

Substation Automation System SAS ARCHITECTURE

400/220KV GIS SUBSTATION AT SONAPUR ASSAM

END USER: M/S. ASSAM ELECTRICITY GRID CORPORATION LIMITED
EPC: M/S. TECHNO ELECTRIC AND ENGINEERING COMPANY LTD

We reserve all rights in this document and in the information contained therein. Reproduction use or disclosure to third parties without express authority is strictly forbidden. Copyright © by Hitachi Energy India Limited.

"Disclaimer – Unauthorized access

The offered solution may be accessed through the customer network and therefore represents a danger which poses a potential threat of intrusion by unauthorized parties. Therefore, Hitachi Energy India Limited strongly recommends that the customer insures/implements necessary protection measures against the possibility of such unauthorized access.

Hitachi Energy India Limited disclaims any responsibility and shall under no circumstances be liable for damages or malfunctions caused by external intrusion of any kind whatsoever."

DOCUMENT	SAS ARCHITECTURE
PROJECT	400/220KV GIS SUBTSATION AT SONAPUR ASSAM
SUBSTATION	400/220KV GIS SUBSTATION
END USER	M/S. ASSAM ELECTRICITY GRID CORPORATION LIMITED
EPC CONTRACTOR	EPC: M/S. TECHNO ELECTRIC AND ENGINEERING COMPANY LTD
SUPPLIER	M/s. HITACHI ENERGY INDIA LIMITED
PO / LOA No.	LETTER OF AWARD(LOA)/TECHNO/SONAPUR(M/S AEGCL)/HITACHI ENERGY/ CRP & SAS/24-25 Dtd:30/11/2024
HEIL SO REF.	128840

Revisions:

Rev.	Prep. / Appr.	Description	Date
00	DP / PSK	First Submission	01.09.2025
01	DP / PSK	Second Submission	30.09.2025
02	DP / PSK	Third Submission	19.11.2025
03	DP / PSK	Fourth Submission	17.12.2025
04	DP / PSK	Corrected as per comments	23.01.2026

CUSTOMER M/S. ASSAM ELECTRICITY GRID CORPORATION LIMITED	DEPT. PG-GA	DOCUMENT ID. 1KHF128840R2101	Rev. 04	Lang. en	Page -
PROJECT 400/220KV GIS SUBTSATION AT SONAPUR ASSAM			PREP. DP	APPR. PSK	DATE 23.01.2026

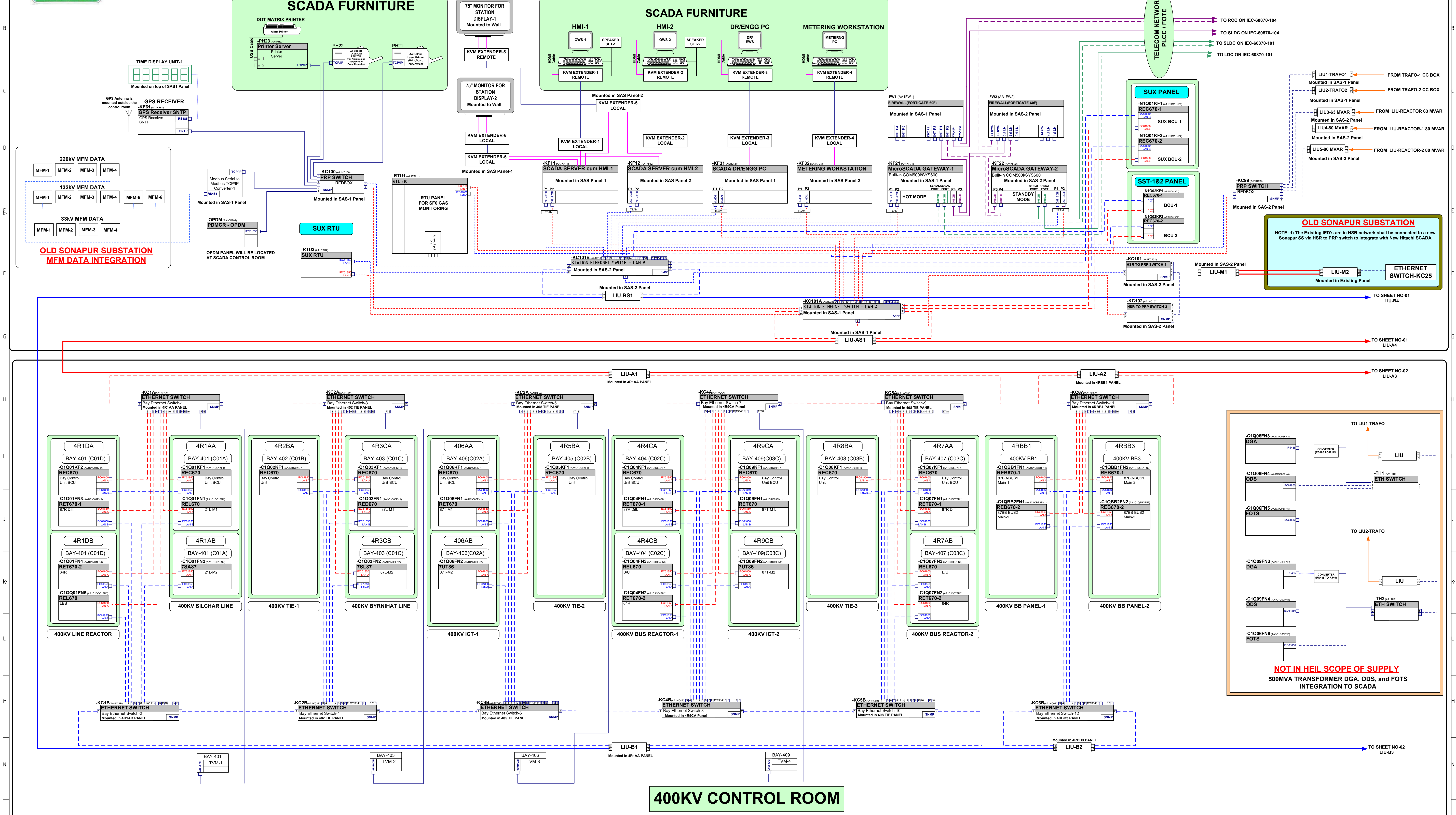


SUPPLY OF CRP AND SAS FOR 400/220KV GIS SUBSTATION AT SONAPUR, ASSAM

END USER: ASSAM ELECTRICITY GRID CORPORATION LIMITED

SUBSTATION AUTOMATION SYSTEM – COMMUNICATION CONNECTIVITY DIAGRAM

HITACHI



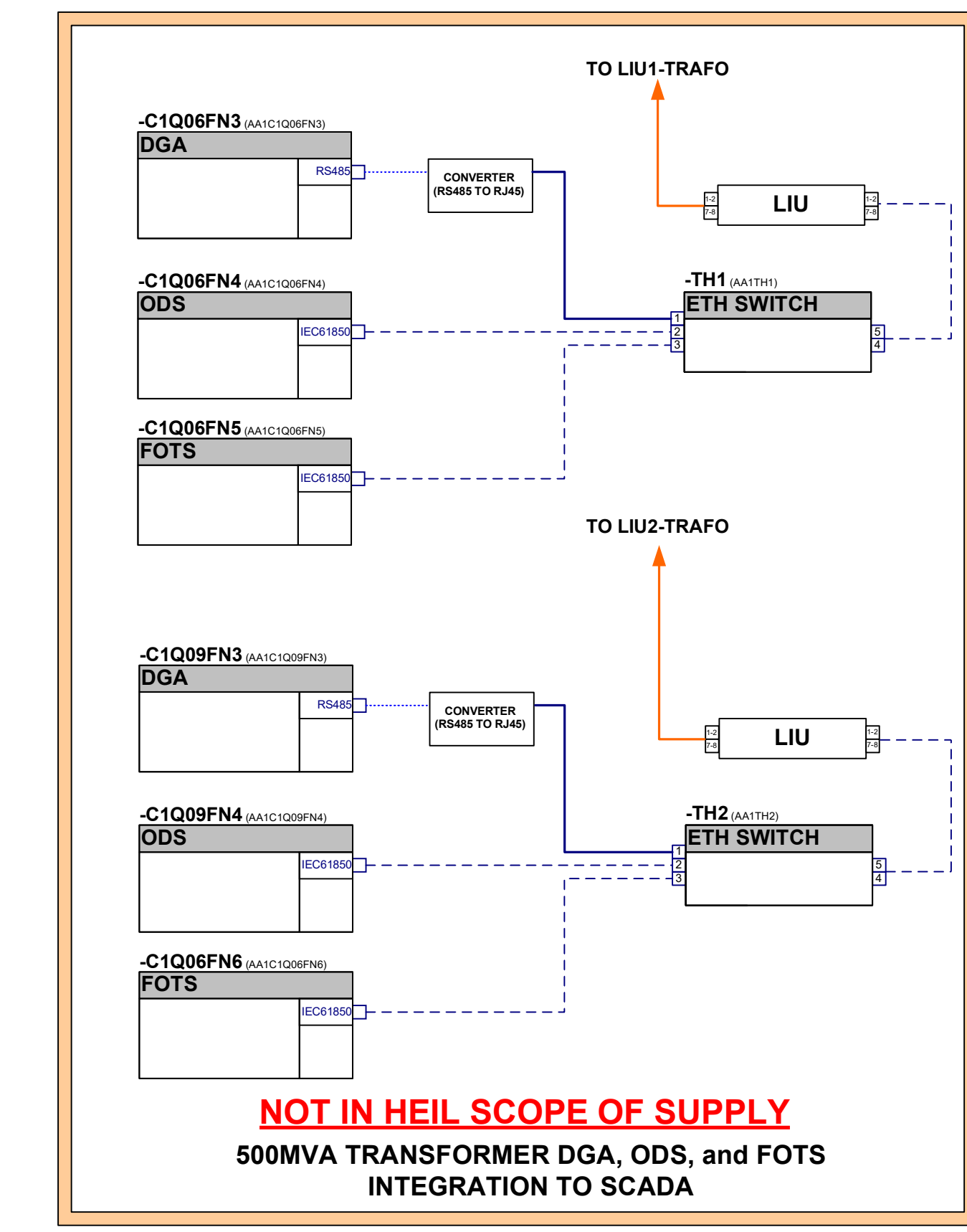
LEGEND:

—	Armored CAT6 Cable with RJ45 Connector- PRP LAN-A
---	Armored CAT6 Cable with RJ45 Connector- PRP LAN-B
---	Unarmored Multimode Fiber Optic Patch cord – PRP LAN-A
---	Unarmored Multimode Fiber Optic Patch cord – PRP LAN-B
---	HDMI CABLE
---	Armored CAT6 Cable with RJ45 Connector
---	Armored CAT6 Cable with RJ45 Connector/IEC104 Network Primary
---	Armored CAT6 Cable with RJ45 Connector/IEC104 Network Redundant
---	Armored Multimode 6 Core Fiber Optic cable – PRP LAN-A
---	Armored Multimode 6 Core Fiber Optic cable – PRP LAN-B
---	Armored Multimode 6 Core Fiber Optic cable For DGA, ODS, AND FOTS Connectivity TO SCADA
---	RS485 Cable

LIU – LIGHT INTERFACE UNIT

NOTE:

- All the ports of Ethernet switches to which Fiber Optic/CAT-6 cable are not connected to be considered as spare ports.
- ## Supply of necessary Telecom network (SDH/PLCC) for RSCC/RCC integration is not in Hitachi Energy Scope of supply.
- Transformer/Reactor auxiliary devices like DGA/ODS/FOTS/RTCC and CSD Device supply is not in Hitachi Energy Scope of Supply
- GPS Antenna is to be mounted outside the control room
- The old Sonapur Substation data will be integrated to New Sonapur Substation via IEC61850 Protocol.
- The existing IED's in old Sonapur SS are in HSR network, shall be communicated to new Sonapur SS via HSR to PRP switch to integrate with new Hitachi SCADA.
- If any of the existing switch is not in working condition then same replaced by New Switch.



Based on: I28640	Title: COMMUNICATION CONNECTIVITY DIAGRAM
Prepared: DA TARAJI PAWAR	Approved: PRASANNA S KUMAR
Project: 400/230KV GIS SUBSTATION AT SONAPUR, ASSAM END USER: ASSAM ELECTRICITY GRID CORPORATION LIMITED EPC: TECHNICAL & ENGINEERING COMPANY LIMITED	Doc. des: SAS ARCHITECTURE Ref. des: Rev. ind: 04 Lang: English
Doc. No.: 1KH12864OR101	Sheet: 01 No. of sh: 03



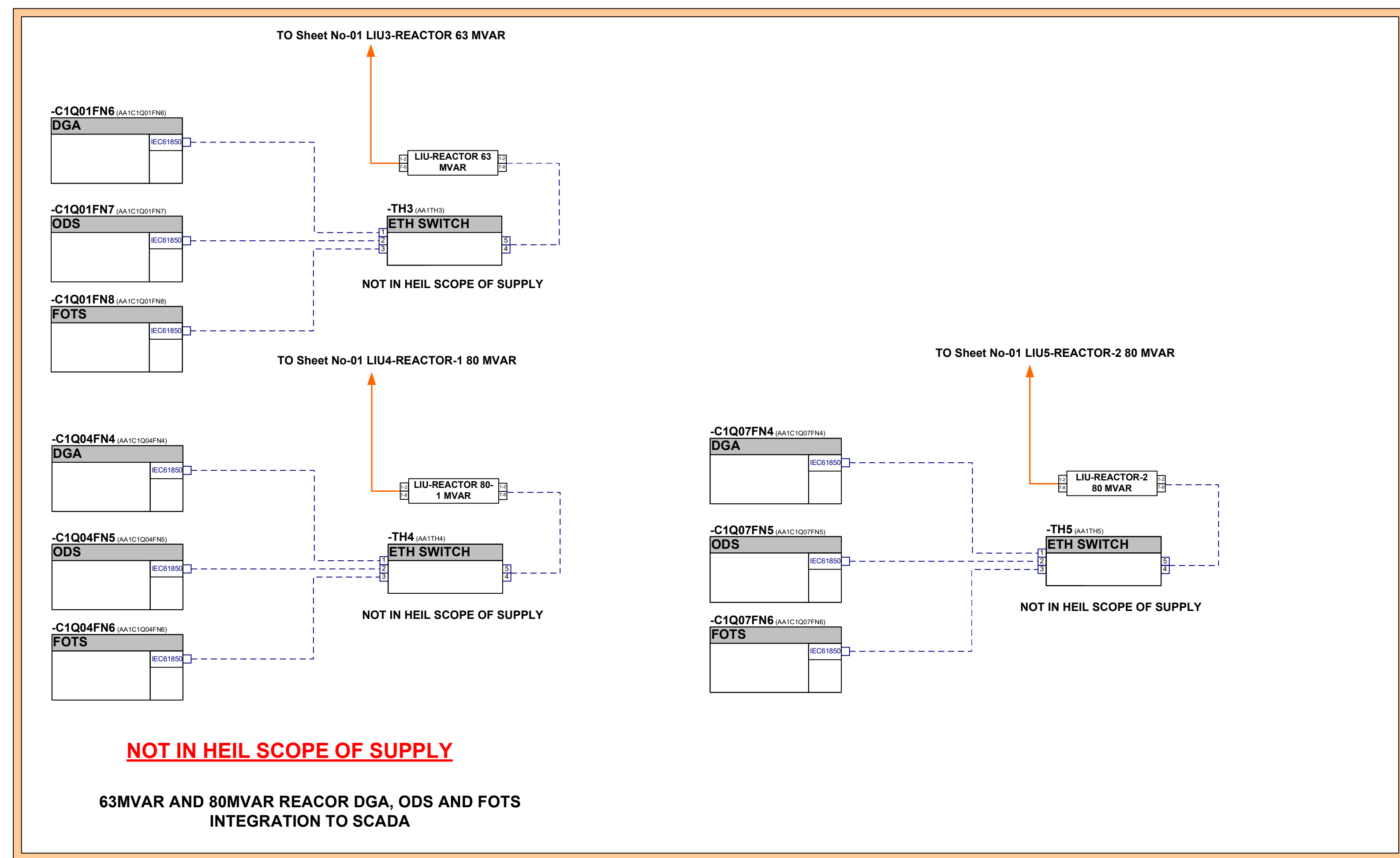
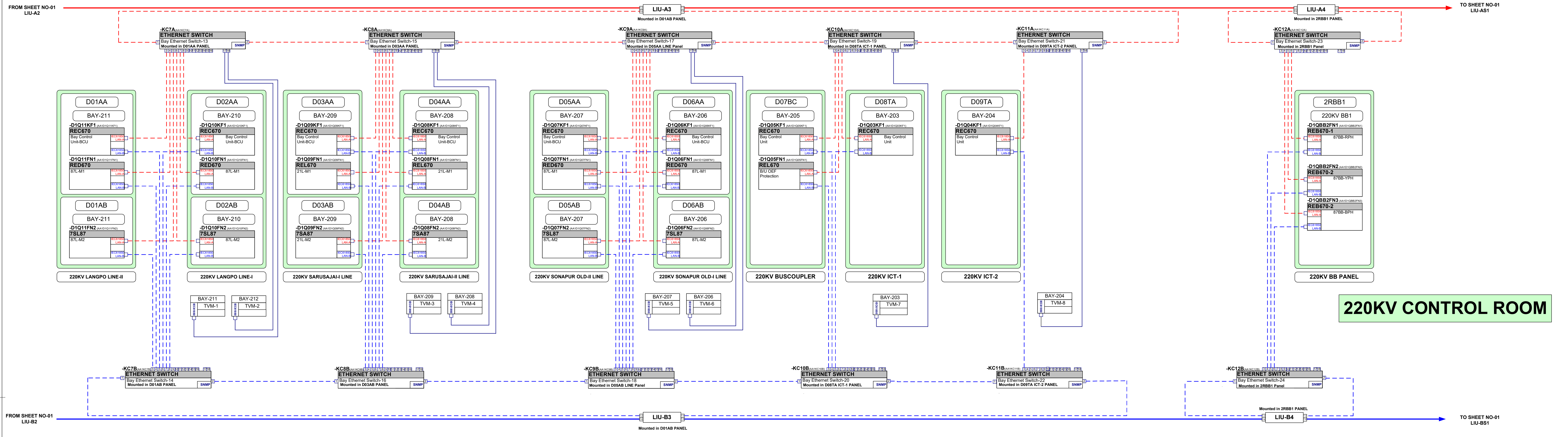


SUPPLY OF CRP AND SAS FOR 400/220KV GIS SUBSTATION AT SONAPUR, ASSAM

END USER: ASSAM ELECTRICITY GRID CORPORATION LIMITED

SUBSTATION AUTOMATION SYSTEM – COMMUNICATION CONNECTIVITY DIAGRAM

HITACHI



Ethernet Switch Port Details				
Switch	Total Ports	Used Ports	Spare Ports	Mounting Location
KC101A	06FX + 13TX	06FX + 11TX	06FX + 02TX	SAS1 PANEL
KC101B	06FX + 13TX	06FX + 11TX	06FX + 02TX	SAS2 PANEL
KC1-A/B	16FX + 02TX	06FX + 01TX	07X + 01TX	4R1AA PANEL
KC2-A/B	16FX + 02TX	06FX + 01TX	10X + 01TX	4R2AA PANEL
KC3-A/B	16FX + 02TX	06FX + 01TX	10X + 01TX	4R3AA PANEL
KC4-A/B	16FX + 02TX	06FX + 01TX	07X + 01TX	4R4AA PANEL
KC5-A/B	16FX + 02TX	07FX + 00TX	09X + 02TX	4R5AA PANEL
KC6-A/B	16FX + 02TX	06FX + 00TX	10X + 02TX	4R6AA PANEL
KC7-A/B	16FX + 02TX	06FX + 02TX	08X + 00TX	4R7AA PANEL
KC8-A/B	16FX + 02TX	06FX + 02TX	08X + 00TX	4R8AA PANEL
KC9-A/B	16FX + 02TX	06FX + 02TX	08X + 00TX	4R9AA PANEL
KC10-A/B	16FX + 02TX	06FX + 01TX	11X + 01TX	4R10AA PANEL
KC11-A/B	16FX + 02TX	03FX + 01TX	13X + 01TX	4R11AA PANEL
KC12-A/B	16FX + 02TX	06FX + 00TX	11X + 02TX	4R12AA PANEL
KC100	82 TX DUAL MODE 16 TX SINGLE MODE	82 TX DUAL MODE 16 TX SINGLE MODE	82 TX DUAL MODE 16 TX SINGLE MODE	SAS1 PANEL
KC101	82 TX DUAL MODE 16 TX SINGLE MODE	82 TX DUAL MODE 16 TX SINGLE MODE	82 TX DUAL MODE 16 TX SINGLE MODE	SAS2 PANEL
KC102	82 TX DUAL MODE 16 TX SINGLE MODE	82 TX DUAL MODE 16 TX SINGLE MODE	82 TX DUAL MODE 16 TX SINGLE MODE	SAS3 PANEL

TX: RJ45 - COPPER PORT
FX: MULTI MODE OPTICAL 100Mbps ST PORT

LIU Details Summary				
Ethernet Switch	Port Details	Used Ports	Spare Ports	Mounting Location
LIU-A1	12MFX	04MFX	08MFX	SAS1 PANEL
LIU-B1	12MFX	04MFX	08MFX	SAS2 PANEL
LIU-A1	12MFX	04MFX	08MFX	4R1AA PANEL
LIU-B1	12MFX	04MFX	08MFX	4R1AA PANEL
LIU-A2	12MFX	04MFX	08MFX	4R2AA PANEL
LIU-B2	12MFX	04MFX	08MFX	4R2AA PANEL
LIU-A3	12MFX	04MFX	08MFX	4R3AA PANEL
LIU-B3	12MFX	04MFX	08MFX	4R3AA PANEL
LIU-A4	12MFX	04MFX	08MFX	4R4AA PANEL
LIU-B4	12MFX	04MFX	08MFX	4R4AA PANEL
LIU1-TRAF01	12MFX	02MFX	10MFX	SAS1 PANEL
LIU2-TRAF02	12MFX	02MFX	10MFX	SAS1 PANEL
LIU3-63MVAR	12MFX	02MFX	10MFX	SAS2 PANEL
LIU4-80MVAR	12MFX	02MFX	10MFX	SAS2 PANEL
LIU5-80MVAR	12MFX	02MFX	10MFX	SAS2 PANEL

LIU – LINE INTERFACING UNIT
MFX – MULTI MODE ST PORTS

LEGEND:	
Armored CAT6 Cable with RJ45 Connector- PRP LAN-A	
Armored CAT6 Cable with RJ45 Connector- PRP LAN-B	
Unarmored Multimode Fiber Optic Patch cord – PRP LAN-A	
Unarmored Multimode Fiber Optic Patch cord – PRP LAN-B	
Armored CAT6 Cable with RJ45 Connector	
HDMI CABLE	
Armored CAT6 Cable with RJ45 Connector-IEC104 Network Primary	
Armored CAT6 Cable with RJ45 Connector-IEC104 Network Redundant	
Armored Multimode 6 Core Fiber Optic cable – PRP LAN-A	
Armored Multimode 6 Core Fiber Optic cable – PRP LAN-B	
Armored Multimode 6 Core Fiber Optic cable For DGA, ODS, AND FOTS	
Connectivity TO SCADA	
RS485 Cable	
LIU – LIGHT INTERFACE UNIT	

NOTE:

- All the ports of Ethernet switches to which Fiber Optic/CAT-6 cable are not connected to be considered as spare ports.
- ## Supply of necessary Telecom network (SDH/PLCC) for RSCC/RCC integration is not in Hitachi Energy Scope of supply.
- Transformer/Reactor auxiliary devices like DGA/ODS/FOTS/RTCC and CSD Device supply is not in Hitachi Energy Scope of Supply
- GPS Antenna is to be mounted outside the control room
- The old Sonapur Substation data will be integrated to New Sonapur Substation via IEC61850 Protocol.

Based on: I28640		Title: COMMUNICATION CONNECTIVITY DIAGRAM	
Prepared: DATTARAJ PAWAR			
Approved: PRASANNA S KUMAR			
Project	400/220KV GIS SUBSTATION AT SONAPUR ASSAM END USER: ASSAM ELECTRICITY GRID CORPORATION LIMITED EPC: TECHNICAL ELECTRIC & ENGINEERING COMPANY LIMITED		Doc. des: SAS ARCHITECTURE
	Respt. dept: PG-GA/DT/23.01.2026	Rev ind: 04	Ref. des:
			Lang: English
Doc. No.: 1KHFI28640R0101			Sheet: 02
			No. of sh: 03

HITACHI

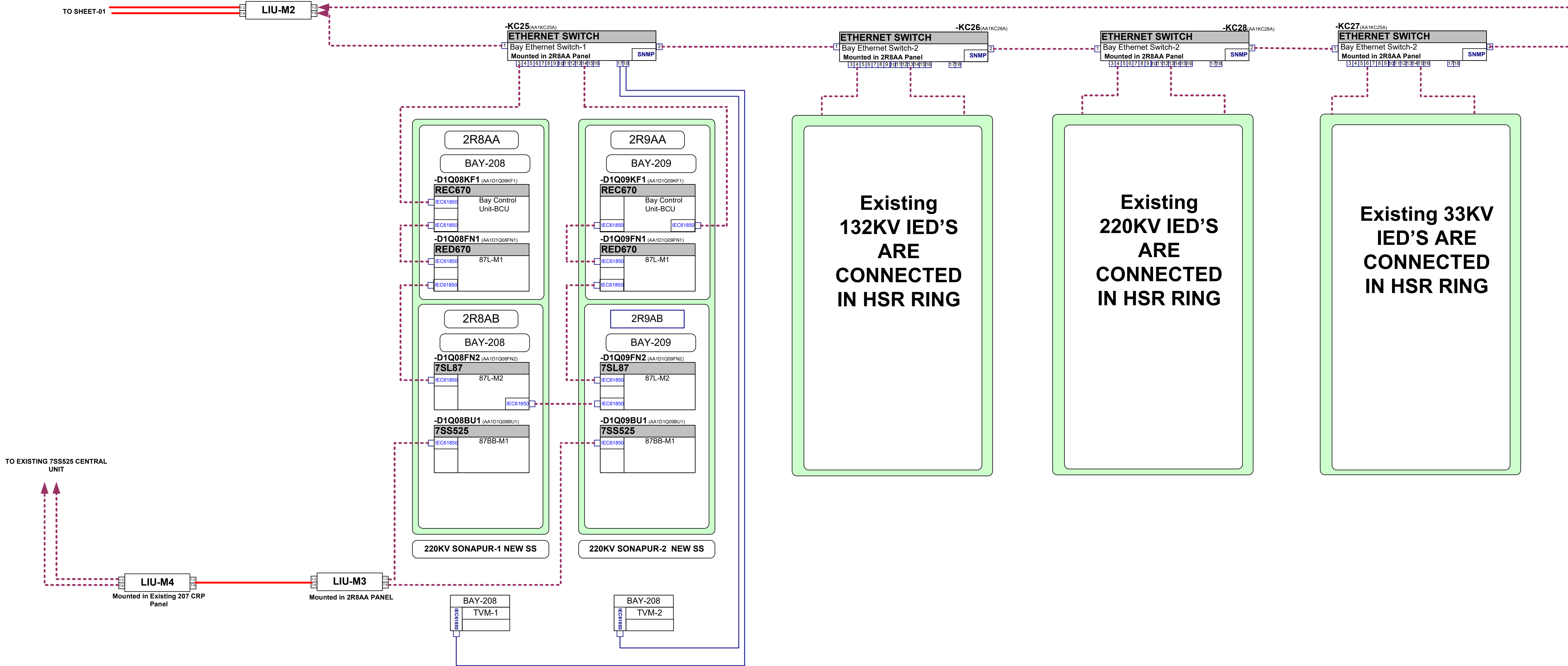
We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © HITACHI ENERGY INDIA LIMITED 2025
Z:\DIP IET FILES\AEGCL SONAPUR\TECHNO\OLD_SONAPUR\AA1\SCD - AA1\vsd / 26-01-23



SUPPLY OF CRP AND SAS FOR 400/220KV GIS SUBSTATION AT SONAPUR, ASSAM
END USER: ASSAM ELECTRICITY GRID CORPORATION LIMITED
SUBSTATION AUTOMATION SYSTEM – COMMUNICATION CONNECTIVITY DIAGRAM

HITACHI

OLD SONAPUR SUBSTATION



Based on: 128840		Title: COMMUNICATION CONNECTIVITY DIAGRAM	
Prepared: DATTARAJ PAWAR			
Approved: PRASANNA S KUMAR			
Project: 400/220KV GIS SUBSTATION AT SONAPUR ASSAM END USER: ASSAM ELECTRICITY GRID CORPORATION LIMITED EPC: TECHNO ELECTRIC & ENGINEERING COMPANY LIMITED		Doc. des.: SAS ARCHITECTURE	Ref. des.:
		Resp. dept.: PG-GA,DT:23.01.2026	Rev. ind.: 04
		Lang.: English:	
		Doc. No.: 1KHF128840R101	
		Sheet: 03	
		No. of sh.: 03	

HITACHI