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CUSTOMER	:	ASSAM ELECTRICITY GRID CORPORATION LTD
CONTRACTOR	:	TECHNO ELECTRIC & ENGINEERING COMPANY LIMITED
CUSTOMER REF. PO.NO	:	0816SN/24-25/43841 DTD:27-FEB-2025
HE REF.NO	:	128840
SUBSTATION	:	400/220kV GIS SONAPUR
EQUIPMENT	:	**220kV LINE CONTROL & RELAY PANEL (WITH LINE DISTANCE)**
DRAWING REF.	:	General Arrangement : 1KHF128840R1113 Schematic Drawings : 1KHF128840R1113 Bill of Material : 1KHY128840R1113,14
STANDARD BAY REF.	:	=2R

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SL.No	BAY REF.	PANEL REF.	BAY DESCRIPTION
01	208	D05AA, D05AB	220kV SARUSAJAI -II LINE
02	209	D06AA, D06AB	220kV SARUSAJAI -I LINE

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Techno Electric & Engineering Co. Ltd. Guwahati

AUX. VOLTAGE : 220V DC

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
Title page

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Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	1
		No.sheets	121

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Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP PAGE NUMBER INDEX

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Doc. kind. Circuit diagram DCC EFS
Ref.Des. =2R
Resp. dept. PG-GAS
Rev. ind. 02
Language en
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Checked By AGM (P&D)	
Checked By DM (P&D)	
Checked By AM (P&D)	

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Title 220kV CONTROL & RELAY PANEL List of contents

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Doc. kind. List of contents DCC EAB
Ref.Des. =2R
Resp. dept. PG-GAS
Rev. ind. 02
Language en
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n. sheet 4
Doc. no. 1KHF128840R1113

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226	227	220kV LINE CRP	REC670 PROTN.CKTS-BIM	02	AS PER CUSTOMER COMMENTS	265	266	220kV LINE CRP	BB/LBB INTERFACING CKT.	02	AS PER CUSTOMER COMMENTS
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239	240	220kV LINE CRP	REC670 PROTN.CKTS-BIM	02	AS PER CUSTOMER COMMENTS	404	405	LINE-TIE-<LINE>	PT SELECTION CKT.	02	AS PER CUSTOMER COMMENTS
240	241	220kV LINE CRP	REC670 PROTN.CKTS-BOM	02	AS PER CUSTOMER COMMENTS	405	406	LINE-TIE-<LINE>	PT SELECTION CKT.	02	AS PER CUSTOMER COMMENTS
241	242	220kV LINE CRP	REC670 PROTN.CKTS-BOM	02	AS PER CUSTOMER COMMENTS	406	407	LINE-TIE-<LINE>	PT SELECTION CKT.	02	AS PER CUSTOMER COMMENTS
242	243	220kV LINE CRP	REC670 PROTN.CKTS-BOM	02	AS PER CUSTOMER COMMENTS	407	361	LINE-TIE-<LINE>	PT SELECTION CKT.	02	AS PER CUSTOMER COMMENTS
243	244	220kV LINE CRP	REC670 MASTER BLOCK	02	AS PER CUSTOMER COMMENTS	361	362	220kV LINE CRP	ETHERNET SWITCH CIRCUIT	02	AS PER CUSTOMER COMMENTS
244	245	220kV LINE CRP	REC670 MASTER BLOCK	02	AS PER CUSTOMER COMMENTS	362	363	220kV LINE CRP	ETHERNET SWITCH CIRCUIT	02	AS PER CUSTOMER COMMENTS

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Title 220kV CONTROL & RELAY PANEL List of contents

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Doc. kind. List of contents
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Sheet 4
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Sheet	n.sh.	Description 1	Description 2	Rev.	Revision note
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401	402	SPARE TERMINALS	SPARE TERMINALS	02	AS PER CUSTOMER COMMENTS
402	403	SPARE TERMINALS	SPARE TERMINALS	02	AS PER CUSTOMER COMMENTS
403		SPARE TERMINALS	SPARE TERMINALS	02	AS PER CUSTOMER COMMENTS

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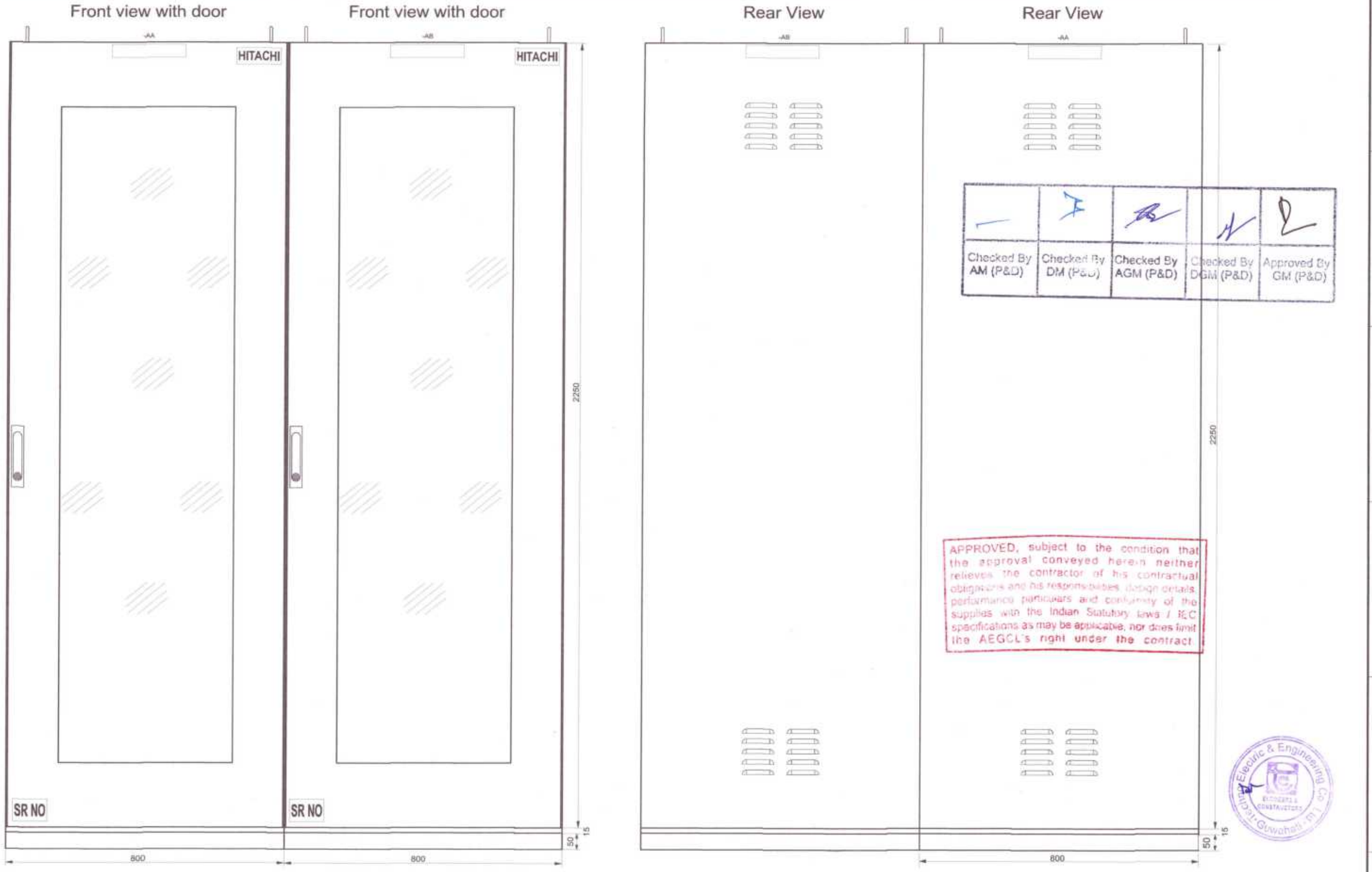

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Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP Front view

HITACHI Hitachi Energy India Limited

Doc. kind. Assembly drawing
DCC ELU
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
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Language en
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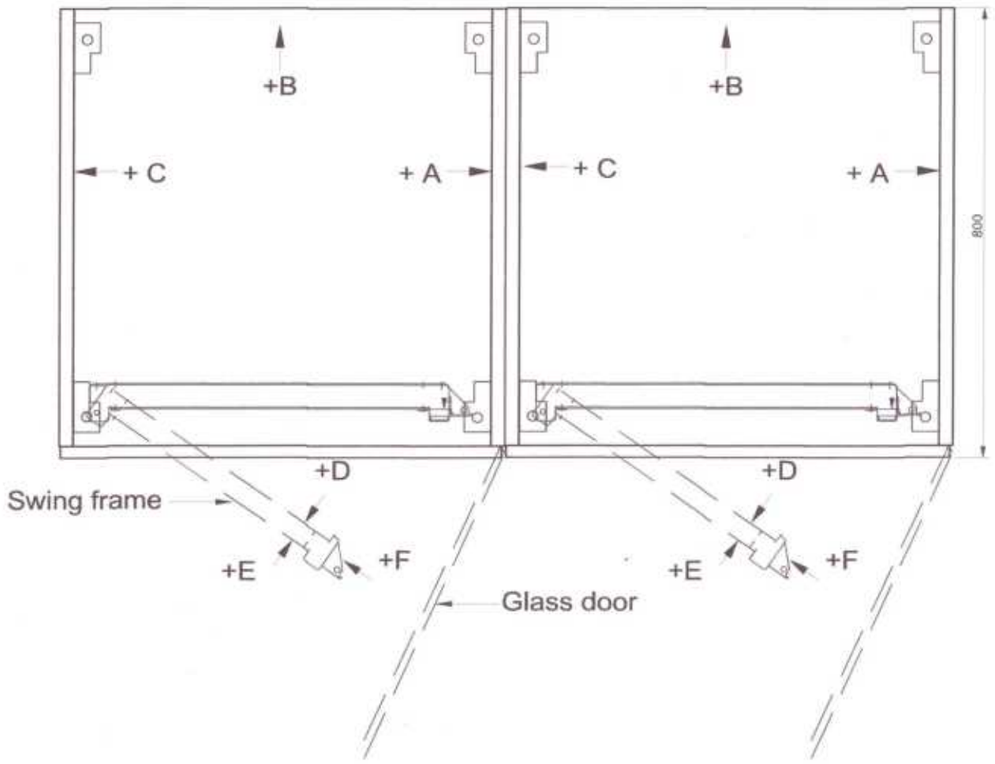
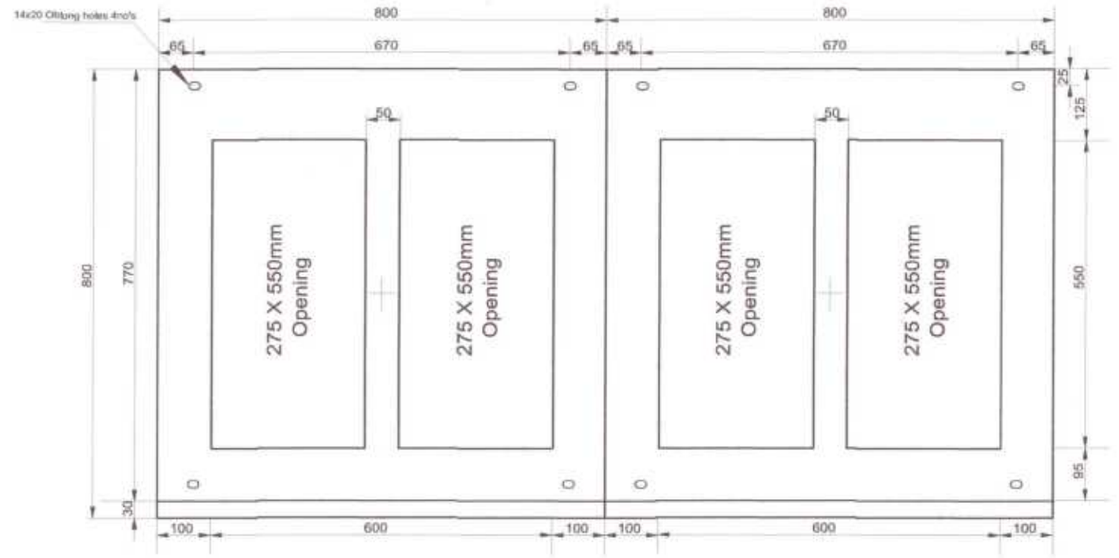
Cross sectional view



Cross sectional view

Foundation Details



Foundation Details

Front

Front

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Assam Electric & Engineering Co. Ltd. Guwahati

Note : All Dimensions are in mm
Base frame Dimension is 800mm(W)x770mm(D)

Based on			
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Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP Section view incl. location designation

HITACHI Hitachi Energy India Limited

Doc. kind.	Assembly drawing DCC ELU	Ref.Des.	=2R
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
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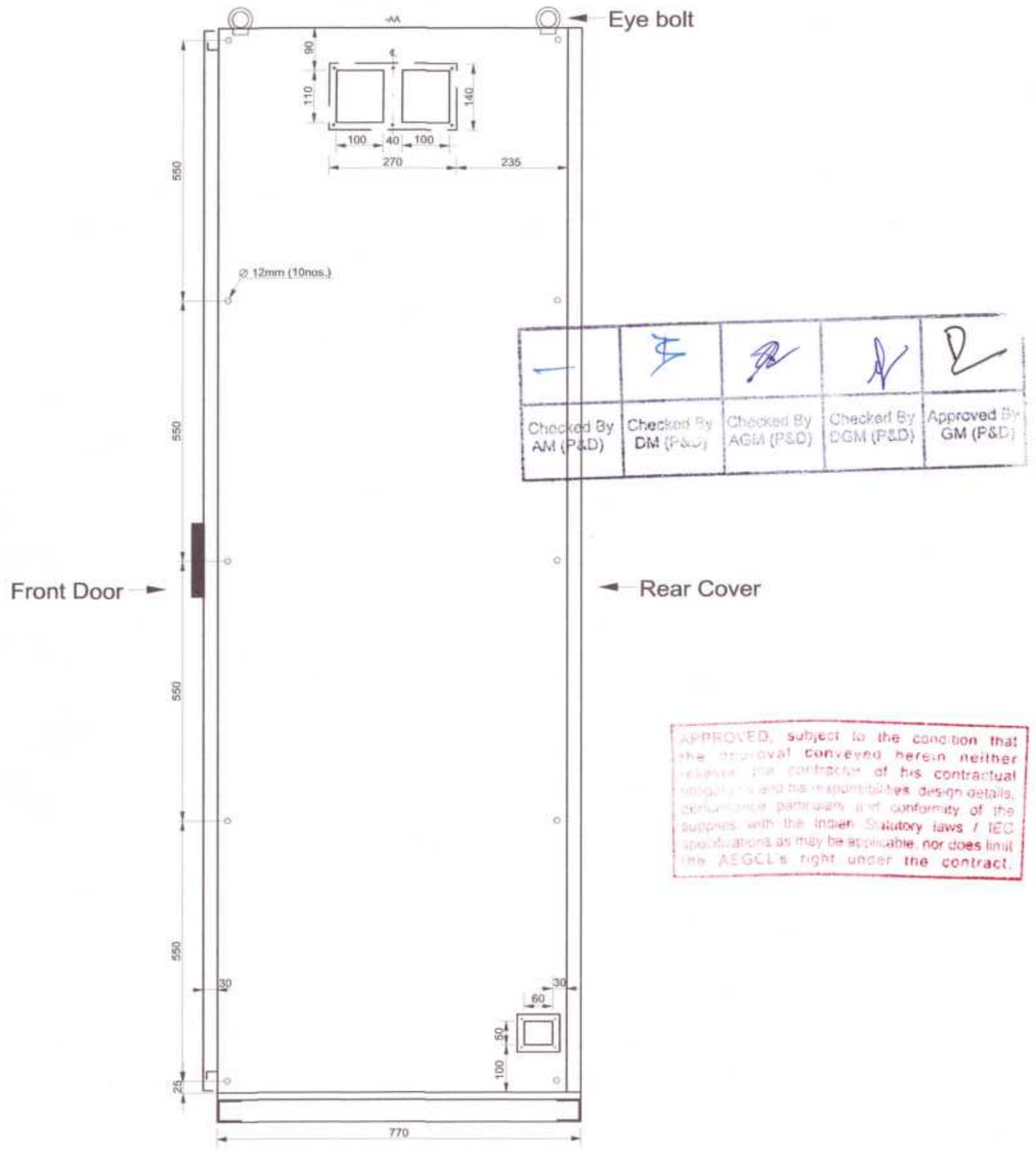
Side view



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CUBICLE SPECIFICATION - RELAY PANEL (SHELL TYPE)

Height	2315 (2250+15+50mm)
Width	800mm
Depth	800mm
Anti-Vibration Pad	15mm
Base frame	50 mm
Dimensional Tolerance	As per IS 2102 Part1-Medium
Weight	400 kg Approx.
Sheet Thickness Tolerance	As Per IS:16162 Standard
Thickness of material	
Swing frame Assembly	2mm
Swing frame Channel	3mm
Rear cover, Roof plate, Bottom plate	2mm
Mounting, Blanking plate	2mm
Side covers	2mm
Base frame	3mm
Gland plate	3mm
Protection class	IP54
Cubicle illumination	9W LED Lamp
Earth Bar	Tinned Copper Strip of 25mm x 6mm
Bottom Plate	With 2 openings of 275mm x 550mm
Gland Plate	2 nos. of plates - Fixing cable glands SIZE-315mm x 590mm
Gasket Material type	EPDM / Neoprene / XLPE / Polystyrene
Cubicle Colour	
Power Coating : :Exterior	RAL7032,Texture Finish
:Interior	Glossy white
:Base frame	Black
:Thickness	60-80 microns for Glossy / Semi Glossy finish 80-100 mircons of Texture finish
Wires (FRLS)	
Wire size of CT Circuits	2.5mm², Phase : RYB, Neutral : Black
Wire size of PT Circuits	2.5mm², Phase : RYB, Neutral : Black (Except near Combiflex Relays)
Wire size of DC Circuits	1.5mm², Grey
Wire size of Aux.AC Circuit	1.5mm², Grey
Wire size of Earthing	2.5mm², Green
Ferrules	
Wire directly connected to TRIP COIL	Red Coloured "T"
All other ferrules	White Sleeve with Nos.marked in Black letters
Terminal blocks (20% spare terminal blocks)	
Terminal CT / VT	Disconnecting type
Terminal AC / DC incoming	Disconnecting type
Terminal Earthing	Disconnecting type
Terminal Control	Non-Disconnecting type
Terminal Interpanel, General	Non-Disconnecting & Disconnecting type

LABELS		DIMENSIONS(mm)	LETTER HEIGHT(mm)
1:Main Label (Front)		200 x 60	10
MATERIAL : Acrylic	TYPE OF INSCRIPTION	: Engraving-white letters on black background	
2A : Apparatus Label (Inside-MCB and Terminals)		40 x 16 and 40 x 8	3
MATERIAL : Sticker (Group marker)	TYPE OF INSCRIPTION	: Printing-Black letters on white background	
2B : Apparatus Label (Inside-Fuses)		29 x 29	3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION	: Engraving-white letters on black background	
3 : Apparatus Label (Front)		20 x 12 or 48 x 14	3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION	: Engraving-white letters on black background	
4:Item Designation Stickers (Inside)		20 x 12	5
MATERIAL : Self adhesive yellow stickers	TYPE OF INSCRIPTION	: Black letters	
5:Flag Relay Labels		29 x 29	2
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION	: Engraving-white letters on black background	
6:PB / Lamp Lables		30 x 40	3
MATERIAL : Aluminium anodised	TYPE OF INSCRIPTION	: Engraving-white letters on black background	

Electric & Engineering Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP Side view

HITACHI Hitachi Energy India Limited

Doc. kind. Assembly drawing
DCC ELU
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 23
n. sheet 24

1MYN691003-102(A3)REV01

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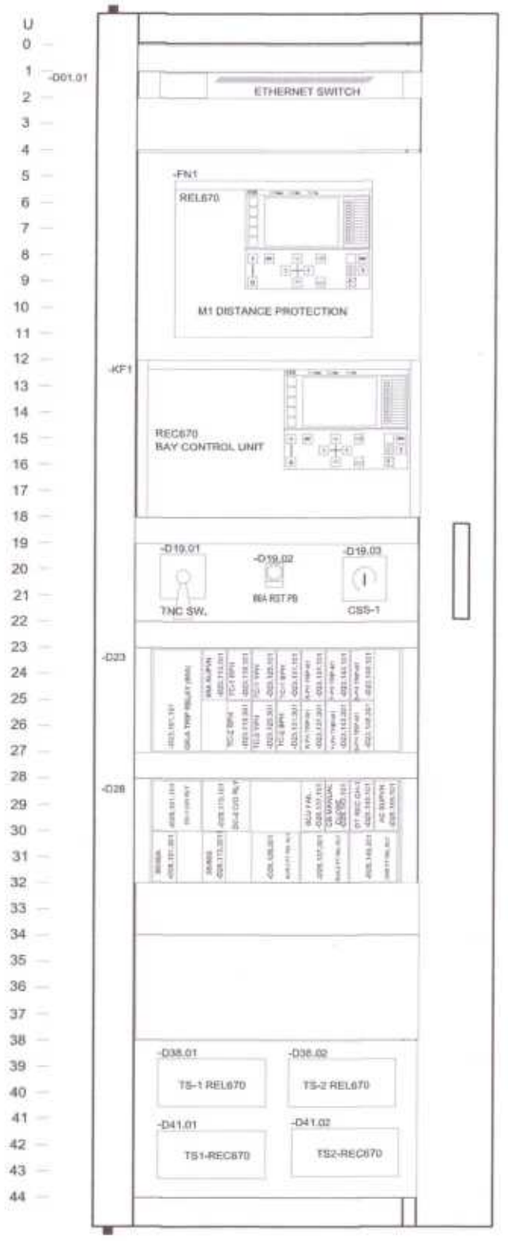
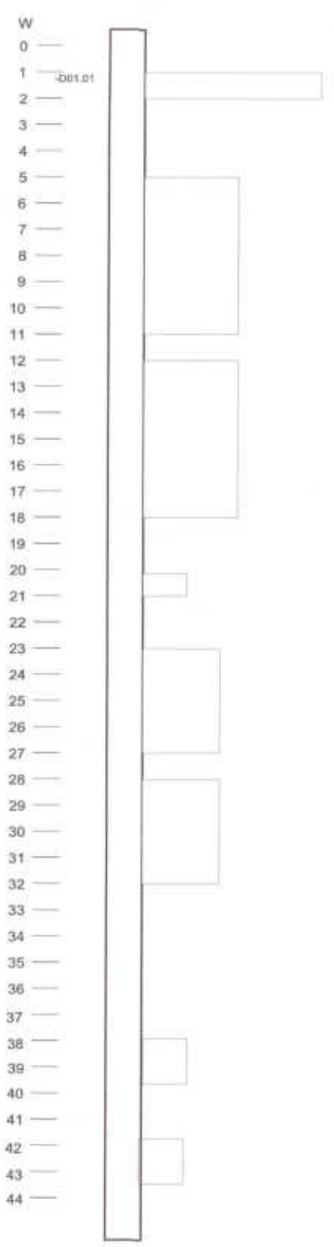
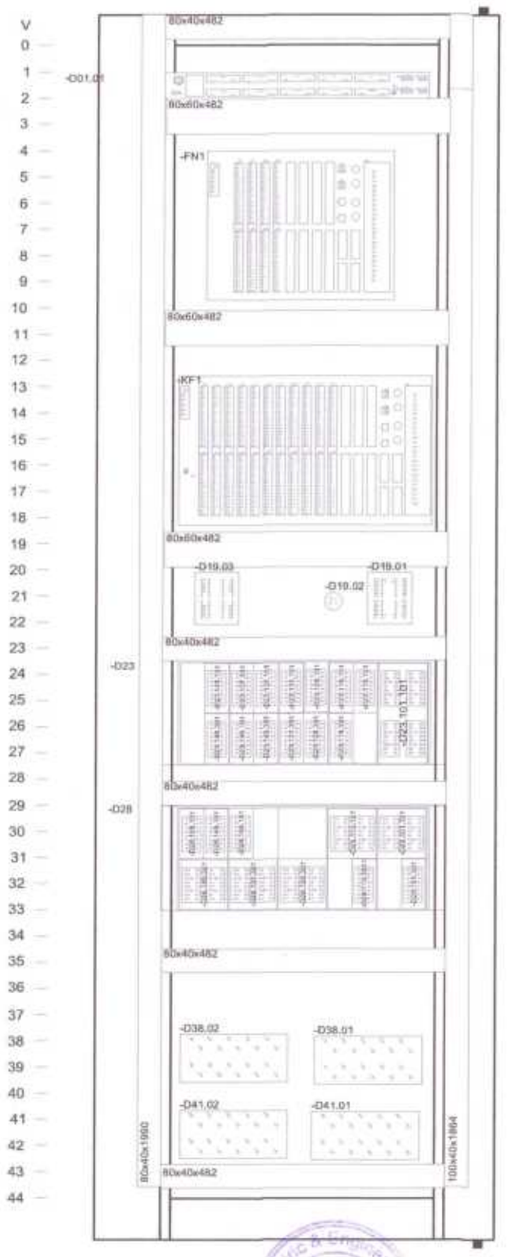
+E Front view hinged frame



+F Side view hinged frame



+D Back view hinged frame



REF SAS ARCHITECTURE FOR ETH SWITCH LOCATION

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities for performance, particulars and details supplied with the Indian Statutory data / specifications as may be discovered during the AEGCL's right under the contract

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)
1				

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR

Project: ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP Hinged frame view

HITACHI Hitachi Energy India Limited

Doc. kind.	Assembly drawing	Ref.Des.	=2R +AA
DCC	ELU		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113		Sheet 24
			n. sheet 25

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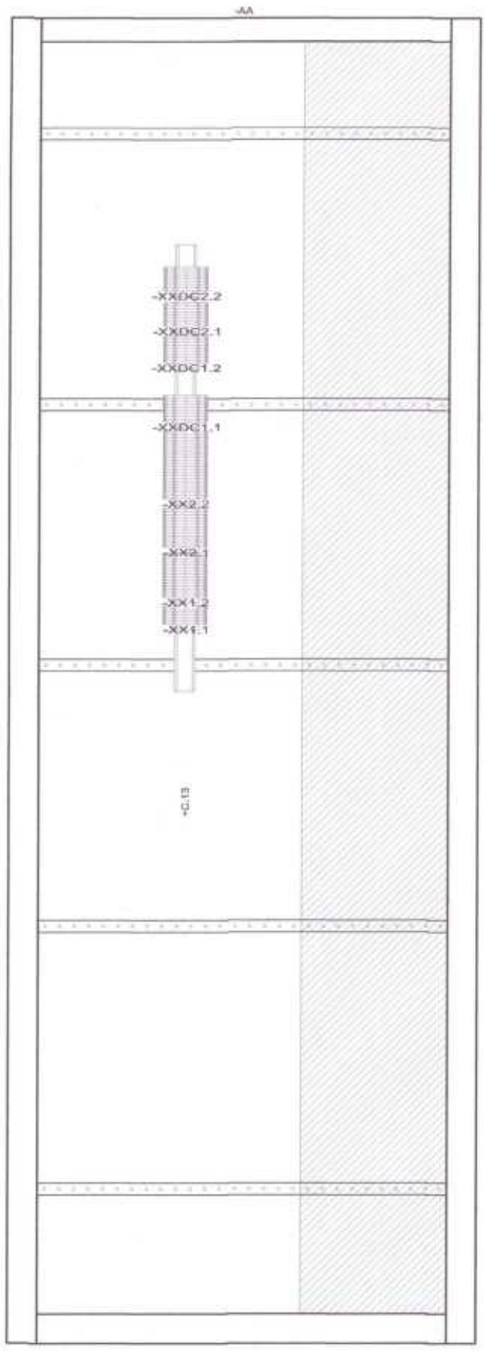
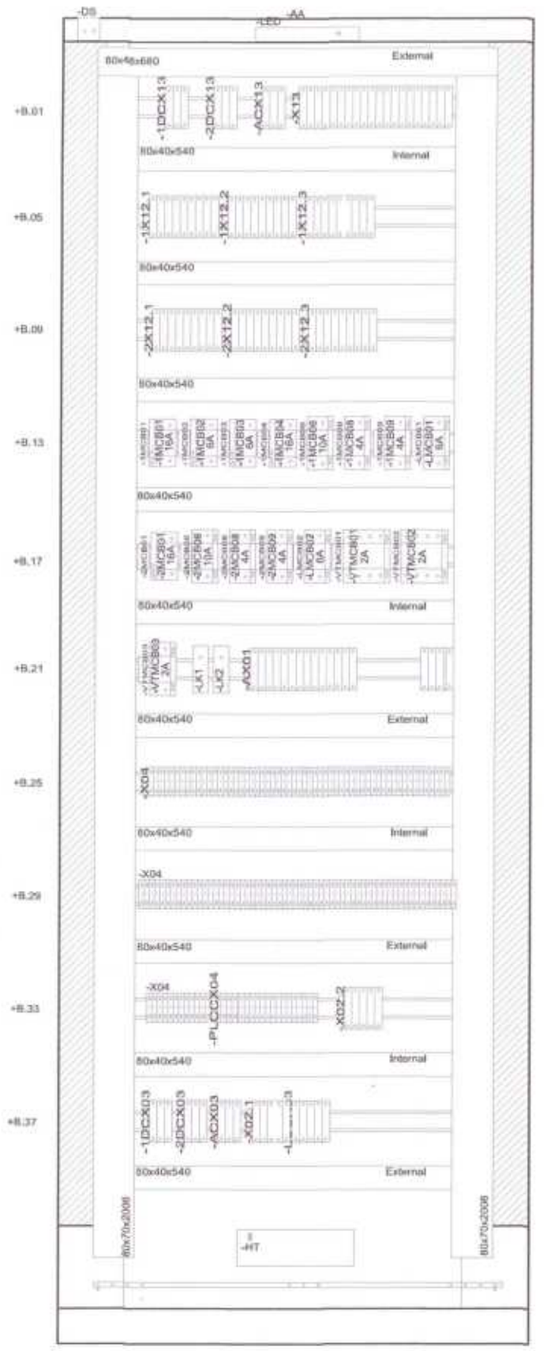
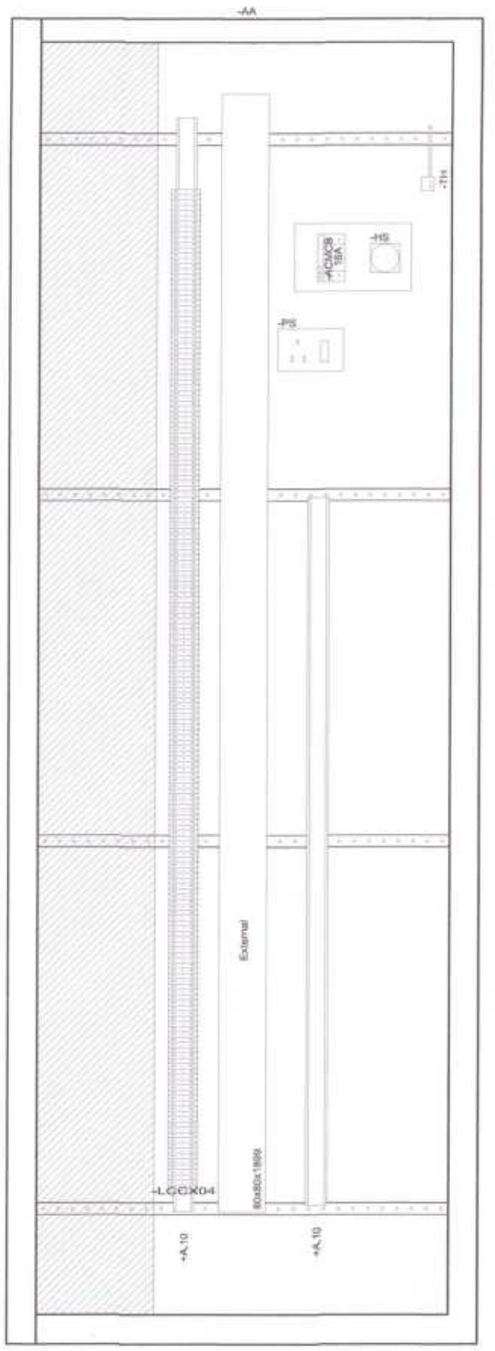
+C Left side



+B Rear plane



+A Right side



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2	Approved By GM (P&D)
1	Checked By DGM (P&D)
	Checked By AGM (P&D)
A	Checked By DM (P&D)
1	Checked By AM (P&D)

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

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP Inside view

HITACHI Hitachi Energy India Limited

Doc. kind.	Assembly drawing DCC ELU	Ref.Des.	=2R +AA
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113		Sheet 25 / n. sheet 26

1MYN691003-102(A3)REV01

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Plane: A

Device name	Description (1)	Description (2)	Type designation
-ACMCB	AC MCB	--	-
-HS	HEATER SWITCH	--	
-TH	Thermostat	--	TH

Plane: B

Device name	Description (1)	Description (2)	Type designation
-1MCB01	I/C DC-1 MCB	--	-
-1MCB02	86A TRIP RLY. MCB	--	-
-1MCB03	RED670 M-1 RLY. MCB	--	-
-1MCB04	BCU MCB	--	-
-1MCB08	ETH. SW. MCB	--	-
-1MCB09	ETH SW MCB	--	-
-2MCB01	I/C DC-2 MCB	--	-
-2MCB08	ETH SW MCB	--	-
-HT	Heating	--	SPHT
-LED	Lamp	--	LED
-LMCB01	LCC DC-1 MCB	--	-
-LMCB02	LCC DC-2 MCB	--	-

Plane: D

Device name	Description (1)	Description (2)	Type designation
-D01.01	Ethernet switch	Power supply module	-
-D19.01	CB CONTROL SWITCH	--	20-3-pos. contacts with 0 position
-D19.02	86A RESET PB	--	-
-D19.03	CARRIER SEL. SW-1	--	12-2-pos. contacts
-D23.101.101	86A TRIP RELAY	--	RXMVB4
-D23.113.101	86A TRIP RELAY SUPVN. (95/86A)	--	TSR-B
-D23.119.101	TC-1_RPH SUPERVISION	--	RXIM1
-D23.119.301	TC-2_RPH SUPERVISION	--	RXIM1
-D23.125.101	TC-1_YPH SUPERVISION	--	RXIM1
-D23.125.301	TC-2_YPH SUPERVISION	--	RXIM1
-D23.131.101	TC-1_BPH SUPERVISION	--	RXIM1
-D23.131.301	TC-2_BPH SUPERVISION	--	RXIM1
-D23.137.101	186 R1	--	RXME18
-D23.137.301	186 R2	--	RXMS1
-D23.143.101	186 Y1	--	RXME18
-D23.143.301	186 Y2	--	RXMS1
-D23.149.101	186 B1	--	RXME18
-D23.149.301	186 B2	--	RXMS1
-D28.101.101	DC-1 CO RELAY	--	RXMH2
-D28.101.301	INCOMER DC-1 SUPVN. (80A)	--	TSR-B
-D28.113.101	DC-2 CO RELAY	--	RXMH2
-D28.113.3011	INCOMER DC-2 SUPVN. (80B)	--	TSR-B
-D28.125.301	BUS-1 PT SEL. RLY.(75A)	--	RXMVF 21
-D28.137.301	BUS-2 PT SEL. RLY.(75B)	--	RXMVF 21
-D28.143.101	BCU/TNC TRIP CMD	CB MANUAL CLOSE	RXMM1
-D28.149.101	DT RECEIVE-CH1	--	RXMS1
-D28.149.301	LINE CVT SEL RLY(75EF)	--	RXMVF 21
-D28.155.101	AC SUPVN	--	RXMA1
-D38.01	TS-REL670	--	DAV
-D38.02	TS2-REL670	--	DAV
-D41.01	TS-REC670	--	DAV
-D41.02	TS-BCU	--	DAV
-FN1	MAIN-1 LINE DIST.PROTN. RLY-REL670	--	TRM

Checked By AM (P&D) | Checked By DM (P&D) | Checked By AGM (P&D) | Checked By DGM (P&D) | Approved By GM (P&D)

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Assam Electric & Engineering Co. Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL
Legend list
Legend list

HITACHI Hitachi Energy India Limited

Doc. kind.	Assembly drawing	Ref.Des.	=2R +AA
DCC	ELU		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113		Sheet 26
			n. sheet 27

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Device name	Description (1)	Description (2)	Type designation
-KF1	BAY CONTROL UNIT (REC670)	--	PSM
-PS	Outlet	--	SW

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Assam Electro Electric & Engineering Co. LLP, Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
Legend list
Legend list

HITACHI Hitachi Energy India Limited

Doc. kind. Assembly drawing
DCC ELU
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R +AA
Rev. ind. 02
Language en
Sheet 27
n. sheet 28

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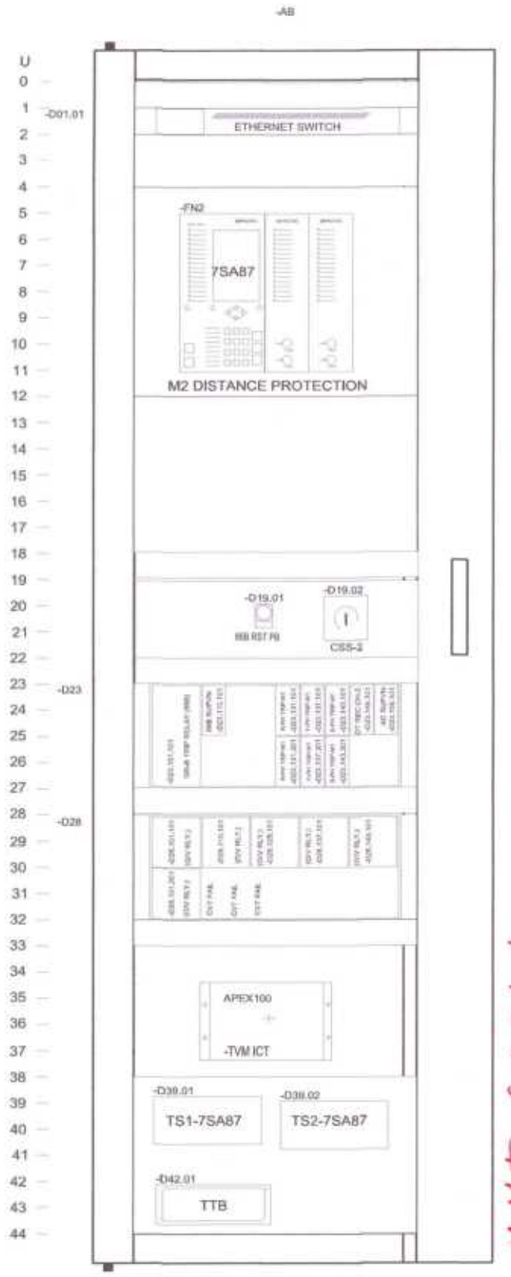
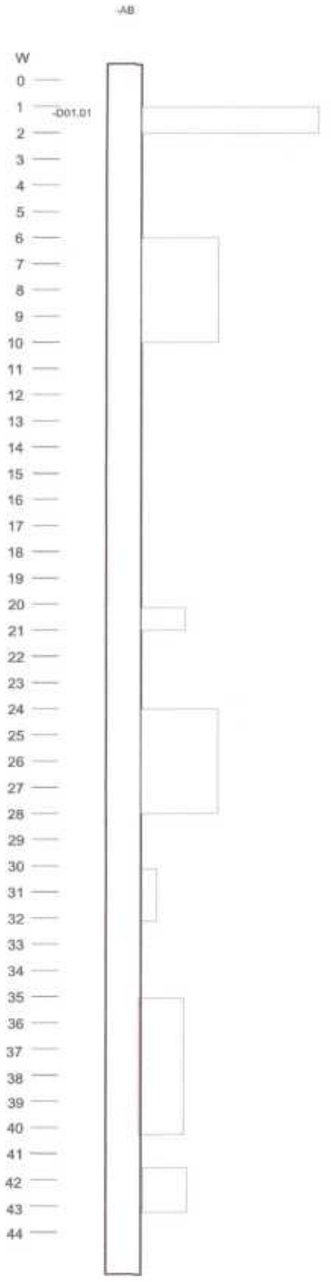
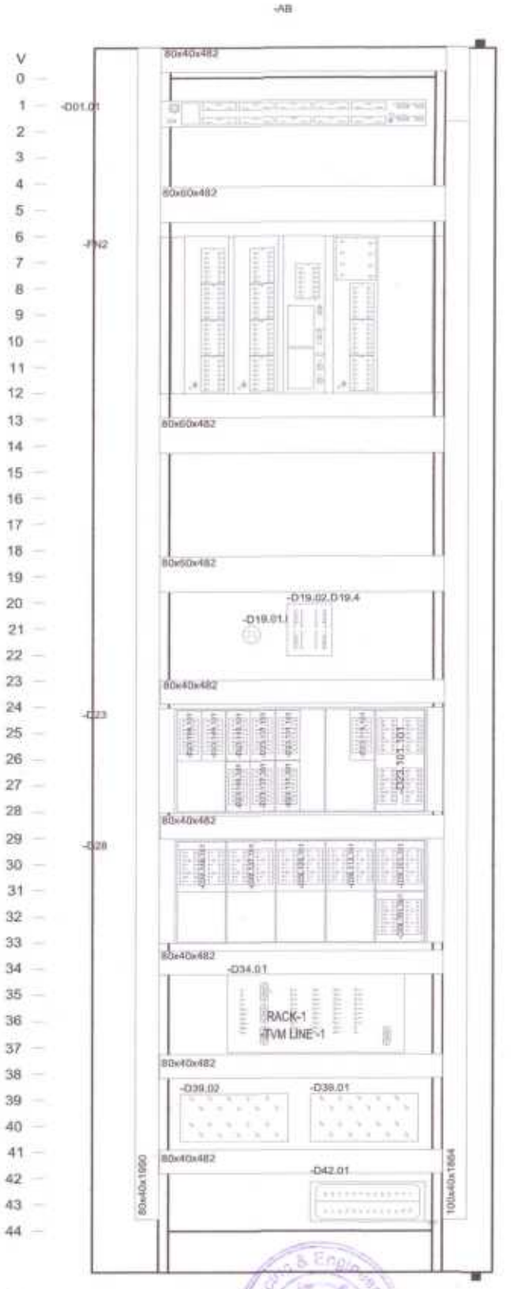
+E Front view hinged frame



+F Side view hinged frame



+D Back view hinged frame



* With Cut Out to Conform to approved note.

REF SAS ARCHTECTURE FOR ETH SWITCH LOCATION

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Approved By GM (P&D)	
Checked By DGM (P&D)	
Checked By AGM (P&D)	
Checked By DM (P&C)	
Checked By AM (P&D)	

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP Hinged frame view

HITACHI Hitachi Energy India Limited

Doc. kind	Assembly drawing	Ref.Des	=2R +AB
DCC	ELU		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113		Sheet 28
			n. sheet 29

The ... oduc... dist... ion s... utiliz... of th... ocun... as w... is the ... mmu... tion i... ; con... s to c... s wil... l exp... ; auth... ator ... prol ... ed.
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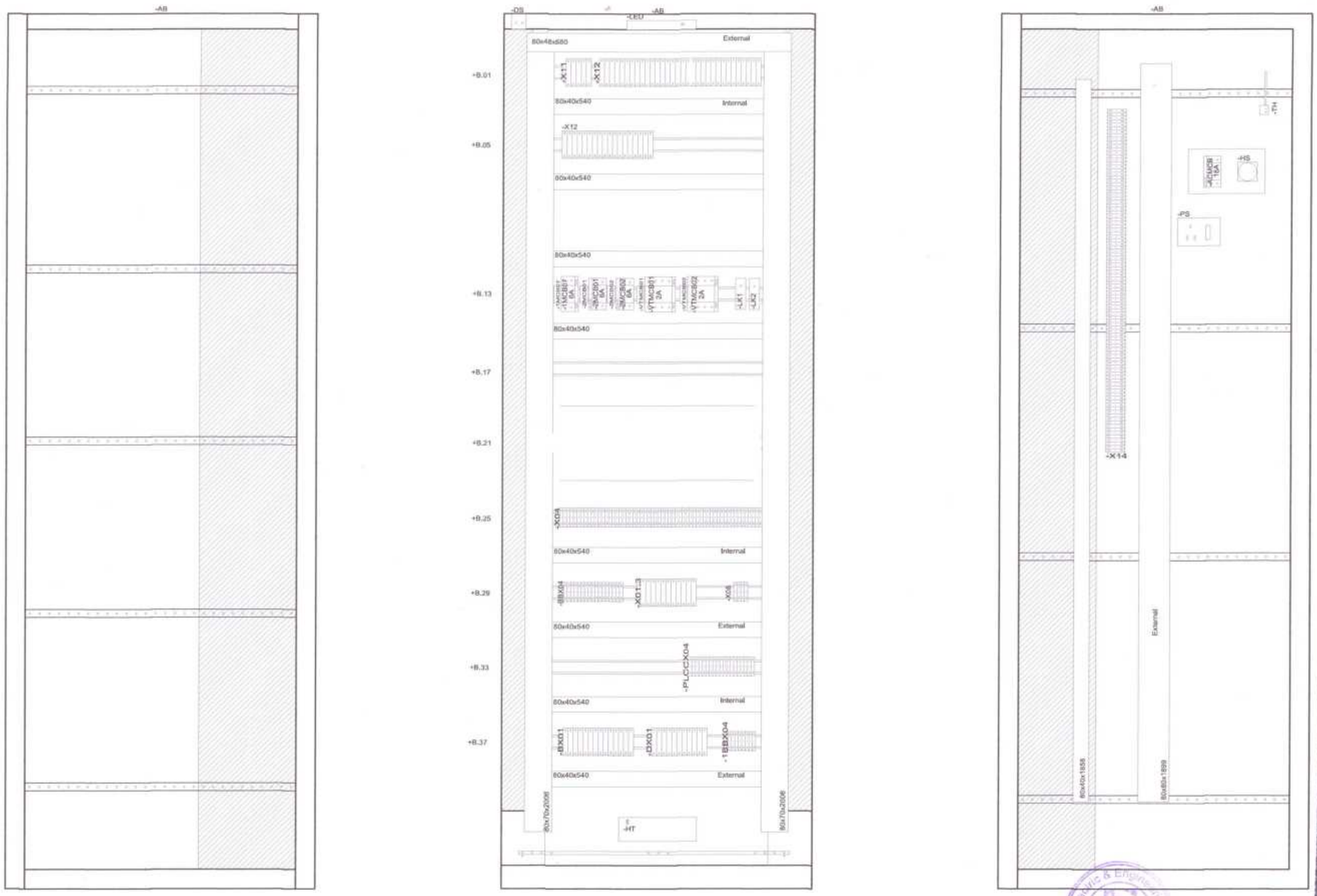

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	Checked By DGM (P&D)
	Checked By AGM (P&D)
	Checked By DM (P&D)
	Checked By AM (P&D)

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Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP Inside view

HITACHI Hitachi Energy India Limited

Doc. kind	Assembly drawing DCC ELU	Ref.Des.	=2R +AB
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113		Sheet 29
			n. sheet 30

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Plane: A

Device name	Description (1)	Description (2)	Type designation
-ACMCB	AC MCB	--	-
-HS	HEATER SWITCH	--	
-PS	Outlet	--	SW
-TH	Thermostat	--	TH

Plane: B

Device name	Description (1)	Description (2)	Type designation
-2MCB01	7SA87 M-2 RLY. MCB	--	-
-2MCB02	86B TRIP RLY. MCB	--	-
-HT	Heating	--	SPHT
-LED	Lamp	--	LED

Plane: D

Device name	Description (1)	Description (2)	Type designation
-D01.01	Ethernet switch	Power supply module	-
-D19.01.D19.4	86B RESET PB	--	-
-D19.02.D19.4	CARRIER SEL. SW-2	--	12-2-pos. contacts
-D23.101.101	86B TRIP RELAY	--	RXMVB4
-D23.113.101	86B TRIP RELAY SUPVN. (95/86B)	--	TSR-B
-D23.131.101	286 R2	--	RXMS1
-D23.131.301	286 R1	--	RXME18
-D23.137.101	286 Y2	--	RXMS1
-D23.137.301	286 Y1	--	RXME18
-D23.143.101	286 B2	--	RXMS1
-D23.143.301	286 B1	--	RXME18
-D23.149.101	DT RECEIVE-CH2	--	RXMS1
-D23.155.101	AC SUPVN	--	RXMA1
-D28.101.101	UNDER VOLTAGE RELAY CORE-1	--	RXEG21
-D28.101.301	UNDER VOLTAGE RELAY CORE-3	--	RXEG21
-D28.113.101	UNDER VOLTAGE RELAY CORE-1	--	RXEG21
-D28.113.301	LINE CVT CORE-1 FAIL	--	RXMS1
-D28.119.301	LINE CVT CORE-2 FAIL	--	RXMS1
-D28.125.101	UNDER VOLTAGE RELAY CORE-2	--	RXEG21
-D28.125.301	LINE CVT CORE-3 FAIL	--	RXMS1
-D28.137.101	UNDER VOLTAGE RELAY CORE-2	--	RXEG21
-D28.149.101	UNDER VOLTAGE RELAY CORE-3	--	RXEG21
-D39.01	TS1-7SA87	--	DAV
-D39.02	TS2-7SA87	--	DAV
-FN2	M-2 DIST. PROTN RLY_7SA87	--	7SA87 WITH PRP

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Assam Electric & Engineering Co. Ltd. Guwahati

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Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP Legend list

HITACHI Hitachi Energy India Limited

Doc. kind.	Assembly drawing DCC ELU	Ref.Des.	=2R +AB
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	30
		n. sheet	31

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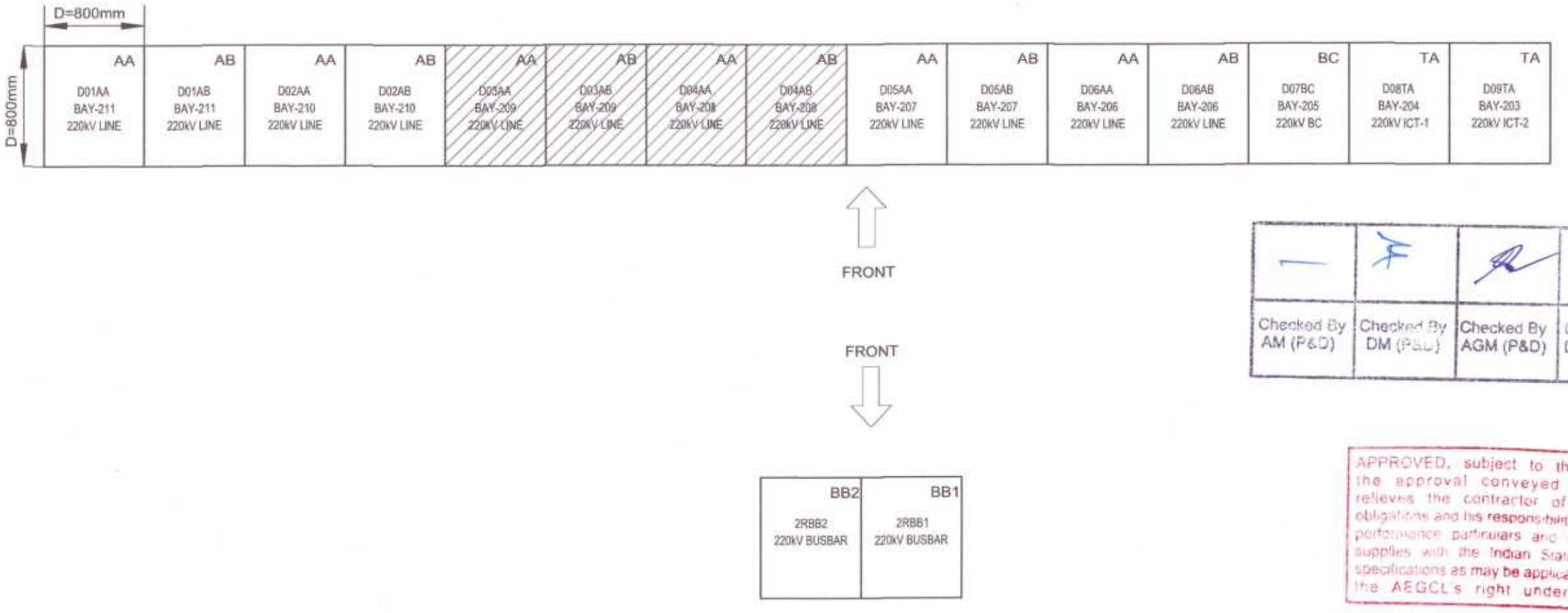
220KV GIS BUILDING



Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities, design details, performance particulars and conformity of the supplies with the Indian Statutory laws / IEC specifications as may be applicable, nor does limit the AEGCL's right under the contract

APPLICABLE BAYS

FUTURE BAYS

NOTE:- PANEL LINE UP TO BE CONFIRMED BY CUSTOMER

Indura Electric & Engineering Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP PANEL LINE UP

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 31
n. sheet 32

1MYN691003-102(A3)REV01

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PANEL NAME PLATE DETAILS

200

60

D01AA
220kV LINE
CONTROL & RELAY PANEL

200

60

D01AB
220kV LINE
CONTROL & RELAY PANEL

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Techno Electric & Engineering Co. Ltd. Guwahati

Based on			
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Rev.	Revision note	Date	Name

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Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
PANEL NAME PLATE

HITACHI Hitachi Energy India Limited

Doc. kind.	Assembly drawing	Ref.Des.	=2R
DCC	ELU		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	32
		n. sheet	33

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PANEL NAME PLATE DETAILS

200

60

D02AA
220kV LINE
CONTROL & RELAY PANEL

200

60

D02AB
220kV LINE
CONTROL & RELAY PANEL

—				
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Assam Electric & Engineering Co. Ltd. Guwahati

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Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP PANEL NAME PLATE

HITACHI Hitachi Energy India Limited

Doc. kind. Assembly drawing
DCC ELU
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 33
n. sheet 41

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
1	+A.01	-ACMCB	Miniature circuit breaker	-	16A	240VAC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,141
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,141,235
2	+A.01	-HS	On/off Switch		1-2 pos on/off switch,5A, Flush mounting	Wing Type knob	1MYN533014-001	Switron		1	25,141
3	+A.01	-TH	Thermostat	TH	230VAC, 15A, 50 Hz	Range : 25-85°C	IN7635-3001	GIRISH EGO		1	25,141
4	+A.10	-LCCX04	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		188	25,153,154,155,164,165,224, 225,226,227,229,230,231, 232,233,234,235,236,240, 241,268,269,270,271,401
5	+B.00	-DS	Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	25,141
6	+B.00	-LED	LED Lamp	LED	240VAC, 9.08W			SPECTRUM TECHVISION (P) LTD		1	25,141
7	+B.01	-1DCX13	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		3	25,131,401
8	+B.01	-2DCX13	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		3	25,131,401
9	+B.01	-ACX13	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		3	25,141,401
10	+B.01	-X13	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		20	25,132,133,141,401
11	+B.05	-1X12.1	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		9	25,401 1KHF128840R1103/405
12	+B.05	-1X12.2	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		9	25,402 1KHF128840R1103/405
13	+B.05	-1X12.3	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		9	25,401 1KHF128840R1103/405
14	+B.09	-2X12.1	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		5	25,402 1KHF128840R1103/405
			Disconnect terminal	CBDT4UNS/KLTDM4	1000V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		4	25,402
15	+B.09	-2X12.2	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		9	25,402 1KHF128840R1103/405
16	+B.09	-2X12.3	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		9	25,401 1KHF128840R1103/405
17	+B.13	-1MCB01	Miniature circuit breaker	-	16A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,131
			Auxiliary contact block	-	25A	1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,131,165
18	+B.13	-1MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,132
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,132,165

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities design details, performance particulars are conformity of the equipment with the Indian Statutory laws / IEC standards as may be applicable no does limit the AEEL's right under the contract

Checked By	Checked By	Checked By	Checked By	Approved By
AM (P&D)	DM (P&D)	AGM (P&D)	DGM (P&D)	CM (P&D)

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AA

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list
DCC EPB
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R +AA
Rev. ind. 02
Language en
Sheet 41
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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
19	+B.13	-1MCB03	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,132
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,132,165
20	+B.13	-1MCB04	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,132
			Auxiliary contact block	-	6A	1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,132,165
21	+B.13	-1MCB06	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,132
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,132,165
22	+B.13	-1MCB08	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,133
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,133
23	+B.13	-1MCB09	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,133
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,133
24	+B.13	-LMCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,131
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,131,165
25	+B.17	-2MCB01	Miniature circuit breaker	-	16A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,131
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,131,236
26	+B.17	-2MCB06	Miniature circuit breaker	-	10A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,132
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,132,236
27	+B.17	-2MCB08	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,133
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,133,236
28	+B.17	-2MCB09	Miniature circuit breaker	-	4A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,133
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,133,236
29	+B.17	-LMCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,131
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,131

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01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AA

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list
DCC EPB
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R +AA
Rev. ind. 02
Language en
Sheet 42
n. sheet 43

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
30	+B.17	-VTMCB01	Miniature circuit breaker	-	2A	415VAC, 4P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,152
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,152,155
31	+B.17	-VTMCB02	Miniature circuit breaker	-	2A	415VAC, 4P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,222
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,222,225
32	+B.21	-AX01	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		14	25,152,401
33	+B.21	-LK1	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	25,152
34	+B.21	-LK2	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	25,152
35	+B.21	-VTMCB03	Miniature circuit breaker	-	2A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	25,223
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	25,223,225
36	+B.21	-X02.3	Disconnect terminal Disconnect terminal	CBDT4U/KLTDM4 CBDT4UNS/KLTDM4	1100V, 41A 1100V, 41A	Polyamide, 1.5-6mm² Polyamide, 1.5-6mm²		Connectwell/Elmex Connectwell/Elmex		1 4	25,402 25 1KHF128840R1103/407
37	+B.33	-PLCCX04	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		19	25,301,303,304,401
38	+B.33	-X02.2	Disconnect terminal Disconnect terminal	CBDT4U/KLTDM4 CBDT4UNS/KLTDM4	1100V, 41A 1100V, 41A	Polyamide, 1.5-6mm² Polyamide, 1.5-6mm²		Connectwell/Elmex Connectwell/Elmex		1 4	25,402 25 1KHF128840R1103/407
39	+B.33	-X04	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		134	25,154,155,156,157,226,229, 231,234,235,236,237,238, 239,241,262,264,363,401
40	+B.37	-1DCX03	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		3	25,131,401
41	+B.37	-2DCX03	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		3	25,131,401
42	+B.37	-ACX03	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		3	25,141,401
43	+B.37	-LCCX03	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		5	25,131,402
44	+B.37	-X02.1	Disconnect terminal Disconnect terminal	CBDT4U/KLTDM4 CBDT4UNS/KLTDM4	1100V, 41A 1100V, 41A	Polyamide, 1.5-6mm² Polyamide, 1.5-6mm²		Connectwell/Elmex Connectwell/Elmex		1 4	25,402 25 1KHF128840R1103/407
45	+B.41	-HT	Heating	SPHT	230V AC, 50W		IN6677-3001-2	APT		1	25,141
46	+C.13	-XX1.1	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		6	25,151,225,242,302,401
47	+C.13	-XX1.2	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		15	25,151,153,154,155,156,242, 261,262,263,264,301,401

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and responsibilities from defaults, deficiencies and discrepancy of the performance particulars and compliance with the Indian Statutory laws / E.C. specifications as may be applicable nor does it prejudice the AEGCL's right under the contract.

Checked By DGM (P&D) | Checked By AGM (P&D) | Checked By DM (P&D) | Checked By AGM (P&D) | Approved By CM (P&D)

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AA

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list
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Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R +AA
Rev. ind. 02
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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
48	+C.13	-XX2.1	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		13	25,221,242,262,264,270,301, 308,401
49	+C.13	-XX2.2	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		23	25,221,224,225,226,227,228, 229,230,231,232,233,234, 235,236,237,238,239,301, 302,401
50	+C.13	-XXDC1.1	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		9	25,132,133,401
51	+C.13	-XXDC1.2	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		9	25,132,133,401
52	+C.13	-XXDC2.1	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		8	25,132,133,401
53	+C.13	-XXDC2.2	Feed-through terminal	280-833/CX2.5/4	800V,20A	Polyamide, 0.08-2.5mm², 1x4 wire		Wago/Connectwell		8	25,132,133,401
54	+D.01	-D01.01	Ethernet switch	-	--	-	PLEASE REFER SAS BOM FOR DETAILS	-	PLEASE REFER SAS BOM FOR DETAILS	1	24,361
55	+D.05	-FN1	Numerical line distance protection IED	REL670 V2.2 (WITH PRP)			1KHY128840M5221	HITACHI	1KHY128840M5221	1	56
			Ethernet module	SFP	100Base-FX, LC connectors	-	-	-	-	2	24,151,158
			Power supply module	PSM	90-250VDC	50/60Hz	-	-	-	1	24,151,158,163
			Binary input module	BIM	220-250VDC, 50ma	16 inputs				2	24,153,154,155,156,159
			Binary output module	BOM		24 output relays				2	24,157,160,225,261,262,263, 264,301,302,303
			Transformer input module	TRM	1A, 0-340V, 50/60Hz	6I+6U	-	-	-	1	24,152,158
			Rack casing	3/4x19" rack casing	8xI/O, 1xTRM	3/4x19", Version 2.2.7	-	-	-	1	24
			15 LED indication module	LED		Normal size	-	-	-	1	24,151
56	+D.12	-KF1	Numerical bay control IED	REC670 V2.2 (WITH PRP)			1KHY128840M5212	HITACHI	1KHY128840M5212	1	221
			Ethernet module	SFP	100Base-FX, LC connectors	Version 2.2.7	-	-	-	2	24,221
			Power supply module	PSM	90-250VDC	50/60Hz	-			1	24,221,242,243
			Binary input module	BIM	220-250VDC, 50ma	16 inputs	-			8	24,224,225,226,227,228,229, 230,231,232,233,234,235, 236,237,238,239,244,245, 246,247
			Binary output module	BOM		24 output relays	-			3	24,240,241,242,248,249,262, 264,265,270,301,302,308
			Transformer input module	TRM	1A, 0-340V, 50/60Hz	6I+6U	-	-		1	24,222,223,243
			Rack casing	1/1x19" rack casing	14xI/O, 1xTRM	1/1x19", Version 2.2.7	-	-	-	1	24
			15 LED indication module	LED		Normal size		-		1	24,221
57	+D.19	-D19.01	Rotary Switch	20-3-pos. contacts with 0 position	32A, 660V	Spring return & lost motion device with Pistol grip handle 45 degree Switching	1MYN910008-BAAE	Switron	1MYN910008-BAAE	1	24,228,242,265,301,302,364

Checked By AM (P&D)	Checked By DM (F...)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibility, design details, performance parameters and suitability of the supplies with the Indian Statutory laws / IEC specifications as may be applicable, nor does limit the AEGCL's right under the contract

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AA

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list
DCC EPB
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R +AA
Rev. ind. 02
Language en
Sheet 44
n. sheet 45

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
58	+D.19	-D19.02	Push button	-	2NO	Green	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	24,262
59	+D.19	-D19.03	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	24,153,301,303,304,364
60	+D.24	-D23.101.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	24,229,262,265,266,267,270, 363
		-D23.113.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	24,229,262
		-D23.119.101	Trip circuit supervision relay	RXIM1	110VDC,220VDC	1NO, 2NC	1MYN569338-A	ABB	1MYN569338-A		24,228,266,270,363
		-D23.119.301	Trip circuit supervision relay	RXIM1	110VDC,220VDC	1NO, 2NC	1MYN569338-A	ABB	1MYN569338-A		24,228,267,270,363
		-D23.125.101	Trip circuit supervision relay	RXIM1	110VDC,220VDC	1NO, 2NC	1MYN569338-A	ABB	1MYN569338-A		24,228,266,270,363
		-D23.125.301	Trip circuit supervision relay	RXIM1	110VDC,220VDC	1NO, 2NC	1MYN569338-A	ABB	1MYN569338-A		24,228,267,270,363
		-D23.131.101	Trip circuit supervision relay	RXIM1	110VDC,220VDC	1NO, 2NC	1MYN569338-A	ABB	1MYN569338-A		24,228,266,270
		-D23.131.301	Trip circuit supervision relay	RXIM1	110VDC,220VDC	1NO, 2NC	1MYN569338-A	ABB	1MYN569338-A		24,228,267,270,363
61	+D.24	-D23.137.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS		24,261,266,267
62	+D.24	-D23.137.301	High speed trip relay	RXMS1	220VDC	6NO, Variant A	RK216-263-AS	ABB	RK216-263-AS		24,261,265,266,267,363
63	+D.24	-D23.143.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS		24,261,266,267
64	+D.24	-D23.143.301	High speed trip relay	RXMS1	220VDC	6NO, Variant A	RK216-263-AS	ABB	RK216-263-AS	1	24,261,265,266,267,363
65	+D.24	-D23.149.101	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	24,261,266,267
66	+D.24	-D23.149.301	High speed trip relay	RXMS1	220VDC	6NO, Variant A	RK216-263-AS	ABB	RK216-263-AS	1	24,261,265,266,267,363
67	+D.29	-D28.101.101	Auxiliary relay	RXMH2	220VDC	4NO, 4NC, without flag	RK223069-AS	ABB	RK223069-AS	1	24,131
		-D28.101.301	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	24,131,236
		-D28.113.3011	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	24,131,236
		-D28.149.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216063-AS	ABB	RK216063-AS	1	24,153,163,262,264,303
68	+D.29	-D28.113.101	Auxiliary relay	RXMH2	220VDC	4NO, 4NC, without flag	RK223069-AS	ABB	RK223069-AS	1	24,131
69	+D.29	-D28.125.301	Bistable relay	RXMVF 21	220VDC	12NO, 2NC	1MRK030405-AS	ABB	1MRK030405-AS	1	24,308 1KHF128840R1103/405
70	+D.29	-D28.137.101	Auxiliary relay	RXSF1	220-250VDC	2NO, 4NC	RK271019-AS	ABB	RK271019-AS	1	153,164,242
71	+D.29	-D28.137.301	Bistable relay	RXMVF 21	220VDC	12NO, 2NC	1MRK030405-AS	ABB	1MRK030405-AS	1	24,308 1KHF128840R1103/405
72	+D.29	-D28.143.101	Auxiliary relay	RXMM1	220-250VDC	6NO	RK214003-AS	ABB	RK214003-AS	1	24,242,270,271
73	+D.29	-D28.149.301	Bistable relay	RXMVF 21	220VDC	12NO, 2NC	1MRK030405-AS	ABB	1MRK030405-AS	1	24,308 1KHF128840R1103/407
74	+D.29	-D28.155.101	Auxiliary relay	RXMA1	230VAC, 50-60Hz	2NO, 2NC	RK211052-BS	ABB	RK211052-BS	1	24,141,235

APPROVED subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities, duties, details, performance parameters and conformity of the equipment with the relevant specifications and / or specifications as may be applicable nor does limit the ALCON's right under the contract.

Approved By GM (P&D) | Checked By DGM (P&D) | Checked By AGM (P&D) | Checked By DM (P&D) | Checked By AM (P&D)

Rev.	Revision note	Date	Name
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02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AA

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list
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Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R +AA
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Sheet 45
n. sheet 46

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
75	+D.34	-D38.01	Test block	DAV	10NC		1KHS282430P0001	DAV	1KHS282430P0001	1	24,151,152,303
76	+D.34	-D38.02	Test block	DAV	10NC		1KHS282430P0001	DAV	1KHS282430P0001	1	24,151,261,262,263,264,301, 302
77	+D.34	-D41.01	Test block	DAV	10NC		1KHS282430P0001	DAV	1KHS282430P0001	1	24,222,364
78	+D.34	-D41.02	Test block	DAV	10NC		1KHS282430P0001	DAV	1KHS282430P0001	1	24,222,364
79	+D.44	-PS	AC Socket with Switch	SW	230VAC, 05-15A	Box type, Indian standard	1MYN538103-001	Anchor		1	25,141

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities design details, performance particulars and conformity of the supplies with the Indian Statutory laws / IEC specifications as may be applicable nor does limit the AEGCL's right under the contract

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AA

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list DCC EPB
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R +AA
Rev. ind. 02
Language en
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n. sheet 51

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
1	+A.01	-ACMCB	Miniature circuit breaker	-	16A	240VAC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	29,141
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	29,141,235
2	+A.01	-HS	On/off Switch		1-2 pos on/off switch,5A, Flush mounting	Wing Type knob	1MYN533014-001	Switron		1	29,141
3	+A.01	-PS	AC Socket with Switch	SW	230VAC, 05-15A	Box type, Indian standard	1MYN538103-001	Anchor		1	29,141
4	+A.01	-TH	Thermostat	TH	230VAC, 15A, 50 Hz	Range : 25-85°C	IN7635-3001	GIRISH EGO		1	29,141
5	+A.10	-X14	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		98	29,153,154,163,164,165,225, 228,229,235,236,261,262, 263,264,265,266,267,270, 301,302,303,304,403 1KHF128840R1103/403
6	+B.01	-1BBX04	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		8	29,265,403
7	+B.01	-DS	Door limit switch	DLS	230V AC, 5A	Single pole, 1NO, Cover for Insulation	IIN5374-3001-1	Kaycee		1	29,141
8	+B.01	-LED	LED Lamp	LED	240VAC, 9.08W			SPECTRUM TECHVISION (P) LTD		1	29,141
9	+B.01	-X11	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		5	29,222,403
10	+B.05	-X12	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		50	29,403 1KHF128840R1103/405,406, 407
11	+B.13	-1MCB07	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	29,132
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	29,132,165
12	+B.13	-2MCB01	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	29,132
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	29,132,236
13	+B.13	-2MCB02	Miniature circuit breaker	-	6A	220VDC, 2P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	29,132
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	29,132,236
14	+B.13	-LK1	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	29,162
15	+B.13	-LK2	Control Fuse Base	-	32A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	
			Neutral link	NL	15A		-	ABB/EATON(cooper Bussmann)/Schneider/L&T	-	1	29,162

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and responsibilities during design, performance particulars and conformity of the systems with the Indian Statutory laws / IEC specifications as may be applicable nor does it limit the ACEL's right under the contract

Electric & Engineering Co. Ltd. Guwahati — Engineers & Contractors

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AB

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list
DCC EPB
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R +AB
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Language en
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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
16	+B.13	-VTMCB01	Miniature circuit breaker	-	2A	415VAC, 4P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	29,162
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	29,162,165
17	+B.13	-VTMCB02	Miniature circuit breaker	-	2A	415VAC, 4P, C-curve, Icn-10kA	-	ABB/Schneider/L&T/ Siemens	-	1	29,170
			Auxiliary contact block	-		1CO	-	ABB/Schneider/L&T/ Siemens	-	1	29,170,225
18	+B.25	-X04	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		79	29,163,164,165,166,363,403 165.1
19	+B.29	-BBX04	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		17	29,265,270,403
20	+B.29	-X01.3	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		11	29,169,403
21	+B.29	-X08	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		4	29,170,403
22	+B.33	-PLCCX04	Feed-through terminal	CSB3/N3UL/KABTM3	800V, 24A	Polyamide, 0.5-2.5mm²		Connectwell/Elmex		19	29,302,303,304,403
23	+B.37	-BX01	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		14	29,162,403
24	+B.37	-DX01	Disconnect terminal	CBDT4U/KLTDM4	1100V, 41A	Polyamide, 1.5-6mm²		Connectwell/Elmex		11	29,403
25	+B.41	-HT	Heating	SPHT	230V AC, 50W		IN6677-3001-2	APT		1	29,141
26	+D.01	-D01.01	Ethernet switch	-	--	-	PLEASE REFER SAS BOM FOR DETAILS	-	PLEASE REFER SAS BOM FOR DETAILS	1	28,362
27	+D.05	-FN2	Numerical line distance protection IED	7SA87 WITH PRP			1KHY128840M5204	HITACHI	1KHY128840M5204	1	56
		-FN2.IO202	Binary I/O and transformer module	IO202	24-250VDC	4I+4U, 8 binary inputs, 6 binary outputs		Siemens		1	28,161,162,164,165,166,167 165.1
		-FN2.IO205-1	Analogue input module	IO205	24-250VDC	12 binary inputs, 16 binary outputs		Siemens		1	28,161,163,164,167,168,261, 262,263,264,301,302,304
		-FN2.IO205-2	Analogue input module	IO205	24-250VDC	12 binary inputs, 16 binary outputs		Siemens		1	28,161,164,165,168,225,250
		-FN2.PS201	Power supply module	PS201	60-250VDC, 115-230VAC, 50/60Hz	3 binary inputs, 3 binary outputs, with communication interface		Siemens		1	28,153,161,167 165.1
28	+D.19	-D19.01.D19.4	Push button	-	2NO	Green	-	ABB/L&T/Teknic/ Schneider/SECO	-	1	28,264,364
29	+D.19	-D19.02.D19.4	Rotary Switch	12-2-pos. contacts	32A, 660V	Wing knob type stayput with 90 Degree switching angle	1MYN910010-AAAB	Switron	1MYN910010-AAAB	1	28,154,163,164,302,303,304, 364
30	+D.24	-D23.149.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216063-AS	ABB	RK216063-AS	1	28,153,163,250,304
31	+D.24	-D23.101.101	Bistable relay	RXMVB4	220VDC	11NO, 3NC	1MYN563039-AS	ABB	1MYN563039-AS	1	28,229,264,265,266,267,270, 363
32	+D.24	-D23.113.101	Trip circuit supervision relay	TSR-B	110/220VDC	2NC, 1NO	1MYN569339-A	ABB	1MYN569339-A	1	28,229,264,364
33	+D.24	-D23.131.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216063-AS	ABB	RK216063-AS	1	28,263,265,266,267,363
34	+D.24	-D23.131.301	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	28,263,266,267

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Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AB

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list DCC EPB
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Ref.Des. =2R +AB
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Language en
Sheet 52
n. sheet 53

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Pos.	Location	Device designation	Device description	Type designation	Technical data	Remark	Article number	Manufacturer	Manufacturer number	Qty.	Document / sheet
35	+D.24	-D23.137.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216063-AS	ABB	RK216063-AS	1	28,263,265,266,267,363
36	+D.24	-D23.137.301	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	28,263,266,267
37	+D.24	-D23.143.101	High speed trip relay	RXMS1	220VDC	6NO, Variant B	RK216063-AS	ABB	RK216063-AS	1	28,263,265,266,267,363
38	+D.24	-D23.143.301	Auxiliary relay	RXME18	220-250VDC	2NO	RK221-825-AS	ABB	RK221-825-AS	1	28,263,266,267
39	+D.24	-D23.155.101	Auxiliary relay	RXMA1	230VAC, 50-60Hz	2NO, 2NC	RK211052-BS	ABB	RK211052-BS	1	28,141,235
40	+D.28	-D28.101.101	Supervision relay	RXEG21	220V DC		INRK411-102-DD	ABB	INRK411-102-DD	1	28,228,363 1KHF128840R1103/404
41	+D.28	-D28.101.301	Supervision relay	RXEG21	220V DC		INRK411-102-DD	ABB	INRK411-102-DD	1	28,228,363 1KHF128840R1103/404
42	+D.28	-D28.113.101	Supervision relay	RXEG21	220V DC		INRK411-102-DD	ABB	INRK411-102-DD	1	28,228,363 1KHF128840R1103/404
43	+D.28	-D28.125.101	Supervision relay	RXEG21	220V DC		INRK411-102-DD	ABB	INRK411-102-DD	1	28,228,363 1KHF128840R1103/404
44	+D.28	-D28.137.101	Supervision relay	RXEG21	220V DC		INRK411-102-DD	ABB	INRK411-102-DD	1	28,228,363 1KHF128840R1103/404
45	+D.28	-D28.149.101	Supervision relay	RXEG21	220V DC		INRK411-102-DD	ABB	INRK411-102-DD	1	28,228,363 1KHF128840R1103/404
46	+D.34	-D34.01	TVM METER	Apex	APEX 100	CT RATIO 1600-800/1A CLASS :0.2S PT RATIO 220/√3 : 0.11 / √3 CLASS :0.2S	1KHY128840P531	Secure meters limited	1KHY128840P531	1	28,169,170,171
47	+D.39	-D39.01	Test block	DAV	10NC		1KHS282430P0001	DAV	1KHS282430P0001	1	28,161,162,304
48	+D.39	-D39.02	Test block	DAV	10NC		1KHS282430P0001	DAV	1KHS282430P0001	1	28,161,250,261,262,263,264, 301,302
49	+D.42	-D42.01	Test terminal block	TTB	1100V, 50A	Compact, Flush mounting	1KHS282430P0001	DAV	1KHS282430P0001	1	28,169,170

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities, design details, performance, particulars and conformity of the supplies with the Indian Statutory laws / IEC specifications as may be applicable nor does limit the AEGCL's right under the contract.

Jaiswal Electric & Engineering Co. Guwahati-Ltd. CONSULTANTS & CONTRACTORS

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL Parts list =2R+AB

HITACHI Hitachi Energy India Limited

Doc. kind. Parts list
DCC EPB
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R +AB
Rev. ind. 02
Language en
Sheet 53
n. sheet 56

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LIST OF REFERENCE DRAWING:-

SL.NO	EQUIPMENT	DESCRIPTION	MAKE	DRAWING NO.
01	SLD	400/220 METERING & PROTECTION SINGLE LINEDIAGRAM	TECHNO ELECTRIC	AEGCL-SONA-0816SN-ELE-SLD-001
02	LCC	220 ~~400~~kV GIS - LCC Schematics	SIEMENS ENERGY	AEGCL-SONA-0816SN-VEN-2GIS-065
03	GSLD	SINGLE LINE DIAGRAM	SIEMENS ENERGY	AEGCL-SONA-0816SN-VEN-2GIS-065

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibility upon details, performance particulars and conformity of the supplies with the Indian Statutory laws / IEC specifications as may be applicable; nor does limit the AEGCL's right under the contract.

Assam Electricity Grid Corporation Ltd. Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP REFERENCE DRAWINGS LIST

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	56
		n. sheet	101

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TERMINAL BLOCK DESIGNATION FOR EXTERNAL WIRING

X01.1,X01.2..	CT CIRCUITS
X02.1,X02.2	CVT/PT CIRCUITS
DCX03, ACX03	DC/AC INCOMING CIRCUITS
X04	CONTROL CIRCUITS
X05	INDICATION CIRCUITS
X06	ANNUNCIATION CIRCUITS
X07	SPARE CONTACTS
IVX04	HV INTERFACE CIRCUITS
LCCX321, LCCX201, LCCX501, LCCX503,..	LCC CIRCUITS
BBX04	BUSBAR CIRCUIT
TRX04	TRANSFORMER TROUBLE/ RTCC/FIRE FIGHTING
FOTEX04	PLCC CIRCUIT
XX1.1,XX1.2, XX2.1,XX2.2	DC CIRCUITS FOR LOOPING

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations [illegible] performance particulars [illegible] of the supplies with the Indian [illegible] IEC specifications as may be applicable nor does [illegible] the ASEGCL's right under the contract

TERMINAL BLOCK DESIGNATION FOR INTERPANEL BUS WIRING

X11	CT CIRCUITS
1X12.1 1X12.3 2X12.1 2X12.3	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
	PT
	PT
	CIRCUIT BREAKER
	ISOLATOR EARTH SWITCH
	TRANSFORMER
	REACTOR/WAVE TRAP
	LIGHNING ARRESTOR
	TTB WITH SCREW TYPE TERMINALS

FERRULE 'A' : CT CIRCUIT- MAIN PROTECTION
FERRULE 'D' : CT CIRCUIT- METERING
FERRULE 'J' : AUXILLARY DC CKTS
FERRULE 'P' : DC CKT- BUSBAR PROTECTION

FERRULE 'B' : CT CIRCUIT- BUSBAR PROTECTION
FERRULE 'E' : PT CKTS
FERRULE 'K' : CONTROL CKTS
FERRULE 'U' : SPARE CONTACTS

FERRULE 'C' : CT CIRCUIT- BACKUP PROTECTION
FERRULE 'H' : AUXILLARY AC CKTS
FERRULE 'L' : INDICATION CKTS

Hitachi Electric & Engineering Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Checked By (OM (P&D))		
Checked By (AGM (P&D))		
Checked By (DGM (P&D))		
Checked By (AM (P&D))		

Project: ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP LIST OF SYMBOLS

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram
DCC	EFS
Ref.Des.	=2R
Resp. dept.	PG-GAS
Rev. ind.	02
Language	en
Doc. no.	1KHF128840R1113
Sheet	101
n. sheet	102

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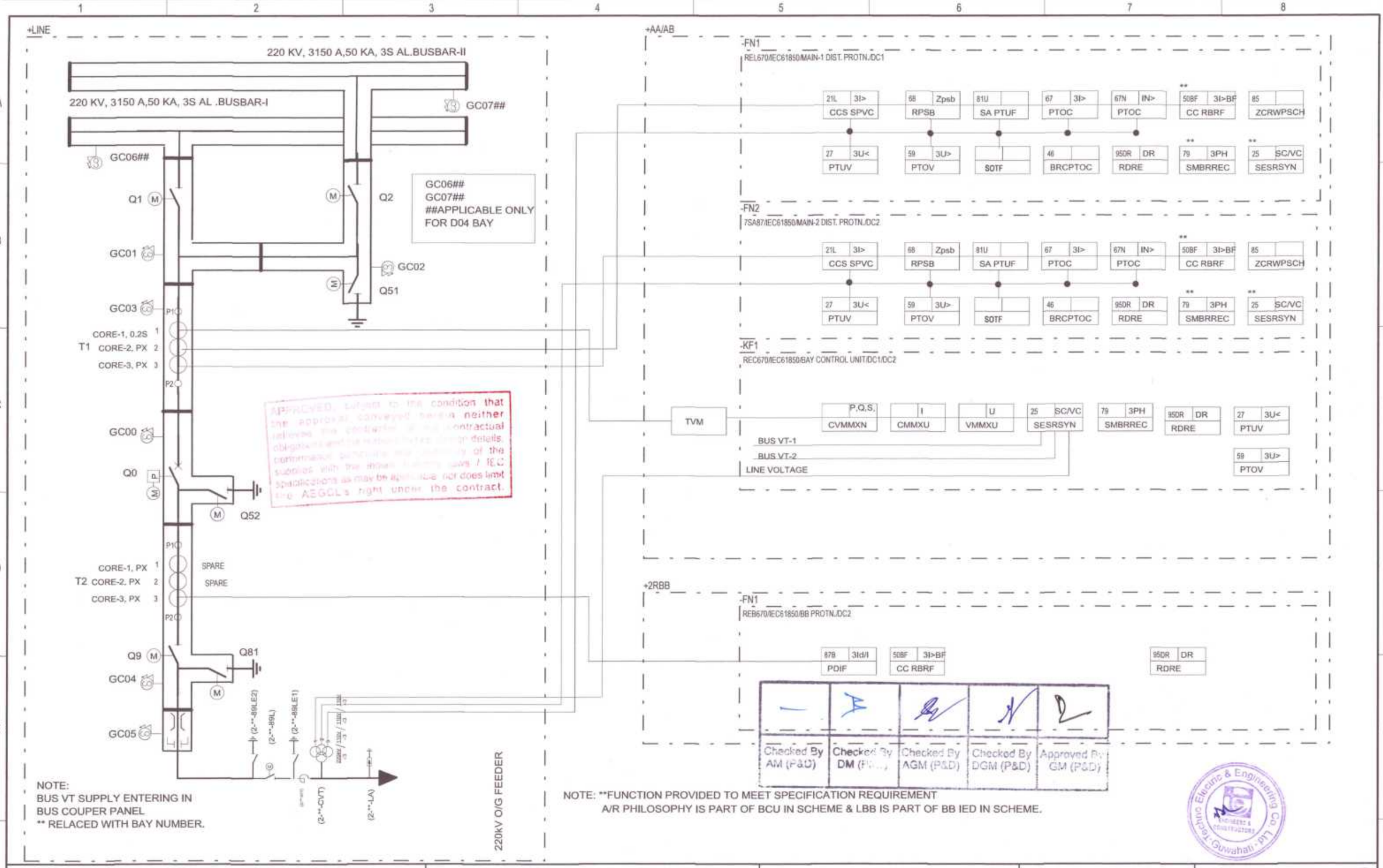

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Electric & Engineering Co. Ltd. Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Rev.	Revision note	Date	Name

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP LINE BAY SINGLE LINE DIAGRAM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 102
n. sheet 103

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220kV LINE CT DETAILS

Field Type	Reference Designation	Core No.	Application	Current Ratio A/A	Class	Burden (VA)	ISF	Knee Point Voltage Vk (V) (≥)	Rct in Ohm (≤)	Magnetizing Current Im (mA)@Vk (≤)
Line Bays &Trafo bays =D01,=D02,=D03, =D04,=D05,=D06, =D08,=D09	-T1	1	Metering	1600-800/1	0.2s	20-20	<5 with choke coil	--	--	--
		2	Protection	1600-800/1	PX	-	-	1700-850	6-2.5	25-50
		3	Protection	1600-800/1	PX	-	-	1600-800	8-4	25-50
	-T2	1	Protection	1600-800/1	PX	-	-	1600-800	8-4	25-50
		2	Protection	1600-800/1	PX	-	-	1600-800	8-4	25-50
		3	Protection	1600-800/1	PX	-	-	1600-800	8-4	25-50

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and responsibilities, design details, performance particulars, quantity of the supplies with the Indian Standards / IEC specifications as may be applicable nor does limit the AEGCL's right under the contract

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

220kV LINE CVT DETAILS

Bay	Reference Designat.	Winding	Ratio (kV/kV)	Rated output (VA)	Class	Application	Remarks
BBM+BE =(D07)	-T15, -T25	1	220/√3 : 0.11 / √3	50	3P	Protection	Without IID
		2	220/√3 : 0.11 / √3	50	3P	Protection	
		3	220/√3 : 0.11 / √3	50	0.2	Metering	
Rated Voltage Factor : 1.2 X Un continuous and 1.5 X Un for 30 sec							

Hitachi Electric & Engineering Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP 220kV LINE CT & PT DETAILS

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
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Sheet 103
n. sheet 104

1MYN691003-102(A3)REV01

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PROTECTION FUNCTION	OUTPUT	GR-A MASTER TRIP RELAY	GR-B MASTER TRIP RELAY	BUSBAR PROTECTION	START AUTO RECLOSE	BLOCK AUTO RECLOSE	96 TRIP RELAY	LBB INITIATION	CB TRIP COIL-1	CB TRIP COIL-2	CB CLOSE	DT SEND CH-1	DT SEND CH-2	CARRIER SEND CH-1	CARRIER SEND CH-2	REMARK
DISTANCE PROTECTION OPTD. (21L MAIN 1)	3-PH	TP	TP			IP		IP	TP	TP		TP	TP			BUILT IN REL670-M1
DISTANCE PROTECTION OPTD. (21L MAIN 2)	3-PH	TP	TP			IP		IP	TP	TP						BUILT IN 7SA87-M2
DISTANCE PROTECTION OPTD. (21L MAIN 1)	1-PH				IP			IP	TP	TP				IP	IP	BUILT IN REL670-M1
DISTANCE PROTECTION OPTD. (21L MAIN 2)	1-PH				IP			IP	TP	TP				IP	IP	BUILT IN 7SA87-M2
B/U DIR. OC & EF PROTN. (67/67N)	3-PH	TP	TP			IP						TP	TP			BUILT IN REL670-M1 & 7SA87-M2
OVER VOLTAGE PROTECTION(59)	3-PH	TP	TP			IP						TP	TP			BUILT IN REL670-M1 & 7SA87-M2
BREAKER FAILURE PROTECTION	3-PH	TP	TP	IP								TP	TP			REB670
GR-A MASTER TRIP RELAY (86A)	3-PH			IP		IP		IP	TP	TP	RS					RXMVB4
GR-B MASTER TRIP RELAY (86B)	3-PH			IP		IP		IP	TP	TP	RS					RXMVB4
MANUAL TRIP									TP	TP		TP	TP			REC670, TNC SWITCH
BUSBAR PROTN OPTD (87BB)	3-PH			IP		IP	TP	IP	TP	TP		TP	TP			TNC SWITCH
MANUAL CLOSE COMMAND	3-PH										IP					REB670
AUTO RECLOSE (RREC,79)	3-PH								IP	IP	CL					REC670
CHECK SYNCHRONISING (25)	3-PH										IP					REC670

* Breaker failure Retrip to be included.

* SOTF, Broken Conductor, Power Swing Block etc shall be included in the Trip Matrix

* REVISE The Trips Matrix as per Previous Observations.

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities design details, performance particulars and conformity of the supplies with the Indian Statutory laws / IEC specifications as may be applicable, nor does limit the AEGCL's right under the contract.

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Based on			
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02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 104
n. sheet 105

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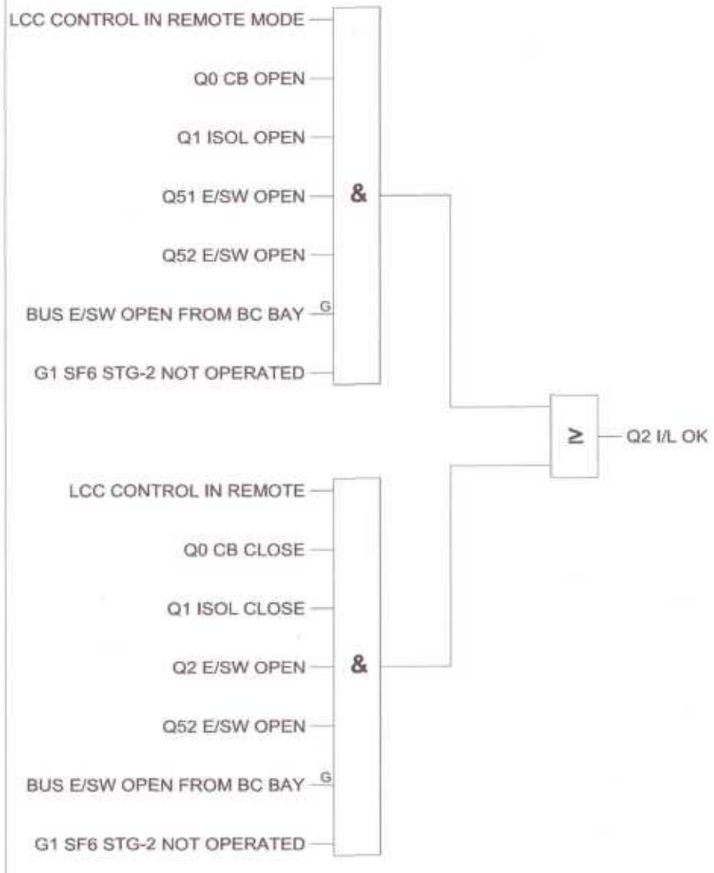
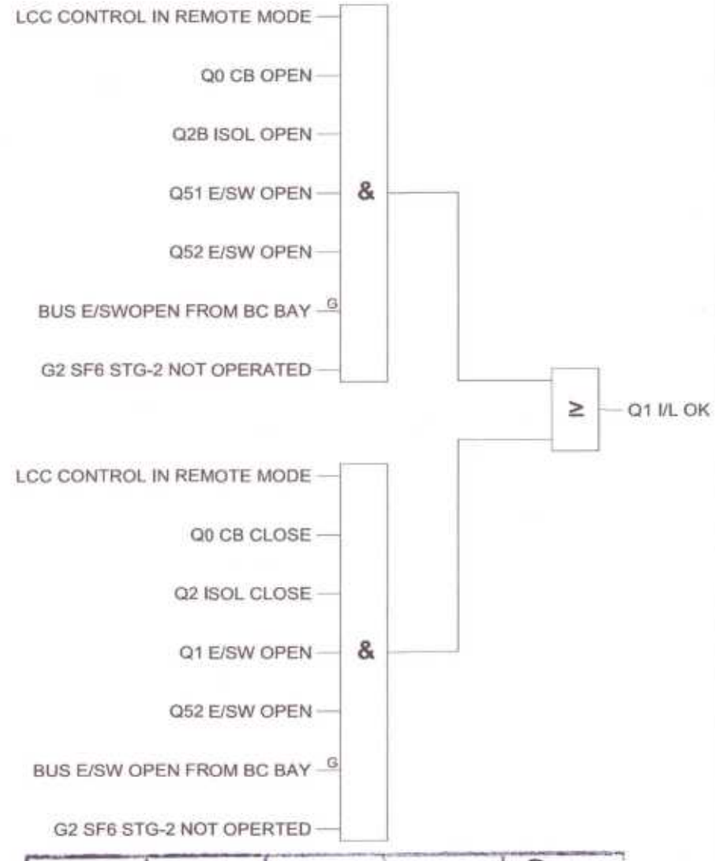
>=4R +AA/AB

Q2 ISOL INTERLOCK

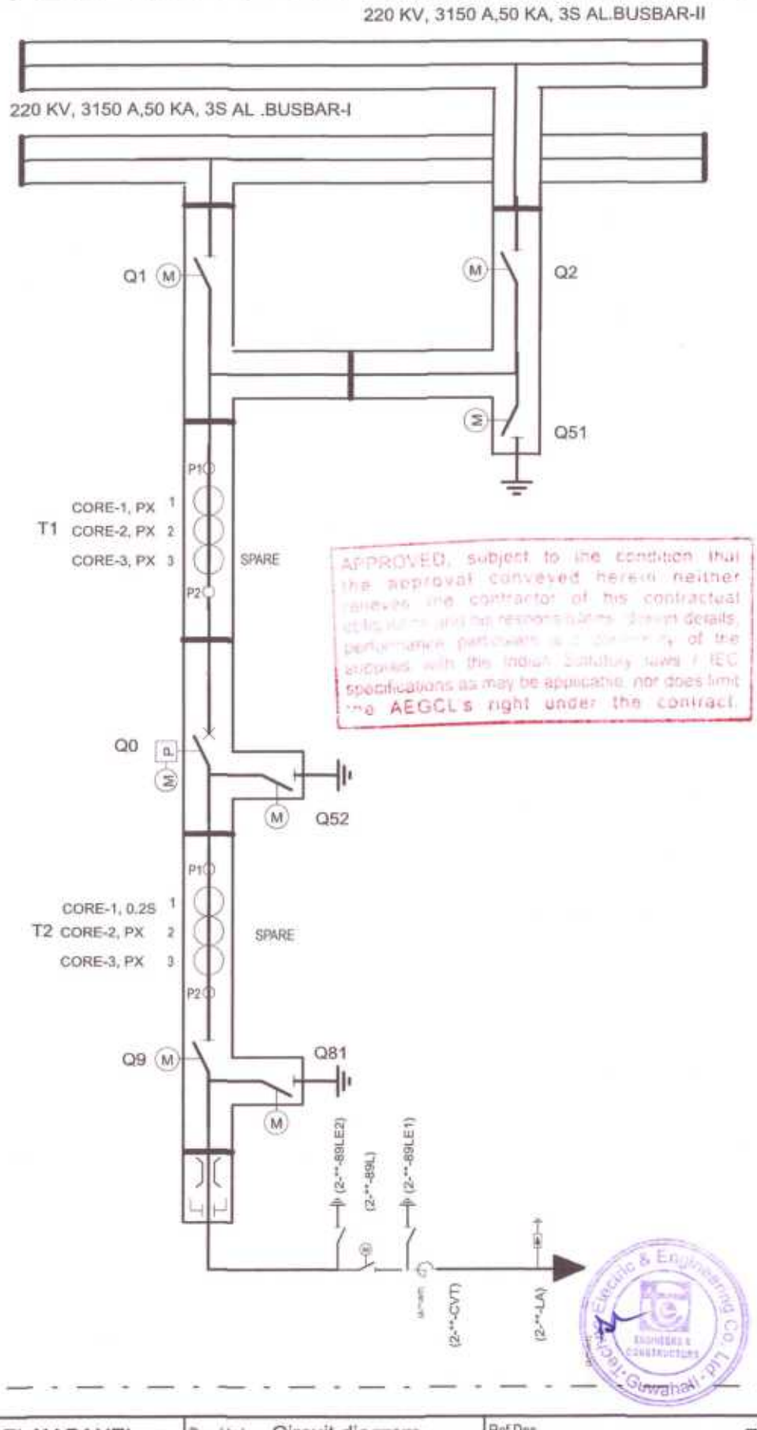


Q1ISOL INTERLOCK



Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

NOTE: G - GOOSE SIGNAL



APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and responsibilities, given details, performance particulars and guarantees of the equipment with the Indian Statutory laws / IEC specifications as may be applicable, nor does limit the AEGCL's right under the contract.

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP LINE BAY Q1 & Q52 INTERLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
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Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
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n. sheet 106

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+AA/AB

Q0 CB INTERLOCK

LCC CONTROL IN REMOTE MODE
Q1OR Q2 CLOSE
Q9 CLOSE
TC1 OR TC2 FAULTY N
SPRING CHARGED
SF6 LOCKOUT N
SYNC. CHECK OK
Q0 CB OPEN POSITION
86A & 86B TRIP RELAY NOT OPTD
BB/LBB PROTN. NOT OPTD
CB SF6 ZONE STG-2 NOT OPERATED

& — Q0 CB I/L OK

Q9 ISOL INTERLOCK

LCC CONTROL IN REMOTE MODE
Q0 CB OPEN
Q52 E/SW OPEN
Q81 E/SW OPEN
G4 SF6 STG-2 NOT OPERATED

& — Q9 ISOL I/L OK

Q51 E/SW INTERLOCK

LCC CONTROL IN REMOTE MODE
Q1 ISOL OPEN
Q2 ISOL OPEN
G1 SF6 STG-2 NOT OPERATED

& — Q51E/SW I/L OK

Q52 E/SW INTERLOCK

LCC CONTROL IN REMOTE MODE
Q9 ISOL OPEN
Q1 ISOL OPEN
Q2 ISOL OPEN
G4 SF6 STG-2 NOT OPERATED

& — 89LE2 E/SW I/L OK

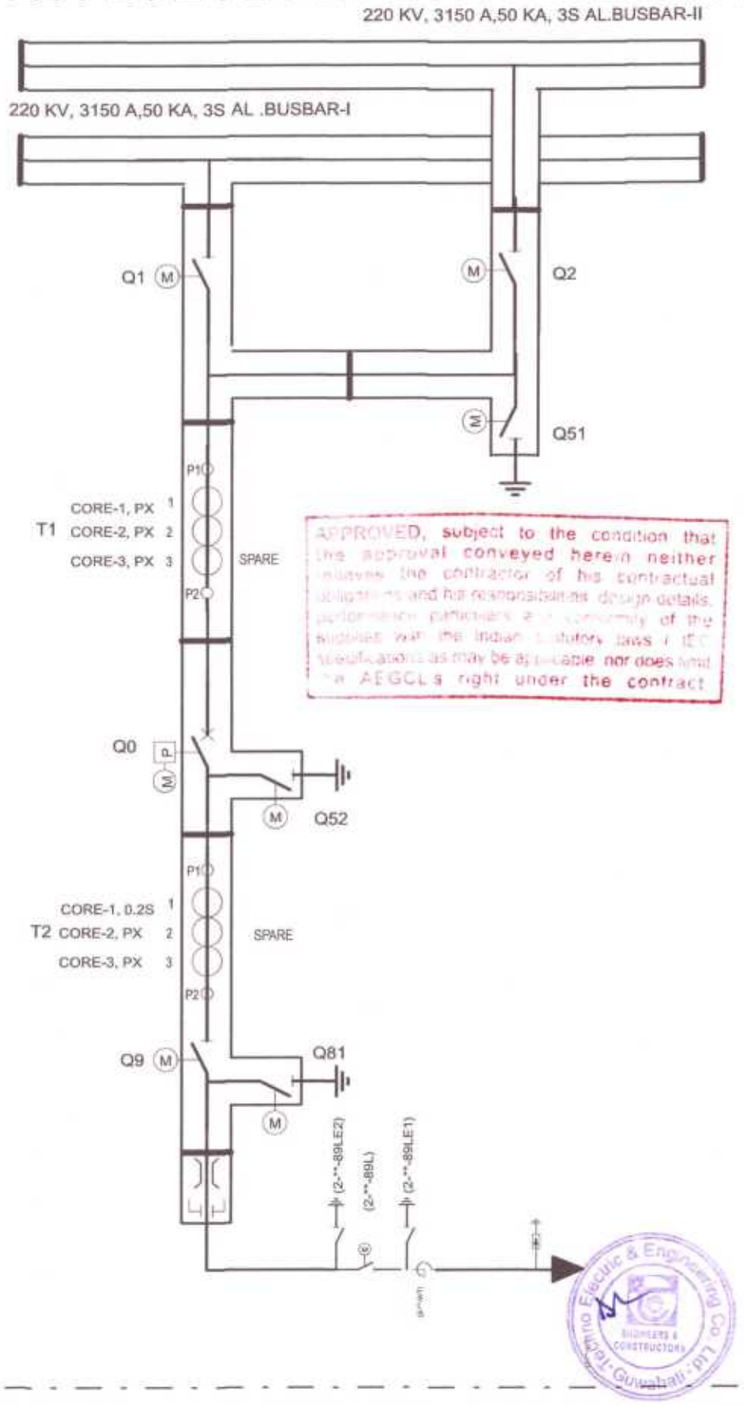
Q81 E/SW INTERLOCK

LCC CONTROL IN REMOTE MODE
Q9 ISOL OPEN
G4 SF6 STG-2 NOT OPERATED

& — Q81 E/SW I/L OK

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By CM (P&D)

NOTE: G - GOOSE SIGNAL



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Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP LINE BAY Q2 INTERLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
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Resp. dept. PG-GAS
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Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 106
n. sheet 107

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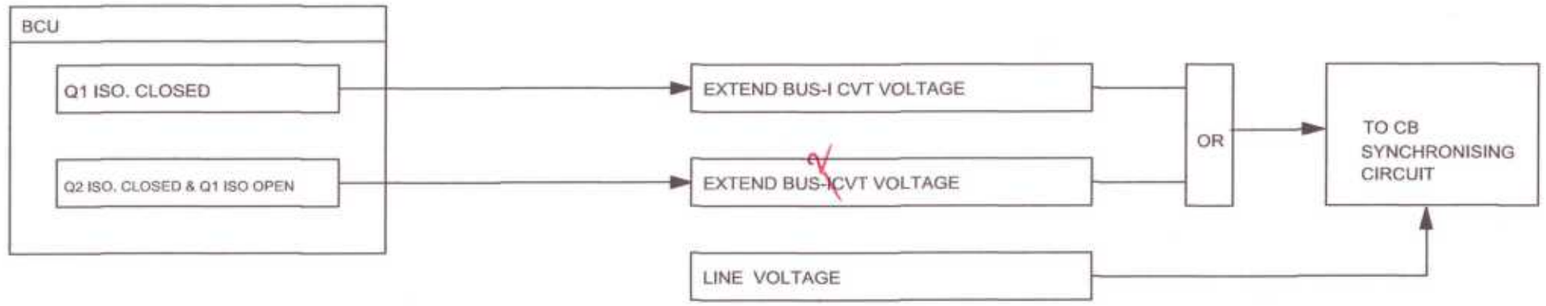

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Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP CHK SYNC

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
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Ref.Des. =2R
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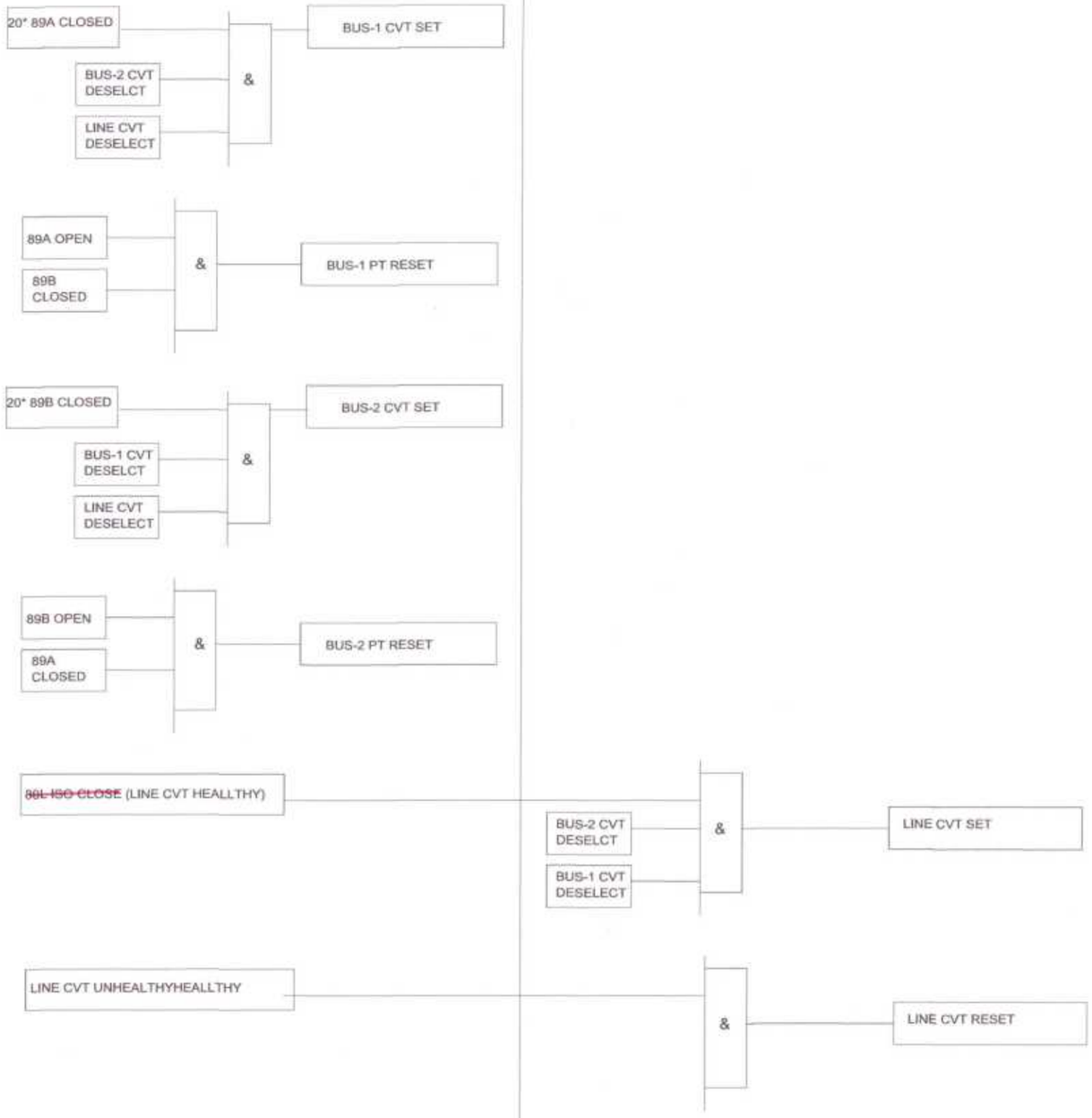
REC670 PT SELECTION LOGIC



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Assam Electric & Engineering Co. Ltd. Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE PT SEL LOGIC

HITACHI Hitachi Energy India Limited

Doc. kind. Assembly drawing DCC ELU
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 108
n. sheet 109

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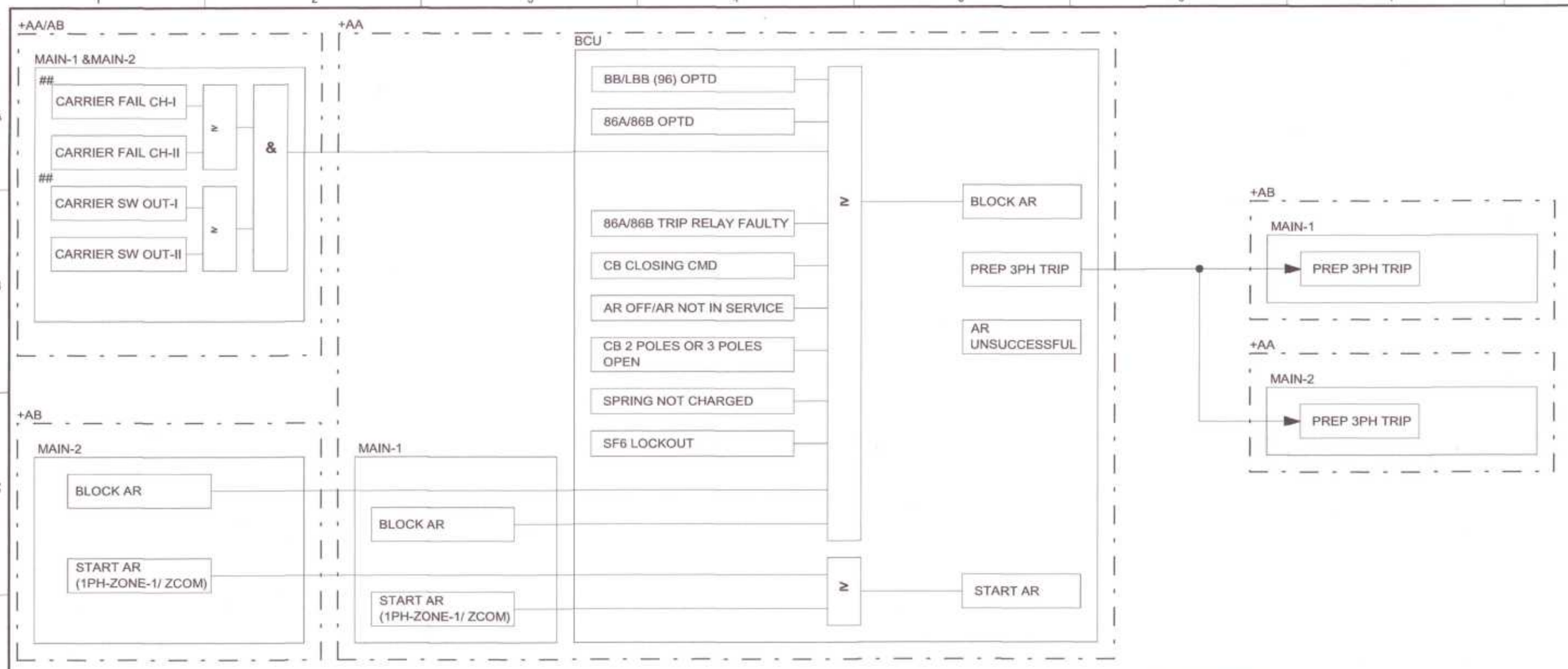

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Assam Electric & Engineering Co. Ltd. Guwahati

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Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP AUTO RECLOSE LOGIC

HITACHI Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	109
		n. sheet	131

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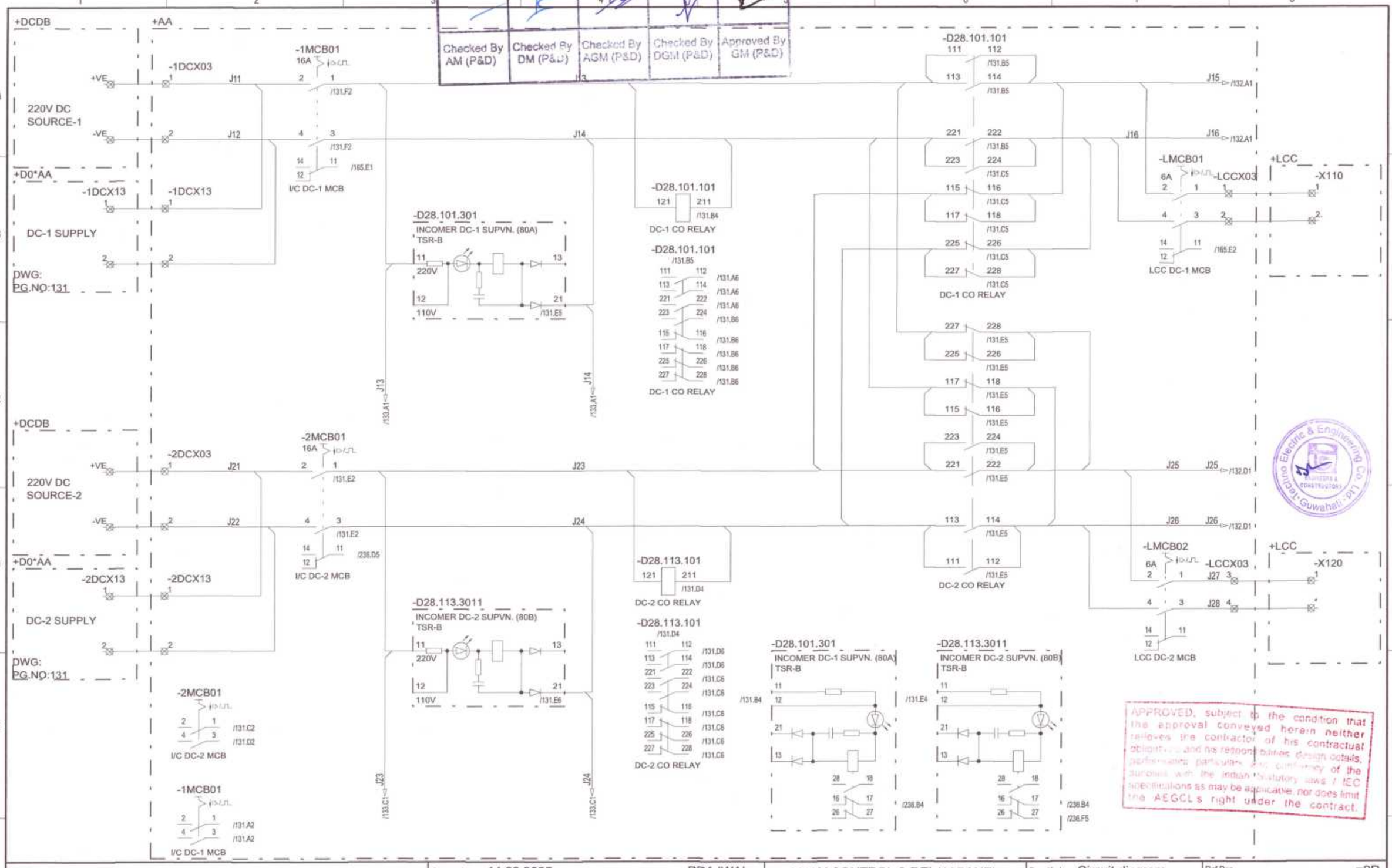

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
DC DISTRIBUTION CKT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 131
n. sheet 132

1MYN691003-102(A3)REV01

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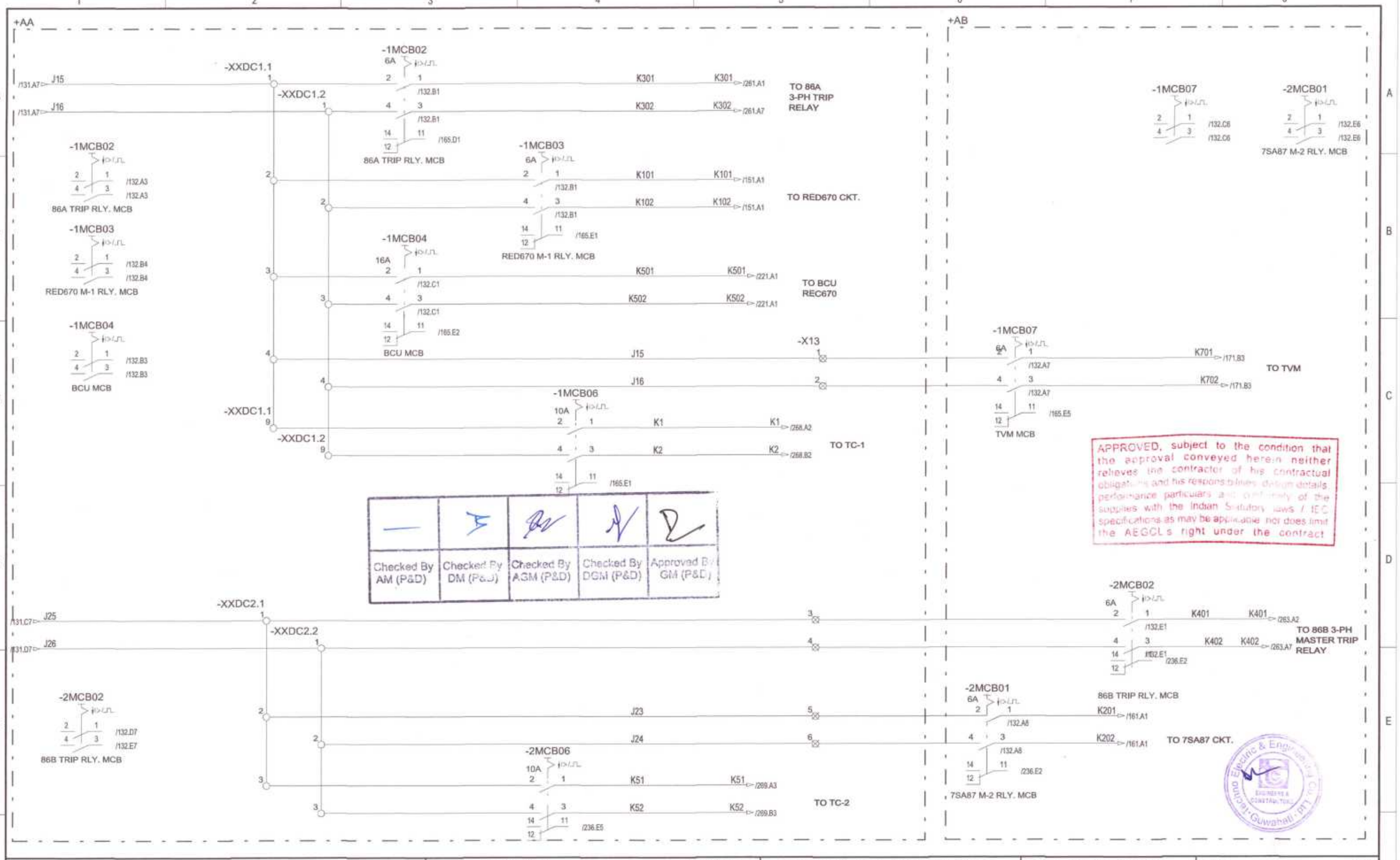

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02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP DC DISTRIBUTION CKT SOURCE-1

HITACHI — Hitachi Energy India Limited

Doc. kind	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	132
		n. sheet	133

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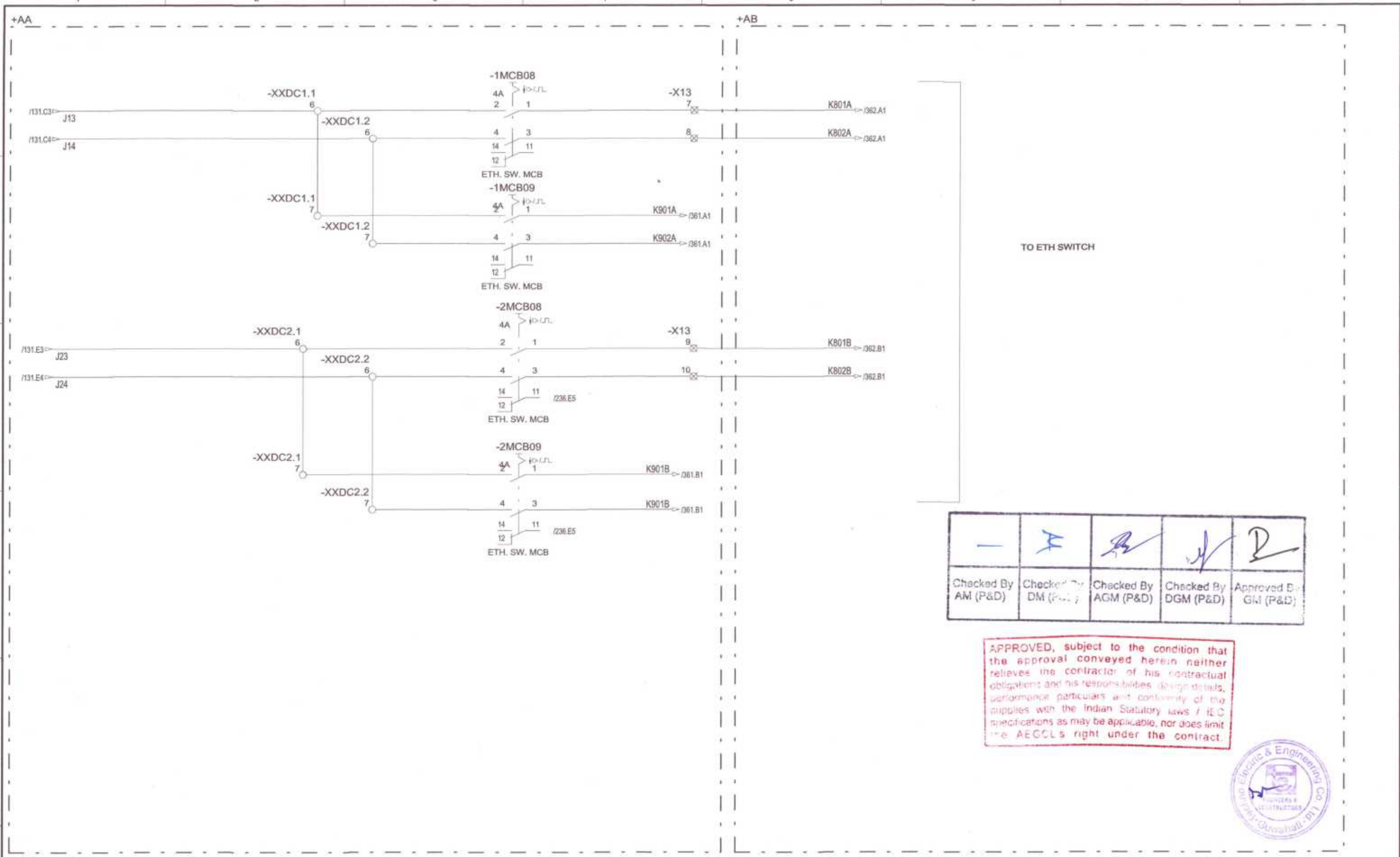

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Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP DC DISTRIBUTION CKT SOURCE-1 &2

HITACHI Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
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Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	133
		n. sheet	141

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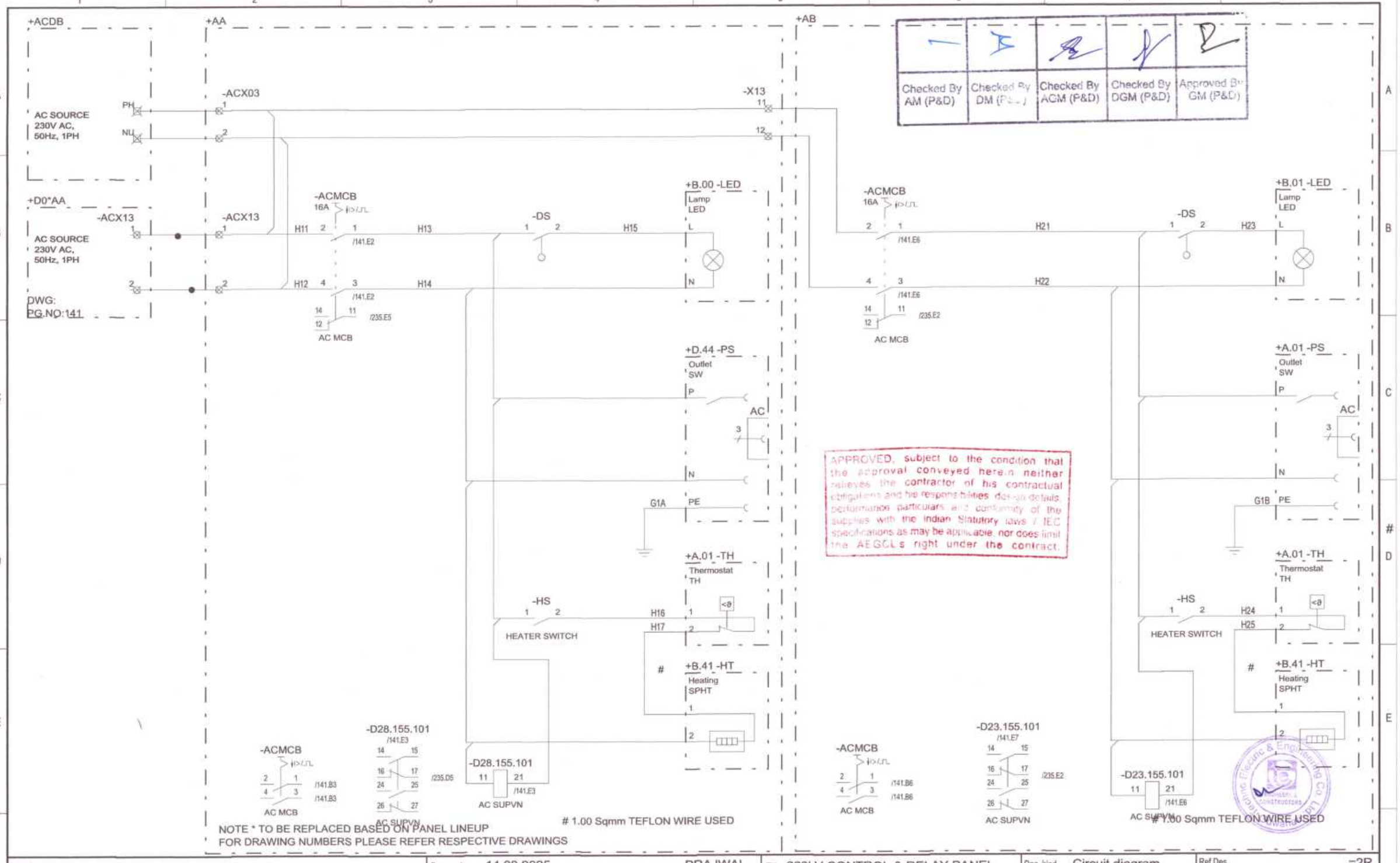

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02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP AC DISTRIBUTION

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 141
n. sheet 151

1MYN691003-102(A3)REV01

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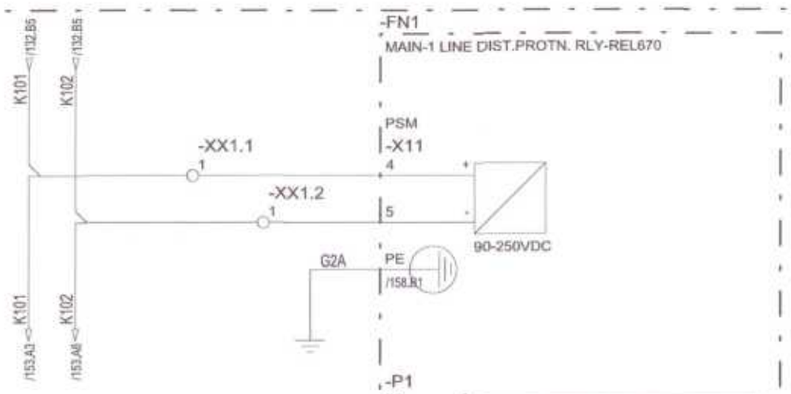
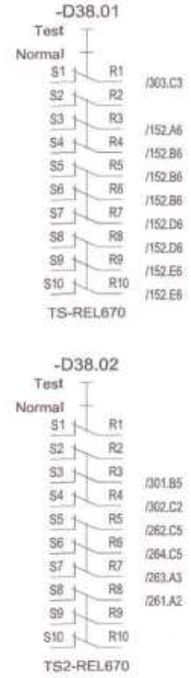


LIST OF FUNCTIONS AVAILABLE IN RELAY

- Distance Protection (PDIS,21)
- Power Swing Detection(RPSB, 78)
- Non- Dir. OC & EF Protn(50/51/50N/51N)
- Automatic Switch on to fault(PSOF)
- Two Step Over voltage Protection(PTOV,59)
- Fuse fail supervision(RFUF)
- Scheme Communication(PSCH,78)
- Tripping Logic(PTRC,94)-2 Instances
- Broken conductor check (PTOC,46)
- Four step phase O/C protection (PTOC-51/67)
- Disturbance Recorder(RDRE)
- Fault Locator(RFLO)
- Event Recorder (RDRE)
- Current Reversal
- Two Step Under voltage Protection(PTUV,59)
- Four step residual overcurrent protection(51N/67N)
- STUB Protection
- Phase selection with Load encroachment
- Quadrilateral characteristic
- Week end Infeed logics
- Breaker Failure Protection
- Under Frequency Protection
- Over Frequency Protection



+D.05 -FN1
Indication HMI -RED LED

1	DIST. PROTN. OPTD
2	RPH FAULT
3	YPH FAULT
4	BPH FAULT
5	ZONE-1 TRIP
6	ZONE-2 TRIP
7	ZONE-3 TRIP
8	ZONE-4 TRIP(R)
9	SOTF
10	O/V TRIP
11	CARRIER RECEIVE CH-1/2
12	DT RECEIVE CH-1/2
13	Z COM TRIP
14	DEF TRIP/OC
15	FUSE FAIL

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

+D.05 -FN1
Indication HMI - YELOW LED

1	BRC ALARM
2	PSB OPTD
3	REC670 UNHEALTHY
4	DT SEND CH-1
5	DT SEND CH-2
6	CARRIER SEND CH-1
7	CARRIER SEND CH-2
8	CARRIER FAIL CH-1
9	
10	
11	
12	
13	
14	
15	

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

+D.05 -FN1
Indication HMI - GREEN LED

1	
2	
3	
4	
5	
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7	
8	
9	
10	
11	
12	
13	
14	
15	

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

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Assam Electric & Engineering Co. Ltd. Guwahati

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Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKTS- PSM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 151
n. sheet 152

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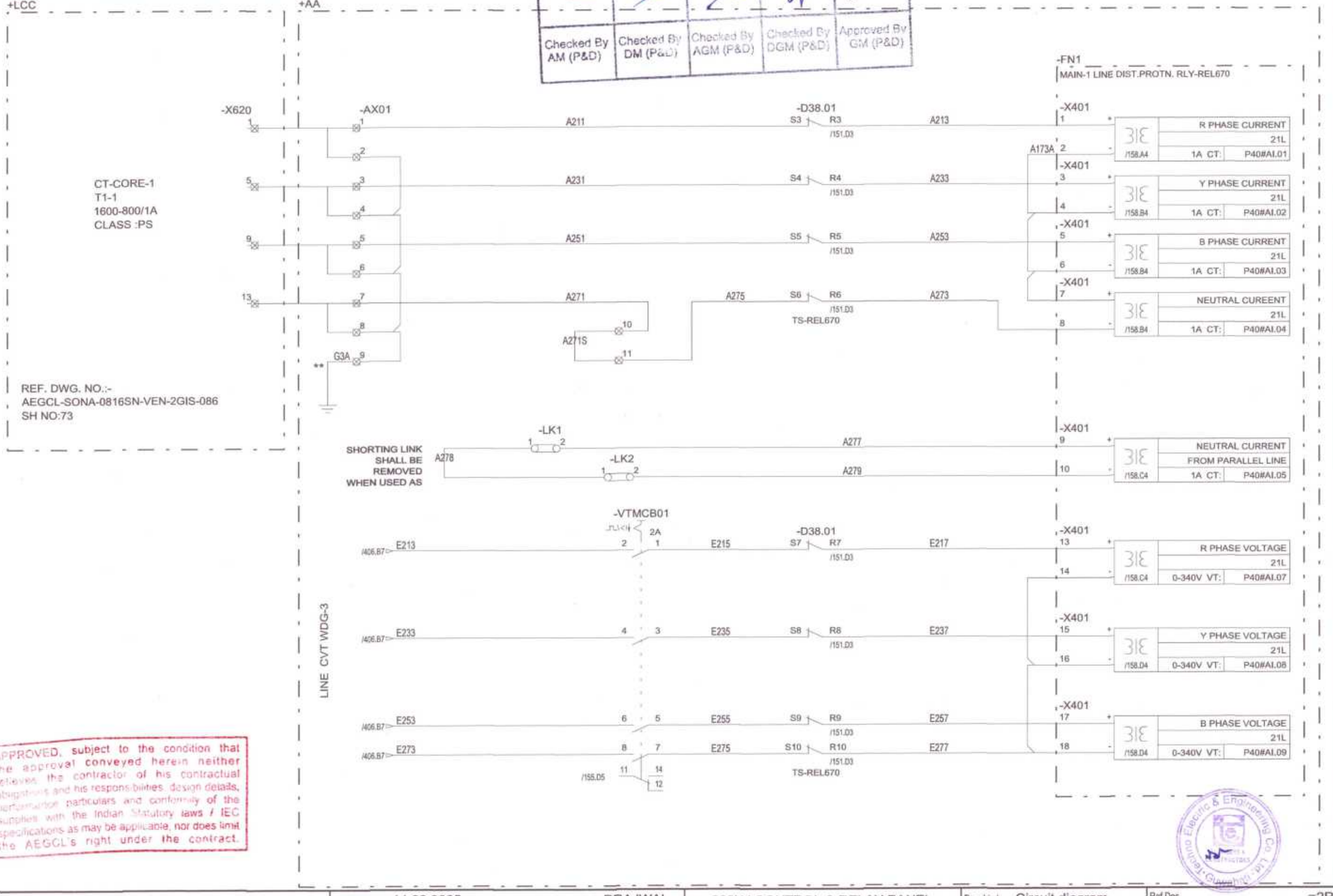

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Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKTS- TRM

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	152
		n. sheet	153

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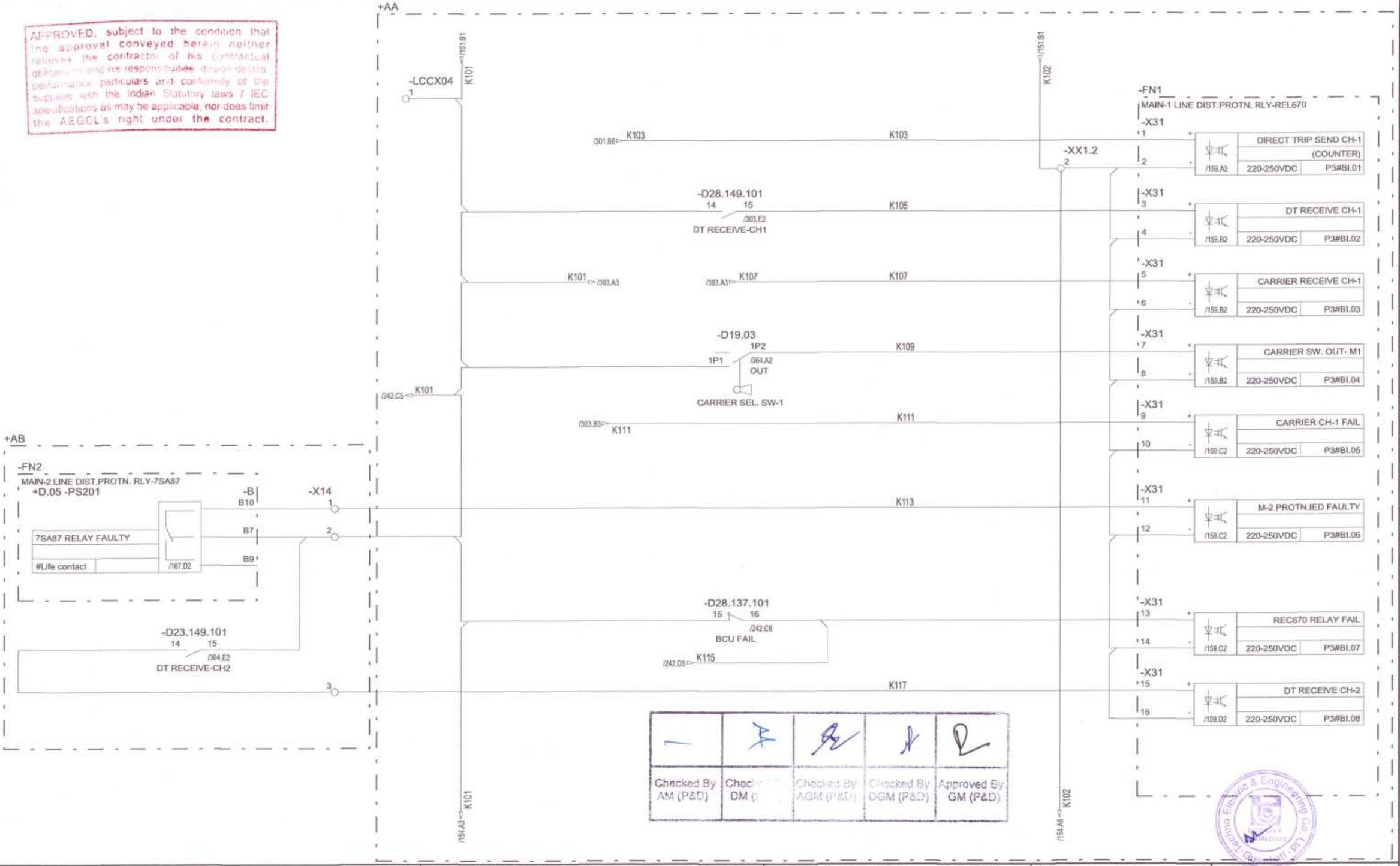

Rev.	Revision note	Date	Name
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Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKTS- BIM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 153
n. sheet 154

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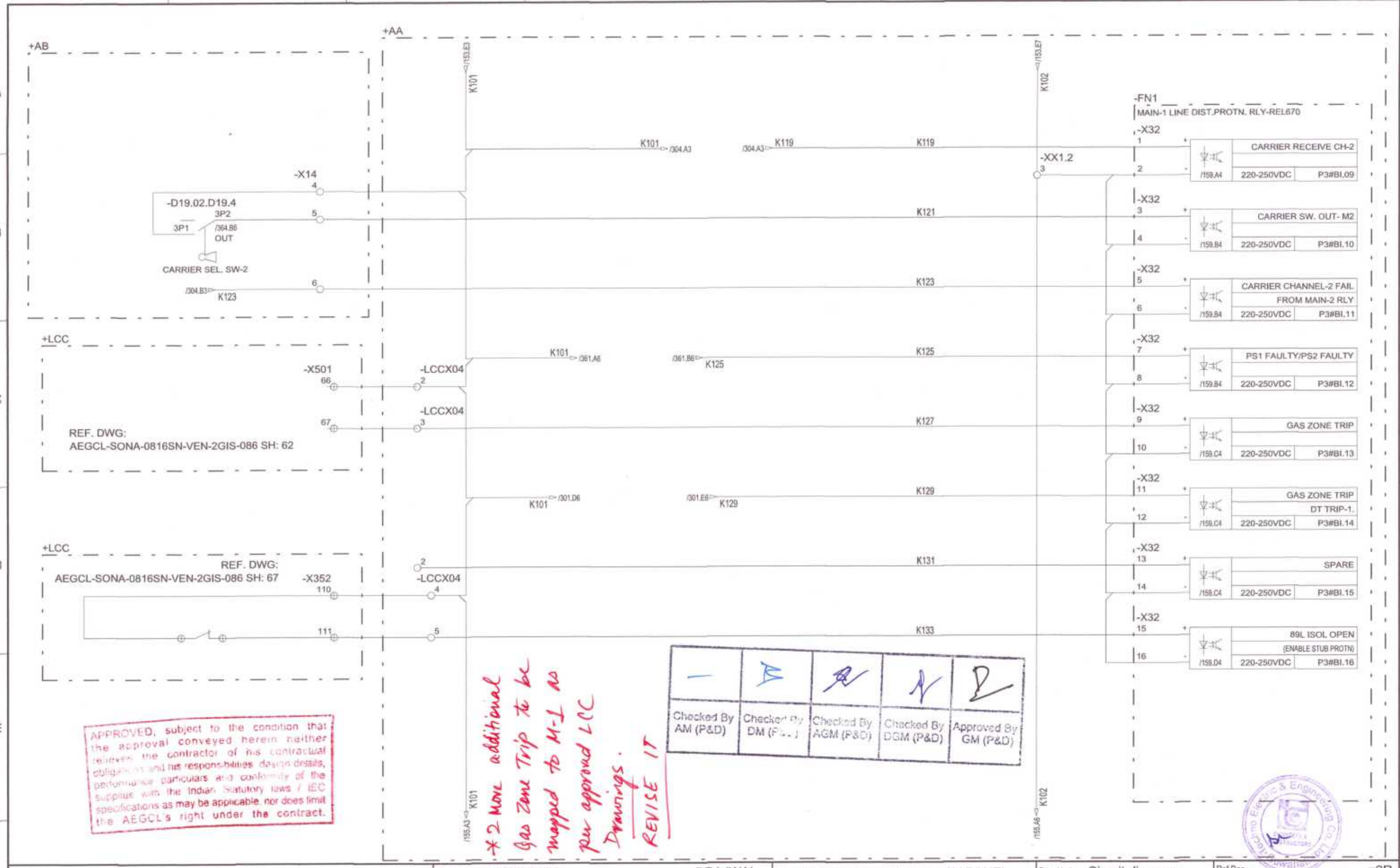

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* 2 More additional Gas Zone Trip to be mapped to M-1 as per approved LCC Drawings.
REVISE IT

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

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Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKTS- BIM

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	154
		n. sheet	155

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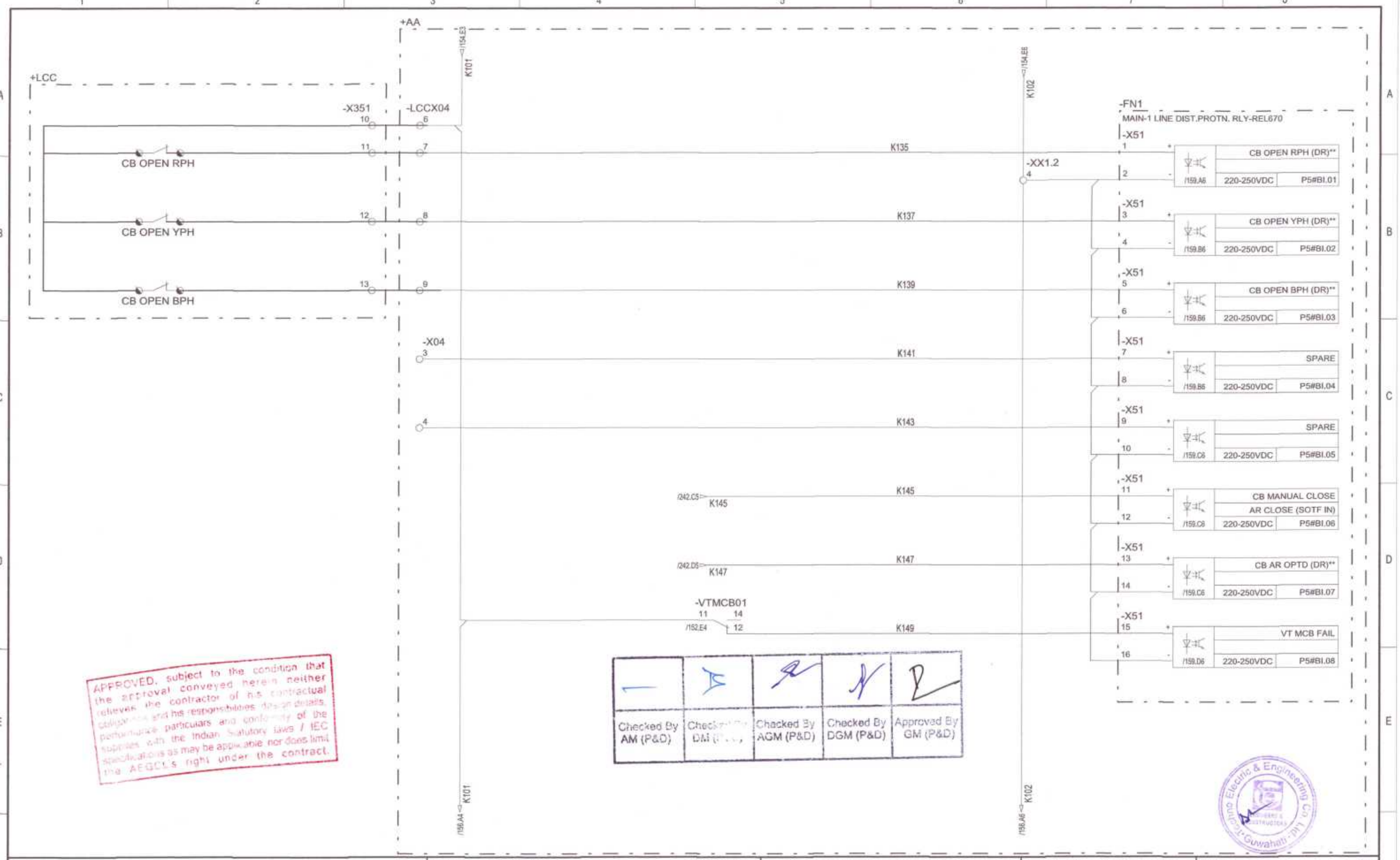

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Assam Electric & Engineering Co. Ltd. Guwahati

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Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKTS- BIM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 155
n. sheet 156

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K101 /155.E3

K102 /155.E6

-X04

5	K151	-XX1.2 5
6	K153	
7	K155	
8	K157	
9	K159	
10	K161	
11	K163	
12	K165	

-FN1
MAIN-1 LINE DIST.PROTN, RLY-REL670

-X52 1 + / 2 -	/159.A7	SPARE	220-250VDC	P5#BI.09
-X52 3 + / 4 -	/159.B7	SPARE	220-250VDC	P5#BI.10
-X52 5 + / 6 -	/159.B7	SPARE	220-250VDC	P5#BI.11
-X52 7 + / 8 -	/159.B7	SPARE	220-250VDC	P5#BI.12
-X52 9 + / 10 -	/159.C7	SPARE	220-250VDC	P5#BI.13
-X52 11 + / 12 -	/159.C7	SPARE	220-250VDC	P5#BI.14
-X52 13 + / 14 -	/159.C7	SPARE	220-250VDC	P5#BI.15
-X52 15 + / 16 -	/159.D7	SPARE	220-250VDC	P5#BI.16

/003.B3 K101

/003.B4 K102

Checked By AM (P&D)	Checked By DM (F...	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKTS- BIM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 156
n. sheet 157

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-FN1
MAIN-1 LINE DIST.PROTN. RLY-REL670

SPARE / P4#BO.15	/160.B4	-X42 5	K171		-X04 13
		4	K173		14
SPARE / P4#BO.16	/160.C4	-X42 6	K175		15
SPARE / P4#BO.17	/160.C4	-X42 8	K177		16
		7	K179		17
SPARE / P4#BO.18	/160.C4	-X42 9	K181		18
SPARE / P4#BO.23	/160.E4	-X42 17	K183		19
		16	K185		20
SPARE / P4#BO.24	/160.E4	-X42 18	K187		21

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKTS- BOM

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	157
		n. sheet	158

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+AA

+D.05 -FN1
1MRK002239-BB
PSM
90-250VDC
-X11
4 +
5 -
/151.B2
90-250VDC
PE
-X11
2
3 /163.D2
1
REL670 FAULTY

+D.05 -FN1
MAIN-1 LINE DIST.PROTN. RLY-REL6701MRK002247-AG
TRM
1A, 0-340V, 50/60Hz
-X401

R PHASE CURRENT	21L	P40#AI.01	CT: 1A	1 / 2 /152.B7
Y PHASE CURRENT	21L	P40#AI.02	CT: 1A	3 / 4 /152.B7
B PHASE CURRENT	21L	P40#AI.03	CT: 1A	5 / 6 /152.B7
NEUTRAL CUREENT	21L	P40#AI.04	CT: 1A	7 / 8 /152.C7
NEUTRAL CURRENT FROM PARALLEL LINE		P40#AI.05	CT: 1A	9 / 10 /152.C7
SPARE		P40#AI.06	CT: 1A	11 / 12
R PHASE VOLTAGE	21L	P40#AI.07	VT: 0-340V	13 / 14 /152.D7
Y PHASE VOLTAGE	21L	P40#AI.08	VT: 0-340V	15 / 16 /152.E7
B PHASE VOLTAGE	21L	P40#AI.09	VT: 0-340V	17 / 18 /152.E7
SPARE		P40#AI.10	VT: 0-340V	19 / 20
SPARE		P40#AI.11	VT: 0-340V	21 / 22
SPARE		P40#AI.12	VT: 0-340V	23 / 24

+D.05 -FN1
Communication interface module
SFP
-P1
TO ETHERNET SW. FOR SCADA
Ethernet port
100FX
LC Rx
LC Tx
/151.B3

+D.05 -FN1
Communication interface module
SFP
-P1
TO ETHERNET SW. FOR SCADA
Ethernet port
100FX
LC Rx
LC Tx
/151.C3

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Rev.	Revision note	Date	Name
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Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
MAIN-1 PROTN. CKT-MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 158
n. sheet 159

1MYN691003-102(A3)REV01

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+AA

+D.05 -FN1

Binary input module BIM 220-250VDC, 50ma — 1MRK000508-CD

-X31

Terminal	Signal	Source	Destination
1 / 2	DIRECT TRIP SEND CH-1 (COUNTER)	P3#BI.01 220-250VDC	/153.B7
3 / 4	DT RECEIVE CH-1	P3#BI.02 220-250VDC	/153.B7
5 / 6	CARRIER RECEIVE CH-1	P3#BI.03 220-250VDC	/153.C7
7 / 8	CARRIER SW. OUT- M1	P3#BI.04 220-250VDC	/153.C7
9 / 10	CARRIER CH-1 FAIL	P3#BI.05 220-250VDC	/153.C7
11 / 12	M-2 PROTN.IED FAULTY	P3#BI.06 220-250VDC	/153.D7
13 / 14	REC670 RELAY FAIL	P3#BI.07 220-250VDC	/153.E7
15 / 16	DT RECEIVE CH-2	P3#BI.08 220-250VDC	/153.E7

+D.05 -FN1

Binary input module BIM 220-250VDC, 50ma — 1MRK000508-CD

-X32

Terminal	Signal	Source	Destination
1 / 2	CARRIER RECEIVE CH-2	P3#BI.09 220-250VDC	/154.B7
3 / 4	CARRIER SW. OUT- M2	P3#BI.10 220-250VDC	/154.B7
5 / 6	CARRIER CHANNEL-2 FAIL FROM MAIN-2 RLY	P3#BI.11 220-250VDC	/154.C7
7 / 8	PS1 FAULTY/PS2 FAULTY	P3#BI.12 220-250VDC	/154.C7
9 / 10	GAS ZONE TRIP	P3#BI.13 220-250VDC	/154.C7
11 / 12	GAS ZONE TRIP DT TRIP-1.	P3#BI.14 220-250VDC	/154.D7
13 / 14	SPARE	P3#BI.15 220-250VDC	/154.D7
15 / 16	89L ISOL OPEN (ENABLE STUB PROTN)	P3#BI.16 220-250VDC	/154.E7

+D.05 -FN1

Binary input module BIM 220-250VDC, 50ma — 1MRK000508-CD

-X51

Terminal	Signal	Source	Destination
1 / 2	CB OPEN RPH (DR)**	P5#BI.01 220-250VDC	/155.B7
3 / 4	CB OPEN YPH (DR)**	P5#BI.02 220-250VDC	/155.B7
5 / 6	CB OPEN BPH (DR)**	P5#BI.03 220-250VDC	/155.C7
7 / 8	SPARE	P5#BI.04 220-250VDC	/155.C7
9 / 10	SPARE	P5#BI.05 220-250VDC	/155.C7
11 / 12	CB MANUAL CLOSE AR CLOSE (SOTF IN)	P5#BI.06 220-250VDC	/155.D7
13 / 14	CB AR OPTD (DR)**	P5#BI.07 220-250VDC	/155.D7
15 / 16	VT MCB FAIL	P5#BI.08 220-250VDC	/155.E7

+D.05 -FN1

Binary input module BIM 220-250VDC, 50ma — 1MRK000508-CD

-X52

Terminal	Signal	Source	Destination
1 / 2	SPARE	P5#BI.09 220-250VDC	/156.B7
3 / 4	SPARE	P5#BI.10 220-250VDC	/156.B7
5 / 6	SPARE	P5#BI.11 220-250VDC	/156.C7
7 / 8	SPARE	P5#BI.12 220-250VDC	/156.C7
9 / 10	SPARE	P5#BI.13 220-250VDC	/156.C7
11 / 12	SPARE	P5#BI.14 220-250VDC	/156.D7
13 / 14	SPARE	P5#BI.15 220-250VDC	/156.D7
15 / 16	SPARE	P5#BI.16 220-250VDC	/156.E7

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Electric & Engineering Co. Ltd. Guwahati

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1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-1 PROTN. CKT-MASTER BLOCK

HITACHI — Hitachi Energy India Limited

Doc. kind	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	159
		n. sheet	160

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+AB

-FN2
MAIN-2 LINE DIFF.PROTN. RLY-7SA87

+D.05 -PS201
Power supply module
PS201
-B
B1 +
B2 -
/167.A1
60-250VDC
115-230VAC, 50-60Hz

K201 /132.E7
K202 /132.E7
K201 /163.A3
K202 /163.A6

+D.05 -IO205-1
Analogue input module
G2B GND
/168.D4

+D.05 -IO205-2
Analogue input module
G3B GND
/168.D8

+D.05 -IO202
Binary I/O and transformer module
G4B GND
/167.D7

+D.05 -FN2
SIPROTEC
60-250VDC, 115-230VAC

1	GENERAL TRIP
2	RPH FAULT
3	YPH FAULT
4	BPH FAULT
5	ZONE-1
6	ZONE-2
7	ZONE-3
8	ZONE-4
9	SOTF
10	FUSE FAIL
11	ZCOM
12	
13	
14	
15	STUB
16	

* SCADA (PRP) Port to be shown - 2 nos

LIST OF FUNCTIONS AVAILABLE IN RELAY

- Distance Protection (PDIS,21)
- Automatic Switch on to fault(PSOF)
- E/F protection(PDEF,67N)
- O/C protection(PDEF,67)
- Fuse fail supervision(RFUF)
- Scheme Communication(PSCH,78)
- Tripping Logic(PTRC,94)
- Disturbance Recorder(RDRE)
- Fault Locator(RFLO)
- PSB
- Event Recorder (RDRE)
- Current Reversal
- Weak end Infeed logics
- Power Swing detection (RTPSB,68)
- Brokern conductor(46BC)
- Stub Protection

All the functions similar to the Hitachi IED shall be included

-D39.01
Test
Normal

S1	R1	/304.C3
S2	R2	
S3	R3	/162.B6
S4	R4	/162.B6
S5	R5	/162.C6
S6	R6	/162.C6
S7	R7	/162.D6
S8	R8	/162.E6
S9	R9	/162.E6
S10	R10	/162.E6

TS1-7SA87

-D39.02
Test
Normal

S1	R1	
S2	R2	
S3	R3	/302.B5
S4	R4	/250.A3
S5	R5	/250.D3
S6	R6	/301.C2
S7	R7	/263.D3
S8	R8	/261.D2
S9	R9	/264.E7
S10	R10	/262.D2

TS2-7SA87

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Assam Electricity Grid Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
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Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-2 PROTN. CKTS- PSM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 161
n. sheet 162

1MYN691003-102(A3)REV01

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+LCC

CT-11
~~T1-2~~
~~1600-800~~/1A
CLASS :PS

170-850

REF. DWG. NO.:-
AEGCL-SONA-0816SN-VEN-2GIS-086
SH NO : 74

+AB

-X630 / -BX01

1	1	A311	S3	R3	/161.A8	A313	1
5	3	A331	S4	R4	/161.B8	A333	3
9	5	A351	S5	R5	/161.B8	A353	5
13	7	A371	S6	R6	/161.B8	A373	7

A375 — TS1-7SA87

G5B 10 **

SHORTING LINK SHALL BE REMOVED WHEN USED AS

-LK1 1 2 — A377
A378
-LK2 1 2 — A379

-VTMCB01 2A

/406.B5	E313	2	1	E315	S7	R7	/161.B8	E317
/406.C5	E333	4	3	E335	S8	R8	/161.B8	E337
/406.C5	E353	6	5	E355	S9	R9	/161.B8	E357
/406.C5	E373	8	7	E375	S10	R10	/161.B8	E377

/165.D5 11 14 12 — TS1-7SA87

SEL. CVT WDG-2

-FN2
MAIN-2 LINE DIST.PROTN. RLY-7SA87

A 1	2	/167.A4	1/5A CT:	R PHASE CURRENT 21L #I1
A 3	4	/167.B4	1/5A CT:	Y PHASE CURRENT 21L #I2
A 5	6	/167.B4	1/5A CT:	B PHASE CURRENT 21L #I3
A 7	8	/167.B4	1/5A CT:	NEUTRAL CUREENT #I4
B 1	2	/167.C4	200V VT:	R PHASE VOLTAGE 21L/67/67N #V1
B 3	4	/167.C4	200V VT:	Y PHASE VOLTAGE 21L/67/67N #V2
B 5	6	/167.C4	200V VT:	B PHASE VOLTAGE ~~21L/67/67N~~ #V3

APPROVED, subject to the condition that the Approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibility for details, performance, particulars and correctness of the supplies with the Indian Electricity Rules / IEC specifications as may be applicable nor does limit the AEGCL's right under the contract.

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-2 PROTN. CKTS- TRM

HITACHI — Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref. Date =2R
Rev. ind. 02
Language en
Sheet 162
n. sheet 163

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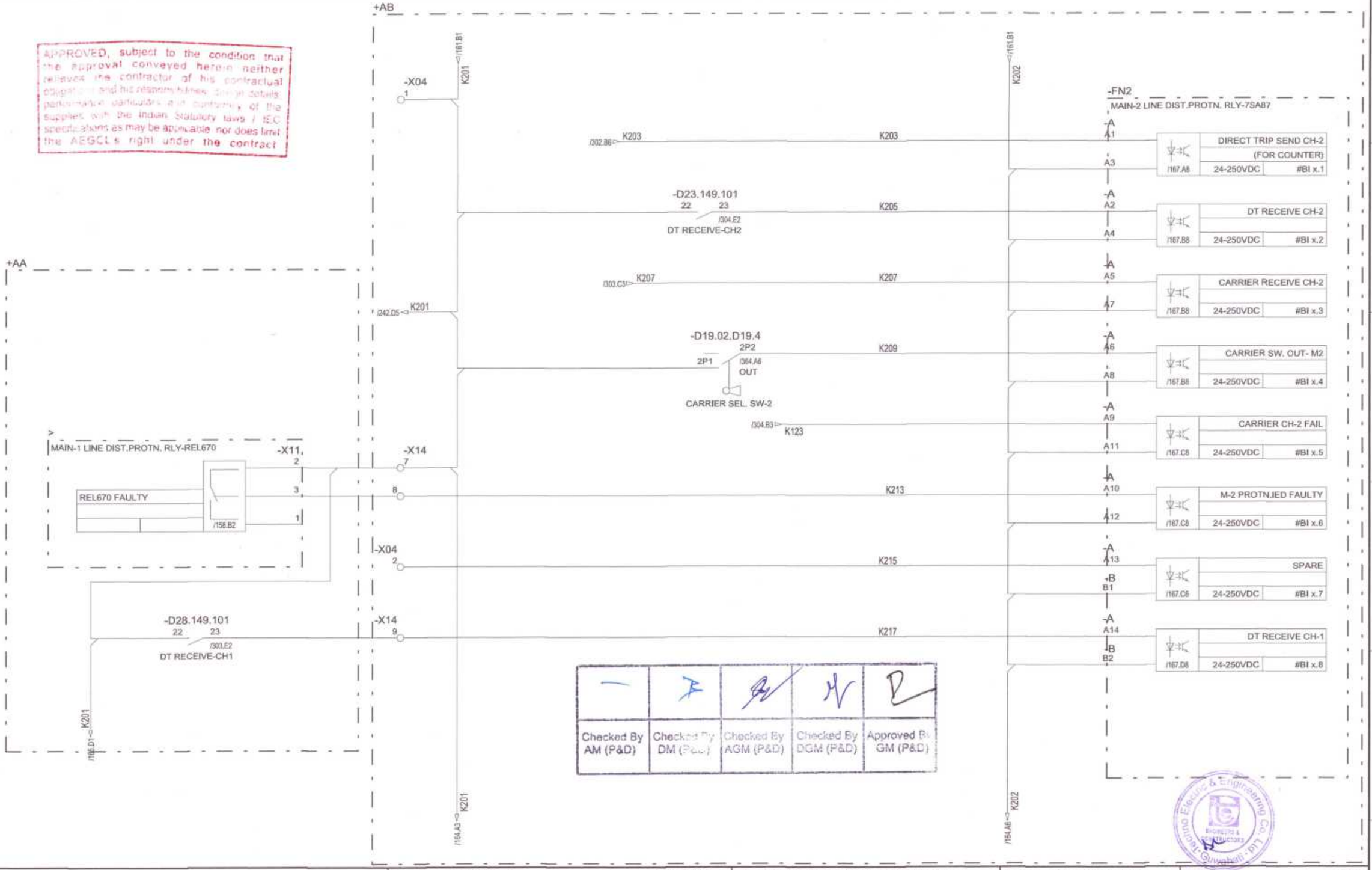

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Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR	
•	128840	

Title: 220kV CONTROL & RELAY PANEL
220kV LINE CRP
MAIN-2 PROTN. CKTS- BIM

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	163
		n. sheet	164

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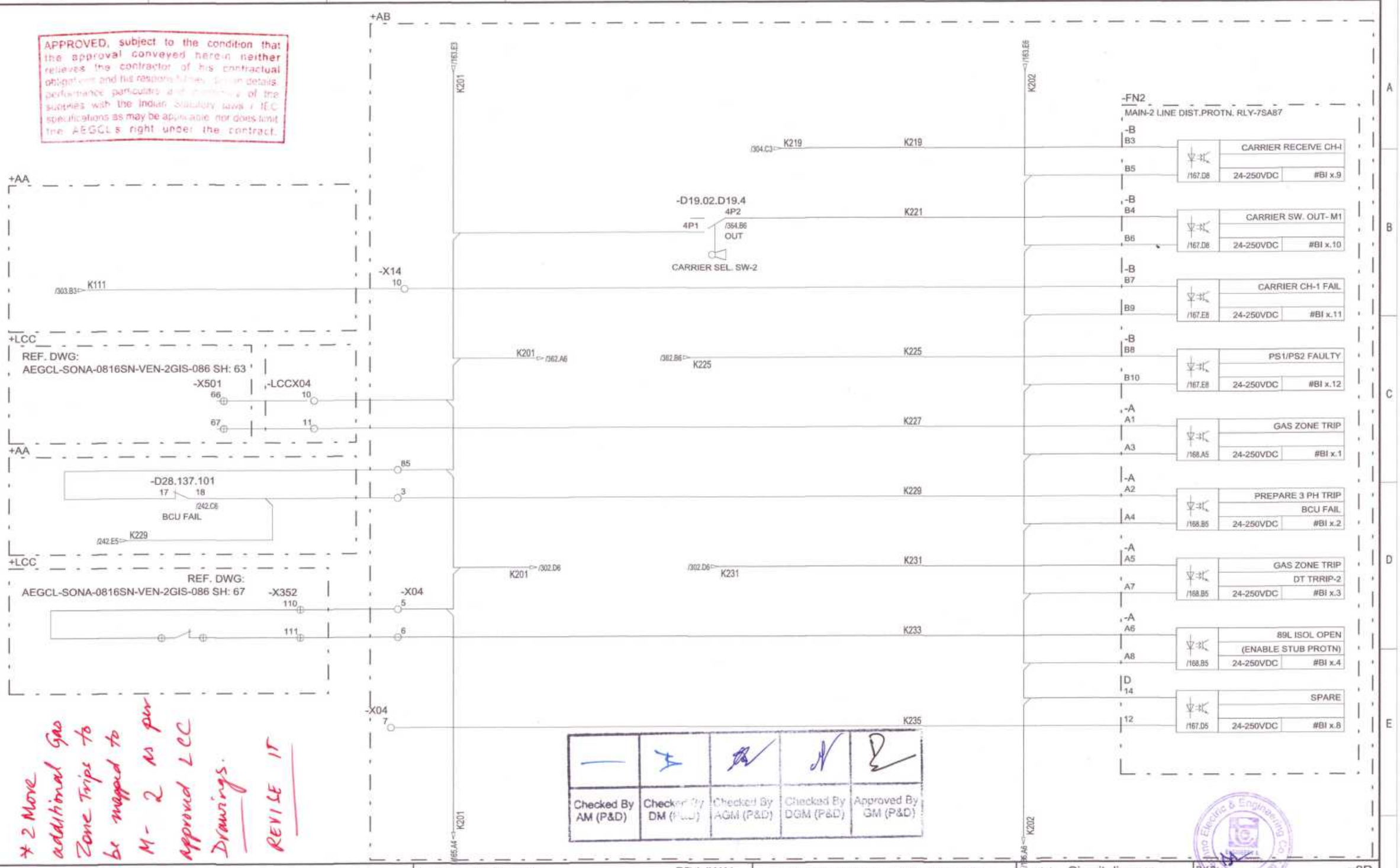

* 2 More additional Gas Zone Trips to be mapped to M- 2 as per Approved LCC Drawings.

REVISE IT

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-2 PROTN. CKTS- BIM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
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+LCC

-X351 -LCCX04 -X14

CB OPEN RPH — 10 / 11 / 12 — 11 / 13 / 12 — K237

CB OPEN YPH — 12 / 14 / 13 — K239

CB OPEN BPH — 13 / 15 / 14 — K241

-X04 8 — K243

9 — K245

+AA

/242.E5 K247 — -X14 15 — K247

/242.E5 K249 — 16 — K249

-1MCB02 (/132.A3) 86A TRIP RLY. MCB

-1MCB01 (/131.B3) I/C DC-1 MCB

-1MCB03 (/132.B4) RED670 M-1 RLY. MCB

-1MCB04 (/132.C3) BCU MCB

-1MCB06 (/132.D4)

-LMCB01 (/131.B7) LCC DC-1 MCB

-X04 10 — K253

11 — K255

-VTMCB01 (/162.F5)

-1MCB07 (/132.C7) TVM MCB

-FN2
MAIN-2 LINE DIST.PROTN. RLY-7SA87

-A A9 / A11	CB OPEN RPH (DR)**	/168.C5	24-250VDC	#BI x.5
-A A10 / A12	CB OPEN YPH (DR)**	/168.C5	24-250VDC	#BI x.6
-A A13 / -B B1	CB OPEN BPH (DR)**	/168.C5	24-250VDC	#BI x.7
-A A14 / -B B2	SPARE	/168.D5	24-250VDC	#BI x.8
-B B3 / B5	SPARE	/168.D5	24-250VDC	#BI x.9
-B B4 / B6	CB MANUAL CLOSE AR CLOSE (SOTF IN)	/168.D5	24-250VDC	#BI x.10
-B B7 / B9	CB AR OPTD (DR)**	/168.E5	24-250VDC	#BI x.11
-B B8 / B10	SPARE	/168.E5	24-250VDC	#BI x.12
D 8 / 10	DC-1 MCB FAIL	/167.C5	24-250VDC	#BI x.6
D 13 / 11	SPARE	/167.C5	24-250VDC	#BI x.7

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)
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400/220kV GIS SONAPUR
128840

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220kV LINE CRP
MAIN-2 PROTN. CKTS- BIM

HITACHI Hitachi Energy India Limited

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Doc. no. 1KHF128840R1113
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Rev. ind. 02
Language en
Sheet 165
n. sheet 165.1

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=2R +AB

K201 /165.E4

K202 /165.E6

-FN2
MAIN-2 LINE DIST.PROTN. RLY-7SA87

30	K257	C 13 / D 1	/167.A5	24-250VDC	SPARE	#BI x.1
31	K279	C 14 / D 2	/167.B5	24-250VDC	SPARE	#BI x.2
32	K285	D 5 / 3	/167.B5	24-250VDC	SPARE	#BI x.3
33	K287	D 6 / 4	/167.B5	24-250VDC	SPARE	#BI x.4
34	K289	D 7 / 9	/167.C5	24-250VDC	SPARE	#BI x.5
35	K291	-B B12	/167.B2	24-250VDC	SPARE	#BI 2.1
36						
56	K293	-B B14	/167.B2	24-250VDC	SPARE	#BI 2.2
57	K295	-B B13 / B11	/167.C2	24-250VDC	SPARE	#BI 2.3

K201 /304.B3

K202 /304.B4

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Techno Electric & Engineering Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no.

Ref.Des.
Rev. ind. 02
Language en
Sheet 165.1
n. sheet 166

1MYN691003-102(A3)REV01

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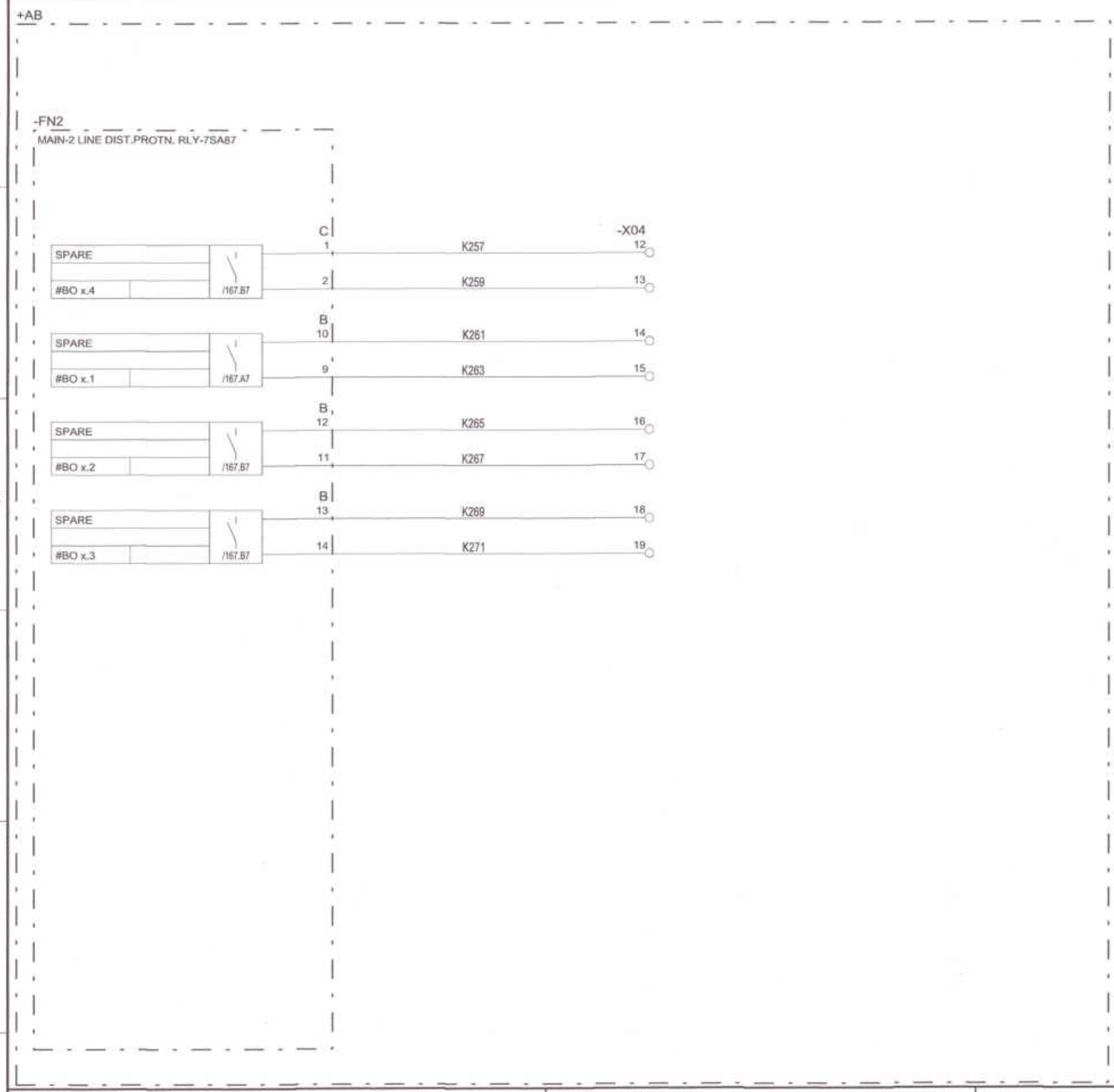

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APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities design details, performance particulars and conformity of the supplies with the Indian Statutory laws / IEC specifications as may be applicable nor does limit the AEGCL's right under the contract.

Electric & Engineering Co. Ltd. Guwahati

Based on			
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Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-2 PROTN. CKTS- BOM

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	166
		n. sheet	167

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+AB

+D.05 -FN2.PS201

Power supply module
PS201
60-250VDC, 115-230VAC, 50/60Hz

-B
B1 (+), B2 (-) /161.B2
60-250VDC
115-230VAC, 50-60Hz

SPARE	#BI 2.1	24-250VDC
SPARE	#BI 2.2	24-250VDC
SPARE	#BI 2.3	24-250VDC
SPARE	#BO 2.1	
SPARE	#BO 2.2	
7SA87 RELAY FAULTY	#Life contact	
Serial port 1	#COM1	-G D-SUB9
Serial port 2	#COM2	-H D-SUB15
Ethernet port	#LAN1	-J RJ45
COM link	#LAN2	-K RJ45

-B: B12, B14, B13, B11, B4, B3, B5, B6, B8, B10, B7, B9

+D.05 -FN2.IO202

Binary I/O and transformer module
IO202
24-250VDC

R PHASE CURRENT	21L	#I1	CT: 1/5A
Y PHASE CURRENT	21L	#I2	CT: 1/5A
B PHASE CURRENT	21L	#I3	CT: 1/5A
NEUTRAL CUREENT		#I4	CT: 1/5A
R PHASE VOLTAGE	21L/67/67N	#V1	VT: 200V
Y PHASE VOLTAGE	21L/67/67N	#V2	VT: 200V
B PHASE VOLTAGE	21L/67/67N	#V3	VT: 200V
		#V4	VT: 200V

A: 1, 2, 3, 4, 5, 6, 7, 8
/162.B7, /162.B7, /162.C7, /162.D7, /162.E7, /162.E7
/165.1.D7, /165.1.D7, /165.1.E7, /153.D2

B: 1, 2, 3, 4, 5, 6, 7, 8

+D.05 -FN2.IO202

Binary I/O and transformer module
IO202
24-250VDC

SPARE	#BI x.1	24-250VDC
SPARE	#BI x.2	24-250VDC
SPARE	#BI x.3	24-250VDC
SPARE	#BI x.4	24-250VDC
SPARE	#BI x.5	24-250VDC
DC-1 MCB FAIL	#BI x.6	24-250VDC
SPARE	#BI x.7	24-250VDC
SPARE	#BI x.8	24-250VDC

C: 13, 14, 5, 6, 9, 10, 11, 12
D: 1, 2, 3, 4, 7, 8, 13, 14

+D.05 -FN2.IO202

Binary I/O and transformer module
IO202
24-250VDC

SPARE	#BO x.1	/165.1.B7
SPARE	#BO x.2	/165.1.B7
SPARE	#BO x.3	/165.1.B7
SPARE	#BO x.4	/165.1.C7
SPARE	#BO x.5	/165.1.C7
3PH TRIP ETO BCU	#BO x.6	/165.E7

B: 10, 9, 12, 11, 13, 14
C: 1, 2, 3, 4, 6, 7, 8, 10
/166.B2, /166.C2, /166.C2, /166.B2, /161.C2, /164.E7, GND

+D.05 -FN2.IO205-1

Analogue input module
IO205
24-250VDC

DIRECT TRIP SEND CH-2 (FOR COUNTER)	#BI x.1	24-250VDC
DT RECEIVE CH-2	#BI x.2	24-250VDC
CARRIER RECEIVE CH-2	#BI x.3	24-250VDC
CARRIER SW. OUT- M2	#BI x.4	24-250VDC
CARRIER CH-2 FAIL	#BI x.5	24-250VDC
M-2 PROTN.IED FAULTY	#BI x.6	24-250VDC
SPARE	#BI x.7	24-250VDC
DT RECEIVE CH-1	#BI x.8	24-250VDC
CARRIER RECEIVE CH-I	#BI x.9	24-250VDC
CARRIER SW. OUT- M1	#BI x.10	24-250VDC
CARRIER CH-1 FAIL	#BI x.11	24-250VDC
PS1/PS2 FAULTY	#BI x.12	24-250VDC

-A: A1, A3, A2, A4, A5, A7, A6, A8, A9, A11, A10, A12, A13, A14
-B: B1, B2, B3, B5, B4, B6, B7, B9, B8, B10
/163.B7, /163.B7, /163.C7, /163.C7, /163.C7, /163.D7, /163.D7, /163.E7, /164.B7, /164.B7, /164.C7, /164.C7

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities design details, workmanship particulars and conformity of the supplies with the Indian Statutory laws / IEC applications as may be applicable, nor does limit the AEGCL's right under the contract.

Assam Electric & Engineering Co. Ltd. Guwahati

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Rev.	Revision note	Date	Name

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-2 PROTN. CKT-MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 167
n. sheet 168

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+AB

+D.05 -FN2.IO205-1
Analogue input module
IO205
24-250VDC

Signal	Terminal
21/Z2/Z3/O/V/SOTF/STUB/DEF_M1 (TO 86B) #BO x.1	-B B12 / B11
OV/DEF OPTD-DTS CH-II #BO x.2	-B B14 / B13
21/Z2/O/V/SOTF/STUB/DEF_M1 (TO 86A) #BO x.3	-C C2 / C1
R PH TRIP GR-A 1 PH TRIP CKT #BO x.4	-C C4 / C3
Y PH TRIP GR-A 1 PH TRIP CKT #BO x.5	-C C6 / C5
B PH TRIP GR-A 1 PH TRIP CKT #BO x.6	-C C8 / C7
SPARE #BO x.7	-C C10 / C9
SPARE #BO x.8	-C C12 / C11

+D.05 -FN2.IO205-1
Analogue input module
IO205
24-250VDC

Signal	Terminal
/264.E7 CARRIER SEND CH-I #BO x.9	-C C14 / C13
/301.C2 CARRIER SEND CH-II #BO x.10	-D D2 / D1
/262.D2 OV/DEF OPTD - DTS CH-I #BO x.11	-D D4 / D3
/261.E2 SPARE #BO x.12	-D D6 / D5
/261.E2 CB TC-2 TRIP RPH #BO x.13	-D D8 / D7
/261.E2 R PH TRIP GR-B 1 PH TRIP CKT #BO x.14	-D D10 / D9
Y PH TRIP GR-B 1 PH TRIP CKT #BO x.15	-D D12 / D11
B PH TRIP GR-B 1 PH TRIP CKT #BO x.16	-D D14 / D13
	GND

+D.05 -FN2.IO205-2
Analogue input module
IO205
24-250VDC

Signal	Terminal
/304.D2 GAS ZONE TRIP #BI x.1 24-250VDC	-A A1 / A3
/304.D2 PREPARE 3 PH TRIP BCU FAIL #BI x.2 24-250VDC	A2 / A4
/302.B5 GAS ZONE TRIP DT TRRIP-2 #BI x.3 24-250VDC	A5 / A7
/164.E7 89L ISOL OPEN (ENABLE STUB PROTN) #BI x.4 24-250VDC	A6 / A8
/263.E3 CB OPEN RPH (DR)** #BI x.5 24-250VDC	A9 / A11
/263.E3 CB OPEN YPH (DR)** #BI x.6 24-250VDC	A10 / A12
/263.E3 CB OPEN BPH (DR)** #BI x.7 24-250VDC	-A A13 / -B B1
/161.B2 SPARE #BI x.8 24-250VDC	-A A14 / -B B2
SPARE #BI x.9 24-250VDC	-B B3 / B5
/165.D7 CB MANUAL CLOSE AR CLOSE (SOTF IN) #BI x.10 24-250VDC	B4 / B6
/165.D7 CB AR OPTD (DR)** #BI x.11 24-250VDC	B7 / B9
/165.E7 SPARE #BI x.12 24-250VDC	B8 / B10

+D.05 -FN2.IO205-2
Analogue input module
IO205
24-250VDC

Signal	Terminal
/164.C7 GENERAL TESTING TO MAIN-1 RLY #BO x.1	-B B12 / B11
/164.D7 3-PH TRIP MAIN #BO x.2	-B B14 / B13
/164.D7 START A/R #BO x.3	-C C2 / C1
/164.E7 BLOCK A/R #BO x.4	-C C4 / C3
/165.B7 3PHASE PROTN. OPTD. TO 86A TRIP RELAY #BO x.5	-C C6 / C5
/165.B7 3PHASE PROTN. OPTD. TO 86B TRIP RELAY #BO x.6	-C C8 / C7
/165.C7 SPARE #BO x.7	-C C10 / C9
/165.C7 SPARE #BO x.8	-C C12 / C11
/165.C7	

+D.05 -FN2.IO205-2
Analogue input module
IO205
24-250VDC

Signal	Terminal
SPARE #BO x.9	-C C14 / C13
/225.D2 SPARE #BO x.10	-D D2 / D1
/225.C2 SPARE #BO x.11	-D D4 / D3
/225.D2 SPARE #BO x.12	-D D6 / D5
/250.A2 SPARE #BO x.13	-D D8 / D7
/250.D2 SPARE #BO x.14	-D D10 / D9
SPARE #BO x.15	-D D12 / D11
SPARE #BO x.16	-D D14 / D13
	GND
/161.C2	

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Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Techno Electric & Engineering Co. Ltd. Guwahati

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02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

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Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP MAIN-2 PROTN. CKT-MASTER BLOCK

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	168
		n. sheet	169

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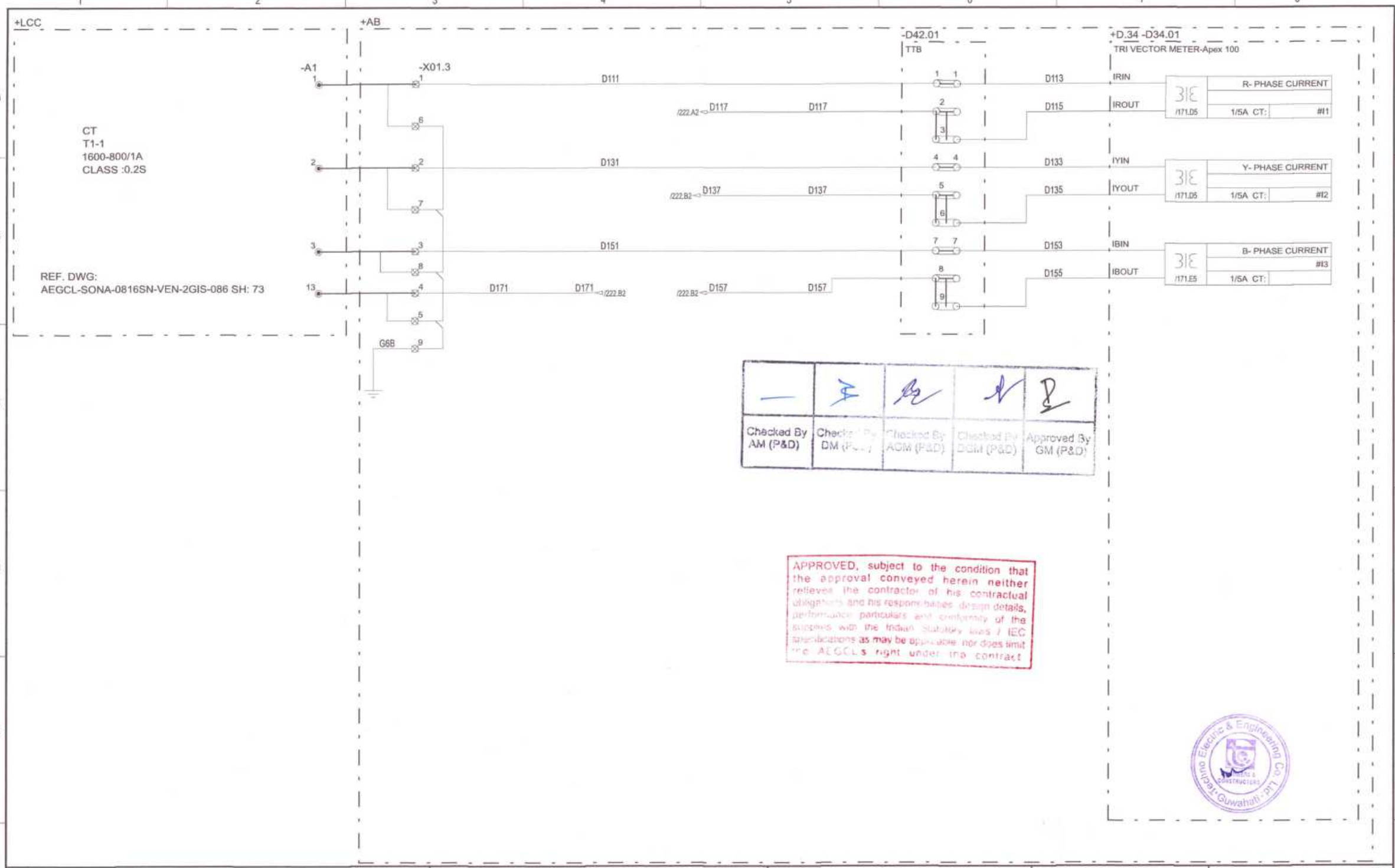

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1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL <LINE>-TIE-LINE TVM CIRCUIT

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	169
		n. sheet	170

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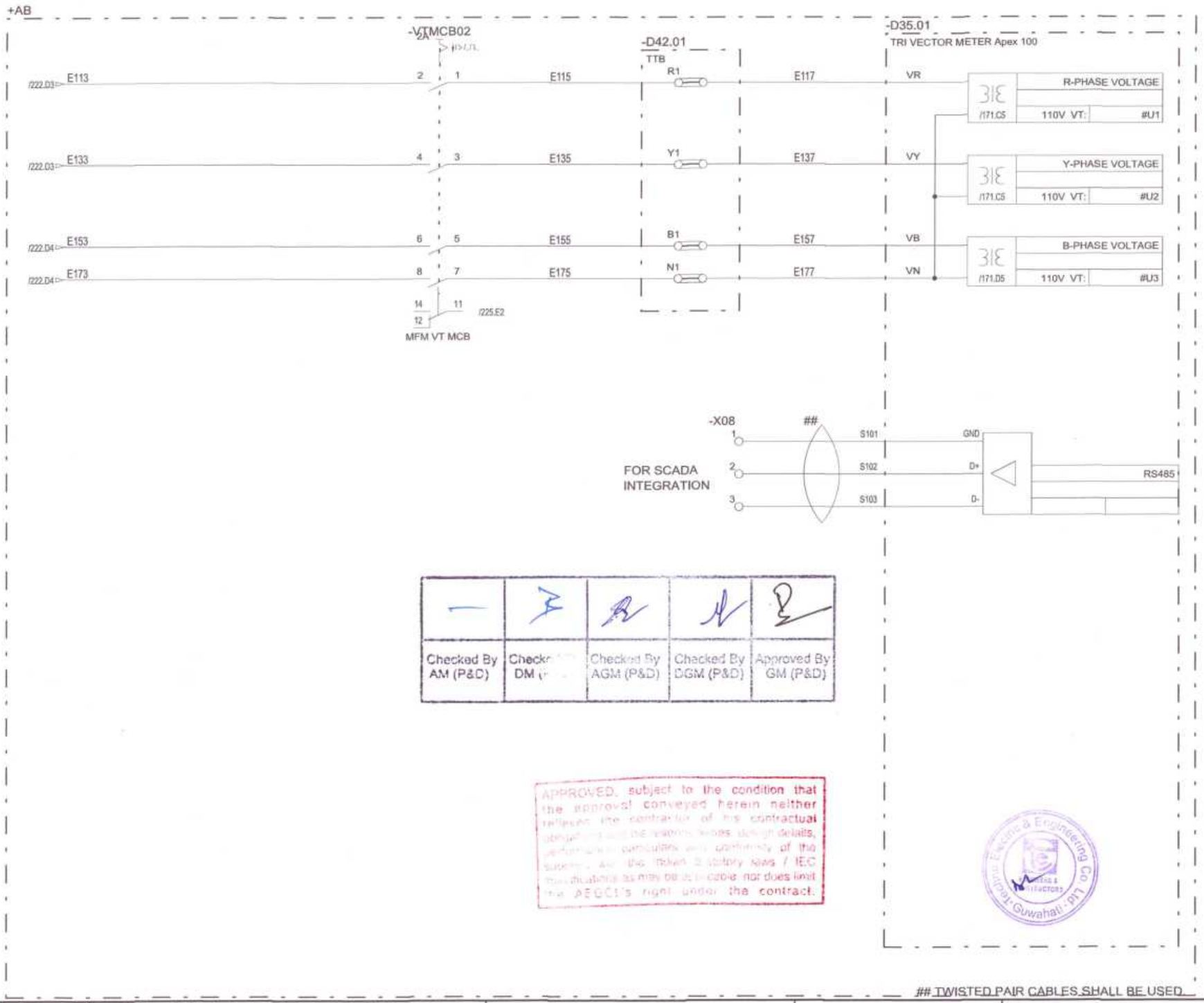

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1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
<LINE>-TIE-LINE
TVM CIRCUIT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 170
n. sheet 171

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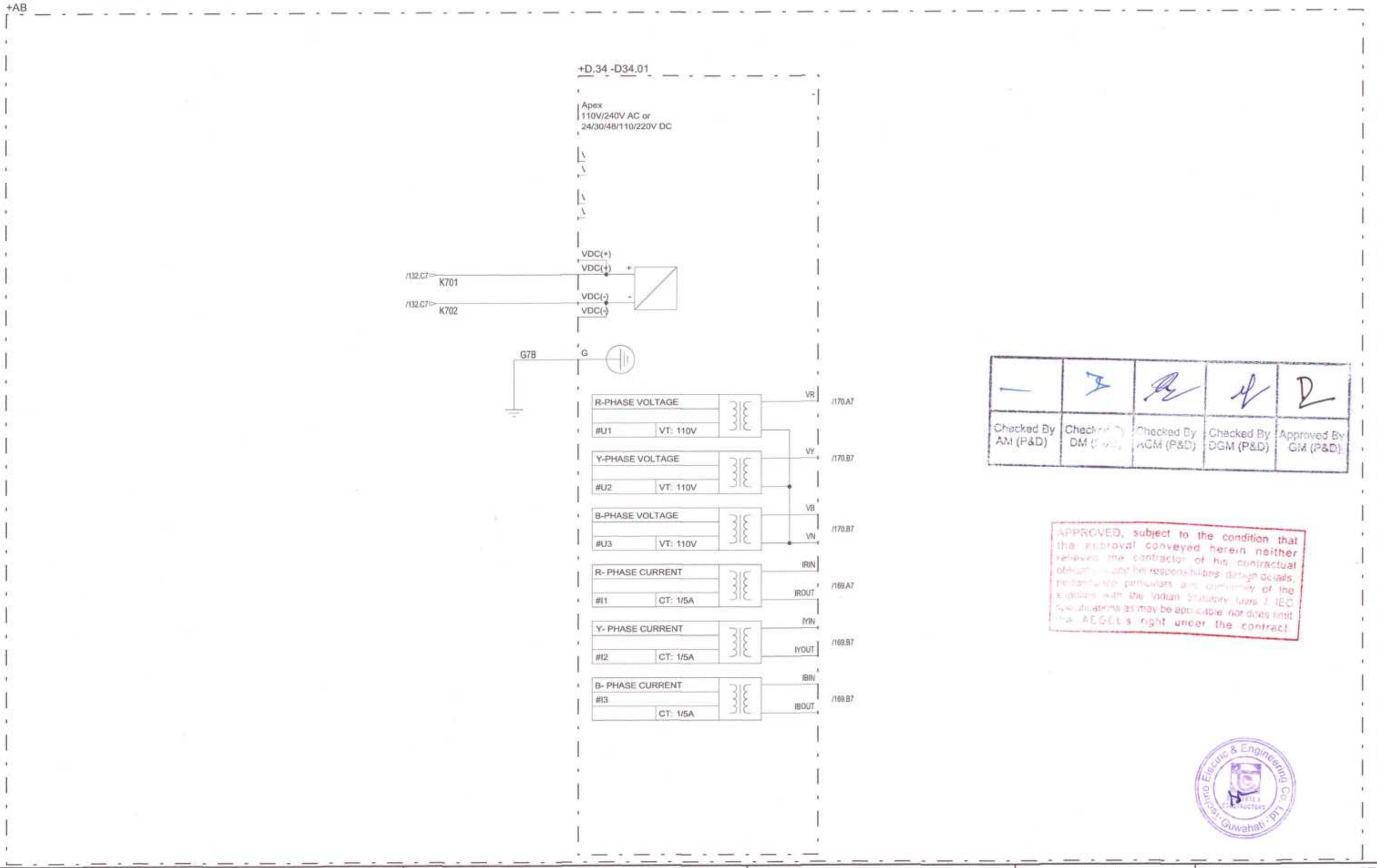

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Assam Electric & Engineering Co. Pvt. Ltd. Guwahati

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Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL <LINE>-TIE-LINE TVM MASTER BLOCK

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
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Doc. no.	1KHF128840R1113	Sheet	171
		n. sheet	221

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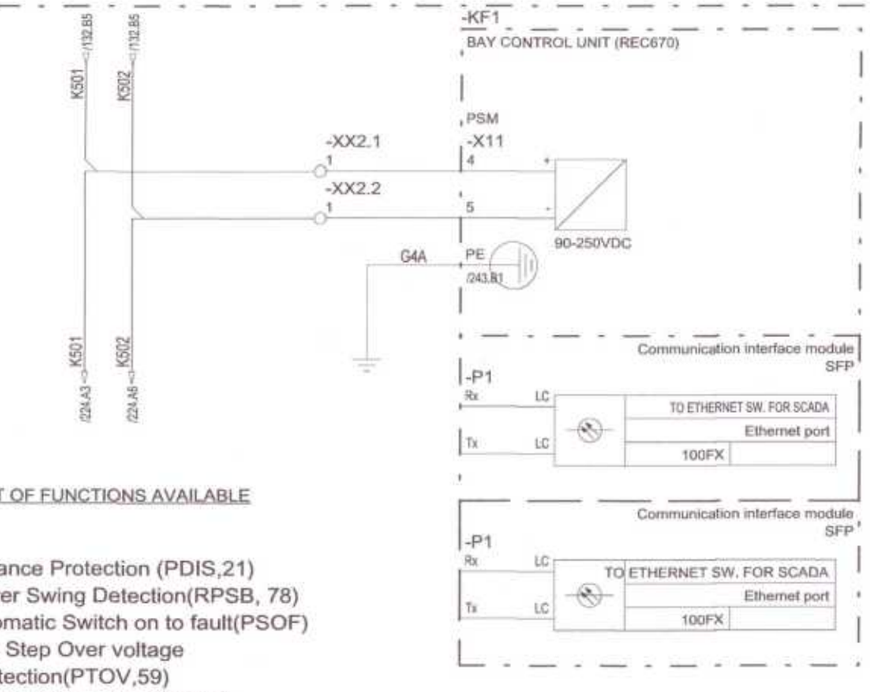

LIST OF FUNCTIONS AVAILABLE

- Distance Protection (PDIS,21)
- Power Swing Detection(RPSB, 78)
- Automatic Switch on to fault(PSOF)
- Two Step Over voltage Protection(PTOV,59)
- Fuse fail supervision(RFUF)
- Scheme Communication(PSCH,78)
- Four step residual O/C protection (PTOC-51/67)
- Tripping Logic(PTRC,94)-2 Instances
- Broken conductor check (PTOC,46)
- Four step phase O/C protection (PTOC-51/67)
- Disturbance Recorder(RDRE)
- Fault Locator(RFLO)
- Event Recorder (RDRE)
- Current Reversal
- Week end Infeed logics

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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+D.12 -KF1
Indication HMI - RED LED

1	86A OPTD
2	86B OPTD
3	BB/LBB OPTD
4	SF6 TRP/CLS BLK
5	DT SEND CH-1
6	DT SEND CH-2
7	CARRIER SEND CH-1
8	CARRIER SEND CH-2
9	MAIN-1 OPERATED
10	MAIN-2 OPERATED
11	AR CLOSE CMD
12	
13	
14	
15	

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

+D.12 -KF1
Indication HMI - YELOW LED

1	SPRING NOT CHARGE
2	SF6 LOW ALARM
3	TC FAULTY
4	FUSE FAIL
5	AR UNSUCESSFULL
6	AR BLOCK
7	AR NOT READY
8	RED670 UNHEALTHY
9	RES670 UNHEALTHY
10	P545 UNHEALTHY
11	AR SEL S/W OUT
12	SYNC OK
13	
14	
15	

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

+D.12 -KF1
Indication HMI - GREEN LED

1	Q1 I/L OK
2	Q2 I/L OK
3	Q9 I/L OK
4	Q52 I/L OK
5	Q53 I/L OK
6	Q8 I/L OK
7	Q0 I/L OK
8	
9	
10	
11	
12	
13	
14	
15	

O: Open
I: Closed
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Electric & Engineering Co. Ltd. Guwahati

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-PSM

HITACHI Hitachi Energy India Limited

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Doc. no. 1KHF128840R1113

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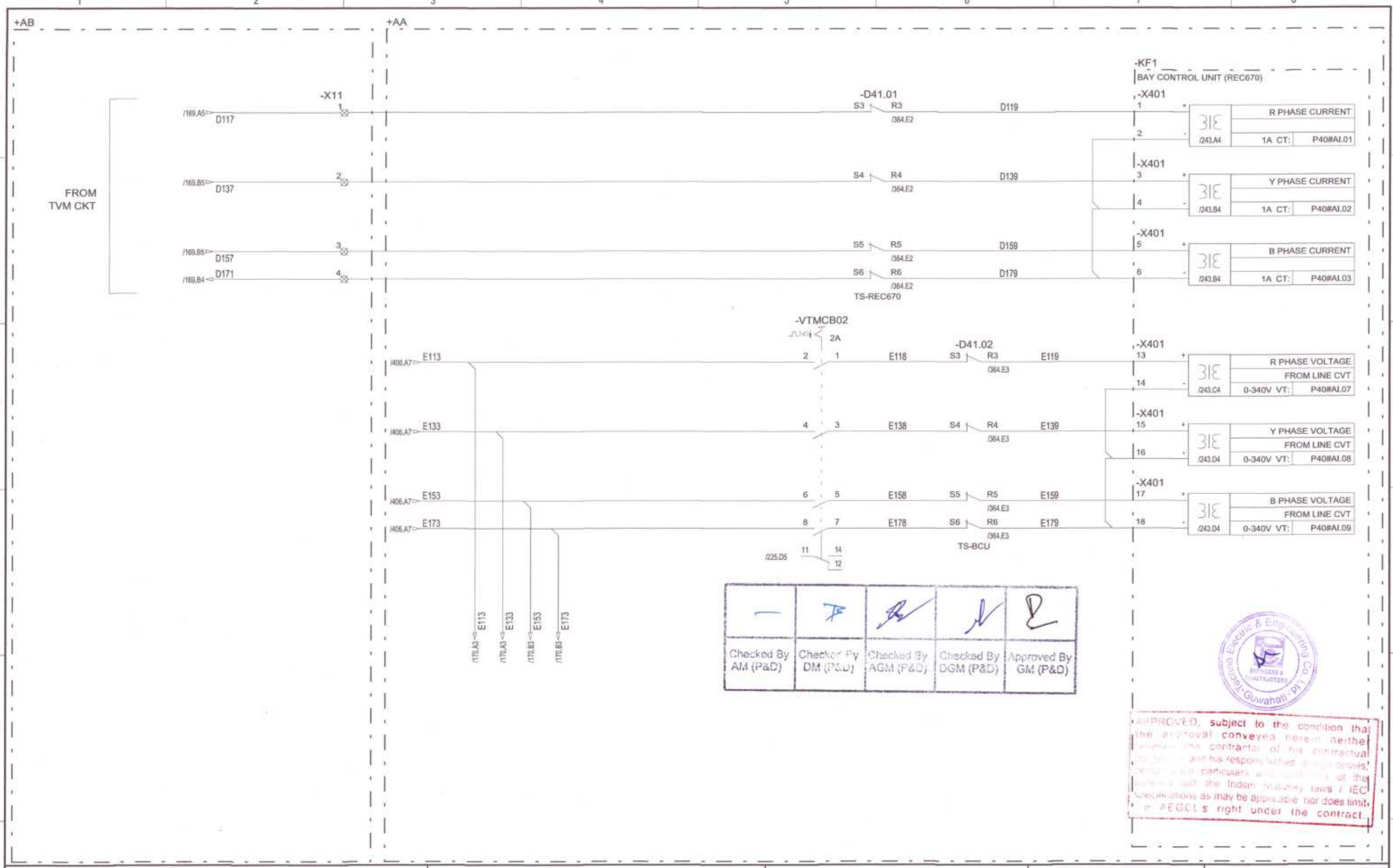

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Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-TRM

HITACHI — Hitachi Energy India Limited

Doc. kind	Circuit diagram	Ref.Des.	=2R
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Hitachi Electric & Engineering Co. Ltd. Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-TRM

HITACHI Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	223
		n. sheet	224

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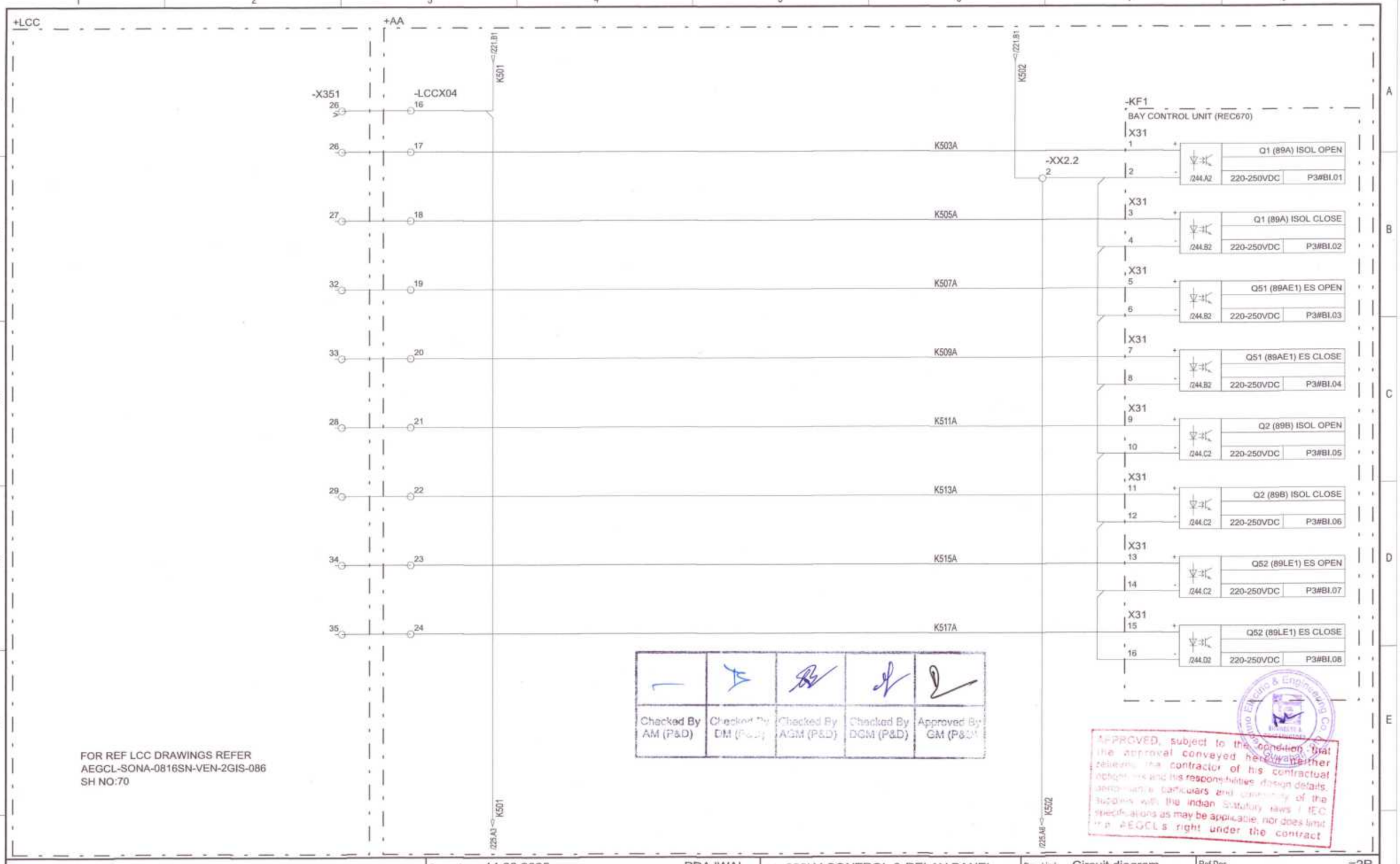

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Rev.	Revision note	Date	Name

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Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL
220kV LINE CRP
REC670 PROTN.CKTS-BIM

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	224
		n. sheet	225

The product, its design, utilization, and documentation of as-built as-planned as-manufactured as-installed as-commissioned as-operated as-maintained as-serviced as-repaired as-upgraded as-decommissioned as-recycled as-scrapped as-recycled as-processed as-produced as-delivered as-shipped as-received as-stored as-transported as-used as-consumed as-produced as-processed as-recycled as-scrapped as-recycled as-decommissioned as-operated as-maintained as-serviced as-repaired as-upgraded as-installed as-commissioned as-planned as-built as-manufactured

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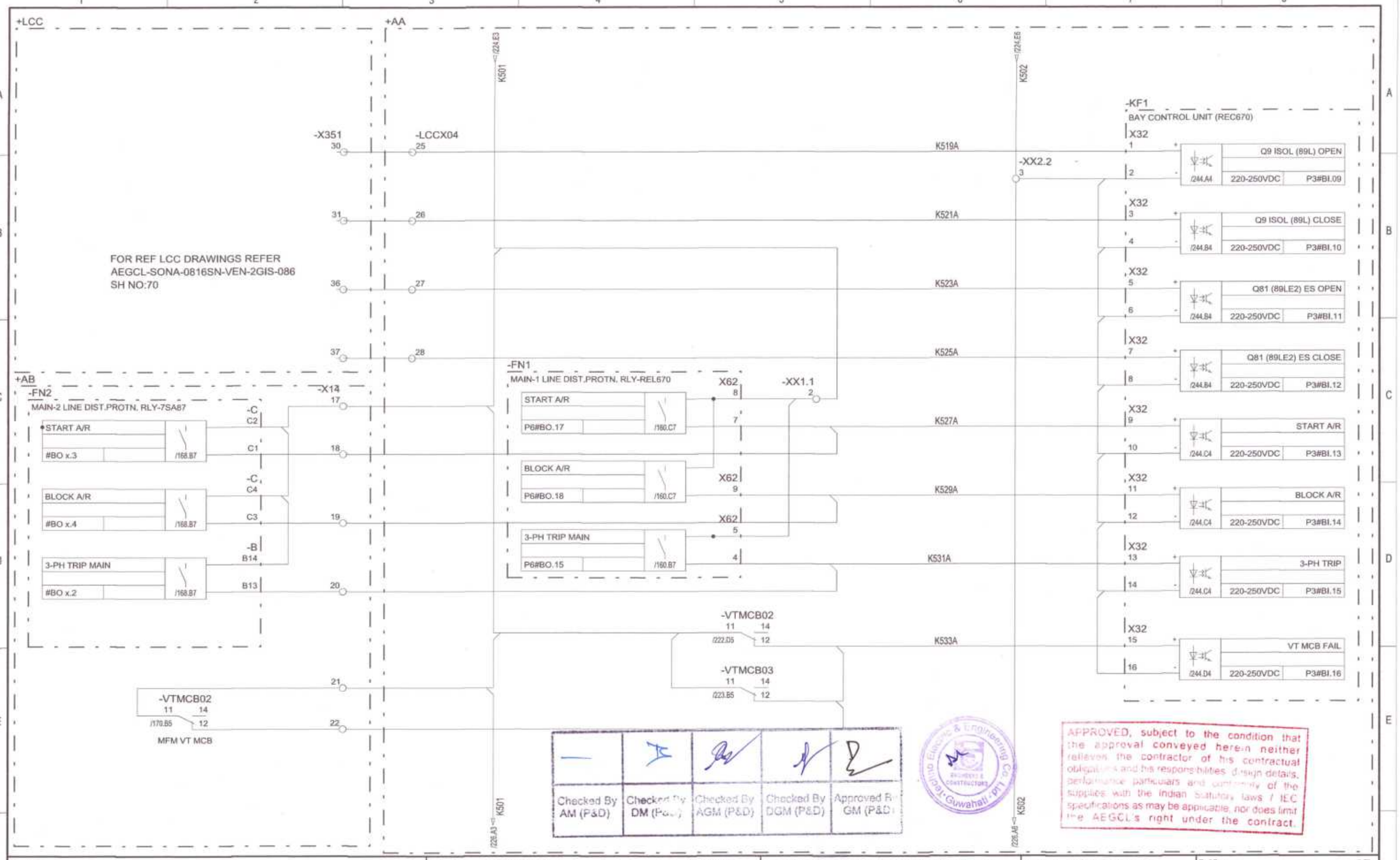

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HITACHI Hitachi Energy India Limited

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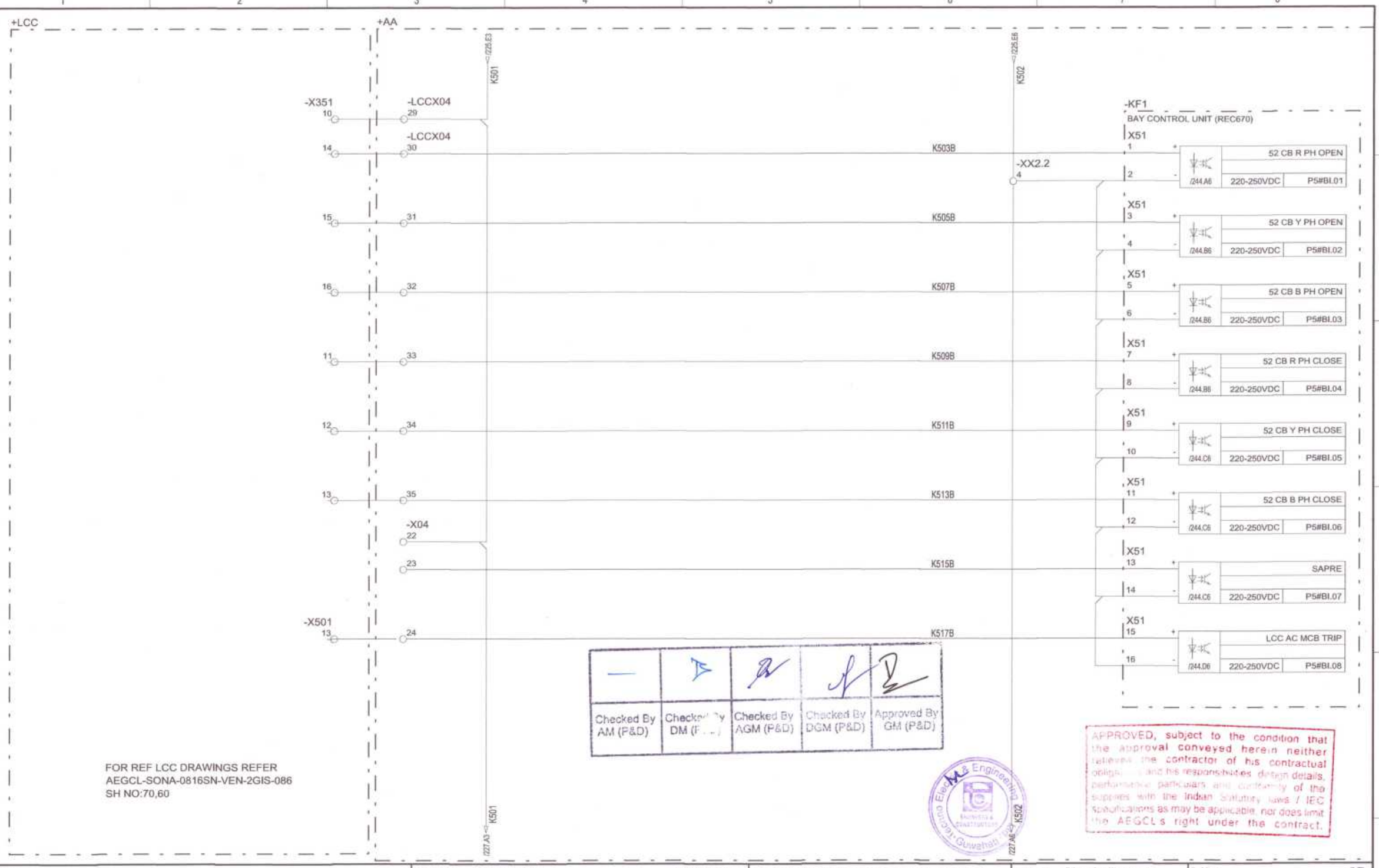

FOR REF LCC DRAWINGS REFER
AEGCL-SONA-0816SN-VEN-2GIS-086
SH NO:70,60

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HITACHI Hitachi Energy India Limited

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DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 226
n. sheet 227

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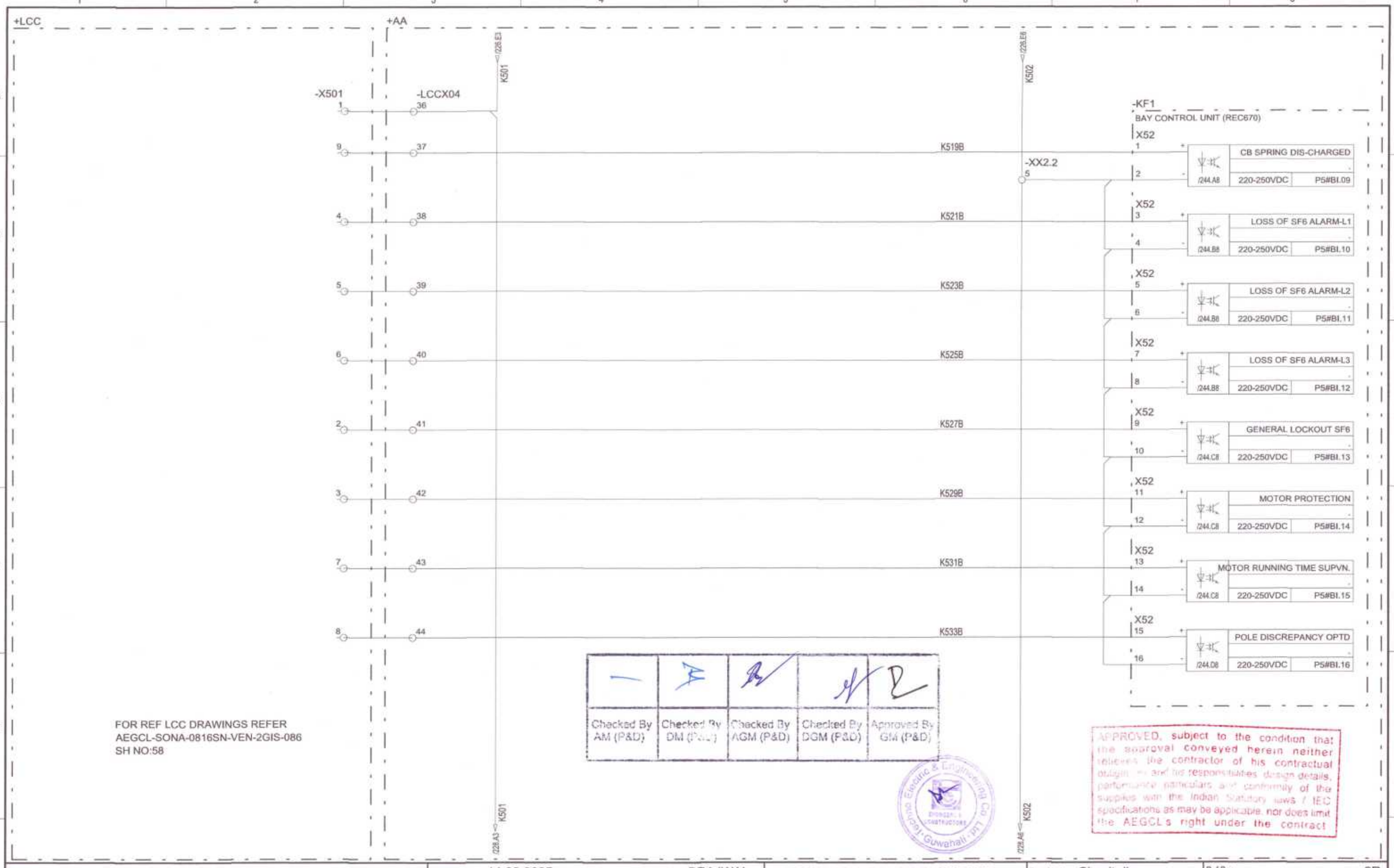

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HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	DCC	EFS
Resp. dept.	PG-GAS	Rev. ind.	02
Doc. no.	1KHF128840R1113		
Ref.Des.	=2R		
Language	en		
Sheet	227		
n. sheet	228		

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+AA

/227.E3 K501 — /227.E6 K502

-D23.119.101 (25 / 26, /266.D5) — TC-1_RPH SUPERVISION — K503C
-D23.125.101 (25 / 26, /266.D5) — TC-1_YPH SUPERVISION — K505C
-D23.131.101 (25 / 26, /266.E5) — TC-1_BPH SUPERVISION — K507C
-D23.119.301 (25 / 26, /267.C5) — TC-2_RPH SUPERVISION — K509C
-D23.125.301 (25 / 26, /267.D5) — TC-2_YPH SUPERVISION — K511C
-D23.131.301 (25 / 26, /267.E5) — TC-2_BPH SUPERVISION — K513C
-D19.01 (1P1, 1P2, /364.A1, C) — K515C
-D19.01 (1P3, 1P4, /364.A1, T) — K517C
CB CONTROL SWITCH

-XX2.2 (6)

-KF1
BAY CONTROL UNIT (REC670)

X71			
1 / 2	CB TC-1 R-PH FAULTY	220-250VDC	P7#BI.01
3 / 4	CB TC-1 Y-PH FAULTY	220-250VDC	P7#BI.02
5 / 6	CB TC-1 B-PH FAULTY	220-250VDC	P7#BI.03
7 / 8	CB TC-2 R-PH FAULTY	220-250VDC	P7#BI.04
9 / 10	CB TC-2 Y-PH FAULTY	220-250VDC	P7#BI.05
11 / 12	CB TC-2 B-PH FAULTY	220-250VDC	P7#BI.06
13 / 14	CB MANUAL CLOSE COMMAND	220-250VDC	P7#BI.07
15 / 16	CB MANUAL OPEN COMMAND	220-250VDC	P7#BI.08

+AB

/229.D4 K501 — K533C /229.D5
-X14 23 — -X14 24

-D28.101.101 (228 / 227, /404.B3 / 226) — UNDER VOLTAGE RELAY CORE-1
-D28.101.301 (228 / 227, /404.D8 / 226) — UNDER VOLTAGE RELAY CORE-3
-D28.125.101 (228 / 227, /404.B6 / 226) — UNDER VOLTAGE RELAY CORE-2
-D28.137.101 (228 / 227, /404.D6 / 226) — UNDER VOLTAGE RELAY CORE-2
-D28.113.101 (228 / 227, /404.D3 / 226) — UNDER VOLTAGE RELAY CORE-1
-D28.149.101 (228 / 227, /404.B8 / 226) — UNDER VOLTAGE RELAY CORE-3

/229.A3 K501 — /229.A6 K502

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Electric & Engineering Co. Ltd. Guwahati

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-BIM

HITACHI — Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 228
n. sheet 229

1MYN691003-102(A3)REV01

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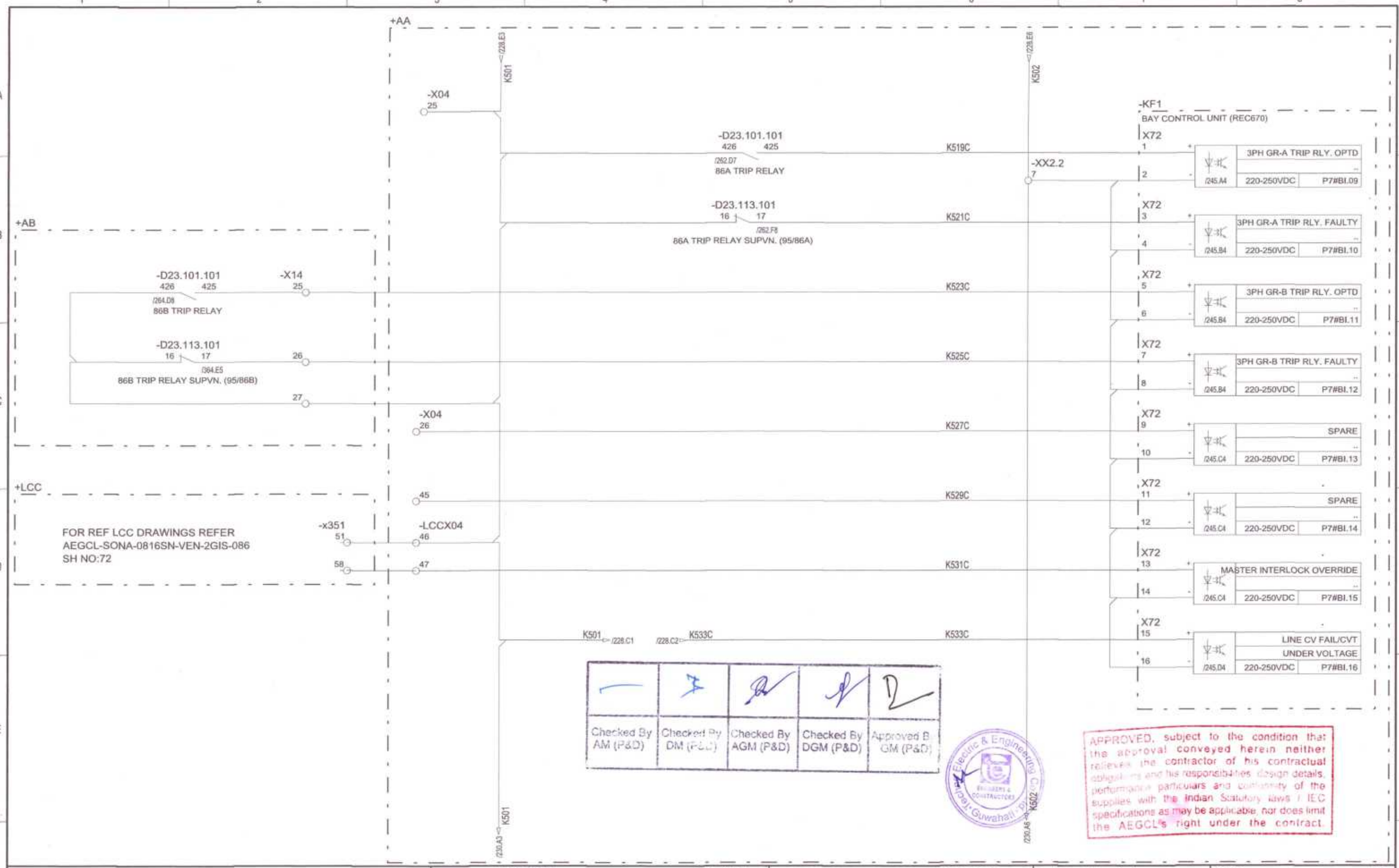

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Electric & Engineering Co. Guwahati-06 Engineers & Contractors

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Approved 14.08.2025 THEJASWINI AR
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400/220kV GIS SONAPUR
128840

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REC670 PROTN.CKTS-BIM

HITACHI Hitachi Energy India Limited

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Language en
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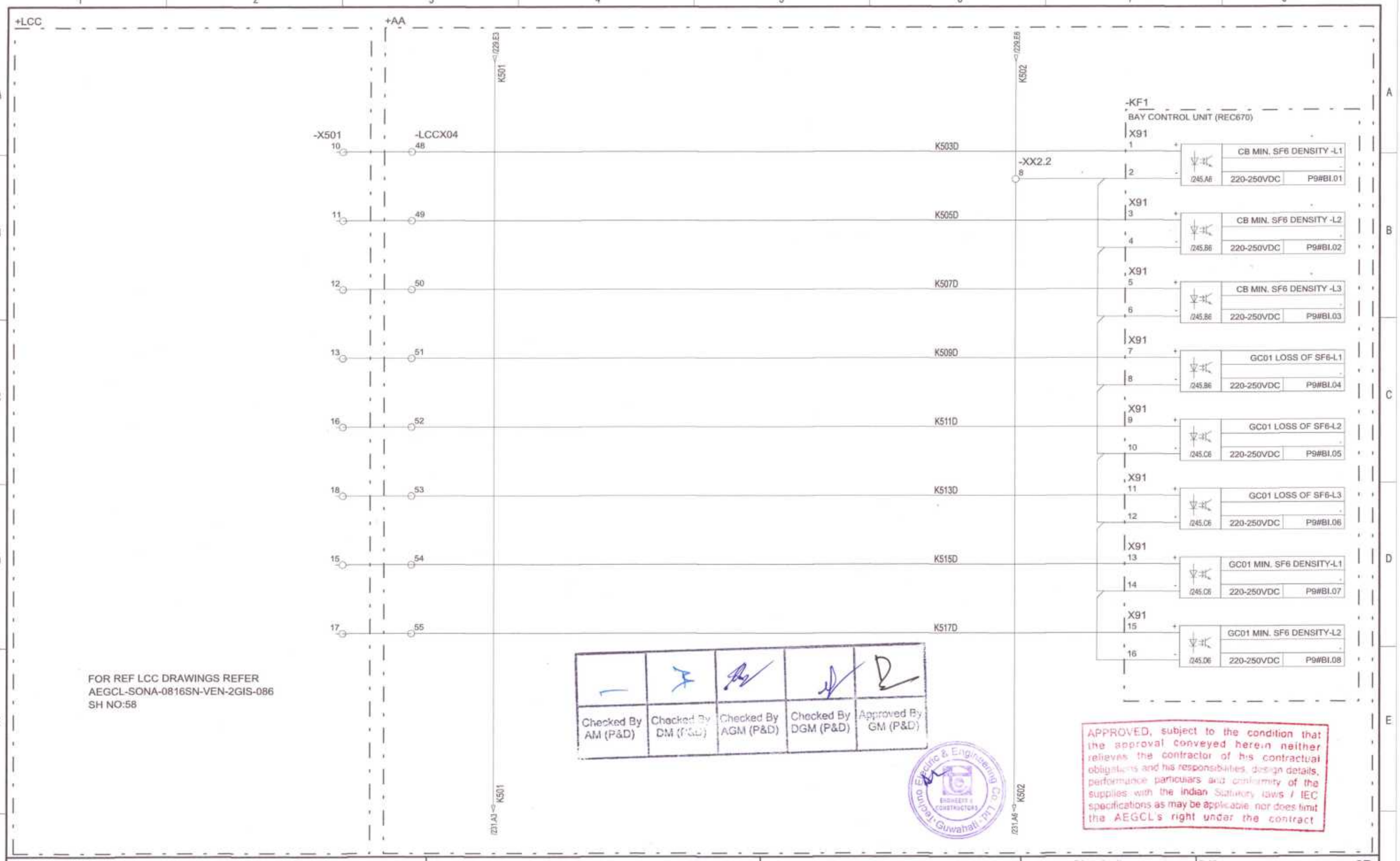

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HITACHI — Hitachi Energy India Limited

Doc. kind. Circuit diagram
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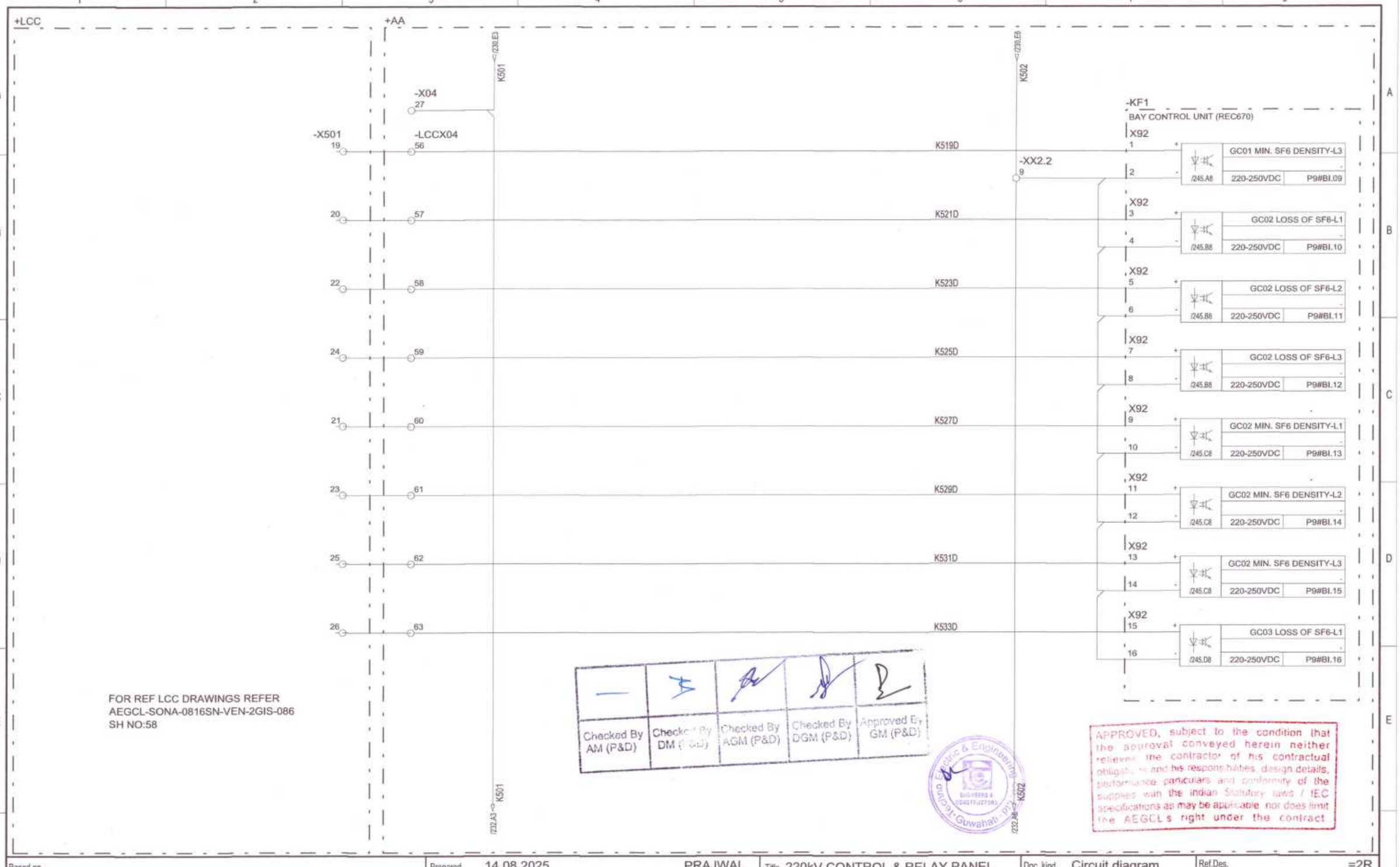

FOR REF LCC DRAWINGS REFER
AEGCL-SONA-0816SN-VEN-2GIS-086
SH NO:58

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Assam Electricity Grid Corporation Ltd. Guwahati — Engineers & Constructors

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HITACHI — Hitachi Energy India Limited

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Doc. no.	1KHF128840R1113	Sheet	231
		n. sheet	232

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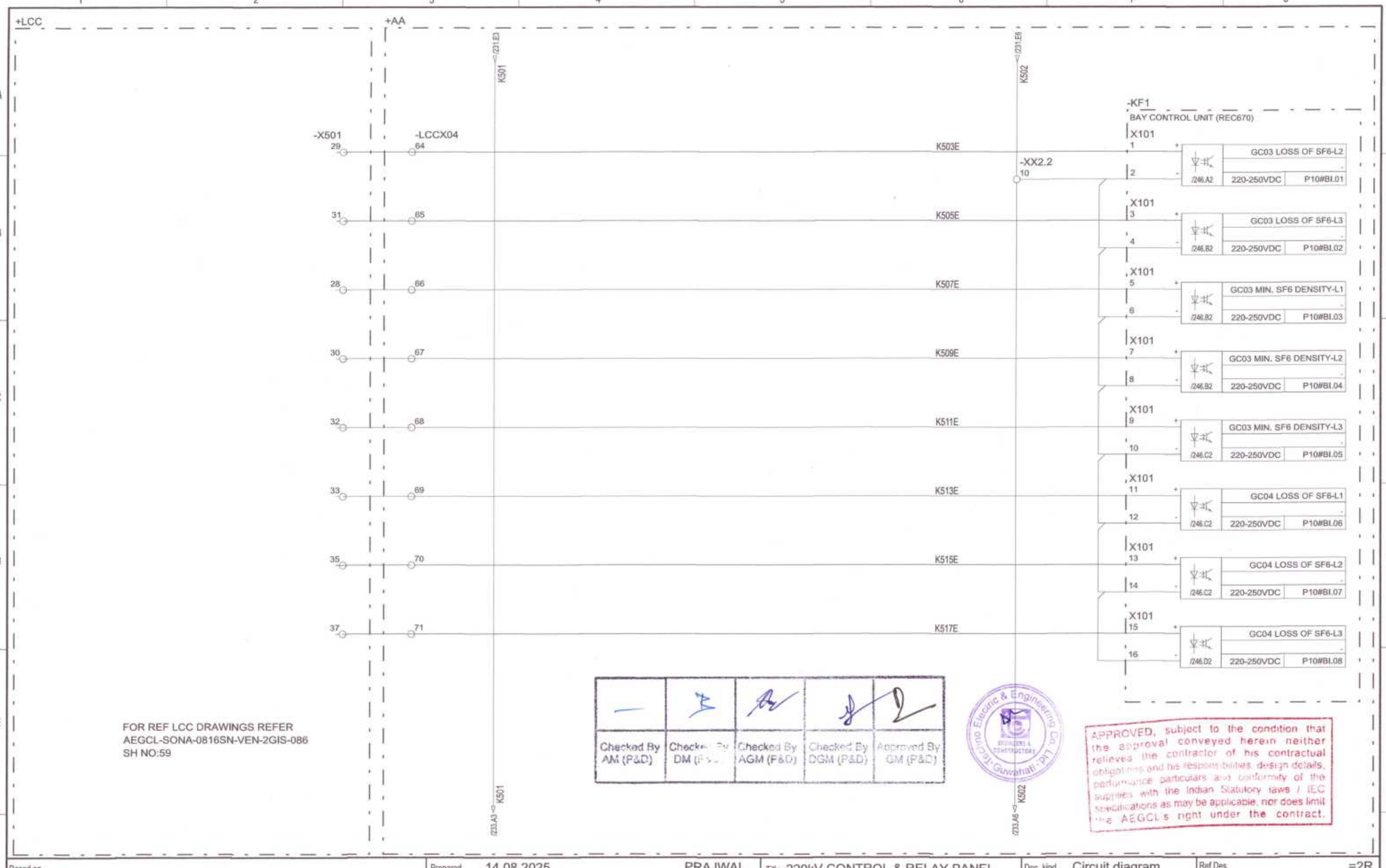

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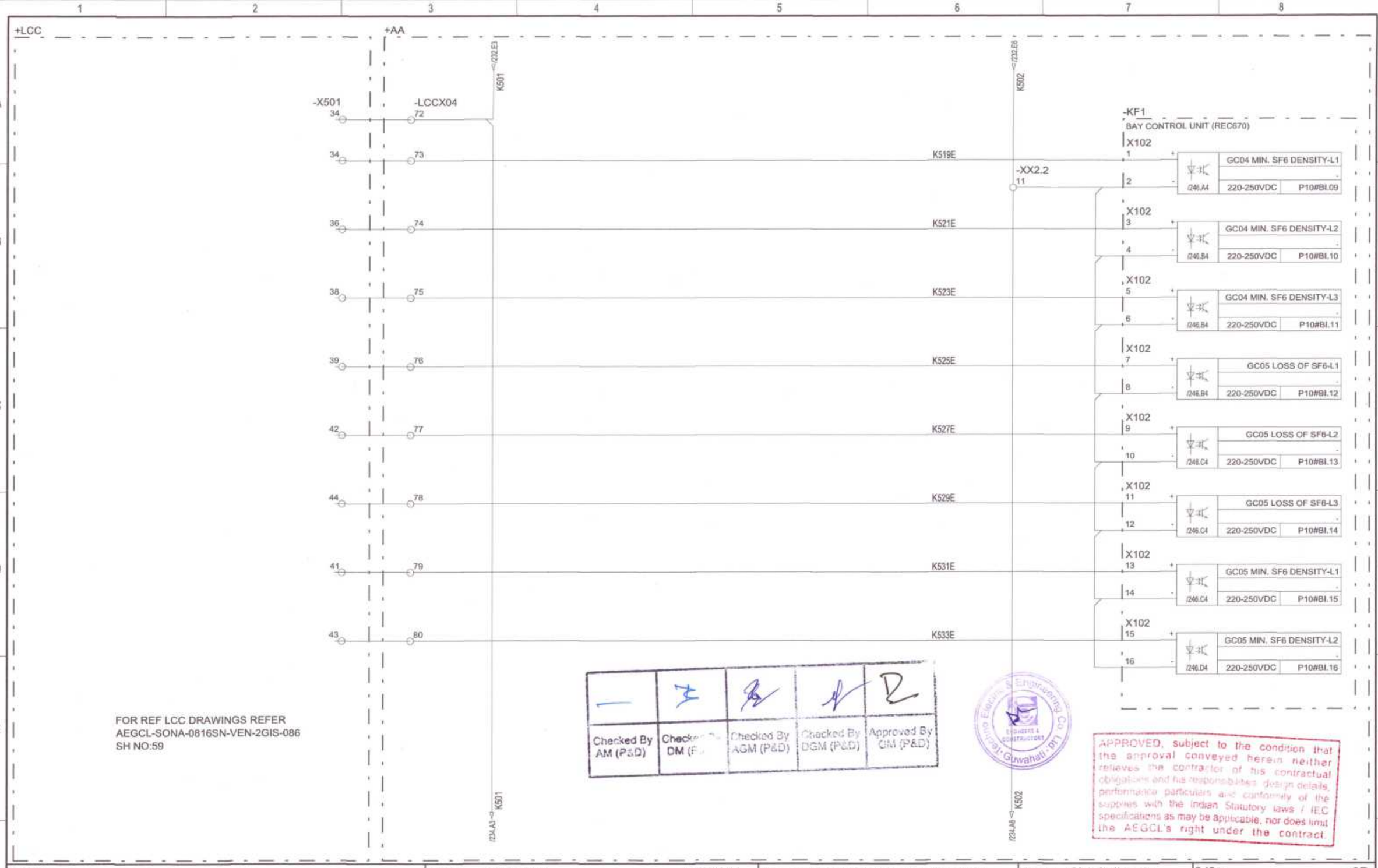

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+LCC

+AA

K501 /233.E3

K502 /233.E6

-KF1
BAY CONTROL UNIT (REC670)

43	-LCCX04 81	-X04 28	K503F	-XX2.2 12	X111 1	2	/246.A6	GC05 MIN. SF6 DENSITY-L3	220-250VDC	P11#BI.01
	29		K505F		X111 3	4	/246.B6	SPARE	220-250VDC	P11#BI.02
	30		K507F		X111 5	6	/246.B6	SPARE	220-250VDC	P11#BI.03
	31		K509F		X111 7	8	/246.B6	SPARE	220-250VDC	P11#BI.04
46	-LCCX04 82		K511F		X111 9	10	/246.C6	GC06 LOSS OF SF6##	220-250VDC	P11#BI.05
47	83		K513F		X111 11	12	/246.C6	GC06 MIN. SF6 DENSITY##	220-250VDC	P11#BI.06
48	84		K515F		X111 13	14	/246.C6	GC07 LOSS OF SF6##	220-250VDC	P11#BI.07
49	85		K517F		X111 15	16	/246.D6	GC07 MIN. SF6 DENSITY##	220-250VDC	P11#BI.08

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Electric & Engineering Co. Ltd. Guwahati

/235.A3 K501

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FOR D04 BAY

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HITACHI
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+LCC

+AA

-X501

-LCCX04

57 — 86

57 — 87 — K519F

61 — 88 — K521F

63 — 32 — K523F

64 — 89 — K525F

66&67 — 90 — K527F

58 — 91 — K529F

59 — 92 — K531F

K501 =/234.E3

K502 =/234.E8

-XX2.2 13

-KF1

BAY CONTROL UNIT (REC670)

X112 1 (+) / 2 (-)	/246.A8	LCC DC-1 INFEED MCB FAIL	220-250VDC P11#BI.09
X112 3 (+) / 4 (-)	/246.B8	LCC DC-2 INFEED MCB FAIL	220-250VDC P11#BI.10
X112 5 (+) / 6 (-)	/246.B8	LCC DC DISTRIBUTION MCB FAIL	220-250VDC P11#BI.11
X112 7 (+) / 8 (-)	/246.B8	LCC MOTOR VOLTAGE MCB FAIL	220-250VDC P11#BI.12
X112 9 (+) / 10 (-)	/246.C8	LCC ANNUNCIATOR -1/2 FAULTY	220-250VDC P11#BI.13
X112 11 (+) / 12 (-)	/246.C8	DC-2 MCB TRIP/FAIL (FOR EVENT TO SCADA)	220-250VDC P11#BI.14
X112 13 (+) / 14 (-)	/246.C8	DC-1 MCB TRIP/FAIL (FOR EVENT TO SCADA)	220-250VDC P11#BI.15
X112 15 (+) / 16 (-)	/246.D8	CRP AC MCB TRIP/FAIL (FOR EVENT TO SCADA)	220-250VDC P11#BI.16

FOR REF LCC DRAWINGS REFER
AEGCL-SONA-0816SN-VEN-2GIS-086
SH NO:59

+AB

-X14 28

-X14 29

-ACMCB
11 — 14
/141.C8 — 12
AC MCB

-D23.155.101
16 — 17
/141.E6
AC SUPVN

-D28.155.101
16 — 17
/141.E3
AC SUPVN

-ACMCB
11 — 14
/141.C3 — 12
AC MCB

K533F

K501 /236.A3

K502 /236.A6

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Hitachi Electrical & Engineering Co. Ltd. Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-BIM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 235
n. sheet 236

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+LCC

+AA

+AB

-X501 50 — -LCCX04 93
51 — 94
52 — 95
53 — 96

-X04 33

-X14 30

-X14 31

-2MCB02 11 14 /132.E7 12
86B TRIP RLY. MCB

-2MCB01 11 14 /132.E6 12
P545 M-2 RLY. MCB

K501 /235.E3

-D28.101.301 17 16 /131.E6
INCOMER DC-1 SUPVN. (80A)

-D28.113.3011 17 16 /131.E7
INCOMER DC-2 SUPVN. (80B)

-2MCB01 11 14 /131.D3 12
I/C DC-2 MCB

-2MCB06 11 14 /132.F4 12

-2MCB08 11 14 /133.C4 12
ETH. SW. MCB

-2MCB09 11 14 /133.D4 12
ETH. SW. MCB

-D28.113.3011 26 27 /131.F7
INCOMER DC-2 SUPVN. (80B)

/237.A3 K501

K503G
K505G
K507G
K509G
K511G
K513G
K515G
K517G

K502 /235.E6

-XX2.2 14

/237.A6 K502

-KF1
BAY CONTROL UNIT (REC670)

X121 1 + / 2 -	/247.A2	I/C DC SOURCE-1 FAIL (FOR EVENT TO SCADA)	220-250VDC	P12#BI.01
X121 3 + / 4 -	/247.B2	I/C DC SOURCE-2 FAIL (FOR EVENT TO SCADA)	220-250VDC	P12#BI.02
X121 5 + / 6 -	/247.B2	GC08 LOSS OF SF6**	220-250VDC	P12#BI.03
X121 7 + / 8 -	/247.B2	GC08 MIN. SF6 DENSITY**	220-250VDC	P12#BI.04
X121 9 + / 10 -	/247.C2	GC09 LOSS OF SF6**	220-250VDC	P12#BI.05
X121 11 + / 12 -	/247.C2	GC09 MIN. SF6 DENSITY**	220-250VDC	P12#BI.06
X121 13 + / 14 -	/247.C2	SPARE	220-250VDC	P12#BI.07
X121 15 + / 16 -	/247.D2	DC-2 MCB TRIP	220-250VDC	P12#BI.08

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Technical Electrical & Engineering Co. Ltd. Guwahati

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Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
REC670 PROTN.CKTS-BIM

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 236
n. sheet 237

1MYN691003-102(A3)REV01

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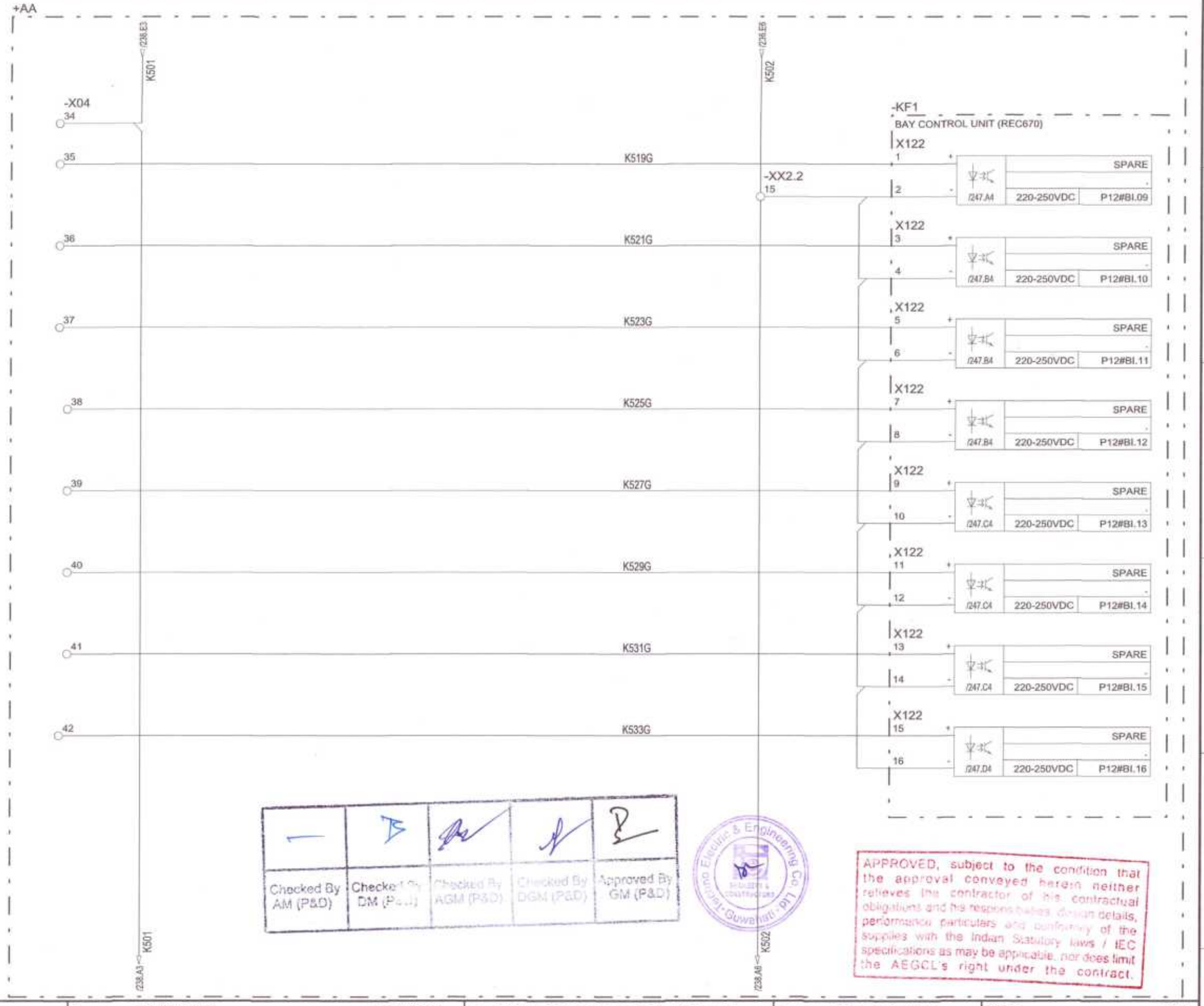

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Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-BIM

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	237
		n. sheet	238

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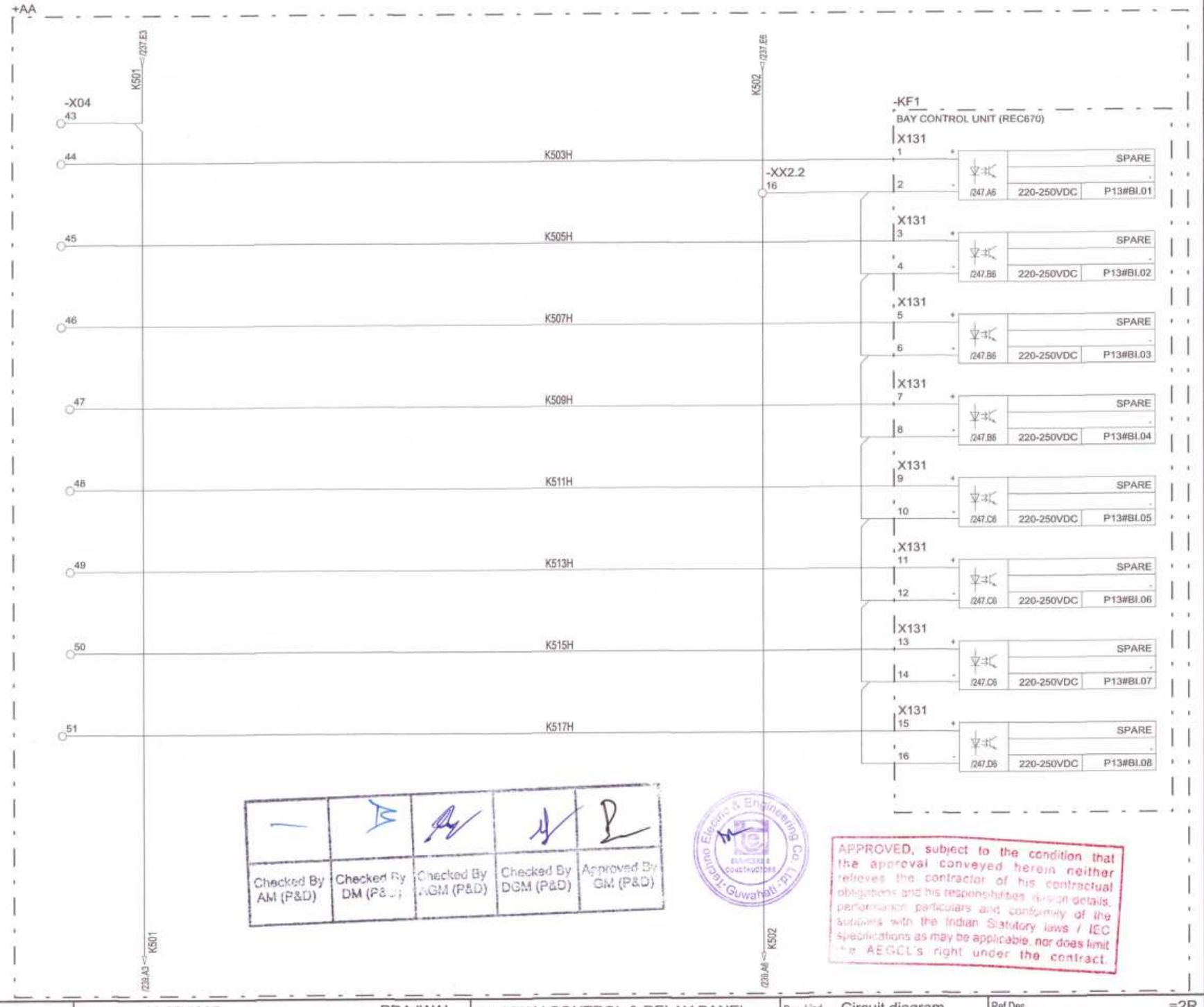

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Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-BIM

HITACHI Hitachi Energy India Limited

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Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 238
n. sheet 239

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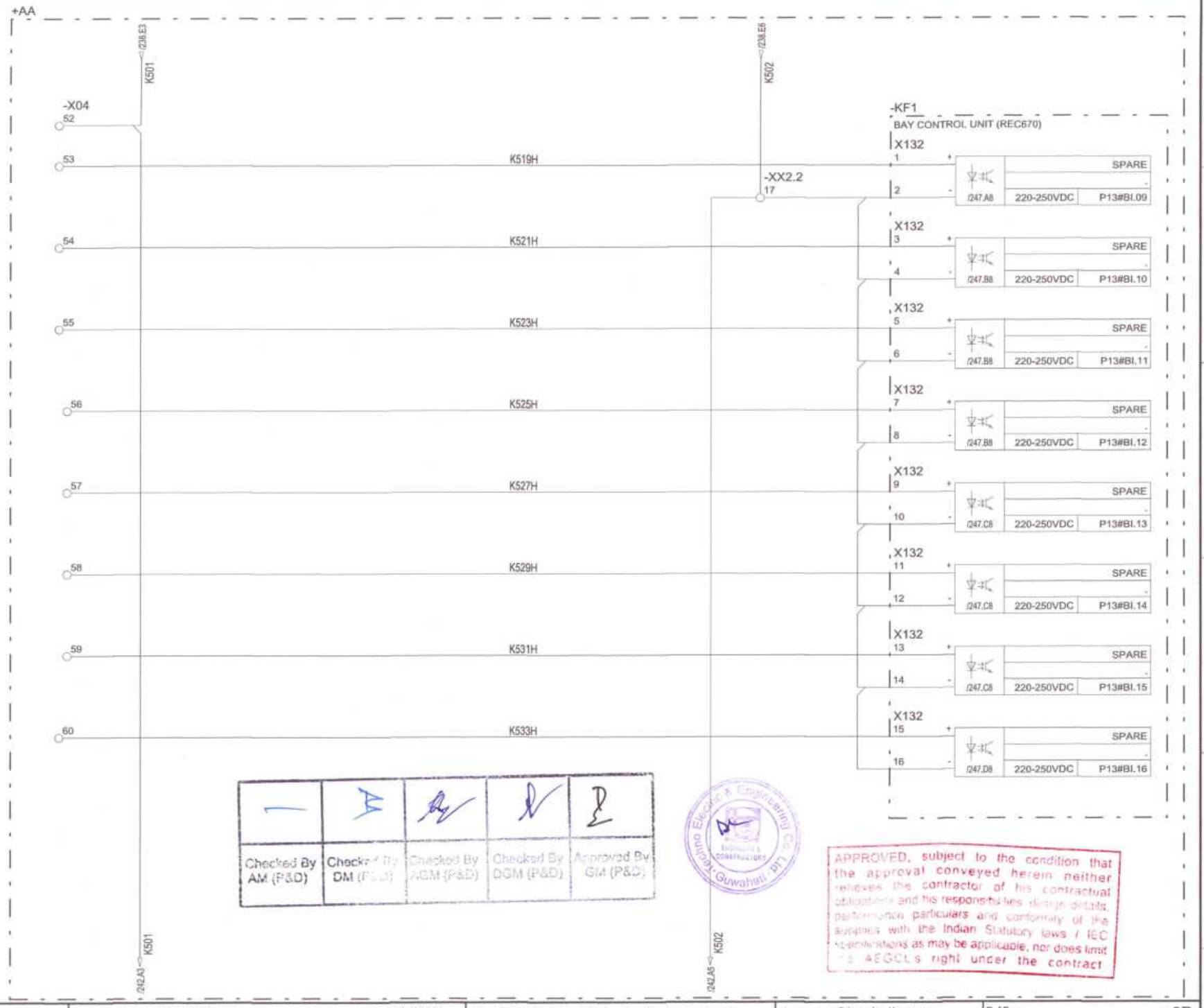

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Assam Electric & Engineering Co. Ltd. Guwahati

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Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 PROTN.CKTS-BIM

HITACHI Hitachi Energy India Limited

Doc. kind.	Circuit diagram	DCC	EFS
Resp. dept.	PG-GAS	Rev. ind.	02
Doc. no.	1KHF128840R1113		

Ref.Des.	=2R
Language	en
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+AA

-KF1
BAY CONTROL UNIT (REC670)

+LCC

Function	Output	Terminal	Signal	-LCCX04	-X201	Description
Q1 OPEN CMD	P4#BO.01 /248.A2	X41 2	K503	97	1	COMMON +VE
Q1 CLOSE CMD	P4#BO.02 /248.B2	X41 1	K505	98	9	Q1 ISOLATOR OPEN COMMAND
Q1 -VE COMMON	P4#BO.03 /248.B2	X41 3	K507	99	10	Q1 ISOLATOR CLOSE COMMAND
Q2 -VE COMMON	P4#BO.04 /248.B2	X41 5	K509	100	2	COMMON -VE
Q2 OPEN CMD	P4#BO.05 /248.C2	X41 4	K511	101	11	
Q2 CLOSE CMD	P4#BO.06 /248.C2	X41 6	K513	102	14	Q2 ISOLATOR OPEN COMMAND
Q51 OPEN CMD	P4#BO.07 /248.C2	X41 8		103		
Q51 CLOSE CMD	P4#BO.08 /248.D2	X41 7	K515	104	13	Q2 ISOLATOR CLOSE COMMAND
Q51 -VE COMMON	P4#BO.09 /248.D2	X41 9	K517	105	13	
Q52 -VE COMMON	P4#BO.10 /248.D2	X41 11		106		
Q52 OPEN CMD	P4#BO.11 /248.E2	X41 10	K519	107	15	Q51 E/SW ISOLATOR OPEN COMMAND
Q52 CLOSE CMD	P4#BO.12 /248.E2	X41 12	K521	108	16	Q51 E/SW ISOLATOR CLOSE COMMAND
		X41 14		109		
		X41 13	K523	110	17	
		X41 15	K525	111	20	
		X41 17		112		
		X41 16	K527	113	18	Q52 EARTH S/W. OPEN COMMAND
		X41 18	K529	114	19	Q52 EARTH S/W. CLOSE COMMAND

+D.12
+D.12

/241.A5 K503
/241.A5 K509

REF DRG NO:
AEGCL-SONA-0816SN-VEN-2GIS-086
SH NO: 24

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02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL
220kV LINE CRP
REC670 PROTN.CKTS-BOM

HITACHI — Hitachi Energy India Limited

Doc. kind	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	240
		n. sheet	241

1MYN691003-102(A3)REV01

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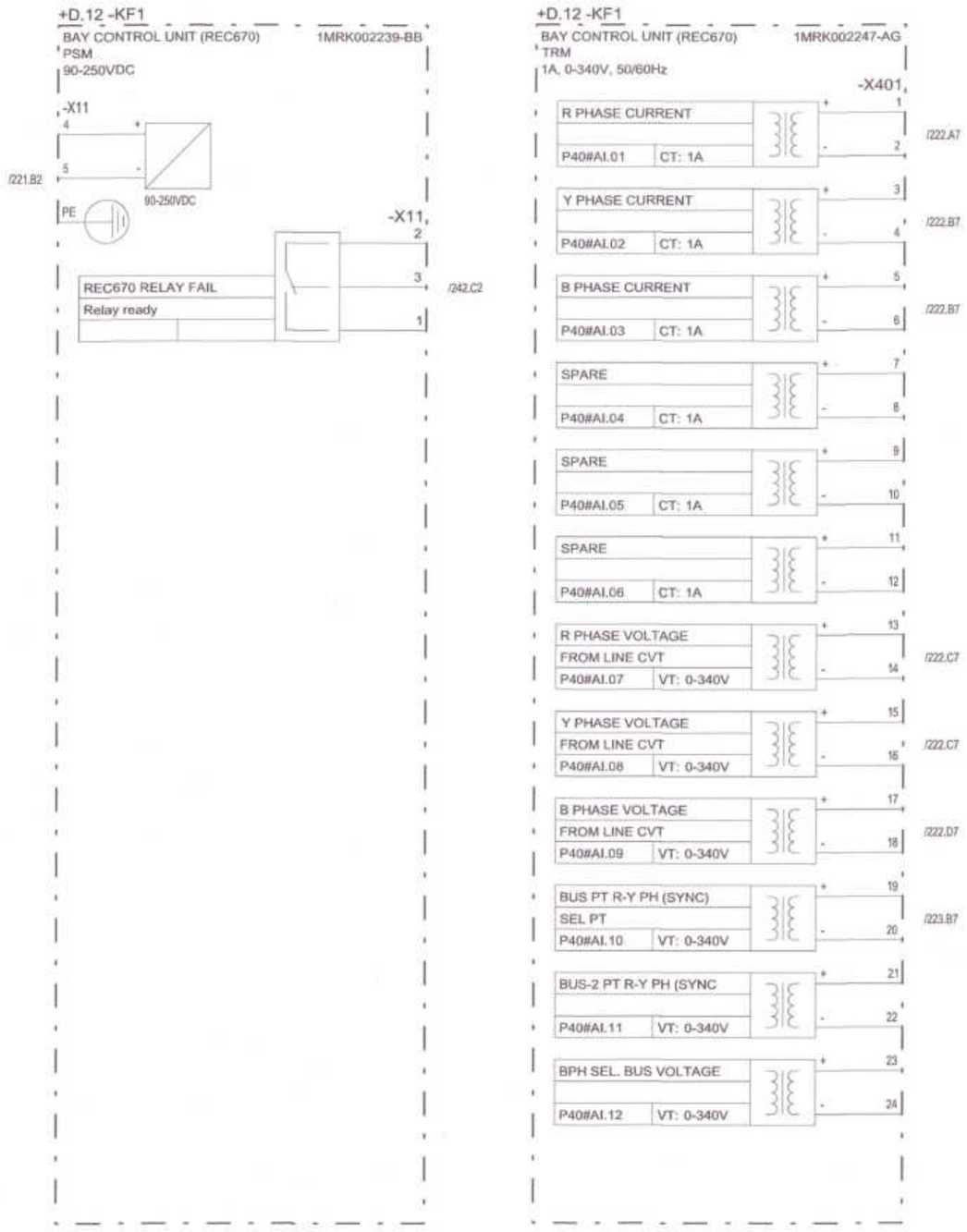

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Assam Electric & Engineering Co. Ltd. Guwahati

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1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 243
n. sheet 244

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+AA

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X31

Q1 (89A) ISOL OPEN	P3#BI.01	220-250VDC	1 / 2	/224.B7
Q1 (89A) ISOL CLOSE	P3#BI.02	220-250VDC	3 / 4	/224.B7
Q51 (89AE1) ES OPEN	P3#BI.03	220-250VDC	5 / 6	/224.C7
Q51 (89AE1) ES CLOSE	P3#BI.04	220-250VDC	7 / 8	/224.C7
Q2 (89B) ISOL OPEN	P3#BI.05	220-250VDC	9 / 10	/224.C7
Q2 (89B) ISOL CLOSE	P3#BI.06	220-250VDC	11 / 12	/224.D7
Q52 (89LE1) ES OPEN	P3#BI.07	220-250VDC	13 / 14	/224.D7
Q52 (89LE1) ES CLOSE	P3#BI.08	220-250VDC	15 / 16	/224.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X32

Q9 ISOL (89L) OPEN	P3#BI.09	220-250VDC	1 / 2	/225.B7
Q9 ISOL (89L) CLOSE	P3#BI.10	220-250VDC	3 / 4	/225.B7
Q81 (89LE2) ES OPEN	P3#BI.11	220-250VDC	5 / 6	/225.C7
Q81 (89LE2) ES CLOSE	P3#BI.12	220-250VDC	7 / 8	/225.C7
START A/R	P3#BI.13	220-250VDC	9 / 10	/225.C7
BLOCK A/R	P3#BI.14	220-250VDC	11 / 12	/225.D7
3-PH TRIP	P3#BI.15	220-250VDC	13 / 14	/225.D7
VT MCB FAIL	P3#BI.16	220-250VDC	15 / 16	/225.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X51

52 CB R PH OPEN	P5#BI.01	220-250VDC	1 / 2	/226.B7
52 CB Y PH OPEN	P5#BI.02	220-250VDC	3 / 4	/226.B7
52 CB B PH OPEN	P5#BI.03	220-250VDC	5 / 6	/226.C7
52 CB R PH CLOSE	P5#BI.04	220-250VDC	7 / 8	/226.C7
52 CB Y PH CLOSE	P5#BI.05	220-250VDC	9 / 10	/226.C7
52 CB B PH CLOSE	P5#BI.06	220-250VDC	11 / 12	/226.D7
SAPRE	P5#BI.07	220-250VDC	13 / 14	/226.D7
LCC AC MCB TRIP	P5#BI.08	220-250VDC	15 / 16	/226.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X52

CB SPRING DIS-CHARGED	P5#BI.09	220-250VDC	1 / 2	/227.B7
LOSS OF SF6 ALARM-L1	P5#BI.10	220-250VDC	3 / 4	/227.B7
LOSS OF SF6 ALARM-L2	P5#BI.11	220-250VDC	5 / 6	/227.C7
LOSS OF SF6 ALARM-L3	P5#BI.12	220-250VDC	7 / 8	/227.C7
GENERAL LOCKOUT SF6	P5#BI.13	220-250VDC	9 / 10	/227.C7
MOTOR PROTECTION	P5#BI.14	220-250VDC	11 / 12	/227.D7
MOTOR RUNNING TIME SUPVN.	P5#BI.15	220-250VDC	13 / 14	/227.D7
POLE DISCREPANCY OPTD	P5#BI.16	220-250VDC	15 / 16	/227.E7

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
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Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
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-KF1

BAY CONTROL UNIT (REC670)

Q9 OPEN CMD	P4#BO.13	/248.A4	X42 2	1	K531	-LCCX04 115	116	-X201 21	Q9 ISOLATOR OPEN COMMAND
Q9 CLOSE CMD	P4#BO.14	/248.B4	X42 3		K533	117		22	Q9 ISOLATOR CLOSE COMMAND
Q9 -VE COMMON	P4#BO.15	/248.B4	X42 5	4	K535	-LCCX04 118	119	23	
Q81 -VE COMMON	P4#BO.16	/248.B4	X42 6		K537	120		26	
Q81 OPEN CMD	P4#BO.17	/248.C4	X42 8	7	K539	121	122	24	Q81 ISOLATOR OPEN COMMAND
Q81 CLOSE CMD	P4#BO.18	/248.C4	X42 9		K541	123		25	Q81 ISOLATOR CLOSE COMMAND
SPARE	P8#BO.01	/249.A2	X81 2	1	K543	-X04 61	62		
SPARE	P8#BO.02	/249.B2	X81 3		K547	63			
SPARE	P8#BO.03	/249.B2	X81 5	4	K549	64	65		
SPARE	P8#BO.04	/249.B2	X81 6		K577	66			
SPARE	P8#BO.05	/249.C2	X81 8	7	K583	-X04 67	68		
SPARE	P8#BO.06	/249.C2	X81 9		K587	69			

K503 =240.E5

K509 =240.E6

+LCC

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REF DRG NO:
AEGCL-SONA-0816SN-VEN-2GIS-086
SH NO: 26

Assam Electric & Engineering Co. Ltd. Guwahati ENGINEERS & CONSTRUCTORS

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01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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HITACHI Hitachi Energy India Limited

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Doc. no.	1KHF128840R1113	Sheet	241
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+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X71

CB TC-1 R-PH FAULTY	P7#BI.01	220-250VDC	/228.B7
CB TC-1 Y-PH FAULTY	P7#BI.02	220-250VDC	/228.B7
CB TC-1 B-PH FAULTY	P7#BI.03	220-250VDC	/228.C7
CB TC-2 R-PH FAULTY	P7#BI.04	220-250VDC	/228.C7
CB TC-2 Y-PH FAULTY	P7#BI.05	220-250VDC	/228.C7
CB TC-2 B-PH FAULTY	P7#BI.06	220-250VDC	/228.D7
CB MANUAL CLOSE COMMAND	P7#BI.07	220-250VDC	/228.D7
CB MANUAL OPEN COMMAND	P7#BI.08	220-250VDC	/228.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X72

3PH GR-A TRIP RLY. OPTD	P7#BI.09	220-250VDC	/229.B7
3PH GR-A TRIP RLY. FAULTY	P7#BI.10	220-250VDC	/229.B7
3PH GR-B TRIP RLY. OPTD	P7#BI.11	220-250VDC	/229.C7
3PH GR-B TRIP RLY. FAULTY	P7#BI.12	220-250VDC	/229.C7
SPARE	P7#BI.13	220-250VDC	/229.C7
SPARE	P7#BI.14	220-250VDC	/229.D7
MASTER INTERLOCK OVERRIDE	P7#BI.15	220-250VDC	/229.D7
LINE CV FAIL/CVT UNDER VOLTAGE	P7#BI.16	220-250VDC	/229.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X91

CB MIN. SF6 DENSITY -L1	P9#BI.01	220-250VDC	/230.B7
CB MIN. SF6 DENSITY -L2	P9#BI.02	220-250VDC	/230.B7
CB MIN. SF6 DENSITY -L3	P9#BI.03	220-250VDC	/230.C7
GC01 LOSS OF SF6-L1	P9#BI.04	220-250VDC	/230.C7
GC01 LOSS OF SF6-L2	P9#BI.05	220-250VDC	/230.C7
GC01 LOSS OF SF6-L3	P9#BI.06	220-250VDC	/230.D7
GC01 MIN. SF6 DENSITY-L1	P9#BI.07	220-250VDC	/230.D7
GC01 MIN. SF6 DENSITY-L2	P9#BI.08	220-250VDC	/230.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X92

GC01 MIN. SF6 DENSITY-L3	P9#BI.09	220-250VDC	/231.B7
GC02 LOSS OF SF6-L1	P9#BI.10	220-250VDC	/231.B7
GC02 LOSS OF SF6-L2	P9#BI.11	220-250VDC	/231.C7
GC02 LOSS OF SF6-L3	P9#BI.12	220-250VDC	/231.C7
GC02 MIN. SF6 DENSITY-L1	P9#BI.13	220-250VDC	/231.C7
GC02 MIN. SF6 DENSITY-L2	P9#BI.14	220-250VDC	/231.D7
GC02 MIN. SF6 DENSITY-L3	P9#BI.15	220-250VDC	/231.D7
GC03 LOSS OF SF6-L1	P9#BI.16	220-250VDC	/231.E7

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Assam Electric & Engineering Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 245
n. sheet 246

1MYN691003-102(A3)REV01

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+AA

+D.12 -KF1

Binary input module BIM 1MRK000508-CD
220-250VDC, 50ma
X101

GC03 LOSS OF SF6-L2	P10#BI.01	220-250VDC	1 / 2	/232.B7
GC03 LOSS OF SF6-L3	P10#BI.02	220-250VDC	3 / 4	/232.B7
GC03 MIN. SF6 DENSITY-L1	P10#BI.03	220-250VDC	5 / 6	/232.C7
GC03 MIN. SF6 DENSITY-L2	P10#BI.04	220-250VDC	7 / 8	/232.C7
GC03 MIN. SF6 DENSITY-L3	P10#BI.05	220-250VDC	9 / 10	/232.C7
GC04 LOSS OF SF6-L1	P10#BI.06	220-250VDC	11 / 12	/232.D7
GC04 LOSS OF SF6-L2	P10#BI.07	220-250VDC	13 / 14	/232.D7
GC04 LOSS OF SF6-L3	P10#BI.08	220-250VDC	15 / 16	/232.E7

+D.12 -KF1

Binary input module BIM 1MRK000508-CD
220-250VDC, 50ma
X102

GC04 MIN. SF6 DENSITY-L1	P10#BI.09	220-250VDC	1 / 2	/233.B7
GC04 MIN. SF6 DENSITY-L2	P10#BI.10	220-250VDC	3 / 4	/233.B7
GC04 MIN. SF6 DENSITY-L3	P10#BI.11	220-250VDC	5 / 6	/233.C7
GC05 LOSS OF SF6-L1	P10#BI.12	220-250VDC	7 / 8	/233.C7
GC05 LOSS OF SF6-L2	P10#BI.13	220-250VDC	9 / 10	/233.C7
GC05 LOSS OF SF6-L3	P10#BI.14	220-250VDC	11 / 12	/233.D7
GC05 MIN. SF6 DENSITY-L1	P10#BI.15	220-250VDC	13 / 14	/233.D7
GC05 MIN. SF6 DENSITY-L2	P10#BI.16	220-250VDC	15 / 16	/233.E7

+D.12 -KF1

Binary input module BIM 1MRK000508-CD
220-250VDC, 50ma
X111

GC05 MIN. SF6 DENSITY-L3	P11#BI.01	220-250VDC	1 / 2	/234.B7
SPARE	P11#BI.02	220-250VDC	3 / 4	/234.B7
SPARE	P11#BI.03	220-250VDC	5 / 6	/234.C7
SPARE	P11#BI.04	220-250VDC	7 / 8	/234.C7
GC06 LOSS OF SF6##	P11#BI.05	220-250VDC	9 / 10	/234.C7
GC06 MIN. SF6 DENSITY##	P11#BI.06	220-250VDC	11 / 12	/234.D7
GC07 LOSS OF SF6##	P11#BI.07	220-250VDC	13 / 14	/234.D7
GC07 MIN. SF6 DENSITY##	P11#BI.08	220-250VDC	15 / 16	/234.E7

+D.12 -KF1

Binary input module BIM 1MRK000508-CD
220-250VDC, 50ma
X112

LCC DC-1 INFEED MCB FAIL	P11#BI.09	220-250VDC	1 / 2	/235.B7
LCC DC-2 INFEED MCB FAIL	P11#BI.10	220-250VDC	3 / 4	/235.B7
LCC DC DISTRIBUTION MCB FAIL	P11#BI.11	220-250VDC	5 / 6	/235.C7
LCC MOTOR VOLTAGE MCB FAIL	P11#BI.12	220-250VDC	7 / 8	/235.C7
LCC ANNUNCIATOR -1/2 FAULTY	P11#BI.13	220-250VDC	9 / 10	/235.C7
DC-2 MCB TRIP/FAIL (FOR EVENT TO SCADA)	P11#BI.14	220-250VDC	11 / 12	/235.D7
DC-1 MCB TRIP/FAIL (FOR EVENT TO SCADA)	P11#BI.15	220-250VDC	13 / 14	/235.D7
CRP AC MCB TRIP/FAIL (FOR EVENT TO SCADA)	P11#BI.16	220-250VDC	15 / 16	/235.E7

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 246
n. sheet 247

1MYN691003-102(A3)REV01

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+AA

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X121

I/C DC SOURCE-1 FAIL (FOR EVENT TO SCADA)	P12#BI.01	220-250VDC	1 / 2	/236.B7
I/C DC SOURCE-2 FAIL (FOR EVENT TO SCADA)	P12#BI.02	220-250VDC	3 / 4	/236.B7
GC08 LOSS OF SF6**	P12#BI.03	220-250VDC	5 / 6	/236.C7
GC08 MIN. SF6 DENSITY**	P12#BI.04	220-250VDC	7 / 8	/236.C7
GC09 LOSS OF SF6**	P12#BI.05	220-250VDC	9 / 10	/236.C7
GC09 MIN. SF6 DENSITY**	P12#BI.06	220-250VDC	11 / 12	/236.D7
SPARE	P12#BI.07	220-250VDC	13 / 14	/236.D7
DC-2 MCB TRIP	P12#BI.08	220-250VDC	15 / 16	/236.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X122

SPARE	P12#BI.09	220-250VDC	1 / 2	/237.B7
SPARE	P12#BI.10	220-250VDC	3 / 4	/237.B7
SPARE	P12#BI.11	220-250VDC	5 / 6	/237.C7
SPARE	P12#BI.12	220-250VDC	7 / 8	/237.C7
SPARE	P12#BI.13	220-250VDC	9 / 10	/237.C7
SPARE	P12#BI.14	220-250VDC	11 / 12	/237.D7
SPARE	P12#BI.15	220-250VDC	13 / 14	/237.D7
SPARE	P12#BI.16	220-250VDC	15 / 16	/237.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X131

SPARE	P13#BI.01	220-250VDC	1 / 2	/238.B7
SPARE	P13#BI.02	220-250VDC	3 / 4	/238.B7
SPARE	P13#BI.03	220-250VDC	5 / 6	/238.C7
SPARE	P13#BI.04	220-250VDC	7 / 8	/238.C7
SPARE	P13#BI.05	220-250VDC	9 / 10	/238.C7
SPARE	P13#BI.06	220-250VDC	11 / 12	/238.D7
SPARE	P13#BI.07	220-250VDC	13 / 14	/238.D7
SPARE	P13#BI.08	220-250VDC	15 / 16	/238.E7

+D.12 -KF1

Binary input module 1MRK000508-CD
BIM
220-250VDC, 50ma

X132

SPARE	P13#BI.09	220-250VDC	1 / 2	/239.B7
SPARE	P13#BI.10	220-250VDC	3 / 4	/239.B7
SPARE	P13#BI.11	220-250VDC	5 / 6	/239.C7
SPARE	P13#BI.12	220-250VDC	7 / 8	/239.C7
SPARE	P13#BI.13	220-250VDC	9 / 10	/239.C7
SPARE	P13#BI.14	220-250VDC	11 / 12	/239.D7
SPARE	P13#BI.15	220-250VDC	13 / 14	/239.D7
SPARE	P13#BI.16	220-250VDC	15 / 16	/239.E7

Techno Electric & Engineering Co. Guwahati-DIT

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 247
n. sheet 248

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+AA

+D.12 -KF1 — X41 (1MRK000614-AB, BOM)

Terminal	Signal	Source
1	P4#BO.01	/240.B2
2	Q1 OPEN CMD	
3	P4#BO.02	/240.B2
4	Q1 CLOSE CMD	
5	P4#BO.03	/240.B2
6	Q1 -VE COMMON	
7	P4#BO.04	/240.C2
8	Q2 -VE COMMON	
9	P4#BO.05	/240.C2
10	Q2 OPEN CMD	
11	P4#BO.06	/240.C2
12	Q2 CLOSE CMD	
13	P4#BO.07	/240.D2
14	Q51 OPEN CMD	
15	P4#BO.08	/240.D2
16	Q51 CLOSE CMD	
17	P4#BO.09	/240.D2
18	Q51 -VE COMMON	
	P4#BO.10	/240.E2
	Q52 -VE COMMON	
	P4#BO.11	/240.E2
	Q52 OPEN CMD	
	P4#BO.12	/240.E2
	Q52 CLOSE CMD	

+D.12 -KF1 — X42 (1MRK000614-AB, BOM)

Terminal	Signal	Source
1	P4#BO.13	/241.B2
2	Q9 OPEN CMD	
3	P4#BO.14	/241.B2
4	Q9 CLOSE CMD	
5	P4#BO.15	/241.B2
6	Q9 -VE COMMON	
7	P4#BO.16	/241.C2
8	Q81 -VE COMMON	
9	P4#BO.17	/241.C2
10	Q81 OPEN CMD	
11	P4#BO.18	/241.C2
12	Q81 CLOSE CMD	
13	P4#BO.19	/262.B5
14	86A RESET	
15	P4#BO.20	
16	SPARE	
17	P4#BO.21	/264.B5
18	86B RESET	
	P4#BO.22	
	SPARE	
	P4#BO.23	/242.A2
	CB MANUAL TRIP COMMAND	
	P4#BO.24	/242.B2
	CB MAN CLOSE	

+D.12 -KF1 — X61 (1MRK000614-AB, BOM)

Terminal	Signal	Source
1	P6#BO.01	/242.D2
2	CB MANUAL CLOSE	
3	P6#BO.02	/242.D2
4	MAIN CB AR OPTD (MAIN BAY TO MAIN-1)	
5	P6#BO.03	/242.D2
6	PREPARE 3PH TRIP TO MAIN-1	
7	P6#BO.04	
8	CB MANUAL CLOSE CMD	
9	P6#BO.05	/242.E2
10	CB MANUAL CLOSE AR CLOSE (MAIN-2)	
11	P6#BO.06	/242.E2
12	MAIN CB AR OPTD (MAIN BAY TO MAIN-2)	
13	P6#BO.09	/308.D2
14	LINE PT RESET MANUAL SEL. THROGH SCADA	
15	P6#BO.10	/308.D2
16	LINE PT SET MANUAL SEL. THROGH SCADA	
17	P6#BO.11	/265.E3
18	CB MANUAL CLOSE CMD	
	P6#BO.12	/270.C5
	SPARE	
	P6#BO.13	/270.D5
	SPARE	
	P6#BO.14	/242.E2
	SPARE	
	P6#BO.15	
	PREPARE 3PH TRIP TO MAIN-2	
	P6#BO.16	
	SPARE	
	P6#BO.17	
	SPARE	
	P6#BO.18	/308.B2
	SPARE	
	P6#BO.19	/308.B2
	BUS-2 PT RESET	
	P6#BO.20	/308.B2
	BUS-2 PT SET	
	P6#BO.21	/270.D5
	AR CLOSE CMD-VE	
	P6#BO.22	
	SPARE	
	P6#BO.23	/308.C2
	BUS-1 PT RESET	
	P6#BO.24	/308.D2
	BUS-1 PT SET	

+D.12 -KF1 — X62 (1MRK000614-AB, BOM)

Terminal	Signal	Source
1	P6#BO.13	/270.D5
2	AR CLOSE COMMAND +VE	
3	P6#BO.14	
4	SPARE	
5	P6#BO.15	/242.E2
6	PREPARE 3PH TRIP TO MAIN-2	
7	P6#BO.16	
8	SPARE	
9	P6#BO.17	
10	SPARE	
11	P6#BO.18	
12	SPARE	
13	P6#BO.19	/308.B2
14	BUS-2 PT RESET	
15	P6#BO.20	/308.B2
16	BUS-2 PT SET	
17	P6#BO.21	/270.D5
18	AR CLOSE CMD-VE	
	P6#BO.22	
	SPARE	
	P6#BO.23	/308.C2
	BUS-1 PT RESET	
	P6#BO.24	/308.D2
	BUS-1 PT SET	

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Approved By GM (P&D)	Checked By DGM (P&D)	Checked By AGM (P&D)	Checked By DM (P&D)	Checked By AM (P&D)

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 MASTER BLOCK

HITACHI — Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113

Ref.Des. =2R
Rev. ind. 02
Language en
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n. sheet 249

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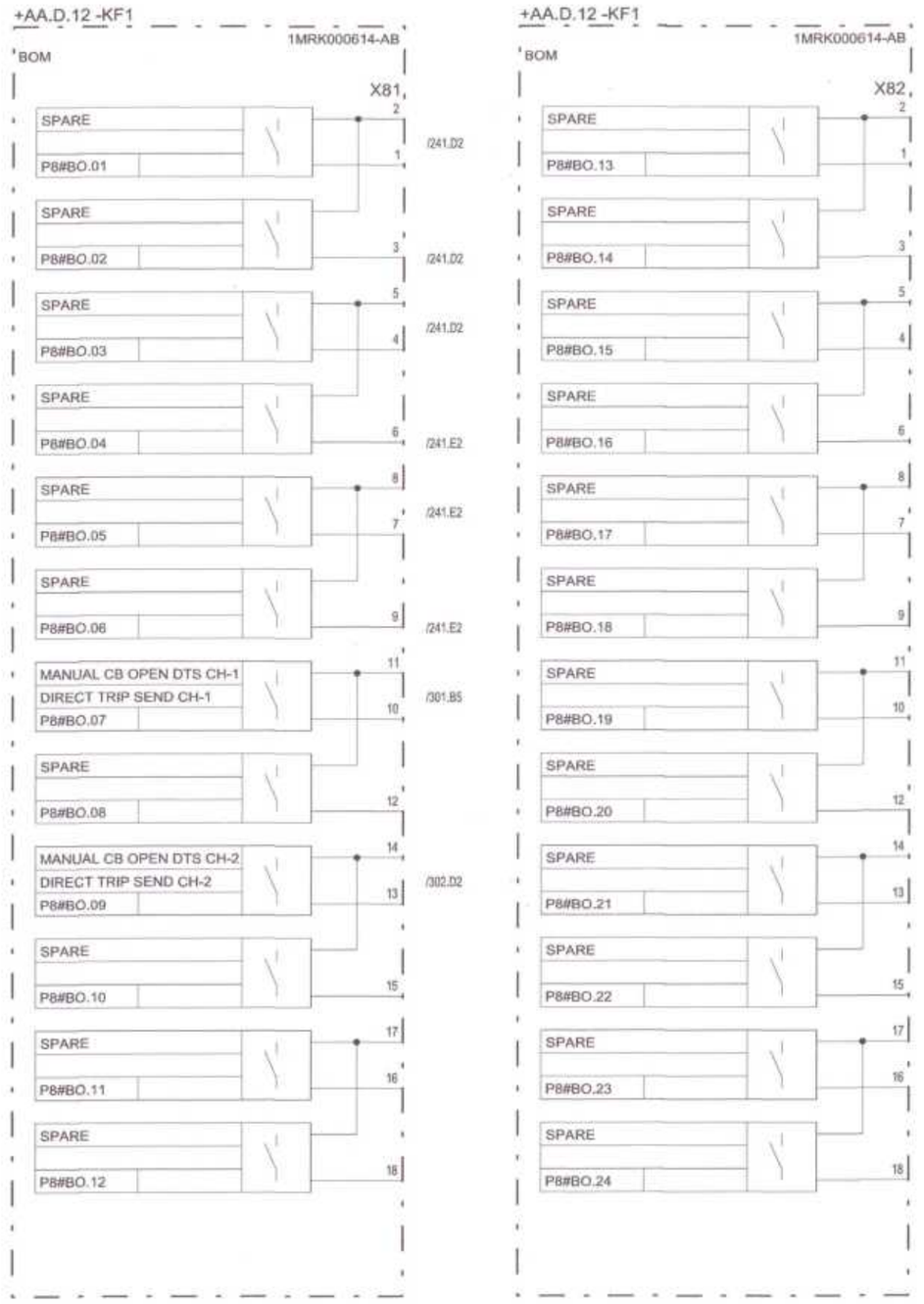

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Assam Electric & Engineering Co. Ltd. Guwahati

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Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP REC670 MASTER BLOCK

HITACHI Hitachi Energy India Limited

Doc. kind	Assembly drawing	Ref.Des.	=2R
DCC	ELU		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	249
		n. sheet	250

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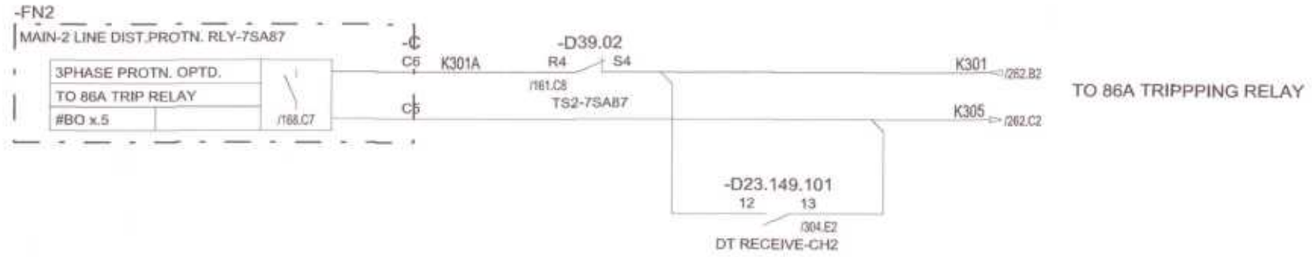
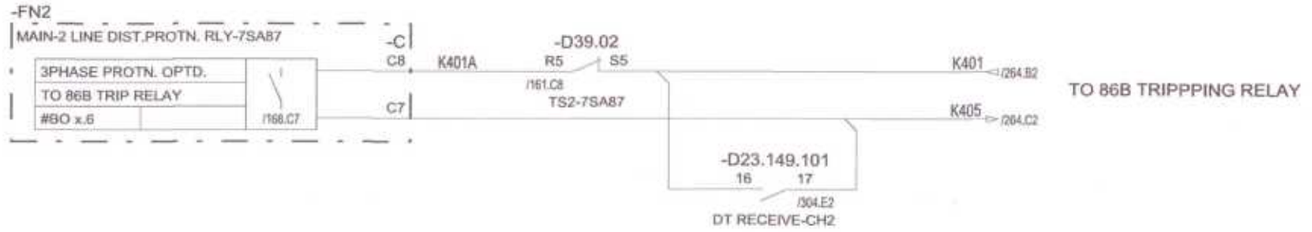


TO 86A TRIPPPING RELAY



TO 86B TRIPPPING RELAY

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP PROTECTION TRIPPING 86A/86B CKT

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	250
		n. sheet	261

Transmission & Engineering Co. Ltd. Guwahati

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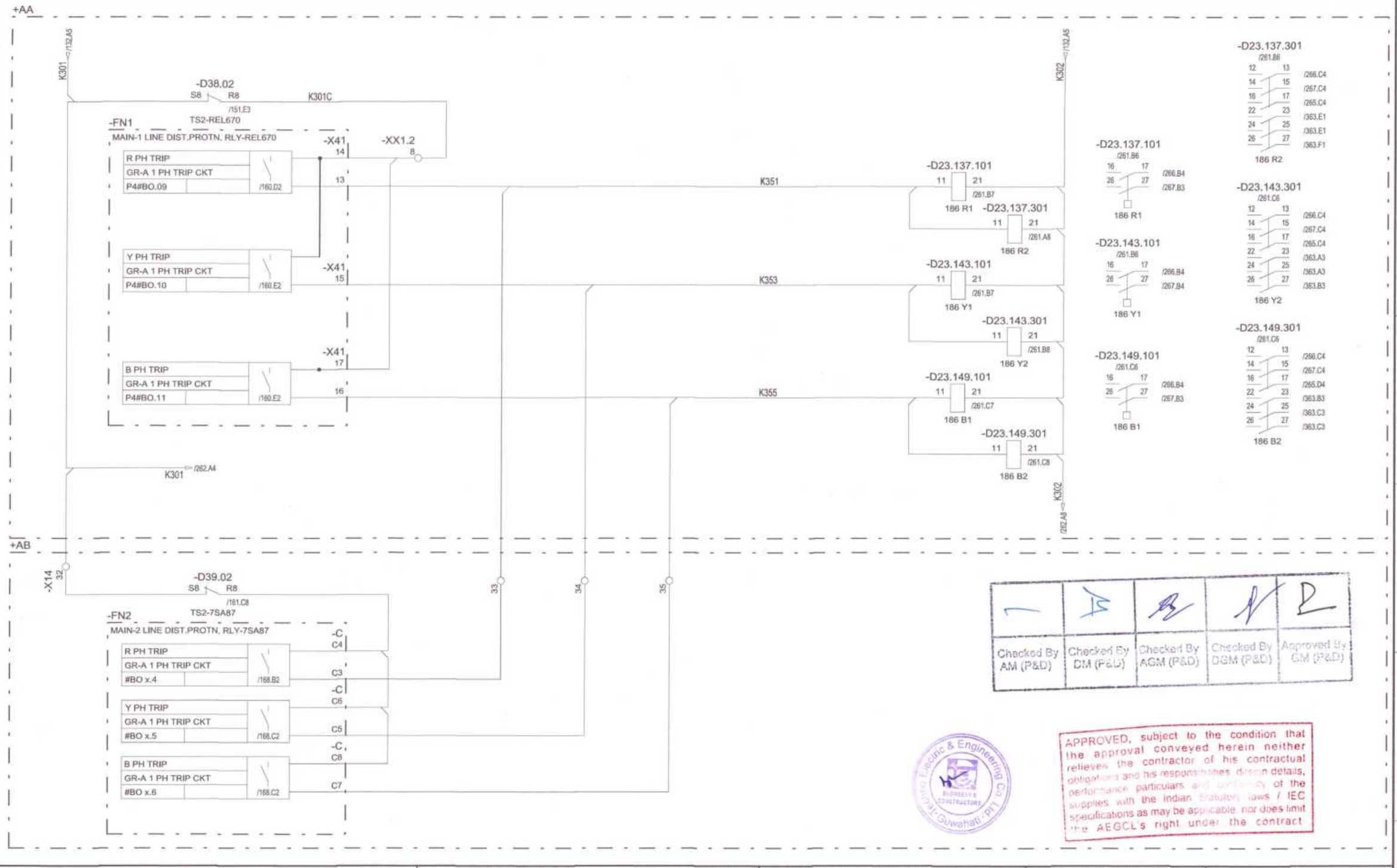

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400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
<LINE>-TIE-LINE
GR-A SINGLE PHASE TRIP CIRCUIT

HITACHI
Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 261
n. sheet 262

1MYN691003-102(A3)REV01

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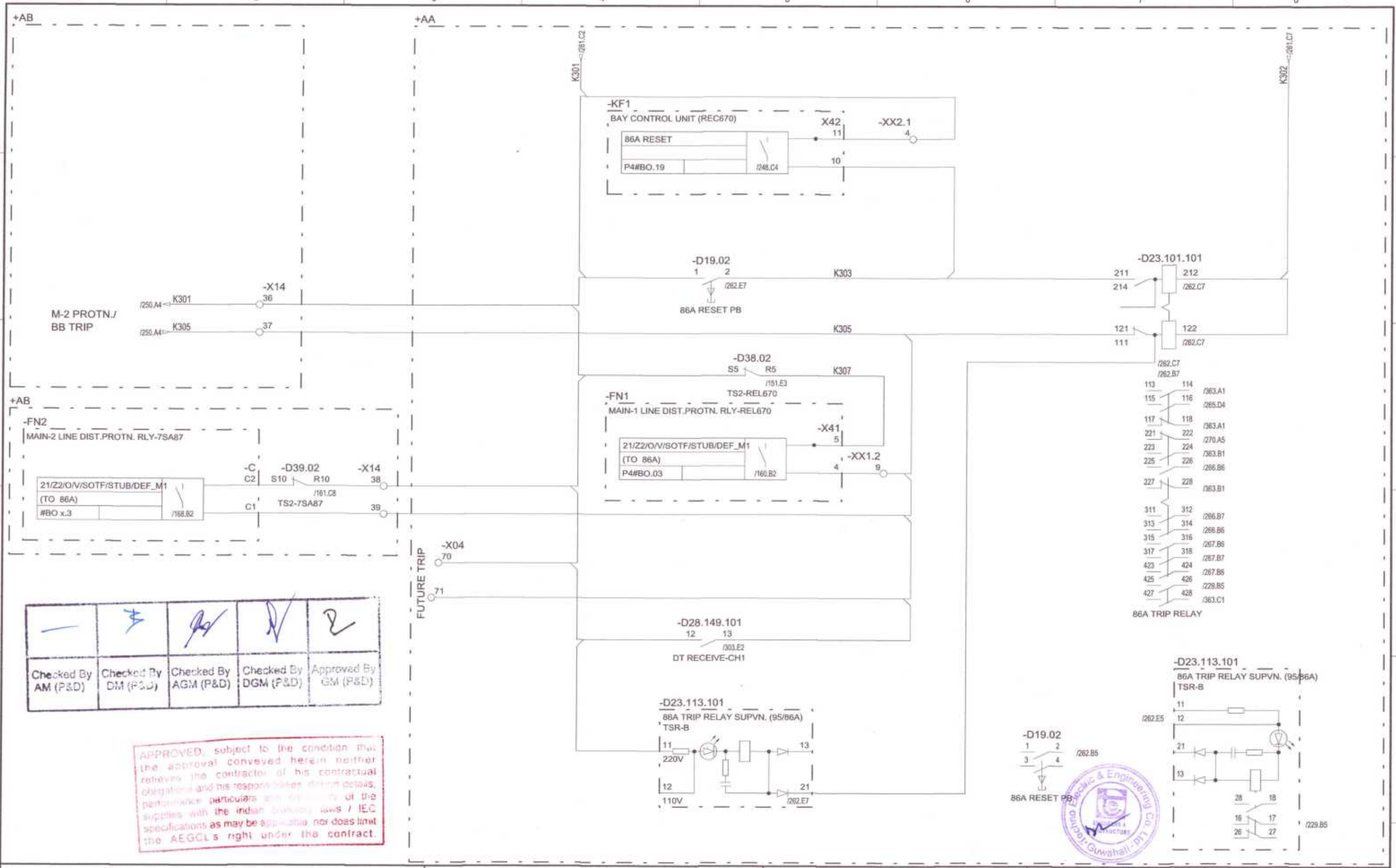

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01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

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Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP 86A TRIP RELAY CKT.

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
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		n. sheet	263

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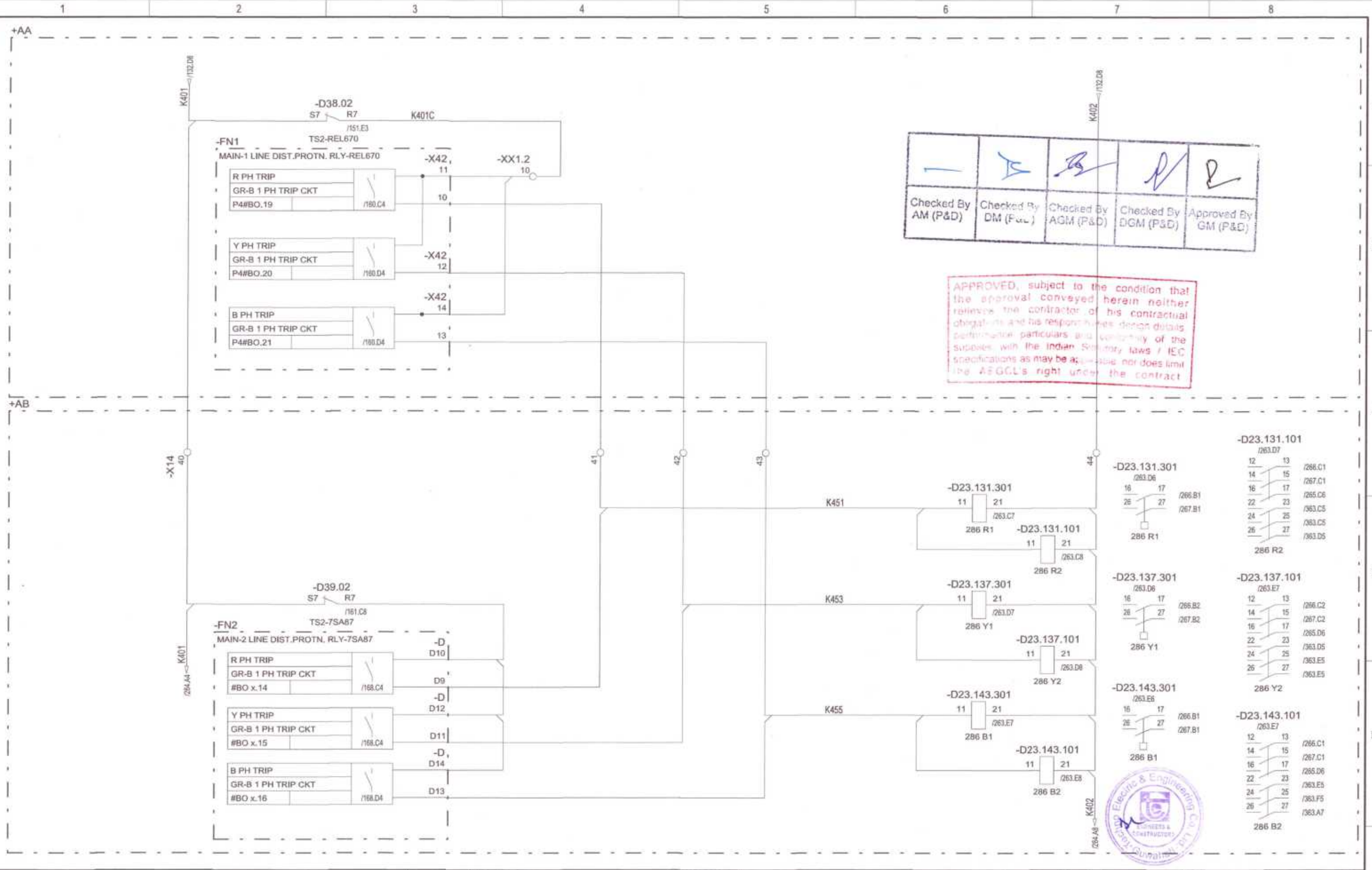

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1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL <LINE>-TIE-LINE GR-B SINGLE PHASE TRIP CIRCUIT

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
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		n. sheet	264

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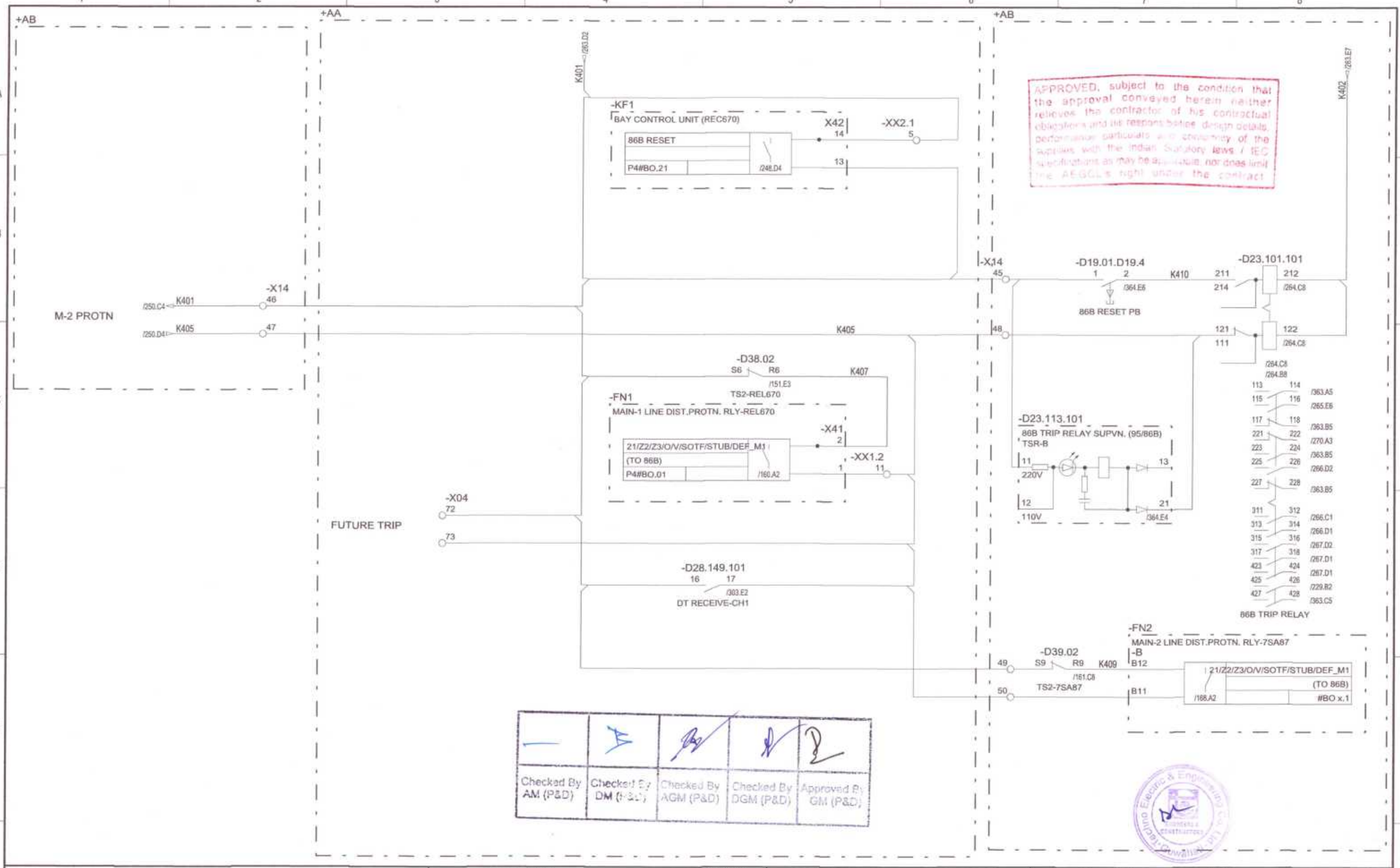

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Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP 86B TRIP RELAY CKT.

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
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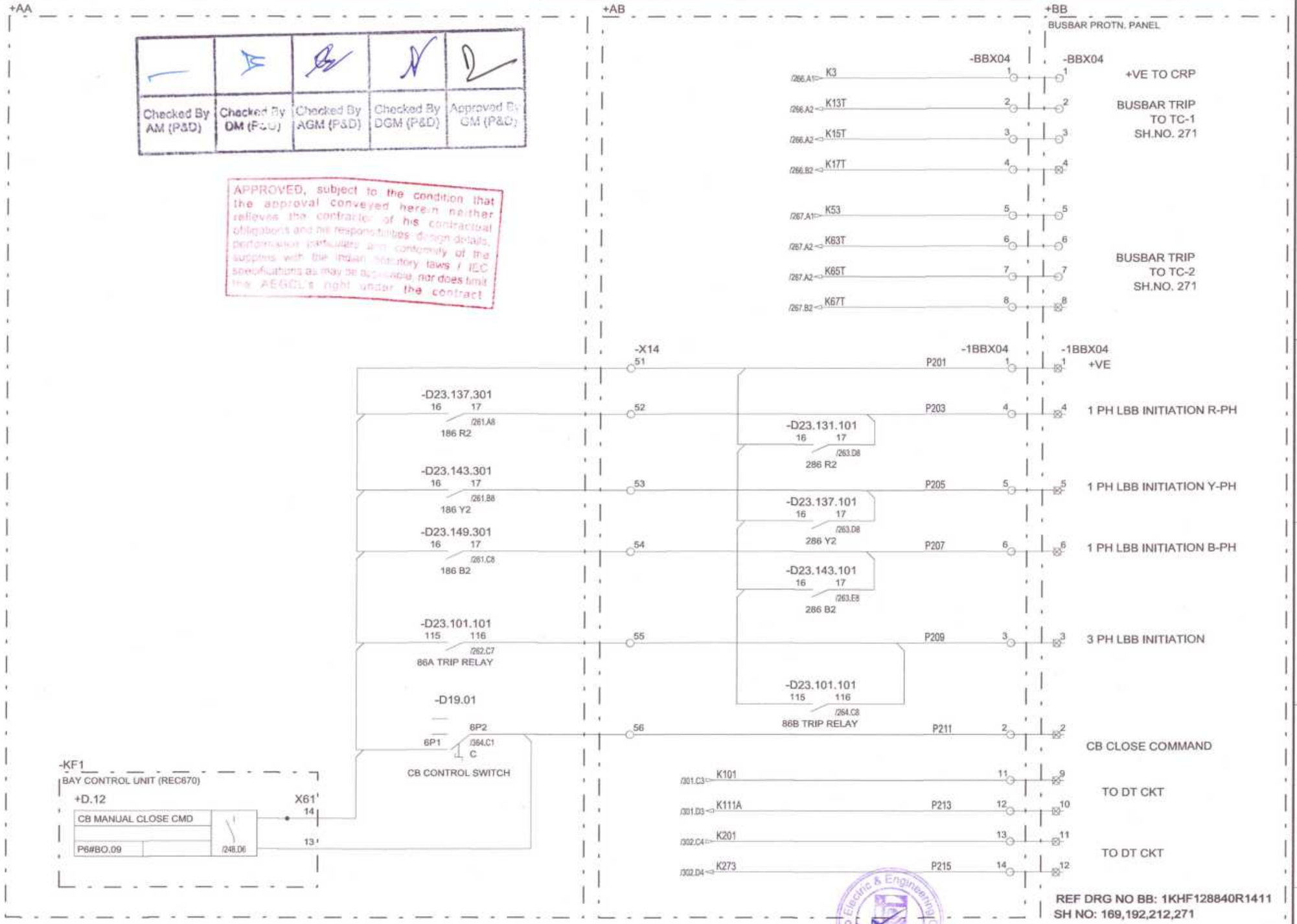

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Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP BB/LBB INTERFACING CKT.

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		n. sheet	266

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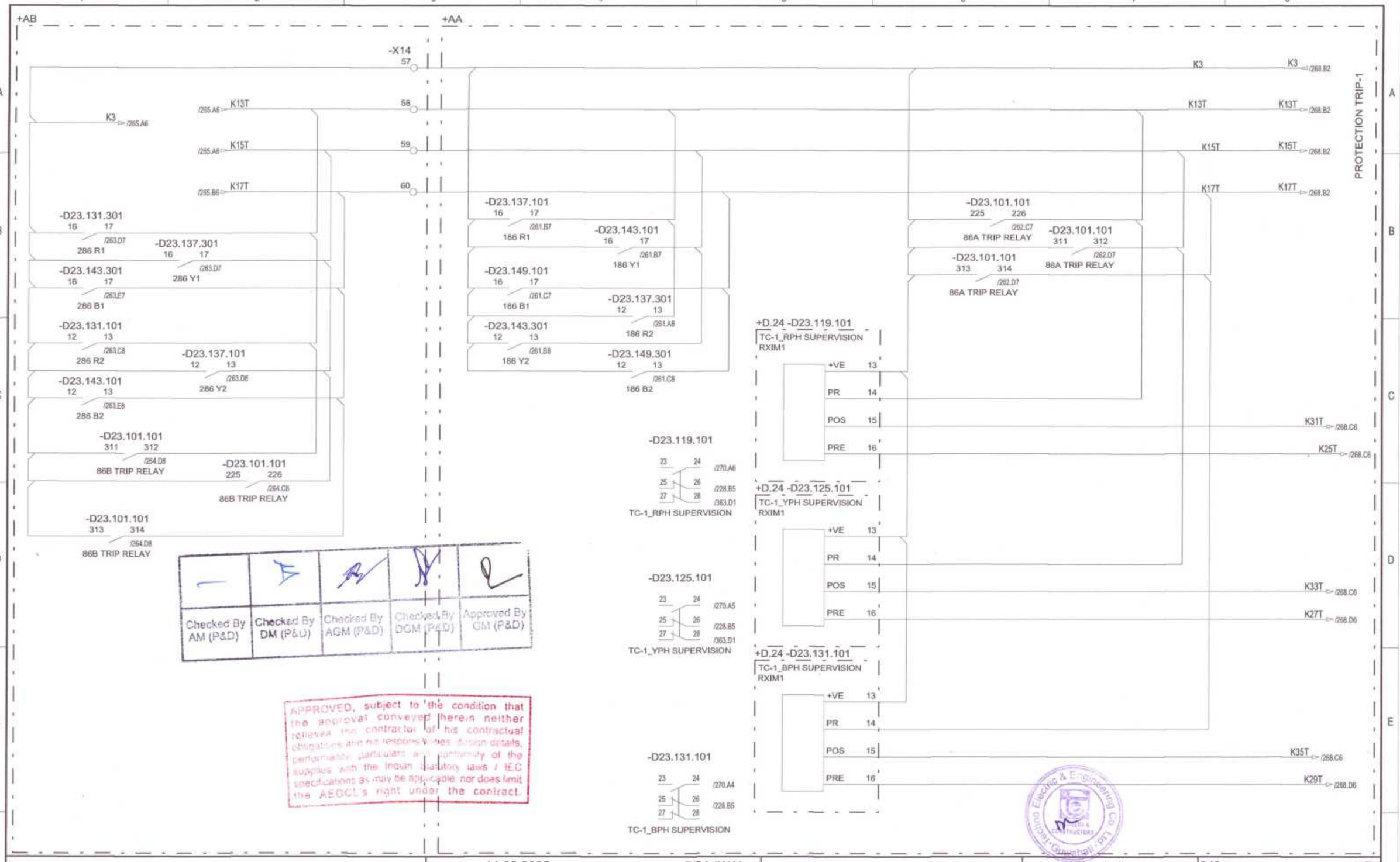

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Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP CB TC-1 INTERFACING CKT.

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Doc. kind.	Circuit diagram	Ref.Des.	=2R
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Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	266
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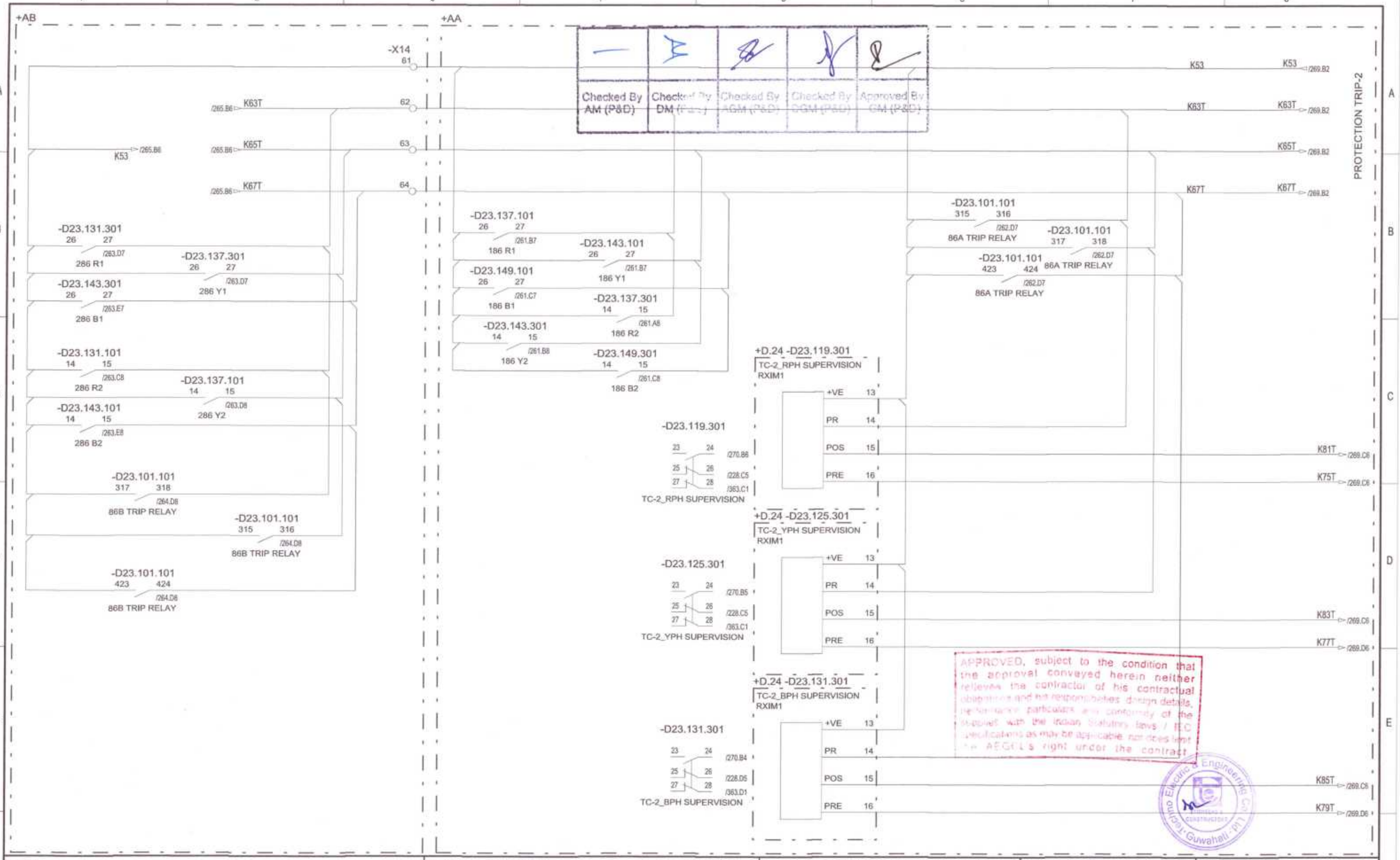

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Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP CB TC-2 INTERFACING CKT.

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
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Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	267
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+AA

+LCC

-LCCX04

-X321

Check

/132.C5	K1	124	23		DC SUPPLY-1
/132.C5	K2	125	14		TC-1
/266.A8	K3	126	23		+VE
/266.A8	K13T	127	14	FROM TRIP RELAY	PROTN.TRIP R PH.
/266.A8	K15T	128	15	FROM TRIP RELAY	PROTN.TRIP Y PH.
/266.B8	K17T	129	16	FROM TRIP RELAY	PROTN.TRIP B PH.
/266.C8	K31T	130	17	FROM POST CLOSE SUPVN. RELAY	R PH.POST CLOSE SUPERVISION
/266.D8	K33T	131	19	FROM POST CLOSE SUPVN. RELAY	Y PH.POST CLOSE SUPERVISION
/266.E8	K35T	132	21	FROM POST CLOSE SUPVN. RELAY	B PH.POST CLOSE SUPERVISION
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/266.E8	K29T	135	22	FROM PRE CLOSE SUPVN. RELAY	B PH.PRE CLOSE SUPERVISION

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Hydro Electric & Engineering Co. Ltd. Guwahati

FOR REF LCC DRAWINGS REFER
AEGCL-SONA-0816SN-VEN-2GIS-086
sh:28

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Rev.	Revision note	Date	Name

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP CB TRIP COIL-1 CIRCUIT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
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+LCC

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/132.E5	K51	136	16		
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					TC-2
/267.A8	K53	138	16	FROM TRIP RELAY	+VE
/267.A8	K63T	139	7	FROM TRIP RELAY	PROTN.TRIP R PH.
/267.A8	K65T	140	8	FROM TRIP RELAY	PROTN.TRIP Y PH.
/267.B8	K67T	141	9	FROM TRIP RELAY	PROTN.TRIP B PH.
/267.C8	K81T	142	10	FROM POST CLOSE SUPVN. RELAY	R PH.POST CLOSE SUPERVISION
/267.D8	K83T	143	12	FROM POST CLOSE SUPVN. RELAY	Y PH.POST CLOSE SUPERVISION
/267.E8	K85T	144	14	FROM POST CLOSE SUPVN. RELAY	B PH.POST CLOSE SUPERVISION
/267.C8	K75T	145	11	FROM PRE CLOSE SUPVN. RELAY	R PH.PRE CLOSE SUPERVISION
/267.D8	K77T	146	13	FROM PRE CLOSE SUPVN. RELAY	Y PH.PRE CLOSE SUPERVISION
/267.E8	K79T	147	15	FROM PRE CLOSE SUPVN. RELAY	B PH.PRE CLOSE SUPERVISION

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Electric & Engineering Co. Ltd. Guwahati

FOR REF LCC DRAWINGS REFER
AEGCL-SONA-0816SN-VEN-2GIS-086
sh:29

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
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Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
CB TRIP COIL-2 CIRCUIT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
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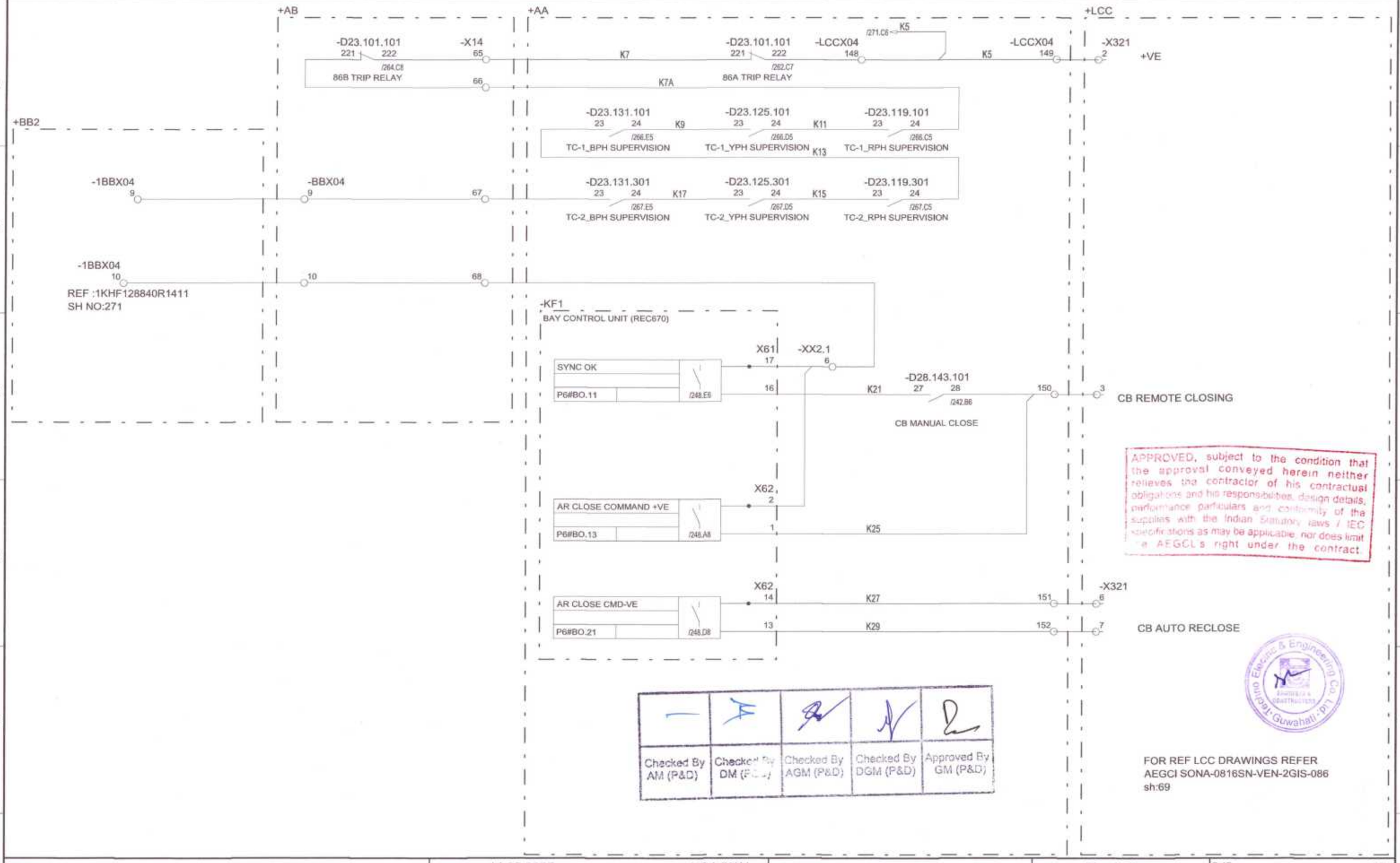

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Hitachi Electrical & Engineering Co. Ltd. Guwahati

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
CB CLOSING CIRCUIT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
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Doc. no. 1KHF128840R1113
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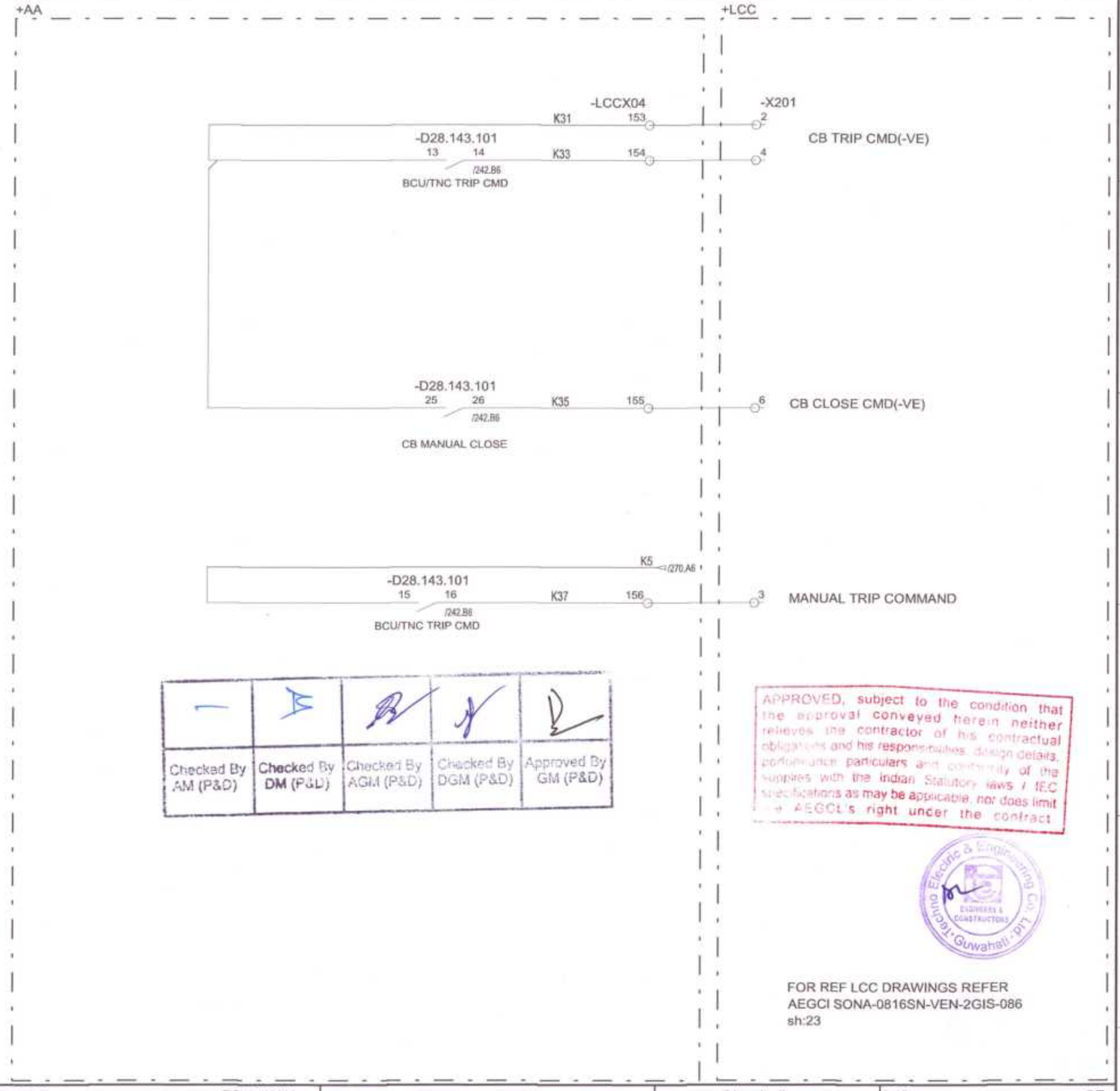

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Assam Electric & Engineering Co. Ltd. Guwahati
ENGINEERS & CONSTRUCTORS

FOR REF LCC DRAWINGS REFER
AEGCI SONA-0816SN-VEN-2GIS-086
sh:23

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Project ASSAM ELECTRICITY GRID CORPORATION LTD
400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
CB CLOSING CIRCUIT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
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Doc. no. 1KHF128840R1113
Ref.Des. =2R
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Language en
Sheet 271
n. sheet 301

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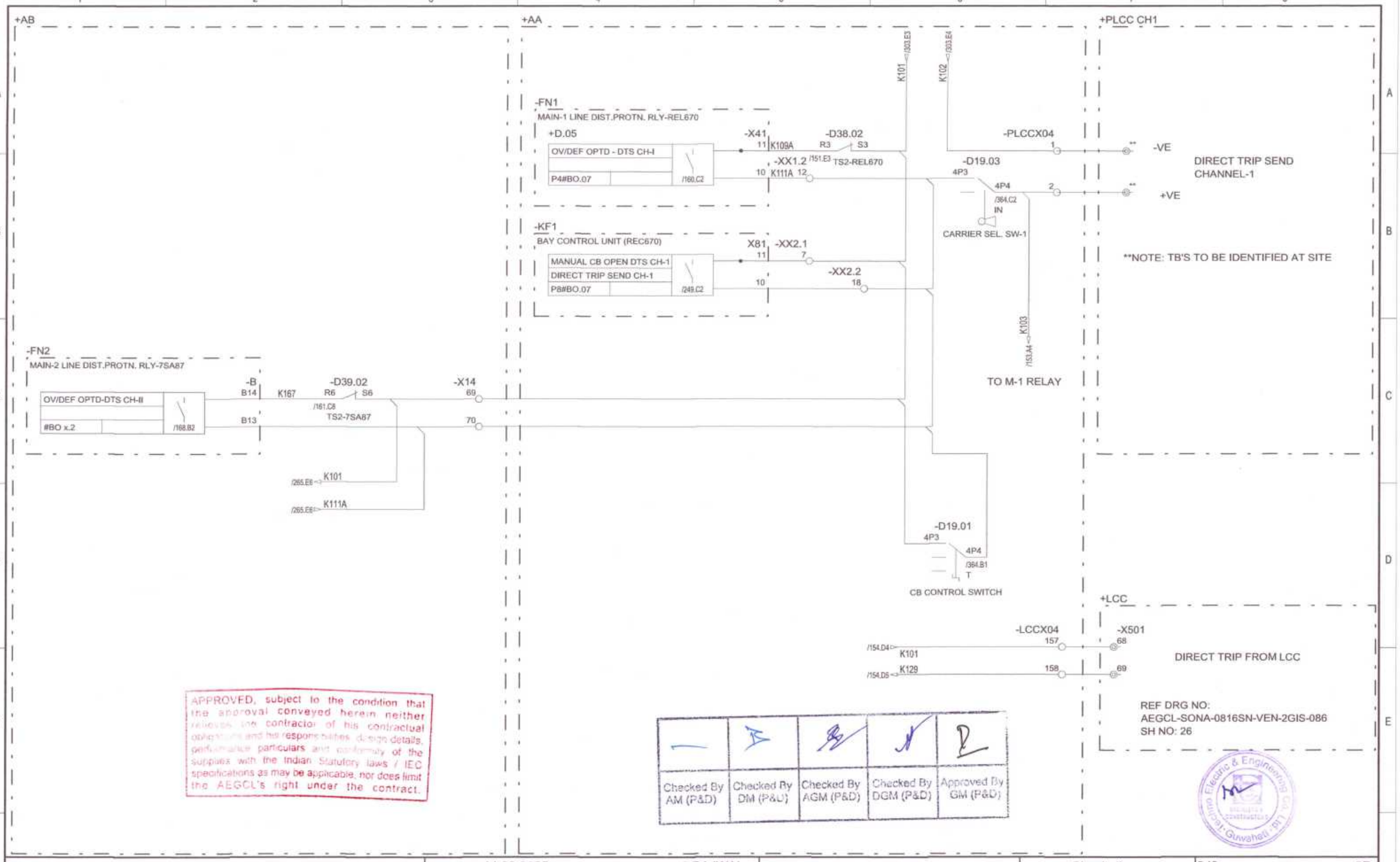

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400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
DT SEND-1 CKT.

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
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Doc. no. 1KHF128840R1113
Ref.Des. =2R
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Sheet 301
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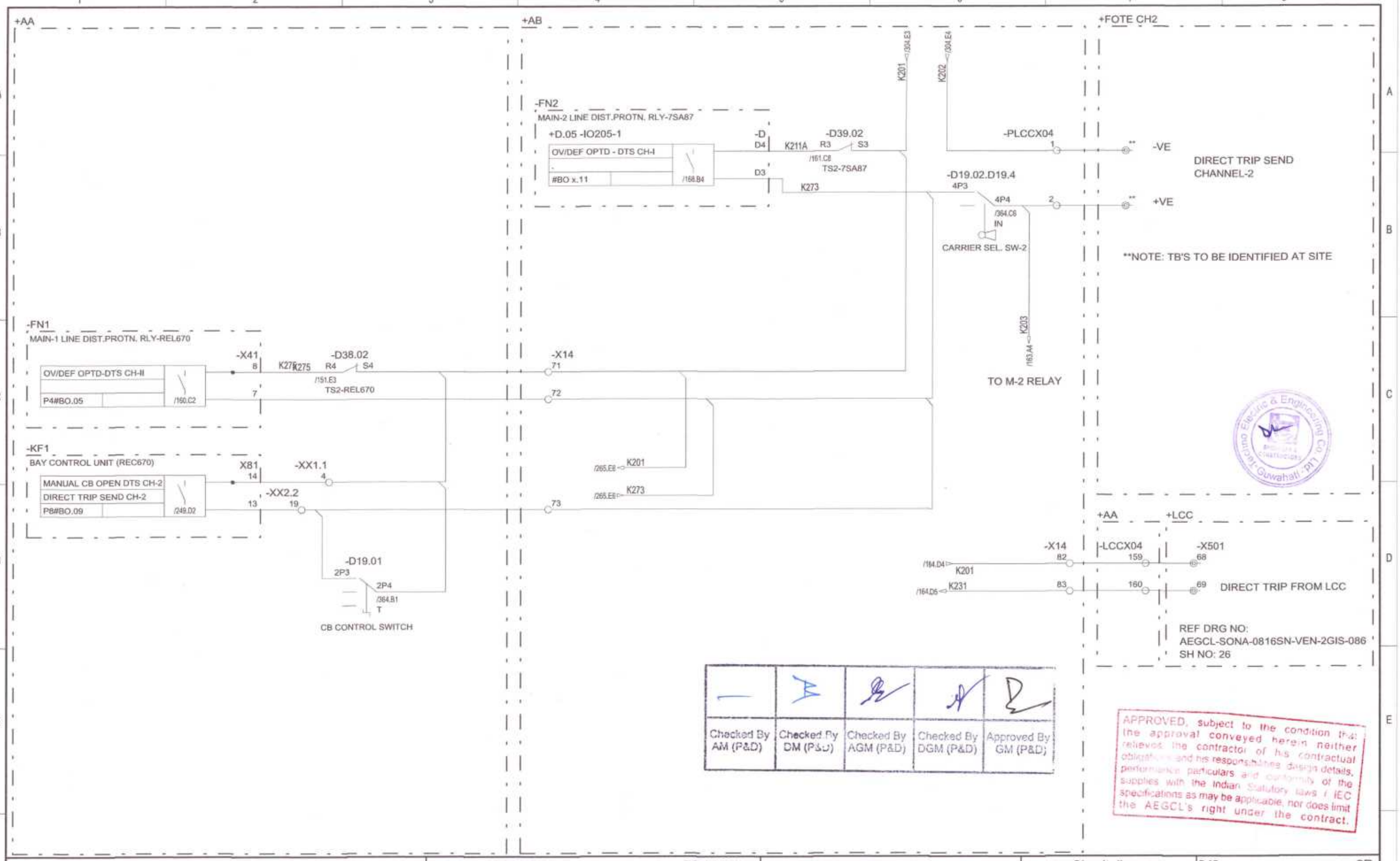

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400/220kV GIS SONAPUR
128840

Title 220kV CONTROL & RELAY PANEL
220kV LINE CRP
DT SEND-2 CKT.

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Doc. kind. Circuit diagram
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n. sheet 303

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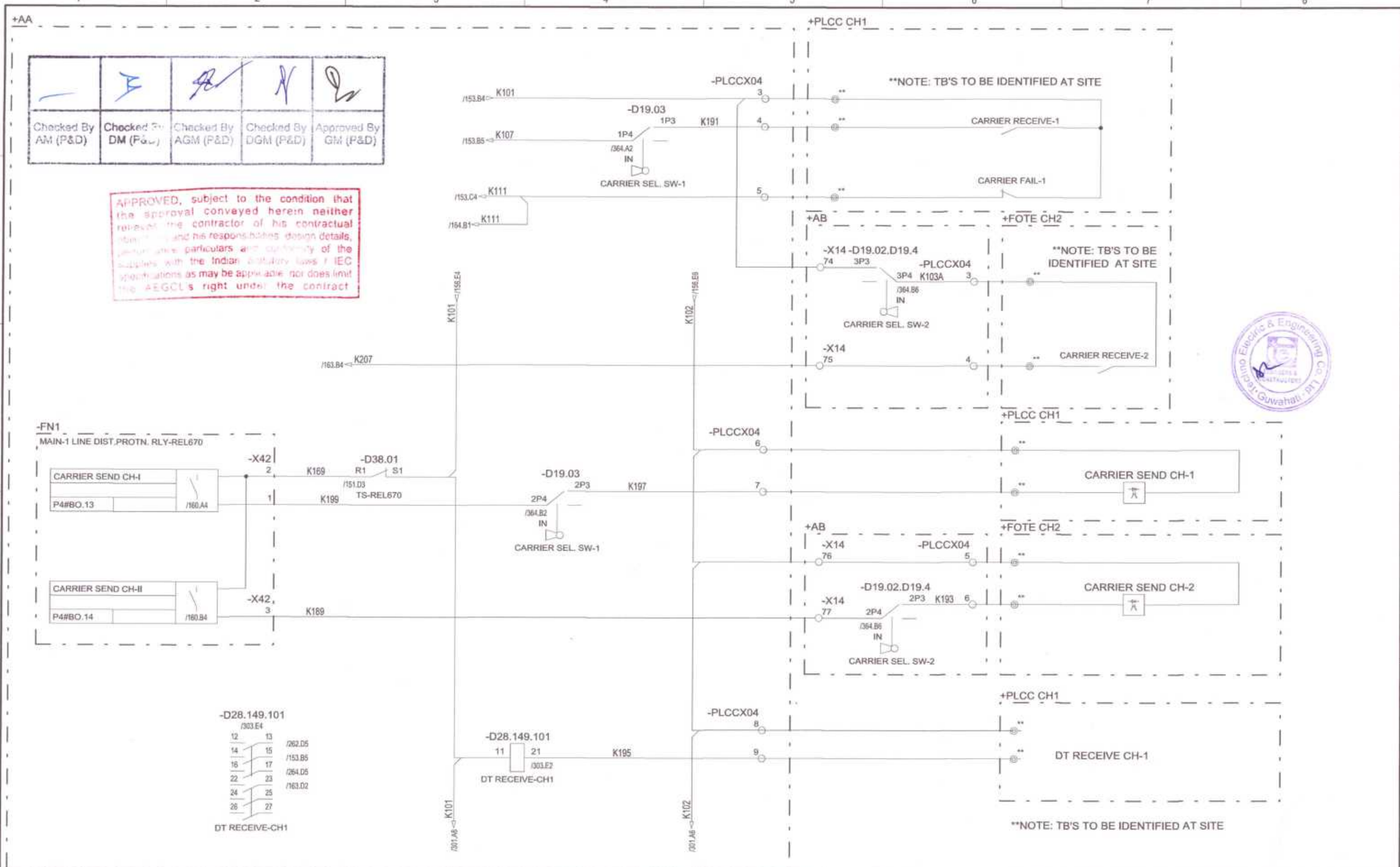

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Approved 14.08.2025 THEJASWINI AR
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Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP CARRIER SIGNALS CKT

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Doc. kind. Circuit diagram DCC EFS
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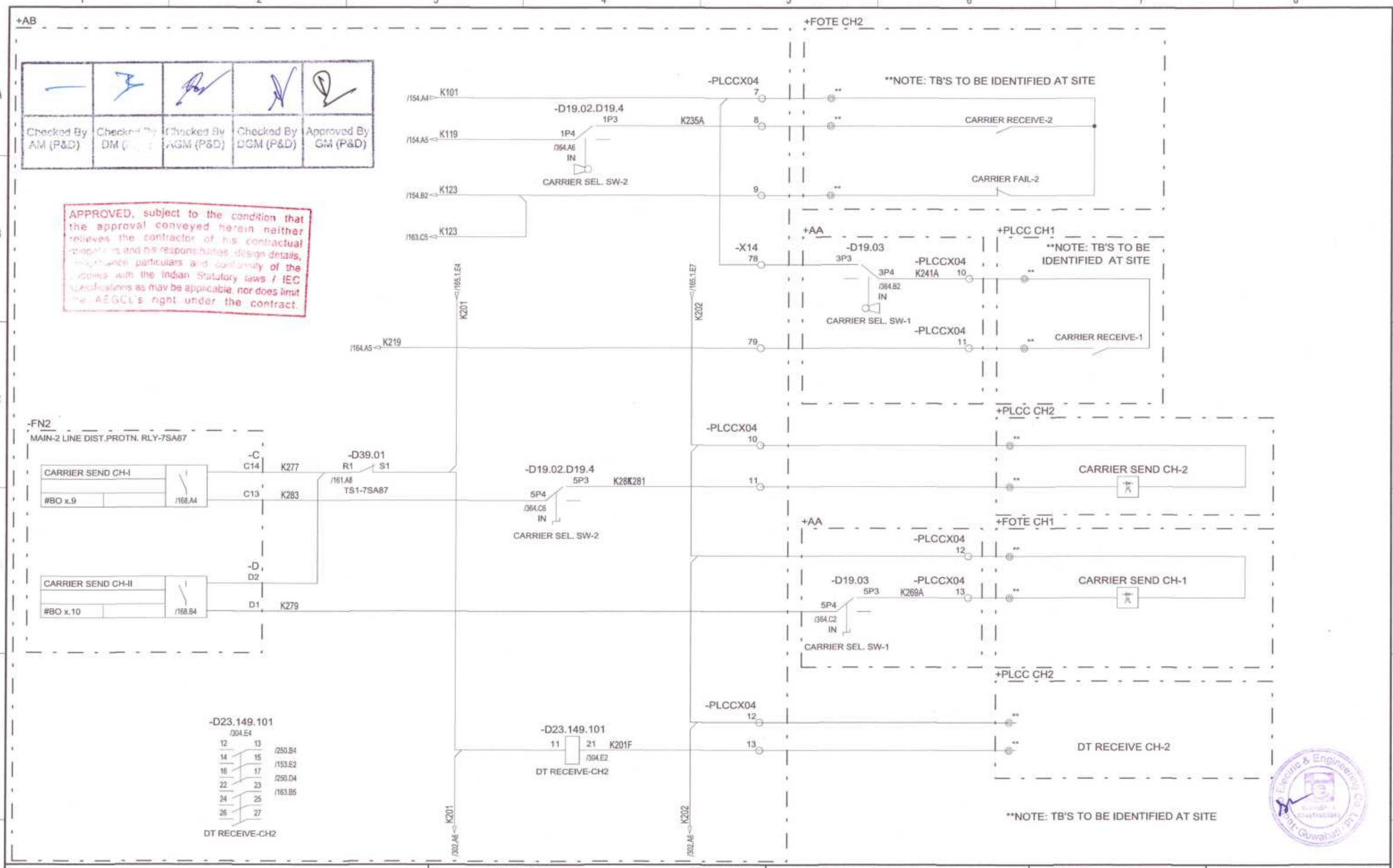

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP CARRIER SIGNALS CKT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 304
n. sheet 308

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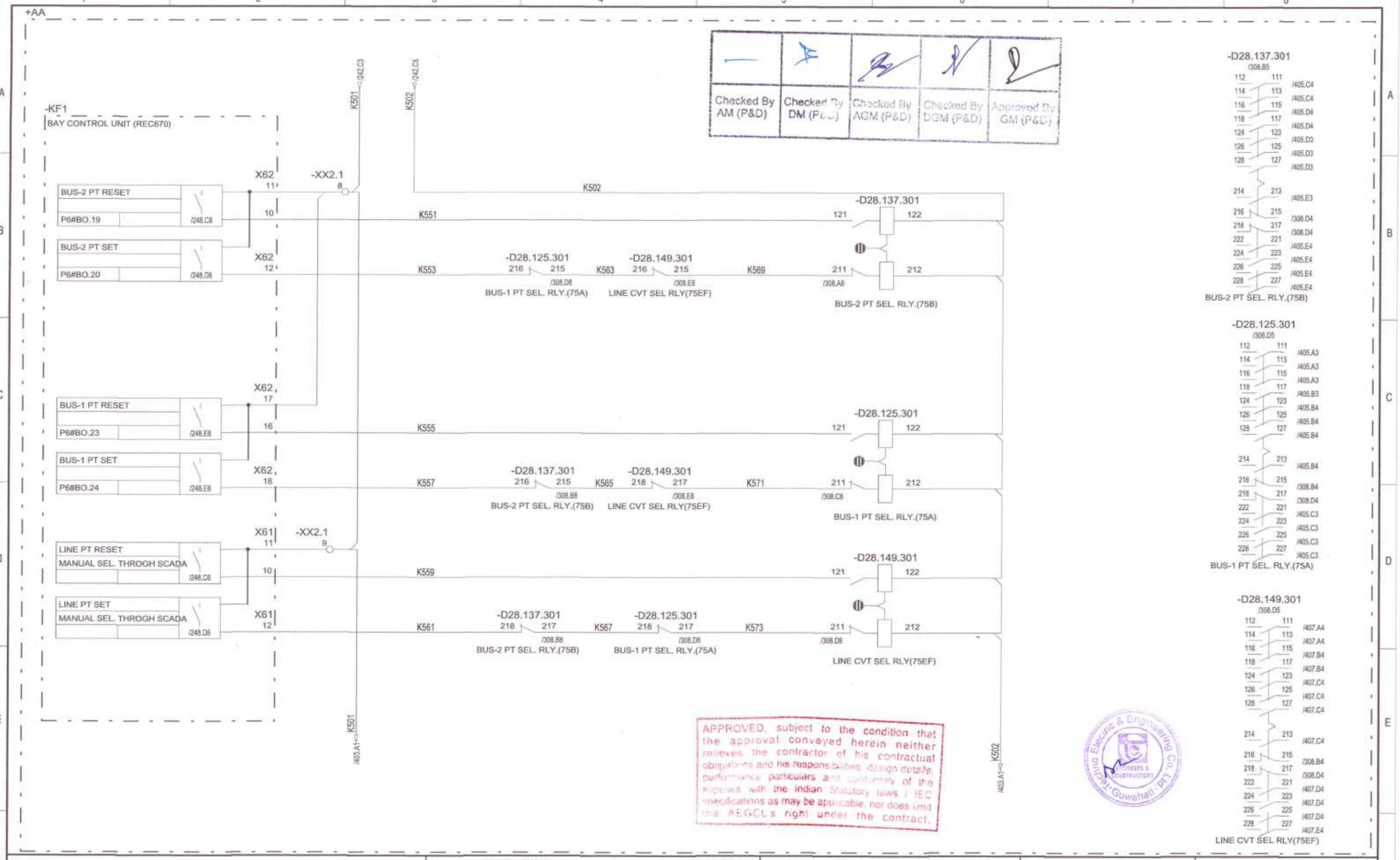

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

1MYN691003-102(A3)REV01

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP BUS-1/2 LINE PT CKT

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 308
n. sheet 403

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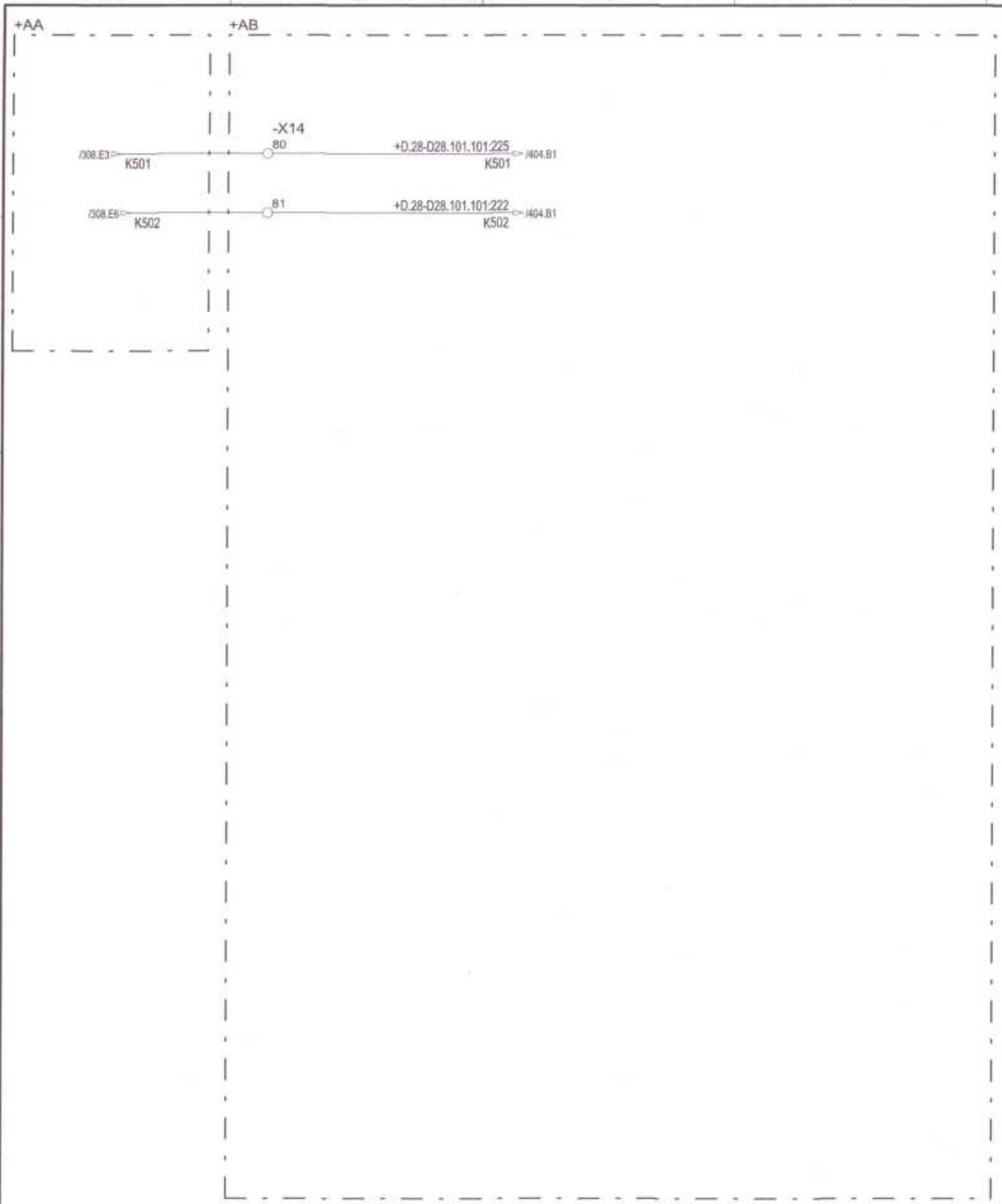

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Assam Electric & Engineering Co. Ltd. Guwahati

Based on				Prepared	14.08.2025	PRAJWAL
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK	Approved	14.08.2025	THEJASWINI AR
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK	Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	
Rev.	Revision note	Date	Name			

1MYN691003-102(A3)REV01

Title 220kV CONTROL & RELAY PANEL LINE-TIE-<LINE> PT SELECTION CKT.

HITACHI Hitachi Energy India Limited

Doc. kind.	Circuit diagram DCC EFS	Ref.Des.	=2R
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1103	Sheet	403
		n. sheet	404

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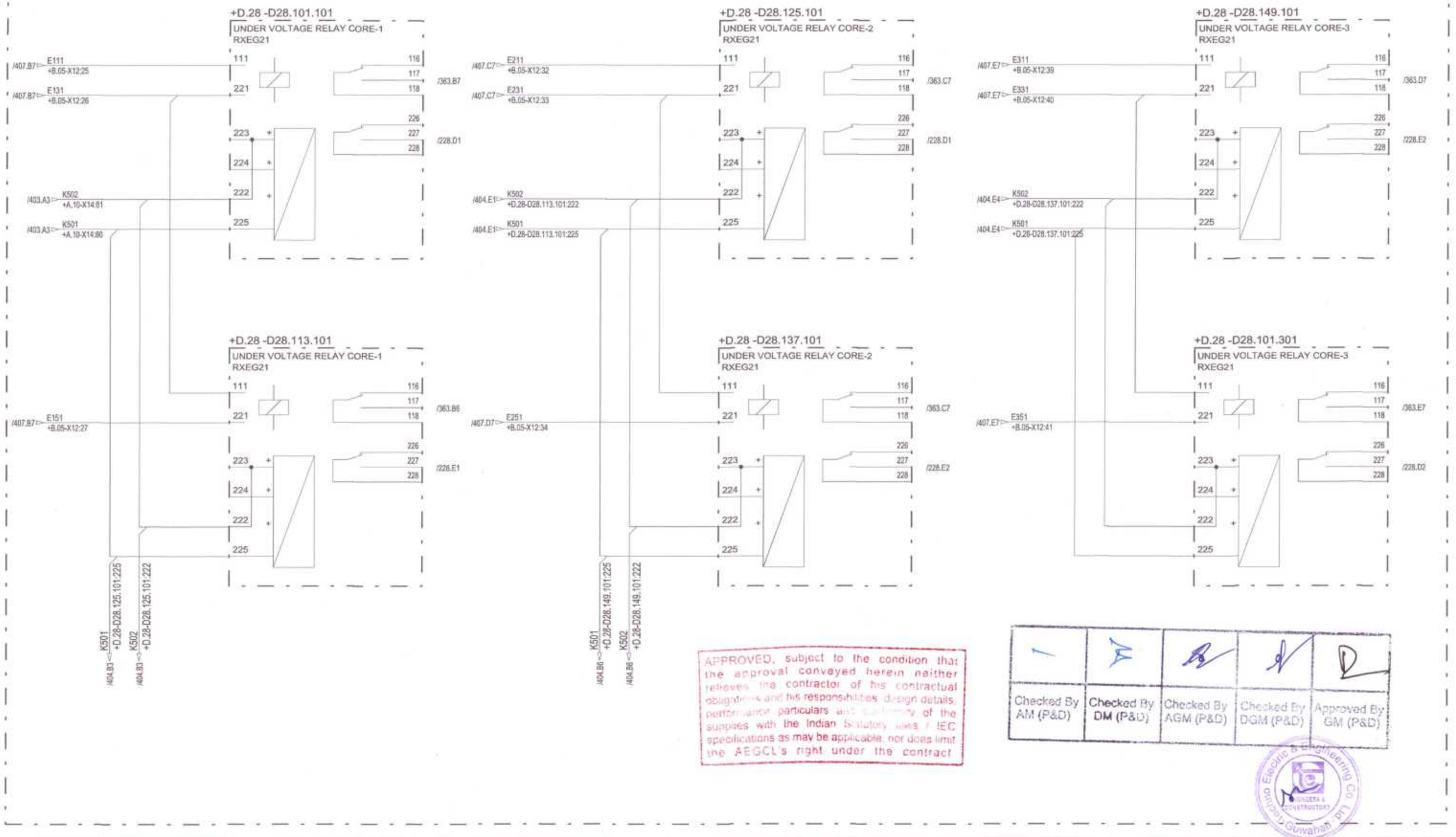

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Technico Electric & Engineering Co. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL LINE-TIE-<LINE> PT SELECTION CKT.

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1103
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 404
n. sheet 405

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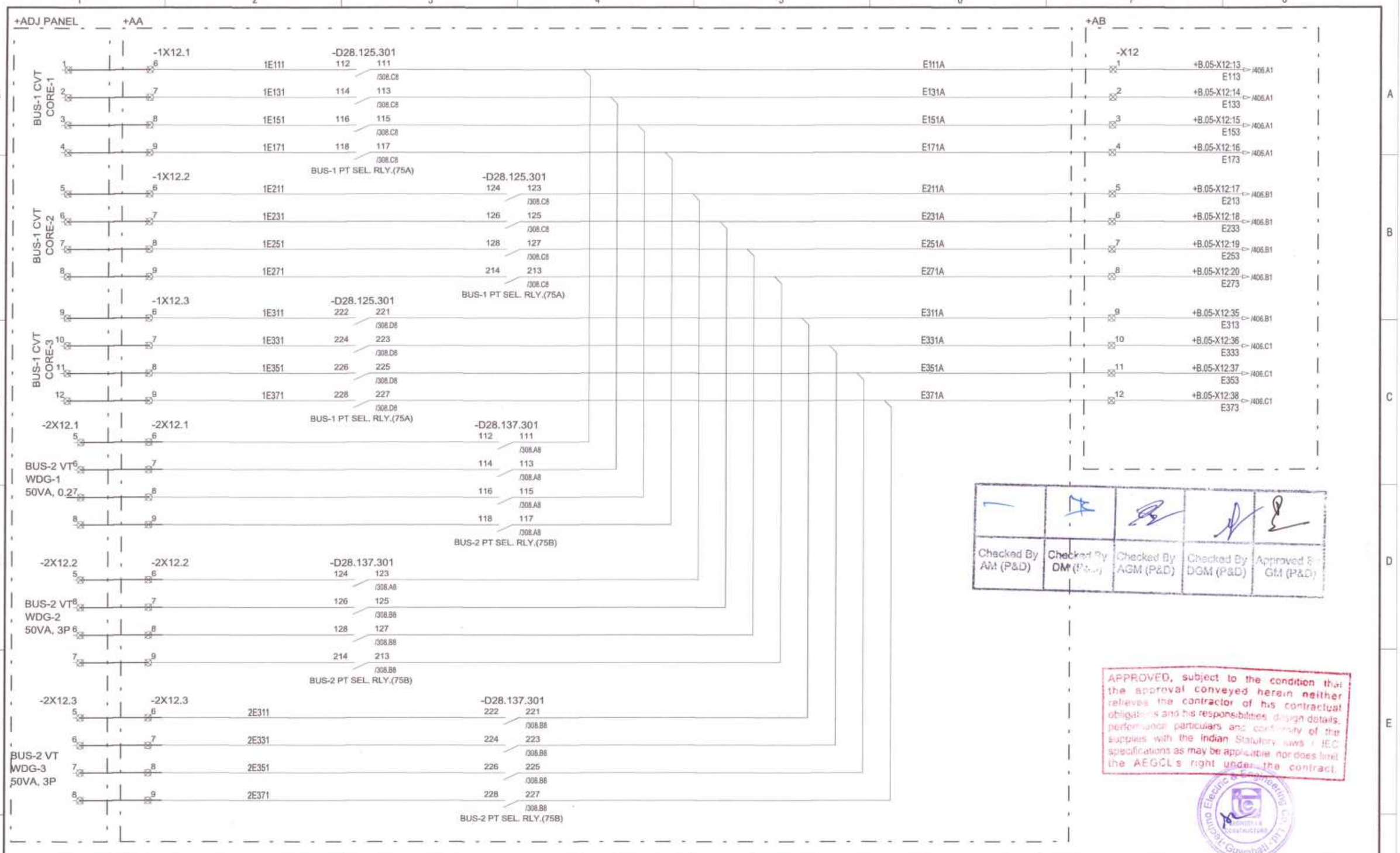

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Assam Electricity Grid Corporation Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL LINE-TIE-<LINE> PT SELECTION CKT.

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1103
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 405
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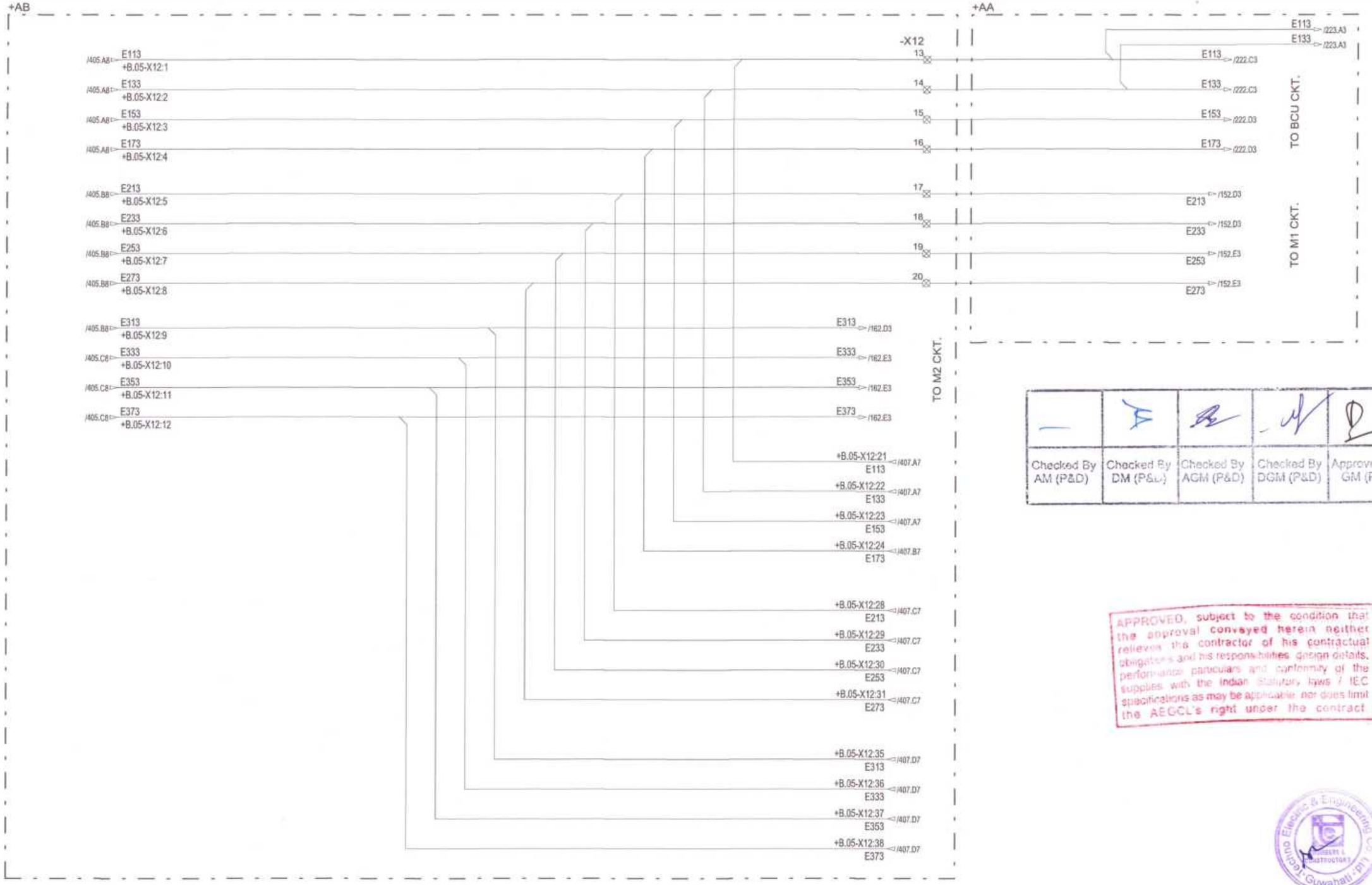

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Electric & Engineering Co. Pvt. Ltd. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL LINE-TIE-<LINE> PT SELECTION CKT.

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram
DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1103

Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 406
n. sheet 407

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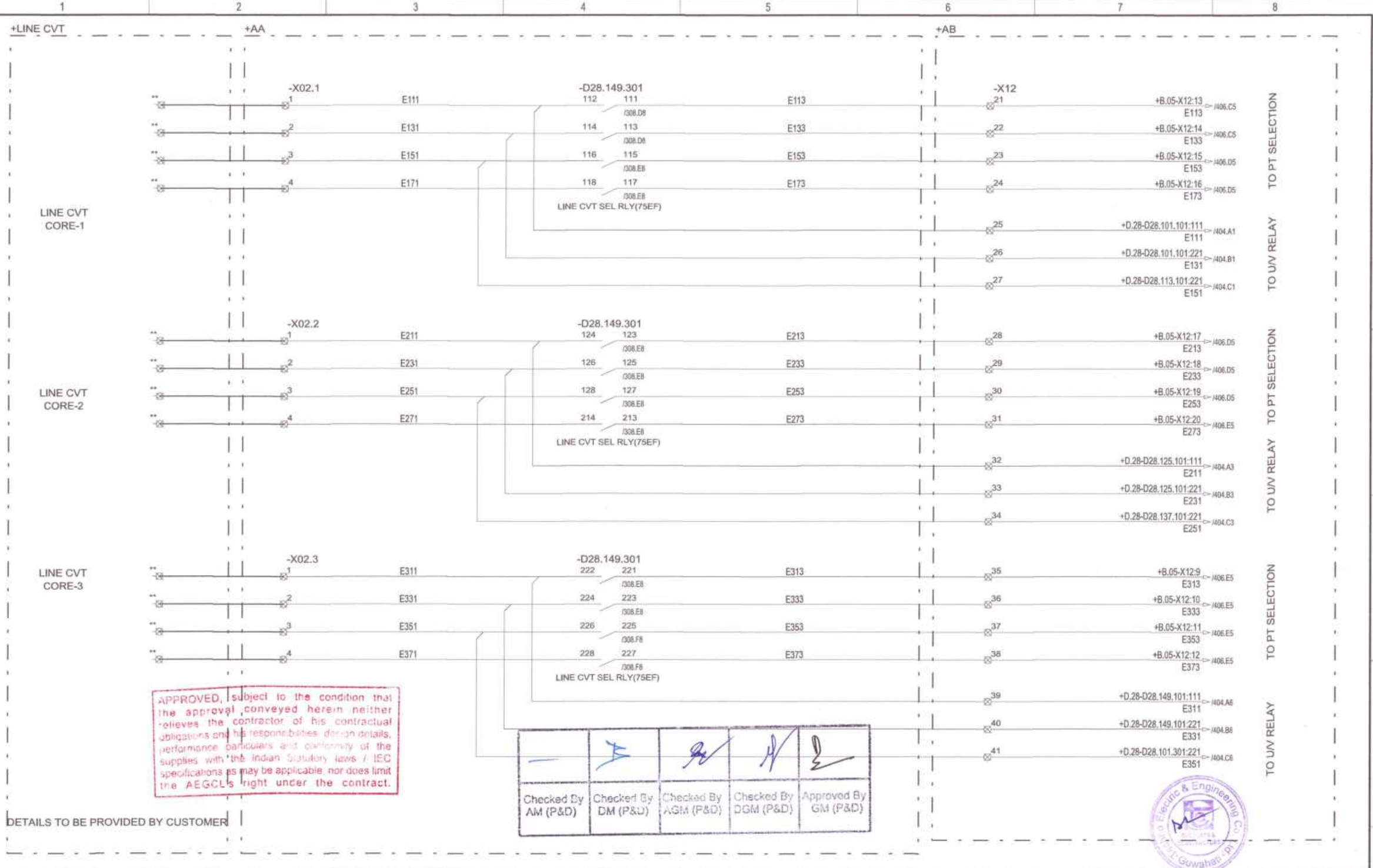

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01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL LINE-TIE-<LINE> PT SELECTION CKT.

HITACHI — Hitachi Energy India Limited

Doc. kind.	Circuit diagram	DCC	EFS
Resp. dept.	PG-GAS	Rev. ind.	02
Doc. no.	1KHF128840R1103		

Ref.Des.	=2R
Language	en
Sheet	407
n. sheet	361

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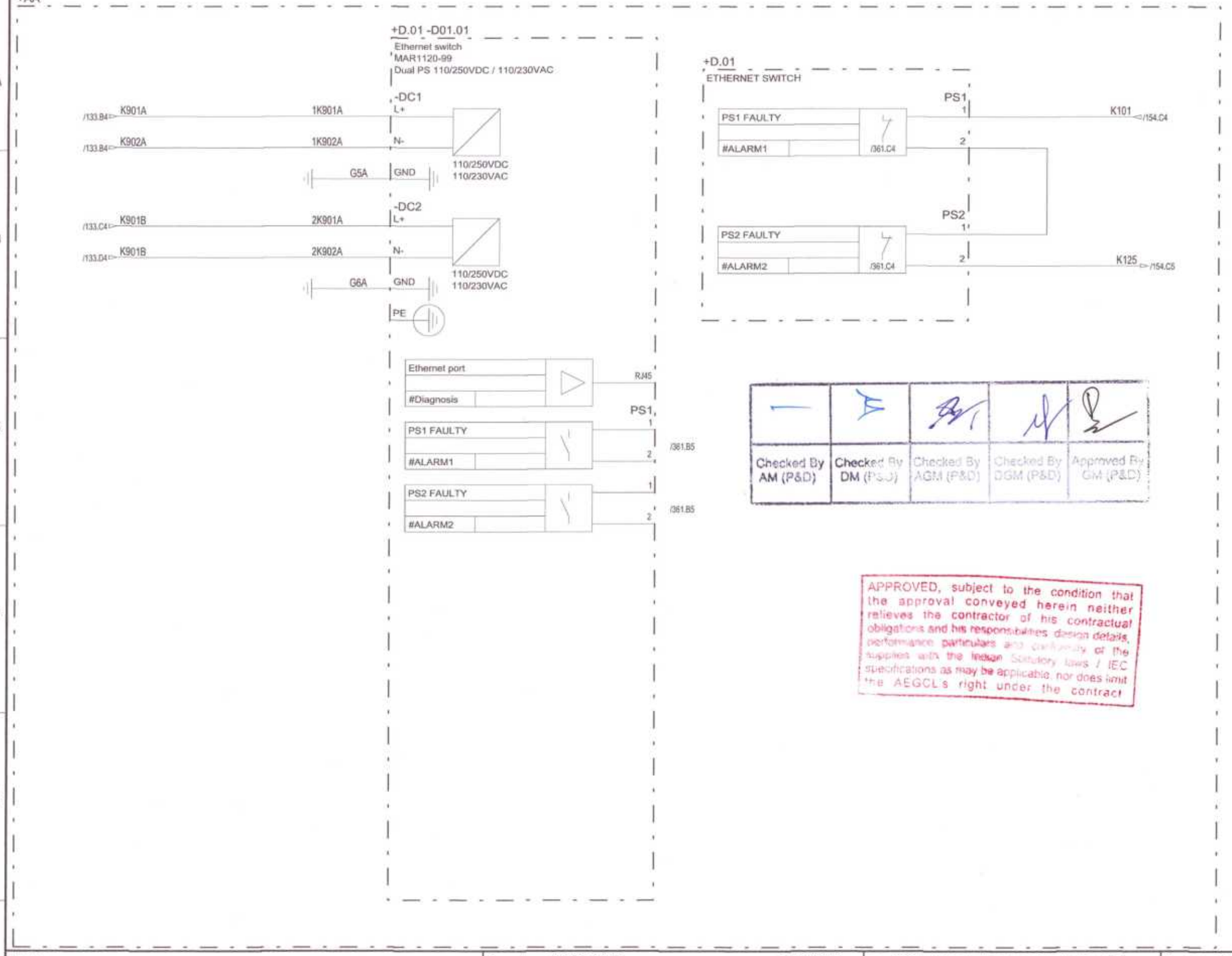

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Electric & Engineering Co. Ltd. Guwahati

Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP ETHERNET SWITCH CIRCUIT

HITACHI Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	361
		n. sheet	362

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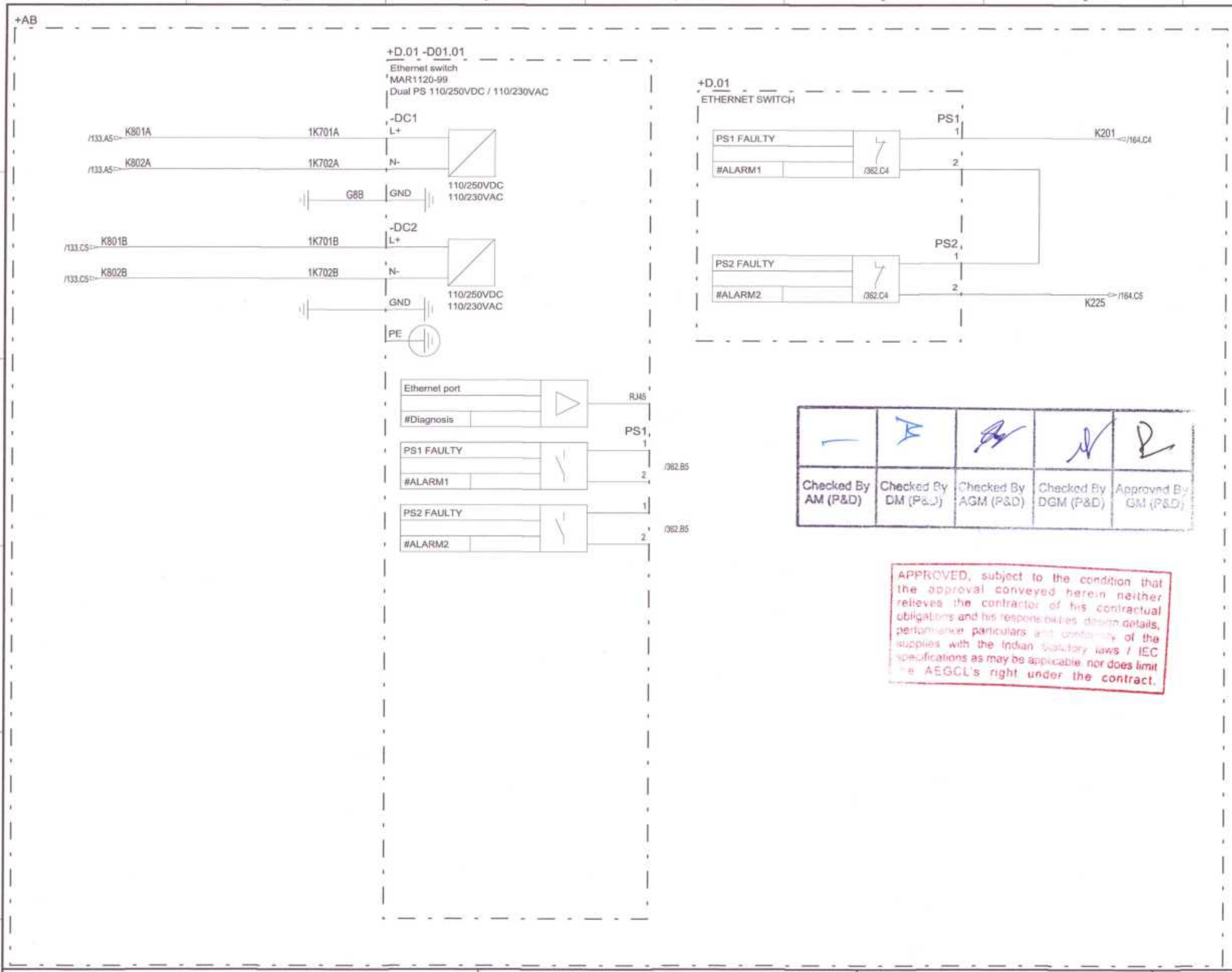

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02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP ETHERNET SWITCH CIRCUIT

HITACHI Hitachi Energy India Limited

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	362
		n. sheet	363

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+AA -X04

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86A TRIP RELAY		/262.C7	U3	76	
-D23.101.101	117	118	U5	78	
86A TRIP RELAY		/262.C7	U7	80	
-D23.101.101	223	224	U9	82	
86A TRIP RELAY		/262.C7	U11	84	
-D23.101.101	227	228	U13	86	
86A TRIP RELAY		/262.D7	U15	88	
-D23.101.101	427	428	U17	90	
86A TRIP RELAY		/262.D7	U19	92	
-D23.125.301	27	28	U21	94	
TC-2_YPH SUPERVISION		/267.D5	U23	96	
-D23.119.301	27	28	U25	98	
TC-2_RPH SUPERVISION		/267.D5	U27	99	
-D23.131.301	27	28	U29	100	
TC-2_BPH SUPERVISION		/267.E5	U31	101	
-D23.119.101	27	28	U33	102	
TC-1_RPH SUPERVISION		/266.D5	U35	103	
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186 R2		/261.A8	U47	109	
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186 Y2		/261.B8	U63	85	
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186 B2		/261.C8	U75	97	

+AB -X04

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286 R2		/263.D8	U23A	38	
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286 R2		/263.D8	U31A	42	
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286 B2		/263.E8	U47A	50	
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286 B2		/263.E8	U51A	52	

-X04

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-D28.101.301	118	117	U97	67	
UNDER VOLTAGE RELAY CORE-3	/404.C8	116	U99	68	

APPROVED, subject to the condition that the approval conveyed herein neither relieves the contractor of his contractual obligations and his responsibilities, design details, performance particulars are in conformity of the supplies with the Indian Statutory laws / IEC specifications as may be applicable, nor does limit the AEGCL's right under the contract

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Assam Electricity Grid Corporation Ltd. Engineering Co. Guwahati

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK

Based on

Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL 220kV LINE CRP SPARE CONTACT DISTRIBUTION

HITACHI Hitachi Energy India Limited

Doc. kind. Assembly drawing DCC ELU
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R
Rev. ind. 02
Language en
Sheet 363
n. sheet 364

1MYN691003-102(A3)REV01

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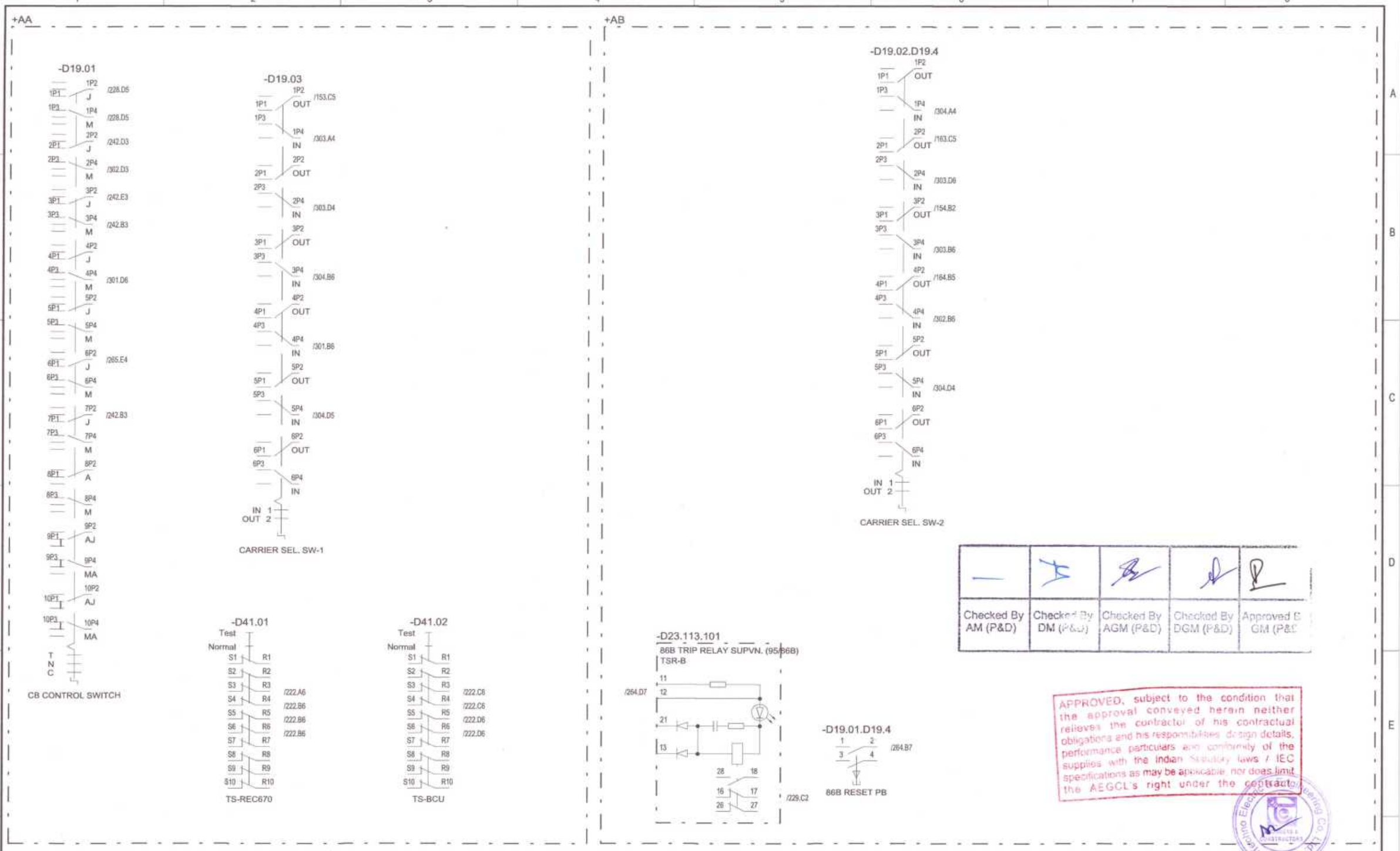

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Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

Title: 220kV CONTROL & RELAY PANEL 220kV LINE CRP MASTER SYMBOLS

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Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 02	Language en
Doc. no.	1KHF128840R1113	Sheet	364
		n. sheet	401

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-XX2.2	19	4	23
-LCCX04	156	32	188
-AX01	11	3	14
-ACX13	2	1	3
-X13	12	8	20
-XXDC1.1	7	2	9
-XXDC1.2	7	2	9
-XXDC2.1	5	3	8
-XXDC2.2	5	3	8
-XX1.2	12	3	15
-PLCCX04	13	3	16
-1DCX03	2	1	3
-2DCX03	2	1	3
-XX1.1	4	2	6
-X04	111	23	134
-1DCX13	2	1	3
-2DCX13	2	1	3
-ACX03	2	1	3
-1X12.3	4	5	9
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-2X12.3	4	5	9

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Prepared 14.08.2025 PRAJWAL
Approved 14.08.2025 THEJASWINI AR
Project ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840

Title 220kV CONTROL & RELAY PANEL SPARE TERMINALS SPARE TERMINALS

HITACHI Hitachi Energy India Limited

Doc. kind. Circuit diagram DCC EFS
Resp. dept. PG-GAS
Doc. no. 1KHF128840R1113
Ref.Des. =2R +AA
Rev. ind. 02
Language en
Sheet 401
n. sheet 402

1MYN691003-102(A3)REV01

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-2X12.1	Used:	4
	(20%)Spare:	5
	Total:	9

1 2 3 4 5

-1X12.2	Used:	4
	(20%)Spare:	5
	Total:	9

1 2 3 4 5

-2X12.2	Used:	4
	(20%)Spare:	5
	Total:	9

1 2 3 4 5

-LCCX03	Used:	4
	(20%)Spare:	1
	Total:	5

5

-X02.1	Used:	4
	(20%)Spare:	1
	Total:	5

5

-X02.2	Used:	4
	(20%)Spare:	1
	Total:	5

6

-X02.3	Used:	4
	(20%)Spare:	1
	Total:	5

5

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

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Based on			
01	AS PER CUSTOMER COMMENTS	10.10.2025	PK
02	AS PER CUSTOMER COMMENTS	19.11.2025	PK
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	14.08.2025	PRAJWAL
Approved	14.08.2025	THEJASWINI AR
Project	ASSAM ELECTRICITY GRID CORPORATION LTD 400/220kV GIS SONAPUR 128840	

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	Used:	(20%)Spare:	Total:
-X11	4	1	5
-BX01	11	3	14
-PLCCX04	13	3	16
-X14	81	17	98
-DX01	9	2	11
-1BBX04	6	2	8
-X04	48	10	58
-X01.3	9	2	11
-X08	3	1	4
-BBX04	14	3	17
-X12	41	9	50

Checked By AM (P&D)	Checked By DM (P&D)	Checked By AGM (P&D)	Checked By DGM (P&D)	Approved By GM (P&D)

Techno Electric & Engineering Co. Ltd. Guwahati

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