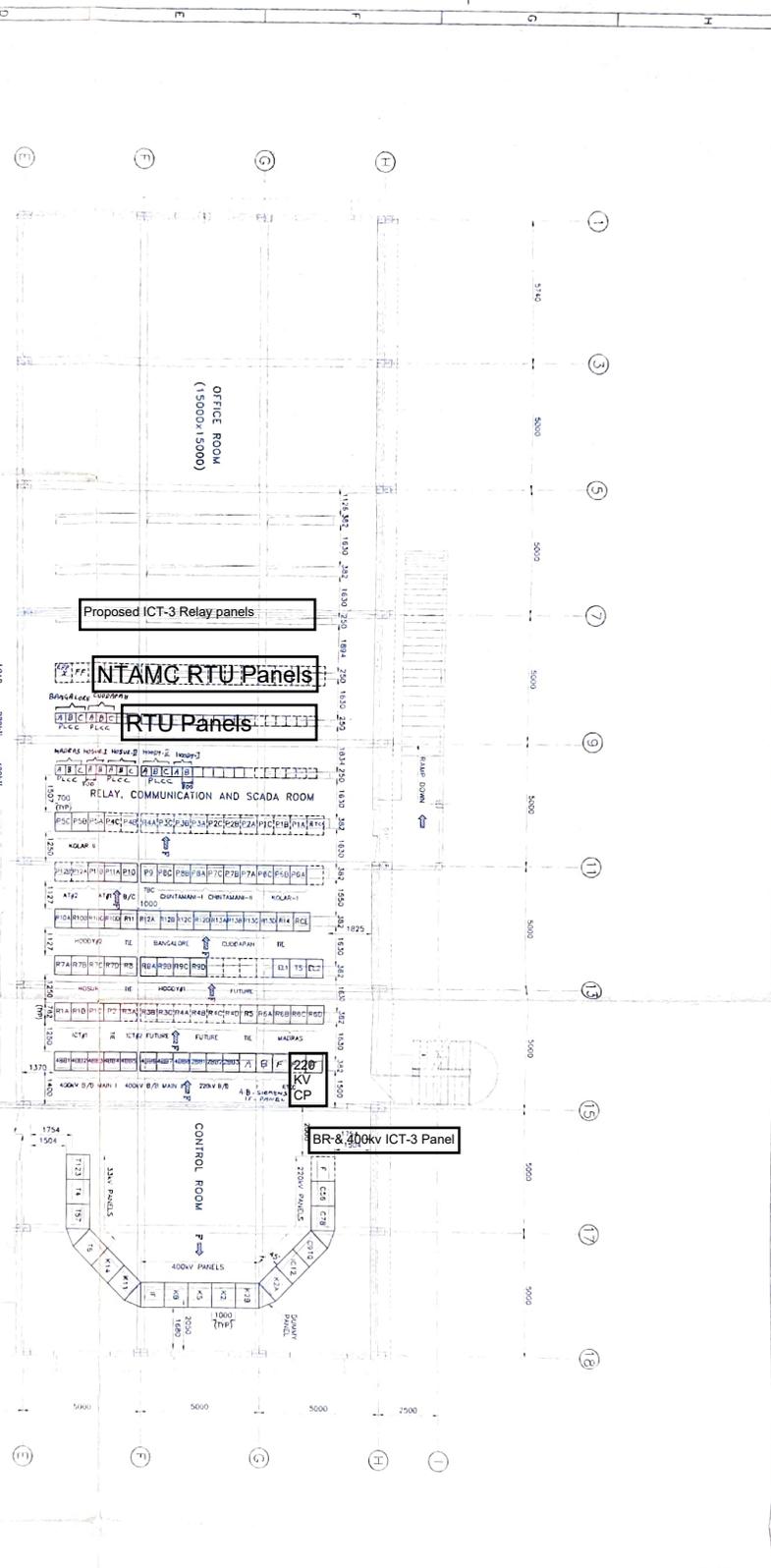
Based on 3100135063				Prepared 18.04.2023	PANKAJ PATIL	Title 400kV BUSBAR PROTECTION RETROFIT OF REB670 RELAY EVENT LOGGER CIRCUIT	Doc. kind. Circuit diagram	Ref.Des. =4R	
01	REVISED AS PER CUSTOMER COMMENTS	02.10.2024	DUR	Approved 20.04.2023	DEENADAYALAN A		DCC EFS		
				Project POWER GRID CORPORATION OF INDIA LTD. 400/220kV KOLAR SUBSTATION 3100137898		Hitachi Energy India Limited	Resp. dept. PG-GAS	Rev. ind. 01	Language en
Rev.	Revision note	Date	Name				Doc. no. 1MNS801837-CGCA		Sheet 175 n. sheet

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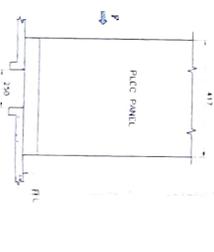
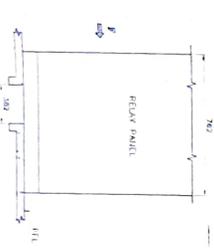
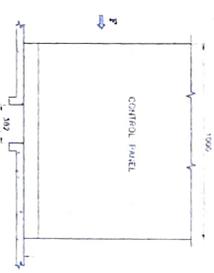
NOTES:-
 1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 2. PANEL DISTRIBUTION SHALL BE AS PER LAYOUT GIVEN BELOW.

LEGEND:-

- 1. CONTROL PANEL (L) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 2. CONTROL PANEL (R) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 3. CONTROL PANEL (C) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 4. CONTROL PANEL (D) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 5. CONTROL PANEL (E) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 6. CONTROL PANEL (F) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 7. CONTROL PANEL (G) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 8. CONTROL PANEL (H) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 9. CONTROL PANEL (I) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 10. CONTROL PANEL (J) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 11. CONTROL PANEL (K) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 12. CONTROL PANEL (L) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 13. CONTROL PANEL (M) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 14. CONTROL PANEL (N) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 15. CONTROL PANEL (O) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 16. CONTROL PANEL (P) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 17. CONTROL PANEL (Q) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 18. CONTROL PANEL (R) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 19. CONTROL PANEL (S) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 20. CONTROL PANEL (T) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 21. CONTROL PANEL (U) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 22. CONTROL PANEL (V) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 23. CONTROL PANEL (W) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 24. CONTROL PANEL (X) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 25. CONTROL PANEL (Y) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)
- 26. CONTROL PANEL (Z) PANELS (FOR 220V, 400V, 11KV, 33KV, 66KV, 110KV, 132KV)



MEZZANINE FLOOR PLAN



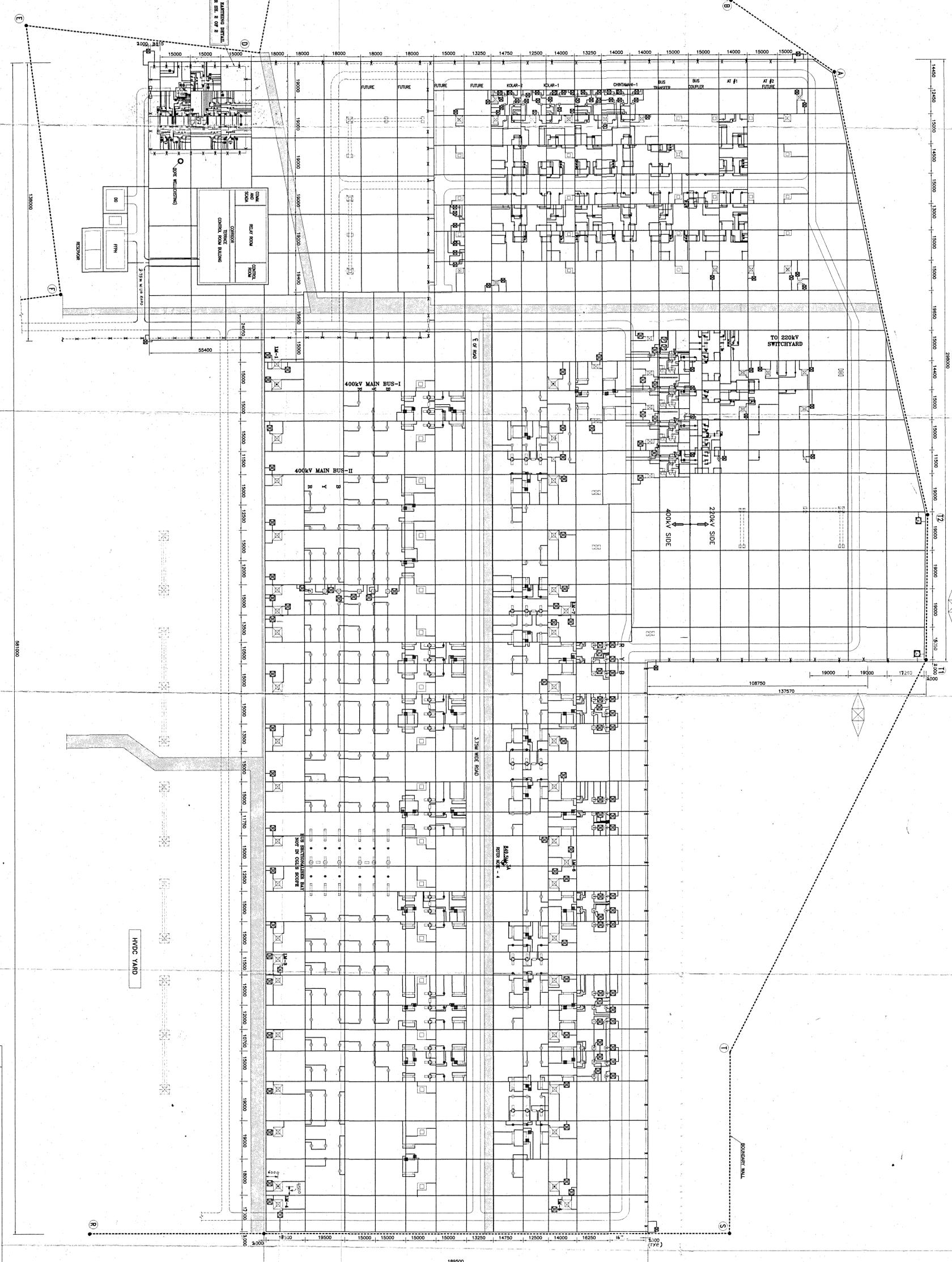
AS BUILT

REFERENCE DRAWINGS:-
 1. EAST-SOUTH INTERCONNECTOR-II
 2. EAST-SOUTH INTERCONNECTOR-II
 3. EAST-SOUTH INTERCONNECTOR-II

Sl. No.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	AS BUILT	18.02.2023
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POWER GRID CORPORATION OF INDIA LTD.
 IN GOVERNMENT OF INDIA (ENTERPRISE)
 PROJECT:- EAST-SOUTH INTERCONNECTOR-II
 400/220/33KV KOLAR S/S (PRG. A)
 THE EQUIPMENT LAYOUT OF CONTROL ROOM BUILDING -MEZZANINE FLOOR PLAN
 PROJECT NO. CG/979/101

A1/2 BAY(C) FUTURE MADRAS HOOSUR HOODY-1 HOODY-2 BANGALORE CUDDAPAH FUTURE



NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND STANDARDS MENTIONED IN THE DRAWING.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CONCERNED AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER-IN-CHARGE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND STANDARDS MENTIONED IN THE DRAWING.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CONCERNED AUTHORITIES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
9. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER-IN-CHARGE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CONCERNED AUTHORITIES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.

REFERENCE DRAWINGS

SL. NO.	DRAWING DESCRIPTION	DRAWING No.
1	GENERAL ARRANGEMENT OF 400/220KV MAIN SUBSTATION	CG/87/03/001
2	400/220KV MAIN SUBSTATION LAYOUT - PLAN	CG/87/03/002
3	400/220KV MAIN SUBSTATION LAYOUT - SECTION	CG/87/03/003
4	GENERAL NOTES ON DRAWING	CG/87/03/004
5	REBAR DETAILS	CG/87/03/005
6	DETAIL OF LAP AND CROSS JOINTS	CG/87/03/006
7	DETAIL OF REINFORCEMENT WITH THE SOLUTION	CG/87/03/007
8	DETAILS OF FOOT RESTRICTION	CG/87/03/008
9	DETAILS OF FOOT RESTRICTION	CG/87/03/009
10	DETAILS OF FOOT RESTRICTION	CG/87/03/010
11	DETAILS OF FOOT RESTRICTION	CG/87/03/011
12	DETAILS OF FOOT RESTRICTION	CG/87/03/012
13	DETAILS OF FOOT RESTRICTION	CG/87/03/013
14	DETAILS OF FOOT RESTRICTION	CG/87/03/014
15	DETAILS OF FOOT RESTRICTION	CG/87/03/015
16	DETAILS OF FOOT RESTRICTION	CG/87/03/016
17	DETAILS OF FOOT RESTRICTION	CG/87/03/017
18	DETAILS OF FOOT RESTRICTION	CG/87/03/018
19	DETAILS OF FOOT RESTRICTION	CG/87/03/019
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21	DETAILS OF FOOT RESTRICTION	CG/87/03/021
22	DETAILS OF FOOT RESTRICTION	CG/87/03/022
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26	DETAILS OF FOOT RESTRICTION	CG/87/03/026
27	DETAILS OF FOOT RESTRICTION	CG/87/03/027
28	DETAILS OF FOOT RESTRICTION	CG/87/03/028
29	DETAILS OF FOOT RESTRICTION	CG/87/03/029
30	DETAILS OF FOOT RESTRICTION	CG/87/03/030
31	DETAILS OF FOOT RESTRICTION	CG/87/03/031
32	DETAILS OF FOOT RESTRICTION	CG/87/03/032
33	DETAILS OF FOOT RESTRICTION	CG/87/03/033
34	DETAILS OF FOOT RESTRICTION	CG/87/03/034
35	DETAILS OF FOOT RESTRICTION	CG/87/03/035
36	DETAILS OF FOOT RESTRICTION	CG/87/03/036
37	DETAILS OF FOOT RESTRICTION	CG/87/03/037
38	DETAILS OF FOOT RESTRICTION	CG/87/03/038
39	DETAILS OF FOOT RESTRICTION	CG/87/03/039
40	DETAILS OF FOOT RESTRICTION	CG/87/03/040
41	DETAILS OF FOOT RESTRICTION	CG/87/03/041
42	DETAILS OF FOOT RESTRICTION	CG/87/03/042
43	DETAILS OF FOOT RESTRICTION	CG/87/03/043

LEGEND:

- MAIN LAMINATE & REBAR CONCRETE (FORM # AS 100)
- ALUMINUM FINISH, W/P (FORM # AS 100)
- ROOF FINISH EXTERIOR
- PREP FINISH EXTERIOR

AS BUILT

REV.	DESCRIPTION	DATE	BY	CHECKED
R1	REVISED BASED ON FIELD COMMENTS DATED 11/01/2001	02/08/02	AK	AK
R2	AS BUILT	02/08/02	AK	AK

PROJECT INFORMATION

PROJECT: EAST-SOUTH INTERCONNECTOR-I
 400/220/33KV KOLAR S/S (PKG. A)

CONTRACT No. _____

TITLE: BARTHING LAYOUT

DATE: 23.12.2000

SCALE: 1/700

DESIGNED BY: S. NARAYAN

CHECKED BY: _____

APPROVED BY: _____

PROJECTED BY: _____

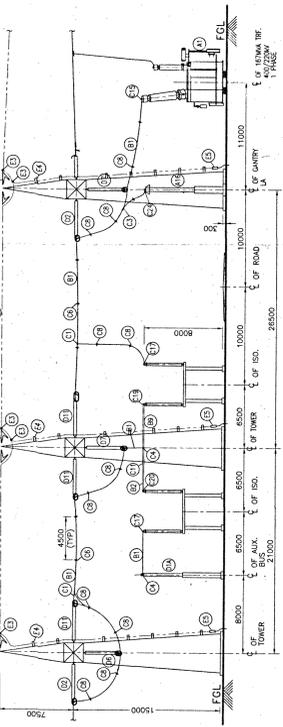
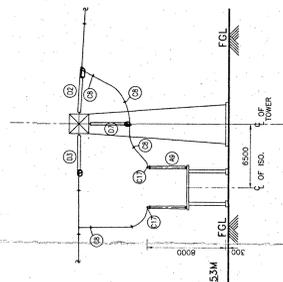
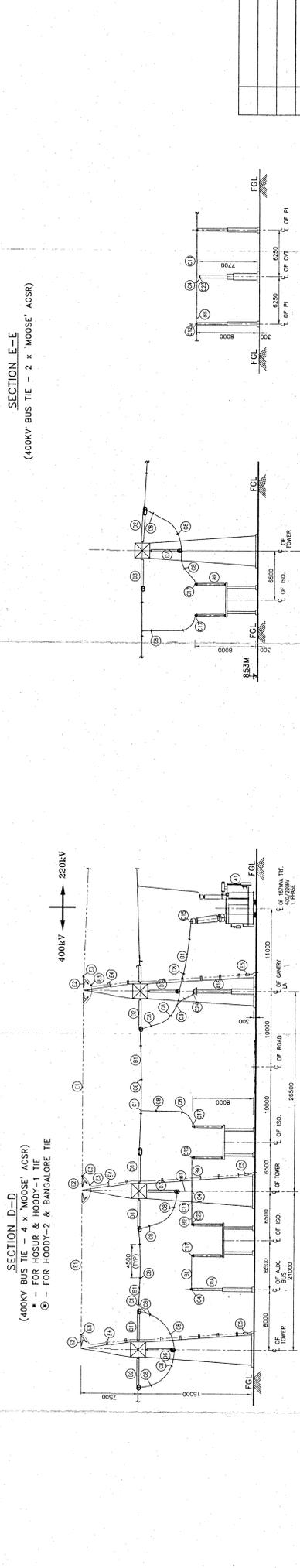
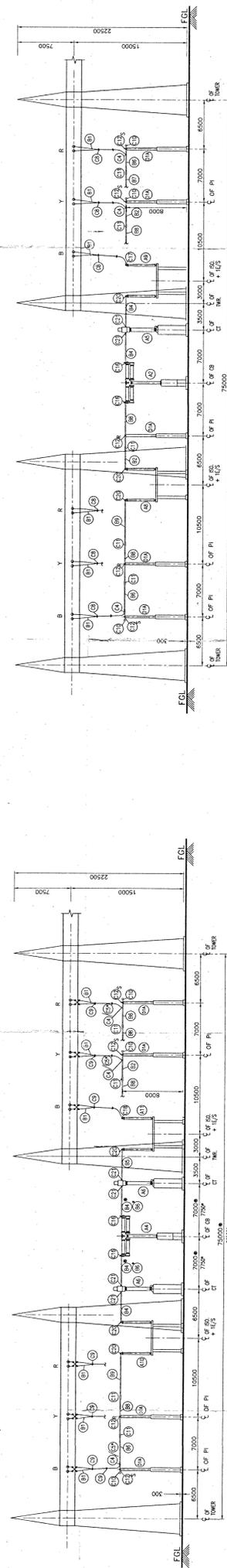
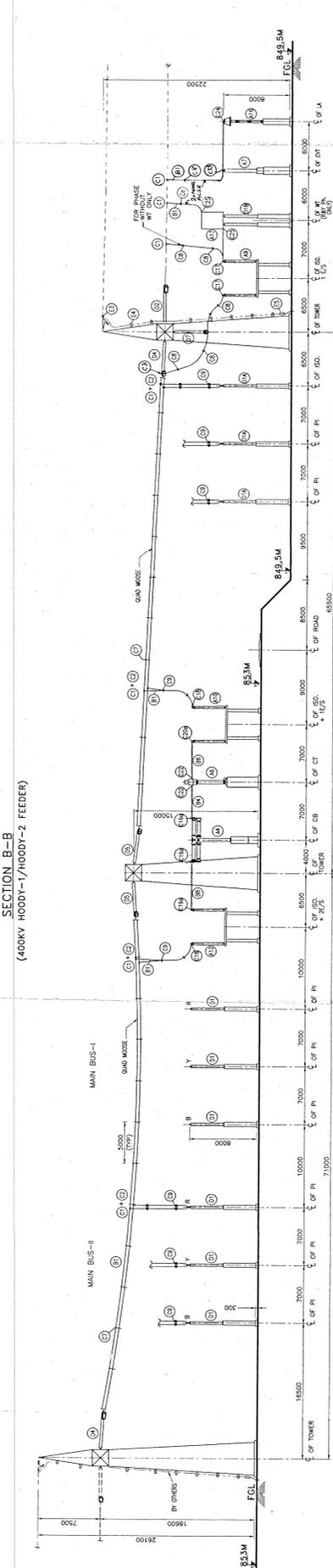
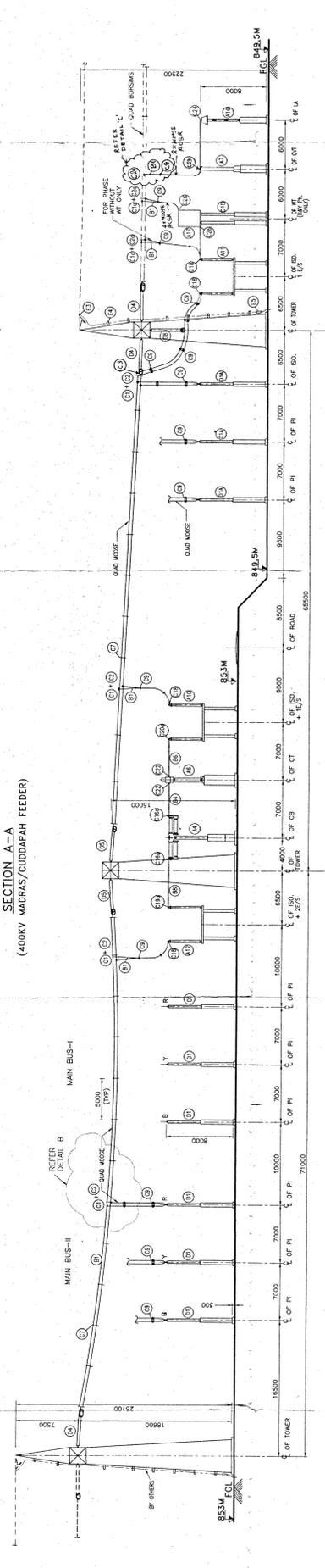
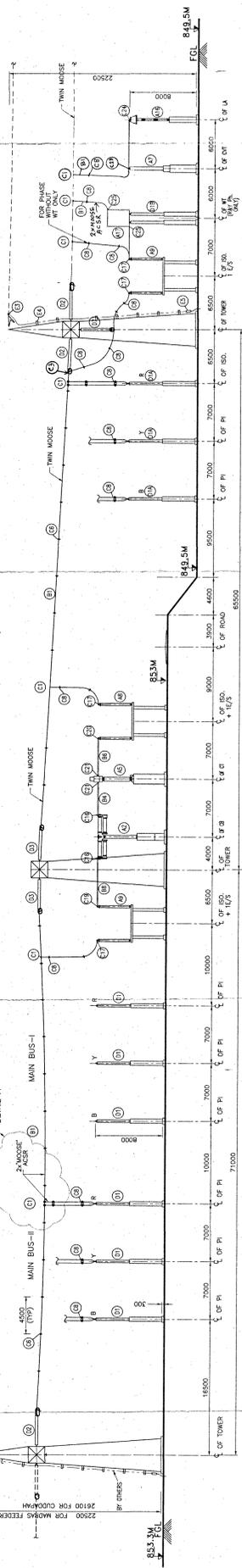
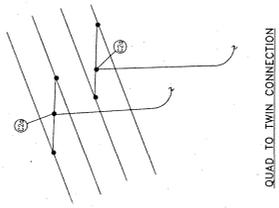
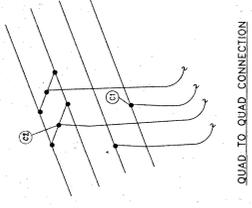
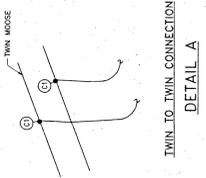
DRAWING No. CG/87/03/007

SHEET No. 1 OF 2

REV. R2

POWER GRID CORPORATION OF INDIA LTD.
 A CORPORATION OF INDIA ESTABLISHED IN 1975

NOTE:-
1. FOR NOTE & LEGEND REFER SHEET 1



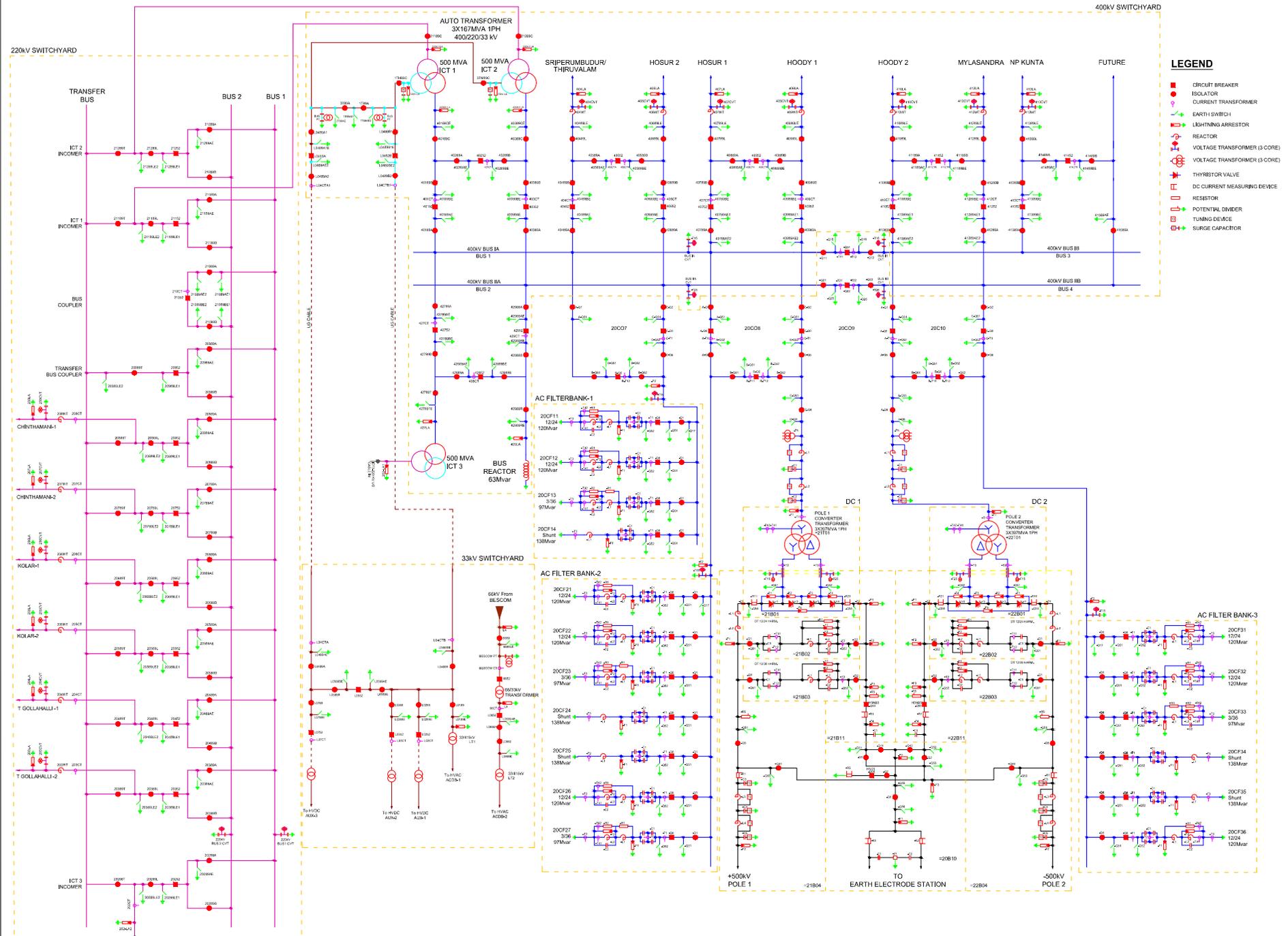
400KV
220KV

AS BUILT

PROJECT	EAST-SOUTH INTERCONNECTOR-II		
CONTRACT	400/220/33KV KOLAR S/S (PKG-A)		
TITLE	ERECTION KEY DIAGRAM - 400KV SWITCHYARD		
CUSTOMER	POWER GRID CORPORATION OF INDIA LTD.,	(A GOVERNMENT OF INDIA ENTERPRISE)	
DRAWN	KAMANEKALAI	DATE	21.02.2001
CHECKED	[Signature]	SCALE	1:250
APPROVED	[Signature]	DATE	07.08.2001
PASSED	[Signature]	DATE	20.06.2001
REV. No	2	DR	2
CG/973/072		REV	R3

POWERGRID CORPORATION OF INDIA LIMITED

2500 MW, ±500kV HVDC TERMINAL & 400/220kV HVAC STATION KOLAR

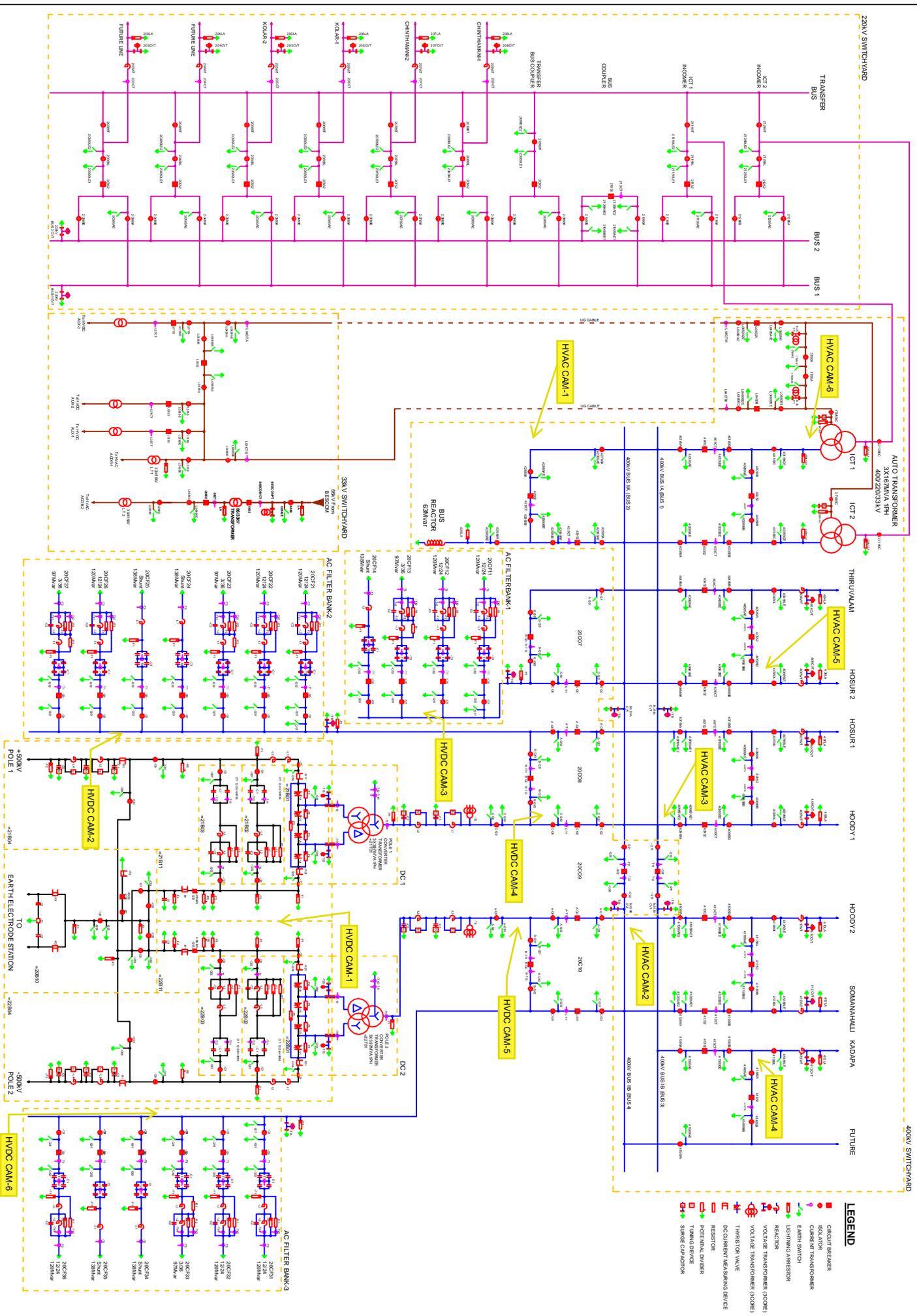


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POWERGRID CORPORATION OF INDIA LIMITED

2500 MW, ₹500kV HVDC TERMINAL & 400/220kV HVAC STATION KOLAR

dwg No: PGCL/Kolar/ 02



- LEGEND**
- CIRCUIT BREAKER
 - ISOLATOR
 - CAPACITOR TRANSFORMER
 - ⊕ EARTH SWITCH
 - ⊖ LIGHTNING ARRESTOR
 - ⊗ REACTOR
 - ⊘ VOLTAGE TRANSFORMER (CCTM)
 - ⊙ TRANSISTOR VALVE
 - ⊚ DC CURRENT MEASURING DEVICE
 - ⊛ RESISTOR
 - ⊜ POTENTIAL DIVIDER
 - ⊝ TUNING DEVICE
 - ⊞ SERIES CAPACITOR

TYPICAL ARCHITECTURAL DRAWING OF SUB-STATION AUTOMATION SYSTEM

