



**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	 EPESOL 71-B Garden Block, New Garden Town, Lahore Pakistan							
Title	<b>132kV LINE RELAY PANEL (=E07+RP3)</b> <b>SCHEMATIC DRAWINGS</b>							
Order no	P-60194		Document no					
			P60194-E-ELR-SC-005					
Sheet type	Total sheets		Sheet no					
	A		26					
1								



	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

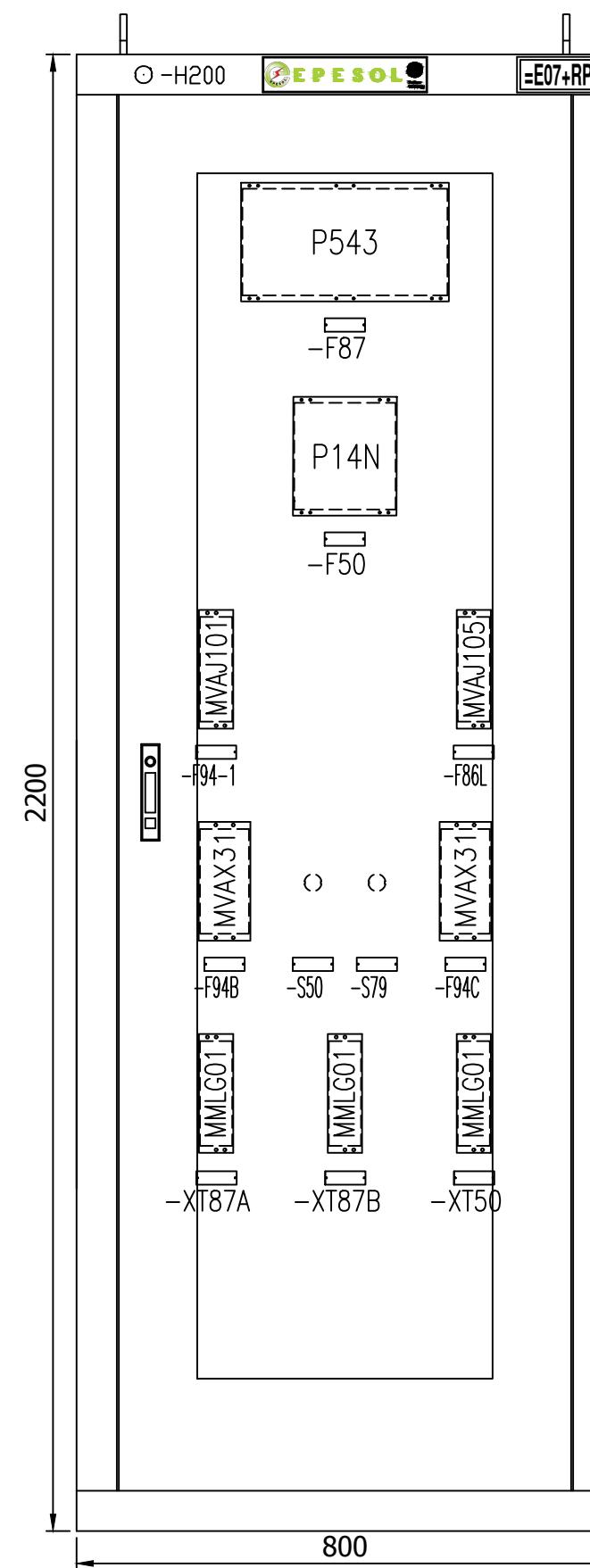
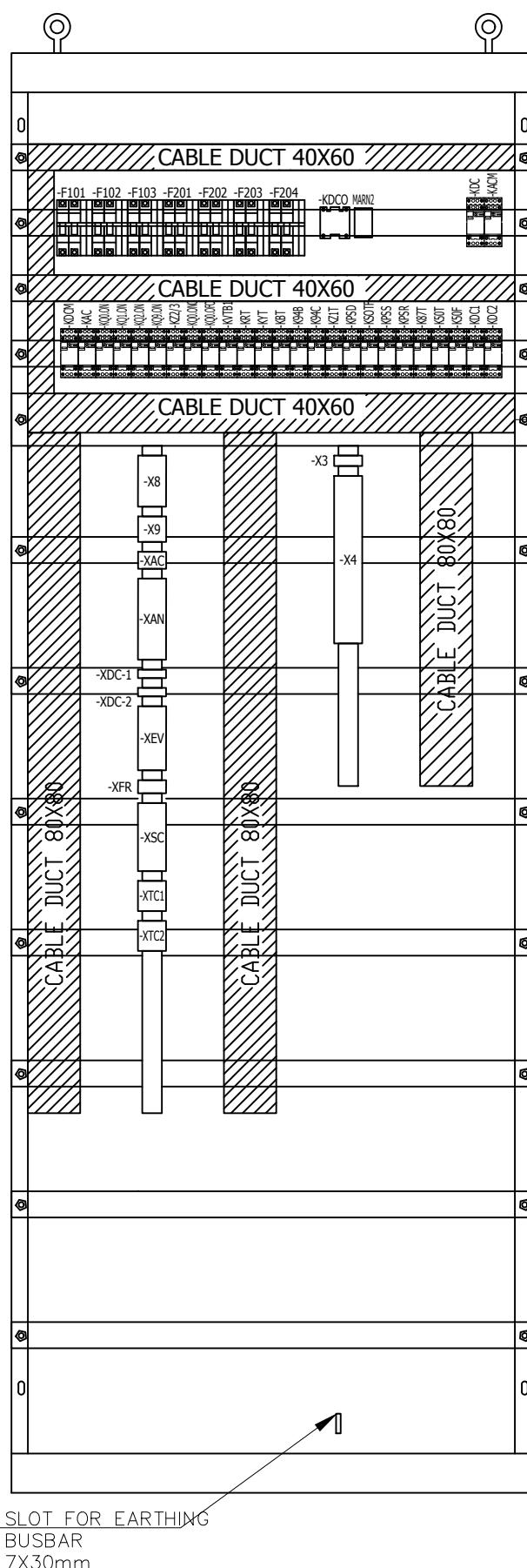
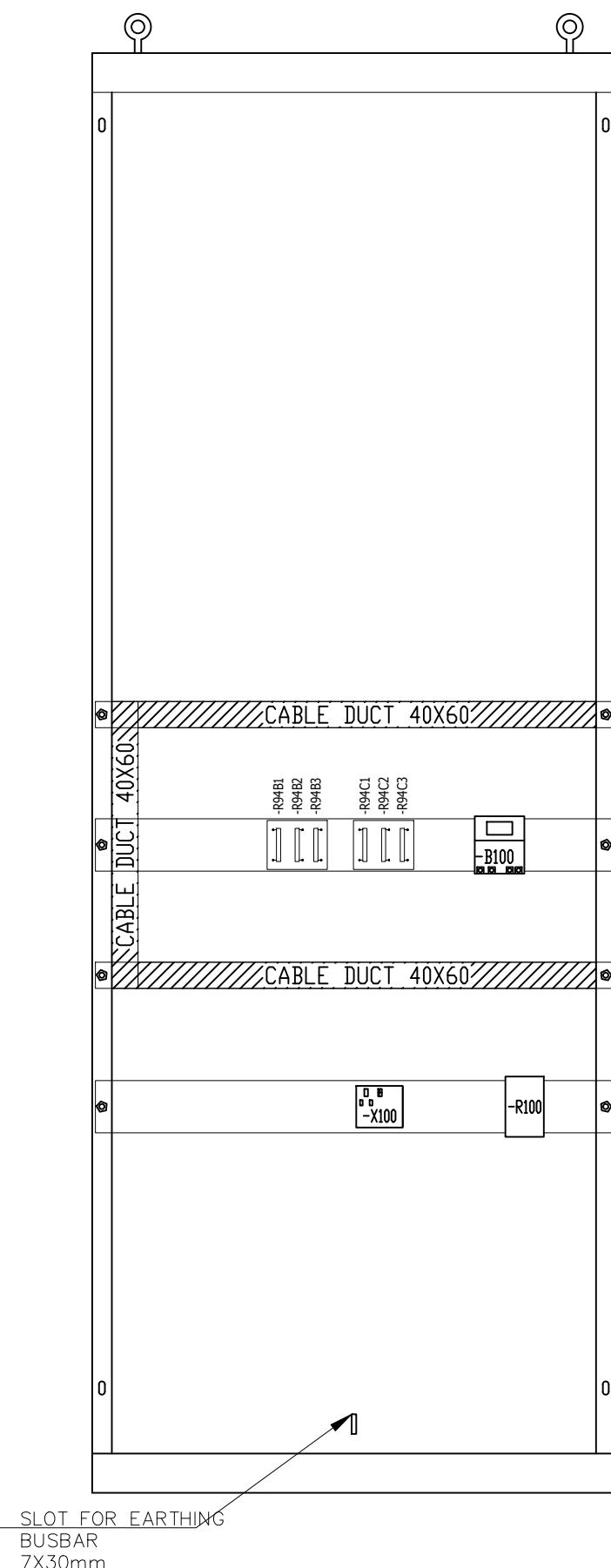
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type AB

	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		A	
	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	
B	04	RESISTORS	4KΩ	-R94 B/C 1-2		GE		B	
	02	RESISTORS	1.5KΩ	-R94 B/C 3		GE			
	03	TEST BLOCK	MMLG01, Cortec: MMLG01-R1AA9002D	-XT87A,-XT87B,XT50		GE		C	
C	01	TRIPPING RELAY (SELF-RESETTING)	MVAJ101, Cortec: MVAJ101-RA0802A  Supply: 110-125VDC, 8 NO + 2 NC Contacts	-F94-1		GE		C	
	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	
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		D	
	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		E	
	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		F	
	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			
F	01	PANEL HEATER	240VAC @ 50Hz, 50W	-R100		ELAB		F	
	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			
0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  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 (=E07+RP3) COMPONENT LIST	Drawing no. P60194-E-ELR-SC-005
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194 Sheet type AC1 Sheet no. 04	
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	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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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 (=E07+RP3) COMPONENT LIST	Drawing no. P60194-E-ELR-SC-005	
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type AC1	Sheet no. 04a

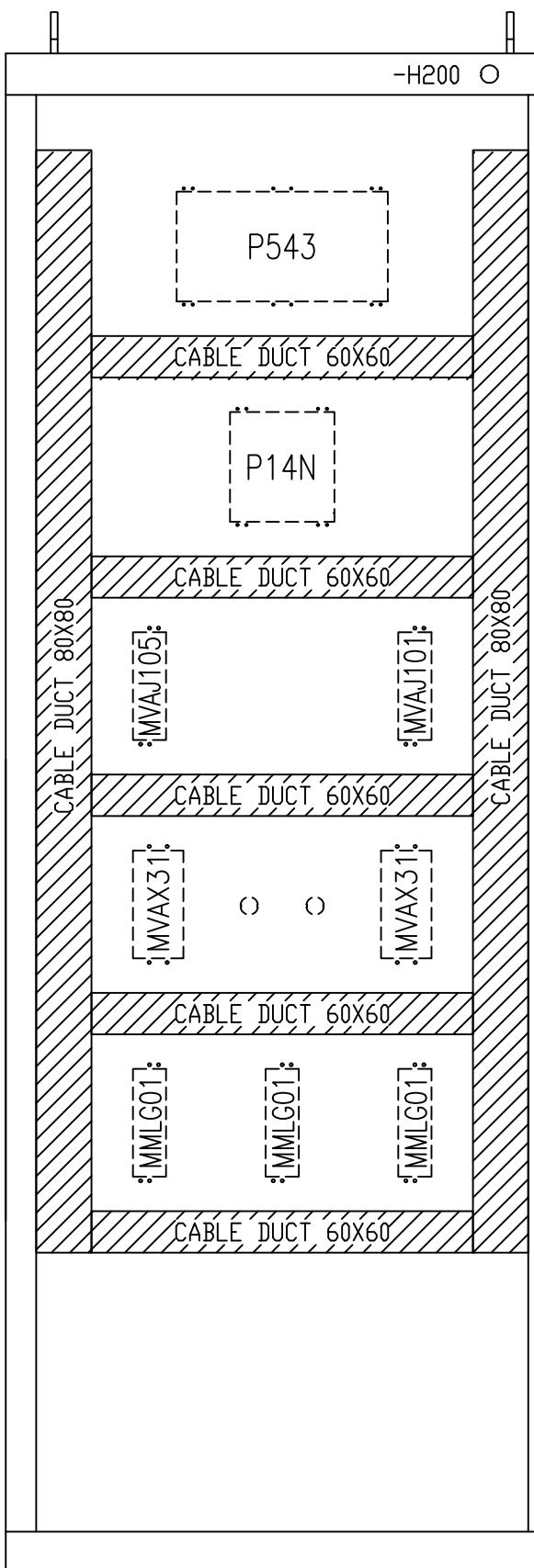
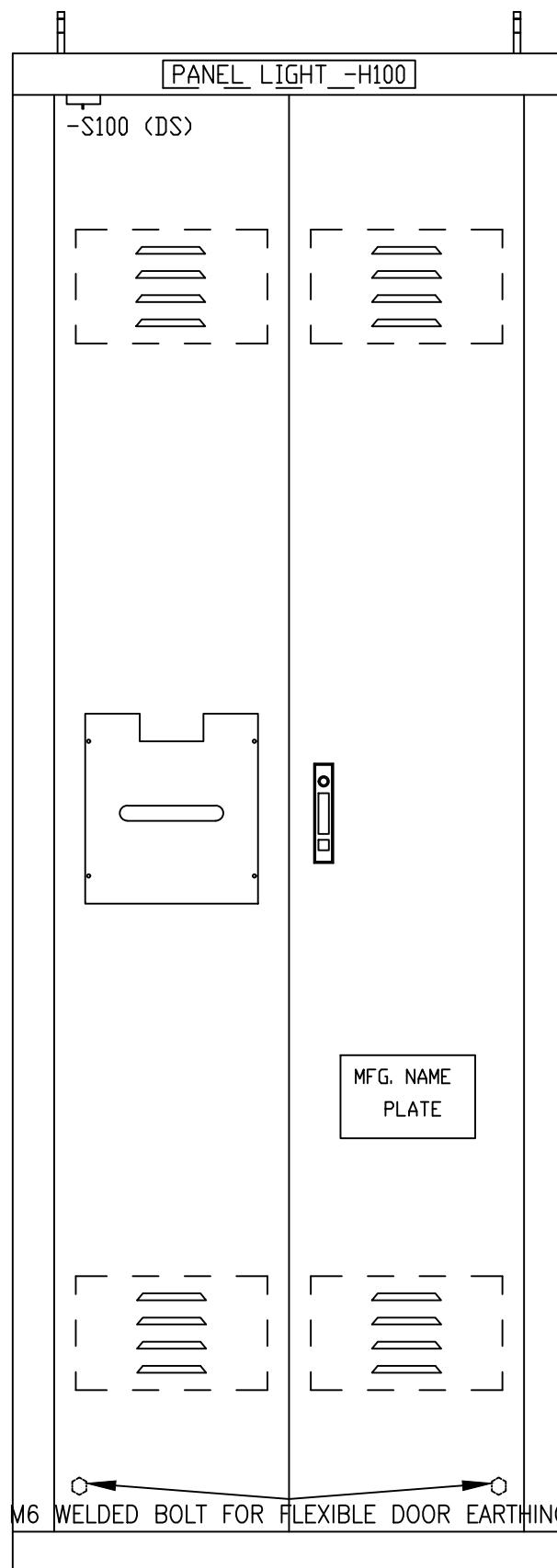
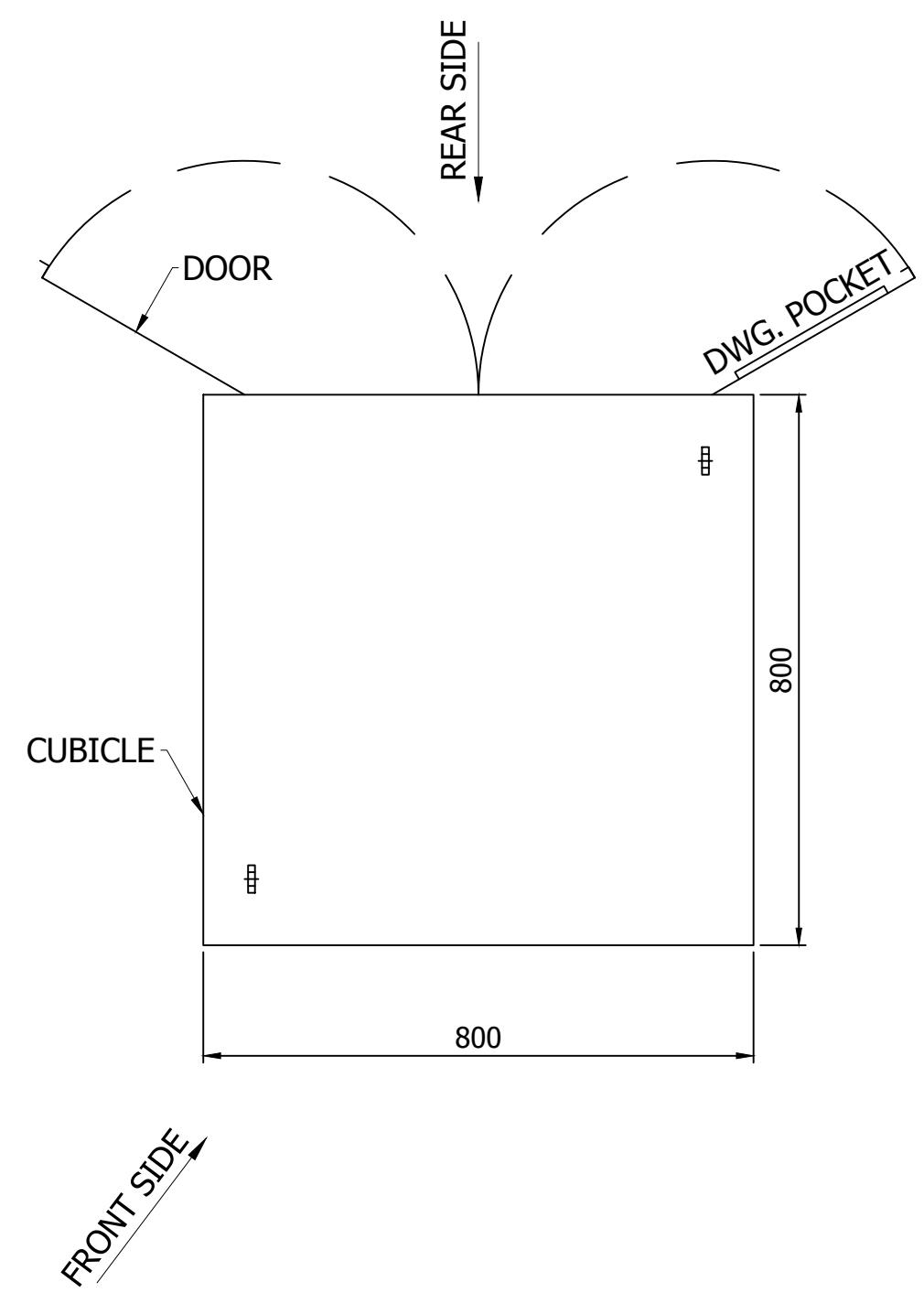
FRONT VIEW WITH DOORLEFT SIDE VIEWRIGHT SIDE VIEW

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A  
B  
C  
D  
E  
F

0	AS BUILT	20.11.2018	ASJ	Manufacturer <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>Grid Solutions</b> A GE and Alstom joint venture	Client <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) PANEL VIEW	Drawing no. P60194-E-ELR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

1 2 3 4 5 6 7 8

BACK VIEW WITHOUT DOORBACK VIEW WITH DOORTOP VIEW**NOTE:-**

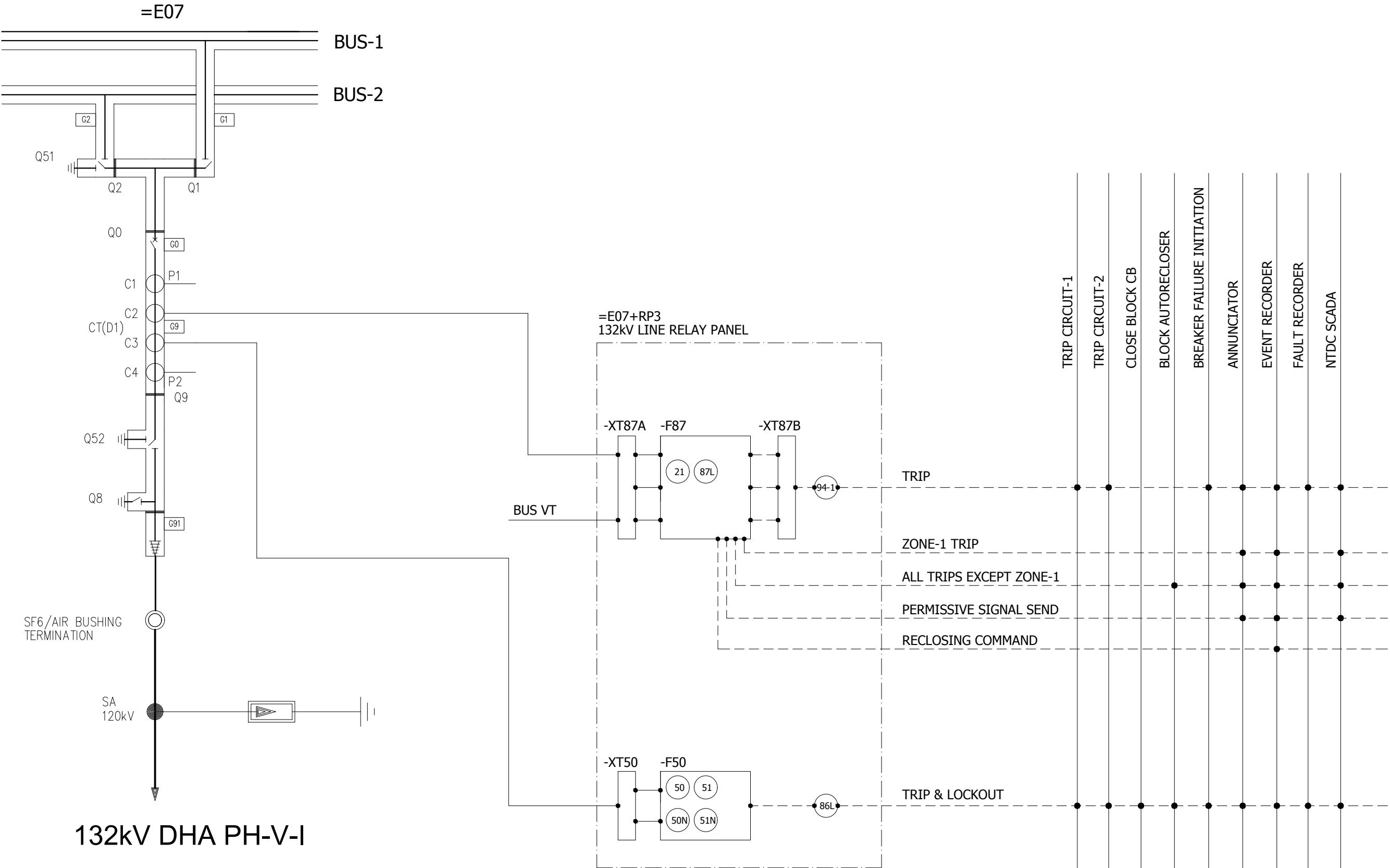
- 1 - PANEL DIMENSION: 800 x 800 x 2200mm (WxDxH)
- 2 - COLOR : RAL 7032
- 3 - SHEET THICKNESS : 2-2.5 mm
- 4 - PROTECTION CLASS : IP-51 (INDOOR TYPE)
- 5 - ALL DOOR FITTED WITH 16mm EARTH STRAP & INSULATED WITH GREEN-YELLOW COLOUR.

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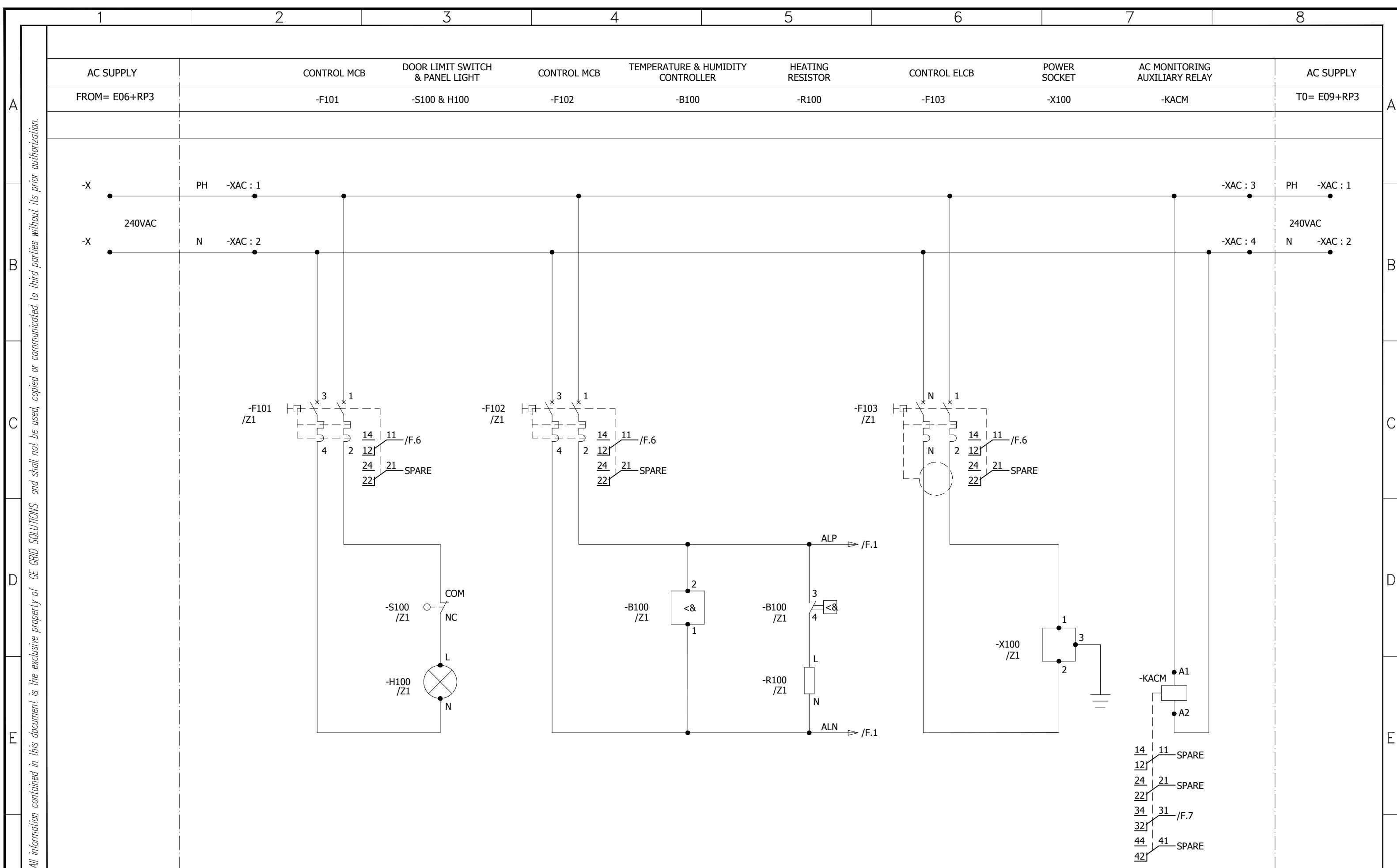
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

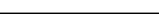
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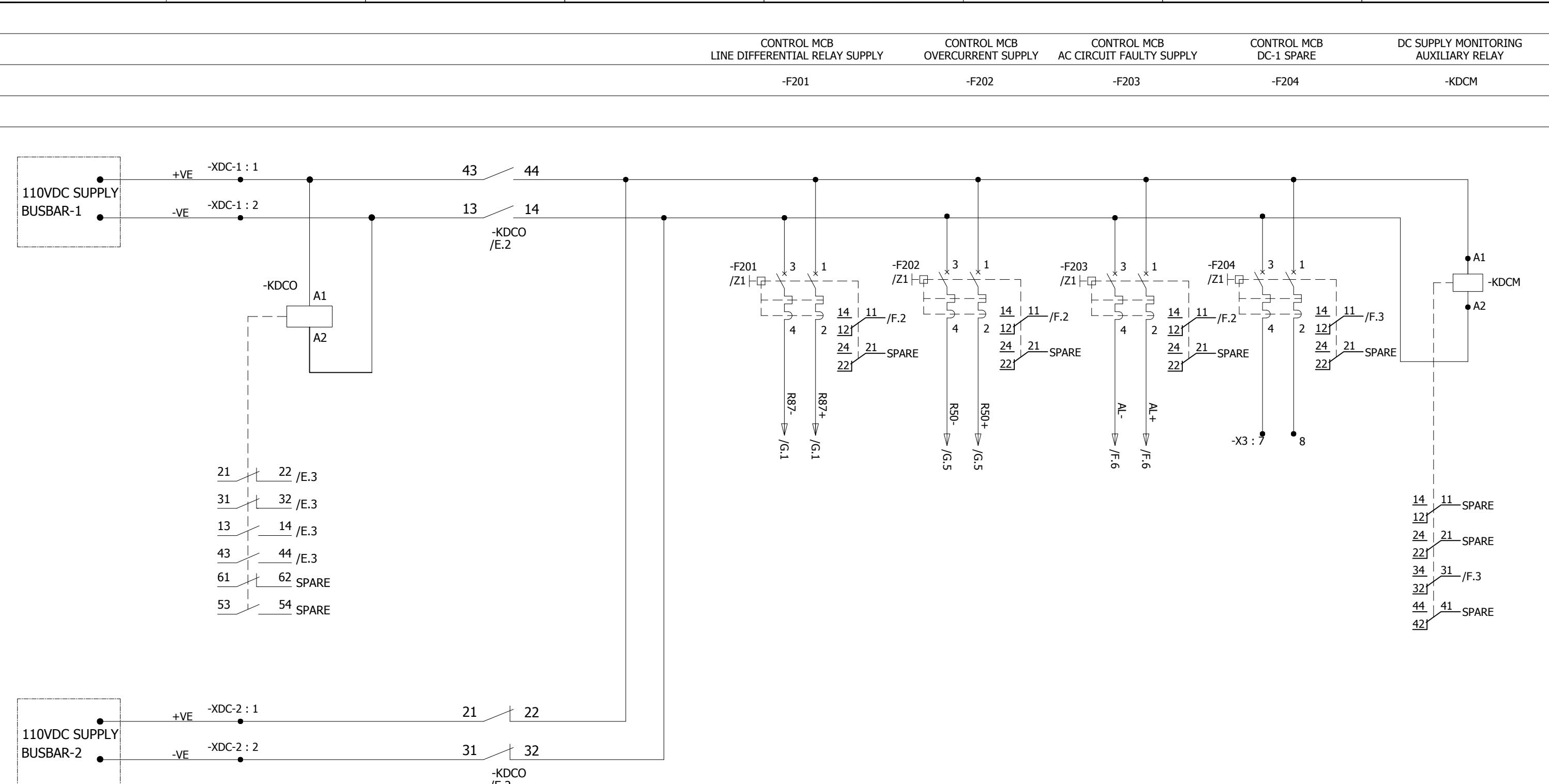
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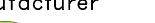


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									Project no. P-60194		
									Sheet type AE		
REV.	DESCRIPTION	DATE	DRAWER	1	2	3	4	5	6	7	8



F	0	AS BUILT	20-11-2018	ASJ	Manufacturer  7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  A GE and Alstom joint venture	Client 	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) AC SUPPLY DISTRIBUTION	Drawing no. P60194-E-ELR-SC-005
	REV.	DESCRIPTION	DATE	DRAWER						
1	2	3	4	5	6	7	8	9	10	11



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									Project no. P-60194	
REV.	DESCRIPTION	DATE	DRAWER						Sheet type E	Sheet no. 08

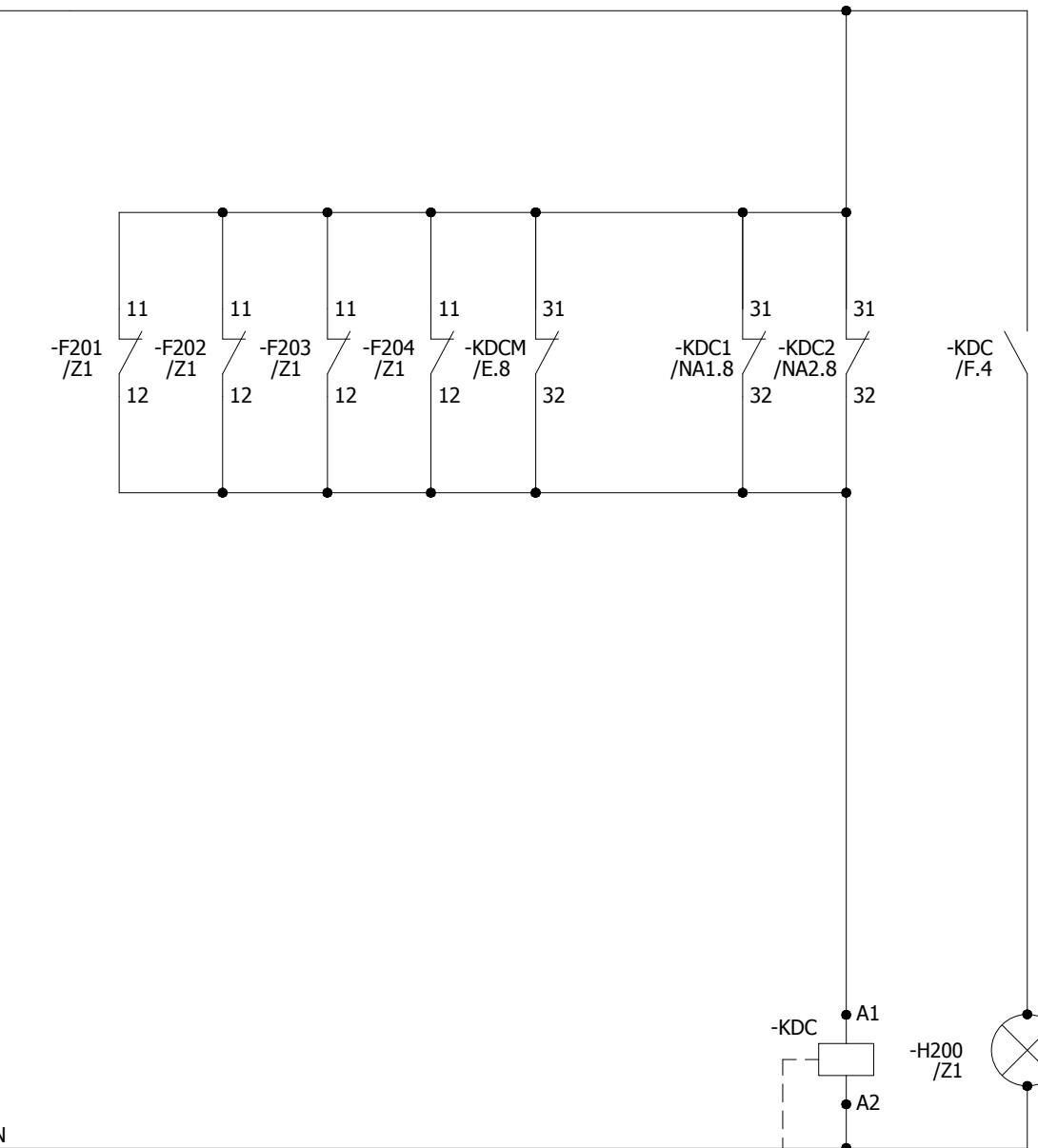
110V DC CIRCUIT FAULTY

240V AC CIRCUIT FAULTY

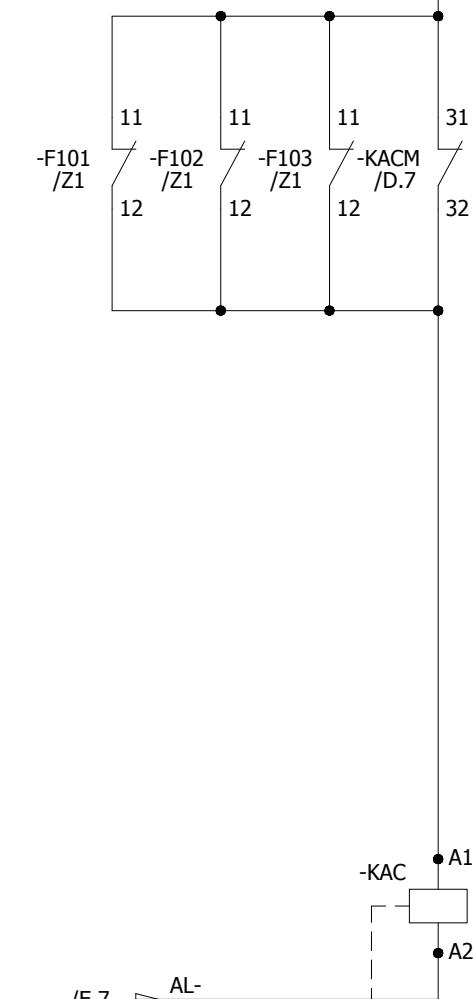
-KDC

-KAC

/D.5 ▷ ALP



/E.7 ▷ AL+



/D.5 ▷ ALN

14 11 /RA2.7  
12 21 /RA1.7  
24 22 /RA1.6  
34 32 /RA3.5  
32 41 /F.4  
44 42 SPARE

/E.7 ▷ AL-

14 11 /RA2.7  
12 21 /RA1.7  
24 22 /RA1.6  
34 32 /RA3.5  
32 41 /F.4  
44 42 SPARE

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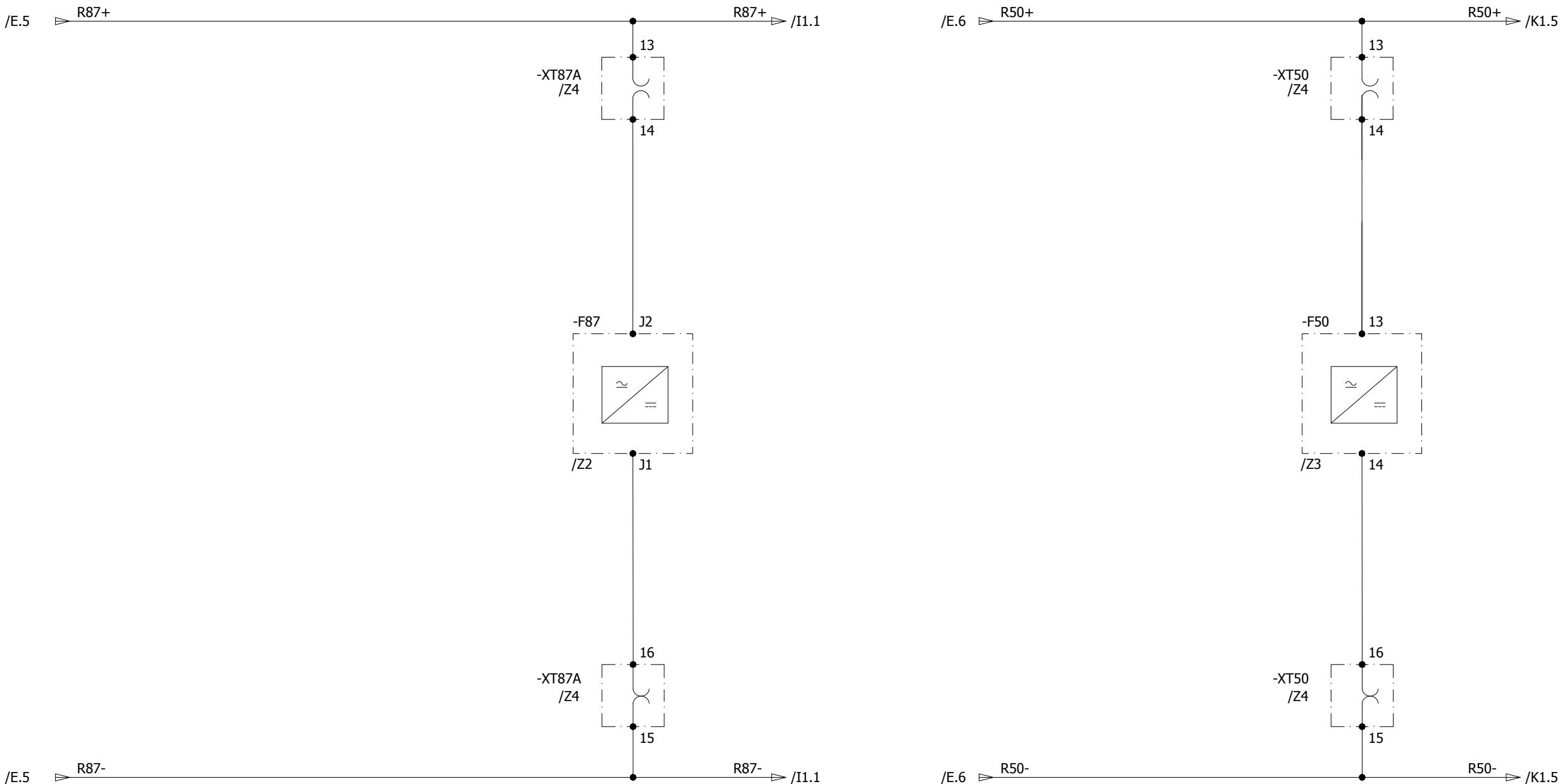
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type F
									Sheet no. 09

## LINE DIFFERENTIAL PROTECTION

## OVERCURRENT PROTECTION

## RELAY SUPPLY

## RELAY SUPPLY



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A

A

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B

C

C

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D

E

E

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F

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0	AS BUILT	20-11-2018	ASJ	Manufacturer  <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) RELAY POWER SUPPLY CIRCUIT	Drawing no. P60194-E-ELR-SC-005
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type G
									Sheet no. 10

TEST BLOCK

LINE DIFFERENTIAL PROTECTION  
RELAY

-XT87A

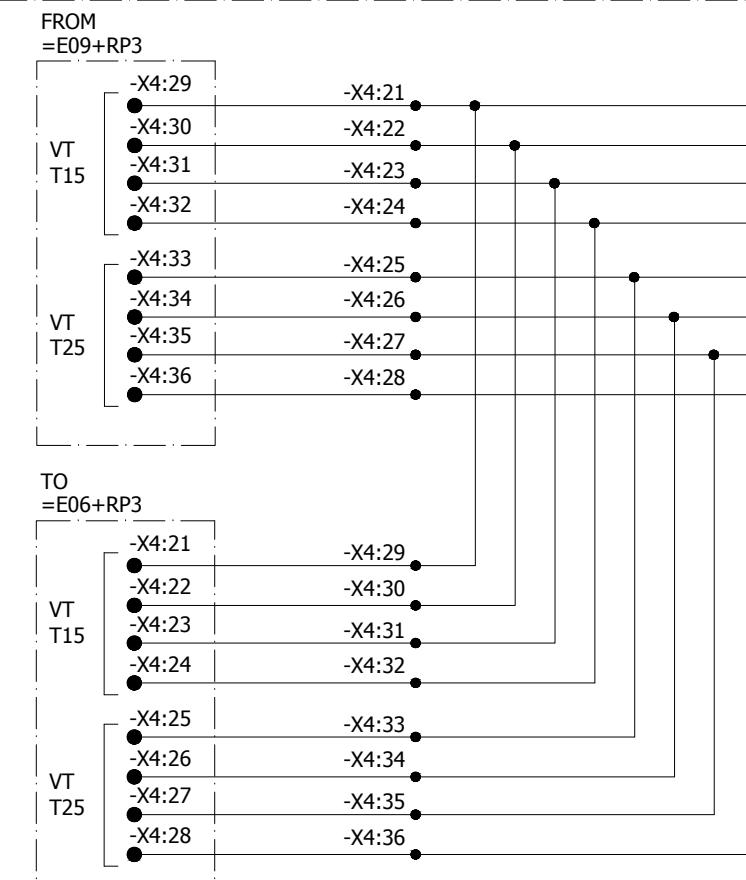
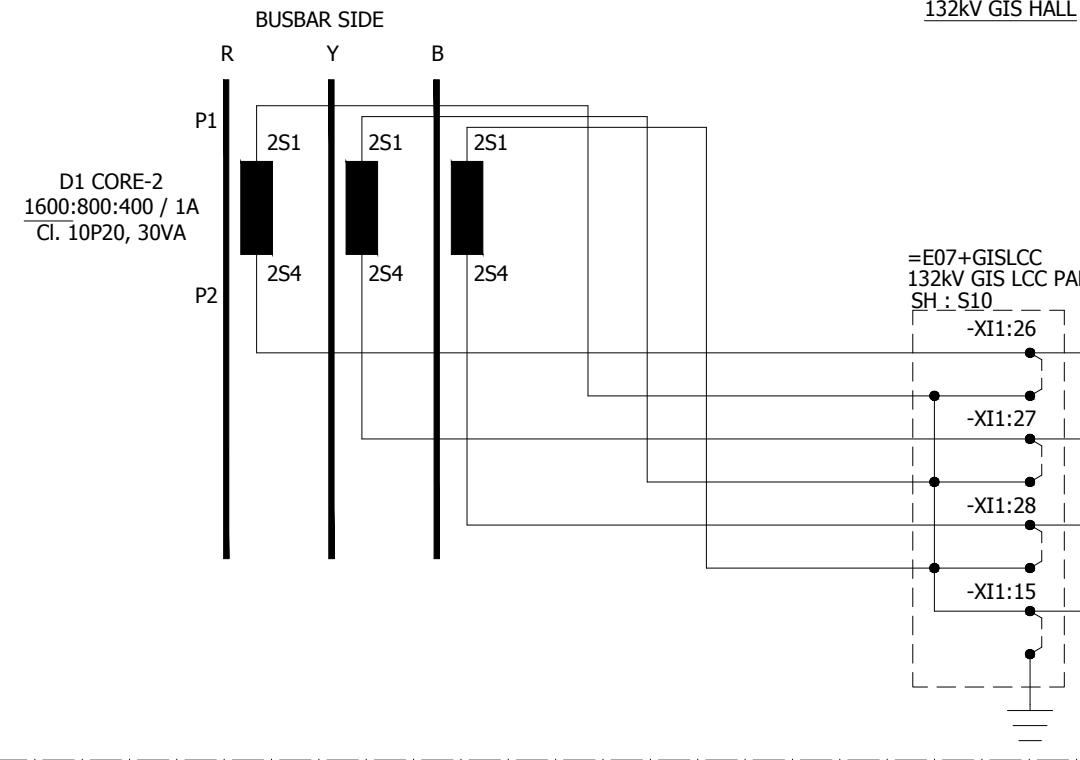
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/Z2

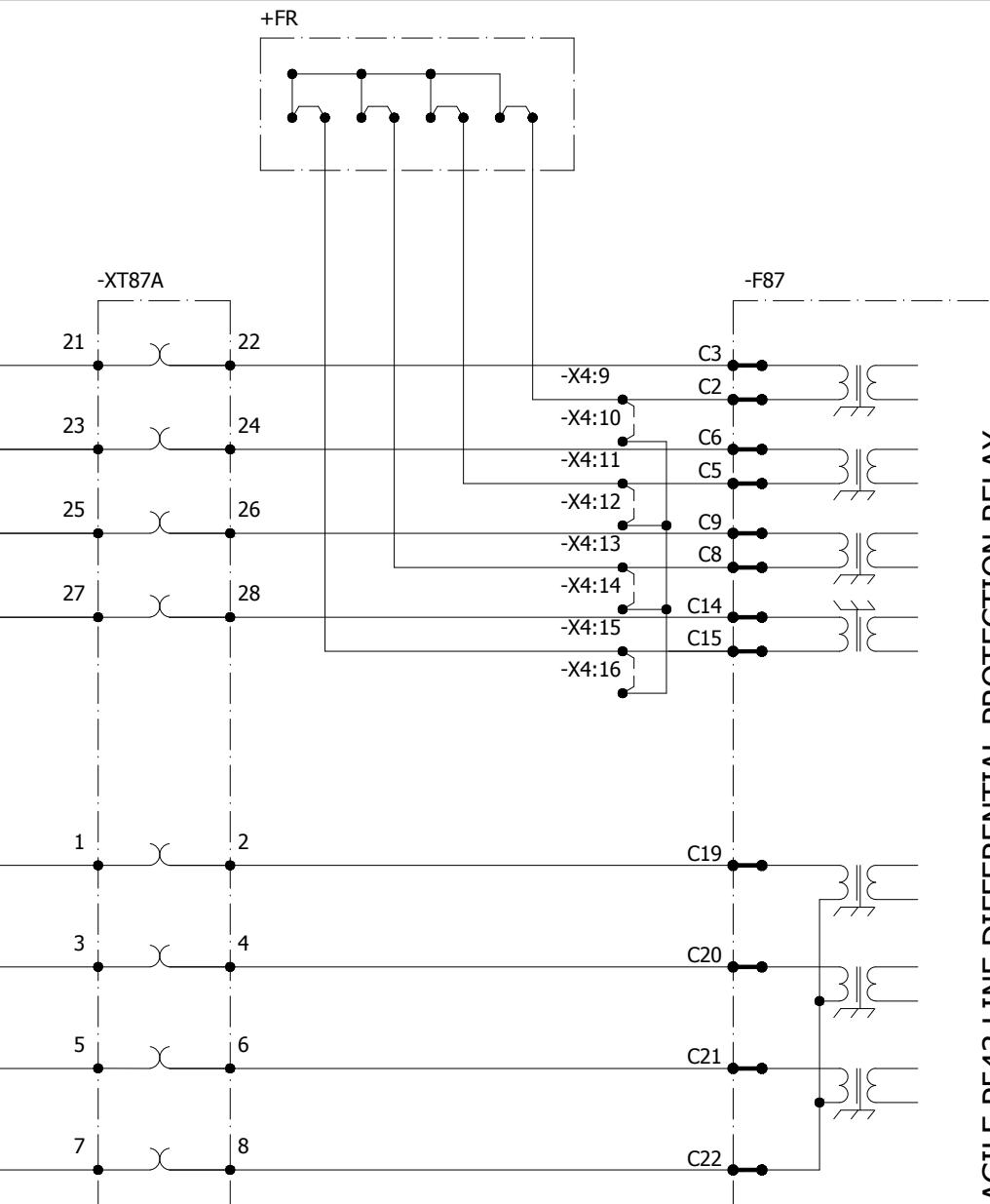
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A



132kV GIS HALL

CONTROL ROOM



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 (=E07+RP3)	P60194-E-ELR-SC-005
REV.	DESCRIPTION	DATE	DRAWER					LINE DIFFERENTIAL PROTECTION CT/VT CIRCUIT	Project no. P-60194

TEST BLOCK

OVERCURRENT  
RELAY

-XT50

-F50

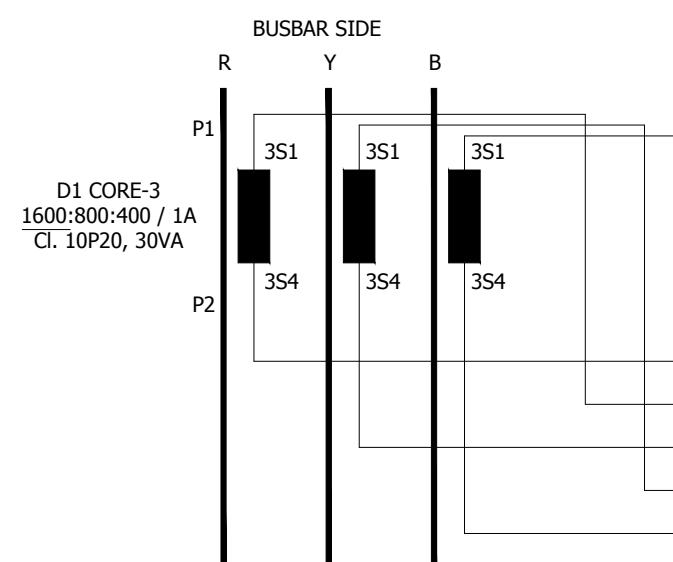
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## 132kV GIS HALL

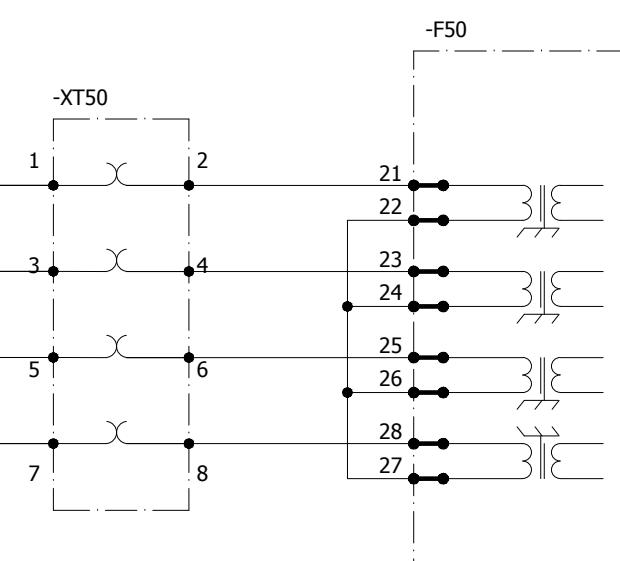
## CONTROL ROOM

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=E07+GISLCC  
132kV GIS LCC PANEL  
SH : S11  
-XI1:40  
-XI1:41  
-XI1:42  
-XI1:29

-X5:1  
-X5:2  
-X5:3  
-X5:4  
-X5:5  
-X5:6  
-X5:7  
-X5:8



A

A

B

B

C

C

D

D

E

E

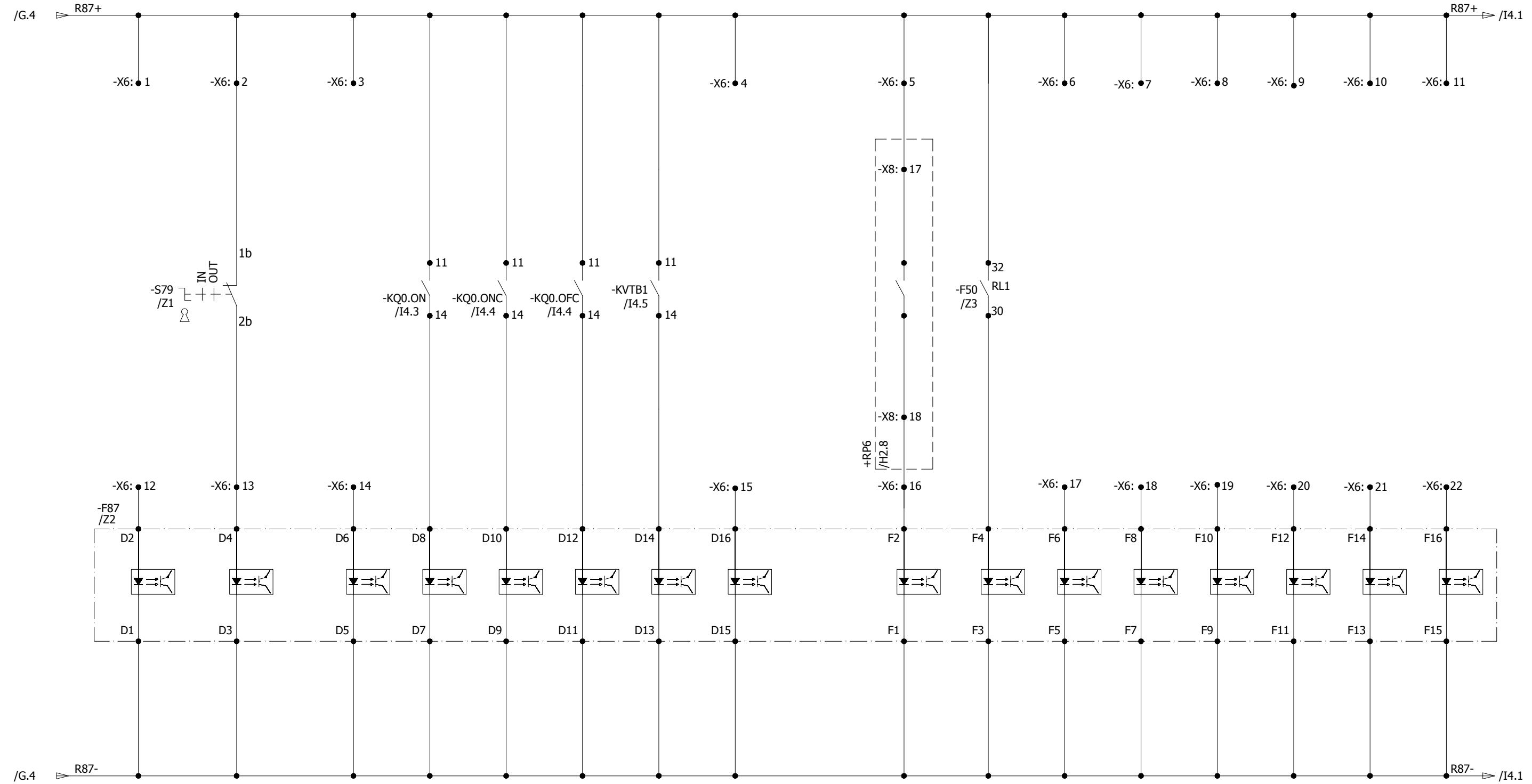
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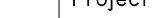
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0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) O/C & E/F CT INPUTS	Drawing no. P60194-E-ELR-SC-005	
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type H2	Sheet no. 12

## LINE DIFFERENTIAL PROTECTION RELAY

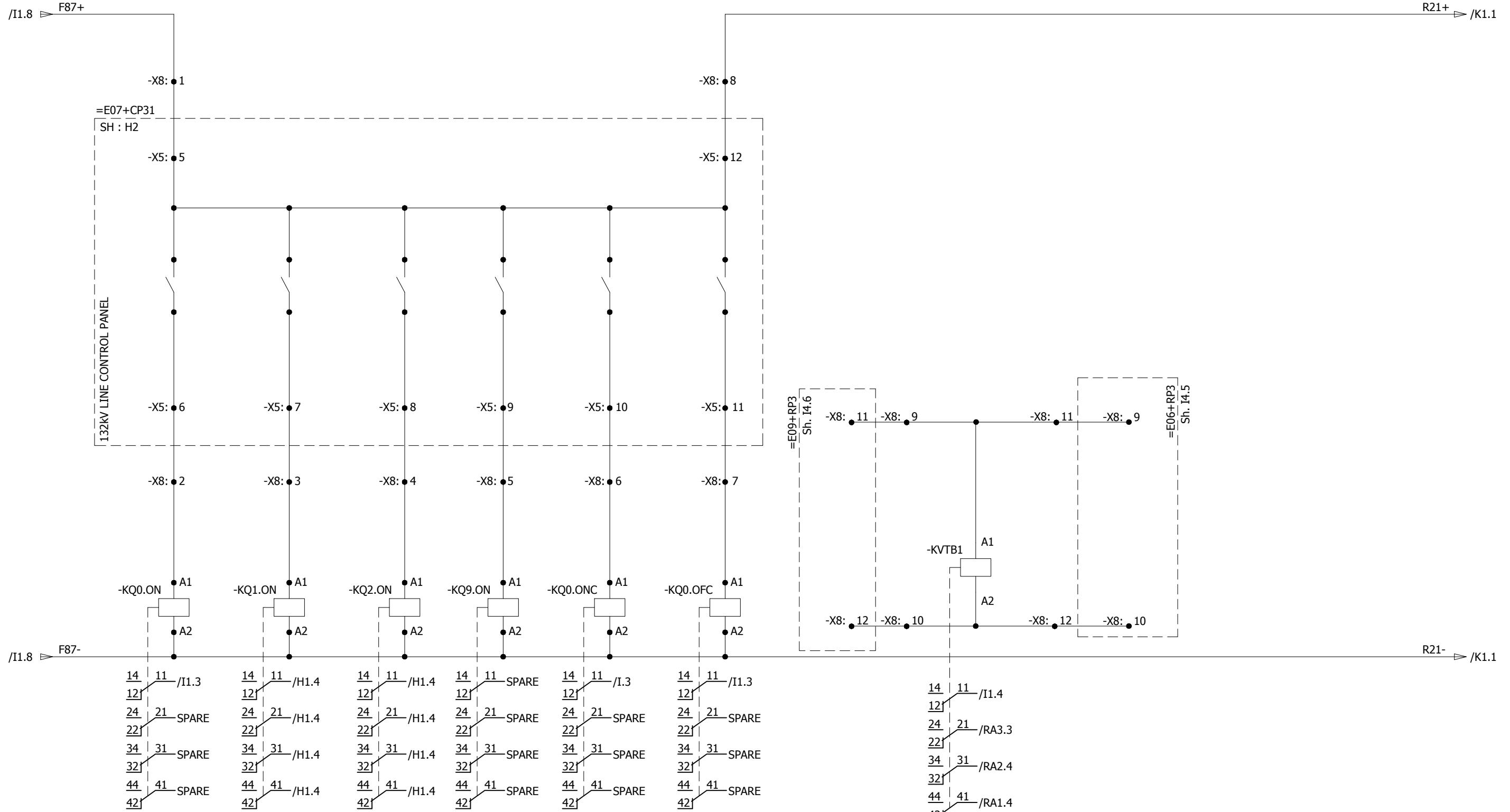
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0	AS BUILT	20-11-2018	ASJ	<b>Manufacturer</b>  <b>EPESOL</b> <i>7-B Garden Block, New Garden Town, Lahore, Pakistan</i>	<b>Contractor</b>  <b>Grid Solutions</b> <small>A GE and Alstom joint venture</small>	<b>Client</b>  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	<b>Project</b> <b>220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE</b>	<b>Title</b> <b>132kV LINE RELAY PANEL (=E07+RP3)</b> <b>LINE DIFFERENTIAL RELAY INPUTS</b>	<b>Drawing no.</b>		
								<b>P60194-E-ELR-SC-005</b>			
								<b>Project no.</b>			
								<b>P-60194</b>	<b>Sheet type</b>	<b>Sheet no.</b>	
REV.	DESCRIPTION	DATE	DRAWER	1	2	3	4	5	6	7	

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CB CLOSE	Q1 CLOSE	Q2 CLOSE	Q9 CLOSE	CB MANUAL CLOSE	CB MANUAL OPEN	BUS VT MCB UNHEALTHY
STATUS	STATUS	STATUS	STATUS	COMMAND	COMMAND	STATUS
=E07+LCC	=E07+LCC	=E07+LCC	=E07+LCC	=E07+LCC	=E07+LCC	=E9+RP3

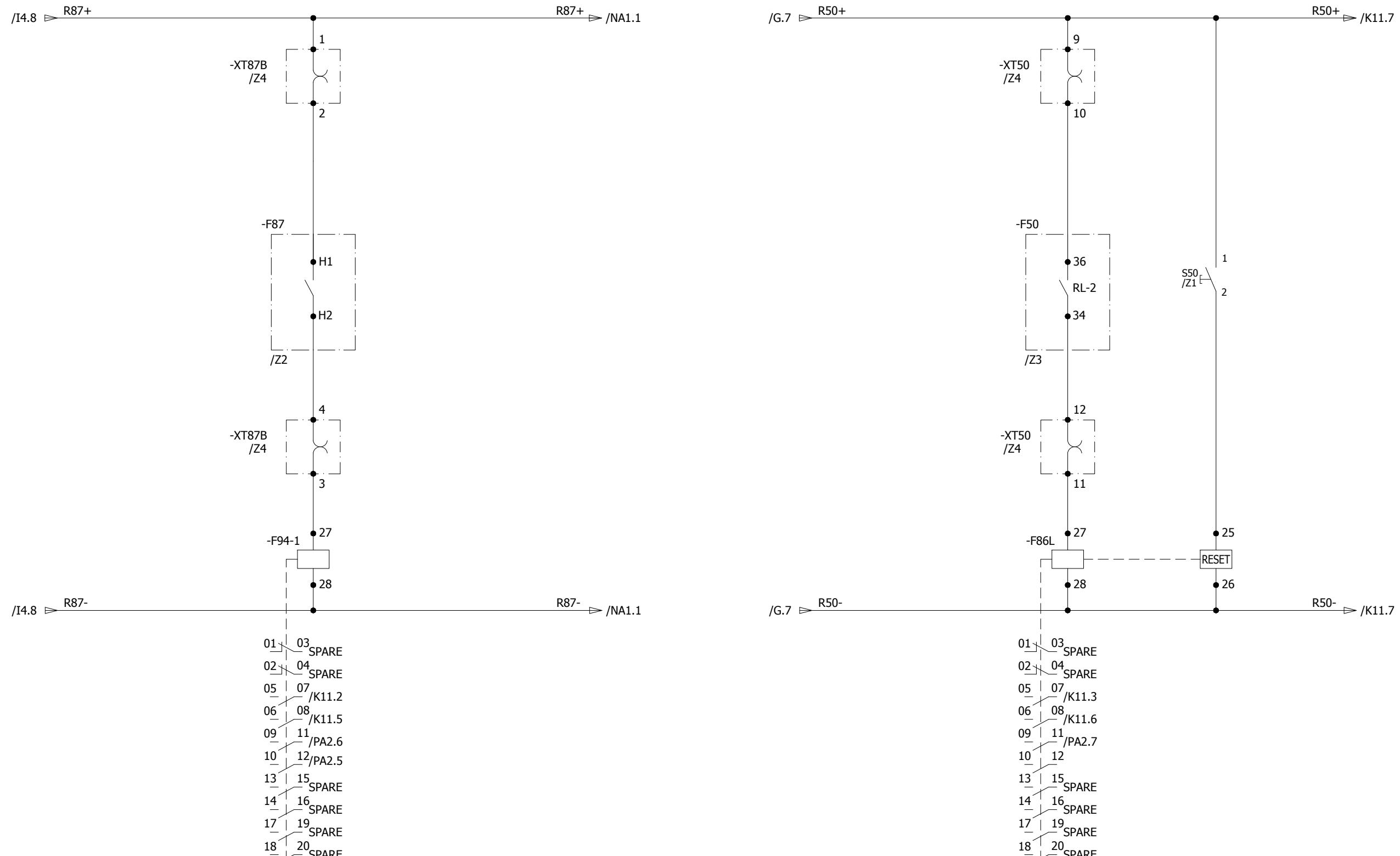


0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) SYSTEM INPUTS	Drawing no. P60194-E-ELR-SC-005		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type I4	Sheet no. 14
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## LINE DIFFERENTIAL PROTECTION GENERAL TRIP

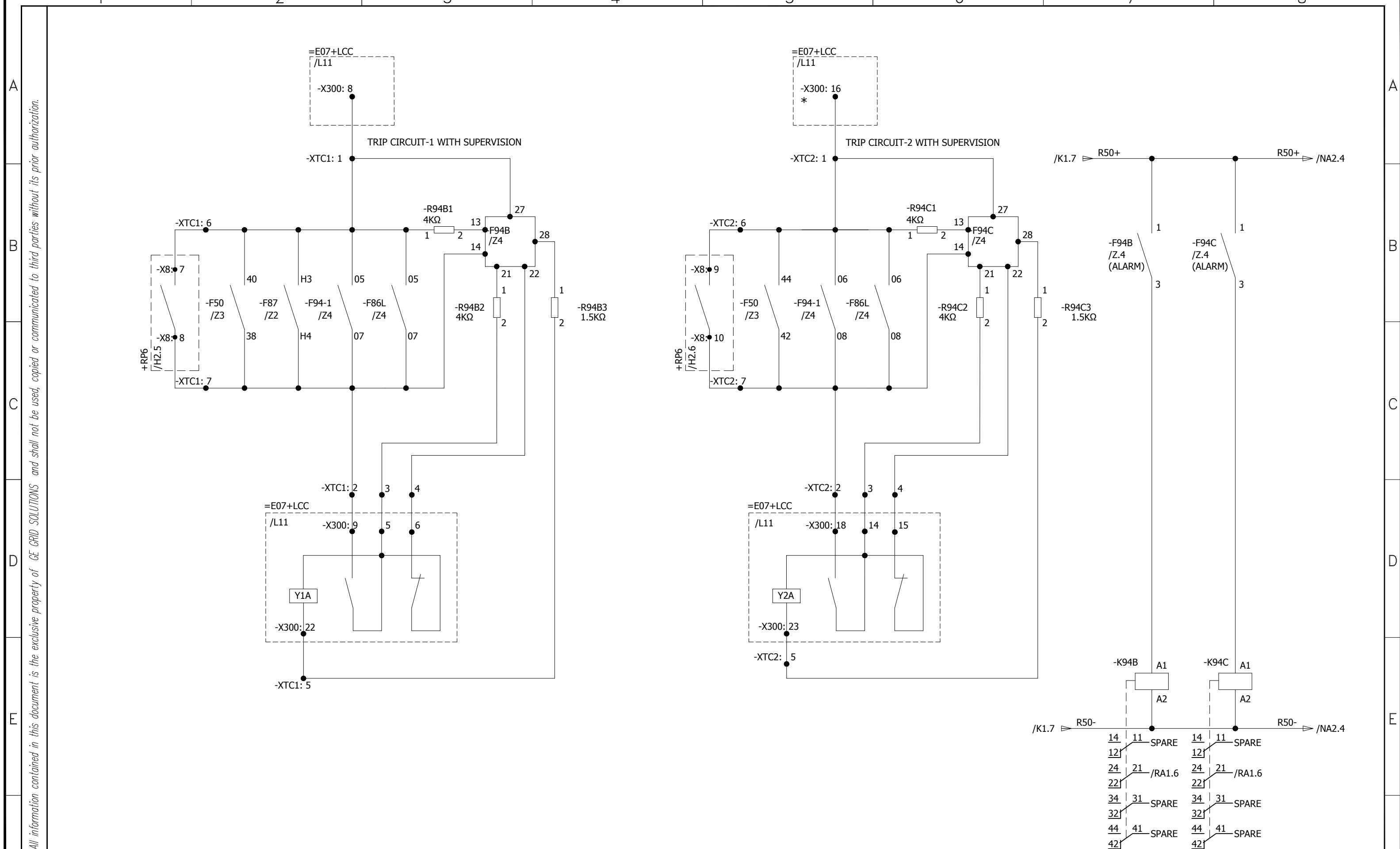
O/C &amp; E/F PROTECTION TRIP    TRIP RELAY RESET

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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 (-E07+RP3) PROTECTION TRIPS	Drawing no. P60194-E-ELR-SC-005		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type K1	Sheet no. 15
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1 2 3 4 5 6 7 8



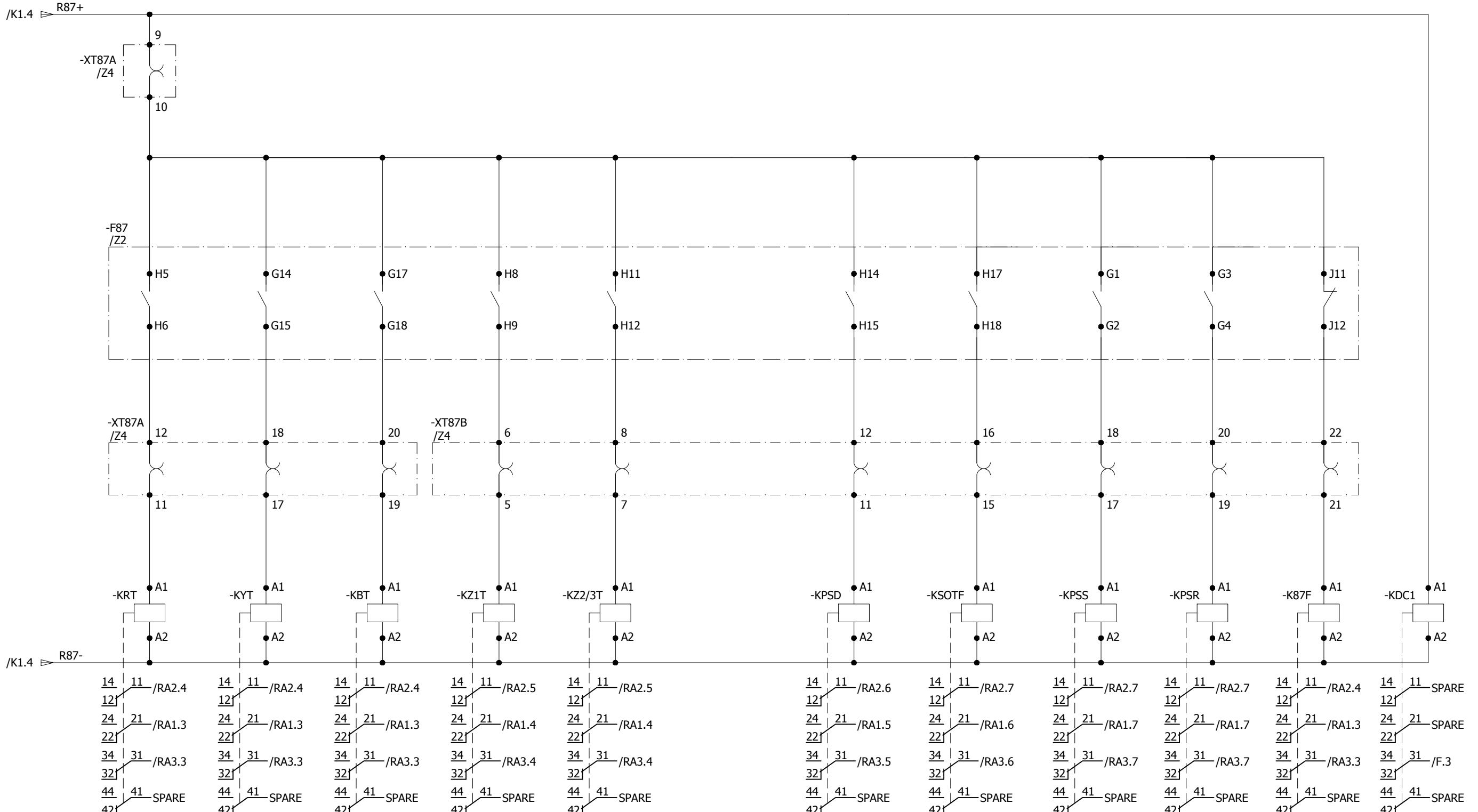
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				EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	132KV LINE RELAY PANEL (=E07+RP3) TRIP CIRCUIT SUPERVISION CIRCUIT	P-60194-E-ELR-SC-005
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type K11 Sheet no. 16

1 2 3 4 5 6 7 8

## 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

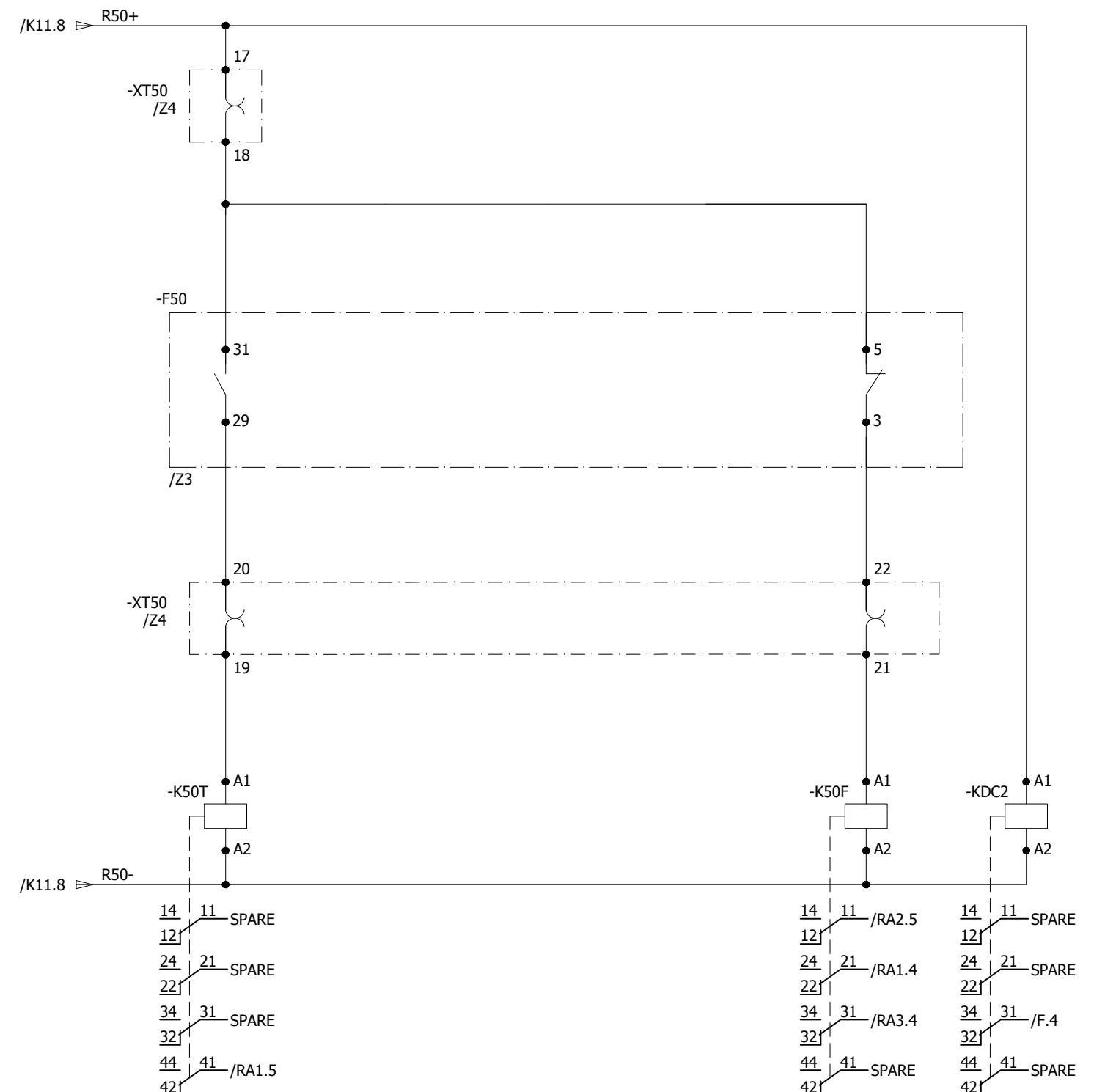


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0	AS BUILT	20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) SYSTEM ALARMS	Drawing no. P60194-E-ELR-SC-005
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type NA1
									Sheet no. 17

				O/C & E/F RELAY ALARMS	R50+ DC SUPPLY MONITORING
				O/C & E/F TRIP	PROTECTION FAULTY
				/Z3	+KDC2

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0	AS BUILT	20-11-2018	ASJ	Manufacturer <b>EPE SOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>Grid Solutions</b> A GE and Alstom joint venture	Client <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV LINE RELAY PANEL (=E07+RP3) SYSTEM ALARMS	Drawing no. P60194-E-ELR-SC-005
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type NA2

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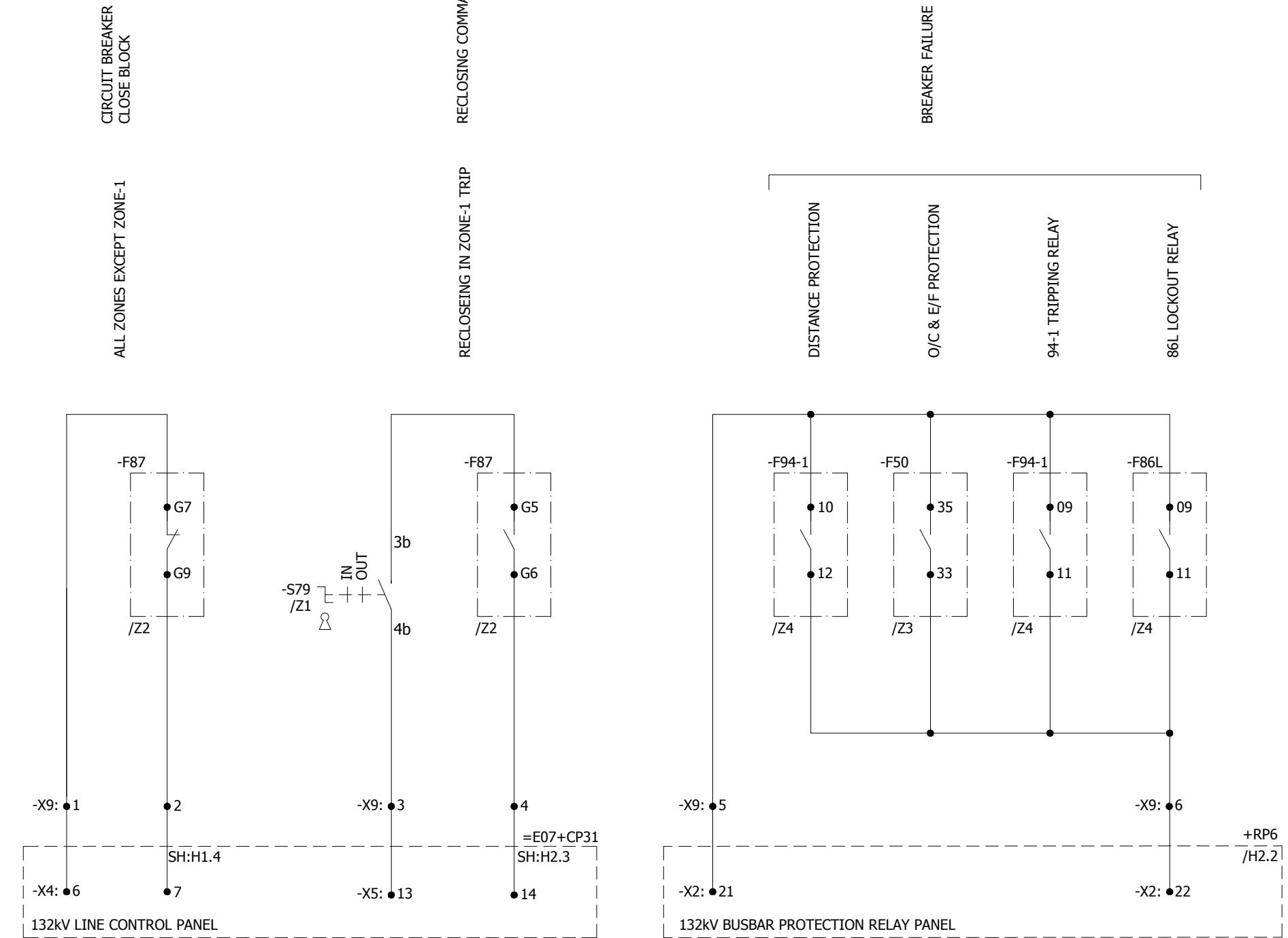
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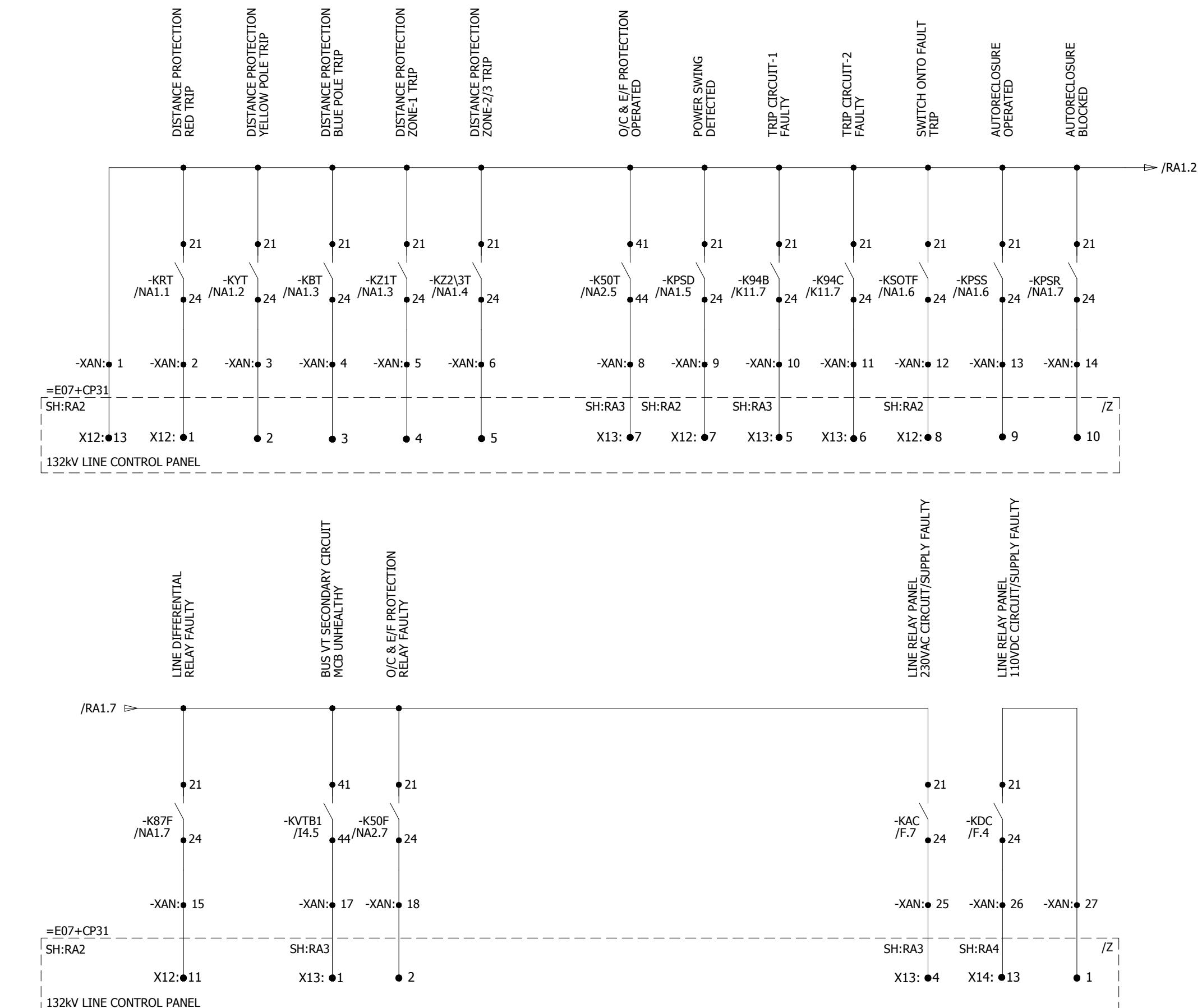
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0	AS BUILT		20-11-2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) PROTECTION INTER-CIRCUITS	Drawing no. P60194-E-ELR-SC-005		
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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0	AS BUILT	20-11-2018	ASJ	Manufacturer  <b>EPESOL</b> 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 (=E07+RP3) ANNUNCIATION CIRCUIT	Drawing no. P60194-E-ELR-SC-005
									Project no. P-60194
									Sheet type RA1
REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 20

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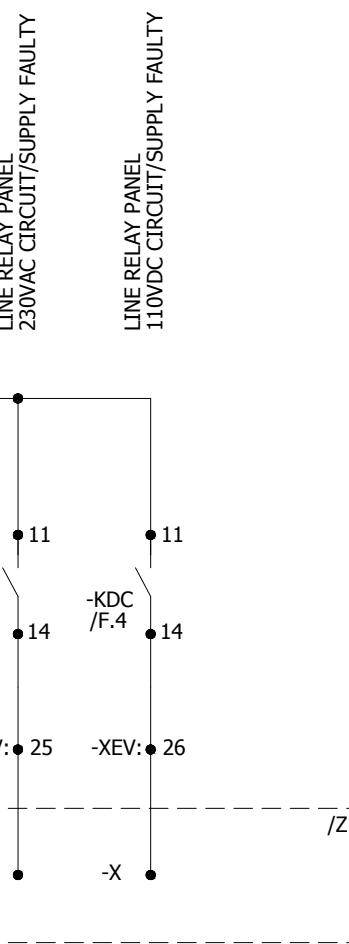
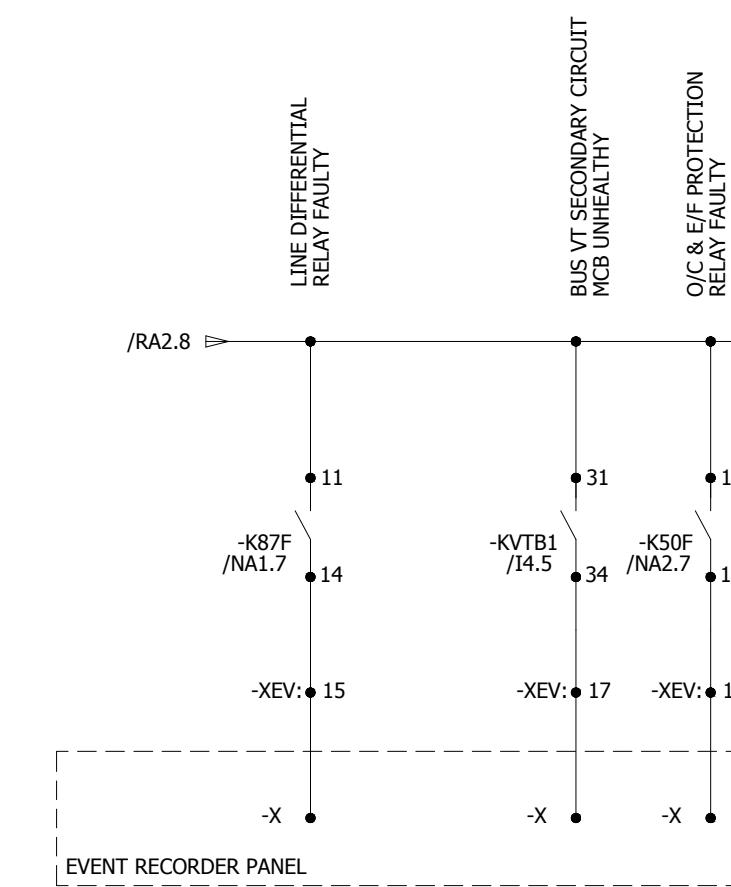
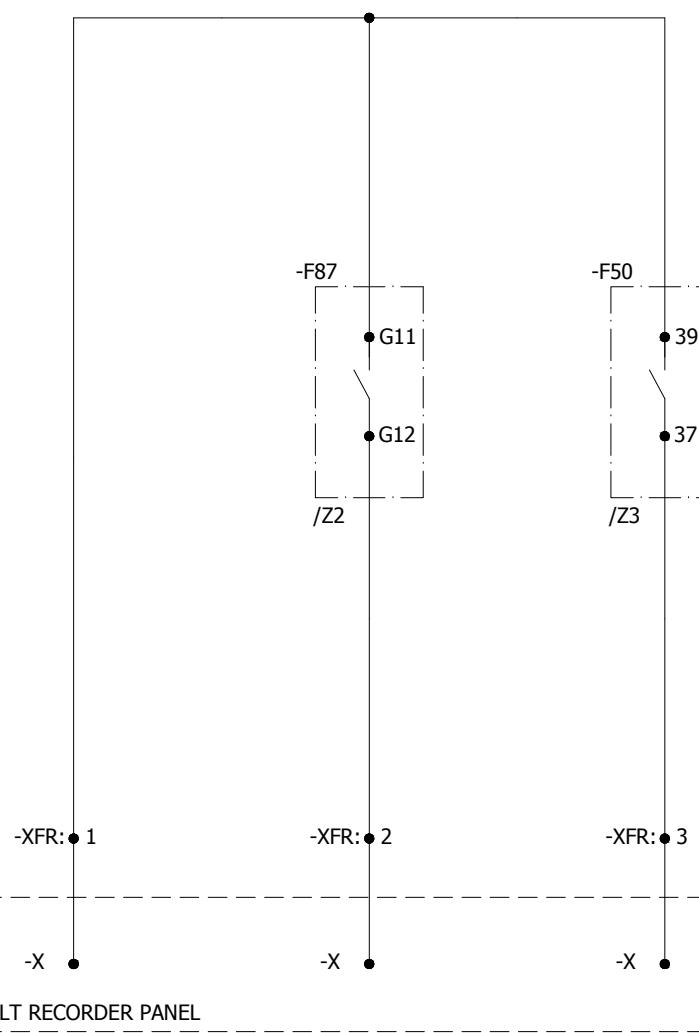
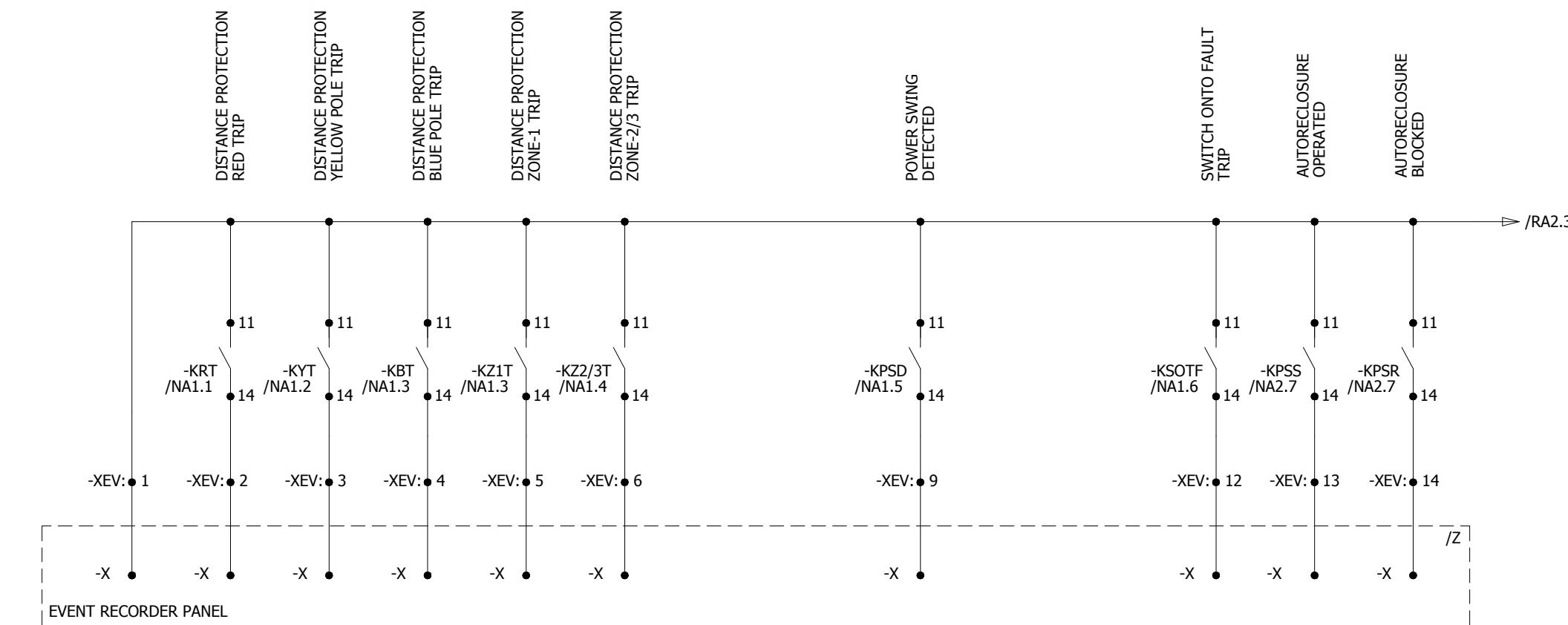
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0      AS BUILT      20-11-2018      ASJ  
 Manufacturer      Grid Solutions  
**EPESOL**  
 71-B Garden Block,  
 New Garden Town,  
 Lahore, Pakistan

Contractor      Client  
  
 A E and Alstom joint venture  
 NATIONAL TRANSMISSION &  
 DISPATCH COMPANY LIMITED  
 (NTDC-WAPDA)

Project      Title  
 220kV/132kV GIS SUBSTATION  
 GHAZI ROAD, LAHORE  
 132kV LINE RELAY PANEL  
 (=E07+RP3)  
 EVENT & FAULT RECORDER CIRCUITS

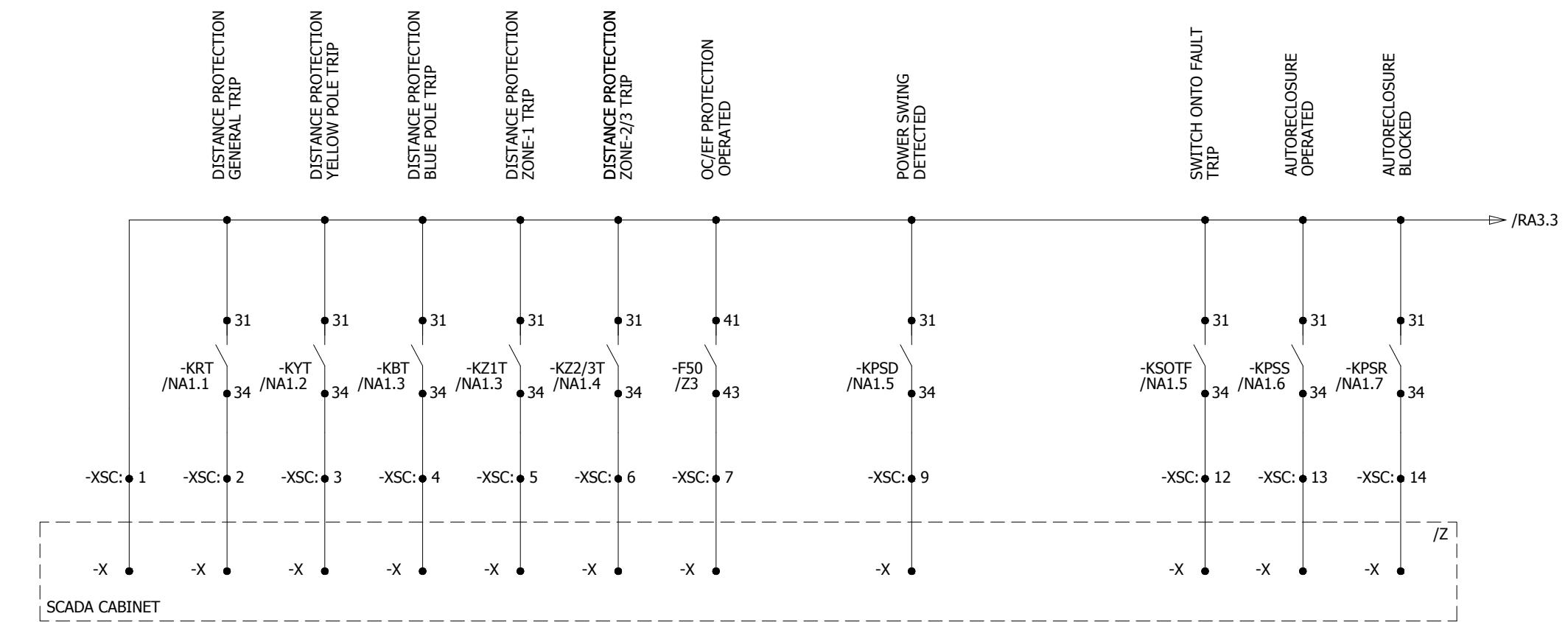
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 Project no.      Sheet type      Sheet no.  
 P-60194      RA2      21



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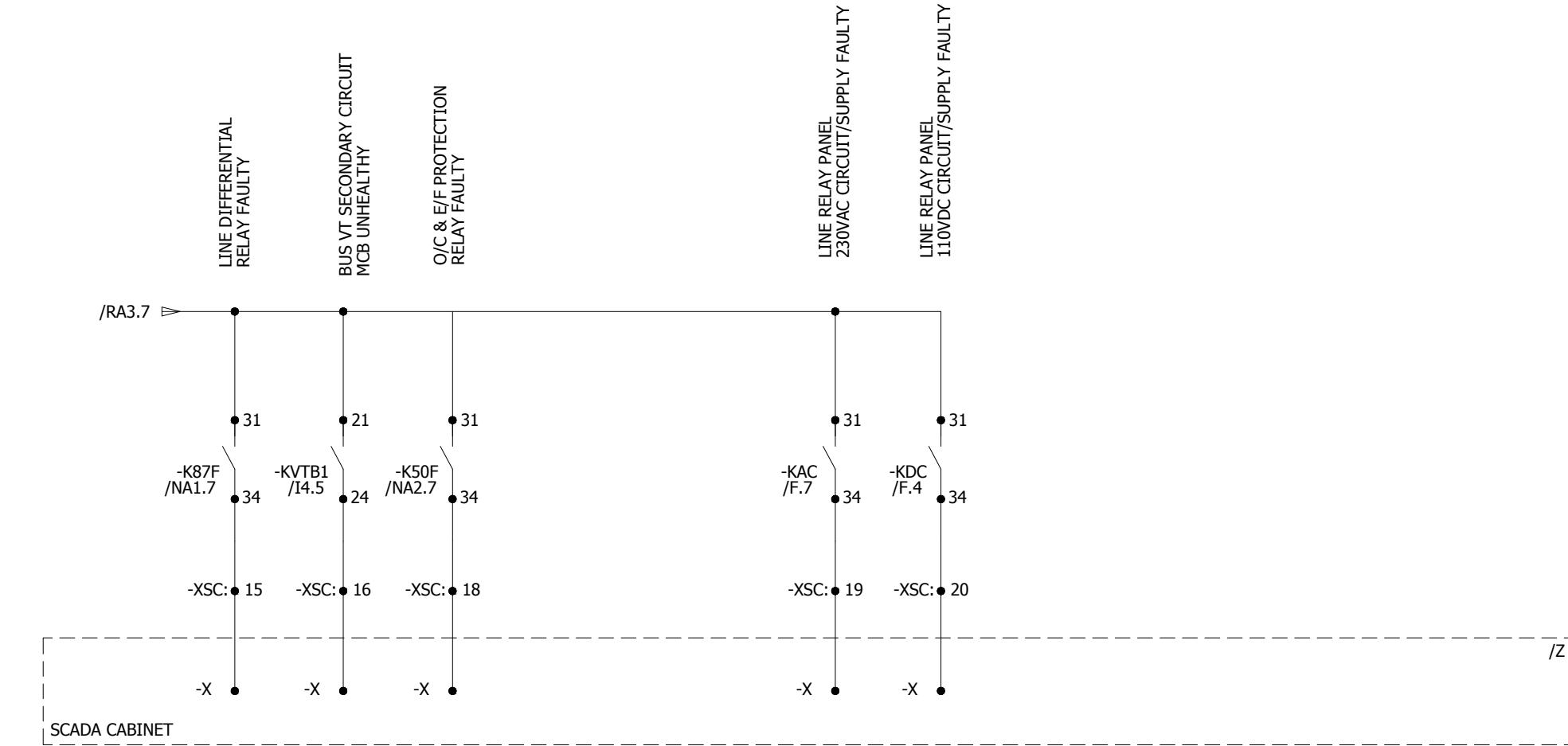
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0	AS BUILT	20-11-2018	ASJ	Manufacturer  71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV LINE RELAY PANEL (=E07+RP3) SCADA CIRCUIT	Drawing no. P60194-E-ELR-SC-005		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA3	Sheet no. 22
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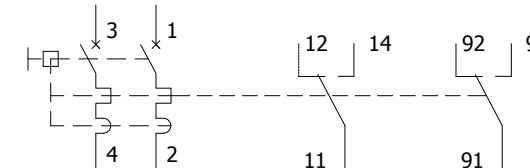
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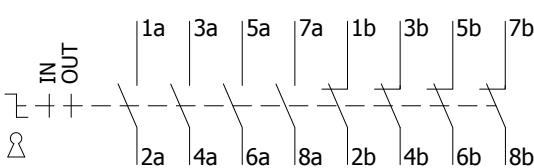
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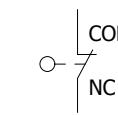
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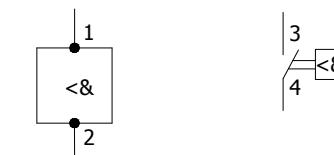
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-F102	D.4	F.6	
-F103	D.6	F.6	
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-F203	E.6	F.2	
-F204	E.7	F.3	



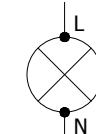
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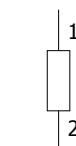
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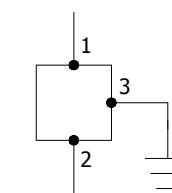
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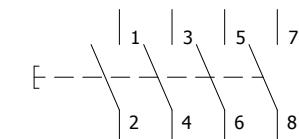
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-H200	F.4



-R100	D.5
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-X100	D.7
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-S50	K1.7		
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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 (=E07+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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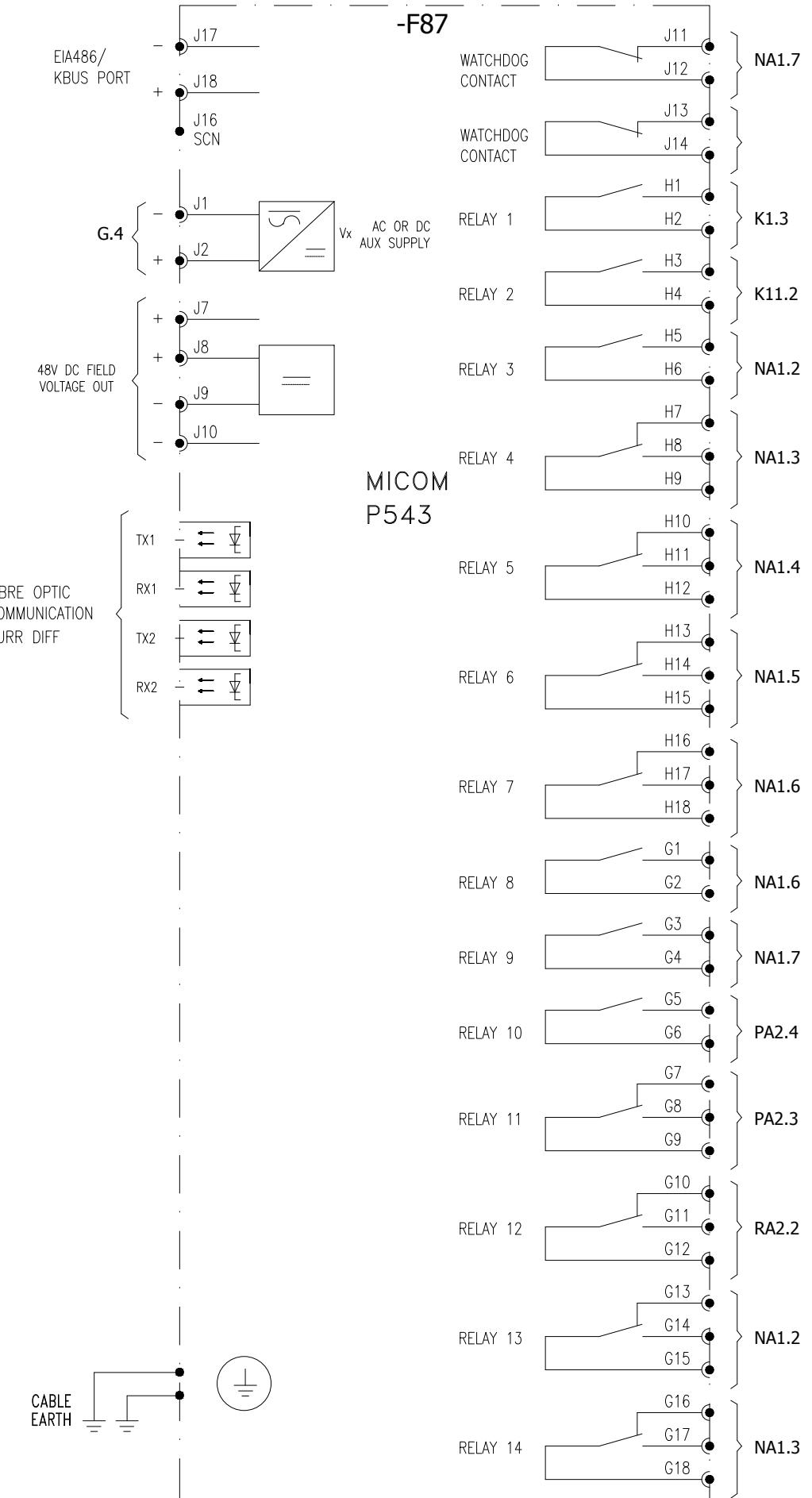
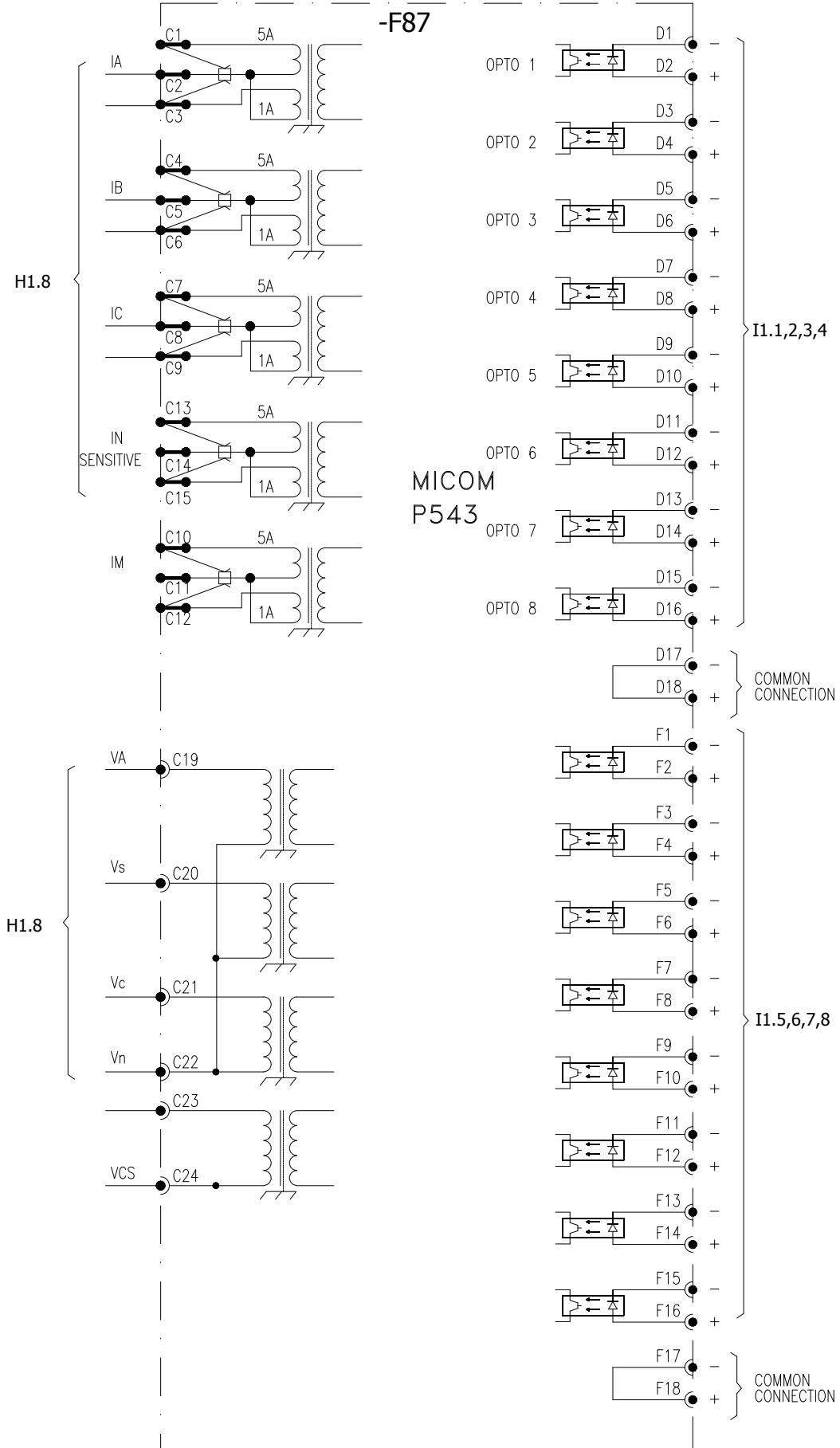
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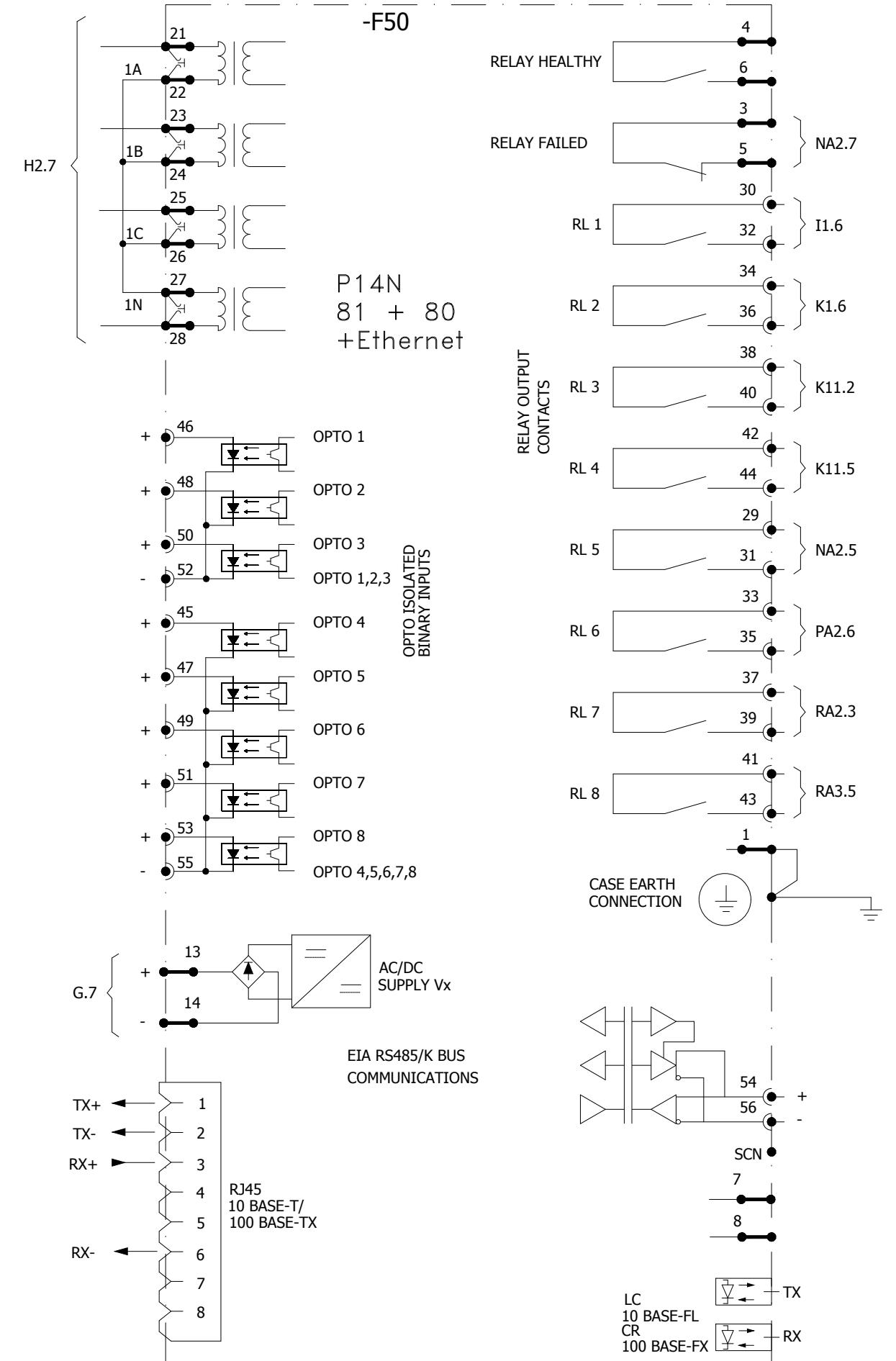
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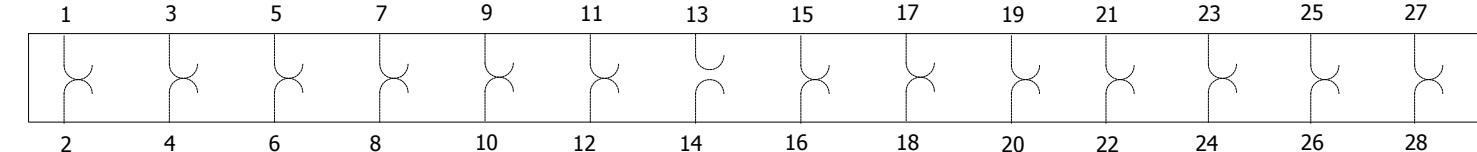
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									P60194-E-ELR-SC-002		
									<b>Project no.</b>	<b>Sheet type</b>	<b>Sheet no.</b>
REV.	DESCRIPTION	DATE	DRAWER						P-60194	Z2	24



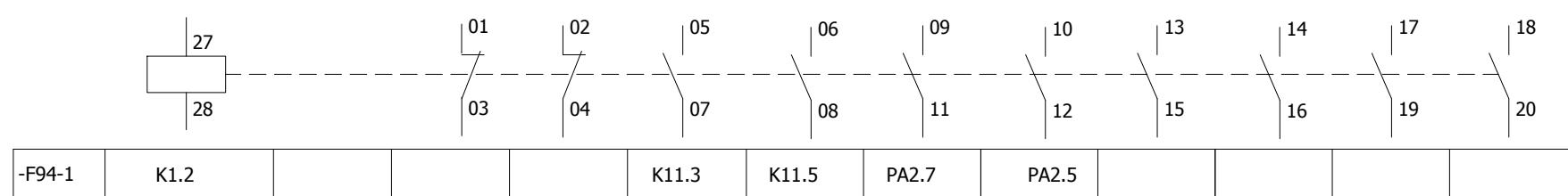
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
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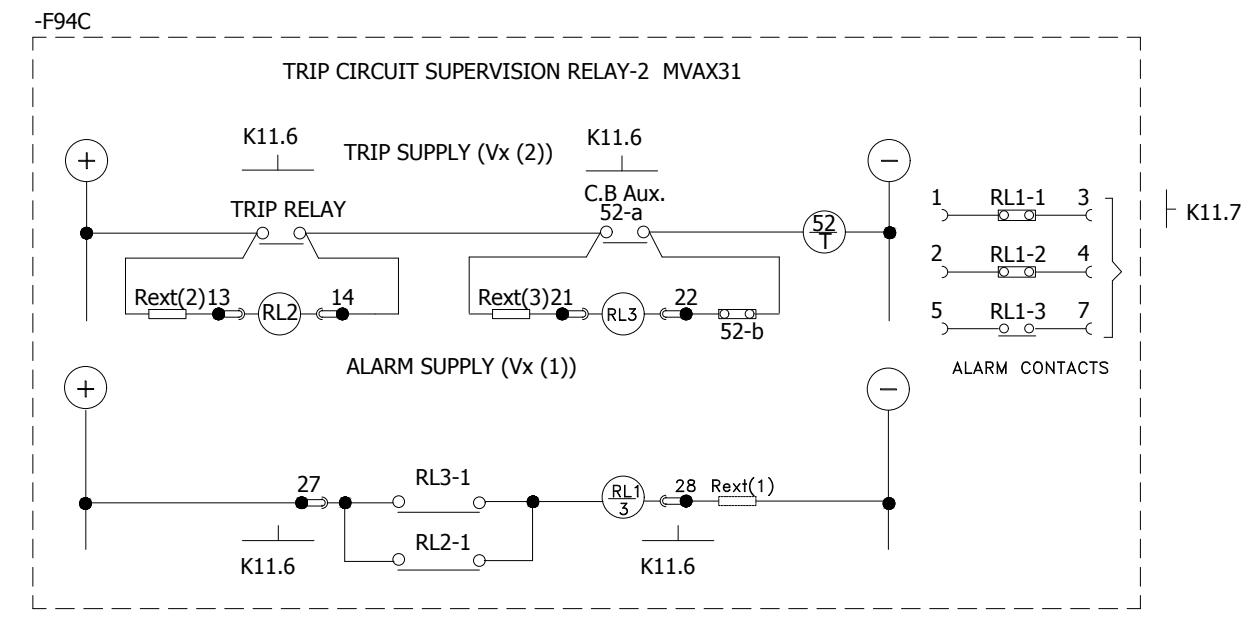
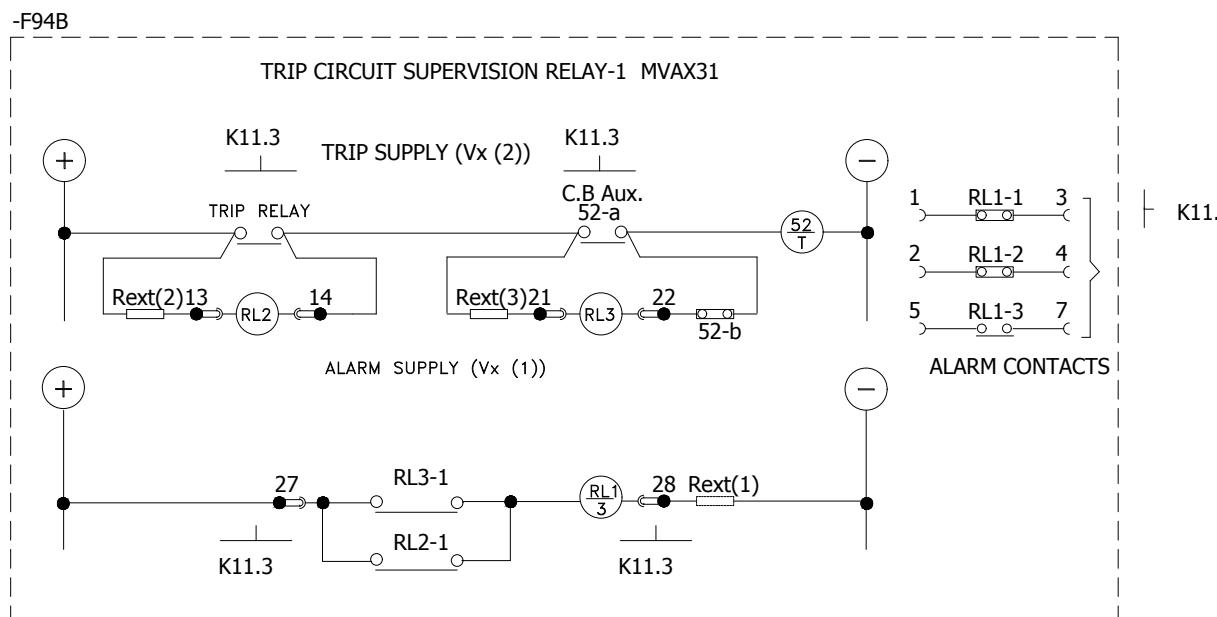


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-F86L	K1.6				K11.3	K11.5	PA2.7	PA2.5			

-R94B1	K11.3
-R94B2	K11.3
-R94B3	K11.4
-R94C1	K11.6
-R94C2	K11.6
-R94C3	K11.7



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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 (=E07+RP3) COMPONENT DIAGRAM	Drawing no. P60194-E-ELR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type Z4	Sheet no. 26
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