



Grid Solutions

A GE and Alstom joint venture

220kV/132kV GIS SUBSTATION GHAZI ROAD , LAHORE

220kV TRAFO RELAY SET-2 PANEL

=D09+R4

SCHEMATIC DRAWINGS

DOC / DWG REVIEW CODE

- A Approved, Issue IFC.
- B Approved with comments as noted, Issue IFC after incorporation of these comments.
- C Revise and re-submit for approval.
- 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
2.	220kV GIS LCC Schematic Drawings	P60194-E-GISS-001

REVISION HISTORY					
REV	DATE	DRW. BY	CHK. BY	APR. BY	REVISION DESCRIPTION
0	22.11.2018	ASJ	MFT	NAH	AS BUILT

Scale	NOT-TO-SCALE	Sheet size
		A3

Client	 <p>NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)</p>
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Contractor	Manufacturer
 <p>Grid Solutions A GE and Alstom joint venture</p>	 <p>EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan</p>

Project	<p>220kV / 132kV GIS SUBSTATION GHAZI ROAD , LAHORE</p>
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Title	<p>220kV TRAFO RELAY SET-2 PANEL SCHEMATIC DRAWINGS</p>
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Order no	Document no
P-60194	P60194-E-DTR-SC-002

Sheet type	Total sheets	Sheet no
A	49	01

	1	2	3	4	5	6	7	8			
	PAGE NO.	SHEET NAME	SHEET DESCRIPTION			ISSUE / REVISION					
						A	B	C	D	E	F
A B C D E F	01	A	Cover Sheet			X	X				
	02	AA1	List Of Contents			X	X				
	03	AA2	List Of Contents			X	X				
	04	AB	Symbol and Legends			X	X				
	05	AC1	Component List			X	X				
	06	AC2	Component List			X	X				
	07	AD	Panel View			X	X				
	08	AE	Bay Concept & Protection Logice			X	X				
	09	D	AC Supply Distribution Circuit			X	X				
	10	E	220DC Supply Distribution Circuit			X	X				
	11	E1	110DC Supply Distribution Circuit			X	X				
	12	F	AC/DC Supply Failure Circuit			X	X				
	13	G	Relay Control & Supply Circuit			X	X				
	14	H1	Overall Trafo Differential			X	X				
	15	H2	HV Connection Differential Protection Circuit			X	X				
	16	H3	LV Connection Differential Protection Circuit			X	X				
	17	H4	Tertiary OverCurrent & EarthFault Circuit			X	X				
	18	H5	Neutral OverCurrent Circuit			X	X				
	19	K1	Protection Trips			X	X				
	20	K2	Protection Trips			X	X				
	21	K11	Trip Circuit For Coil-1 (D04-Q0)			X	X				
	22	K12	Trip Circuit For Coil-1 (D04-Q0)			X	X				
	23	K13	Trip Circuit For Coil-1 (D04-Q0)			X	X				
	24	K21	Trip Circuit For Coil-2 (D04-Q0)			X	X				
	25	K22	Trip Circuit For Coil-2 (D04-Q0)			X	X				
	26	K23	Trip Circuit For Coil-2 (D04-Q0)			X	X				
	27	K31	Trip Circuit For Coil-1 (E08-Q0)			X	X				
	28	K32	Trip Circuit For Coil-1 (E08-Q0)			X	X				
	29	K41	Trip Circuit For Coil-2 (E08-Q0)			X	X				
	30	K42	Trip Circuit For Coil-2 (E08-Q0)			X	X				
	31	NA1	Protection Trips & Relay Faulty			X	X				
	32	NA2	Protection Trips & Relay Faulty			X	X				
0	AS BUILT	22.11.2018	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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) LIST OF CONTANTS	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AA1	Sheet no. 02

	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A		CIRCUIT BREAKER		MINIATURE CIRCUIT BREAKER		AUXILIARY CONTACTOR NO+NC	21	DISTANCE
B		SWITCH/ISOLATOR		KEY OPERATED SELECTOR SWITCH		AMMETER	24	OVEREXCITATION
C		EARTHING		LIMITED SWITCH		VOLTMETER	25	SYNCHROCHECK
D		SF6 TO AIR BUSHING		HUMIDITY & TEMPERATURE CONTROLLER		POWER FACTOR METER	49	THERMAL OVERLOAD
E		LINE TRAP		PANEL HEATER		DIGITAL PANEL METER	50/51	PHASE INST./OVERCURRENT
F		SURGE ARRESTOR		THREE PIN SOCKET		ACTIVE POWER METER	50N/51N	EARTH INST./OVERCURRENT
G		CURRENT TRANSFORMER		INDICATION LIGHT		REACTIVE POWER METER	50BF	CIRCUIT BREAKER FAILURE
H		COUPLING CAPACITOR VOLTAGE TRANSFORMER		PUSH BUTTON		ENERGY METER	64	RESTRICTED EARTH FAULT
I		POWER TRANSFORMER		AUXILIARY CONTACTOR COIL			67N	DIRECTIONAL EARTH FAULT
J		AUTO TRANSFORMER		POWER SUPPLY AC/DC			68	POWER SWING BLOCKING
K				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	DIFFERENTIAL CONNECTION
P							87BB	DIFFERENTIAL BUSBAR

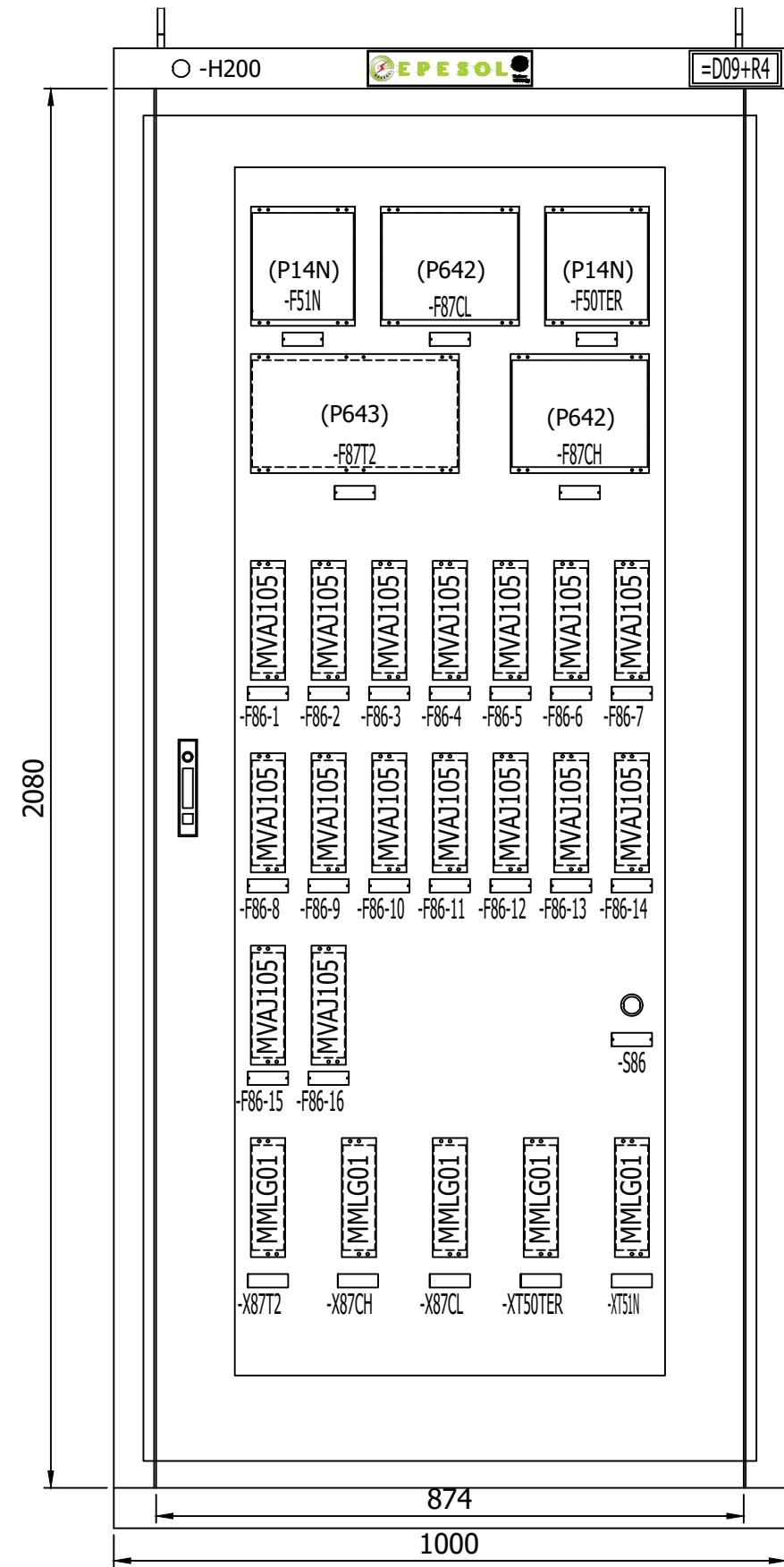
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type AB
									Sheet no. 04

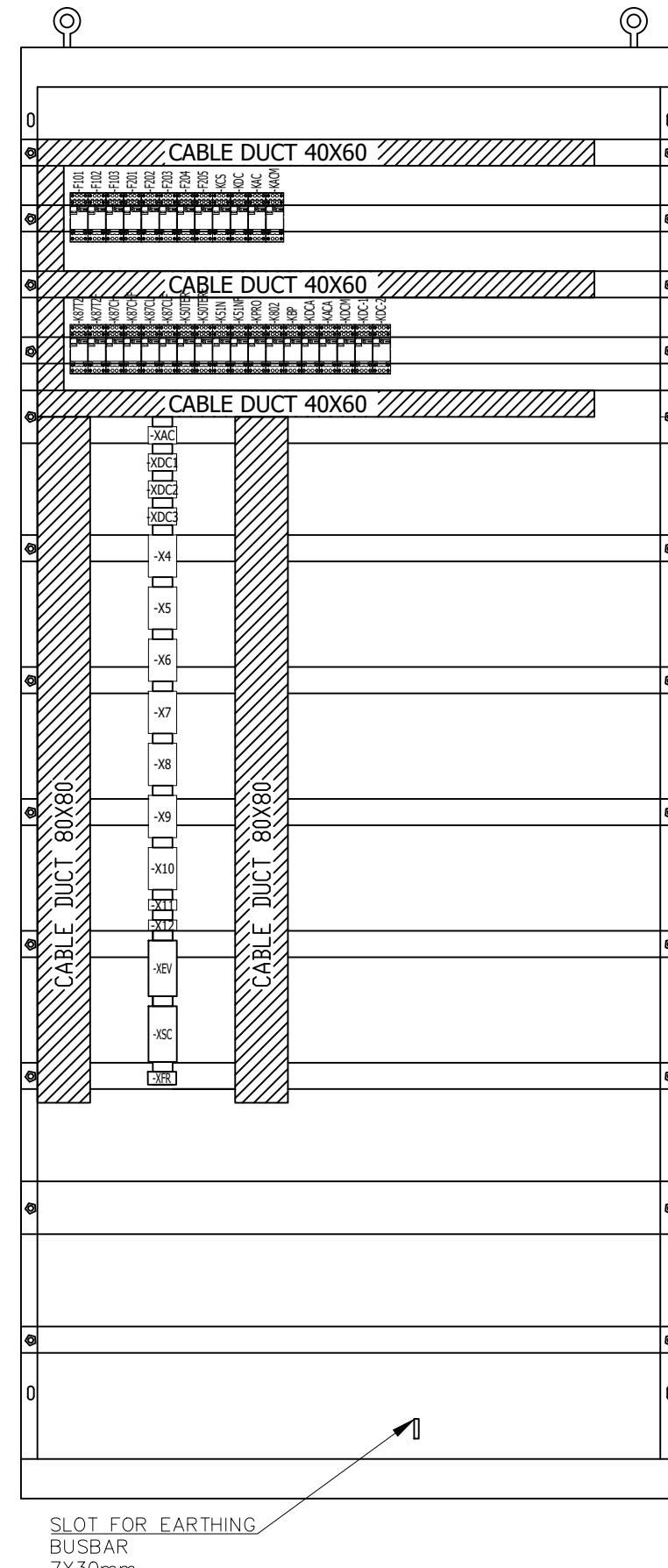
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A	QTY.	DEVICE DESCRIPTION		DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION		MANUFACTURER		
	01	OVERALL TRANSFORMER DIFFERENTIAL PROTECTION RELAY		AGILE P643, Cortec: P64391BA6M0060M Supply: 110-250VDC / 100-240VAC, 12 CT + 1 VT (Vn=100-120V),(In=1/5A) Inputs 16 Opto Inputs, 16 Relay Outputs			-F87T2		GE GRID SOLUTIONS		
B	02	HV CONNECTION DIFFERENTIAL PROTECTION RELAY		AGILE P642, Cortec: P64291BA6M0060P Supply: 110-250VDC / 100-240VAC, 1 VT + 8 CT (Vn=100-120V),(In=1/5A) Inputs			-F87CH, -F87CL		GE GRID SOLUTIONS		
	01	LV CONNECTION DIFFERENTIAL PROTECTION RELAY		8 Opto Inputs, 8 Relay Outputs							
C	01	TERTIARY OVER CURRENT PROTECTION RELAY		AGILE P14N, Cortec: P14NB16A7C0570A Supply: 24-250VDC / 110-240VAC, 4 CT (In=1/5A) Inputs 8 Opto Inputs, 8 Relay Outputs			-F50TER		GE GRID SOLUTIONS		
	01	NEUTRAL OVER CURRENT PROTECTION		AGILE P14N, Cortec: P14NB16A7C0570A Supply: 24-250VDC / 110-240VAC, 4 CT (In=1/5A) Inputs 8 Opto Inputs, 8 Relay Outputs			-F51N		GE GRID SOLUTIONS		
D	05	TEST BLOCK		MMLG01, Cortec: MMLG01-R1AA9002D			-XT87T2,-XT87CH,-XT87CL,-XT50TER,-XT51N		GE GRID SOLUTIONS		
	16	TRIPPING RELAY (HAND/ELECTRICAL RESET)		MVAJ105, Cortec: MVAJ105-RA1002A Supply: 220-250VDC, 8 NO + 2 NC Contacts			-F86-1 ~ -F86-16		GE GRID SOLUTIONS		
E	02	CONTROL MCB - PANEL LIGHT & HEATER		G62C02+(CAH2),2-Pole, Ratings: 2A, 230VAC, 6kA @ 230VAC, 2 C/O Contacts			-F101, -102		GE		
	01	CONTROL ELCB - PANEL SOCKET		DM100C216/030+(CAH2),2-Pole, Ratings: 16A, 30mA, 230VAC, 2 C/O Contacts			-F103		GE		
F	04	CONTROL MCB - DC DISTRIBUTION		EP102UCC04+(CAH2),2-Pole, Ratings: 4A, 220VDC, 10kA, 2 C/O Contacts			-F201 ~ - F204		GE		
	01	CONTROL MCB - 110VDC DISTRIBUTION		EP102UCC04+(CAH2),2-Pole, Ratings: 4A, 110VDC, 10kA, 2 C/O Contacts			-F205		GE		
G	01	PUSHBUTTON - HAND TRIP RELAY RESET		YS-AP1-2-40-B-D-W, Black button, Spring return, 2-Pole, Ratings: 12A, 220VDC			-S86		YOUNGSUNG		
	01	INDICATION LAMP - DC SUPPLY FAILURE		YS-PL-2-AL-22-R-W, Type: Integrated LED , Color : RED , Supply : 230VAC @ 50Hz			-H200		YOUNGSUNG		
H	19	AUXILIARY CONTACTOR		PRC4M40DCML, Coil Voltage: 220VDC, 4 C/O Contacts			-K87T2, -K87T2F, -K87CH, -K87CHF, -K87CL, -K87CLF		GE		
	01	AUXILIARY CONTACTOR		MCRC022ATWN-B+MARN211AT, Coil Voltage: 220VDC, 3NO+3NC Contacts			-K50TER, -K50TERF, -K51N, -K51NF, -KPRD, -KBOL				
I	02	AUXILIARY CONTACTOR		PRC4M40ANL, Coil Voltage: 230VAC, 4 C/O Contacts			-KBT, -KDCA, -KACA, -KDCM, -KAC, -KDC1, -KDC2				
	01	AUXILIARY CONTACTOR		-KDC, -KACM			-KCS		GE		
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REV.	DESCRIPTION		DATE	DRAWER							
	1		2	3	4	5	6	7	8		

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	QTY.	DEVICE DESCRIPTION		DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION		MANUFACTURER		
A	01	PANEL LIGHT WITH DOOR SWITCH		YST8-30-5W+YSP3315GWB, 230VAC @ 50Hz, 20W, with Door Limit Sw. 1 CO contact			-H100, -S100		YOUNGSUNG		
	01	THREE PIN SOCKET		1N+PE, 16A, 230VAC @ 50Hz			-X100		LEAR		
	01	PANEL HEATER		230VAC @ 50Hz, 50W			-R100		E-LABS		
	01	HUMIDITY & TEMPERATURE CONTROLLER		THERMOSTAT AND HUMIDSTAT			-B100		E-LABS		
B	08	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X4		CABUR		
	08	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X5		CABUR		
	08	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X6		CABUR		
	08	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X7		CABUR		
	08	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X8		CABUR		
	08	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X9		CABUR		
	08	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X10		CABUR		
	02	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X11		CABUR		
	02	TERMINAL BLOCKS FOR CT WITH SHORTING ARRANGEMNT		Type: SCB-6			-X12		CABUR		
C	05	TERMINAL BLOCKS FOR AC SUPPLY		Type: CBD-4			-XAC		CABUR		
	04	TERMINAL BLOCKS FOR 220VDC SUPPLY-1		Type: CBD-4			-XDC1		CABUR		
	04	TERMINAL BLOCKS FOR 220VDC SUPPLY-2		Type: CBD-4			-XDC2		CABUR		
	04	TERMINAL BLOCKS FOR 110VDC SUPPLY		Type: CBD-4			-XDC3		CABUR		
	02	TERMINAL BLOCKS FOR AC FAULTY CIRCUIT		Type: CBD-4			-X3		CABUR		
	10	TERMINAL BLOCKS FOR LOR INITIATE		Type: CBD-4			-X15		CABUR		
	05	TERMINAL BLOCKS FOR TRANSFORMER MECH. TRIP		Type: CBD-4			-X02		CABUR		
	09	TERMINAL BLOCKS FOR 220KV CB TRIP CIRCUIT-1		Type: CBD-4			-XTC1		CABUR		
	13	TERMINAL BLOCKS FOR 220KV CB TRIP CIRCUIT-2		Type: CBD-4			-XTC2		CABUR		
	05	TERMINAL BLOCKS FOR 132KV CB TRIP CIRCUIT-1		Type: CBD-4			-XTC3		CABUR		
D	06	TERMINAL BLOCKS FOR 132KV CB TRIP CIRCUIT-2		Type: CBD-4			-XTC4		CABUR		
	03	TERMINAL BLOCKS FOR FAULT LOCATOR SIGNAL		Type: CBD-4			-X21		CABUR		
	11	TERMINAL BLOCKS FOR CLOSE BLOCK, BFI SIGNALS		Type: CBD-4			-X22		CABUR		
	13	TERMINAL BLOCKS FOR ANNUNCIATION SIGNALS		Type: CBD-4			-XAN		CABUR		
	13	TERMINAL BLOCKS FOR ER SIGNALS		Type: CBD-4			-XEV		CABUR		
	13	TERMINAL BLOCKS FOR SCADA SIGNALS		Type: CBD-4			-XSC		CABUR		
	03	TERMINAL BLOCKS FOR FR SIGNALS		Type: CBD-4			-XFR		CABUR		
E	0	AS BUILT		22.11.2018	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 GAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) COMPONENT LIST	Drawing no. P60194-E-DTR-SC-002
F	REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	
										Sheet type AC2	
										Sheet no. 06	

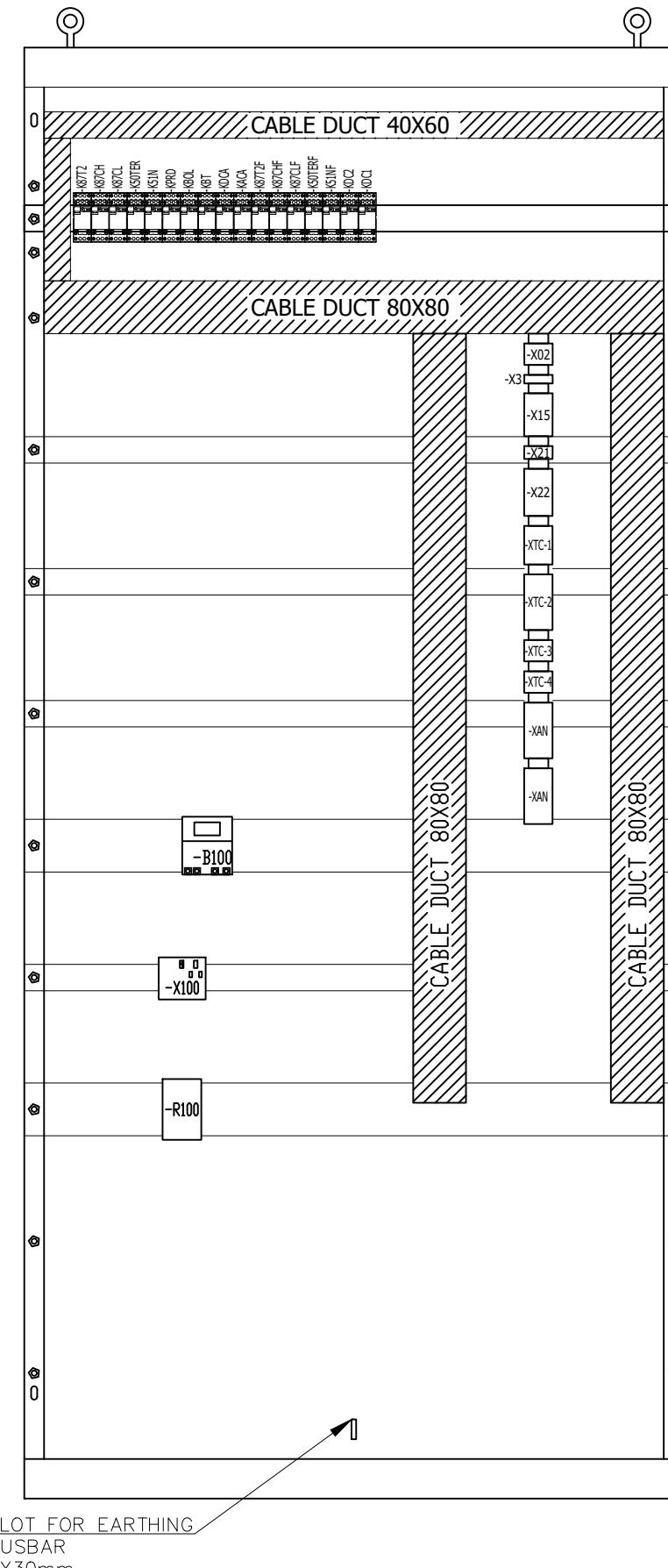
FRONT VIEW



LEFT SIDE VIEW



RIGHT SIDE VIEW



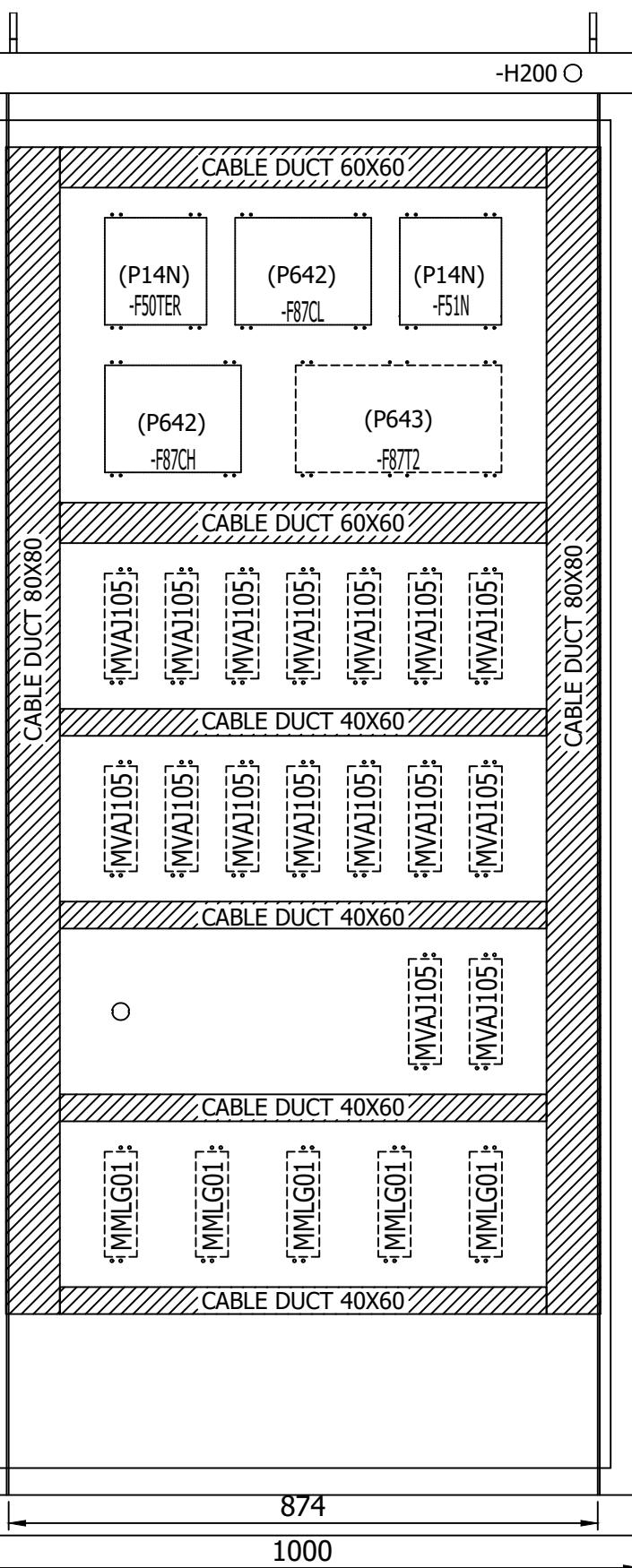
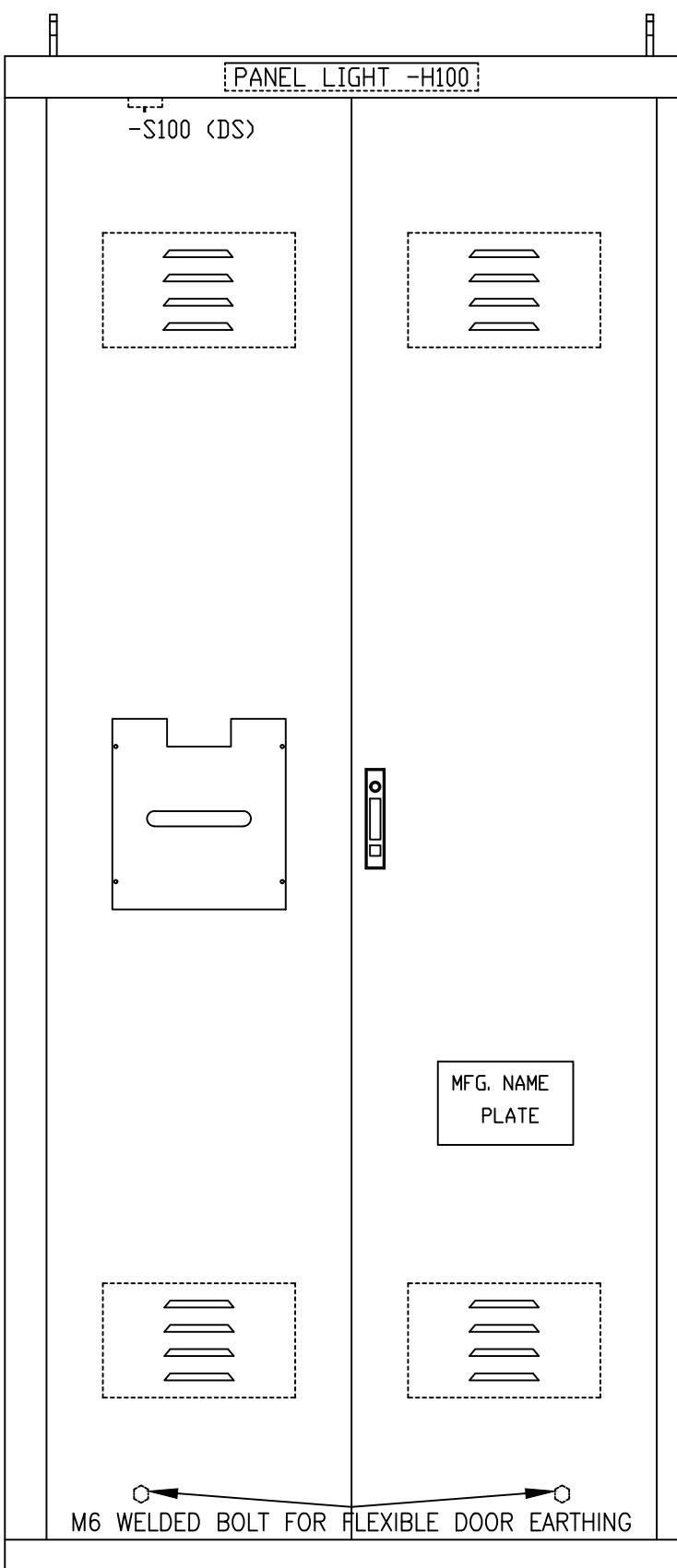
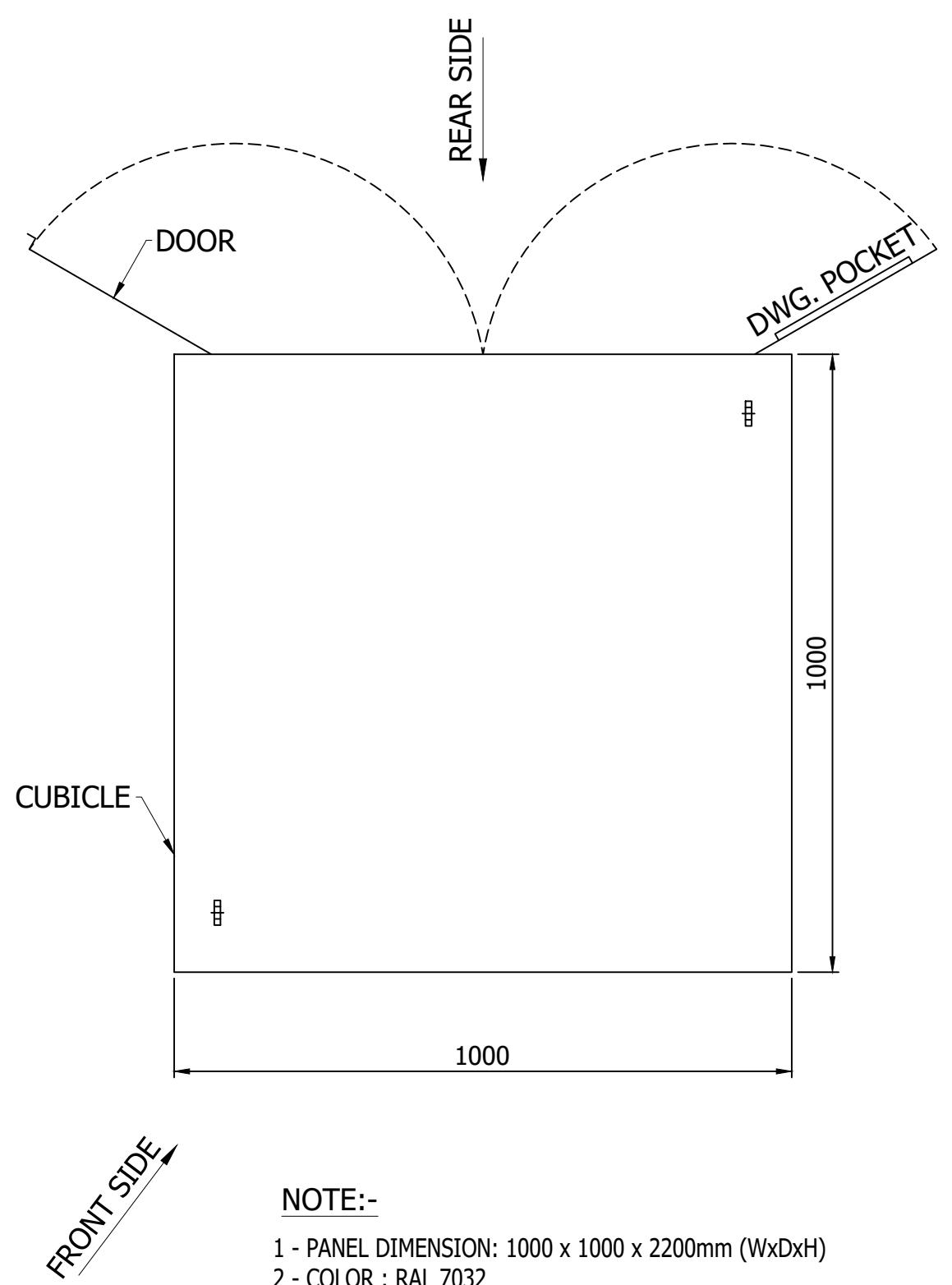
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) PANEL VIEW	Drawing no. P60194-E-DTR-SC-003	
									Project no. P-60194	
REV.	DESCRIPTION	DATE	DRAWER						Sheet type AD	Sheet no. 07

1 2 3 4 5 6 7 8

FRONT VIEW

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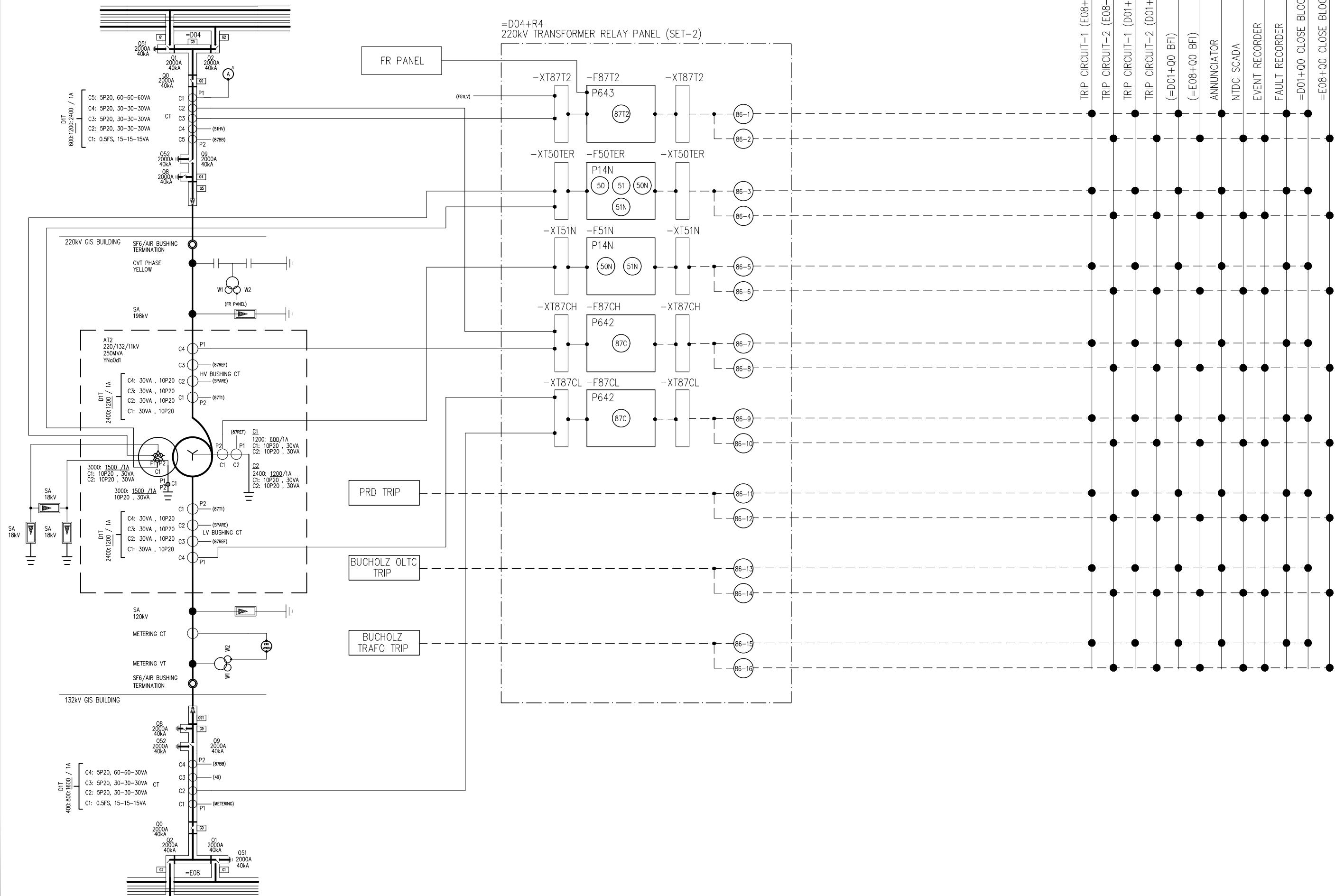
BACK VIEW WITH DOORTOP VIEW**NOTE:-**

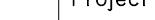
- 1 - PANEL DIMENSION: 1000 x 1000 x 2200mm (WxDxH)
- 2 - COLOR : RAL 7032
- 3 - SHEET THICKNESS : 2-2.5 mm
- 4 - PROTECTION CLASS : IP-51 (INDOOR TYPE)
- 5 - ALL DOOR FITTED WITH 16mm EARTH STRAP & INSULATED WITH GREEN-YELLOW COLOUR.

0	AS BUILT	22.11.2018	ASJ	Manufacturer EPE SOL 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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) PANEL VIEW	Drawing no. P60194-E-DTR-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

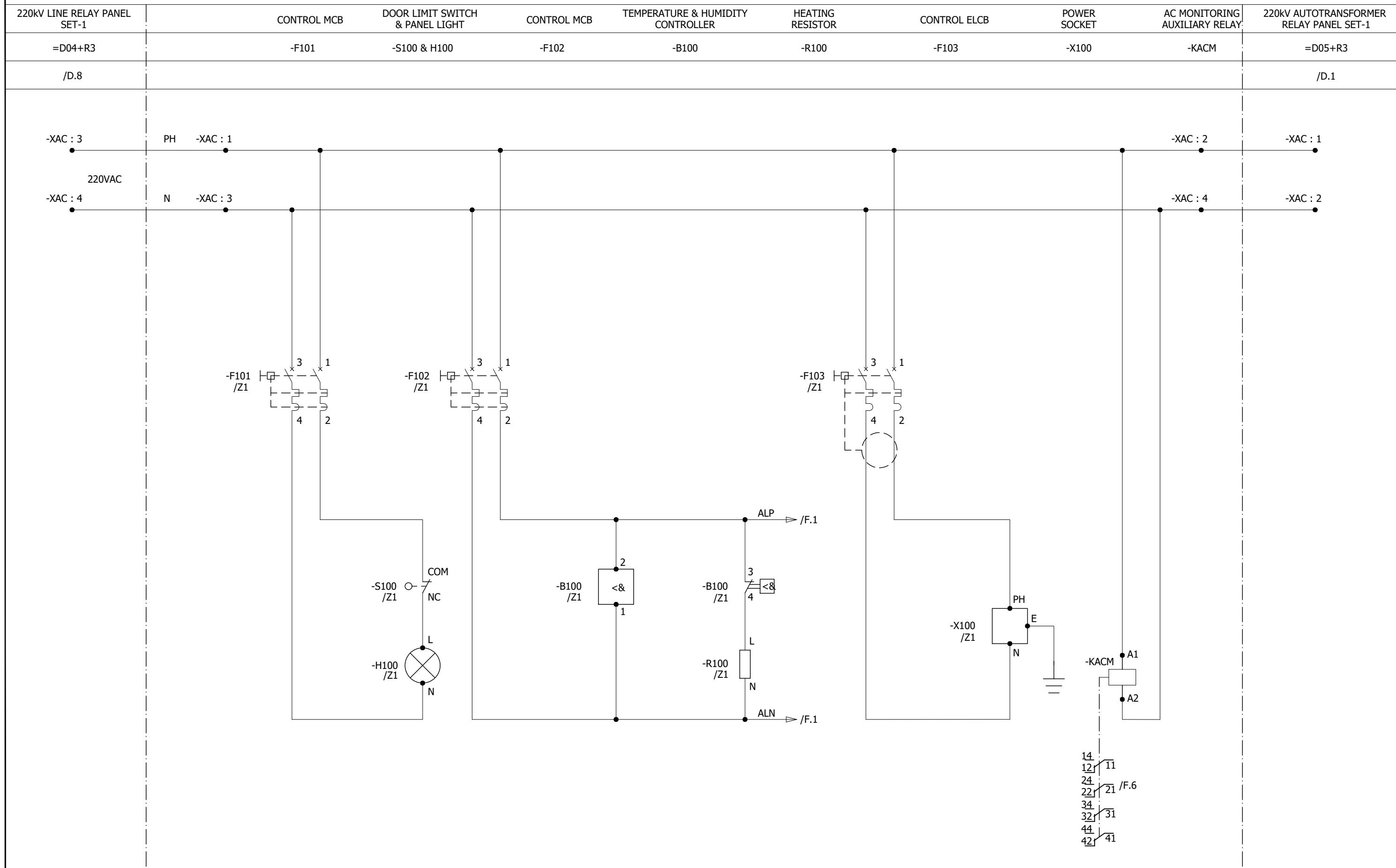
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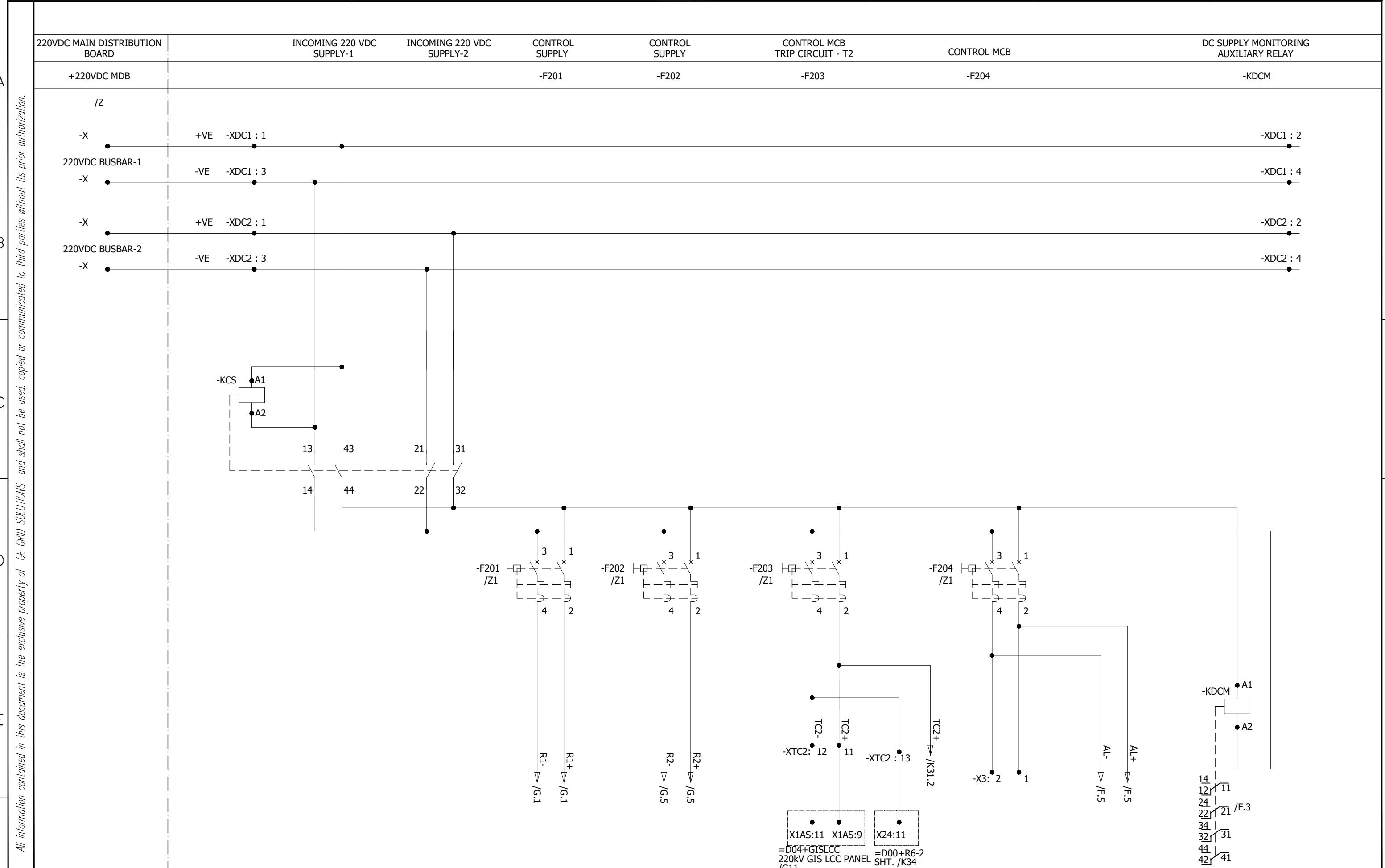
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									Project no.	Sheet type	
									P-60194	AE	
REV.	DESCRIPTION	DATE	DRAWER							Sheet no. 08	
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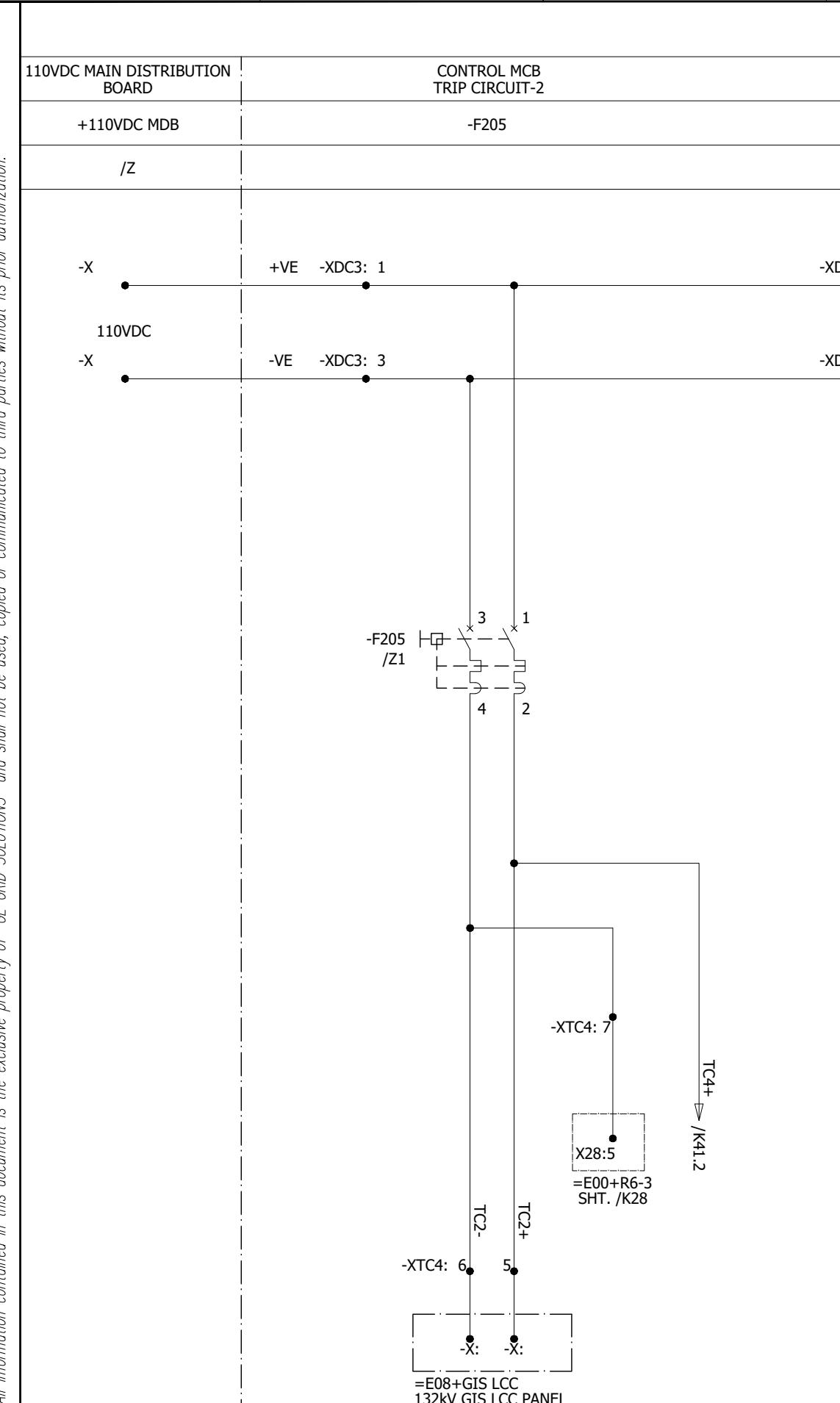
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type D	Sheet no. 09
1	2	3	4	5	6	7	8				

1 2 3 4 5 6 7 8



0	AS BUILT	22.11.2018	ASJ	Manufacturer EPE SOL 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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) 220VDC SUPPLY DISTRIBUTION	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type E
									Sheet no. 10

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0	AS BUILT		22.11.2018	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	220kV TRAFO RELAY SET-2 PANEL (=D09+R4) 110VDC SUPPLY DISTRIBUTION	P-60194-E-DTR-SC-002	Project no.	Sheet type	Sheet no.
REV.	DESCRIPTION		DATE	DRAWER						P-60194	E1	11	

220V DC CIRCUIT FAULTY

220V DC CIRCUIT FAULTY INDICATION

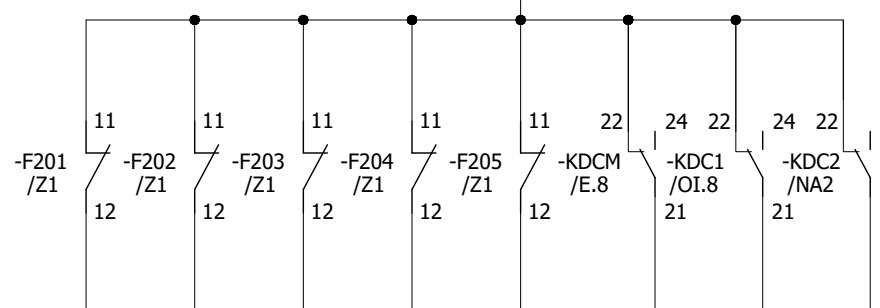
220V AC CIRCUIT FAULTY

-KDC

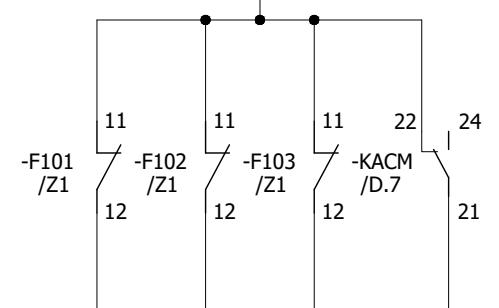
-H200

-KAC

/D.5 ➤ ALP



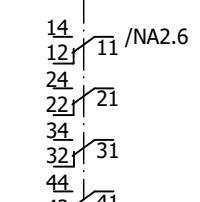
/E.5 ➤ AL+



/D.5 ➤ ALN



/E.5 ➤ AL-



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

OVERALL DIFFERENTIAL PROT.

HV CONN CIRC PROT

LV CONN CIRC PROT

TERTIARY
OVERCURRENTTRAFO NEUTRAL
OVERCURRENT

RELAY SUPPLY

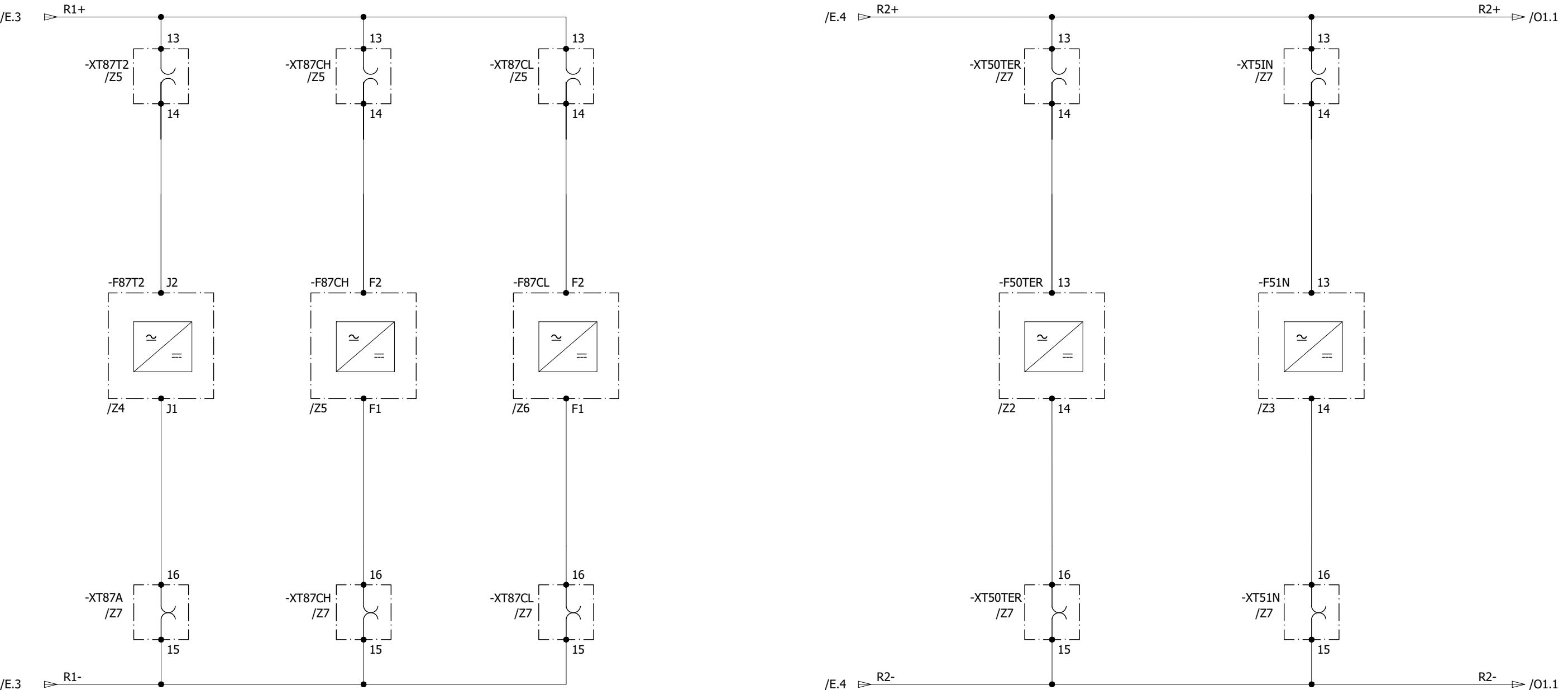
RELAY SUPPLY

RELAY SUPPLY

RELAY SUPPLY

RELAY SUPPLY

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0	AS BUILT		22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
					EPE SOL	Grid Solutions	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	220KV TRAFO RELAY SET-2 PANEL (=D09+R4) RELAY CONTROL & SUPPLY	P-60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER						Project no.	Sheet type	Sheet no.
1			2							P-60194	G	13

TEST BLOCK

OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

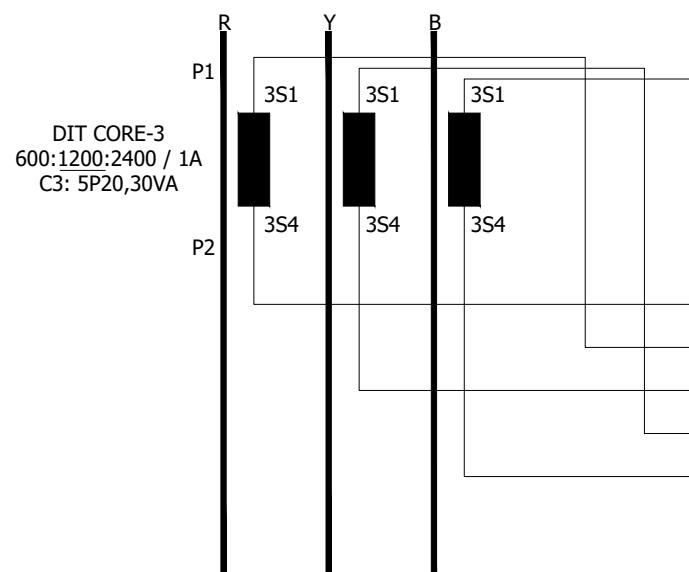
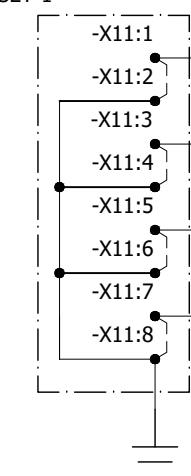
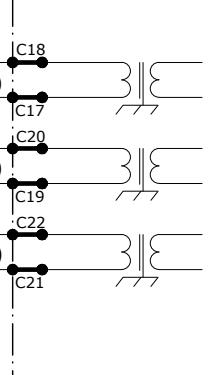
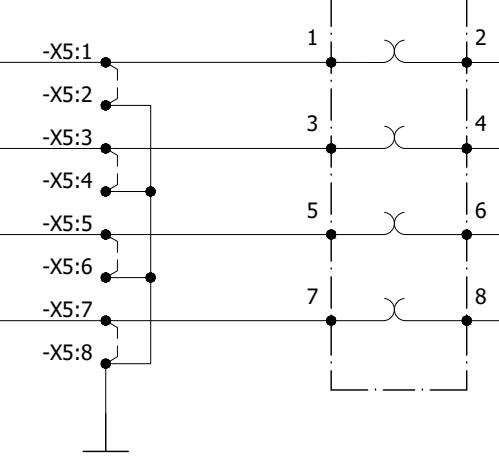
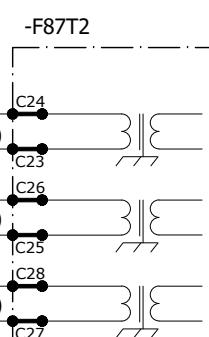
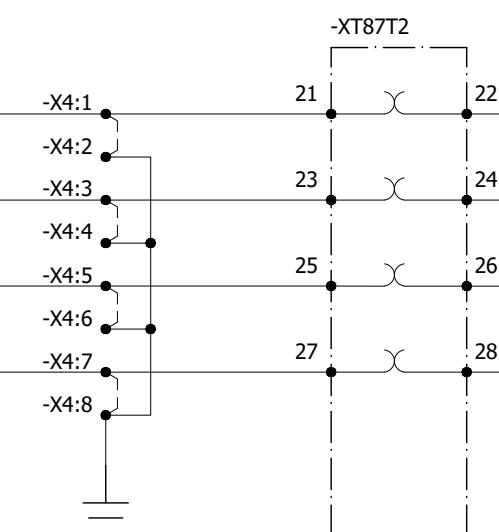
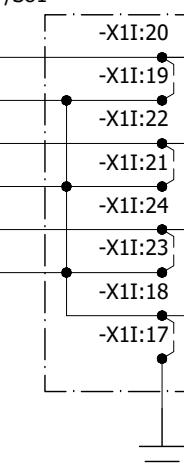
-XT87T2

-F87T2

/Z5

/Z4

220KV GIS HALL

CONTROL ROOM
=SET-1CONTROL ROOM
=SET-2=D04+R3
220KV+D04
PROTECTION PANEL
SET-1=D04+GISLCC
220KV GIS LCC PANEL
/S81

AGILE P643 OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

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0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
REV.	DESCRIPTION	DATE	DRAWER	EPEPSOL 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	220KV TRAFO RELAY SET-2 PANEL (=D09+R4) OVERALL TRAFO DIFFERENTIAL	P-60194-E-DTR-SC-002
									Project no. P-60194 Sheet type H1 Sheet no. 14

TEST BLOCK

HV CONNECTION DIFFERENTIAL PROTECTION RELAY

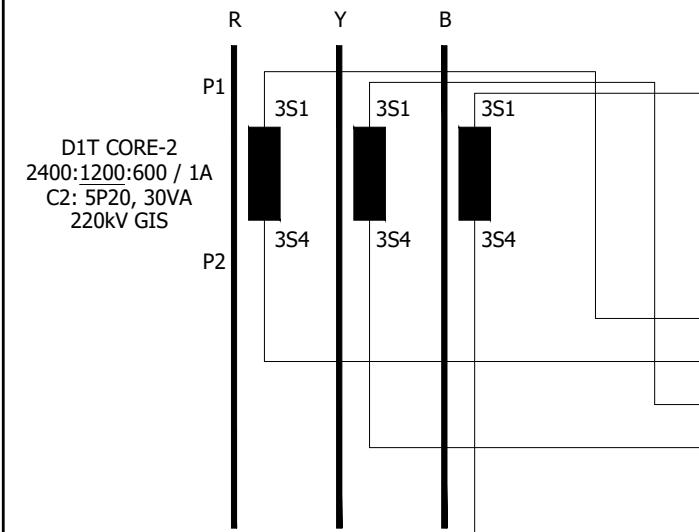
-XT87CH

-F87CH

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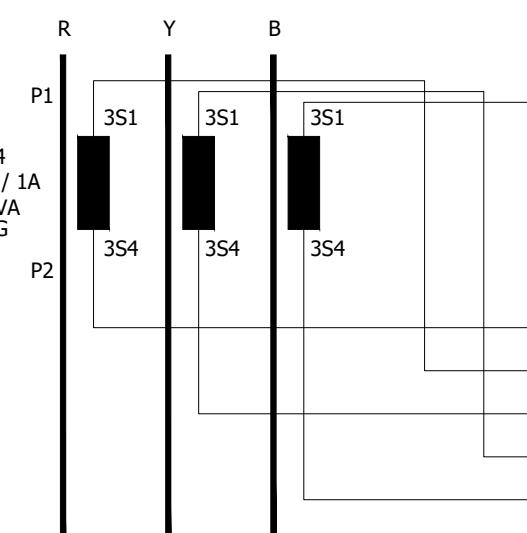
/Z4

220KV GIS HALL

CONTROL ROOM
=SET-2

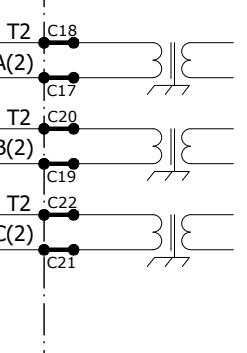
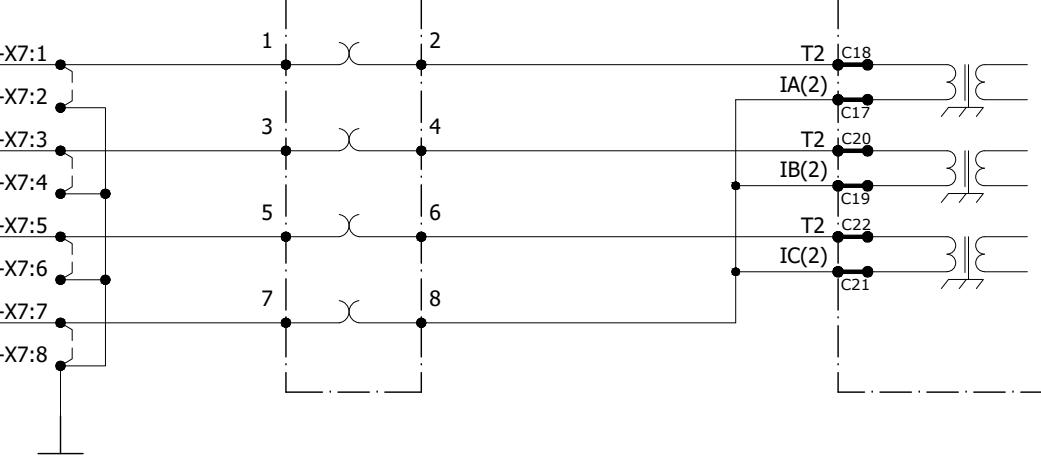
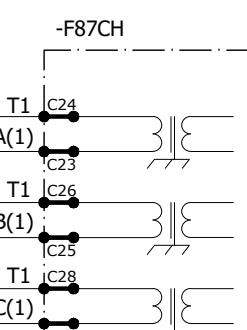
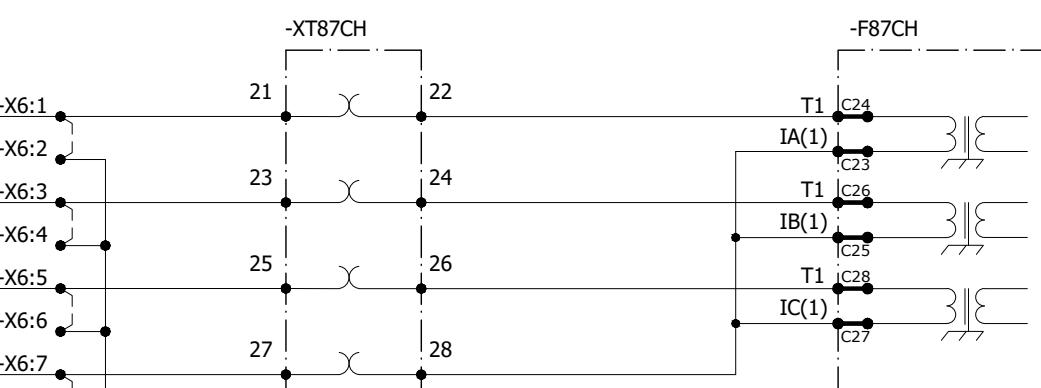
=D01+GISLCC
220kV GIS LCC PANEL
/S80

-X1I:12
-X1I:11
-X1I:14
-X1I:13
-X1I:16
-X1I:15
-X1I:10
-X1I:9
-X6:1
-X6:2
-X6:3
-X6:4
-X6:5
-X6:6
-X6:7
-X6:8



=D04+RTCC
220kV RTCC PANEL
/25

-X6:14
-X6:15
-X6:16
-X6:17
-X6:18
-X6:19
-X6:20
-X6:21
-X6:22
-X7:1
-X7:2
-X7:3
-X7:4
-X7:5
-X7:6
-X7:7
-X7:8



AGILE P642 OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

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0	AS BUILT	22.11.2018	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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) HV CONNECTION DIFFERENTIAL PROTECTION CIRCUIT	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type H2
									Sheet no. 15

TEST BLOCK

LV CONNECTION DIFFERENTIAL PROTECTION RELAY

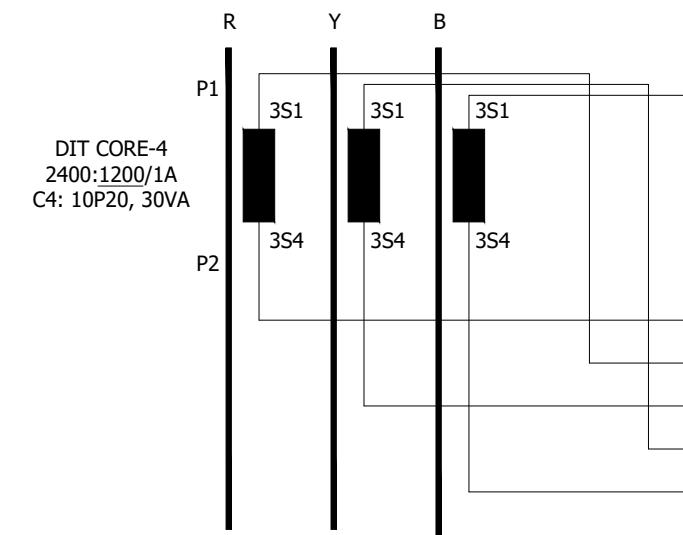
-XT87CL

-F87CL

/Z5

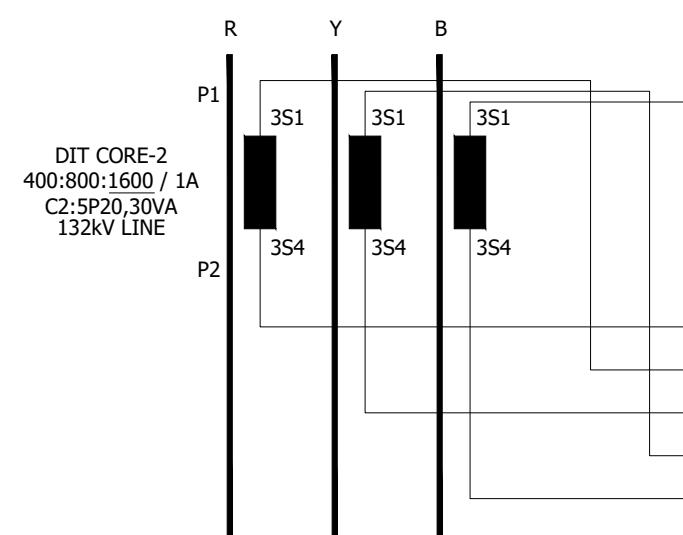
/Z4

220kV GIS HALL



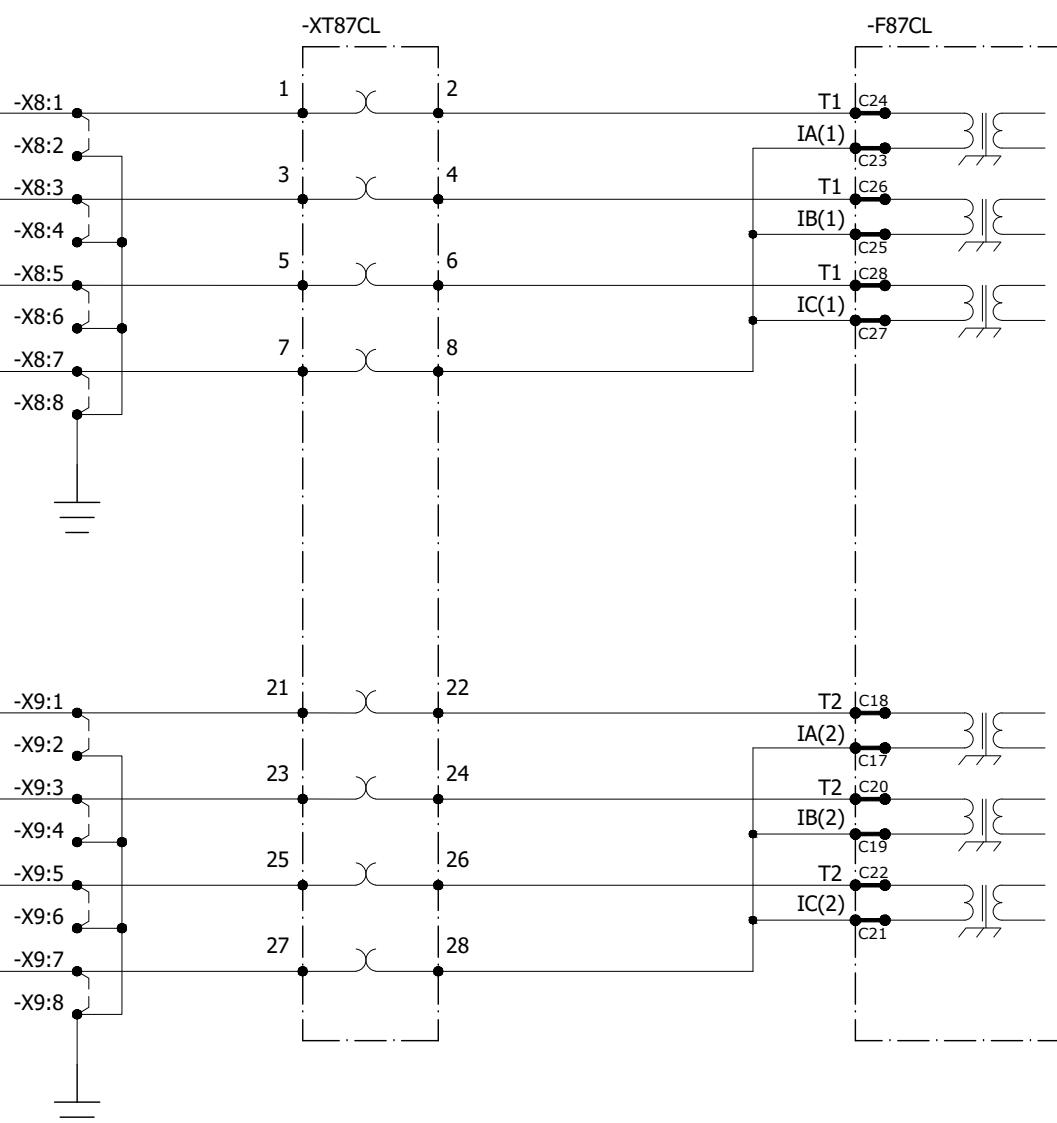
=D04+RTCC
220kV RTCC PANEL
/S10

-X6:30
-X6:31
-X6:32
-X6:33
-X6:34
-X6:35
-X6:36
-X6:37
-X6:38



=E08+GISLCC
132kV GIS LCC PANEL
/S10

-X1I:26
-X1I:27
-X1I:28
-X1I:29
-X1I:30
-X1I:31
-X1I:32
-X1I:33

CONTROL ROOM
=SET-2

AGILE P642 OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

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0	AS BUILT	22.11.2018	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	220kV TRAFO RELAY SET-2 PANEL (=D09+R4) LV CONNECTION DIFFERENTIAL PROTECTION CIRCUIT	P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type H3 Sheet no. 16

TEST BLOCK

TERTIARY OVERCURRENT & EARTHFAULT PROTECTION RELAY

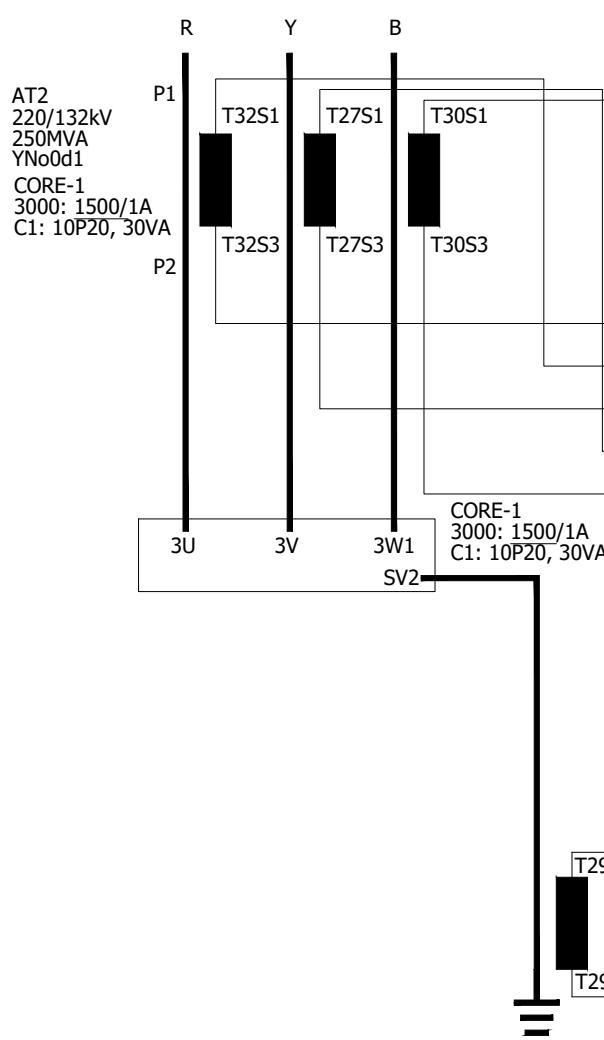
-XT50TER

-F50TER

/Z5

/Z4

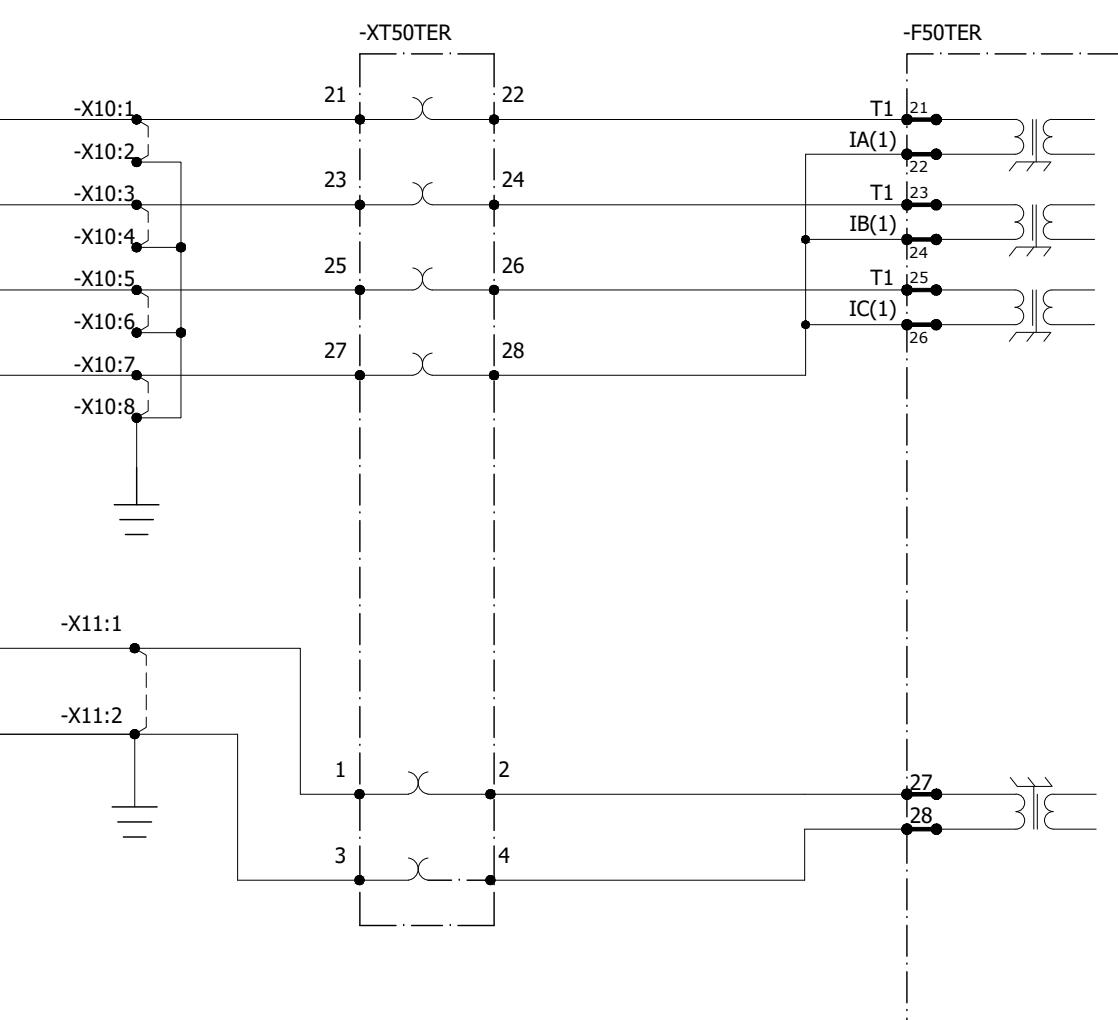
220KV GIS HALL CONTROL ROOM



=D04+RTCC
220KV RTCC PANEL /27

=D04+RTCC
220KV RTCC PANEL /27

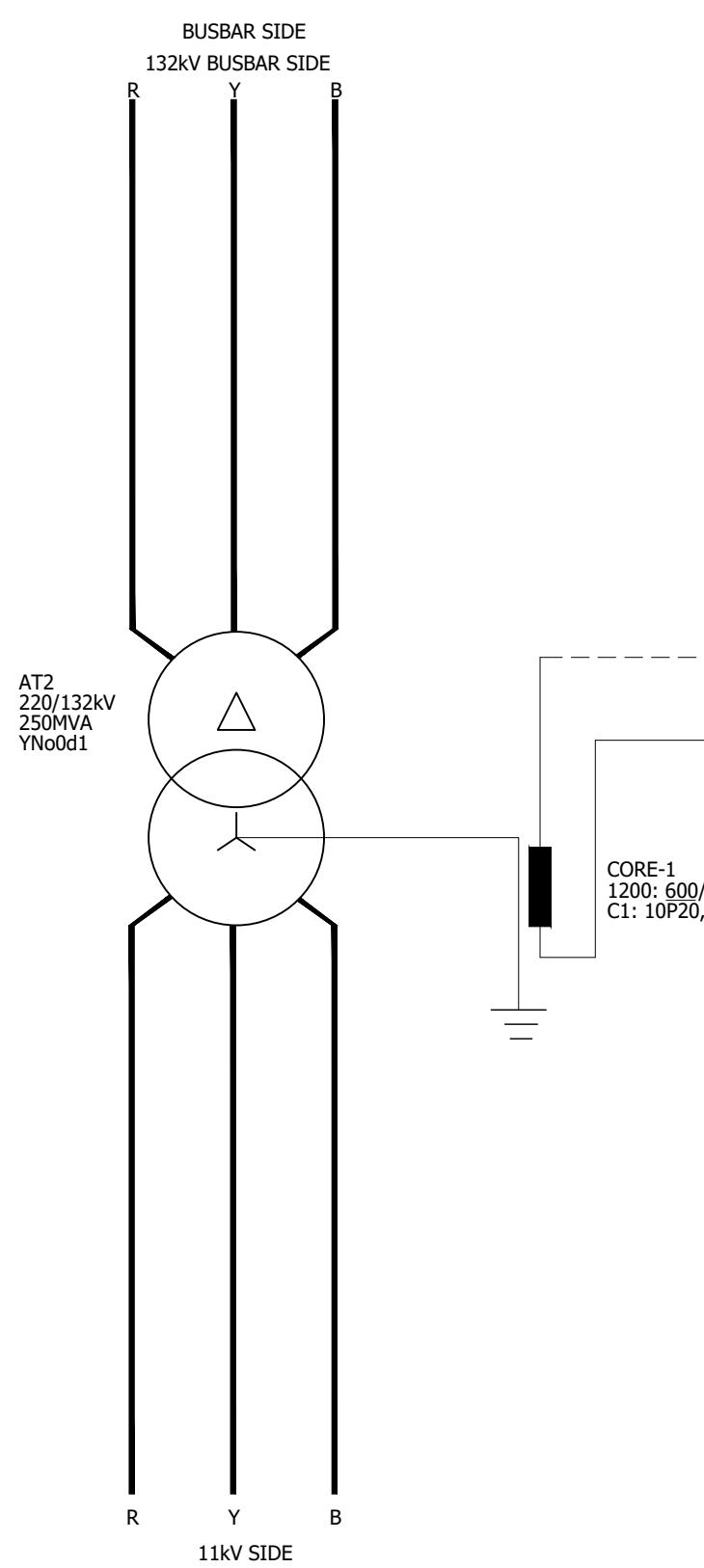
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPEPSOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE RELAY SET-2 PANEL (=D09+R4) TERTIARY OVERCURRENT & EARTHFAULT CIRCUIT	Drawing no. P60194-E-DTR-SC-002	
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type H4	Sheet no. 17

1 2 3 4 5 6 7 8

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TEST BLOCK

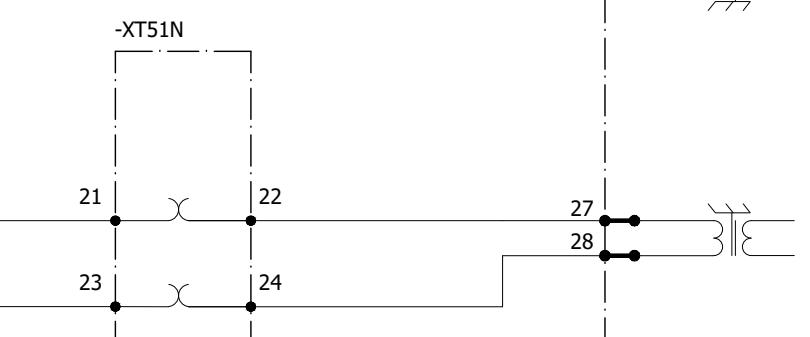
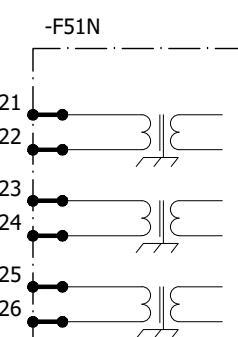
NEUTRAL OVERCURRENT PROTECTION RELAY

-XT51N

-F51N

/Z5

/Z4



AGILE P14N OVERCURRENT & EARTHFAULT PROTECTION RELAY

0	AS BUILT	22.11.2018	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 220KV LINE RELAY SET-2 PANEL (=D09+R4) NEUTRAL OVERCURRENT CIRCUIT	Drawing no. P60194-E-DTR-SC-002		
									Project no. P-60194		
									Sheet type H5	Sheet no. 18	
REV.	DESCRIPTION	DATE	DRAWER								

OVERALL TRAFO DIFFERENTIAL

HV CONNECTION DIFFERENTIAL

LV CONNECTION DIFFERENTIAL

TERTIARY OVERCURRENT & EARTHFAULT

NEUTRAL OVERCURRENT

TRIP

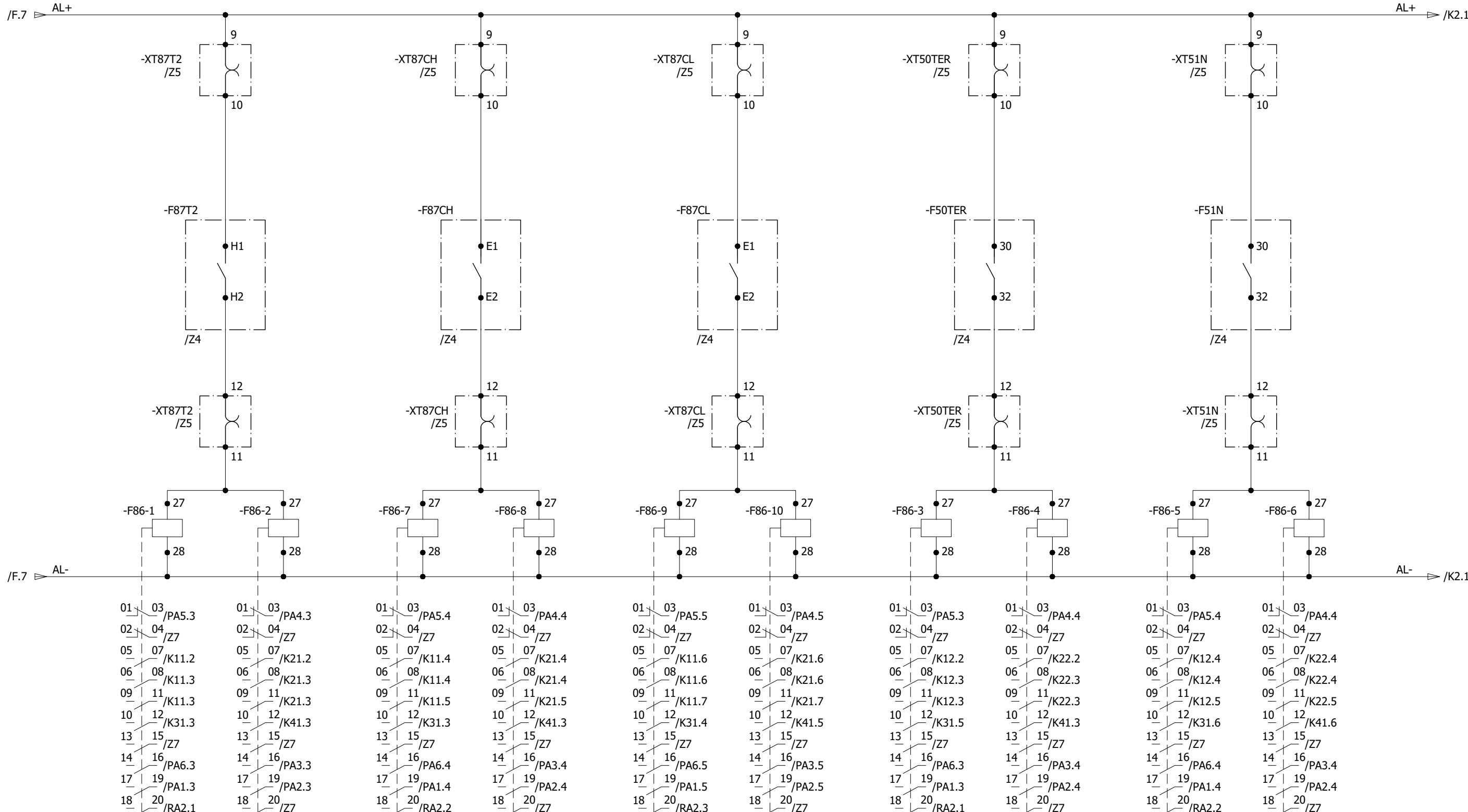
TRIP

TRIP

TRIP

TRIP

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0	AS BUILT	22.11.2018	ASJ	Manufacturer E P E S O L 7-8 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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) PROTECTION TRIPS	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type K1
									Sheet no. 19

PRESSURE RELIEF

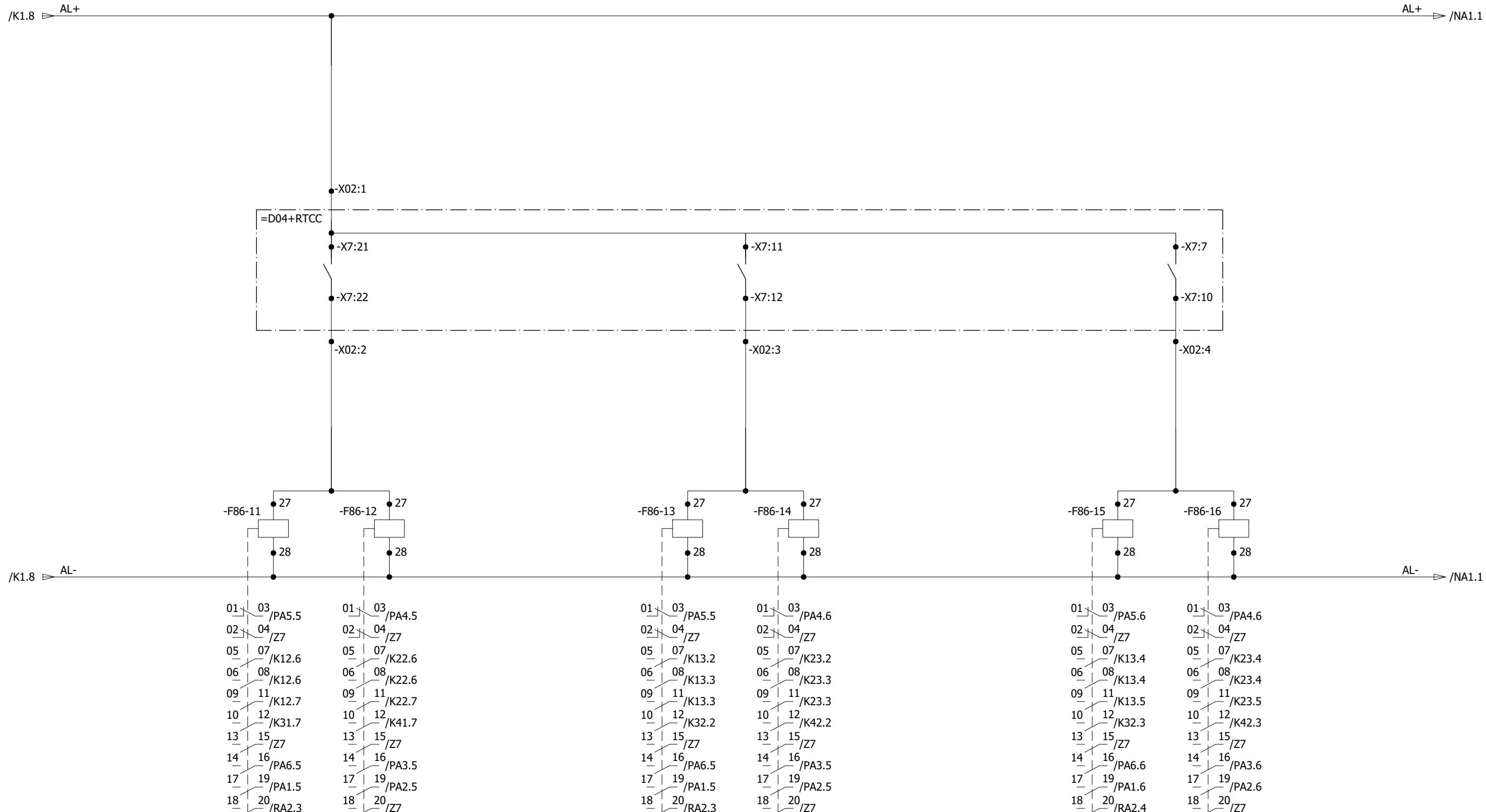
BUCHOLZ OLTC

BUCHOLZ TRAFO

TRIP

TRIP

TRIP



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0	AS BUILT		22.11.2018	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 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) PROTECTION TRIPS	Drawing no. P60194-E-DTR-SC-002	
REV.	DESCRIPTION		DATE	DRAWER					Project no. P-60194	Sheet type K2	Sheet no. 20
1	2	3	4	5	6	7	8				

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220KV TRAFO RELAY PANEL
SET-1

OVERALL TRAFO DIFFERENTIAL PROTECTION TRIP

HV CONNECTION DIFFERENTIAL TRIP

LV CONNEVCTION DIFFERENTIALTRIP

=D04+R3

RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

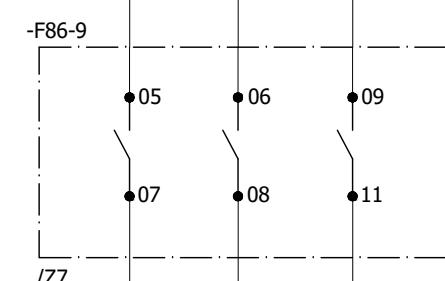
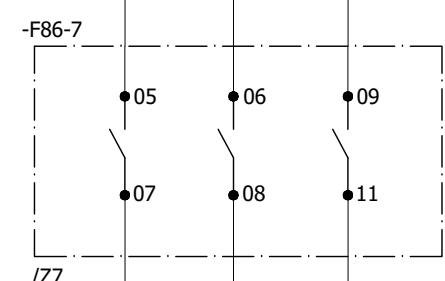
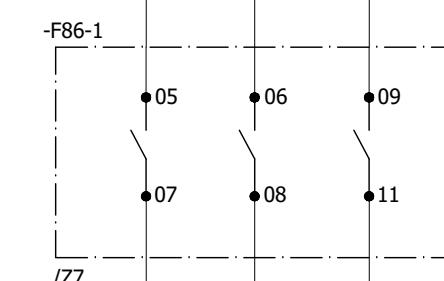
RED-PH YELLOW-PH BLUE-PH

/K11

A

-XTC1: 5 TC1+ -XTC1: 1

TC1+ → /K12.1



-XTC1: 6 -XTC1: 2

→ /K12.1

-XTC1: 7 -XTC1: 3

→ /K12.1

-XTC1: 8 -XTC1: 4

→ /K12.1

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C

D

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0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
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REV.	DESCRIPTION	DATE	DRAWER	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	220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 1 (D04-Q0)	Drawing no. P60194-E-DTR-SC-002
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TERTIARY OVERCURRENT & EARTHFAULT TRIP

RED-PH YELLOW-PH BLUE-PH

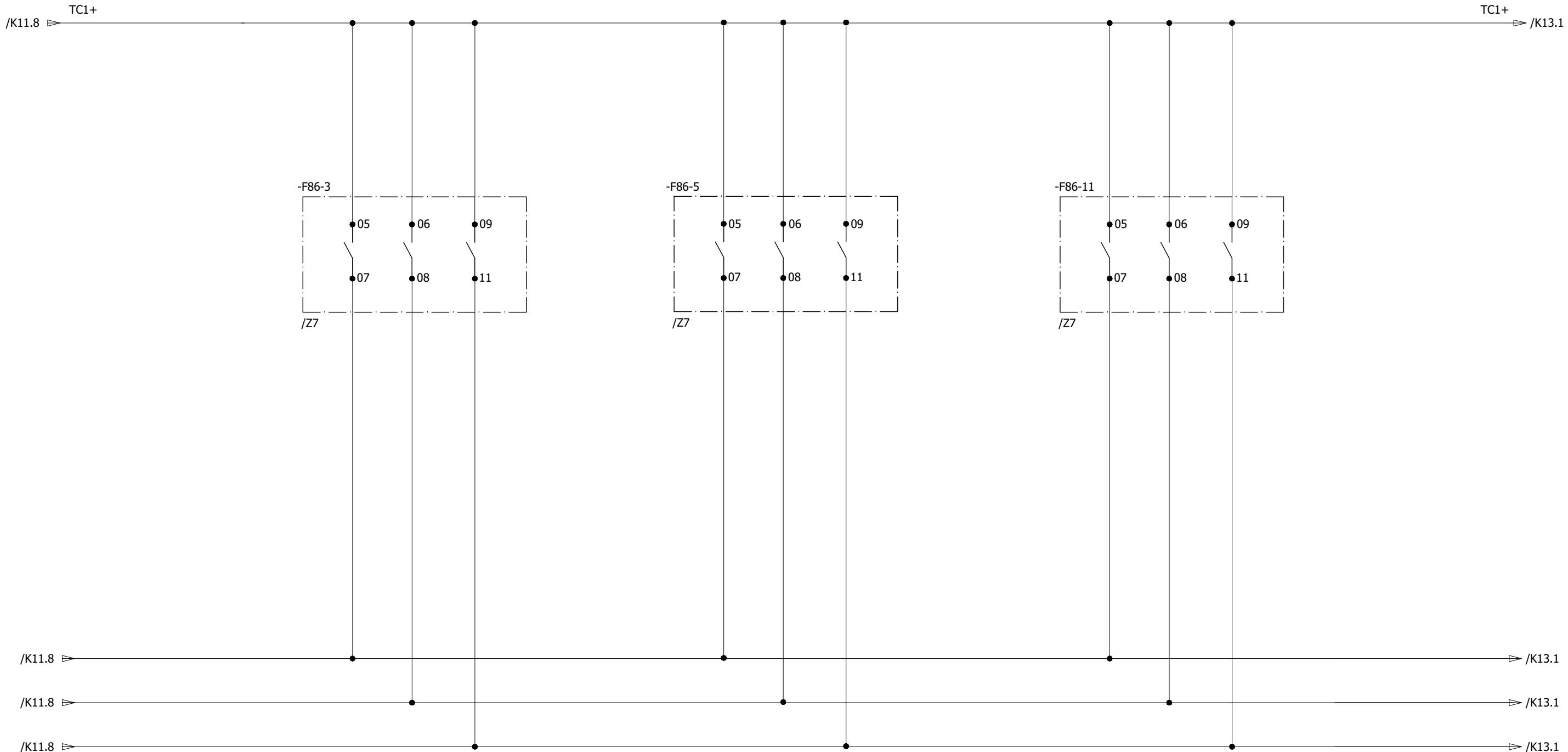
NEUTRAL OVERCURRENT TRIP

RED-PH YELLOW-PH BLUE-PH

PRESSURE RELIEF TRIP

RED-PH YELLOW-PH BLUE-PH

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0	AS BUILT	22.11.2018	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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 1 (D04-Q0)	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type K12
									Sheet no. 22

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BUCHOLZ OLTC TRIP

BUCHOLZ TRAFO TRIP

220KV CIRCUIT BREAKER
FAILURE PANEL

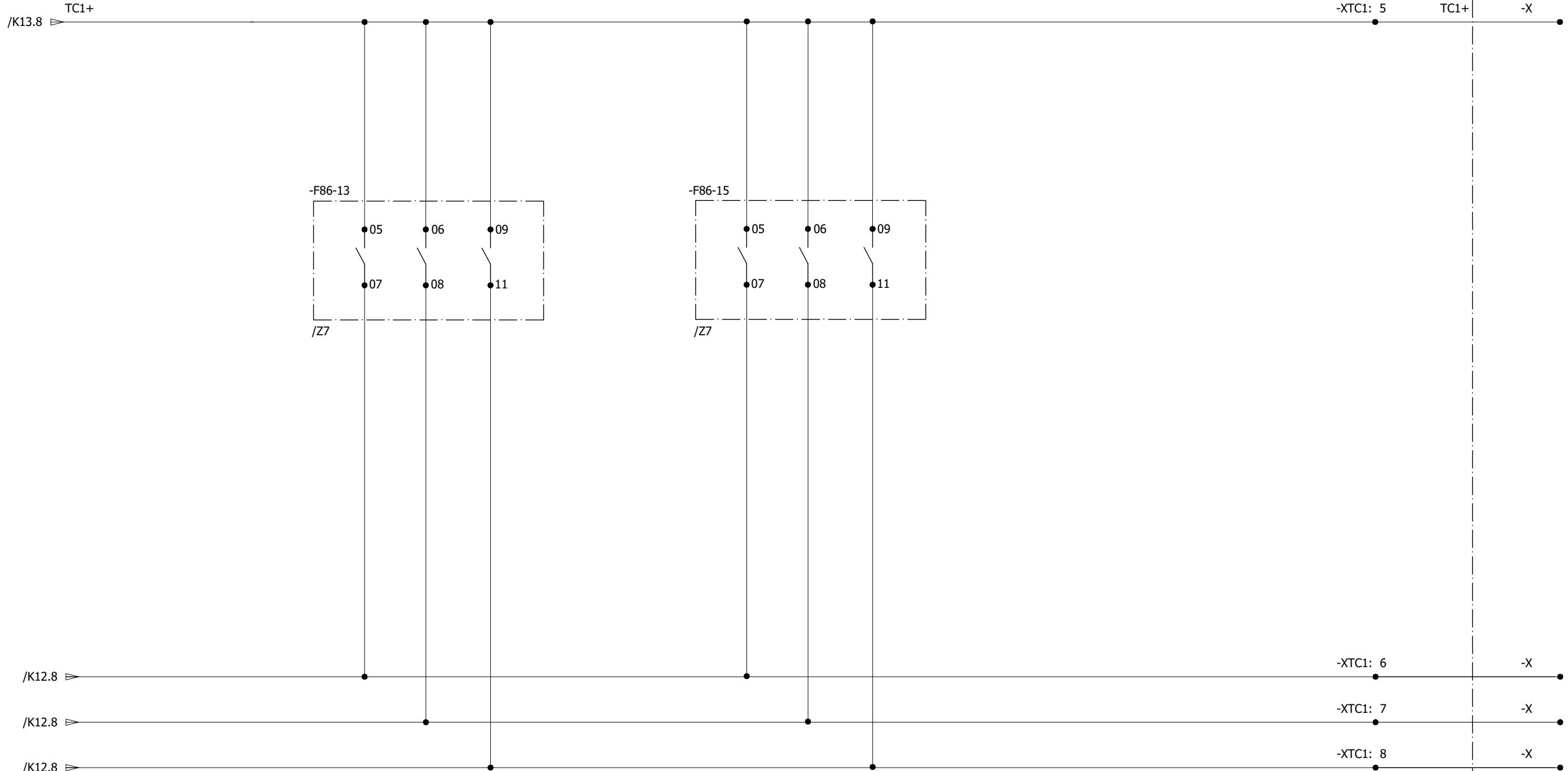
RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

=D00+R5A

/Z

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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPEPSOL 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 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 1 (D04-Q0)	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type K13
									Sheet no. 23

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220KV GIS LCC PANEL

OVERALL TRAFO DIFFERENTIAL PROTECTION TRIP

HV CONNECTION DIFFERENTIAL TRIP

LV CONNEVCTION DIFFERENTIALTRIP

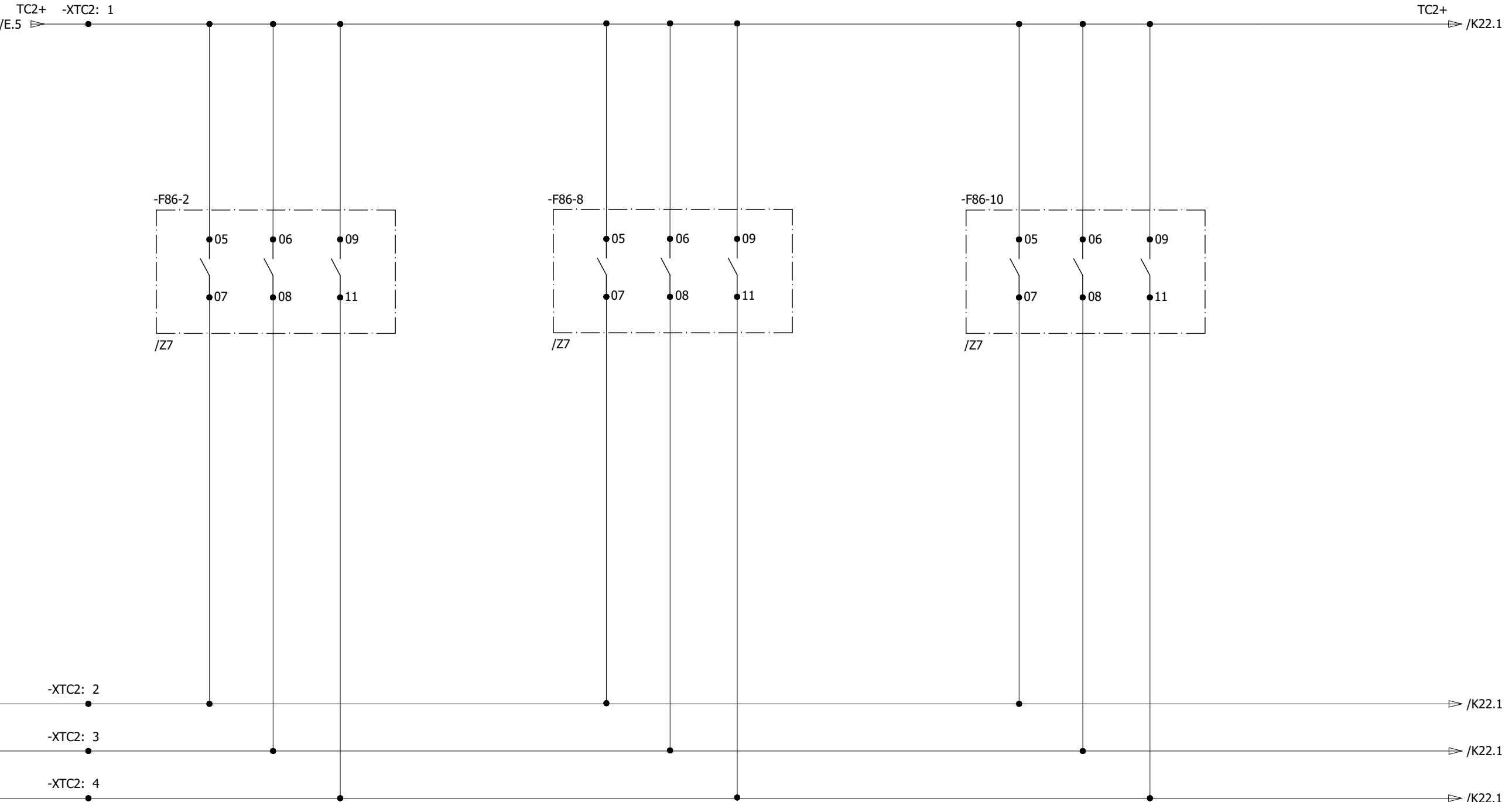
=D04+GIS LCC

RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

/L53



A

A

B

B

C

C

D

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0	AS BUILT	22.11.2018	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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 2 (D04-Q0)	Drawing no. P60194-E-DTR-SC-002	
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type K21	Sheet no. 24

TERTIARY OVERCURRENT & EARTHFAULT TRIP

RED-PH YELLOW-PH BLUE-PH

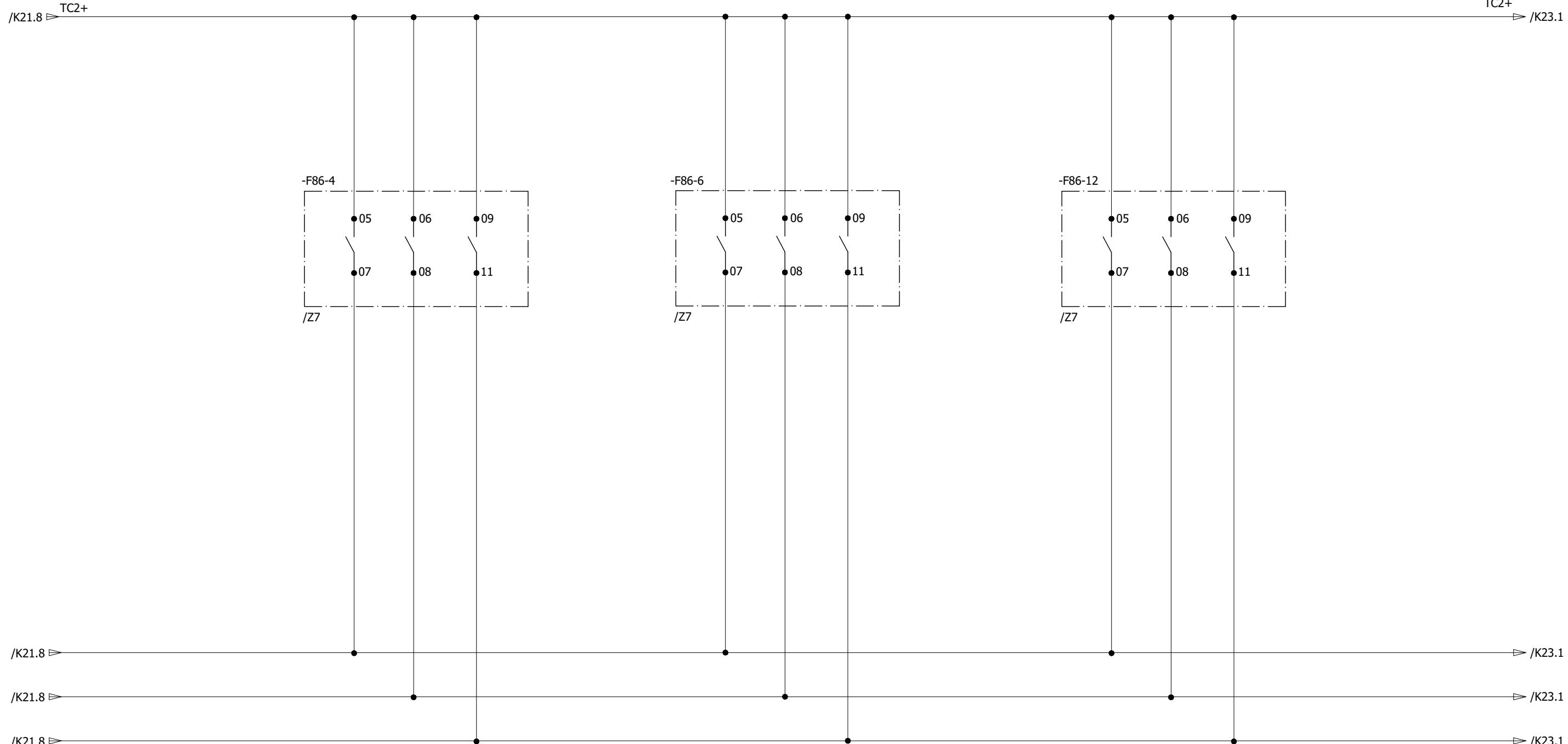
NEUTRAL OVERCURRENT TRIP

RED-PH YELLOW-PH BLUE-PH

PRESSURE RELIEF TRIP

RED-PH YELLOW-PH BLUE-PH

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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPE SOL 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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 2 (D04-Q0)	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type K22
									Sheet no. 25

BUCHOLZ OLTC TRIP

BUCHOLZ TRAFO TRIP

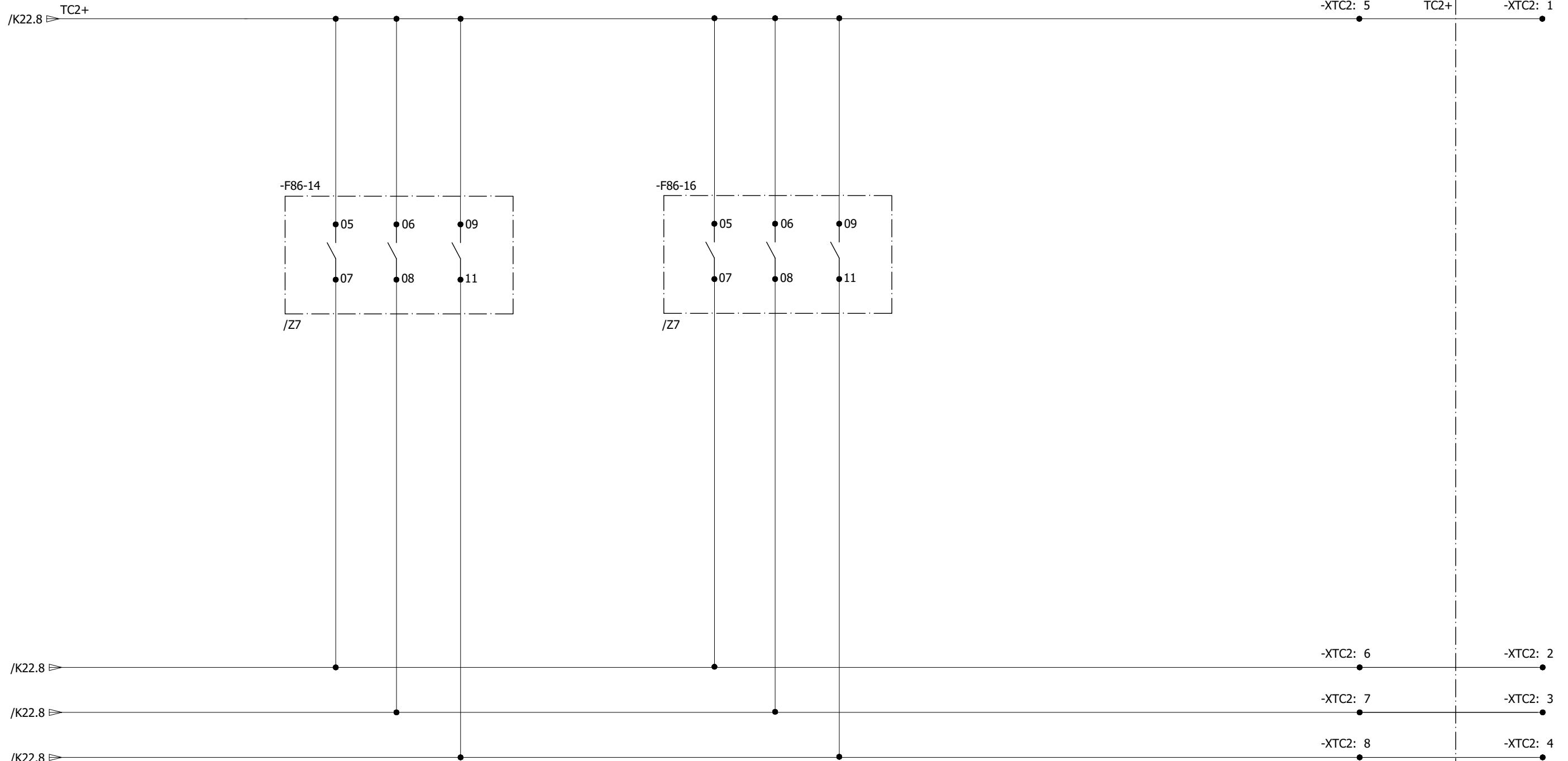
220KV TRAFO RELAY PANEL
SET-1

RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

=D04+R3

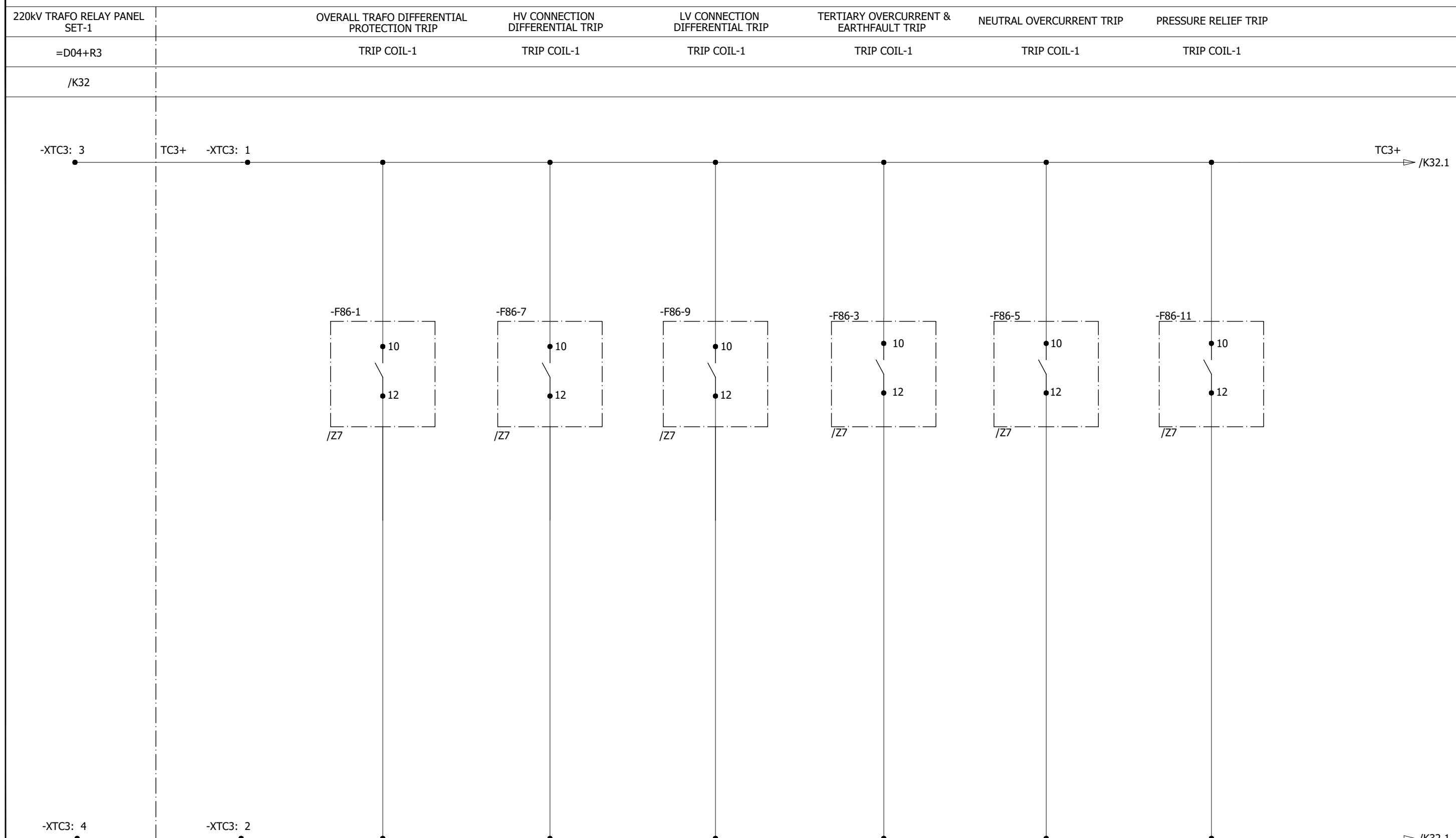
/K11



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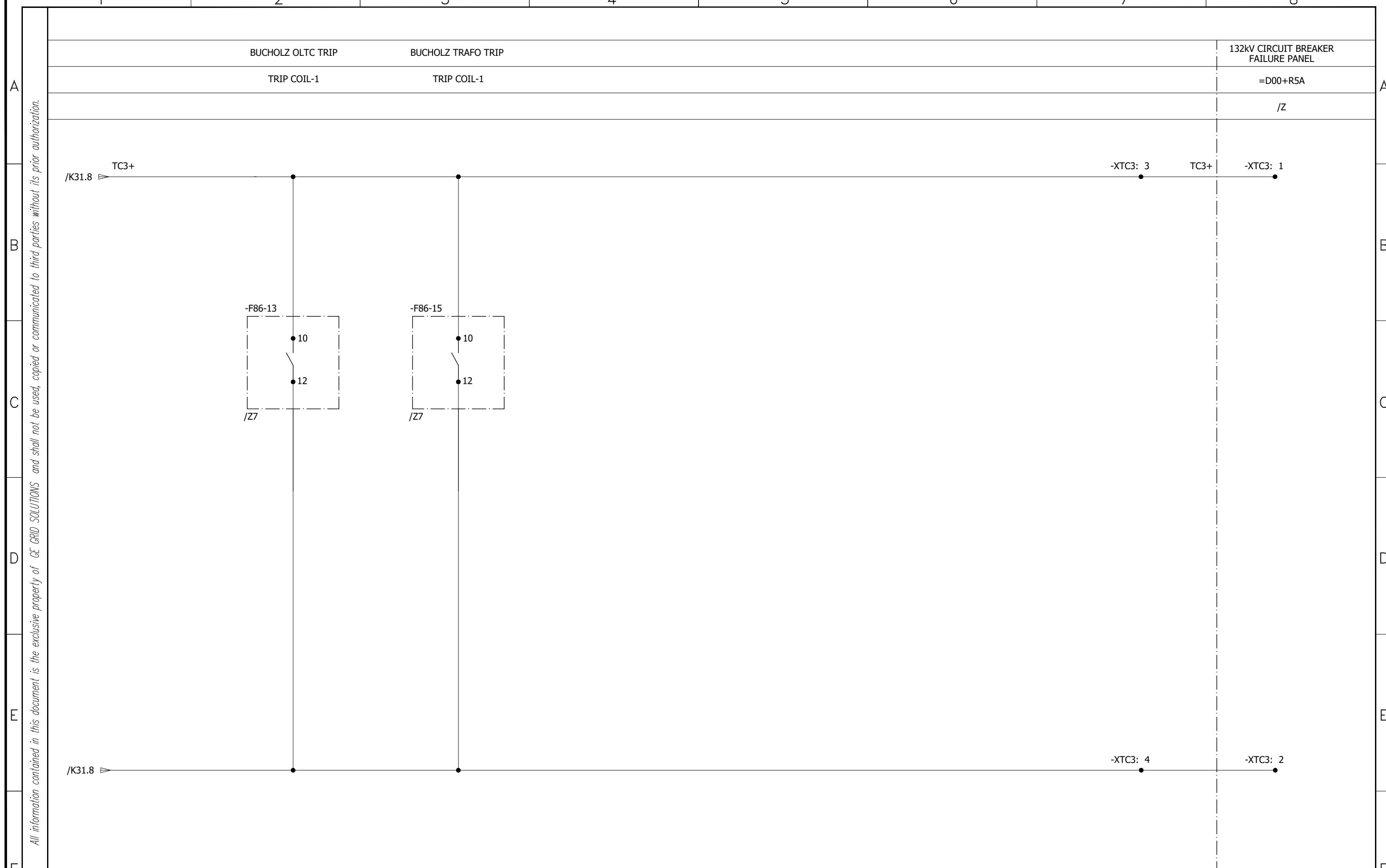
0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 2 (D04-Q0)	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
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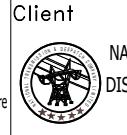
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 1 (E08-Q0)	Drawing no. P60194-E-DTR-SC-002
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REV.	DESCRIPTION	DATE	DRAWER						Sheet type K31
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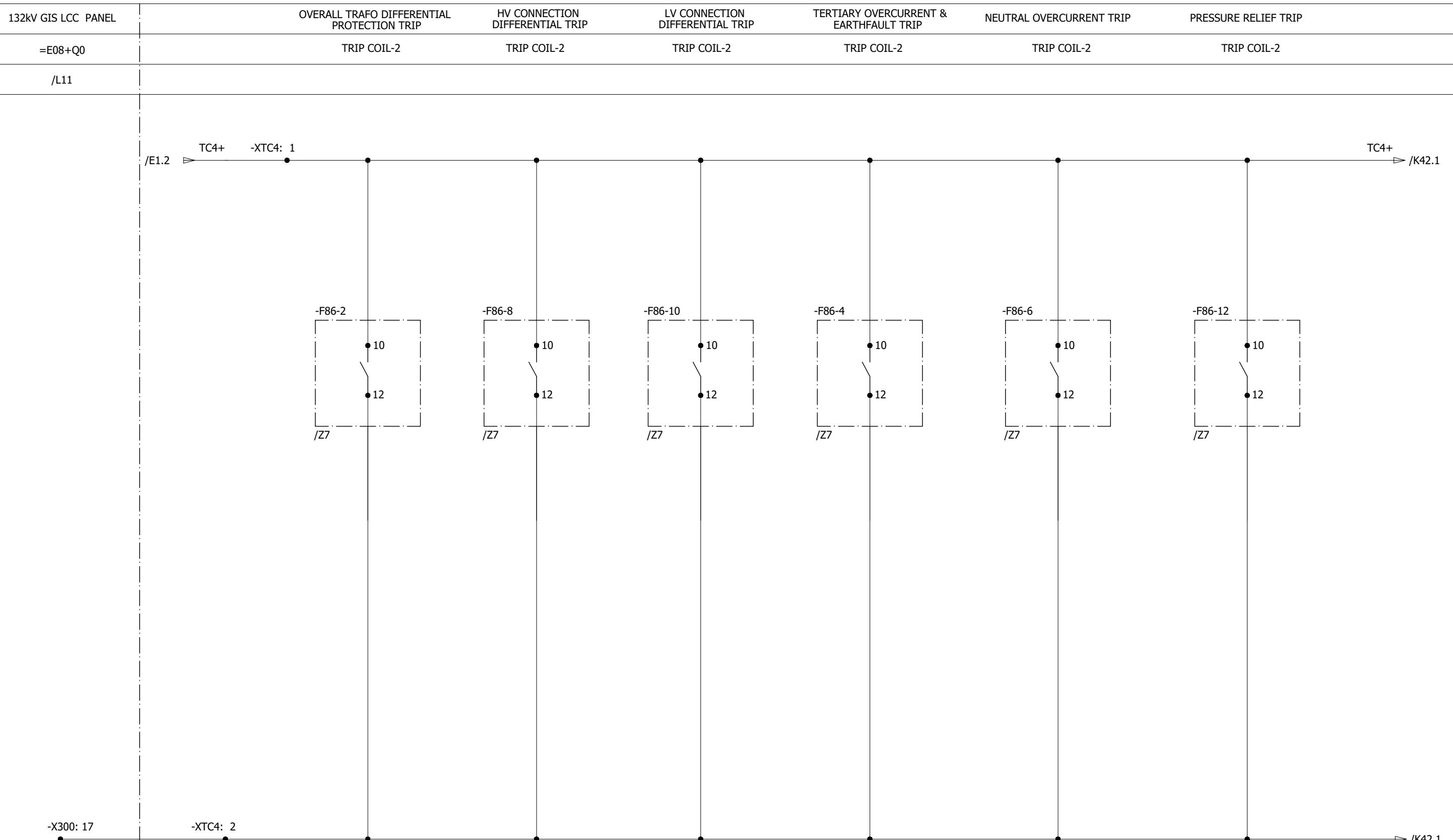
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 1 (E08-Q0)	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type K32
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1 2 3 4 5 6 7 8

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0	AS BUILT		22.11.2018	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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 2 (E08-Q0)	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER					Project no. P-60194	Sheet type K41	Sheet no. 29	
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BUCHOLZ OLTC TRIP

BUCHOLZ TRAFO TRIP

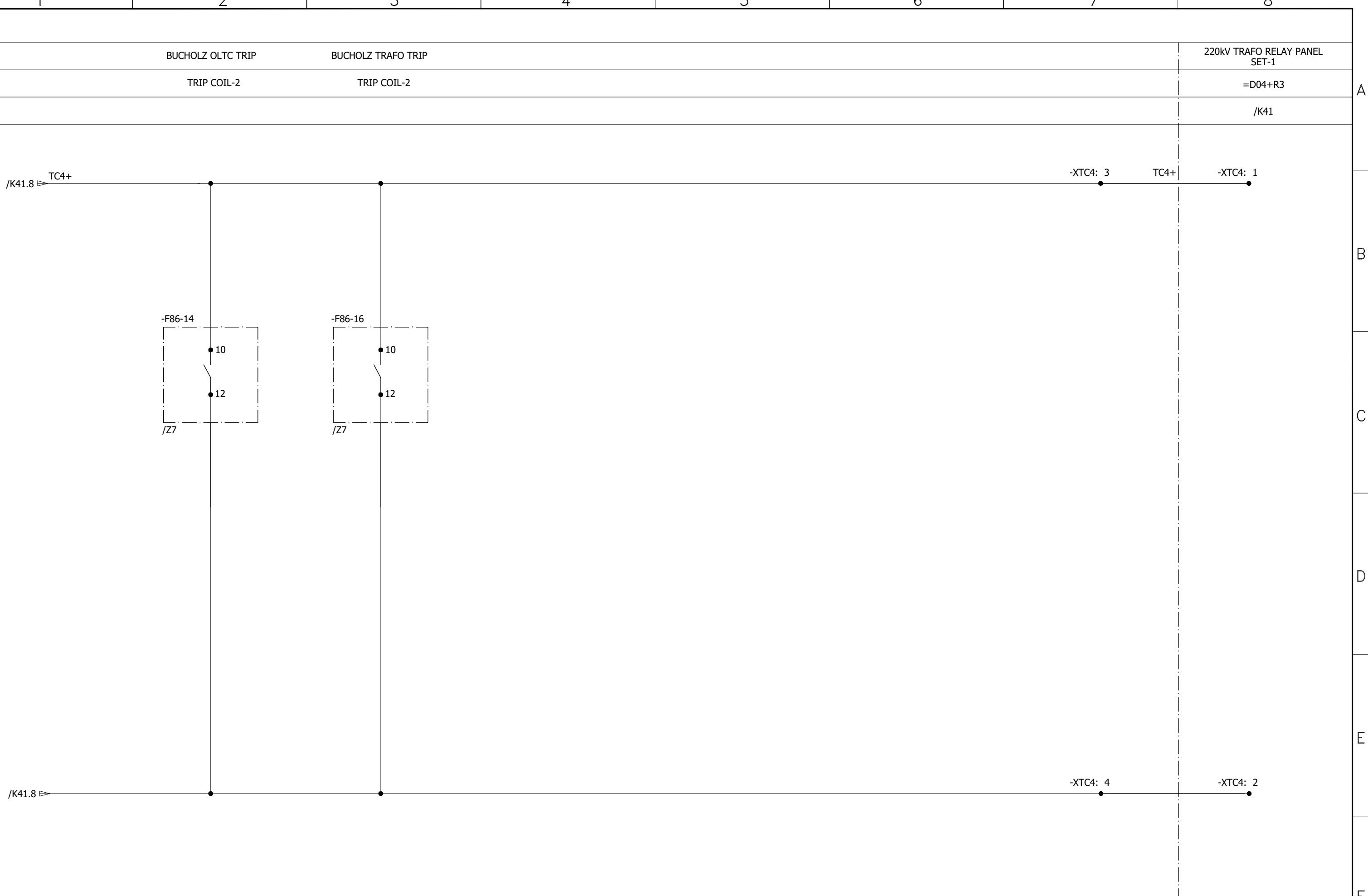
220KV TRAFO RELAY PANEL
SET-1

TRIP COIL-2

TRIP COIL-2

=D04+R3

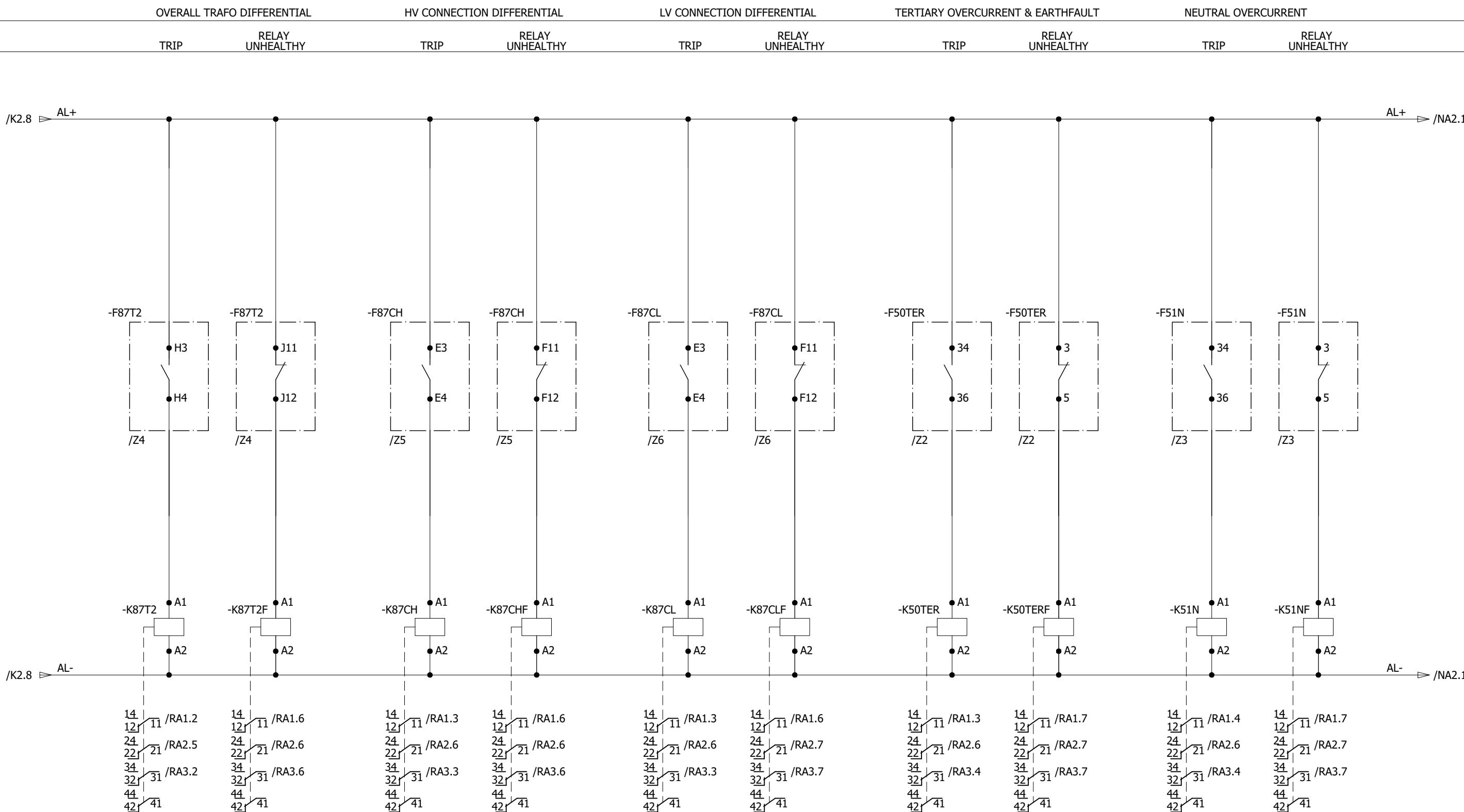
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0	AS BUILT		22.11.2018	ASJ	Manufacturer  EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) TRIP CIRCUIT FOR COIL - 2 (E08-Q0)	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type K42	Sheet no. 30
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220KV TRAFO RELAY SET-2 PANEL ALARMS

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0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
REV.	DESCRIPTION	DATE	DRAWER	EPEPSOL 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	220KV TRAFO RELAY SET-2 PANEL (=D09+R4) PROTECTION TRIPS & RELAY FAULTY	P-60194-E-DTR-SC-002
									Project no. P-60194 Sheet type NA1 Sheet no. 31

PRESSURE RELIEF

BUCHOLZ OLTC

BUCHOLZ TRAFO

DC SUPPLY MONITORING

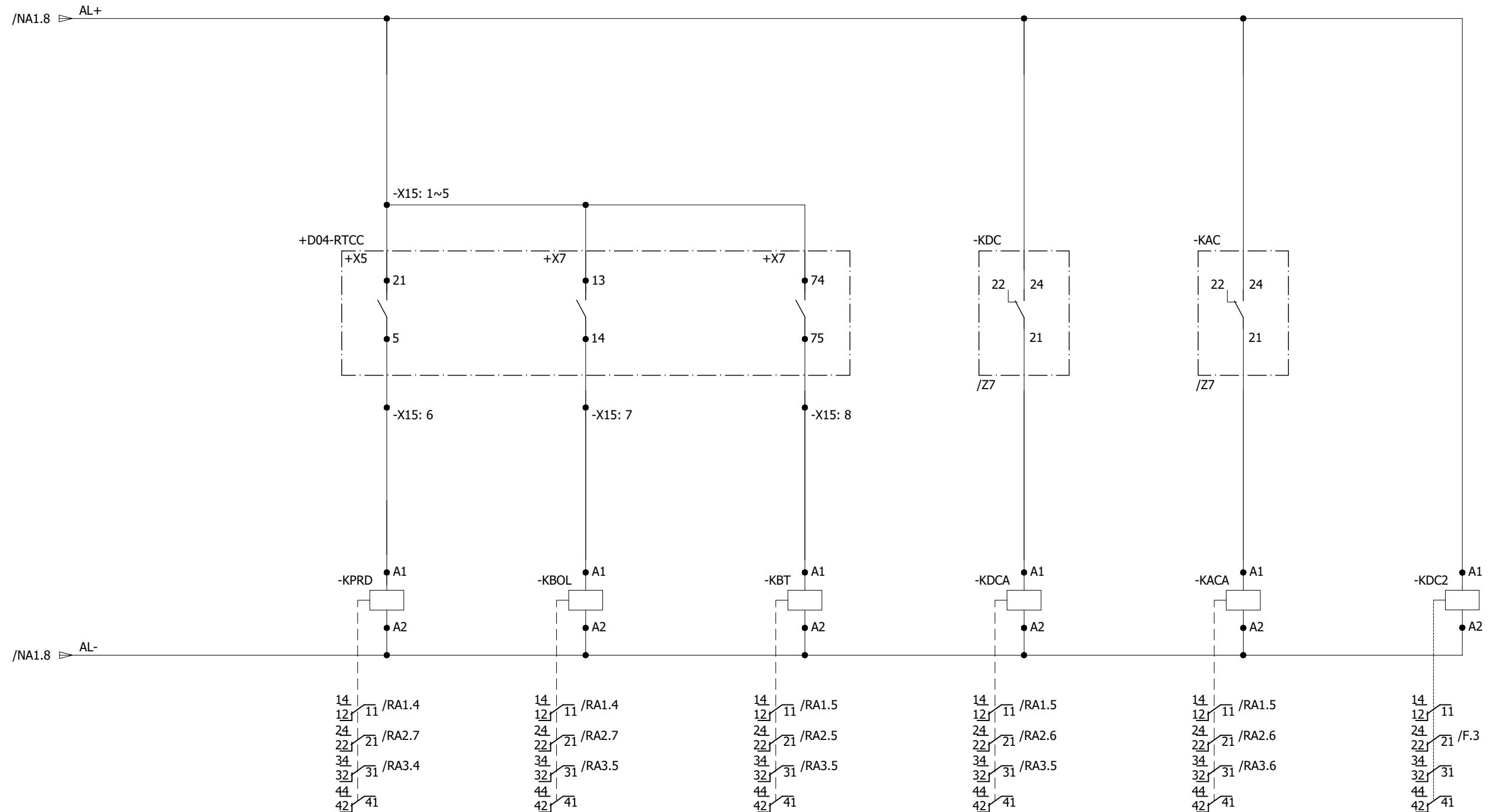
AC SUPPLY MONITORING

TRIP

TRIP

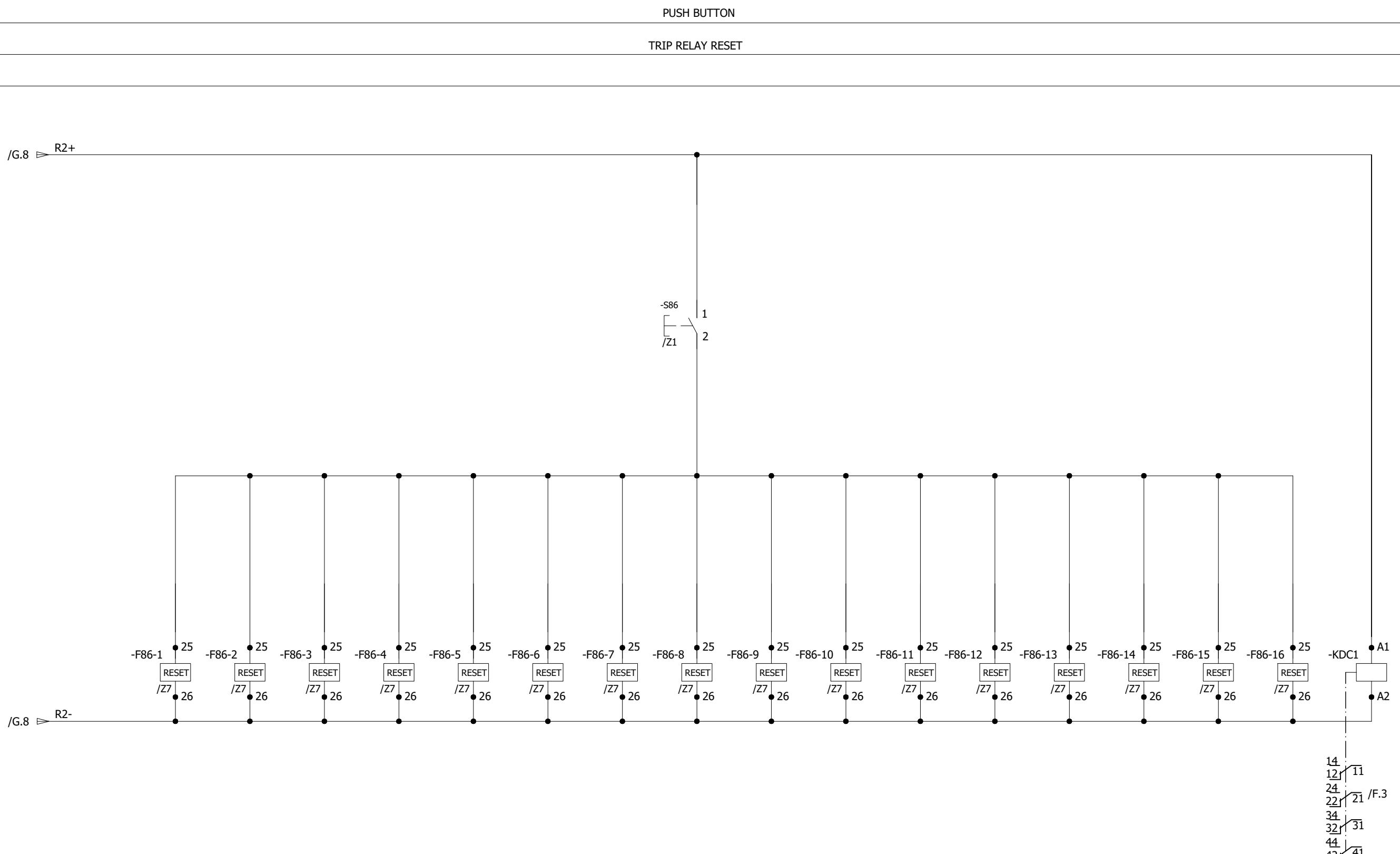
TRIP

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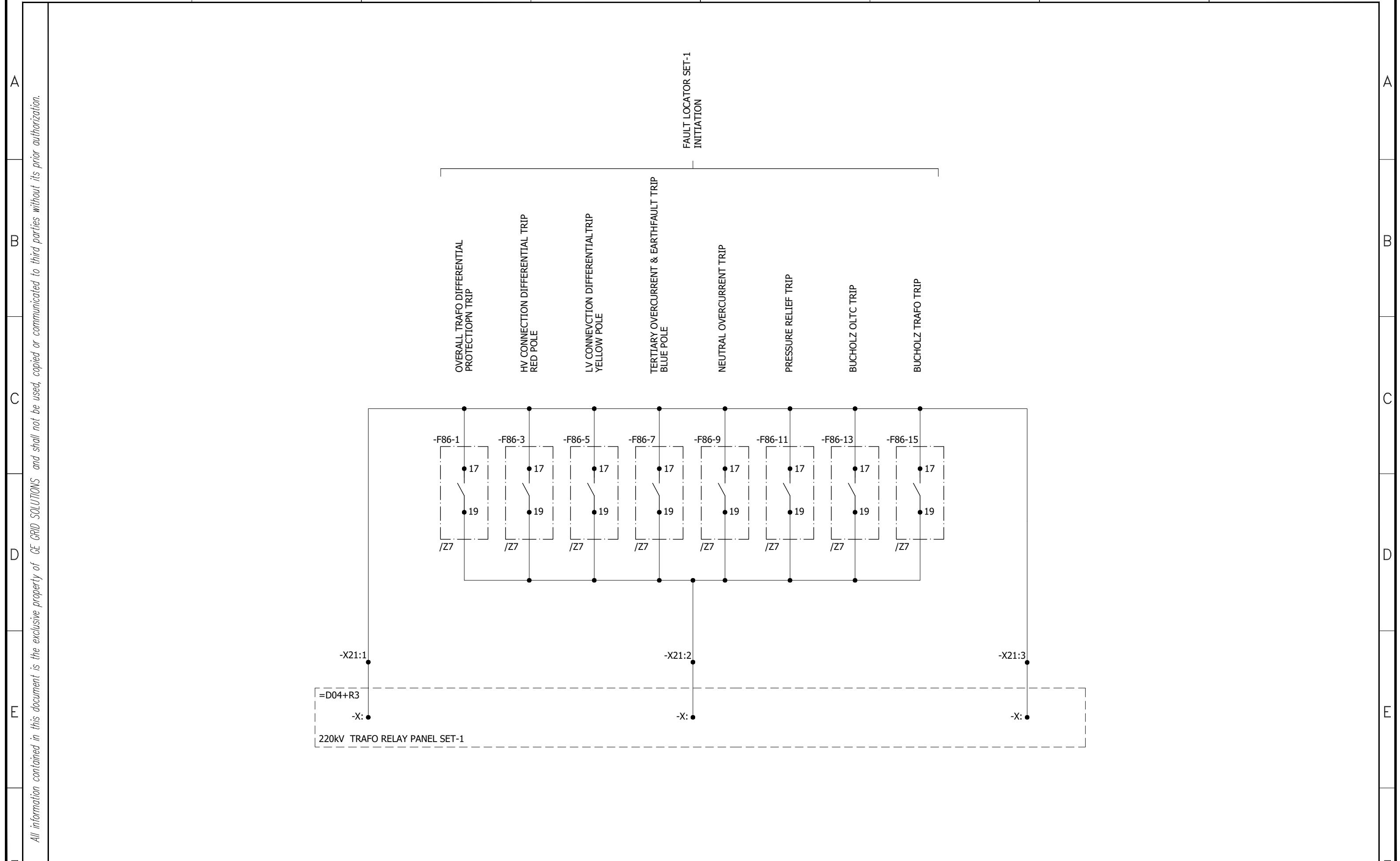


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REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type NA2	Sheet no. 32
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) HAND RESET OF TRIPPING RELAYS	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type O1	Sheet no. 33
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0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPESEL 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	220KV TRAFO RELAY SET-2 PANEL (=D09+R4) PROTECTION INTER-CIRCUITS	P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type PA1 Sheet no. 34

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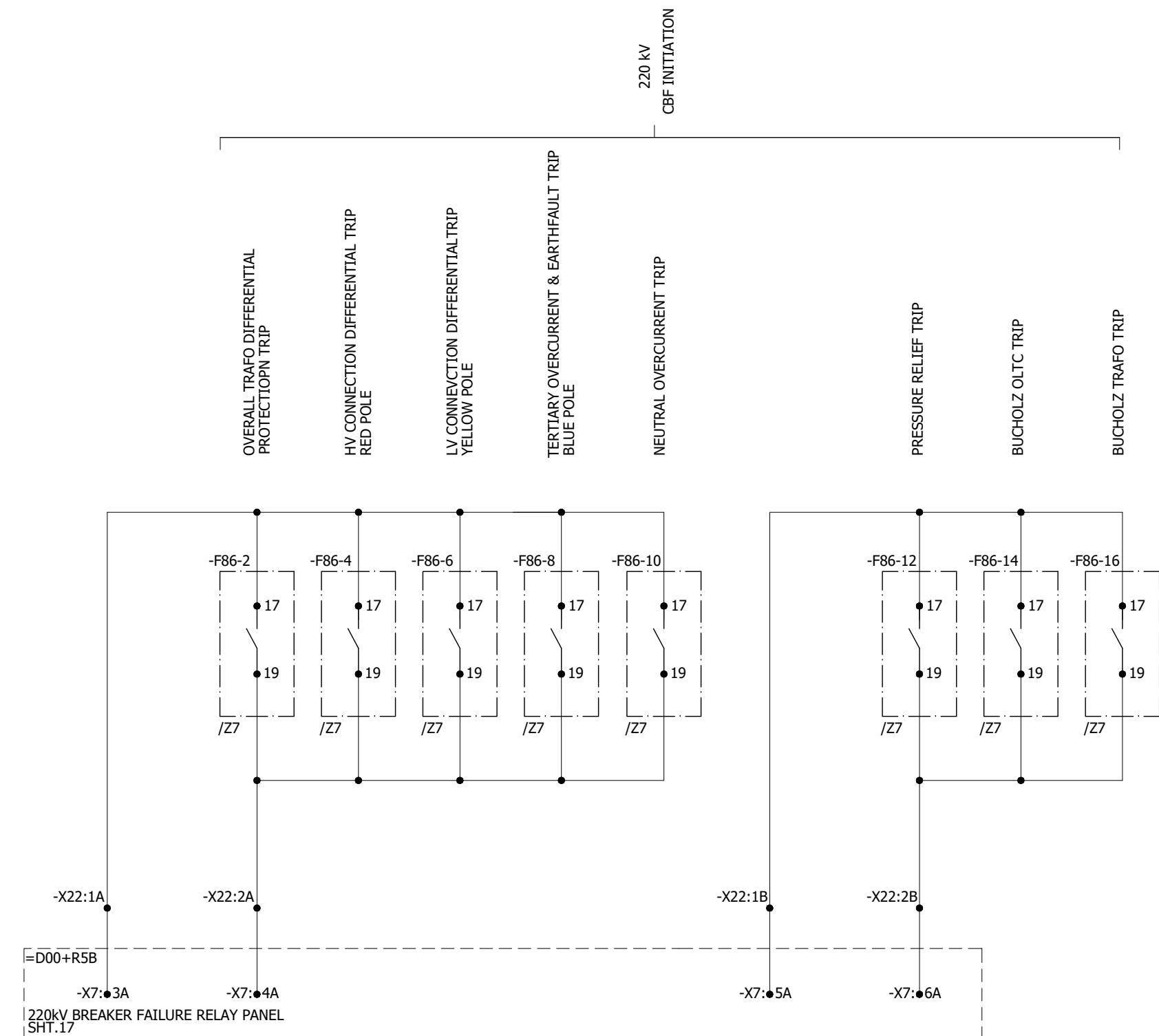
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0	AS BUILT		22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
REV.	DESCRIPTION		DATE	DRAWER	E P E S O L 7-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	220kV TRAFO RELAY SET-2 PANEL (=D09+R4) PROTECTION INTER-CIRCUITS	Project no.	Sheet type	Sheet no.
1	1		2	3	4	5	6	7	8	P-60194	PA2	35

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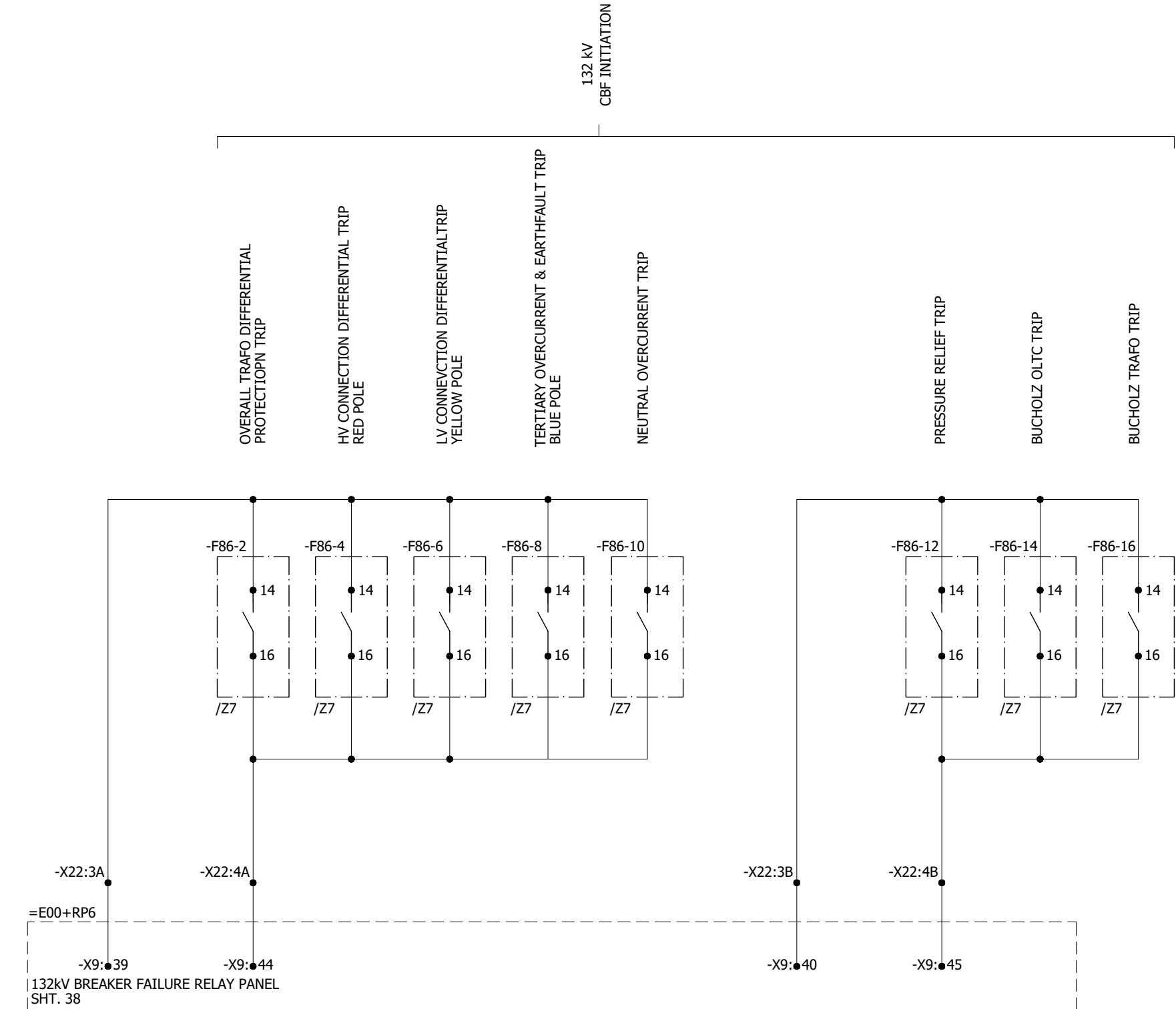
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0	AS BUILT		22.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) PROTECTION INTER-CIRCUITS	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type PA3	Sheet no. 36
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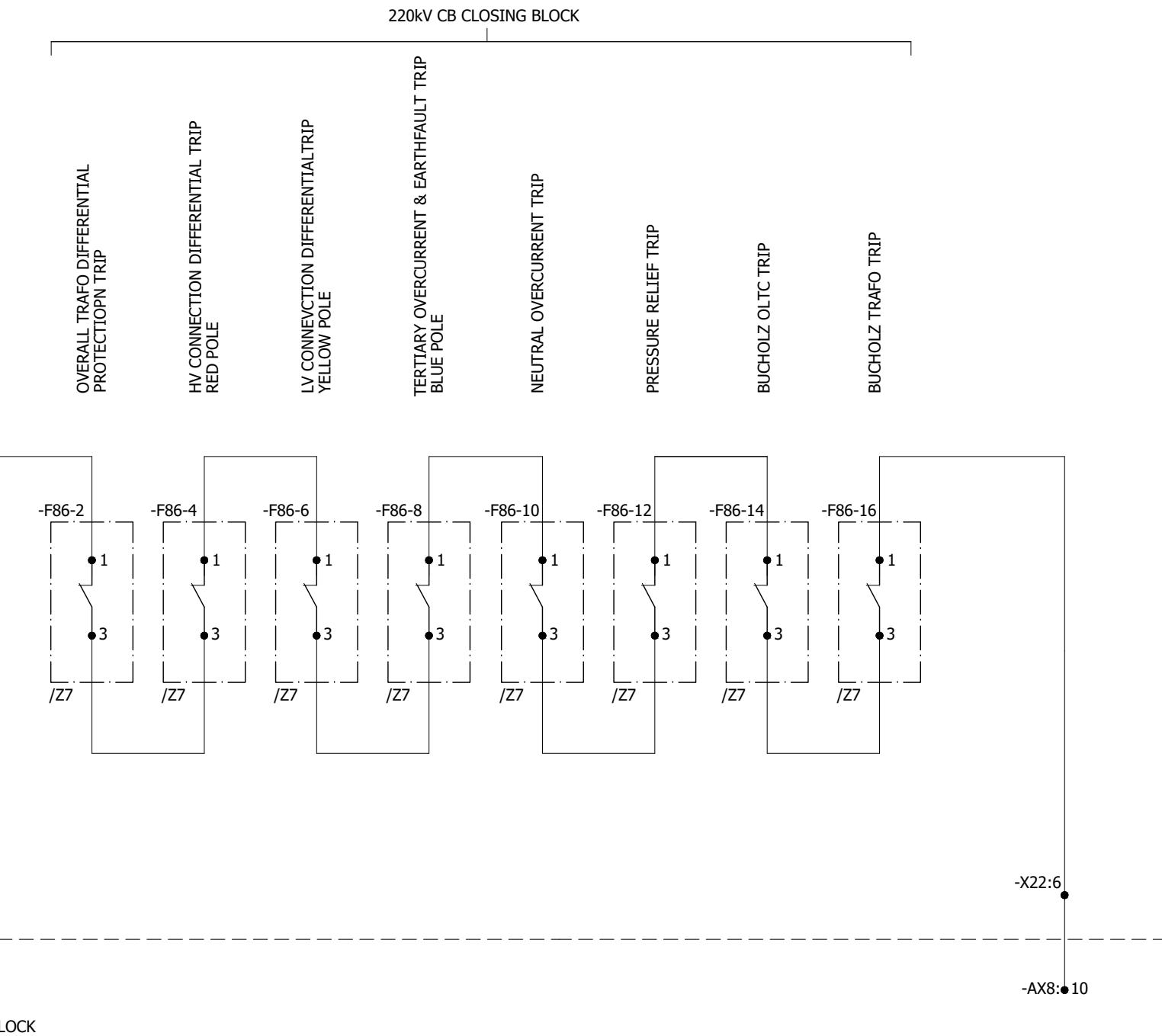
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) =E08+Q0 CLOSING BLOCK	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type PA4
									Sheet no. 37

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132KV CB CLOSING BLOCK

OVERALL TRAFO DIFFERENTIAL PROTECTIONN TRIP

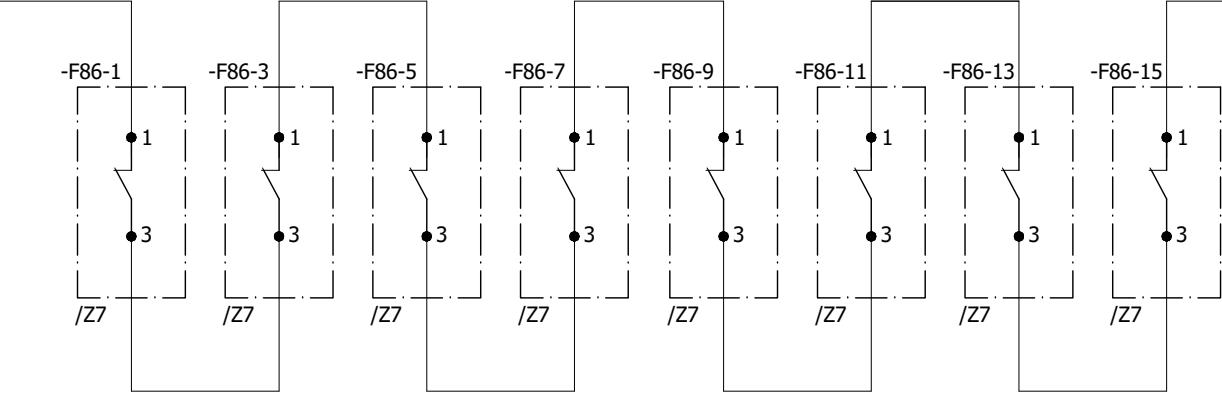
HV CONNECTION DIFFERENTIAL TRIP
RED POLELV CONNEVCTION DIFFERENTIAL TRIP
YELLOW POLETERTIARY OVERCURRENT & EARTHFAULT TRIP
BLUE POLE

NEUTRAL OVERCURRENT TRIP

PRESSURE RELIEF TRIP

BUCHOLZ OLTC TRIP

BUCHOLZ TRAFO TRIP



-X22:7

-BX:9

=D04+C5

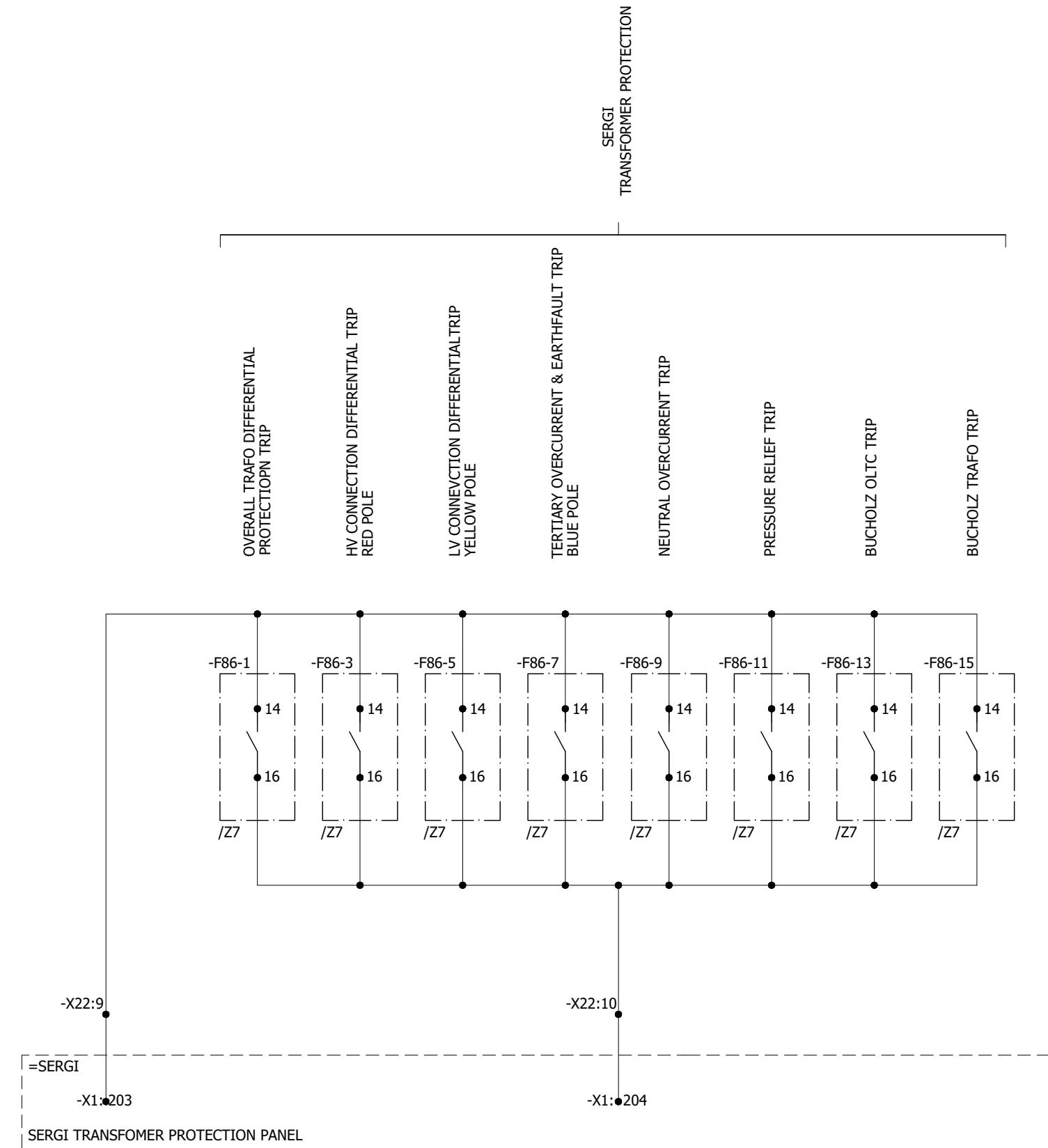
=E08+Q0 CLOSING BLOCK

-X22:8

-BX:10

0	AS BUILT	22.11.2018	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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) =DO4+Q0 CLOSING BLOCK	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

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0	AS BUILT	22.11.2018	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 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) PROTECTION INTER-CIRCUITS	Drawing no. P60194-E-DTR-SC-002	
									Project no. P-60194	
REV.	DESCRIPTION	DATE	DRAWER						Sheet type PA6	Sheet no. 39
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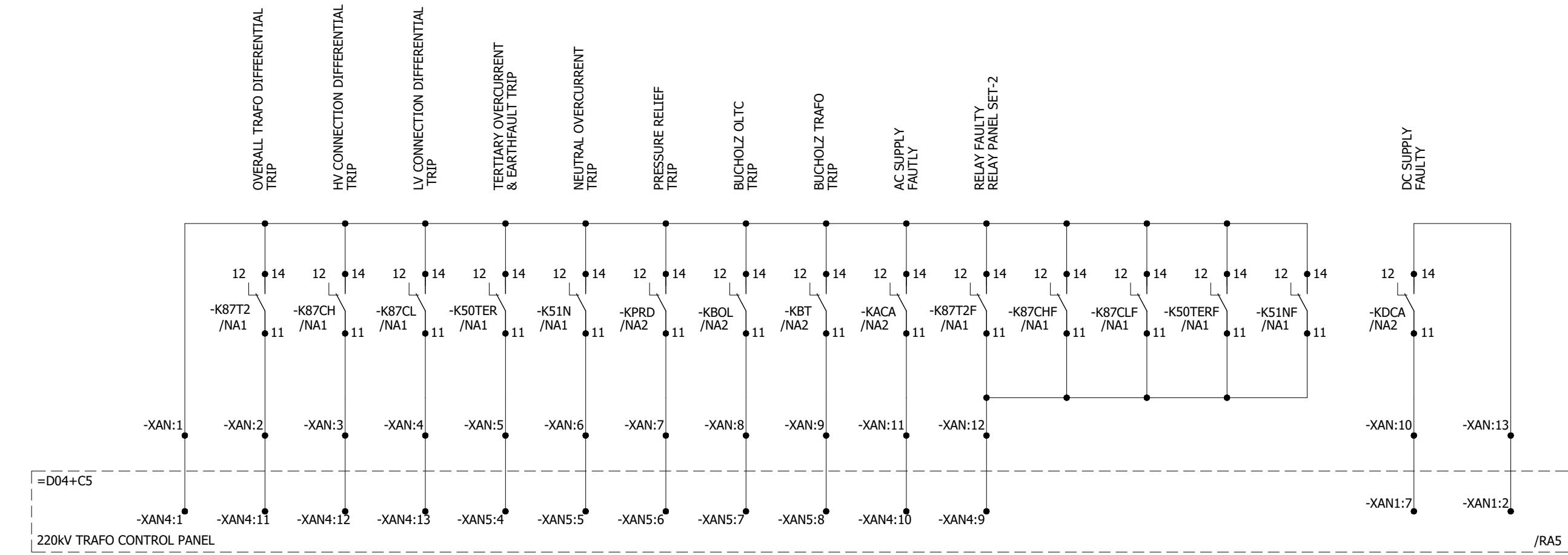
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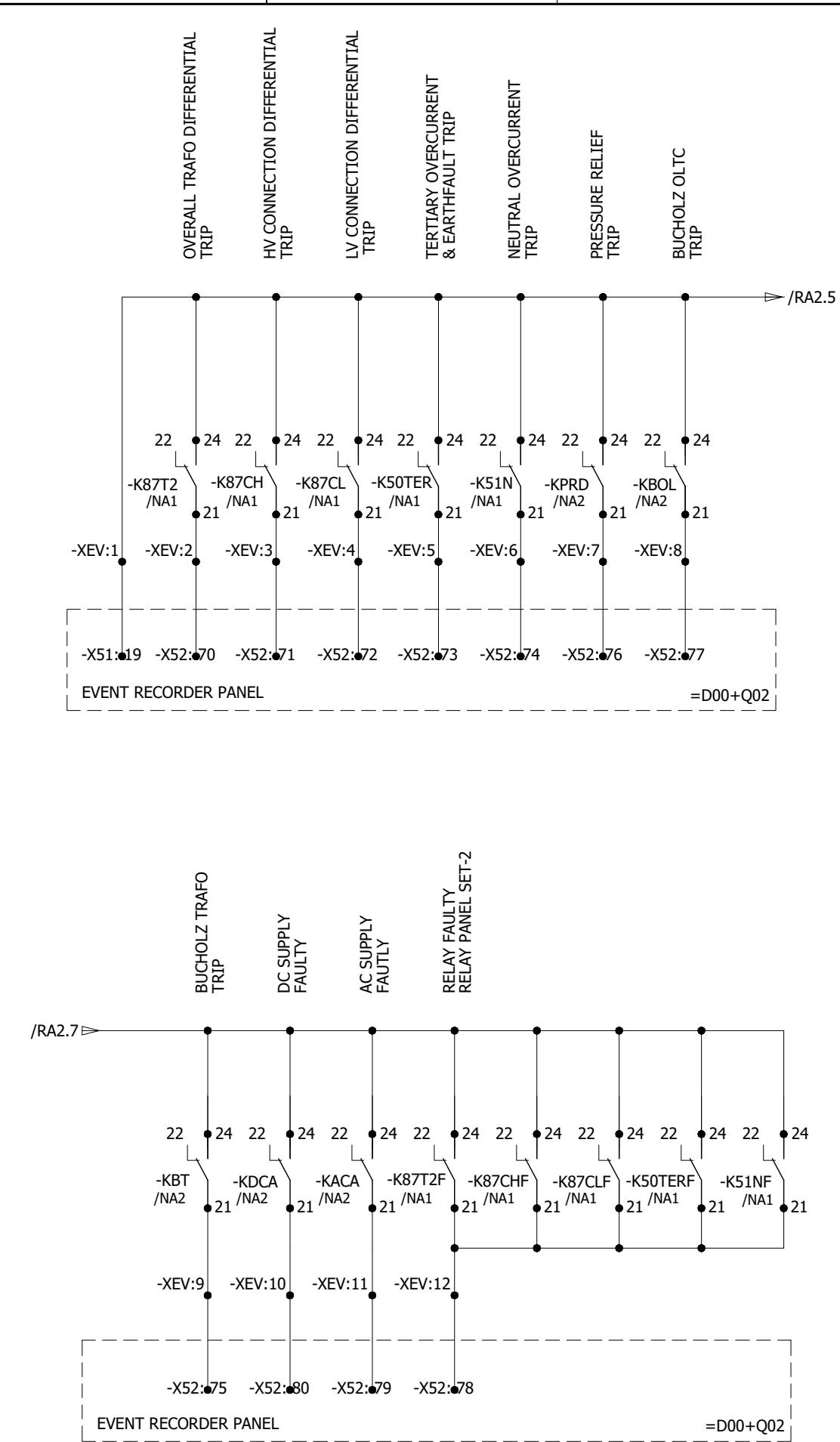
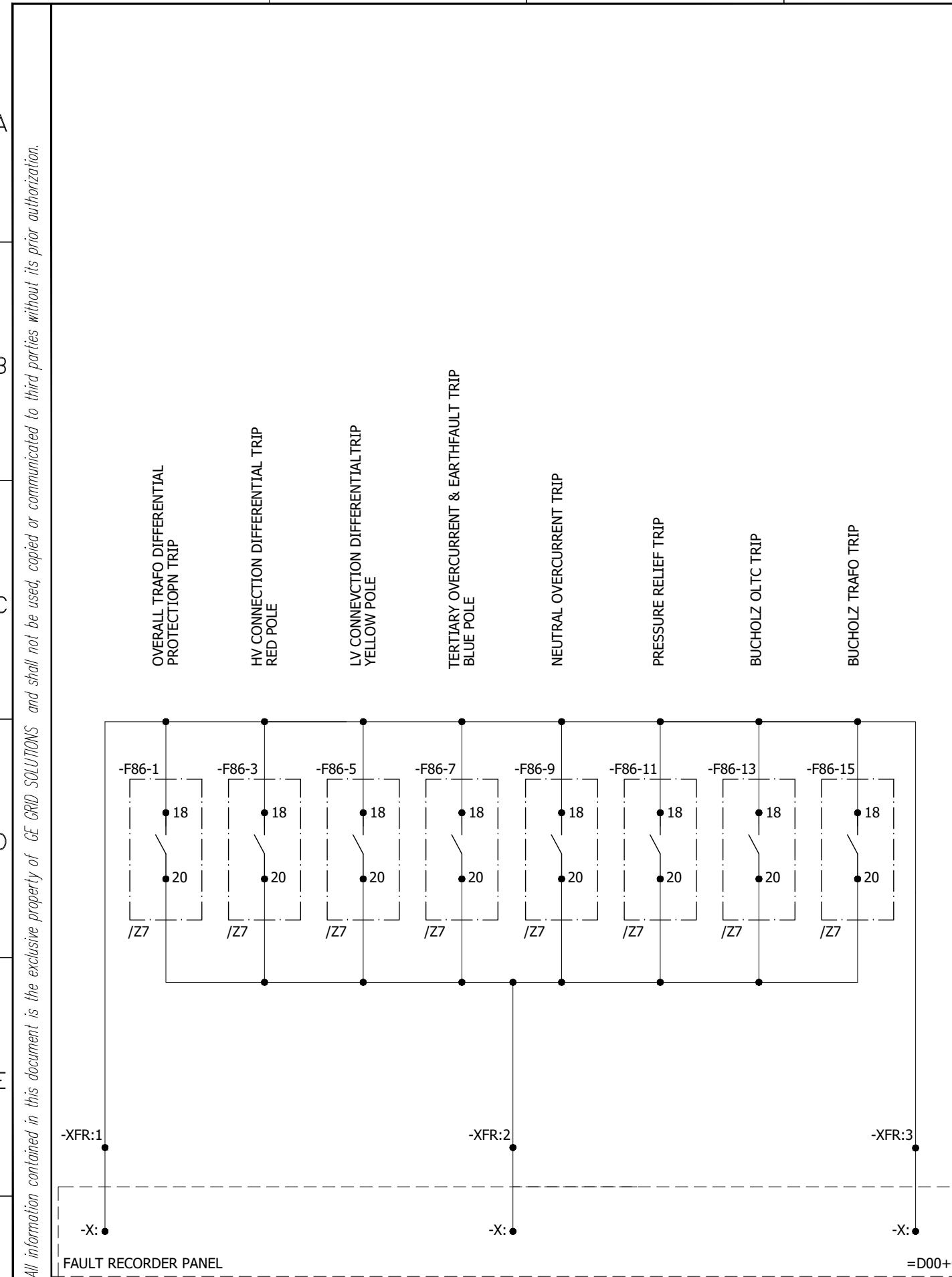
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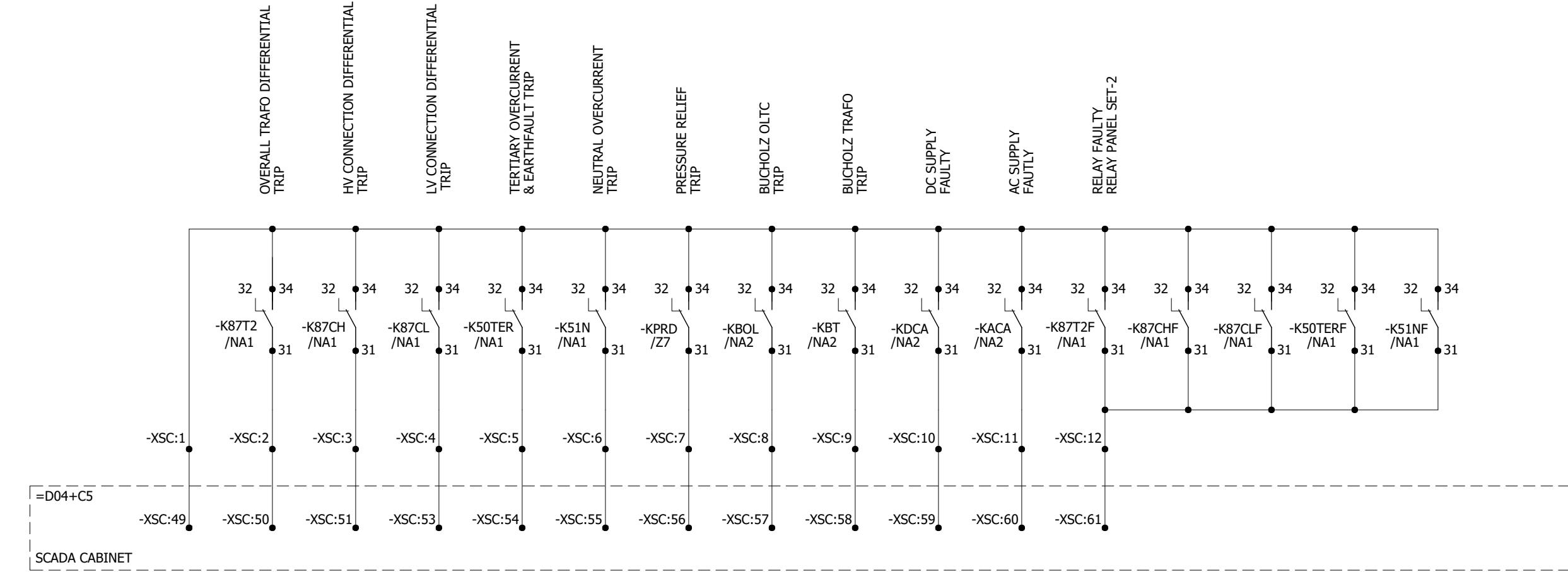


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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA1	Sheet no. 40



0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPEPSOL 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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) EVENT & FAULT RECORDER CIRCUITS	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA2	Sheet no. 41
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  7-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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) SCADA CIRCUIT	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA3	Sheet no. 42
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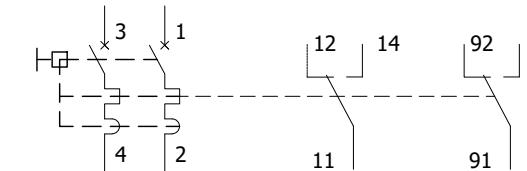
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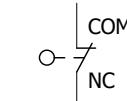
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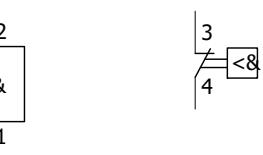
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-F103	D.6	F.6	
-F201	E.2	F.2	
-F202	E.3	F.2	
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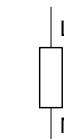
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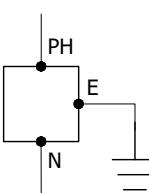
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-H100	D.3
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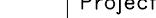
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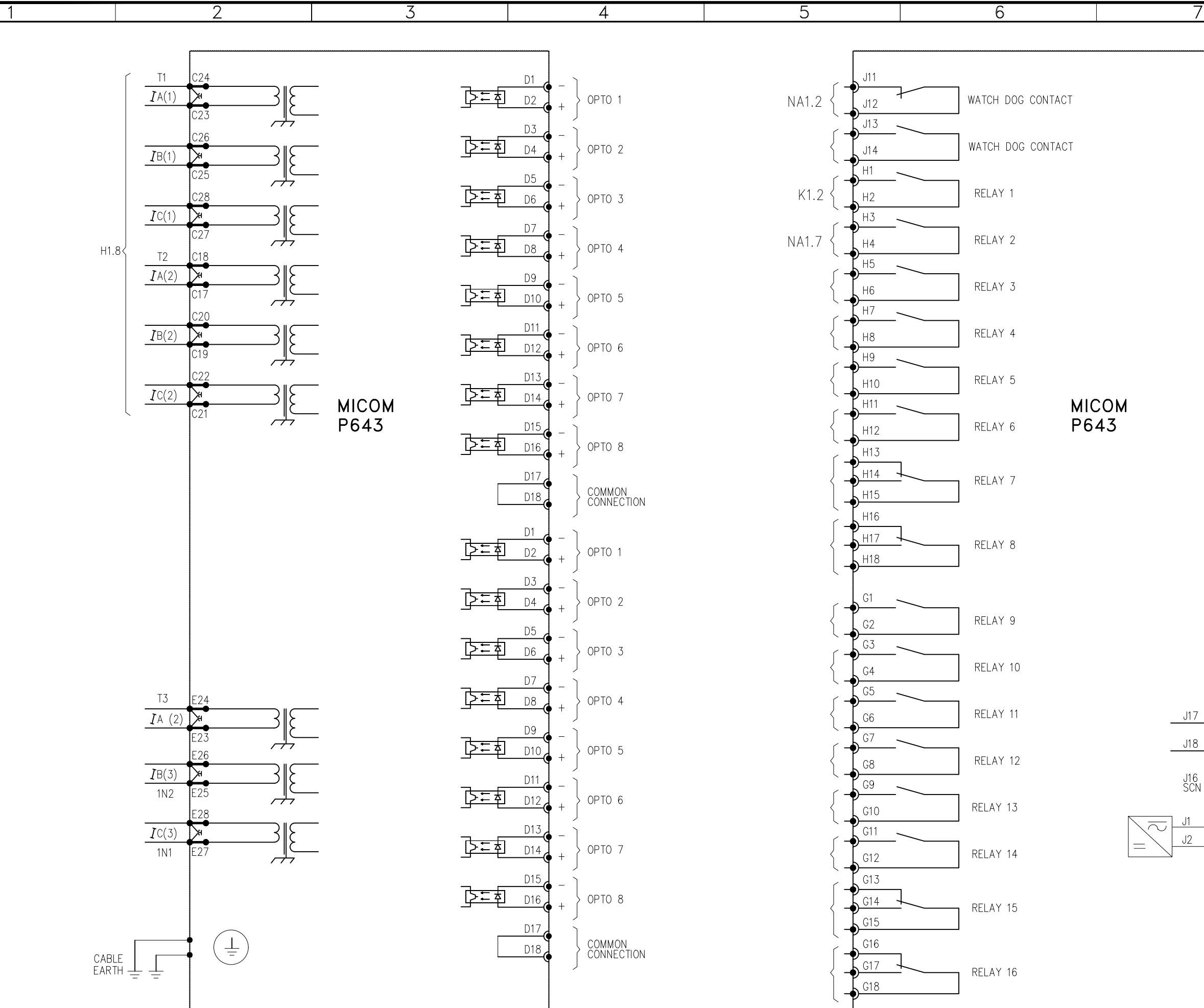


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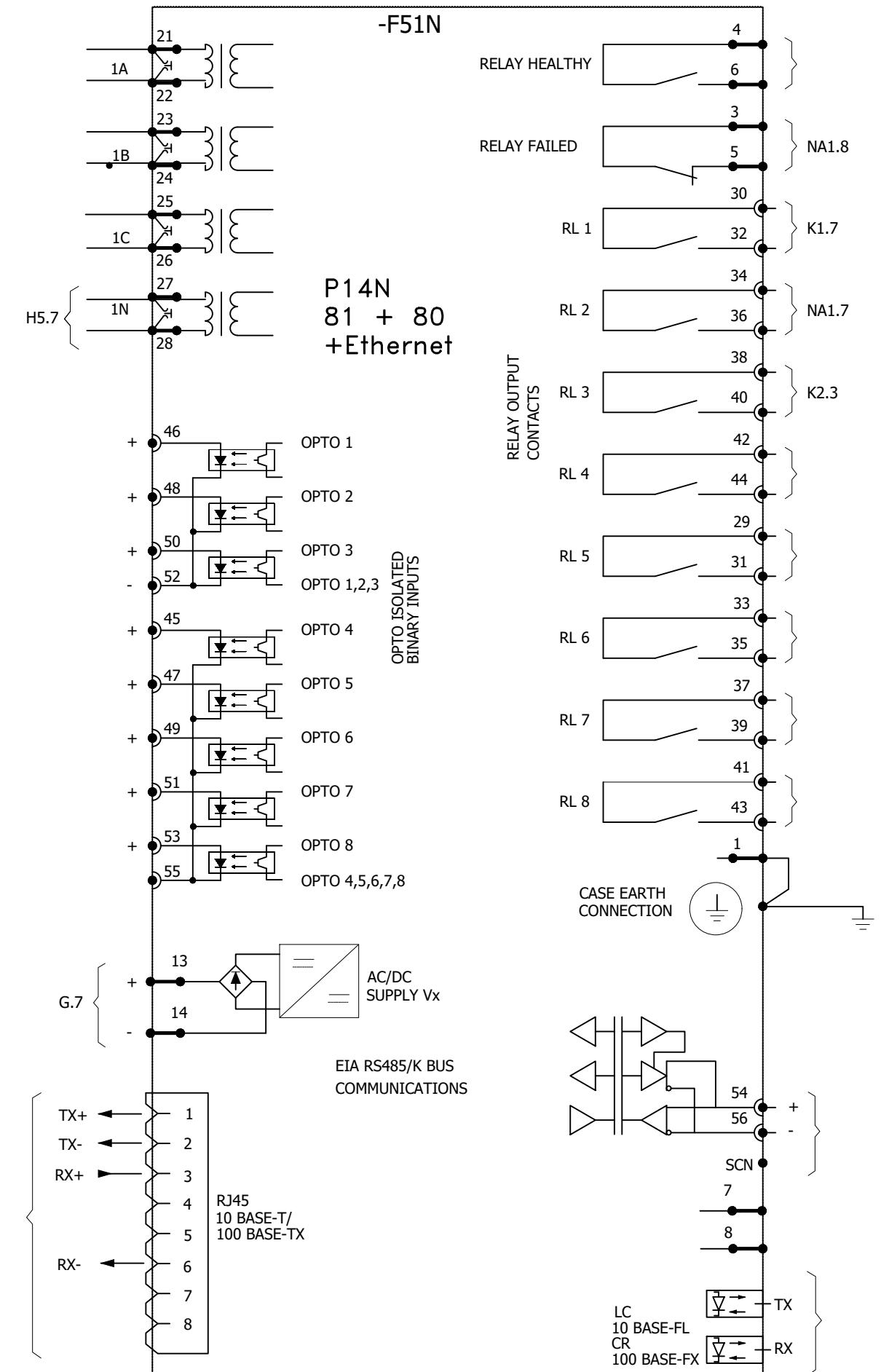
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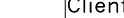
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									Project no. P-60194	
REV.	DESCRIPTION	DATE	DRAWER						Sheet type Z1	Sheet no. 43



0	AS BUILT		22.11.2018	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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) COMPONENT DIAGRAM	Drawing no. P60194-E-DTR-SC-002	
REV.	DESCRIPTION		DATE	DRAWER					Project no. P-60194	Sheet type Z2	Sheet no. 44
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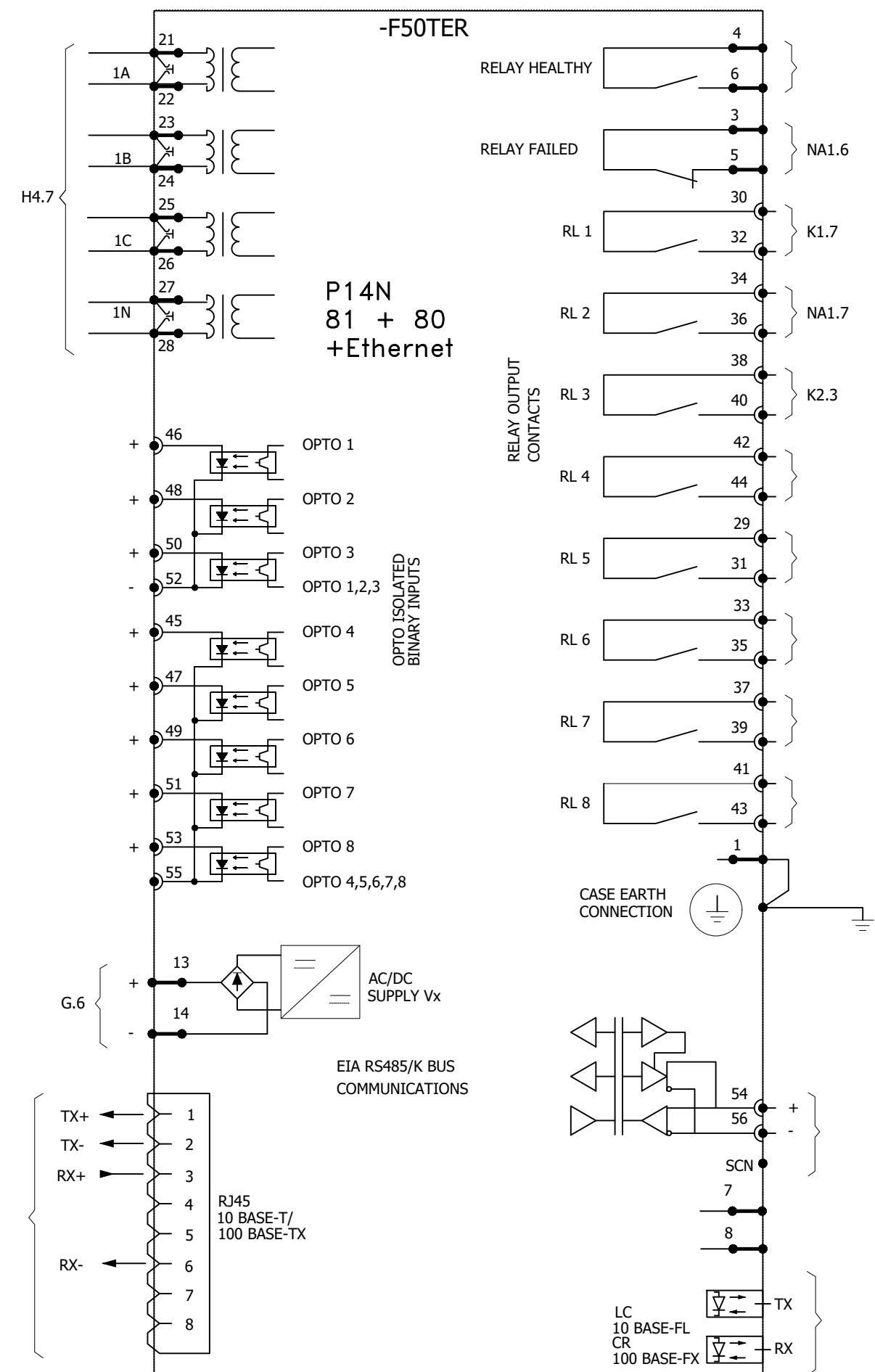
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0	AS BUILT	22.11.2018	ASJ	Manufacturer  EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) COMPONENT DIAGRAM	Drawing no. P60194-E-DTR-SC-002
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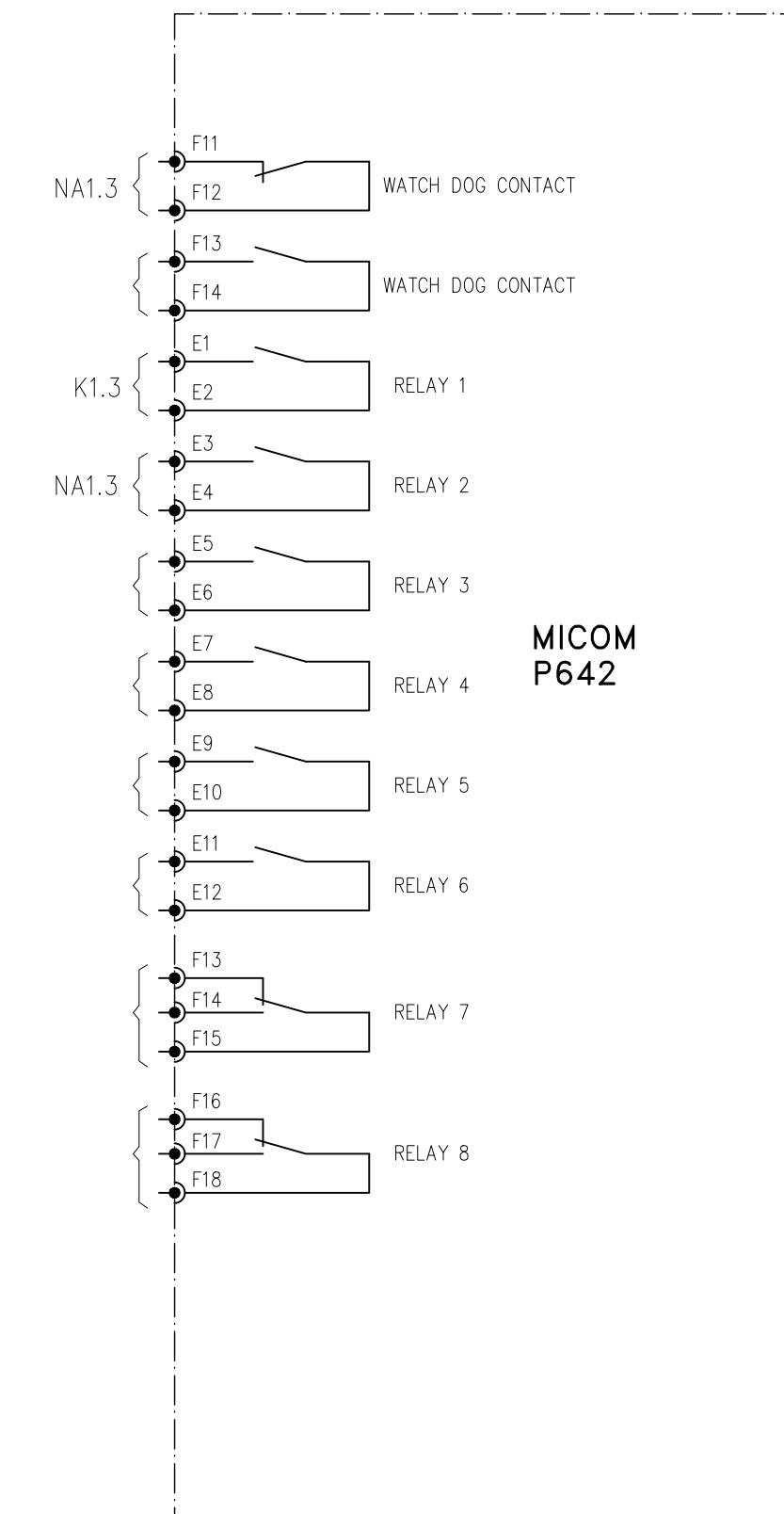
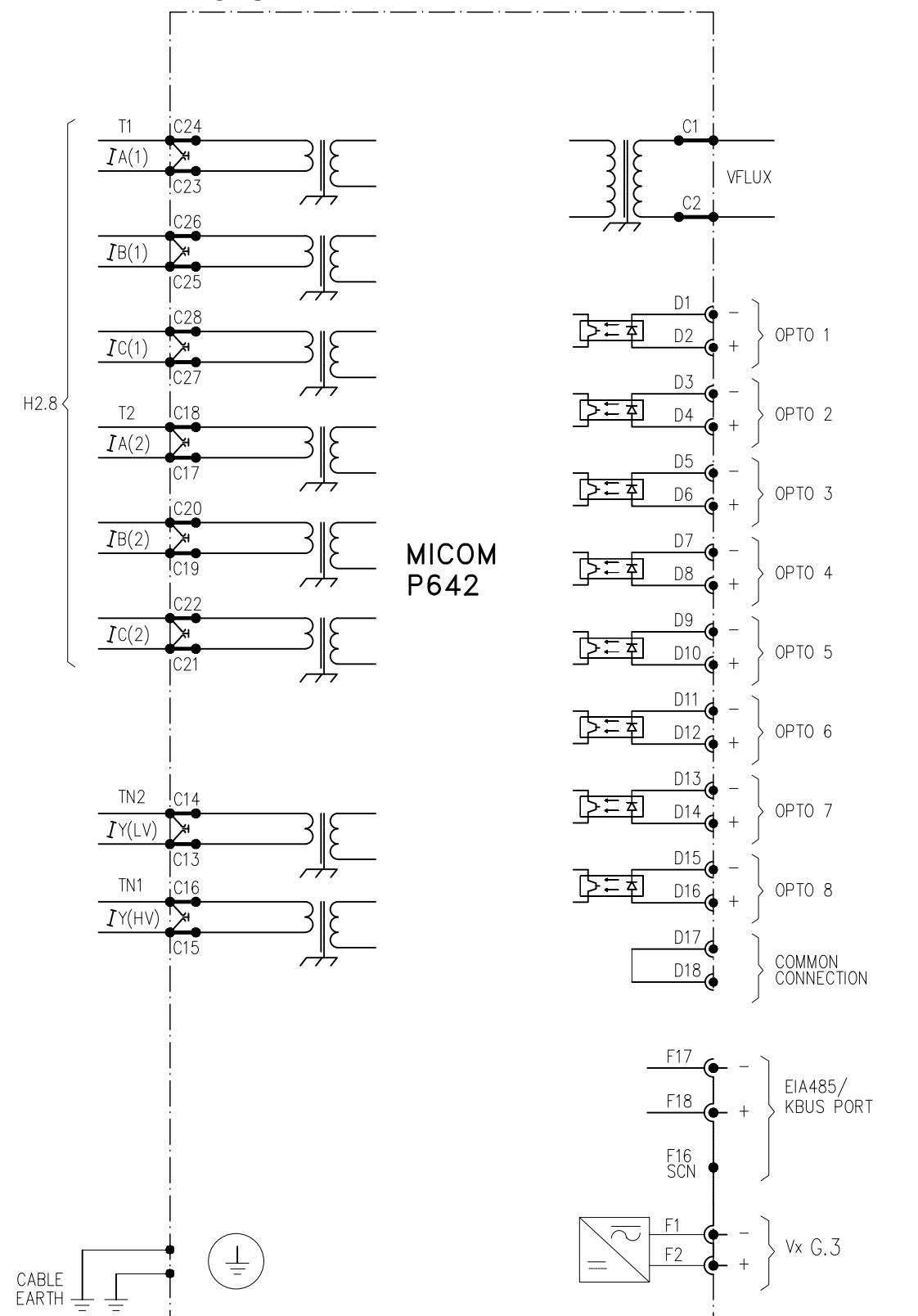
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									Sheet type Z4
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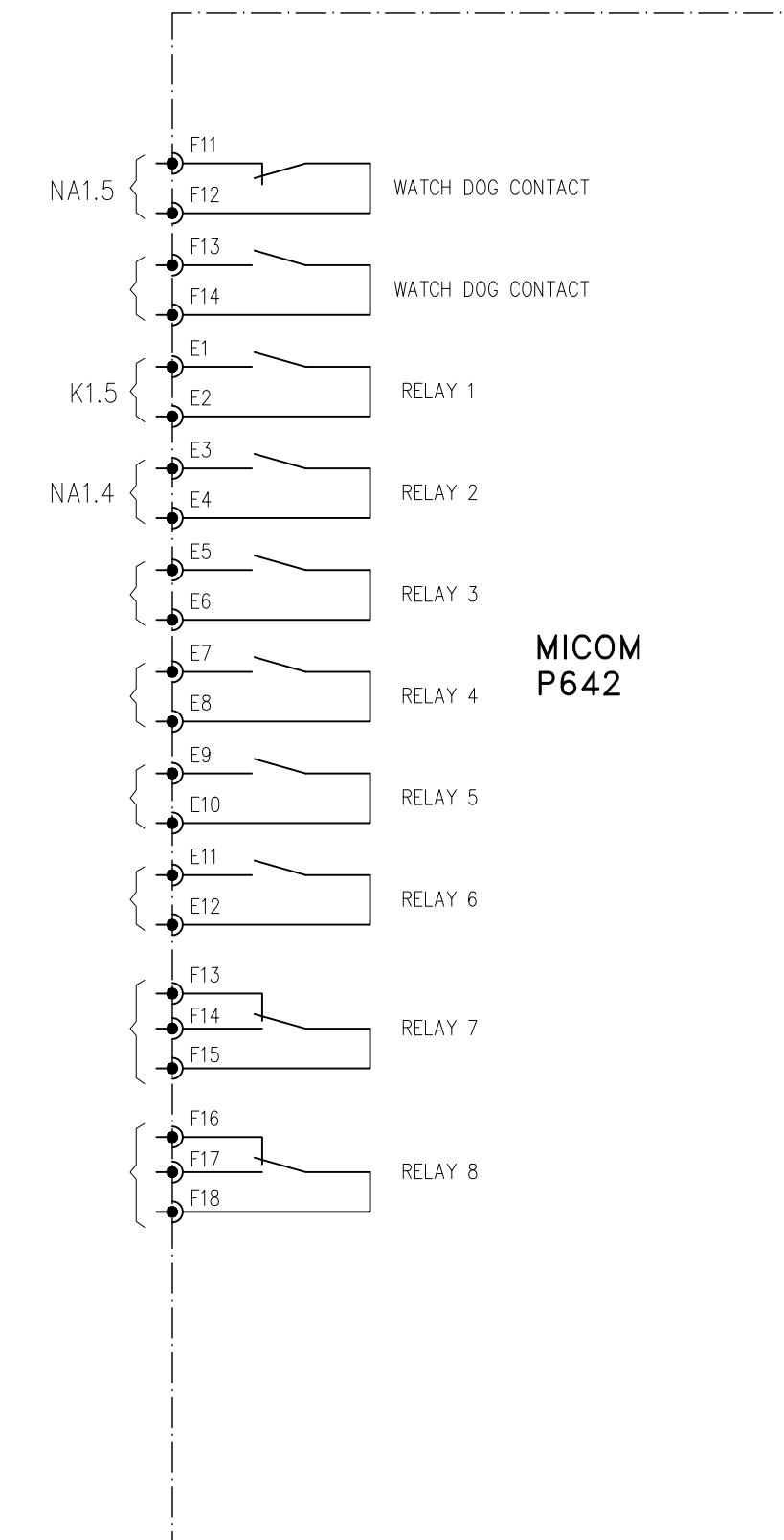
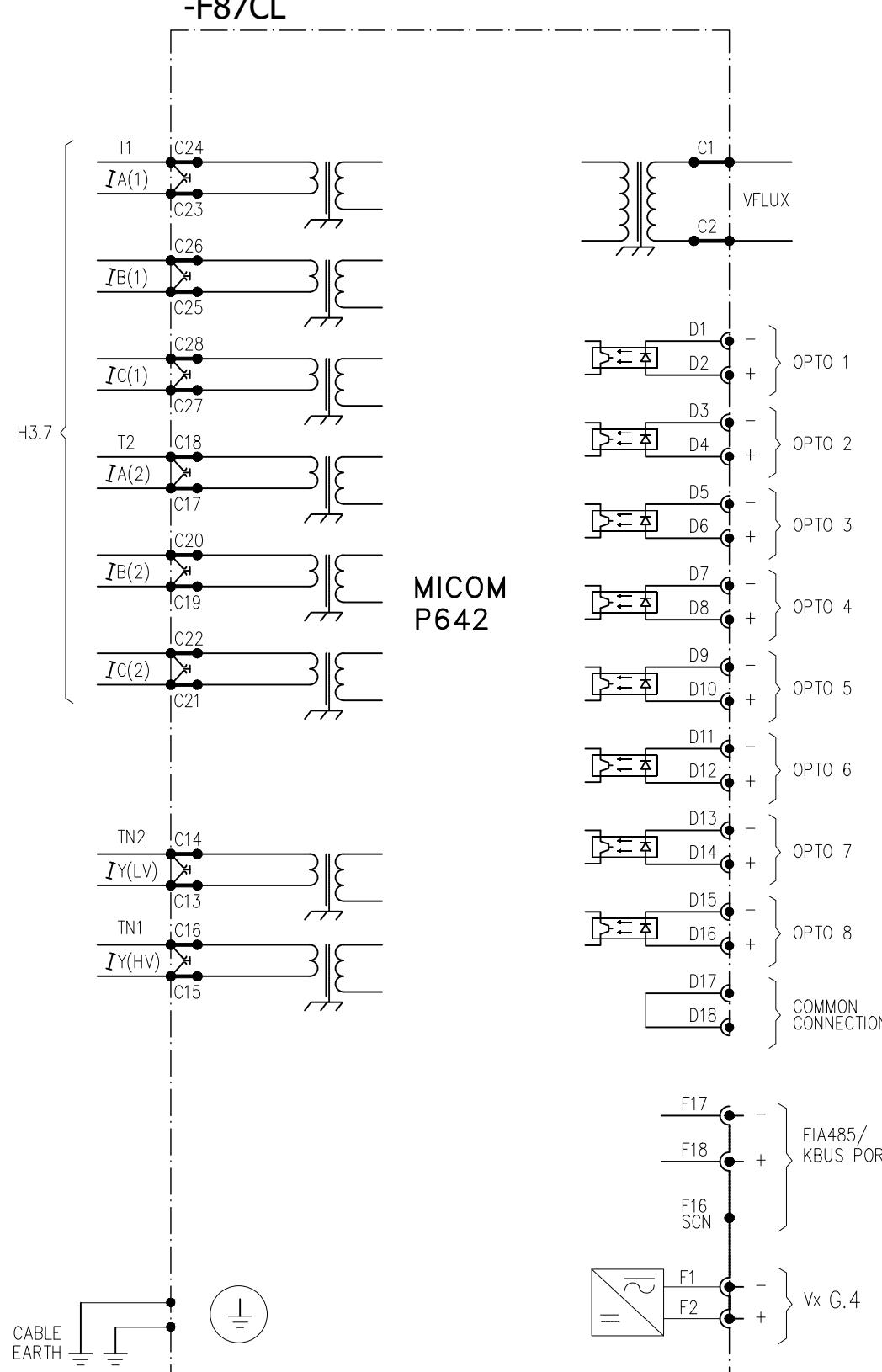
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type Z5

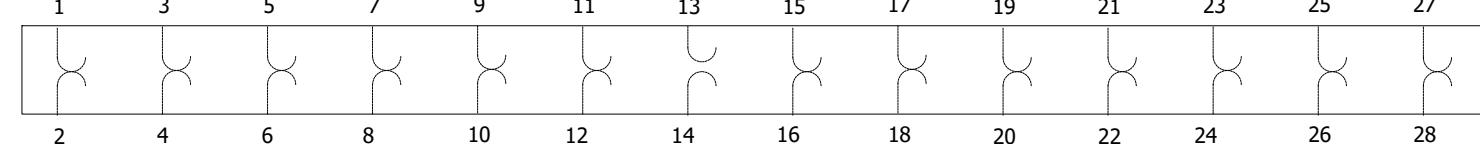
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-F87CL

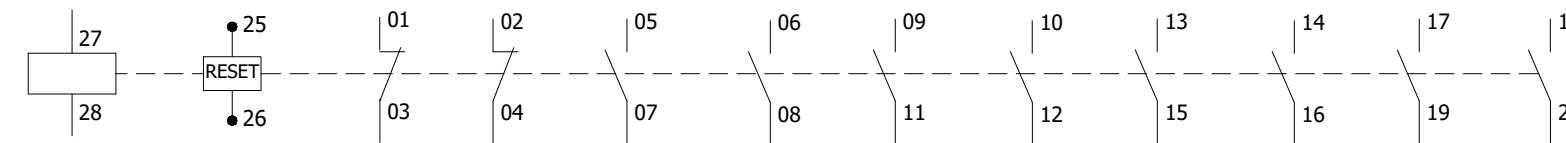


A
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0	AS BUILT	22.11.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV TRAFO RELAY SET-2 PANEL (=D09+R4) COMPONENT DIAGRAM	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type Z6
									Sheet no. 48



XT87T2	H1.6				K1.2	K1.2	G.2	G.2				H1.6
XT50TER	H4.6				K1.6	K1.6	G.6	G.6				H4.6
XT51N					K1.7	K1.7	G.7	G.7		H5.6		
XT87CH	H2.6				K1.3	K1.3	G.3	G.3				H2.6
XT87CL	H3.6				K1.5	K1.5	G.3	G.3				H3.6



F86-1	K1-2	O1-2	PA5-3		K11-2	K11-3	K11-3	K31-3		PA6-3	PA1-3	RA2-1
F86-2	K1-2	O1-2	PA4-3	PA3-3	K21-2	K21-3	K21-3	K41-3		PA3-3	PA2-3	
F86-3	K1-6	O1-3	PA5-3		K12-2	K12-3	K12-3	K31-3		PA6-3	PA1-3	RA2-1
F86-4	K1-6	O1-3	PA4-3	PA3-4	K22-2	K22-3	K22-3	K41-3		PA3-3	PA2-3	
F86-5	K1-7	O1-3	PA5-4		K12-4	K12-4	K12-5	K31-6		PA6-4	PA1-4	RA2-2
F86-6	K1-8	O1-4	PA4-4	PA3-4	K22-4	K22-4	K22-5	K41-6		PA3-4	PA2-4	
F86-7	K1-3	O1-4	PA5-4		K11-4	K11-4	K11-5	K31-3		PA6-4	PA1-4	RA2-2
F86-8	K1-4	O1-4	PA4-4	PA3-4	K21-4	K21-4	K21-5	K41-3		PA3-4	PA2-4	
F86-9	K1-4	O1-5	PA5-5		K11-6	K11-6	K11-7	K31-4		PA6-5	PA1-5	RA2-3
F86-10	K1-5	O1-5	PA4-5	PA3-5	K21-6	K21-6	K21-7	K41-4		PA3-5	PA2-5	
F86-11	K2-2	O1-6	PA5-5		K12-6	K12-6	K12-7	K31-6		PA6-5	PA1-5	RA2-3
F86-12	K2-3	O1-6	PA4-5	PA3-5	K22-6	K22-6	K22-7	K41-6		PA3-5	PA2-5	
F86-13	K2-4	O1-6	PA5-5		K13-2	K13-3	K13-3	K32-2		PA6-5	PA1-5	RA2-3
F86-14	K2-5	O1-7	PA4-5	PA3-6	K23-2	K23-3	K42-2	K42-6		PA3-5	PA2-5	
F86-15	K2-7	O1-7	PA5-6		K13-4	K13-4	K13-5	K32-3		PA1-6	PA1-6	RA2-4
F86-16	K2-7	O1-7	PA4-6	PA3-6	K23-4	K23-4	K23-5	K42-3		PA1-6	PA2-6	

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0	AS BUILT	22.11.2018	ASJ	Manufacturer  7-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 220KV TRAFO RELAY SET-2 PANEL (=D09+R4) COMPONENT DIAGRAM	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type Z7	Sheet no. 49
1	2	3	4	5	6	7	8				