



Grid Solutions
A GE and Alstom joint venture

220kV/132kV GIS SUBSTATION GHAZI ROAD , LAHORE

132kV LINE RELAY PANEL SCHEMATIC DRAWINGS

DOC / DWG REVIEW CODE	
<input type="checkbox"/> A	Approved, Issue IFC.
<input type="checkbox"/> B	Approved with comments as noted, Issue IFC after incorporation of these comments.
<input type="checkbox"/> C	Revise and re-submit for approval.
<input type="checkbox"/> D	Rejected.
Signed	Date
Permission to proceed does not constitute acceptance of approval of design details, analysers, test methods or materials/ selected by the CONTRACTOR and does not relieve the CONTRACTOR from full compliance with AGREEMENT obligations.	

REFERENCE DRAWINGS								
SR. NO.	DRAWING TITLE				DOCUMENT NO.			
1.	220kV / 132kV Metering & Protection SLD				P60194-E-SLMP-001			
REV	DATE	DRW. BY	CHK. BY	APR. BY	REVISION DESCRIPTION			
0	20.11.2018	ASJ	MFT	NAH	AS BUILT			
REVISION HISTORY								
Scale	NOT-TO-SCALE			Sheet size	A3			
Client	 NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)							
Contractor	 Grid Solutions A GE and Alstom joint venture		Manufacturer					
Project	220kV / 132kV GIS SUBSTATION GHAZI ROAD , LAHORE							
Title	132kV LINE RELAY PANEL (=E04+RP3) SCHEMATIC DRAWINGS							
Order no	P-60194		Document no					
			P60194-E-ELR-SC-003					
Sheet type	Total sheets		Sheet no					
	A		26					
1								

	1	2	3	4	5	6	7	8								
	PAGE NO.	SHEET NAME	SHEET DESCRIPTION			ISSUE / REVISION										
						A	B	C	D	E	F	01	02	03	04	05
A B C D E F	01	A	Cover Sheet			X	X	X	X	X	X					
	02	AA	List Of Contents			X	X	X	X	X	X					
	03	AB	Symbol and Legends			X	X	X	X	X	X					
	04	AC1	Component List			X	X	X	X	X	X					
	05	AD	Panel View			X	X	X	X	X	X					
	06	AE	Bay Concept & Protection Logic			X	X	X	X	X	X					
	07	D	AC Supply Distribution Circuit			X	X	X	X	X	X					
	08	E	DC Supply Distribution Circuit			X	X	X	X	X	X					
	09	F	AC/DC Supply Failure Circuit			X	X	X	X	X	X					
	10	G	Relay Power Supply Circuit			X	X	X	X	X	X					
	11	H1	Line Differential Relay Protection CT/VT input			X	X	X	X	X	X					
	12	H2	O/C & E/F CT input			X	X	X	X	X	X					
	13	I1	Line Differential Relay input Circuit			X	X	X	X	X	X					
	14	I4	System Input Circuit			X	X	X	X	X	X					
	15	K1	Protection Trips Circuit			X	X	X	X	X	X					
	16	K11	Trips Circuit Supervision			X	X	X	X	X	X					
	17	NA1	System Alarm Circuit			X	X	X	X	X	X					
	18	NA2	System Alarm Circuit			X	X	X	X	X	X					
	19	PA2	Protection Inter Circuit			X	X	X	X	X	X					
	20	RA1	Annunciation Circuit			X	X	X	X	X	X					
	21	RA2	Event & Fault Recorder Circuit			X	X	X	X	X	X					
	22	RA3	SCADA Circuit			X	X	X	X	X	X					
	23	Z1	Component Diagram			X	X	X	X	X	X					
	24	Z2	Component Diagram			X	X	X	X	X	X					
	25	Z3	Component Diagram			X	X	X	X	X	X					
	26	Z4	Component Diagram			X	X	X	X	X	X					
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0	AS BUILT		20-11-2018	ASJ	Manufacturer	 EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor	 Grid Solutions A GE and Alstom joint venture	Client	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title	Drawing no. P60194-E-ELR-SC-003		
													Project no.	Sheet type	Sheet no.	
REV.	DESCRIPTION		DATE	DRAWER									P-60194	AA	02	

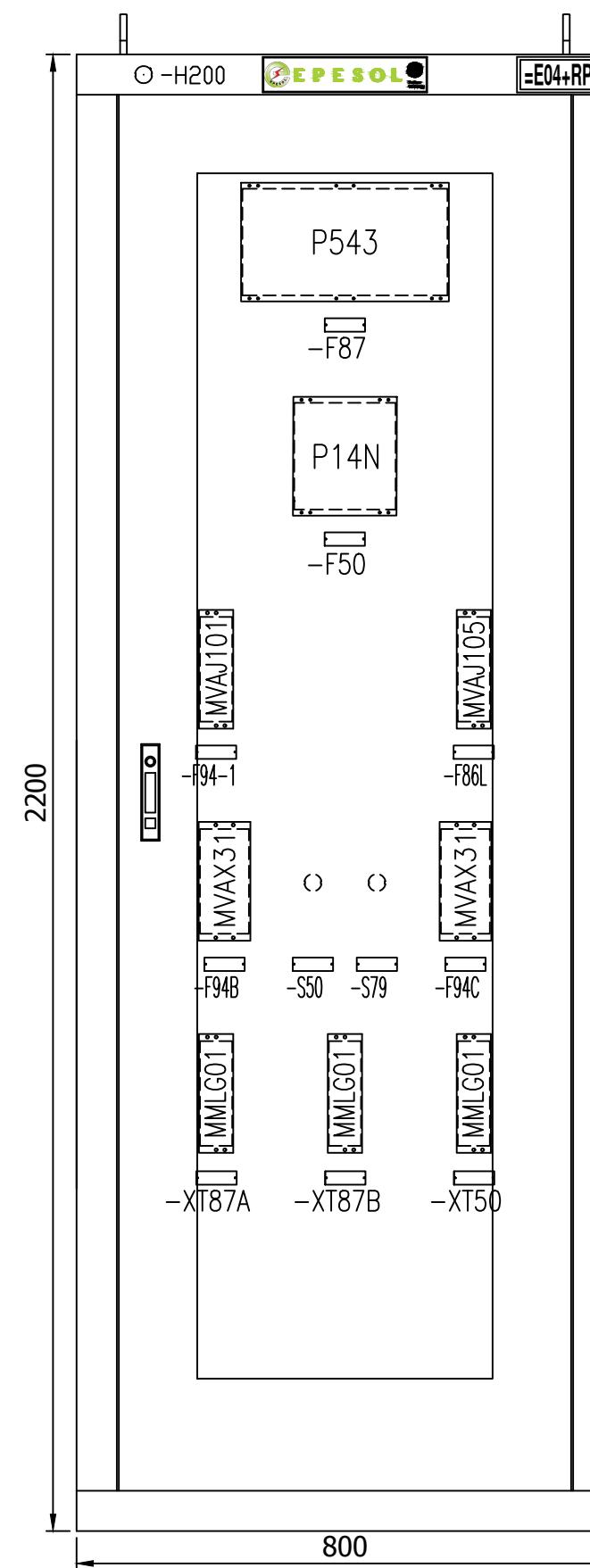
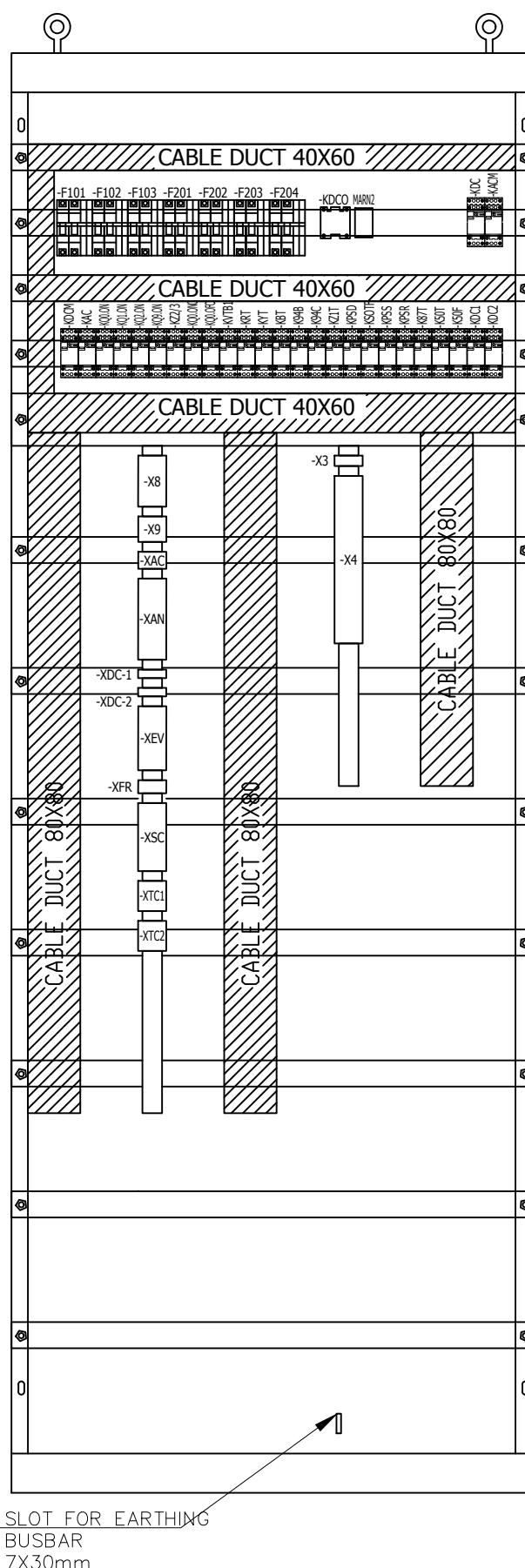
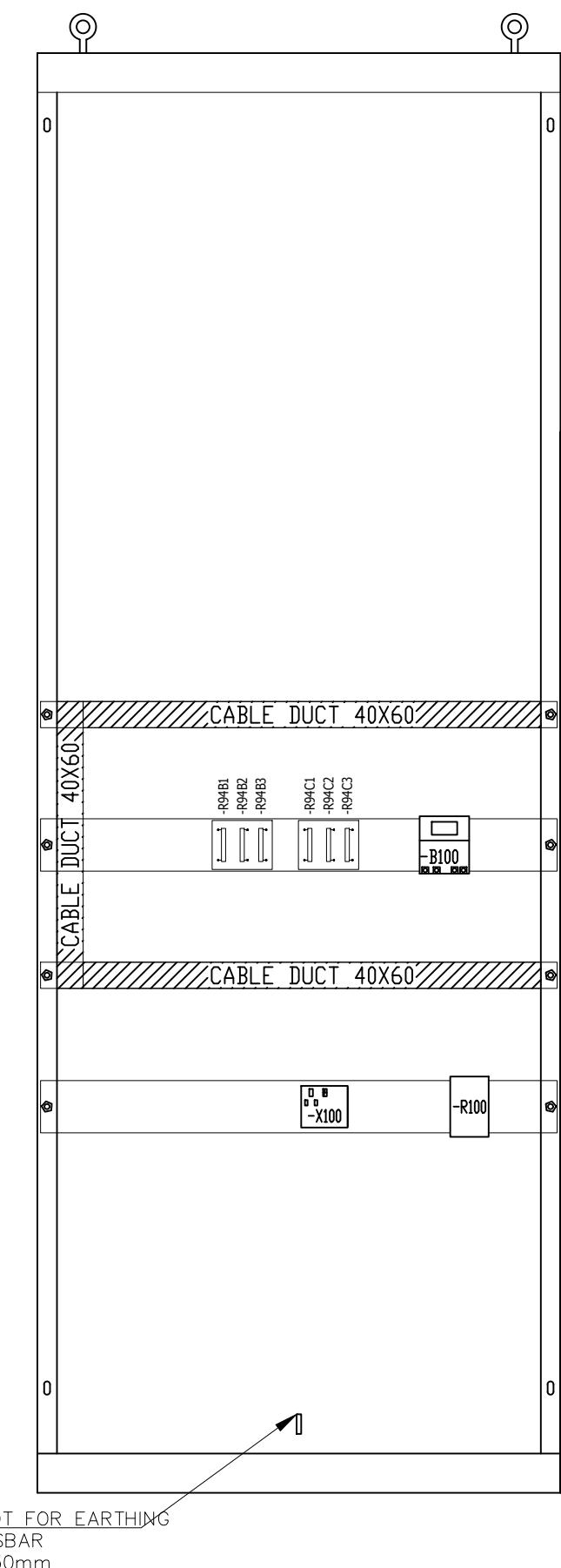
	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A		CIRCUIT BREAKER		MINIATURE CIRCUIT BREAKER		AUXILIARY CONTACTOR NO+NC	21	DISTANCE
B		SWITCH/ISOLATOR		SELECTOR SWITCH		AMMETER	24	OVEREXCITATION
C		EARTHING		LIMITED SWITCH		VOLTMETER	25	SYCHROCHECK
D		GIS TERMINATION		HUMIDITY & TEMPERATURE CONTROLLER		POWER FACTOR METER	49	THERMAL OVERLOAD
E		SF6 TO AIR BUSHING		PANEL HEATER		DIGITAL PANEL METER	50/51	PHASE OVERCURRENT
F		LINE TRAP		THREE PIN SOCKET		ACTIVE POWER METER	50N/51N	EARTH FAULT
G		SURGE ARRESTOR		INDICATION LIGHT		REACTIVE POWER METER	50BF	CIRCUIT BREAKER FAILURE
H		CURRENT TRANSFORMER		PUSH BUTTON		ENERGY METER	64	RESTRICTED EARTH FAULT
I		COUPLING CAPACITOR VOLTAGE TRANSFORMER		AUXILIARY CONTACTOR COIL			67N	DIRECTIONAL EARTH FAULT
J		POWER TRANSFORMER		POWER SUPPLY AC/DC			68	POWER SWING BLOCKING
K		AUTO TRANSFORMER		TERMINAL			78	OUT OF STEP
L				OPTO CONTACTS			79	AUTO-RECLOSING
M				RELAY CONTACTS			85	COMMUNICATION FAILURE
N				HOOTER			87T	TRAFO DIFFERENTIAL
O				AC BELL			87C	LOW IMPEDANCE DIFFERENTIAL CONNECTION
P							87BB	LOW IMPEDANCE DIFFERENTIAL BUSBAR

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0	AS BUILT	20-11-2018	ASJ	Manufacturer EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) SYMBOLA AND LEGENDS	Drawing no. P60194-E-ELR-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type AB
									Sheet no. 03

	1	2	3	4	5	6	7	8			
	QTY.	DEVICE DESCRIPTION		DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION	MANUFACTURER			
A	01	LINE DIFFERENTIAL PROTECTION RELAY		AGILE P543, Cortec: P543-91PC7M0820M Supply: 110-250VDC / 100-240VAC, VT + CT (100-120V:1/5A) Inputs 16 Opto Inputs, 14 Relay Outputs			-F87	GE			
	01	OVER CURRENT PROTECTION RELAY		AGILE P14N, Cortec: P14N-B16A7C570A 08 Opto Inputs, 08 Relay Outputs			-F50	GE			
	02	TRIP CIRCUIT SUPERVISION		MVAX31, Cortec: MVAX31-S1DD0754A			-F94B-C	GE			
B	04	RESISTORS		4KΩ			-R94 B/C 1-2	GE			
	02	RESISTORS		1.5KΩ			-R94 B/C 3	GE			
	03	TEST BLOCK		MMLG01, Cortec: MMLG01-R1AA9002D			-XT87A,-XT87B,XT50	GE			
C	01	TRIPPING RELAY (SELF-RESETTING)		MVAJ101, Cortec: MVAJ101-RA0802A Supply: 110-125VDC, 8 NO + 2 NC Contacts			-F94-1	GE			
	01	LOCKOUT RELAY (HAND/ELECTRICAL RESET)		MVAJ105, Cortec: MVAJ105-RA0802A Supply: 110-125VDC, 8 NO + 2 NC Contacts			-F86L	GE			
	02	CONTROL MCB - PANEL LIGHT & HEATER		2-Pole, Ratings: 2A, 240VAC, 6kA @ 240VAC, 2 C/O Contacts, Ord: G62C02+CAH(2)			-F101, -F102	GE			
D	01	CONTROL ELCB - PANEL SOCKET		2-Pole, Ratings: 16A, 30mA, 240VAC, 10kA @ 240VAC, 2 C/O Contacts, Ord: DM100C16/030+CAH(2)			-F103	GE			
	04	CONTROL MCB - DC DISTRIBUTION		2-Pole, Ratings: 4A, 110VDC, 10kA @ 110VDC, 2 C/O Contacts, Ord: EP102UCC04+CAH(2)			-F201, -F202, -F203, -F204	GE			
	25	AUXILIARY CONTACTOR		Coil Voltage: 110VDC, DIODE, 4 C/O Contacts, Ord: PRC4M40DCJL			-KDCM, -KQ0.ON, -KQ1.ON, -KQ2.ON, -KQ9.ON, -KZ2/3T, -KQ0.ONC, -KQ0.OFC, -KVTB1, -KRT, -KYT, -K94B, -K94C, -KBT, -KZ1T, -KPSD, -KSOTF, -KPSS, -KPSR, -K87F, -KDC1, -KAC, -K50T, -K50F, -KDC2	GE			
E	01	AUXILIARY CONTACTOR - SUPPLY CHANGEOVER		Coil Voltage: 110VDC, 3 NO + 3 NC Contacts, Ord: MCRC022ATWJ+MARN211AT			-KDCO	GE			
	02	AUXILIARY CONTACTOR		Coil Voltage: 240VAC, 4 C/O Contacts, Ord: PRC4M40ANL			-KDC, -KACM	GE			
	01	SELECTOR SWITCH - AUTORECLOSER		YS-AK-2-2-44-D, 2-Postion (IN-OUT), 110VDC, KEYLOCKABLE TYPE, KEY RELEASE ON "OUT"			-S79	YONGSUNG			
F	01	PUSH BUTTON		Black Button, Spring Return, 2-Pole, Rating 12A, 110VDC Ord: YS-AP1-2-40-B-D-W			-S50	YONGSUNG			
	01	PANEL LIGHT WITH DOOR SWITCH		240VAC @ 50Hz, 5W, with Door Limit Sw. Ord: YSP3315GW-B + YS-T8-30-5W			-H100,-S100	YONGSUNG			
	01	THREE PIN SOCKET		1N+PE, 16A, 240VAC @ 50Hz			-X100	LEAR			
G	01	PANEL HEATER		240VAC @ 50Hz, 50W			-R100	ELAB			
	01	HUMIDITY & TEMPERATURE CONTROLLER		40-90%RH, 25-50°C, 230VAC @ 50Hz			-B100	ELAB			
	01	INDICATION LAMP - DC SUPPLY FAILURE		Type: Integrated LED, Color : RED , Supply : 240VAC @ 50Hz, Ord: YS-PL-2-AL-22-R-W			-H200	YONGSUNG			
H	0	AS BUILT		20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) COMPONENT LIST	Drawing no. P60194-E-ELR-SC-003
							Project no. P-60194				
	REV.	DESCRIPTION		DATE	DRAWER		Sheet type AC1				
I	1			2	3	4	5	6	7		
									8		

	1	2	3	4	5	6	7	8		
	QTY.	DEVICE DESCRIPTION	DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION	MANUFACTURER			
A	12	TERMINAL BLOCKS FOR SYSTEM INPUT STATUS	CBD-4			-X8	CABUR			
	6	TERMINAL BLOCKS FOR PROTECTION INTER CIRCUIT	CBD-4			-X9	CABUR			
	4	TERMINAL BLOCKS FOR AC SUPPLY DISTRIBUTION	CBD-4			-XAC	CABUR			
B	19	TERMINAL BLOCKS FOR ANNUNCIATOR	CBD-4			-XAN	CABUR			
	2	TERMINAL BLOCKS FOR DC SUPPLY-1 DISTRIBUTION	CBD-4			-XDC1	CABUR			
	2	TERMINAL BLOCKS FOR DC SUPPLY-2 DISTRIBUTION	CBD-4			-XDC2	CABUR			
C	15	TERMINAL BLOCKS FOR EVENT RECORDER	CBD-4			-XEV	CABUR			
	3	TERMINAL BLOCKS FOR FAULT RECORDER	CBD-4			-XFR	CABUR			
	16	TERMINAL BLOCKS FOR SCADA	CBD-4			-XSC	CABUR			
D	7	TERMINAL BLOCKS FOR TRIP CIRCUIT-1	CBD-4			-XTC1	CABUR			
	7	TERMINAL BLOCKS FOR TRIP CIRCUIT-2	CBD-4			-XTC2	CABUR			
	2	TERMINAL BLOCKS FOR CONTROL	CBD-4			-X3	CABUR			
E	22	TERMINAL BLOCKS FOR LINE DIFFERENTIAL	CBD-4			-X6	CABUR			
	16	TERMINAL BLOCKS FOR CT	SCB-6			-X4	CABUR			
	16	TERMINAL BLOCKS FOR VT	SCB-6			-X4	CABUR			
F	8	TERMINAL BLOCKS FOR CT	SCB-6			-X5	CABUR			
	16	SPARE TERMINAL BLOCKS	CBD-4			-X1	CABUR			
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REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type AC1	Sheet no. 04a

FRONT VIEW WITH DOORLEFT SIDE VIEWRIGHT SIDE VIEW

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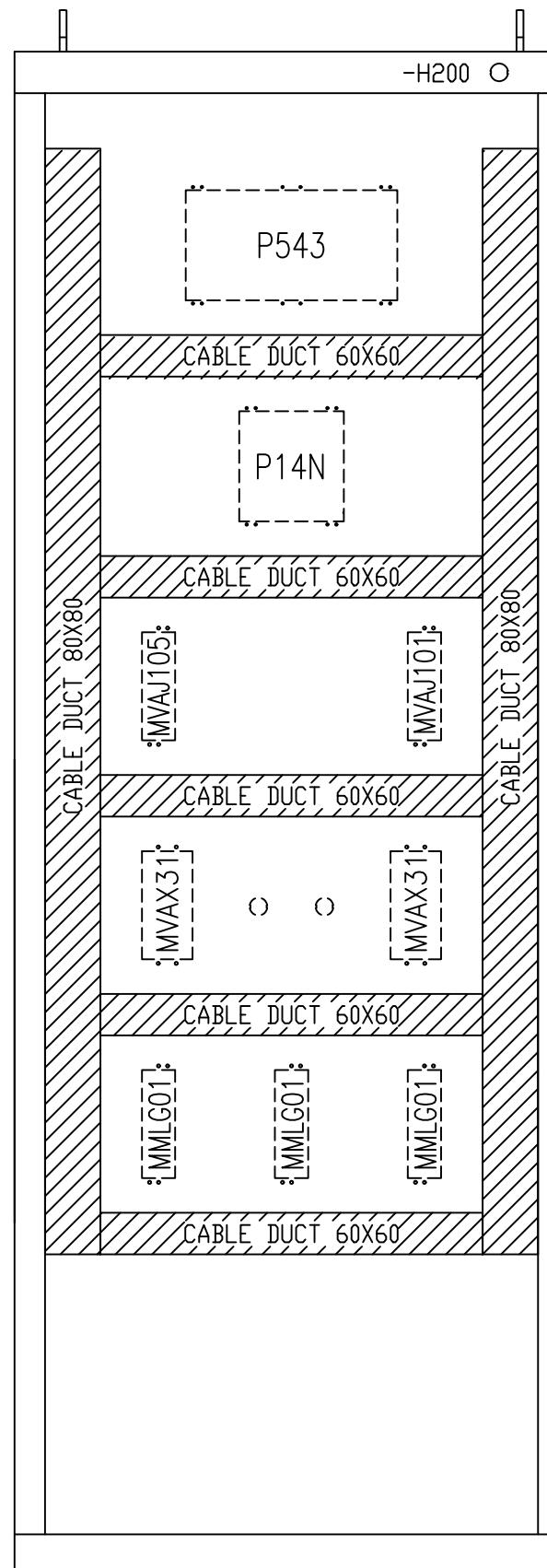
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0	AS BUILT	20.11.2018	ASJ	Manufacturer EPEPSOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) PANEL VIEW	Drawing no. P60194-E-ELR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

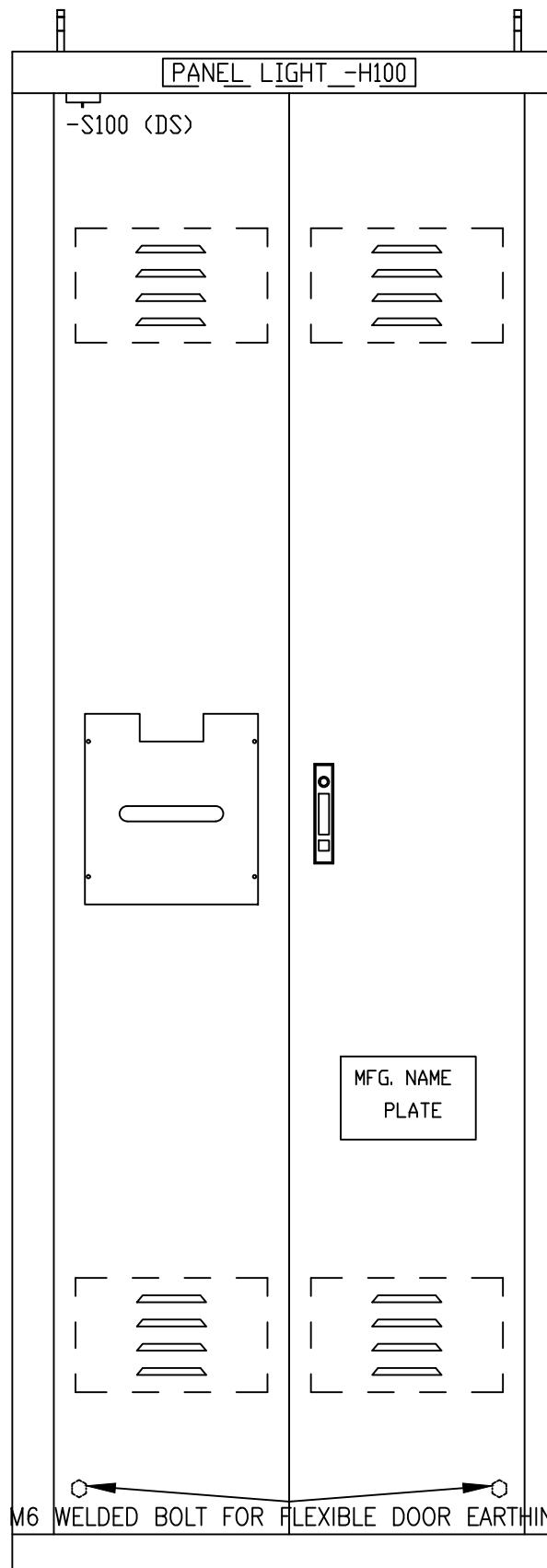
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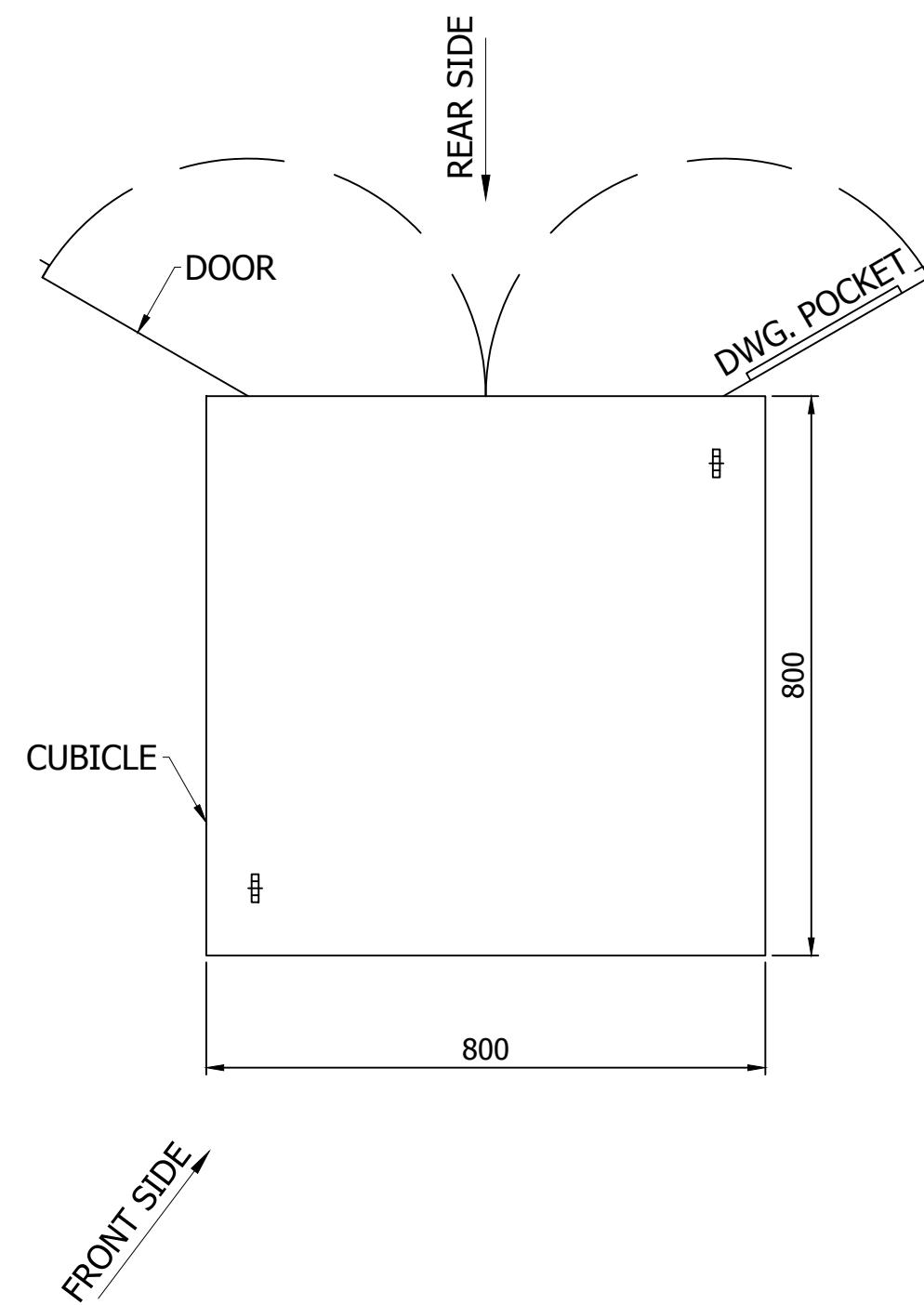
BACK VIEW WITHOUT DOOR



BACK VIEW WITH DOOR

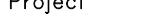


TOP VIEW

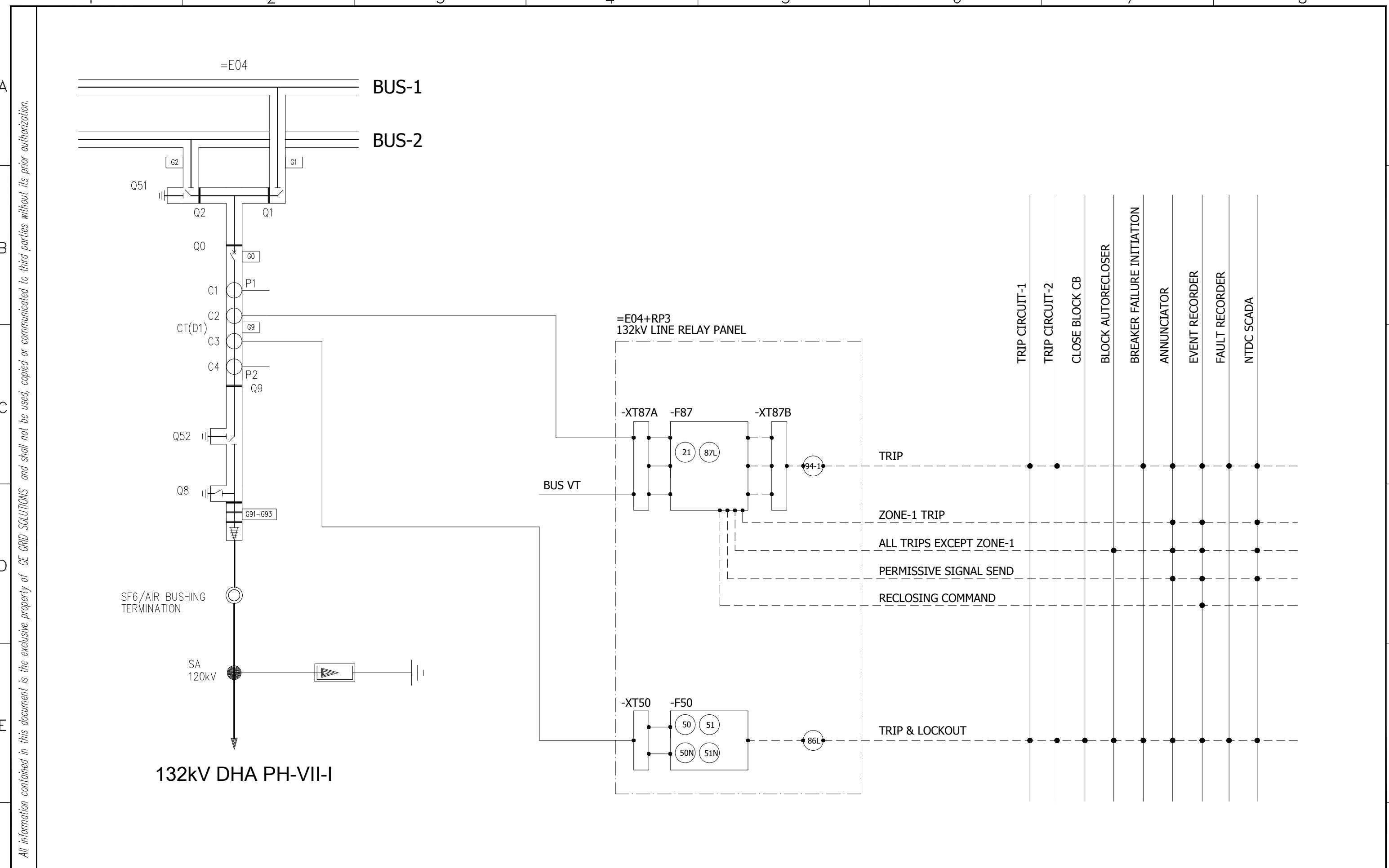


NOTE:-

- 1 - PANEL DIMENSION: 800 x 800 x 2200mm (WxDxH)
 - 2 - COLOR : RAL 7032
 - 3 - SHEET THICKNESS : 2-2.5 mm
 - 4- PROTECTION CLASS : IP-51 (INDOOR TYPE)
 - 5 - ALL DOOR FITTED WITH 16mm EARTH STRAP & INSULATED WITH GREEN-YELLOW COLOUR.

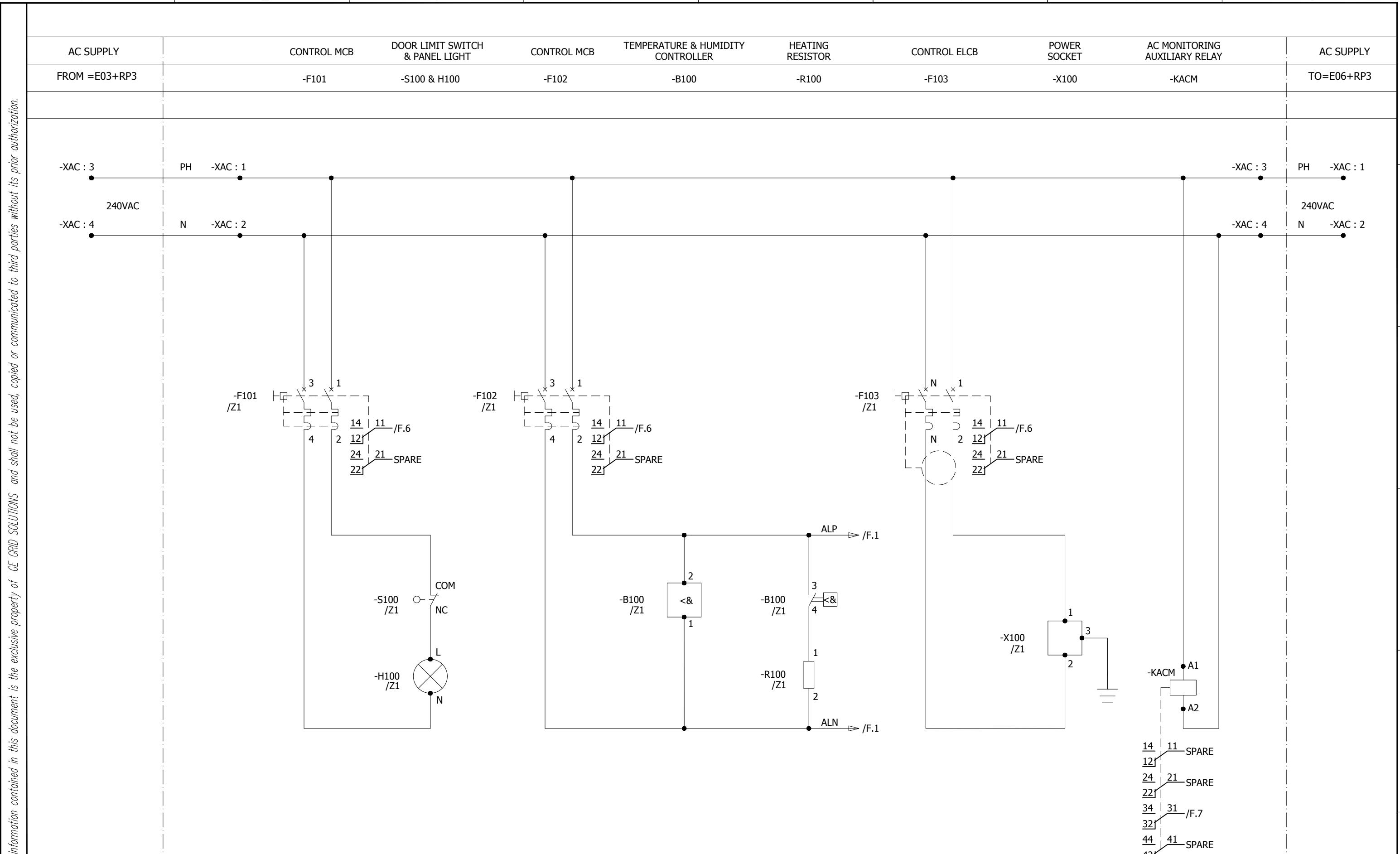
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									Project no. P-60194	
REV.	DESCRIPTION	DATE	DRAWER						Sheet type AD1	Sheet no. 05a

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0	AS BUILT	20-11-2018	ASJ	Manufacturer E P E S O L 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) BAY CONCEPT & PROTECTION LOGICS	Drawing no. P60194-E-ELR-SC-003
									Project no. P-60194
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REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 06

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REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type D	Sheet no. 07
1	2	3	4	5	6	7	8					

CONTROL MCB LINE DIFFERENTIAL RELAY SUPPLY	CONTROL MCB OVERCURRENT SUPPLY	CONTROL MCB AC CIRCUIT FAULTY SUPPLY	CONTROL MCB DC-1 SPARE	DC SUPPLY MONITORING AUXILIARY RELAY
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-F201

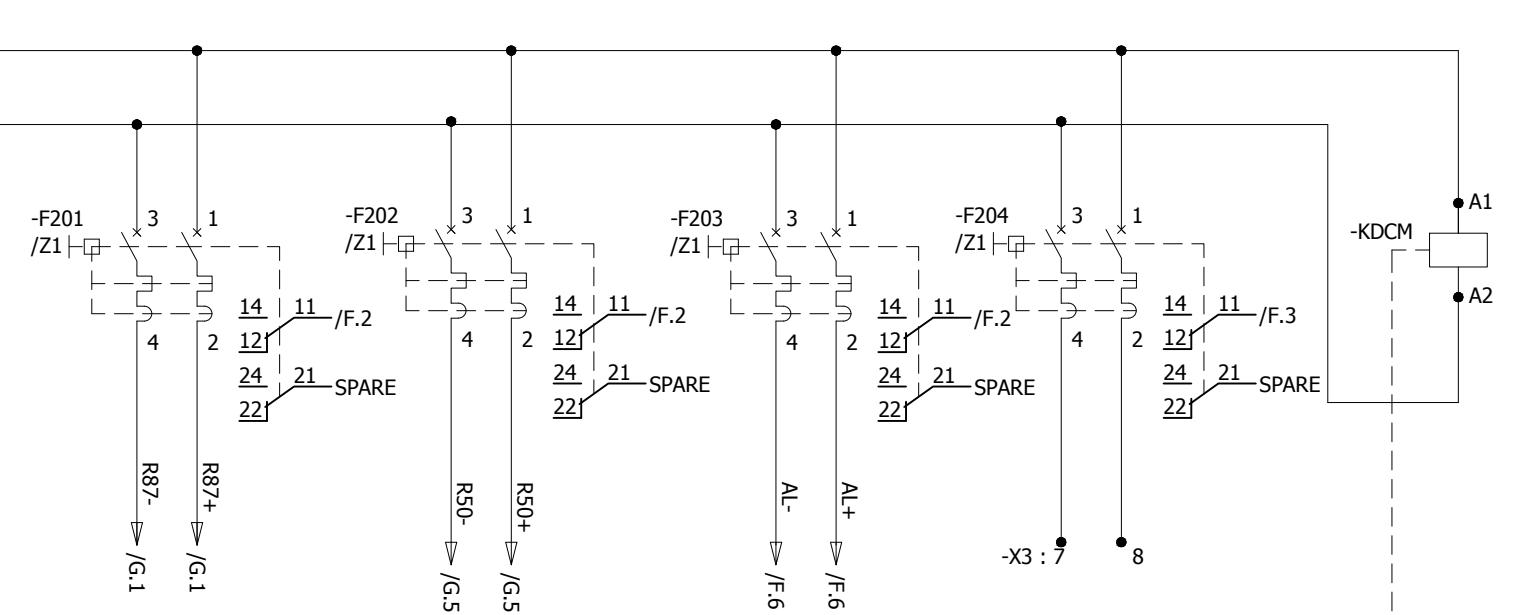
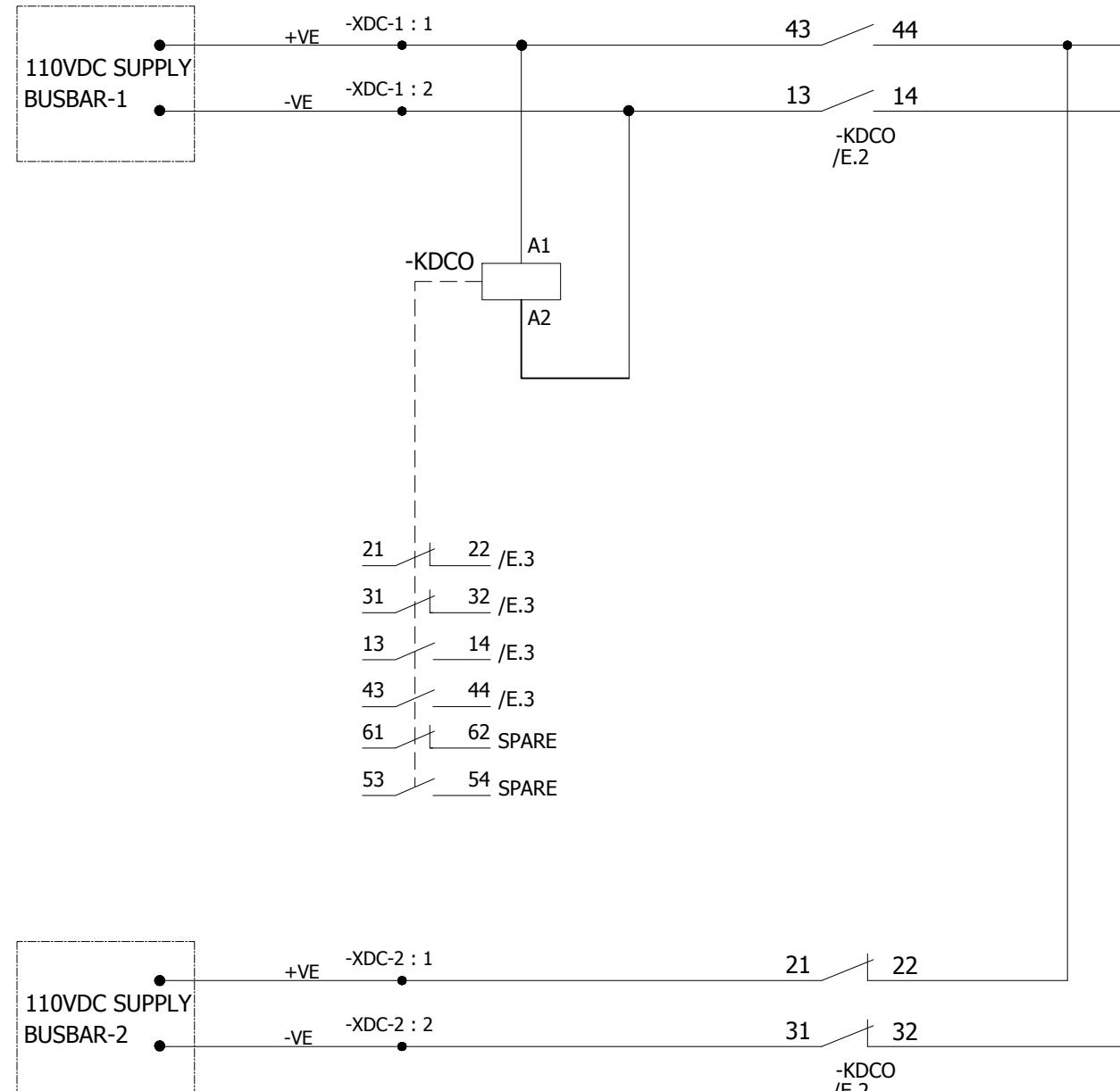
-F202

-F203

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-KDCM

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0	AS BUILT	20-11-2018	ASJ	Manufacturer EPE SOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV LINE RELAY PANEL (=E04+RP3) DC SUPPLY DISTRIBUTION	Drawing no. P60194-E-ELR-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type E
									Sheet no. 08

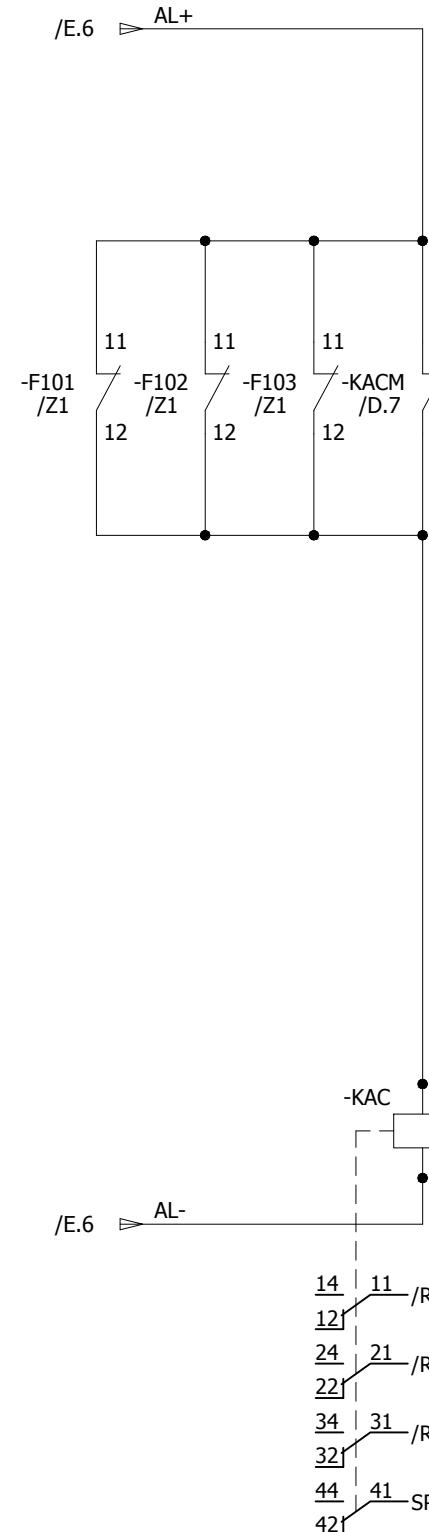
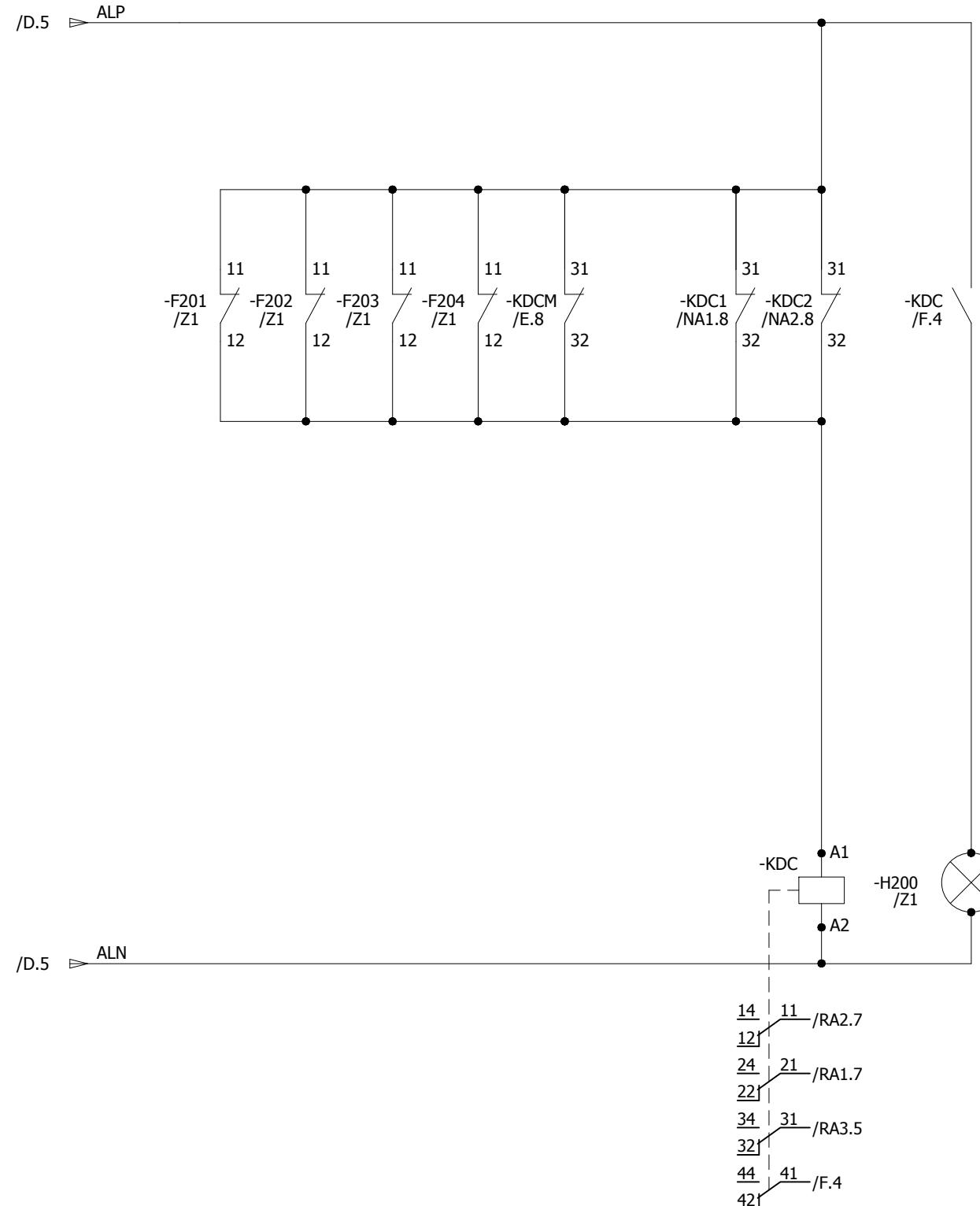
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110V DC CIRCUIT FAULTY

240V AC CIRCUIT FAULTY

-KDC

-KAC



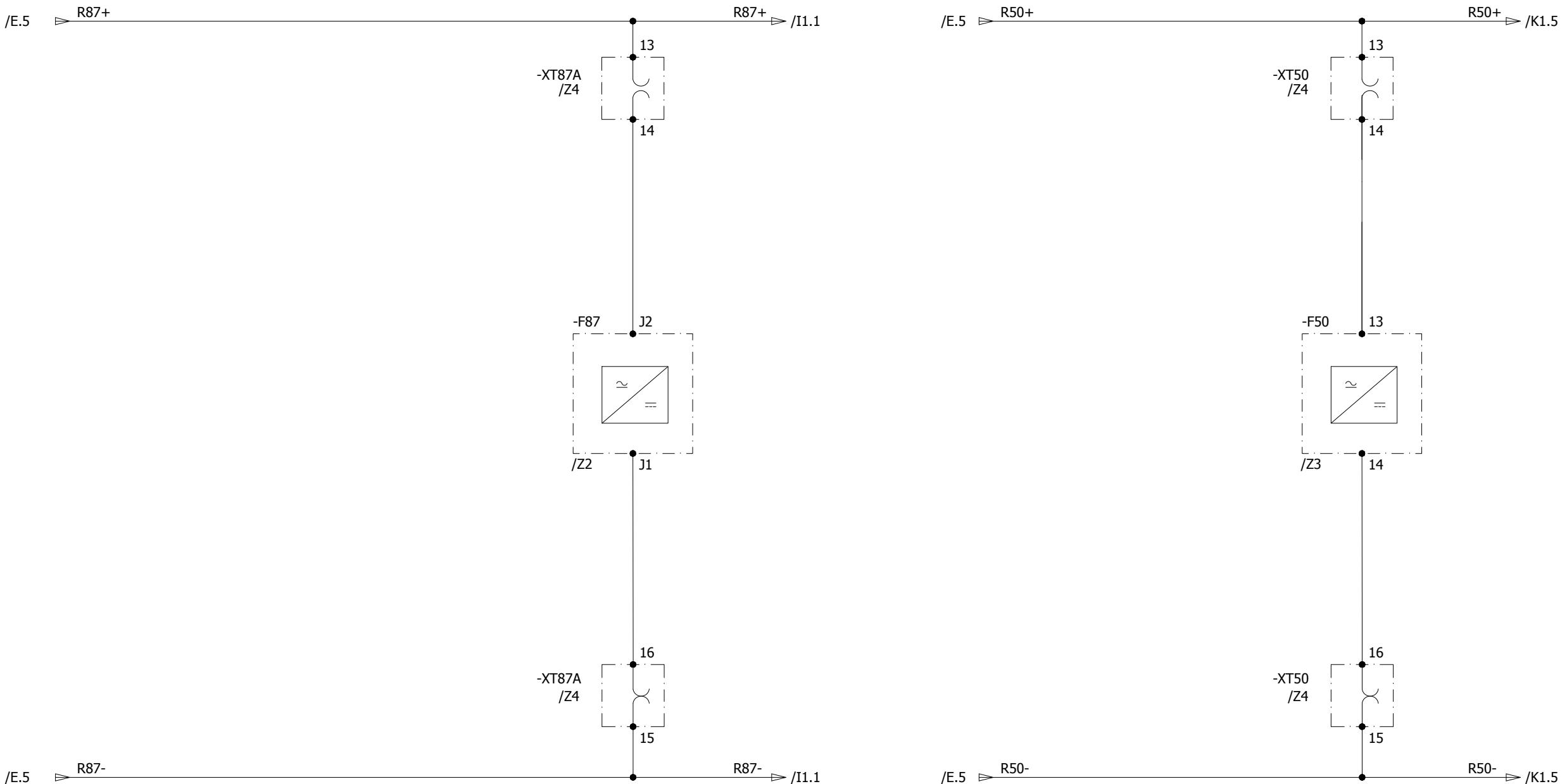
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				 EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	 Grid Solutions A GE and Alstom joint venture	 NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV LINE RELAY PANEL (=E04+RP3) AC/DC SUPPLY FAILURE CIRCUIT	P60194-E-ELR-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type F Sheet no. 09

LINE DIFFERENTIAL PROTECTION

OVERCURRENT PROTECTION

RELAY SUPPLY

RELAY SUPPLY



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A

A

B

B

C

C

D

D

E

E

F

F

0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) RELAY POWER SUPPLY CIRCUIT	Drawing no. P60194-E-ELR-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type G Sheet no. 10

1 2 3 4 5 6 7 8

TEST BLOCK

LINE DIFFERENTIAL PROTECTION
RELAY

-XT87A

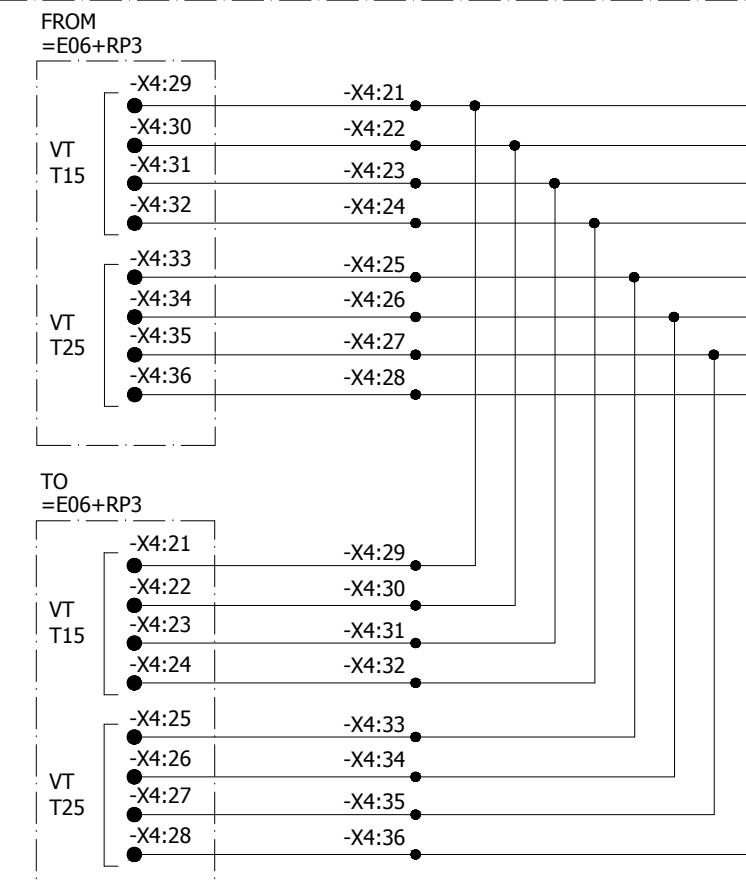
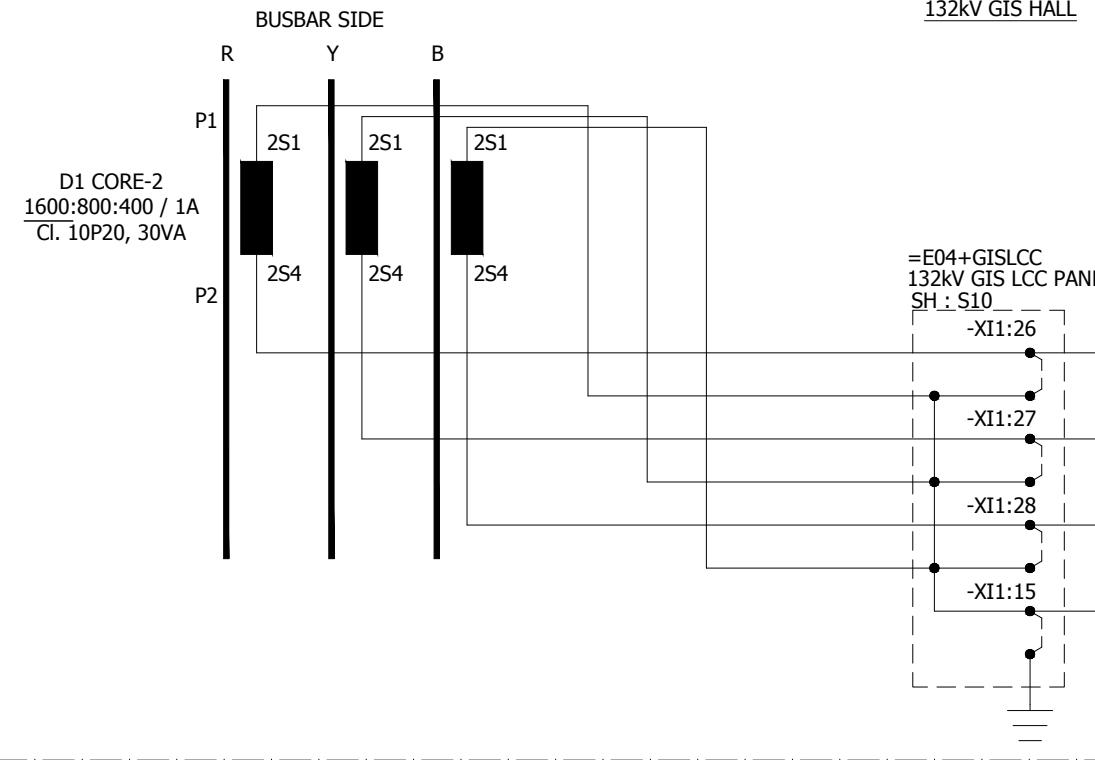
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A



132kV GIS HALL

CONTROL ROOM



-XT87A

-F87

21 22

C3 C2

23 24

C6 C5

25 26

C9 C8

27 28

C14 C15

1 2

C19

3 4

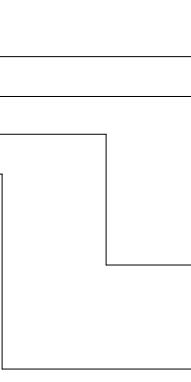
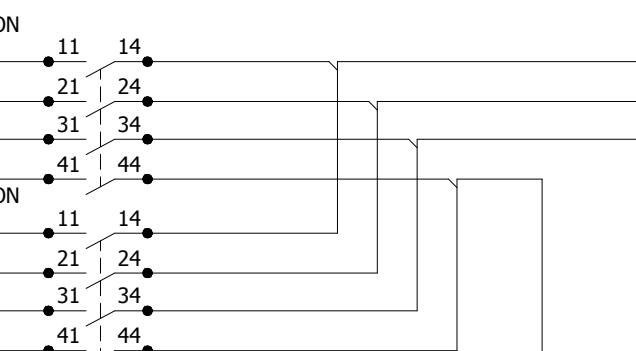
C20

5 6

C21

7 8

C22



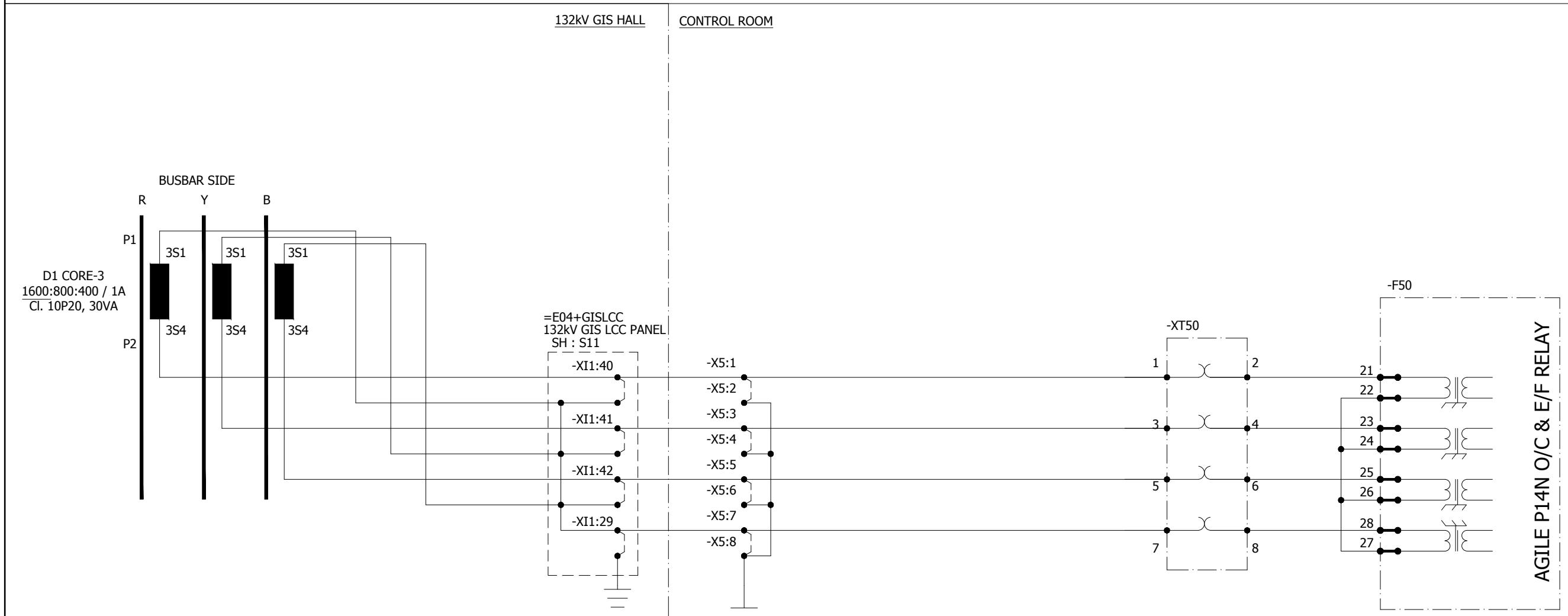
AGILE P543 LINE DIFFERENTIAL PROTECTION RELAY

0	AS BUILT	20-11-2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV LINE RELAY PANEL (=E04+RP3) LINE DIFFERENTIAL PROTECTION CT/VT CIRCUIT	P-60194-E-ELR-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type H1 Sheet no. 11

1 2 3 4 5 6 7 8

TEST BLOCK
OVERCURRENT RELAY
-XT50
/Z4
-F50
/Z3

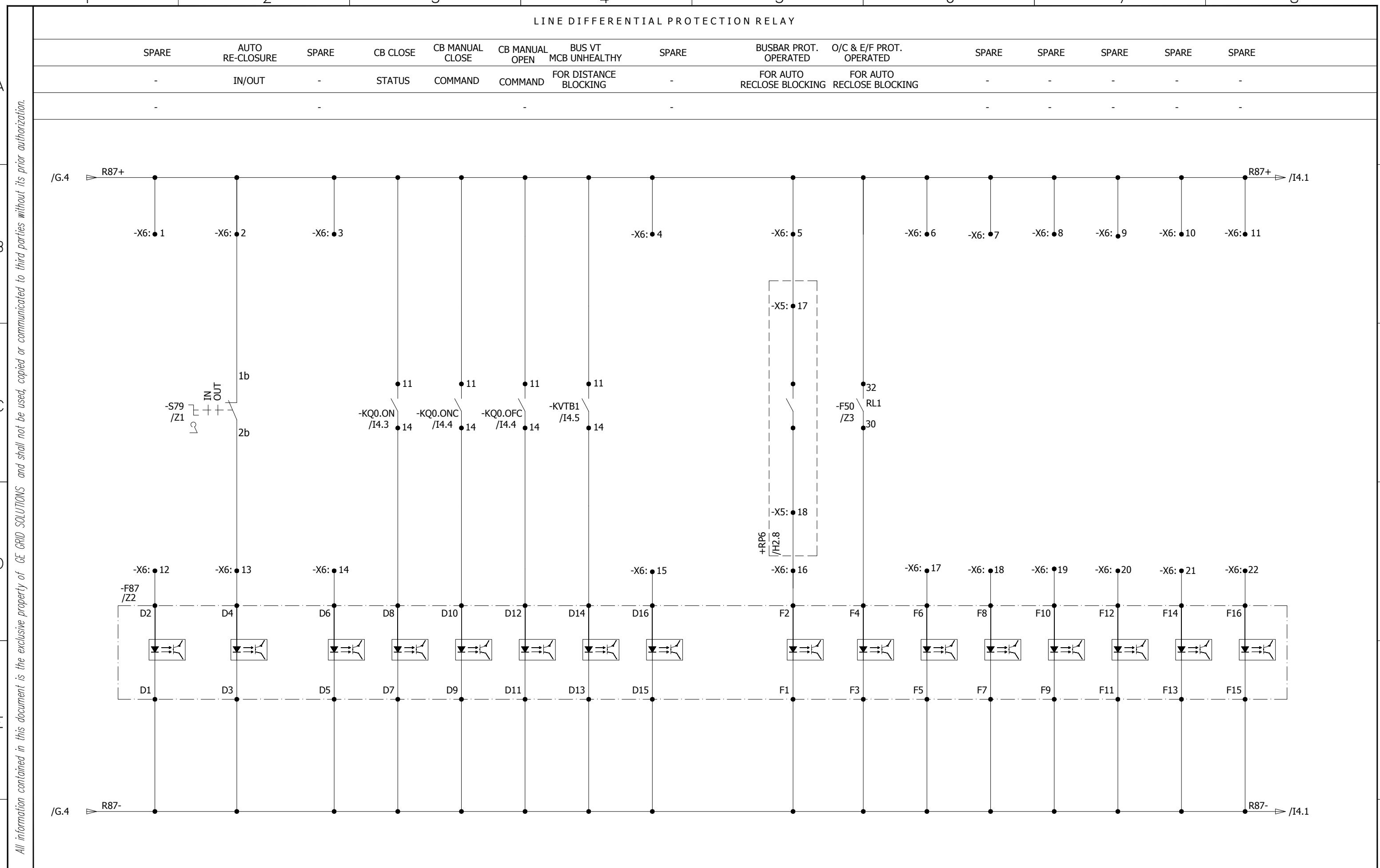
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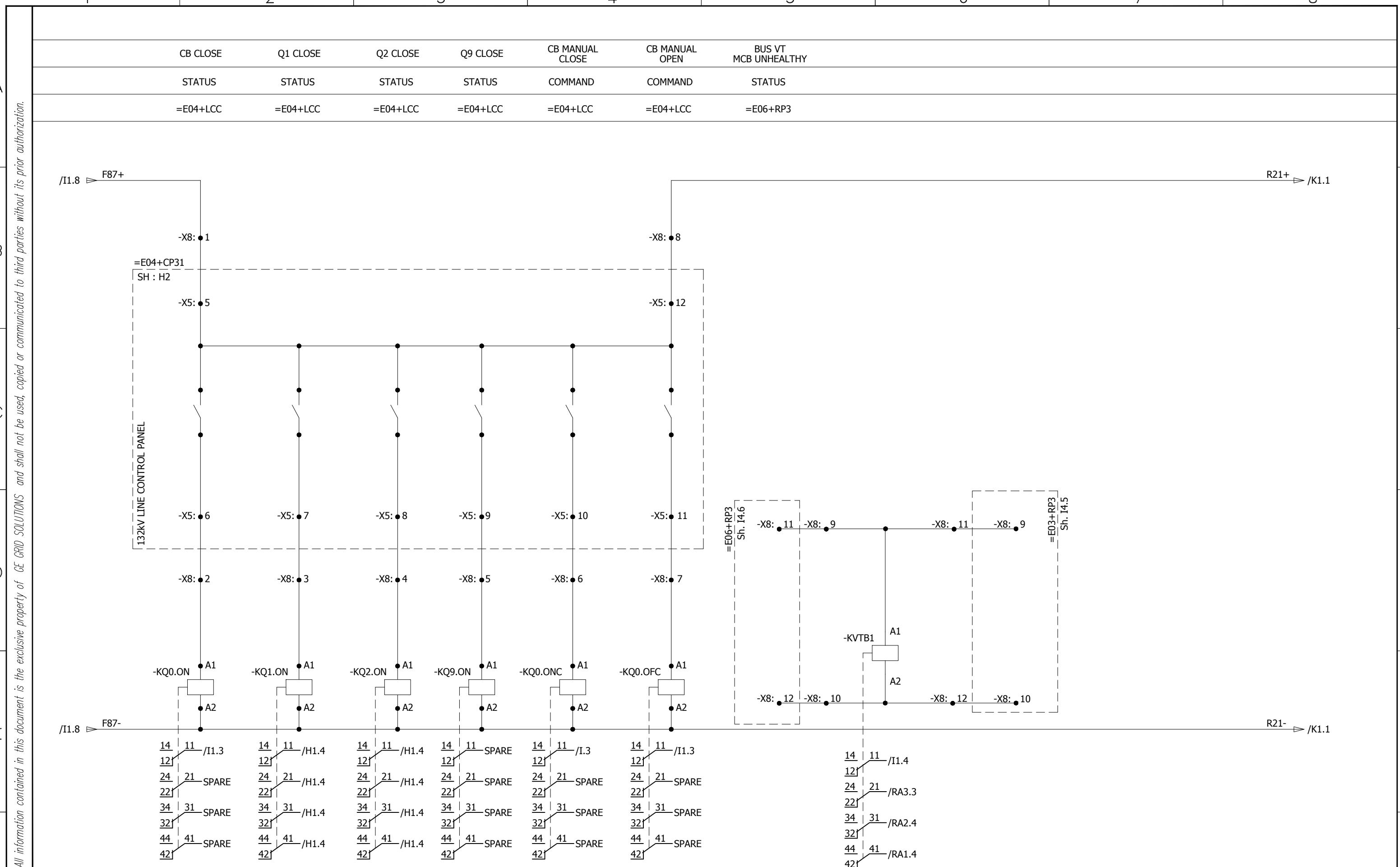
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

LINE DIFFERENTIAL PROTECTION RELAY



0	AS BUILT	20-11-2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV LINE RELAY PANEL (=E04+RP3) LINE DIFFERENTIAL RELAY INPUTS	Drawing no. P60194-E-ELR-SC-003
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type I1
									Sheet no. 13

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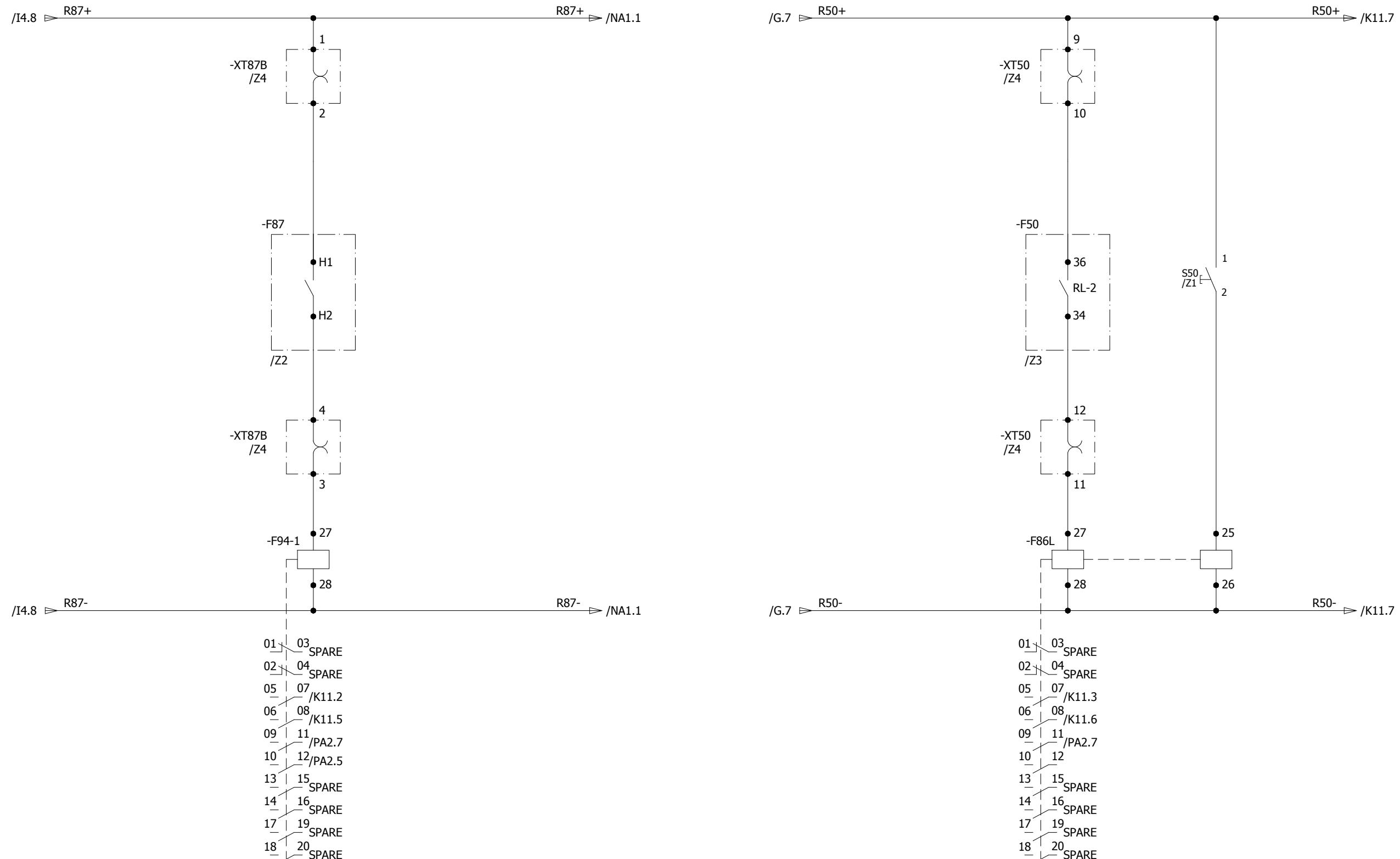


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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type I4	Sheet no. 14
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LINE DIFFERENTIAL PROTECTION GENERAL TRIP

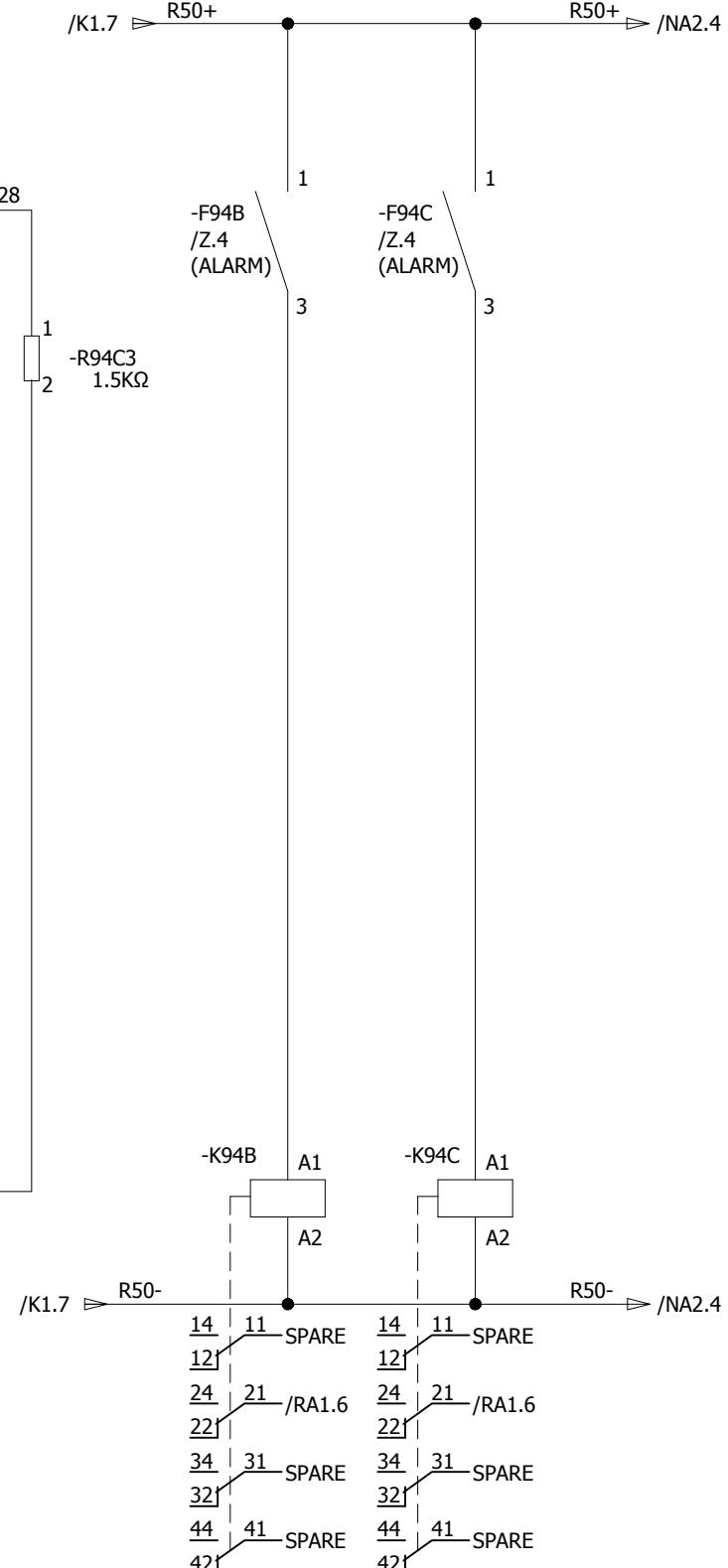
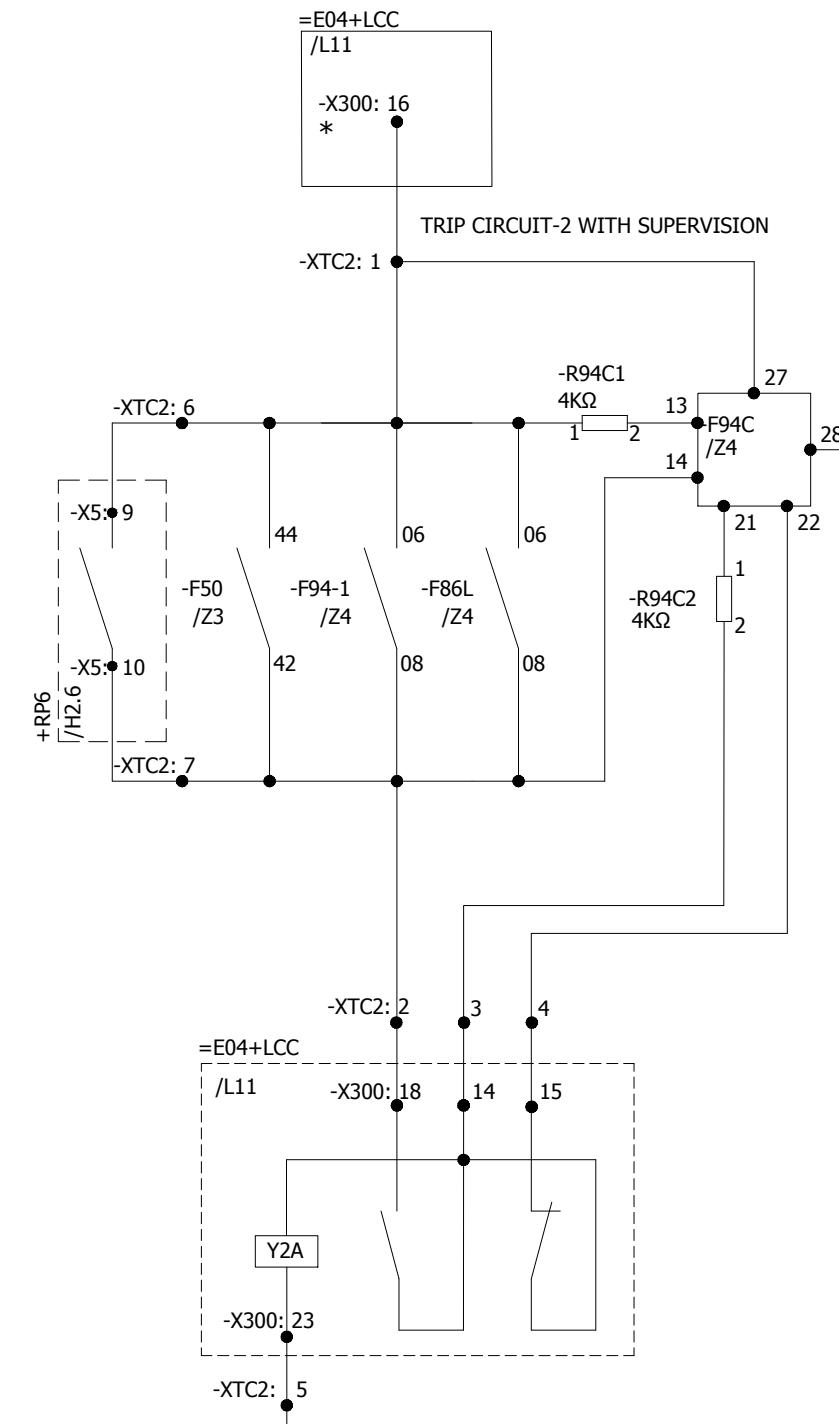
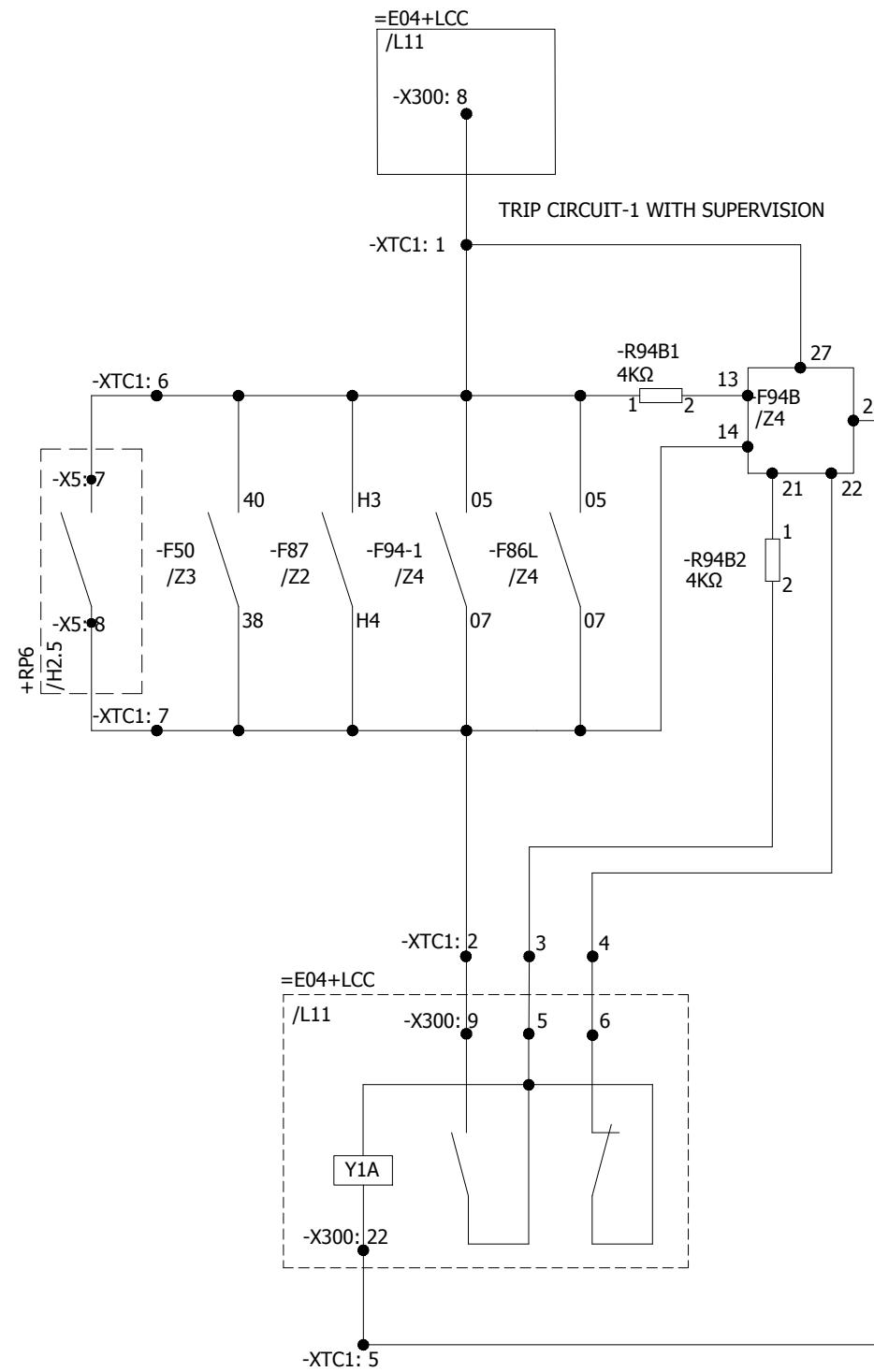
O/C & E/F PROTECTION TRIP TRIP RELAY RESET

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0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPEPSOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV LINE RELAY PANEL (=E04+RP3) PROTECTION TRIPS	Drawing no. P60194-E-ELR-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type K1	Sheet no. 15
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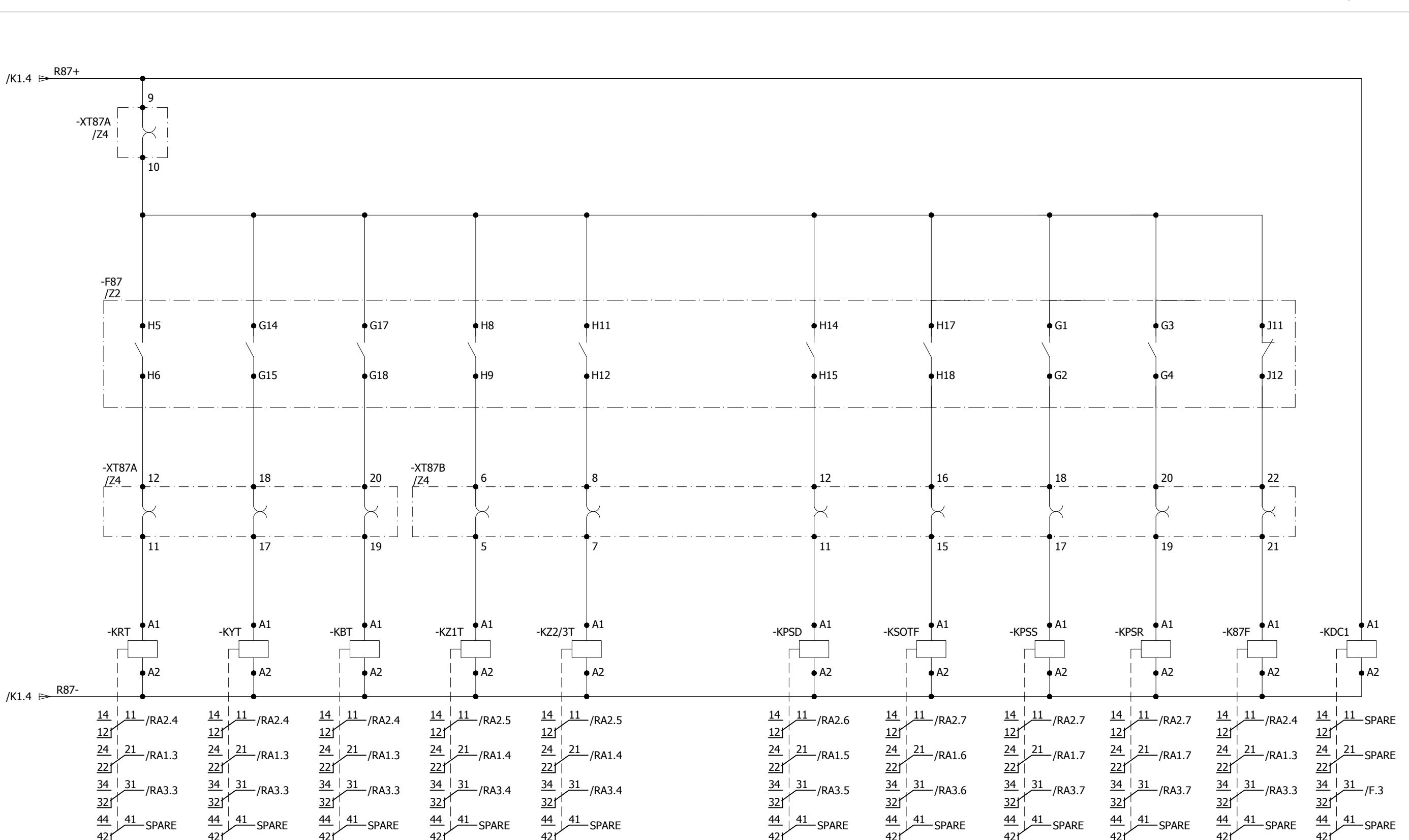


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									P60194-E-ELR-SC-003		
									Project no. P-60194		
REV.	DESCRIPTION	DATE	DRAWER						Sheet type K11		

LINE DIFFERENTIAL PROTECTION

RED-PH TRIP	YELLOW-PH TRIP	BLUE-PH TRIP	ZONE-1 TRIP	ZONE-2 TRIP\ZONE-3 TRIP	POWER SWING DETECT	SWITCH ON TO FAULT	AUTORECLOSURE OPERATED	AUTORECLOSURE BLOCKED	LINE DIFF. RELAY FAULTY	R87+ DC SUPPLY MONITORING
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+KDC1



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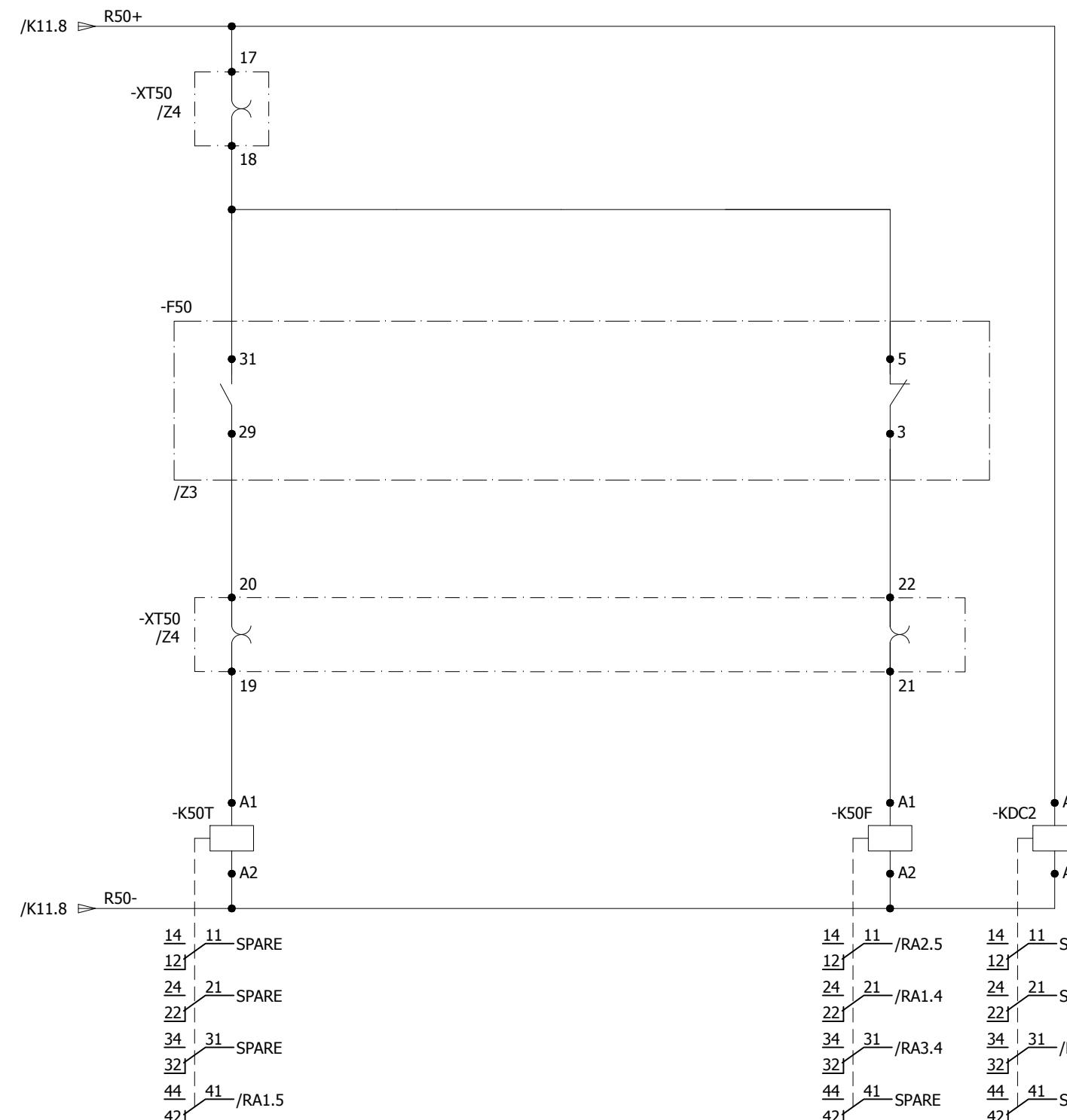
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REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type NA1	Sheet no. 17

O/C & E/F RELAY ALARMS

R50+ DC SUPPLY
MONITORINGO/C & E/F
TRIPPROTECTION
FAULTY

+KDC2

/Z3



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0	AS BUILT	20-11-2018	ASJ	Manufacturer EPE SOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV LINE RELAY PANEL (=E04+RP3) SYSTEM ALARMS	Drawing no. P60194-E-ELR-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type NA2
									Sheet no. 18

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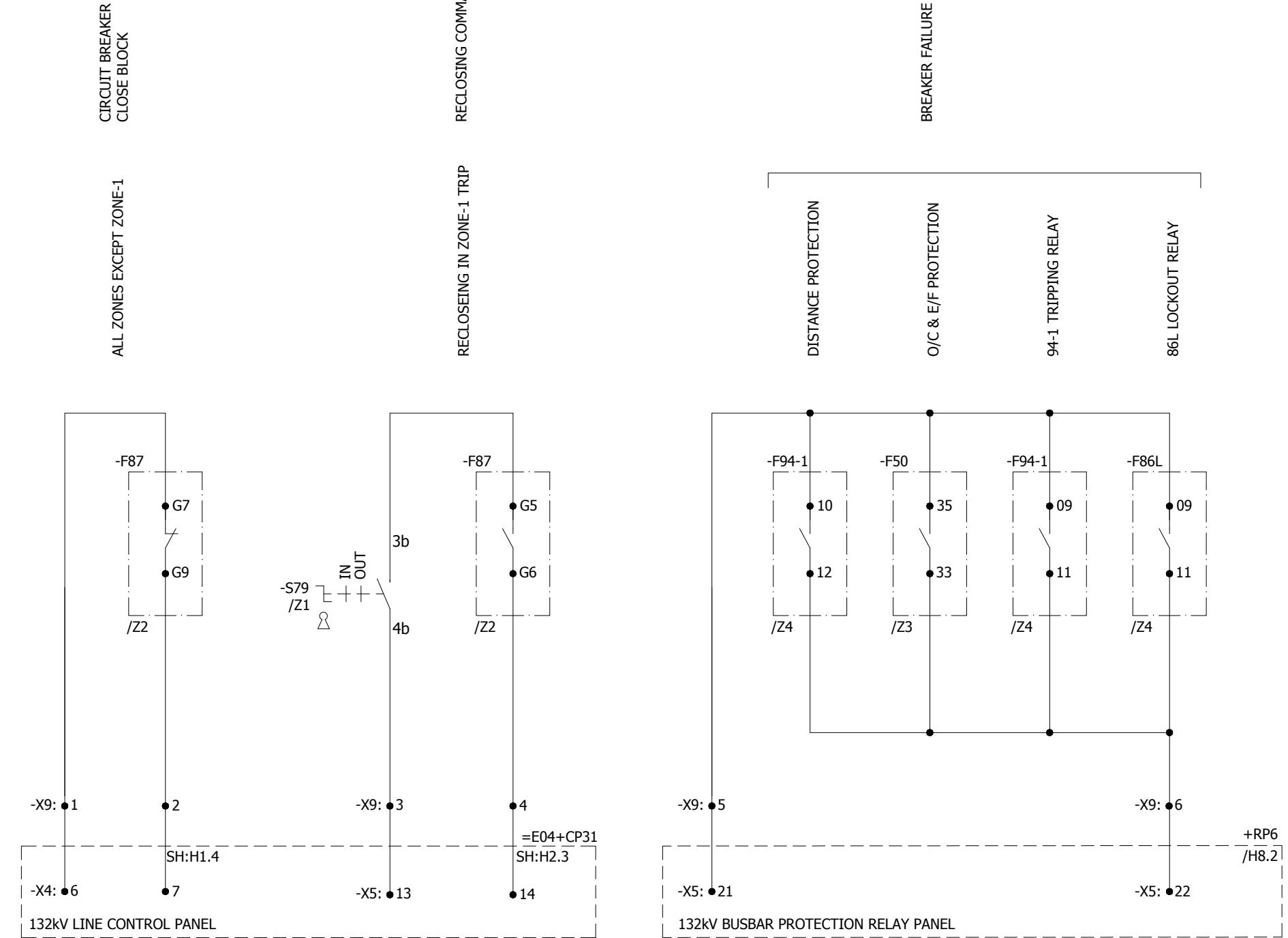
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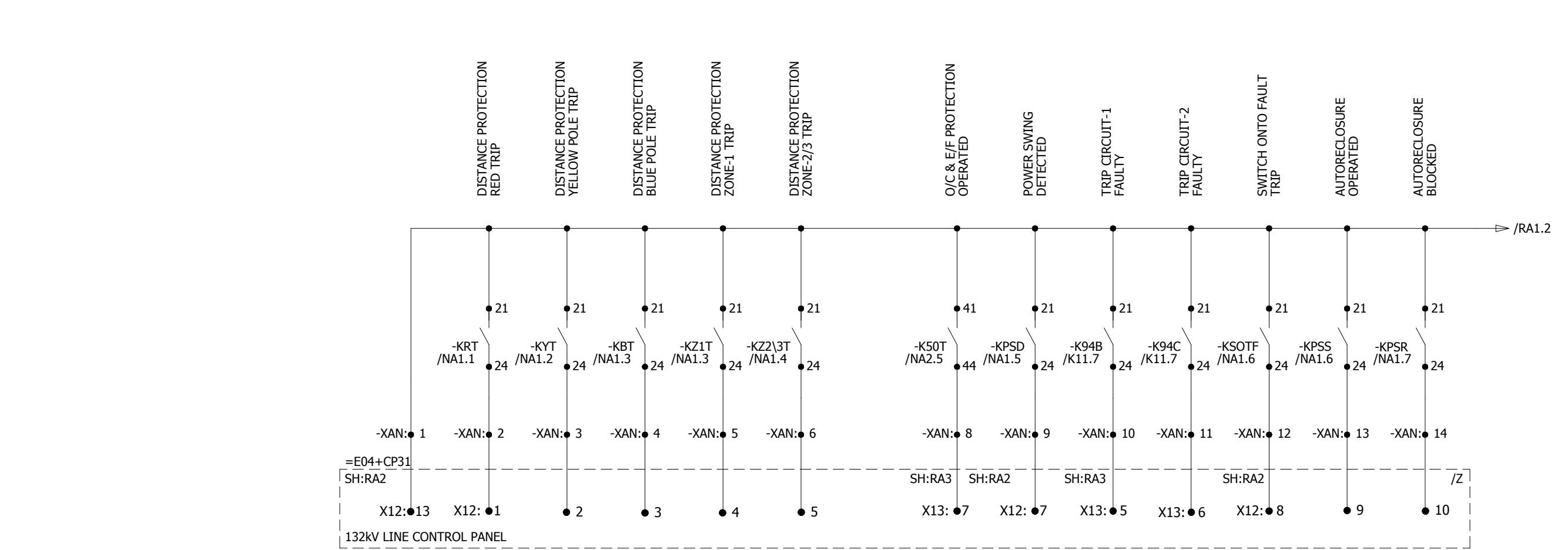
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0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) PROTECTION INTER-CIRCUITS	Drawing no. P60194-E-ELR-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type PA2	Sheet no. 19
1	2	3	4	5	6	7	8				

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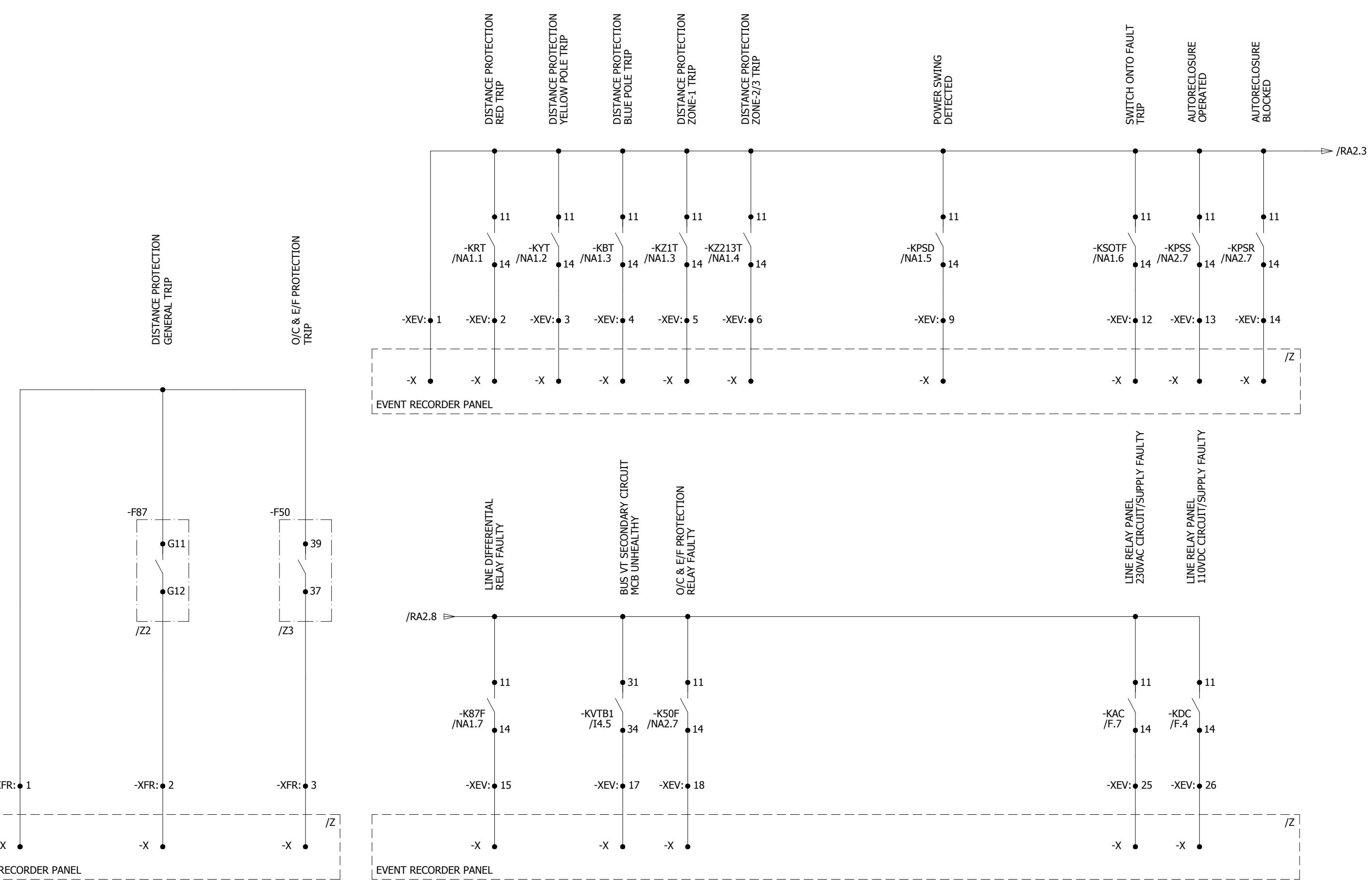


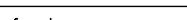
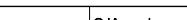
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA1	Sheet no. 20
1		2	3								

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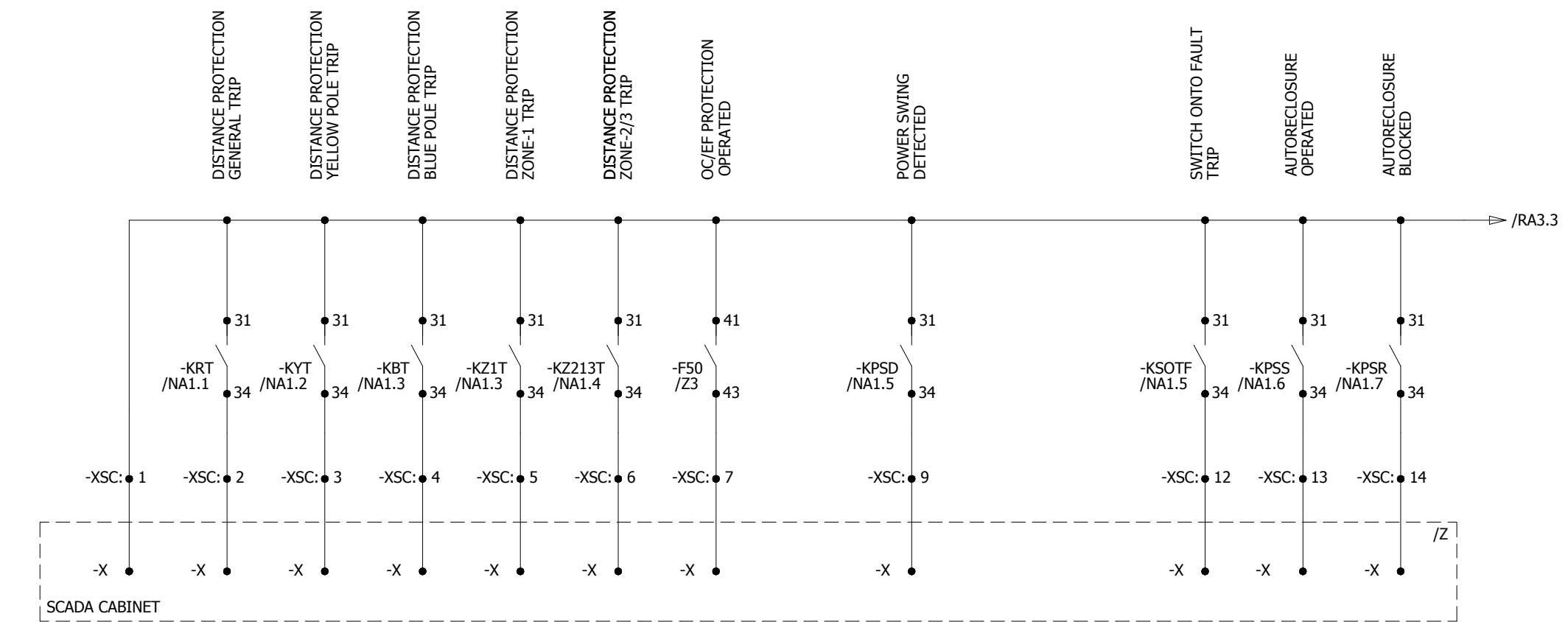


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								P60194-E-ELR-SC-003			
								Project no. P-60194			
REV.	DESCRIPTION	DATE	DRAWER					Sheet type	Sheet no.	21	
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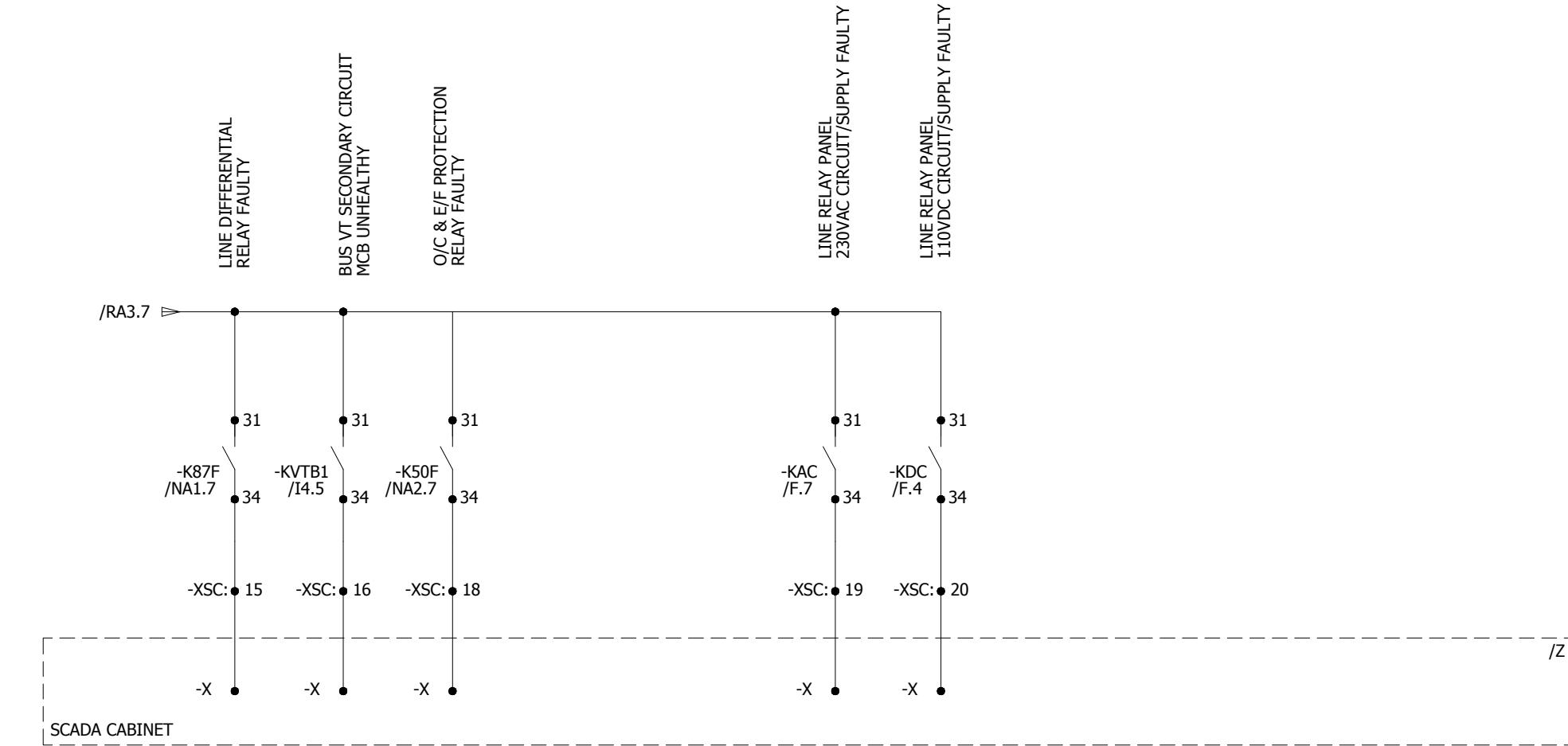
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0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) SCADA CIRCUIT	Drawing no. P60194-E-ELR-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA3	Sheet no. 22

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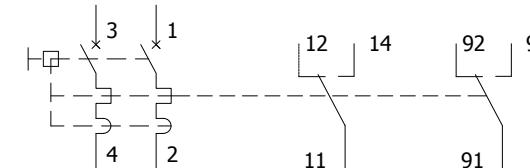
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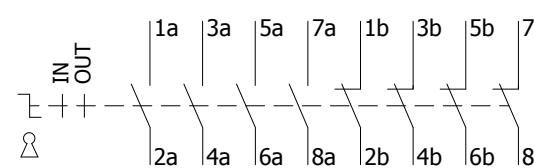
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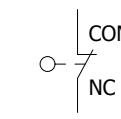
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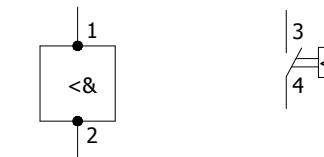
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-F204	E.7	F.3	



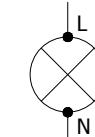
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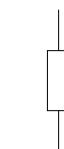
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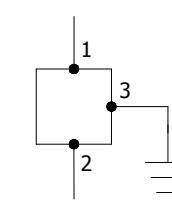
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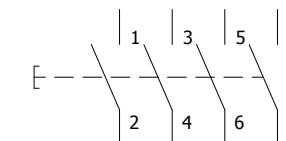
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-R100	D.5
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-X100	D.7
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0	AS BUILT	20.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) COMPONENT DIAGRAM	Drawing no. P60194-E-ELR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type Z1
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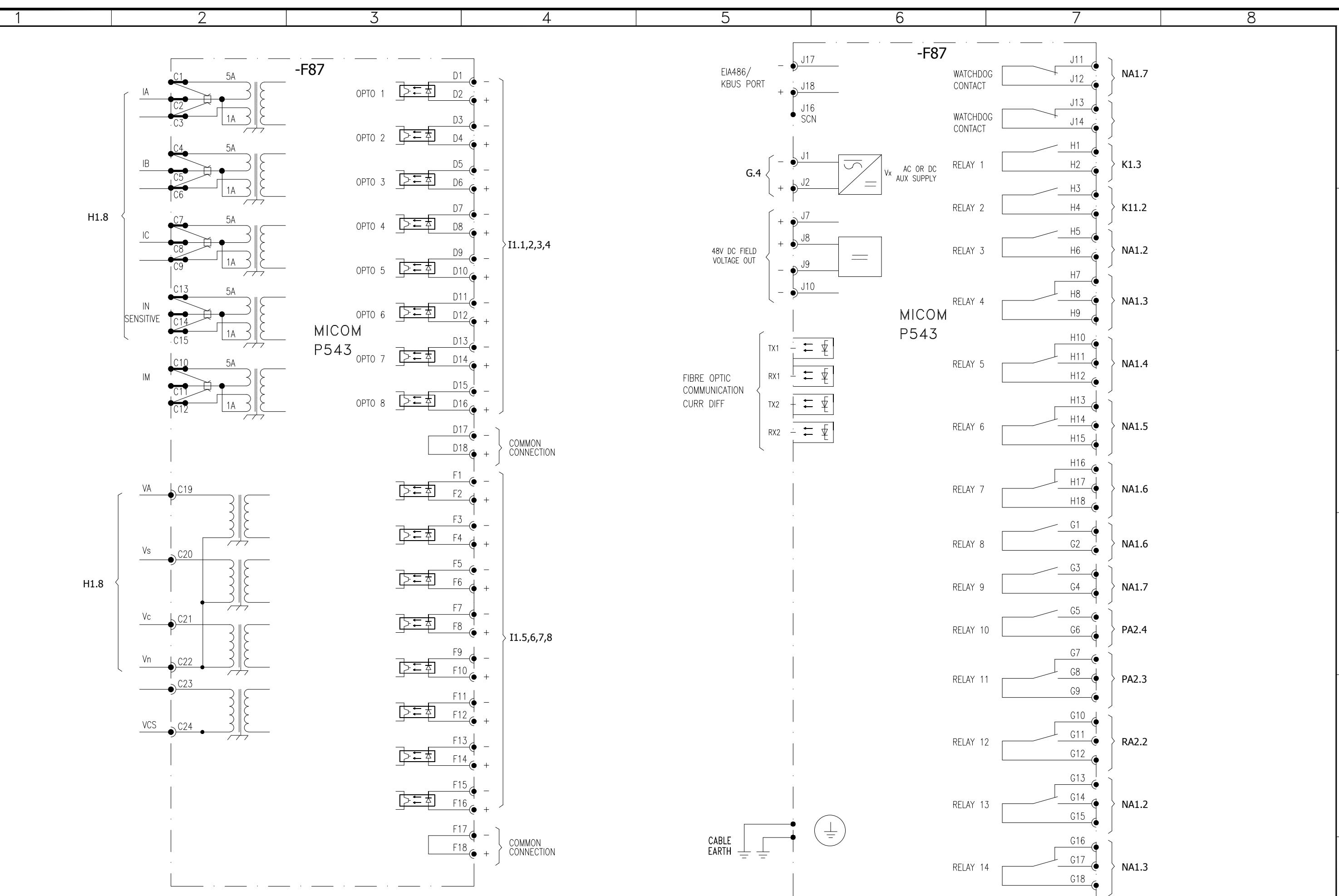
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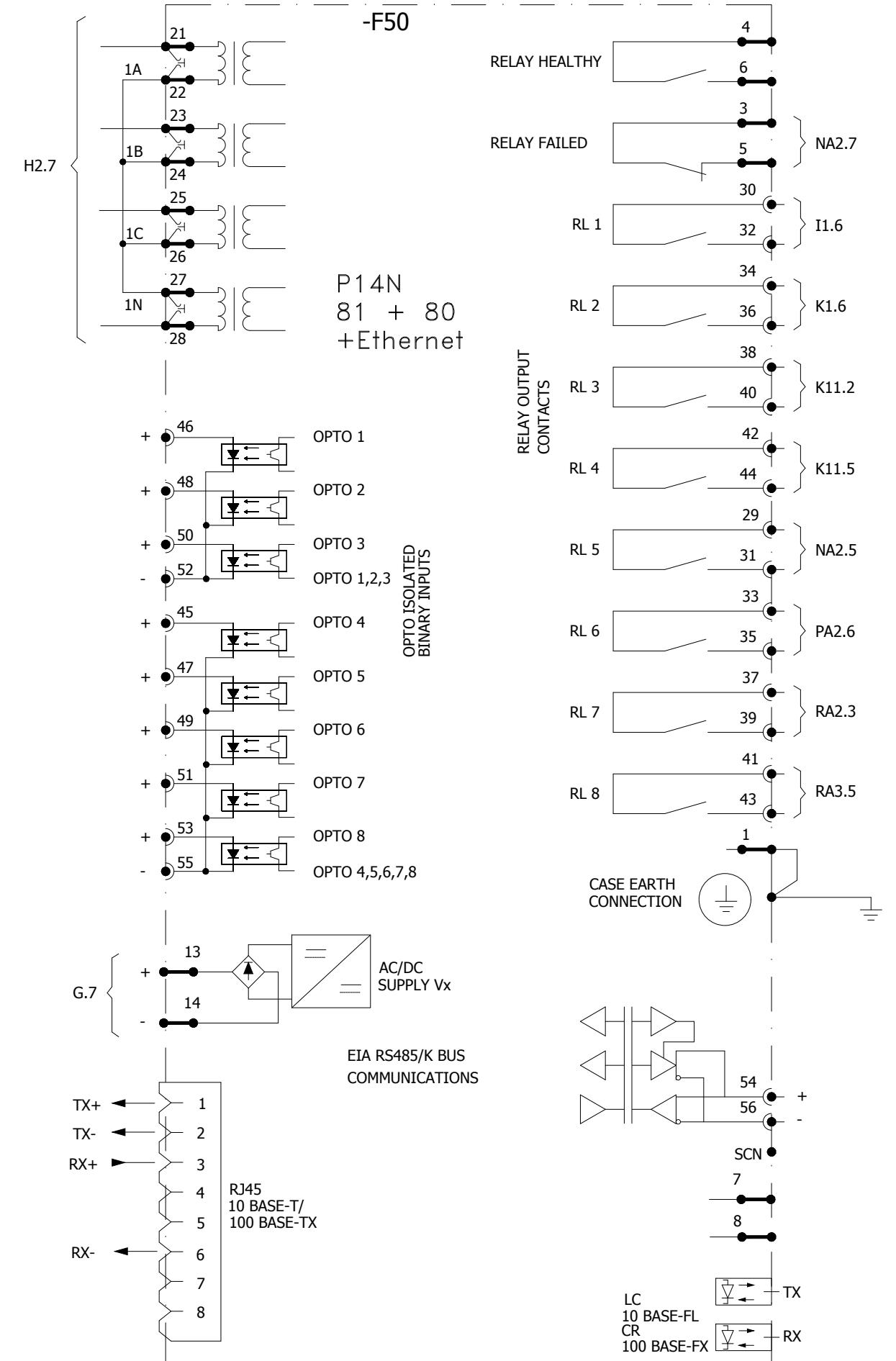
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0	AS BUILT	20.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E04+RP3) COMPONENT DIAGRAM	Drawing no. P60194-E-ELR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type Z2	Sheet no. 24
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0	AS BUILT	20.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
				EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	132KV LINE RELAY PANEL (=E04+RP3) COMPONENT DIAGRAM	Project no. P-60194	Sheet type Z3	Sheet no. 25

