



Grid Solutions

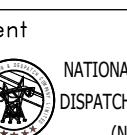
A GE and Alstom joint venture

220kV/132kV GIS SUBSTATION GHAZI ROAD , LAHORE

220kV TRAFO RELAY SET-2 PANEL

=D03+R4

SCHEMATIC DRAWINGS

	1	2	3	4	5	6	7	8				
	PAGE NO.	SHEET NAME	SHEET DESCRIPTION			ISSUE / REVISION						
						A	B	C	D	E	F	01
A All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.	01	A	Cover Sheet			X	X	X	X	X	X	
	02	AA1	List Of Contents			X	X	X	X	X	X	
	03	AA2	List Of Contents			X	X	X	X	X	X	
	04	AB	Symbol and Legends			X	X	X	X	X	X	
	05	AC1	Component List			X	X	X	X	X	X	
	06	AC2	Component List			X	X	X	X	X	X	
	07	AD	Panel View			X	X	X	X	X	X	
	08	AE	Bay Concept & Protection Logice			X	X	X	X	X	X	
	09	D	AC Supply Distribution Circuit			X	X	X	X	X	X	
	10	E	220DC Supply Distribution Circuit			X	X	X	X	X	X	
	11	E1	110DC Supply Distribution Circuit			X	X	X	X	X	X	
	12	F	AC/DC Supply Failure Circuit			X	X	X	X	X	X	
	13	G	Relay Control & Supply Circuit			X	X	X	X	X	X	
	14	H1	Overall Trafo Differential			X	X	X	X	X	X	
	15	H2	HV Connection Differential Protection Circuit			X	X	X	X	X	X	
	16	H3	LV Connection Differential Protection Circuit			X	X	X	X	X	X	
	17	H4	Tertiary OverCurrent & EarthFault Circuit			X	X	X	X	X	X	
	18	H5	Neutral OverCurrent Circuit			X	X	X	X	X	X	
	19	K1	Protection Trips			X	X	X	X	X	X	
	20	K2	Protection Trips			X	X	X	X	X	X	
	21	K11	Trip Circuit For Coil-1 (D04-Q0)			X	X	X	X	X	X	
	22	K12	Trip Circuit For Coil-1 (D04-Q0)			X	X	X	X	X	X	
	23	K13	Trip Circuit For Coil-1 (D04-Q0)			X	X	X	X	X	X	
	24	K21	Trip Circuit For Coil-2 (D04-Q0)			X	X	X	X	X	X	
	25	K22	Trip Circuit For Coil-2 (D04-Q0)			X	X	X	X	X	X	
	26	K23	Trip Circuit For Coil-2 (D04-Q0)			X	X	X	X	X	X	
	27	K31	Trip Circuit For Coil-1 (E08-Q0)			X	X	X	X	X	X	
	28	K32	Trip Circuit For Coil-1 (E08-Q0)			X	X	X	X	X	X	
	29	K41	Trip Circuit For Coil-2 (E08-Q0)			X	X	X	X	X	X	
	30	K42	Trip Circuit For Coil-2 (E08-Q0)			X	X	X	X	X	X	
	31	NA1	Protection Trips & Relay Faulty			X	X	X	X	X	X	
	32	NA2	Protection Trips & Relay Faulty			X	X	X	X	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 (=D03+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	

	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
A	33	NA3	Protection Trips & Relay Faluty			X	X								
	34	O1	Hand Reset Of Tripping Relays			X	X								
	35	PA1	Protection Inter-Circuits			X	X								
	36	PA2	Protection Inter-Circuits			X	X								
	37	PA3	Protection Inter-Circuits			X	X								
	38	PA4	=E08+Q0 Closing Block			X	X								
	39	PA5	=D08+Q0 Closing Block			X	X								
	40	PA6	Protection Signal to SERGI Panel			X	X								
	41	RA1	Annunciation Circuit			X	X								
	42	RA2	Event & Fault Recorder Circuits			X	X								
B	43	RA3	SCADA CIRCUIT			X	X								
	44	Z1	Component Diagram			X	X								
	45	Z2	Component Diagram			X	X								
	46	Z3	Component Diagram			X	X								
	47	Z4	Component Diagram			X	X								
	48	Z5	Component Diagram			X	X								
	49	Z6	Component Diagram			X	X								
	50	Z7	Component Diagram			X	X								
C															
D															
E															
F															
	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 (=D03+R4) LIST OF CONTANTS	Drawing no. P60194-E-DTR-SC-002					
REV.	DESCRIPTION	DATE	DRAWER									Project no. P-60194	Sheet type AA2	Sheet no. 03	

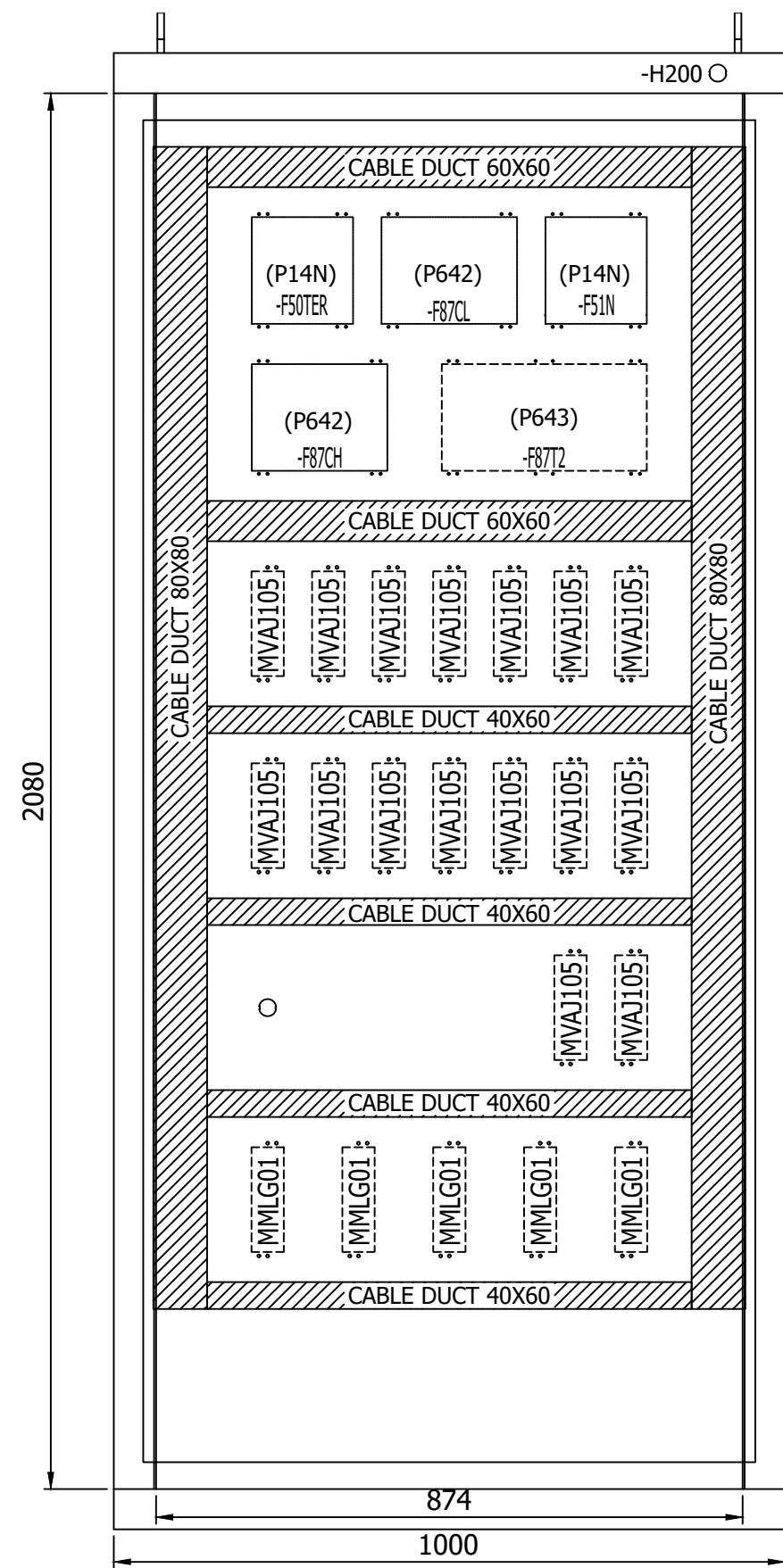
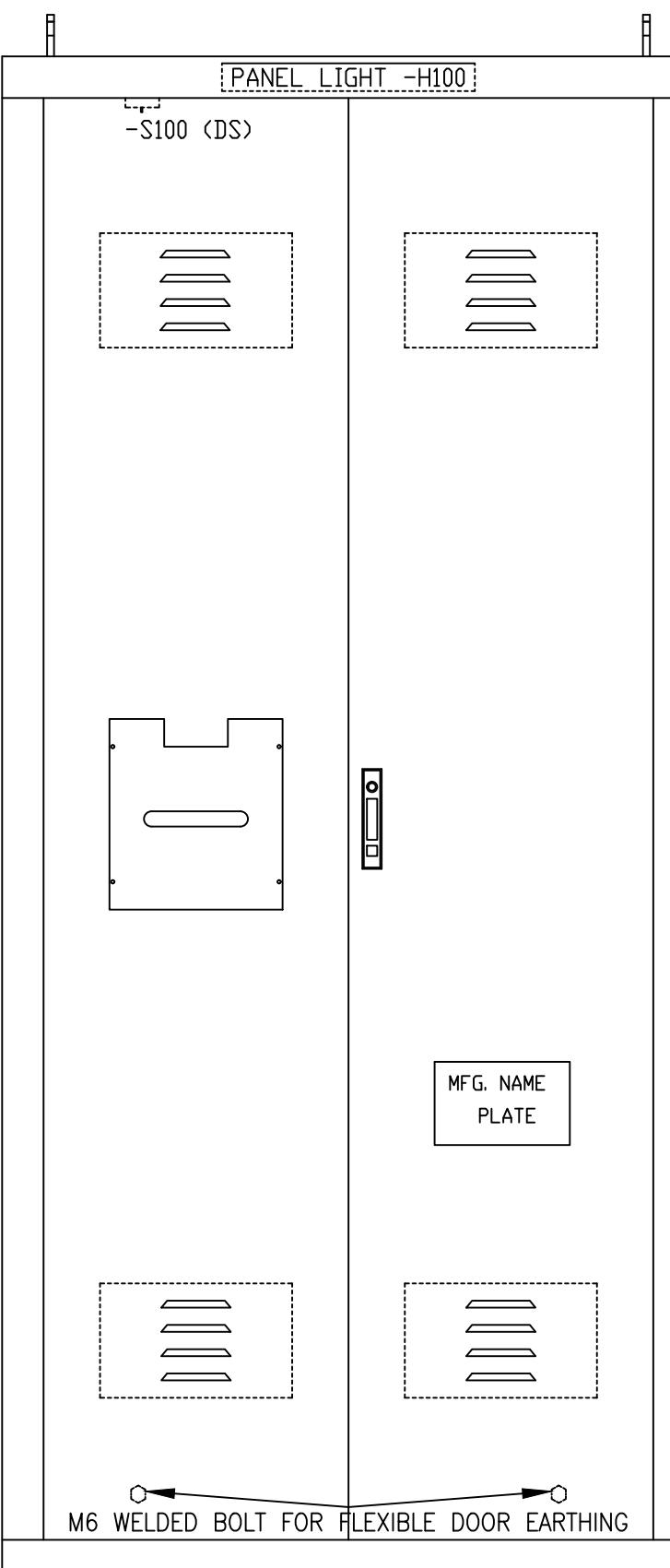
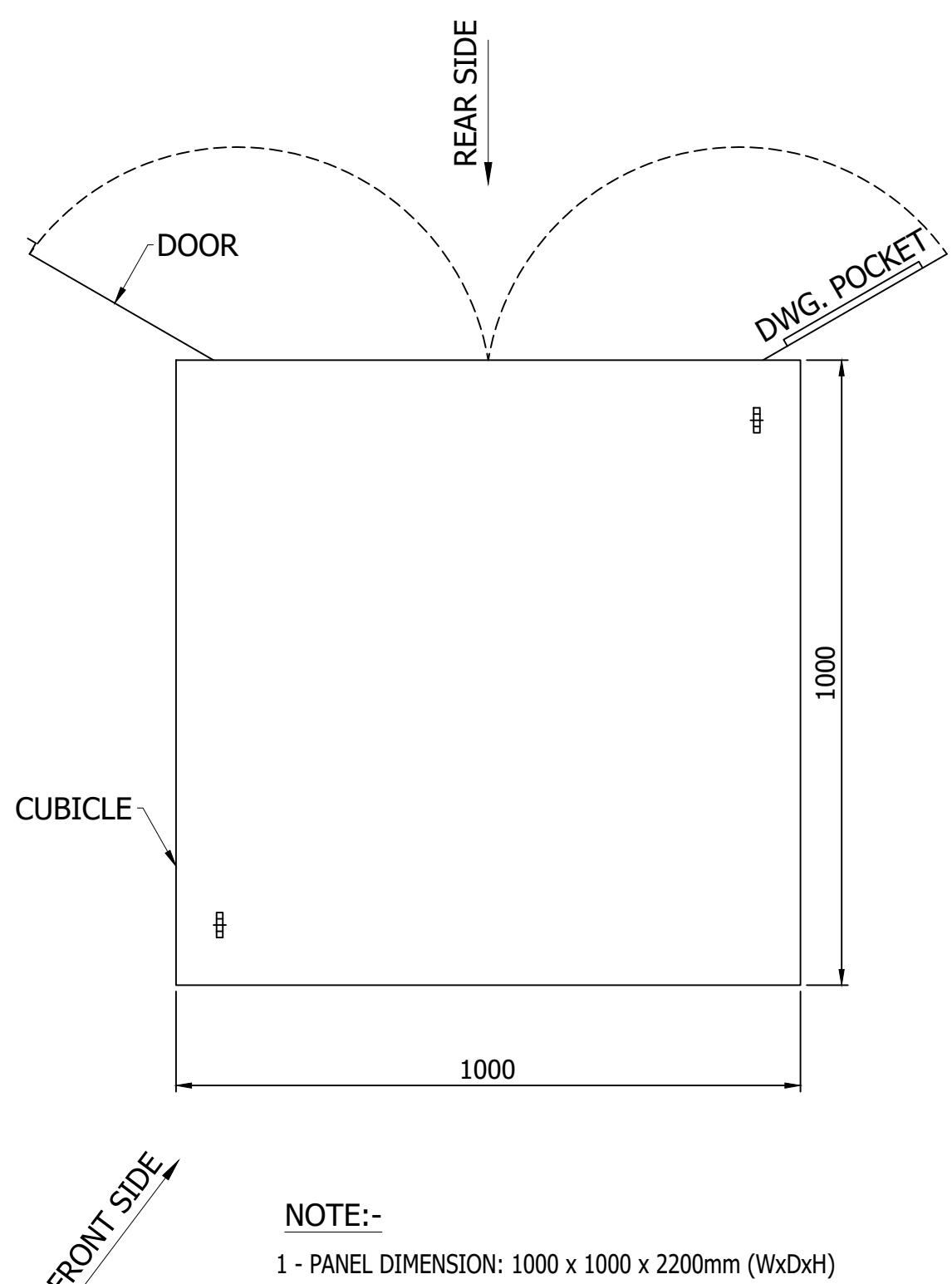
	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A		CIRCUIT BREAKER		MINIATURE CIRCUIT BREAKER		AUXILIARY CONTACTOR NO+NC	21	DISTANCE
B		SWITCH/ISOLATOR		KEY OPERATED SELECTOR SWITCH		AMMETER	24	OVEREXCITATION
C		EARTHING		LIMITED SWITCH		VOLTmeter	25	SYNCHROCHECK
D		SF6 TO 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		OPTO CONTACTS			78	OUT OF STEP
L		RELAY CONTACTS		HOOTER			79	AUTO-RECLOSING
M		AC BELL					85	COMMUNICATION FAILURE
N							87T	TRAFO DIFFERENTIAL
O							87C	DIFFERENTIAL CONNECTION
P							87BB	DIFFERENTIAL BUSBAR

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	22.11.2018	ASJ	Manufacturer EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor 	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D03+R4) SYMBOLA AND LEGENDS	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type AB
									Sheet no. 04

	1	2	3	4	5	6	7	8			
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		
	05	TEST BLOCK		MMLG01, Cortec: MMLG01-R1AA9002D			-XT87T2,-XT87CH,-XT87CL,-XT50TER,-XT51N		GE GRID SOLUTIONS		
D	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		
	02	CONTROL MCB - PANEL LIGHT & HEATER		G62C02+(CAH2),2-Pole, Ratings: 2A, 230VAC, 6kA @ 230VAC, 2 C/O Contacts			-F101, -102		GE		
E	01	CONTROL ELCB - PANEL SOCKET		DM100C216/030+(CAH2),2-Pole, Ratings: 16A, 30mA, 230VAC, 2 C/O Contacts			-F103		GE		
	04	CONTROL MCB - DC DISTRIBUTION		EP102UCC04+(CAH2),2-Pole, Ratings: 4A, 220VDC, 10kA, 2 C/O Contacts			-F201 ~ - F204		GE		
F	01	CONTROL MCB - 110VDC DISTRIBUTION		EP102UCC04+(CAH2),2-Pole, Ratings: 4A, 110VDC, 10kA, 2 C/O Contacts			-F205		GE		
	01	PUSHBUTTON - HAND TRIP RELAY RESET		YS-AP1-2-40-B-D-W, Black button, Spring return, 2-Pole, Ratings: 12A, 220VDC			-S86		YOUNGSUNG		
G	01	INDICATION LAMP - DC SUPPLY FAILURE		YS-PL-2-AL-22-R-W, Type: Integrated LED , Color : RED , Supply : 230VAC @ 50Hz			-H200		YOUNGSUNG		
	19	AUXILIARY CONTACTOR		PRC4M40DCML, Coil Voltage: 220VDC, 4 C/O Contacts -K87T2, -K87T2F, -K87CH, -K87CHF, -K87CL, -K87CLF -K50TER, -K50TERF, -K51N, -K51NF, -KPRD, -KBOL -KBT, -KDCA, -KACA, -KDCM, -KAC, -KDC1, -KDC2			GE				
H	01	AUXILIARY CONTACTOR		MCRC022ATWN-B+MARN211AT, Coil Voltage: 220VDC, 3NO+3NC Contacts			-KCS		GE		
	02	AUXILIARY CONTACTOR		PRC4M40ANL, Coil Voltage: 230VAC, 4 C/O Contacts			-KDC, -KACM		GE		
I	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 (=D03+R4) COMPONENT LIST	Drawing no. P60194-E-DTR-SC-002
	REV.	DESCRIPTION		DATE	DRAWER				Project no. P-60194	Sheet type AC1	Sheet no. 05

1 2 3 4 5 6 7 8

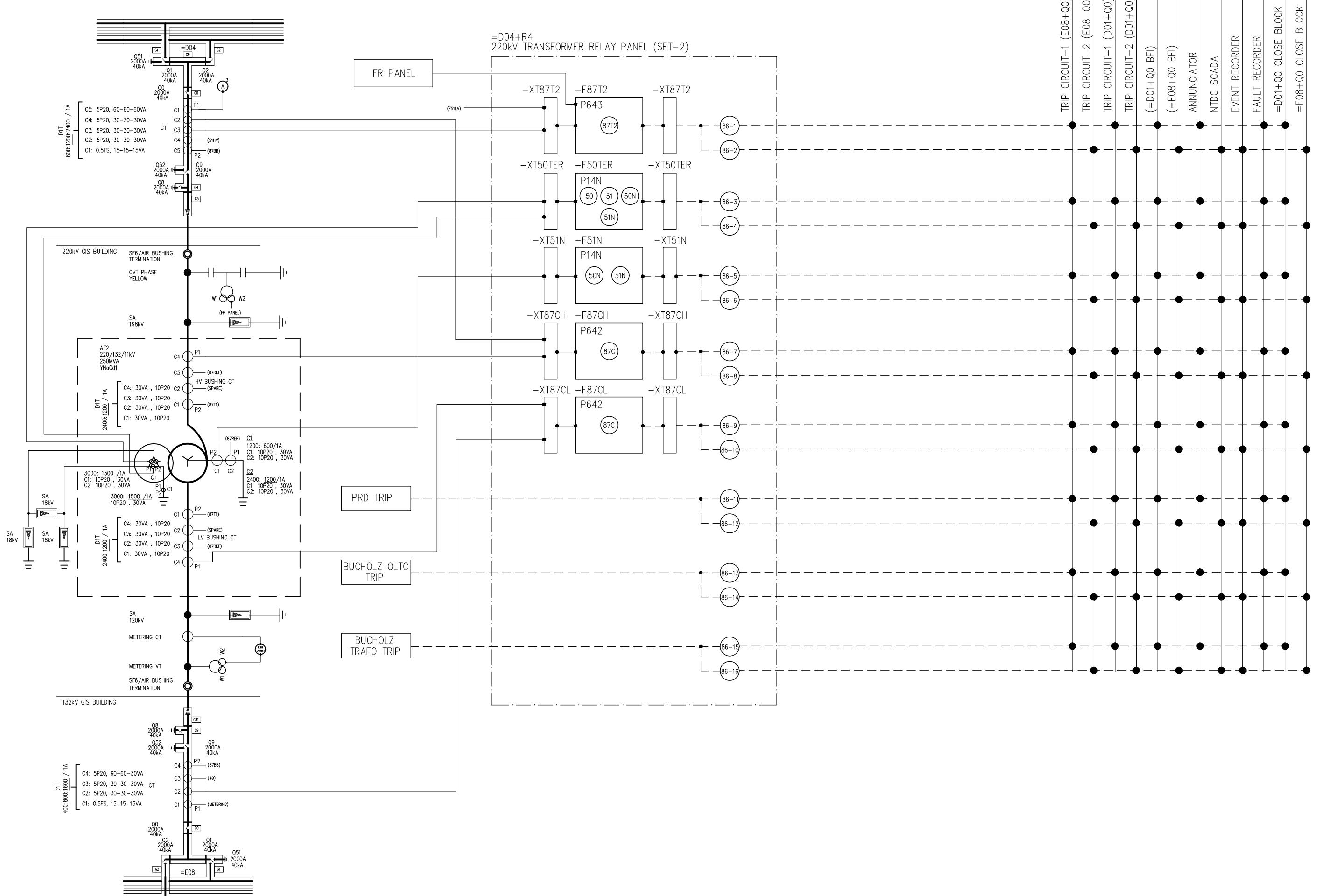
FRONT VIEWBACK VIEW WITH DOORTOP VIEW**NOTE:-**

- 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.

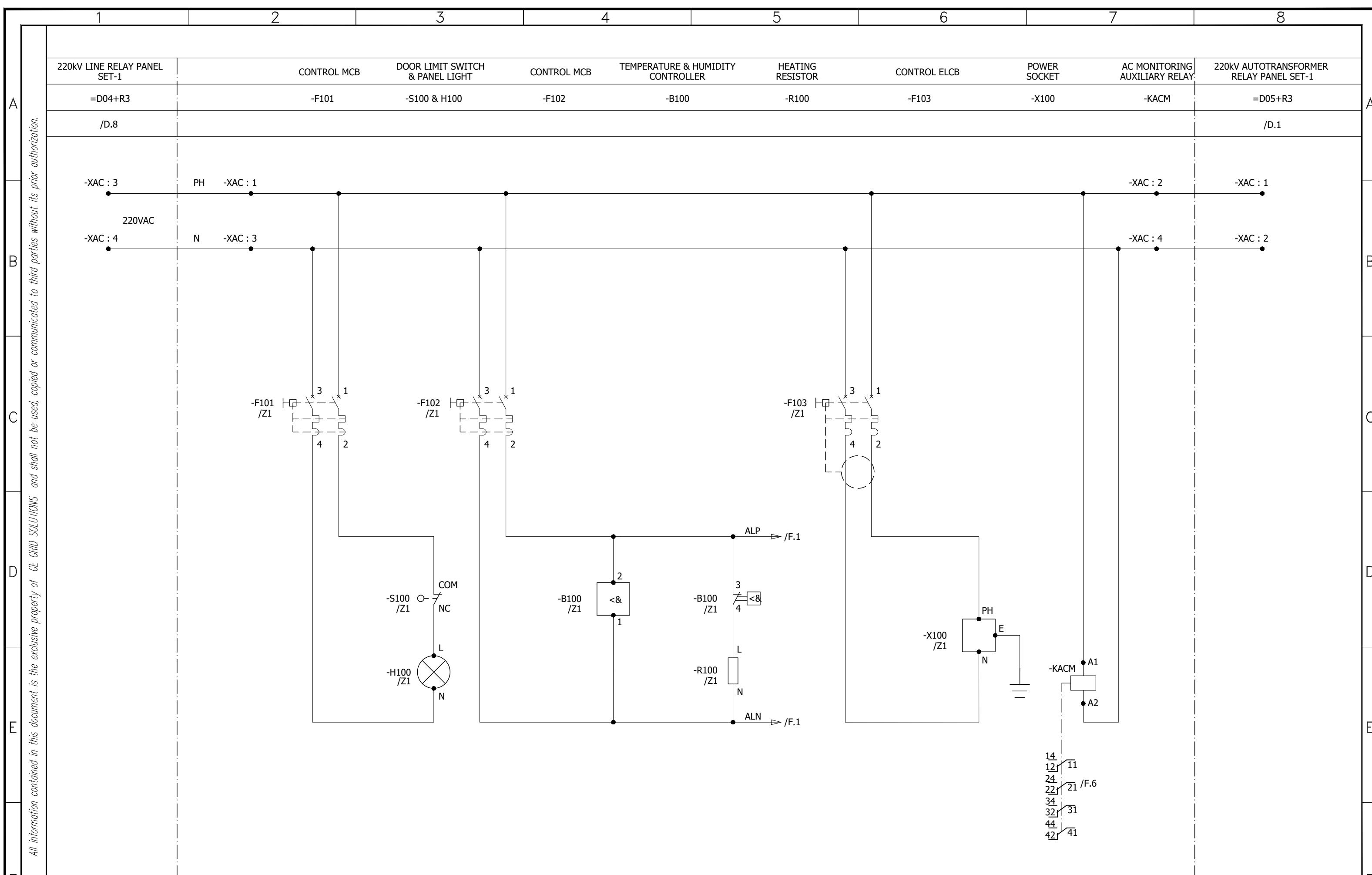
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	22.11.2018	ASJ	Manufacturer EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan
REV.	DESCRIPTION	DATE	DRAWER	Contractor Grid Solutions A GE and Alstom joint venture
				Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)

Project	Title	Drawing no.
220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	220KV TRAFO RELAY SET-2 PANEL (=D03+R4) PANEL VIEW	P-60194-E-DTR-SC-003
Project no.	Sheet type	Sheet no.
P-60194	AD	07

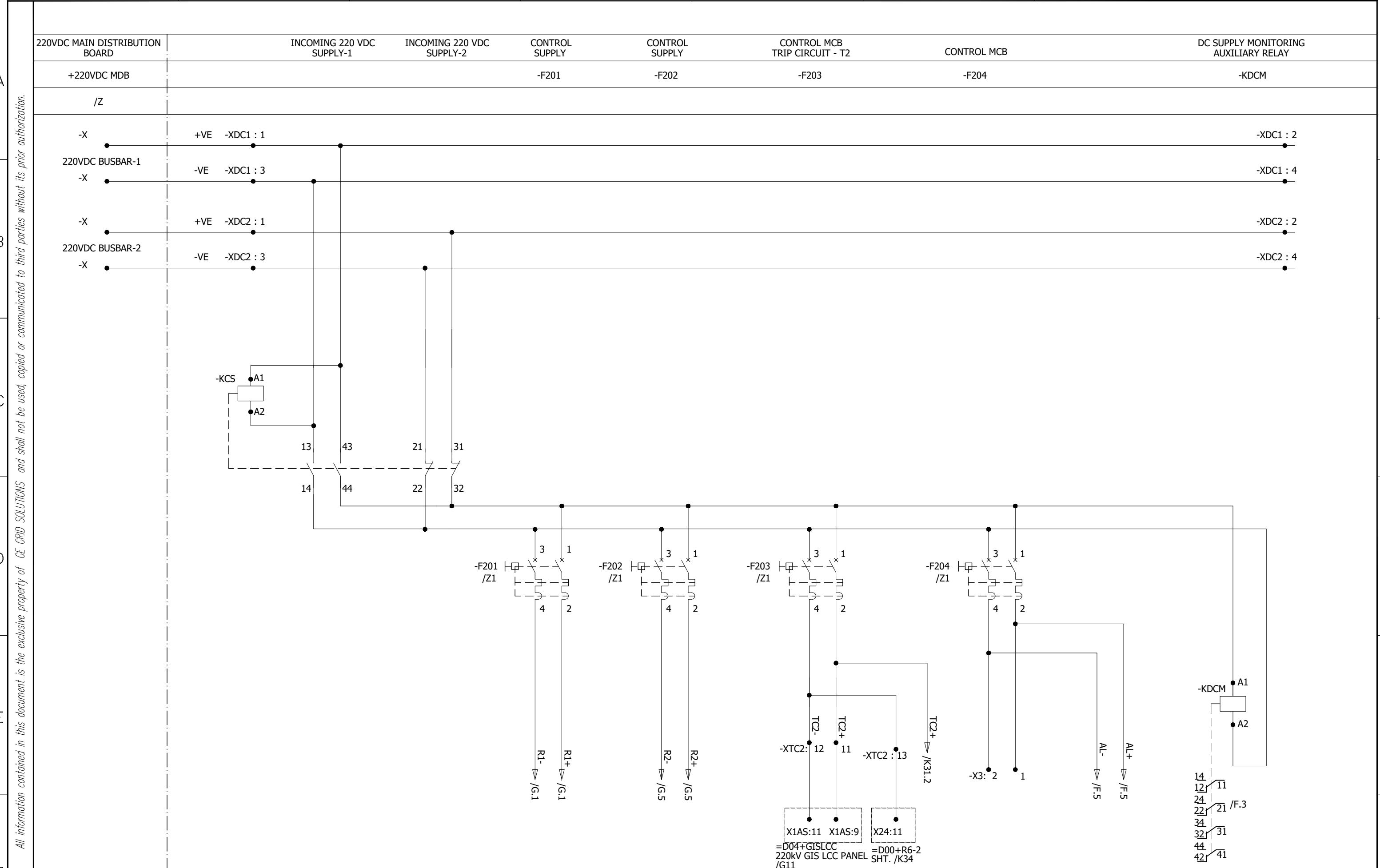


0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
				EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	220kV TRANSFORMER RELAY SET-2 PANEL (=D03+R4) BAY CONCEPT & PROTECTION LOGICS	P-60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AE	Sheet no. 08



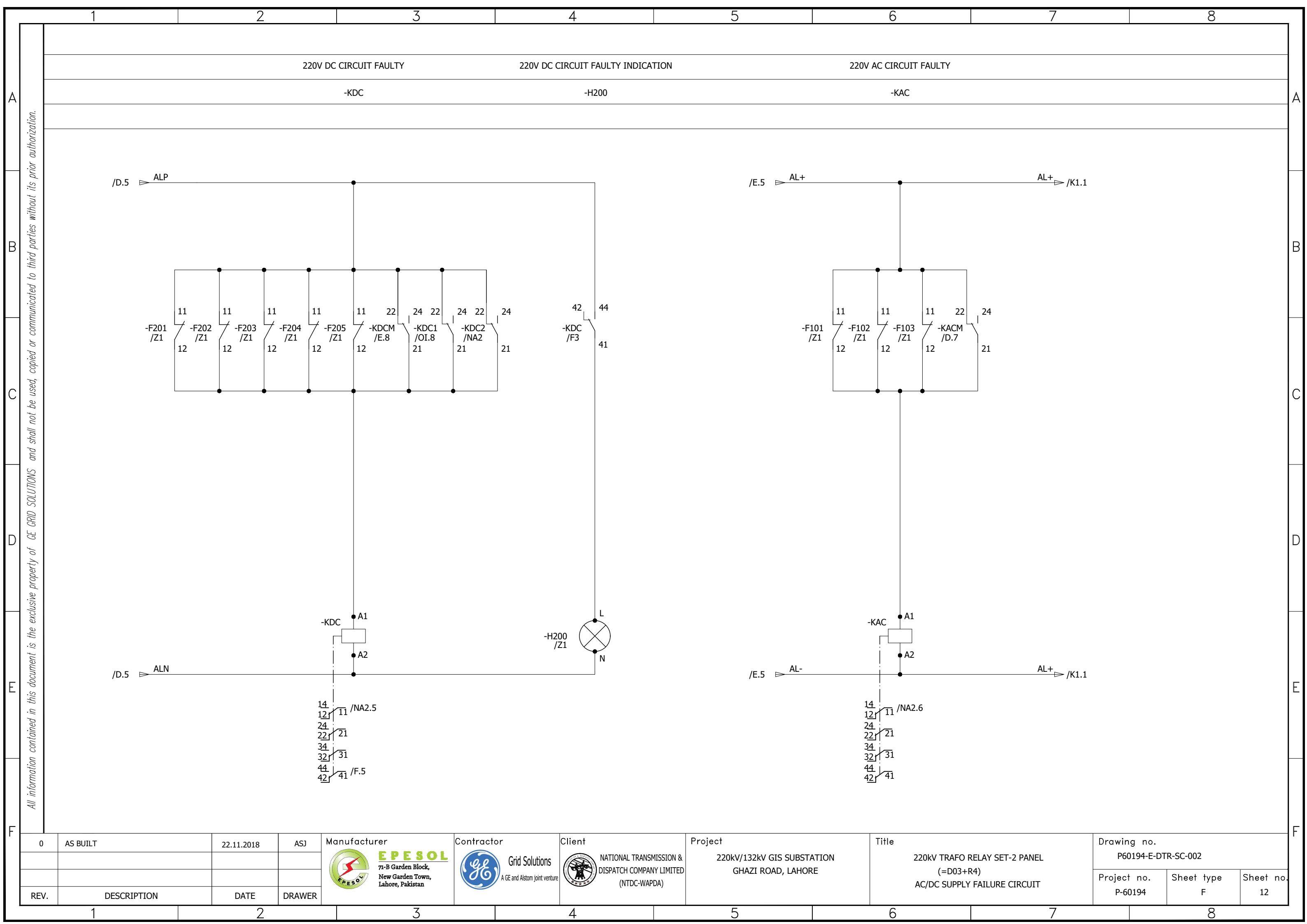
0	AS BUILT	22.11.2018	ASJ	Manufacturer  71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D03+R4) AC SUPPLY DISTRIBUTION	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type D	Sheet no. 09

1 2 3 4 5 6 7 8



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 (=D03+R4) 220VDC SUPPLY DISTRIBUTION	Drawing no. P60194-E-DTR-SC-002
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type E

1 2 3 4 5 6 7 8



All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

OVERALL DIFFERENTIAL PROT.

HV CONN CIRC PROT

LV CONN CIRC PROT

TERTIARY
OVERCURRENTTRAFO NEUTRAL
OVERCURRENT

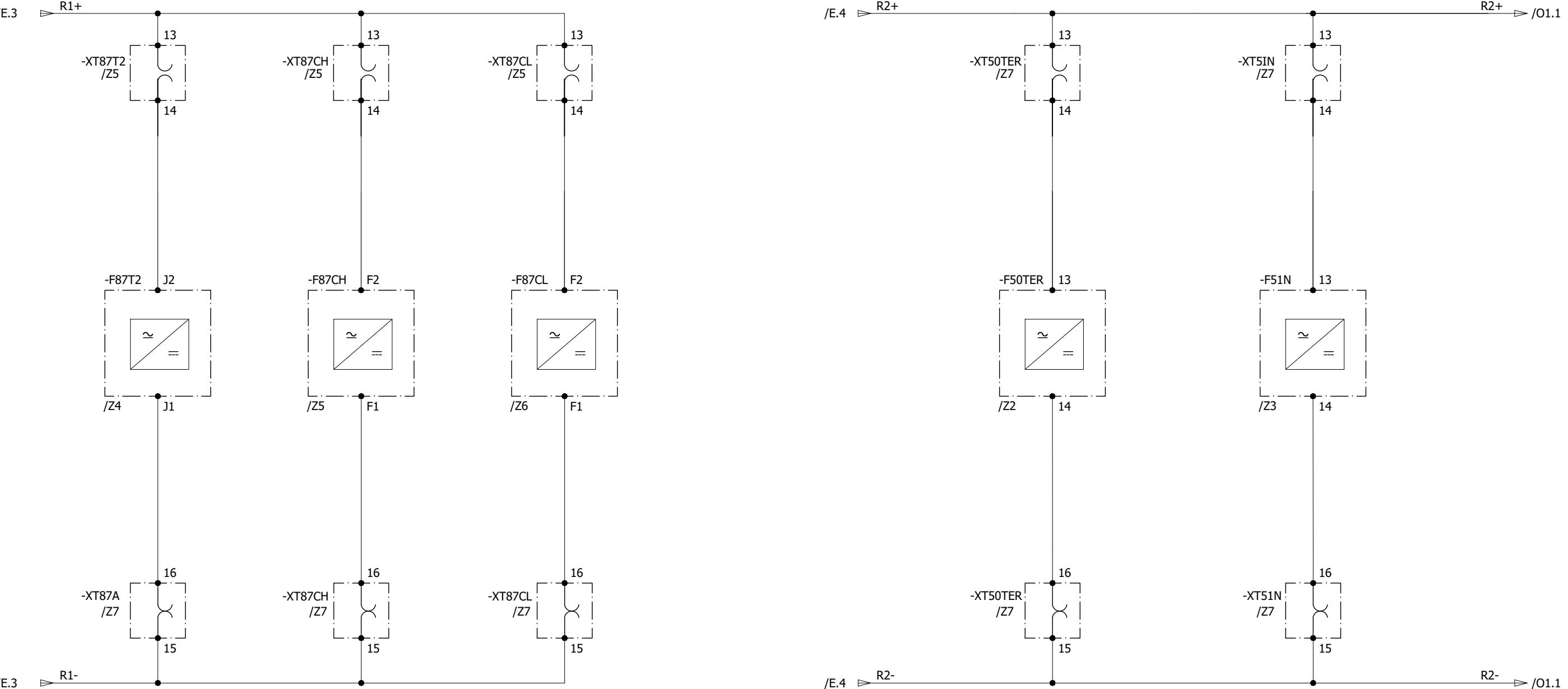
RELAY SUPPLY

RELAY SUPPLY

RELAY SUPPLY

RELAY SUPPLY

RELAY SUPPLY



TEST BLOCK

OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

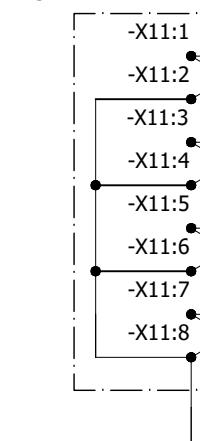
-XT87T2

-F87T2

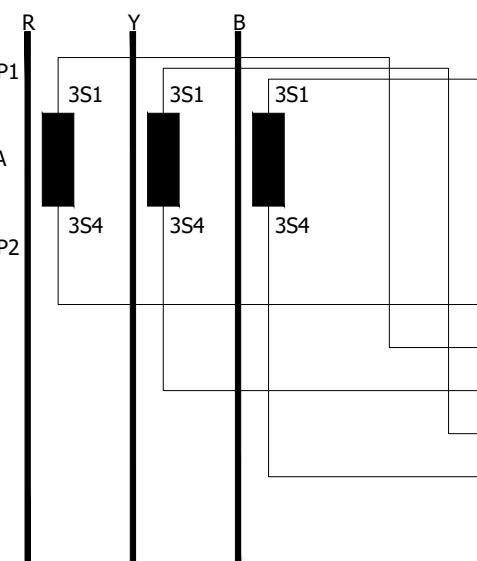
/Z5

/Z4

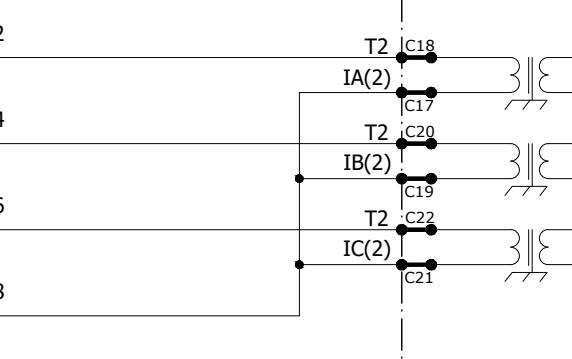
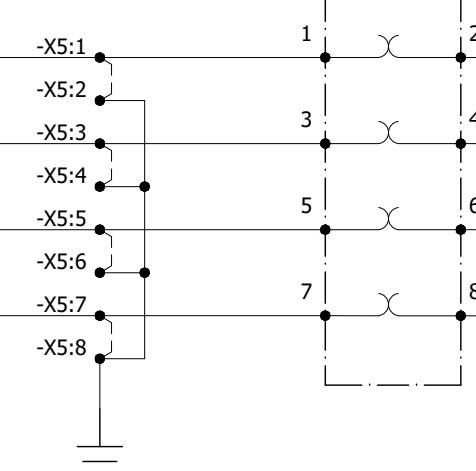
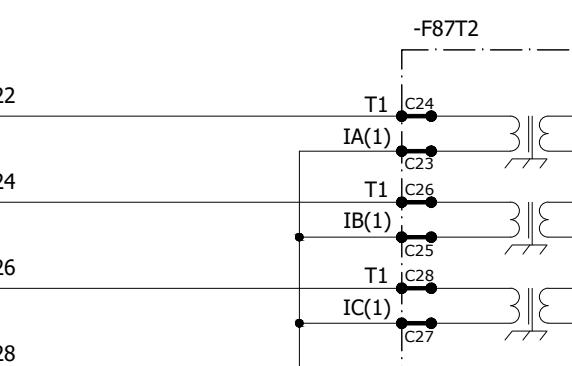
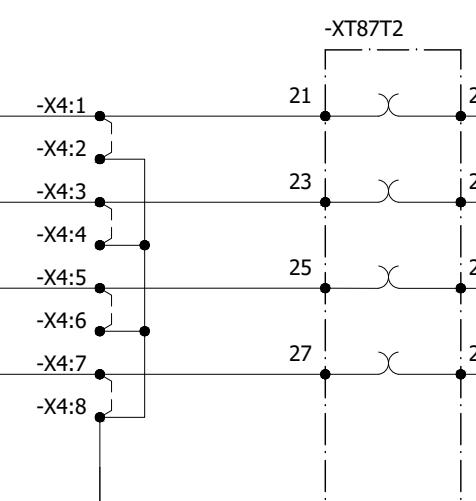
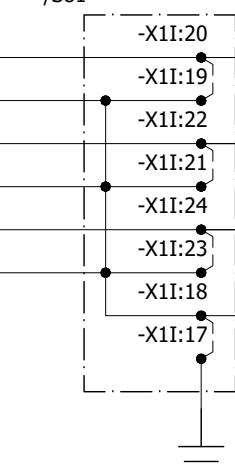
220KV GIS HALL

CONTROL ROOM
=SET-1CONTROL ROOM
=SET-2=D04+R3
220KV+D04
PROTECTION PANEL
SET-1DIT CORE-3
600:1200:2400 / 1A
C3: 5P20,30VA

P1



P2

=D04+GISLCC
220KV GIS LCC PANEL
/S81

AGILE P643 OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPE SOL 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 (=D03+R4) OVERALL TRAFO DIFFERENTIAL	P-60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. Sheet type Sheet no.
									P-60194 H1 14

TEST BLOCK

HV CONNECTION DIFFERENTIAL PROTECTION RELAY

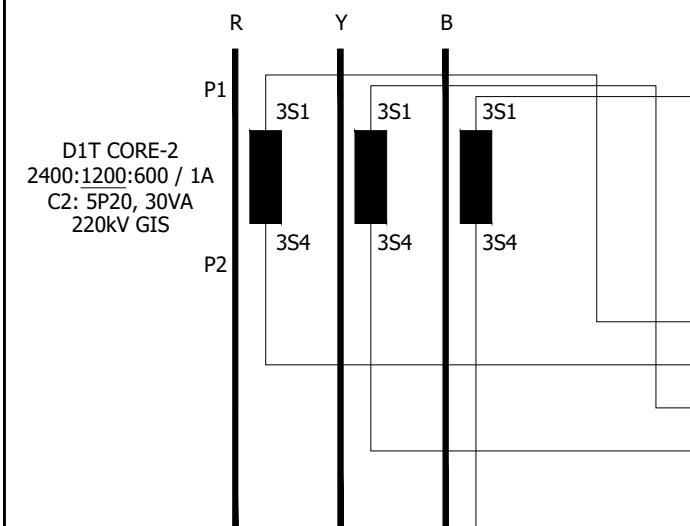
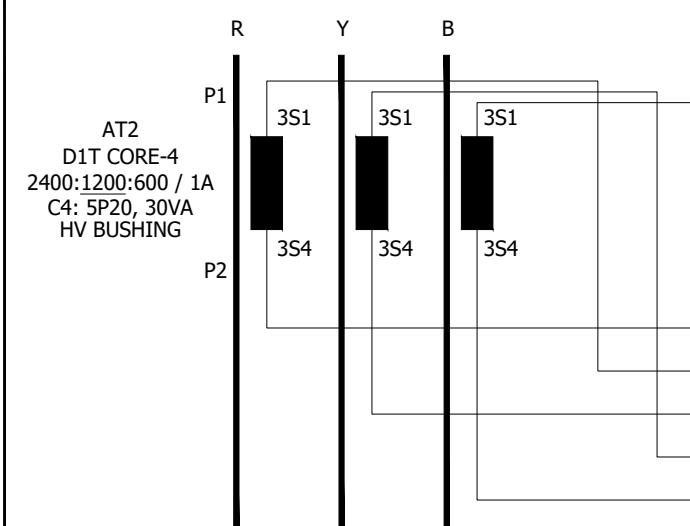
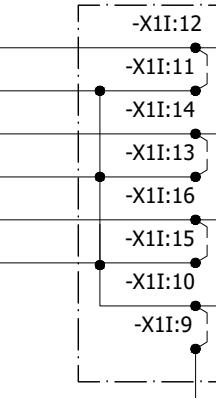
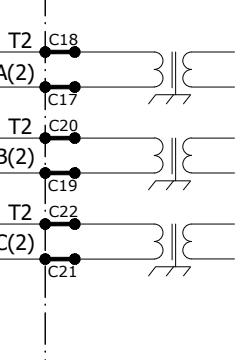
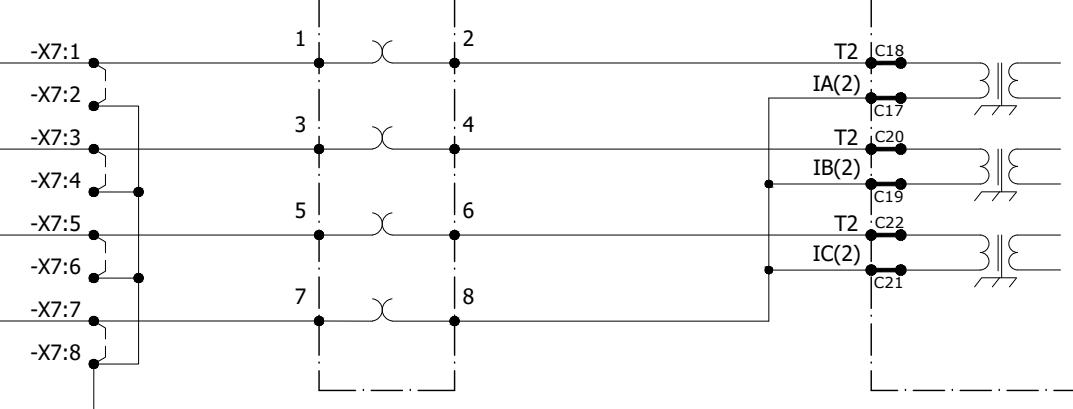
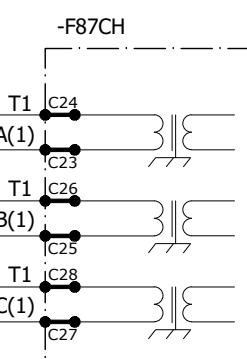
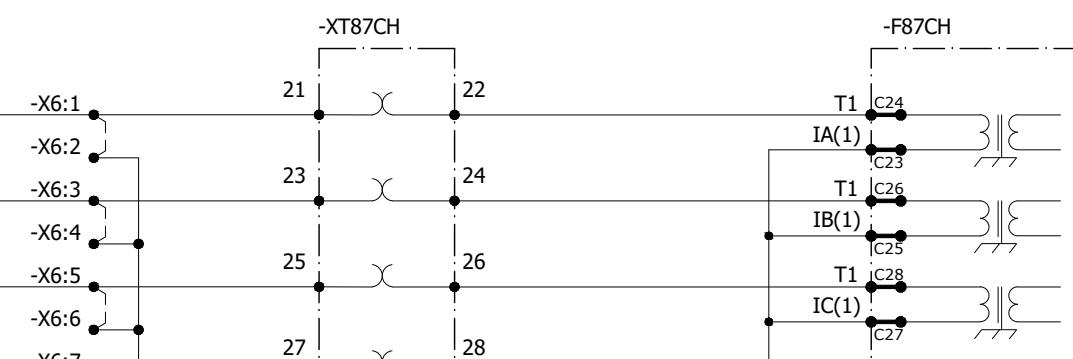
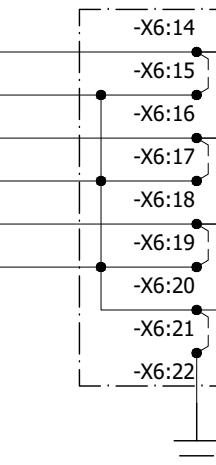
-XT87CH

-F87CH

/Z5

/Z4

220KV GIS HALL

CONTROL ROOM
=SET-2=D01+GISLCC
220KV GIS LCC PANEL
/S80=D04+RTCC
220KV RTCC PANEL
/25

AGILE P642 OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	22.11.2018	ASJ	Manufacturer  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 (=D03+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

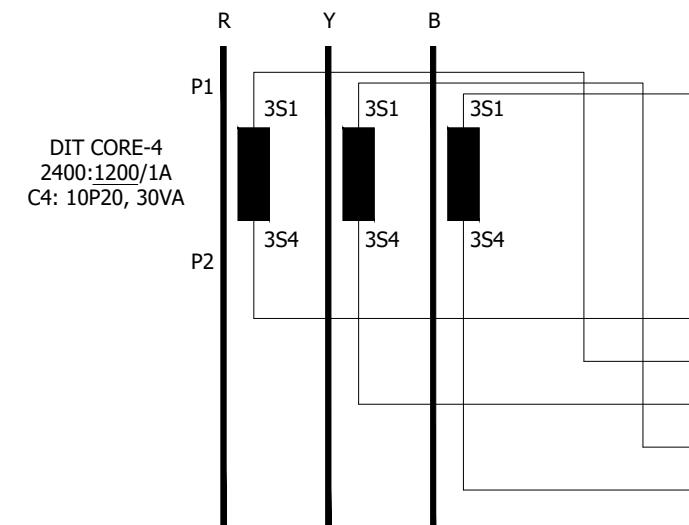
-XT87CL

-F87CL

/Z5

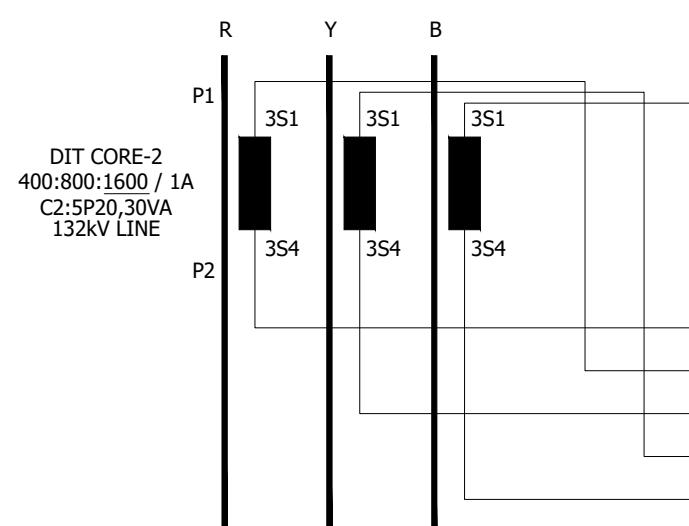
/Z4

220KV GIS HALL

CONTROL ROOM
=SET-2

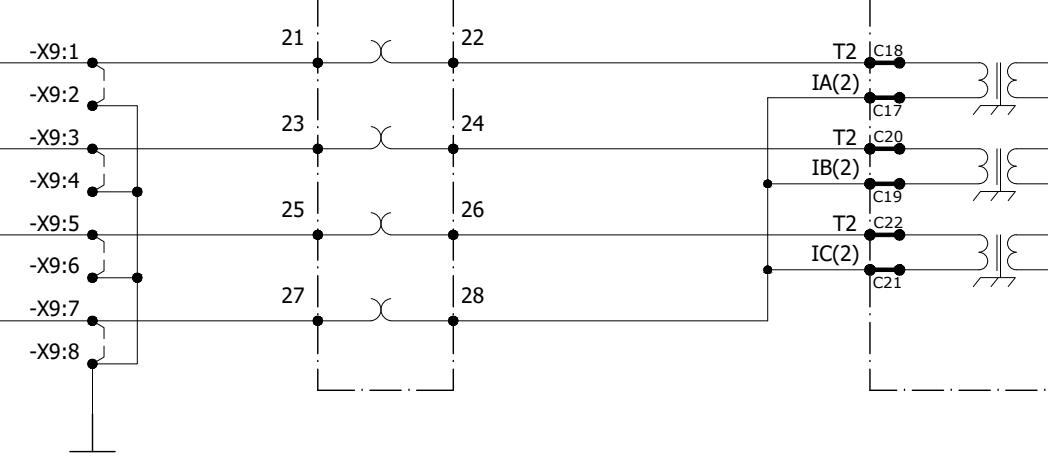
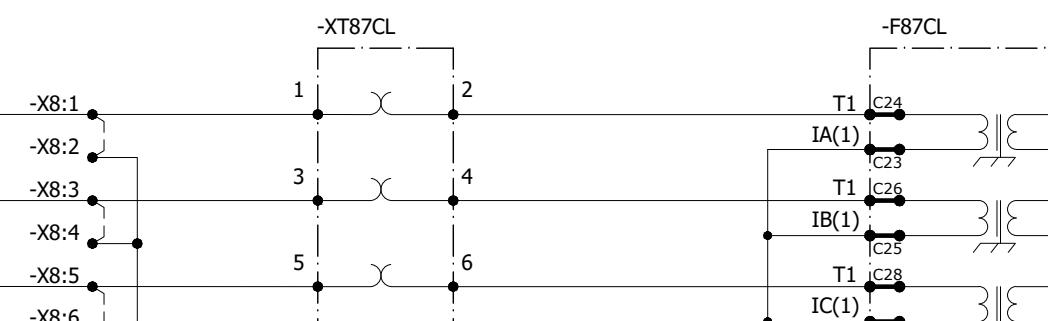
=D04+RTCC
220kV RTCC PANEL
/S10

-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



AGILE P642 OVERALL TRAFO DIFFERENTIAL PROTECTION RELAY

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	22.11.2018	ASJ	Manufacturer  7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor 	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D03+R4) LV CONNECTION DIFFERENTIAL PROTECTION CIRCUIT	Drawing no. 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

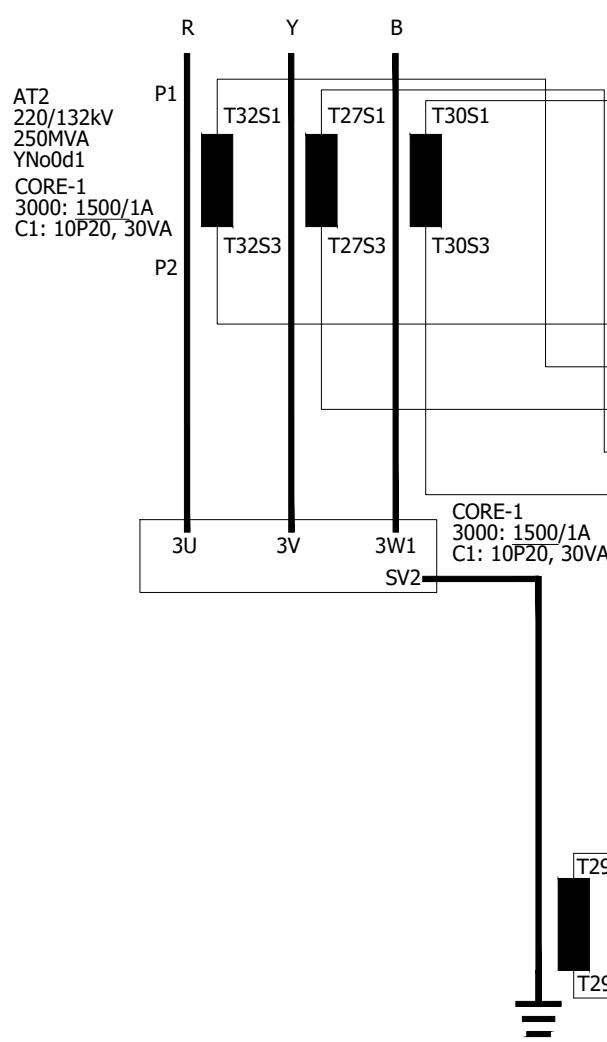
-F50TER

/Z5

/Z4

220kV GIS HALL

CONTROL ROOM



Project
220kV/132kV GIS SUBSTATION
GHAZI ROAD, LAHORE

Title
220kV LINE RELAY SET-2 PANEL
(=D03+R4)
TERTIARY OVERCURRENT & EARTHFAULT CIRCUIT

Drawing no.
P60194-E-DTR-SC-002

Project no. P-60194 Sheet type H4 Sheet no. 17

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

A

B

B

C

C

D

D

E

E

F

F

0 AS BUILT 22.11.2018 ASJ

DESCRIPTION DATE DRAWER

Manufacturer

Contractor

Client

Project

Title

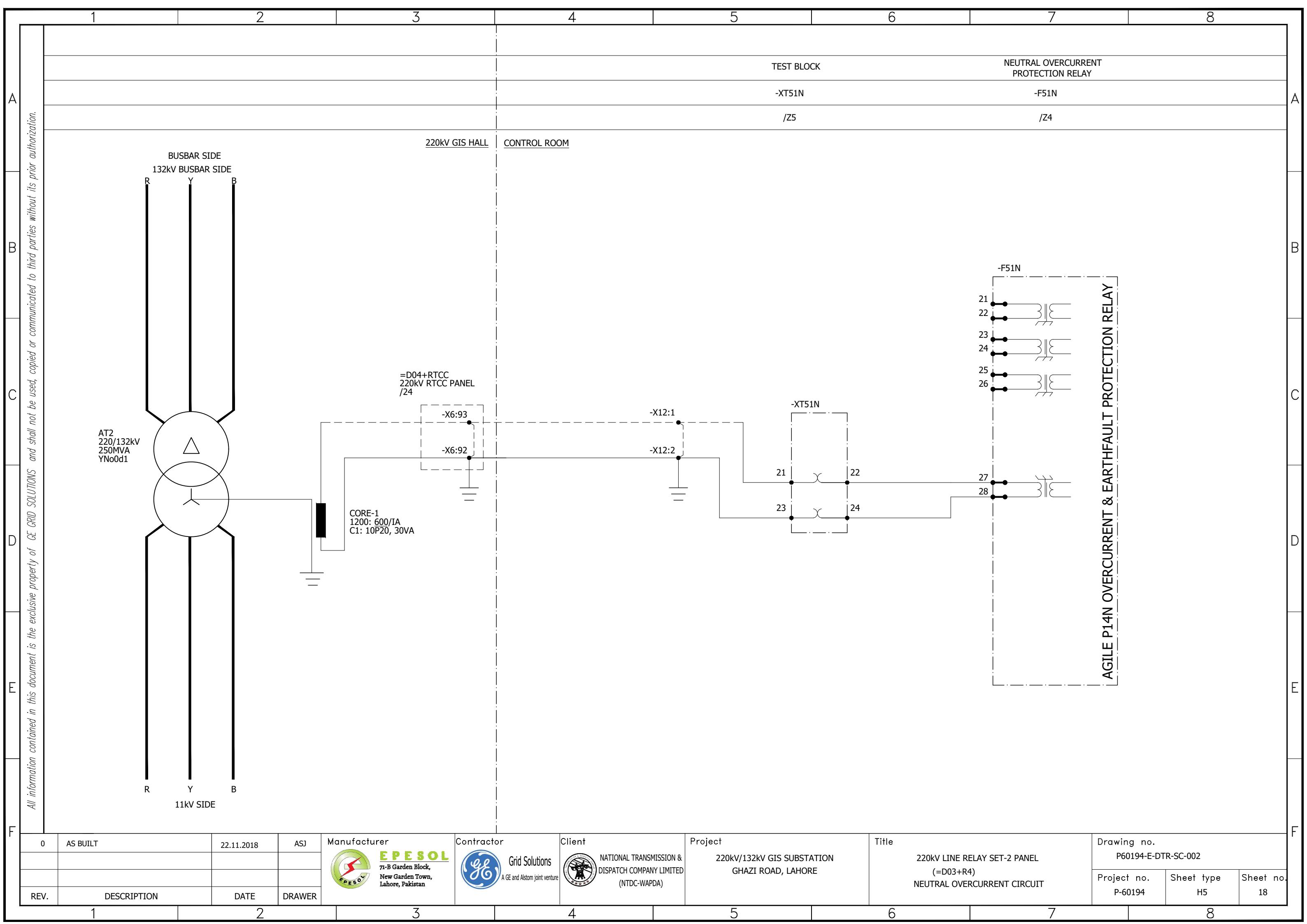
Drawing no.

Project no.

Sheet type

Sheet no.

1 2 3 4 5 6 7 8



OVERALL TRAFO DIFFERENTIAL

HV CONNECTION DIFFERENTIAL

LV CONNECTION DIFFERENTIAL

TERTIARY OVERCURRENT & EARTHFAULT

NEUTRAL OVERCURRENT

TRIP

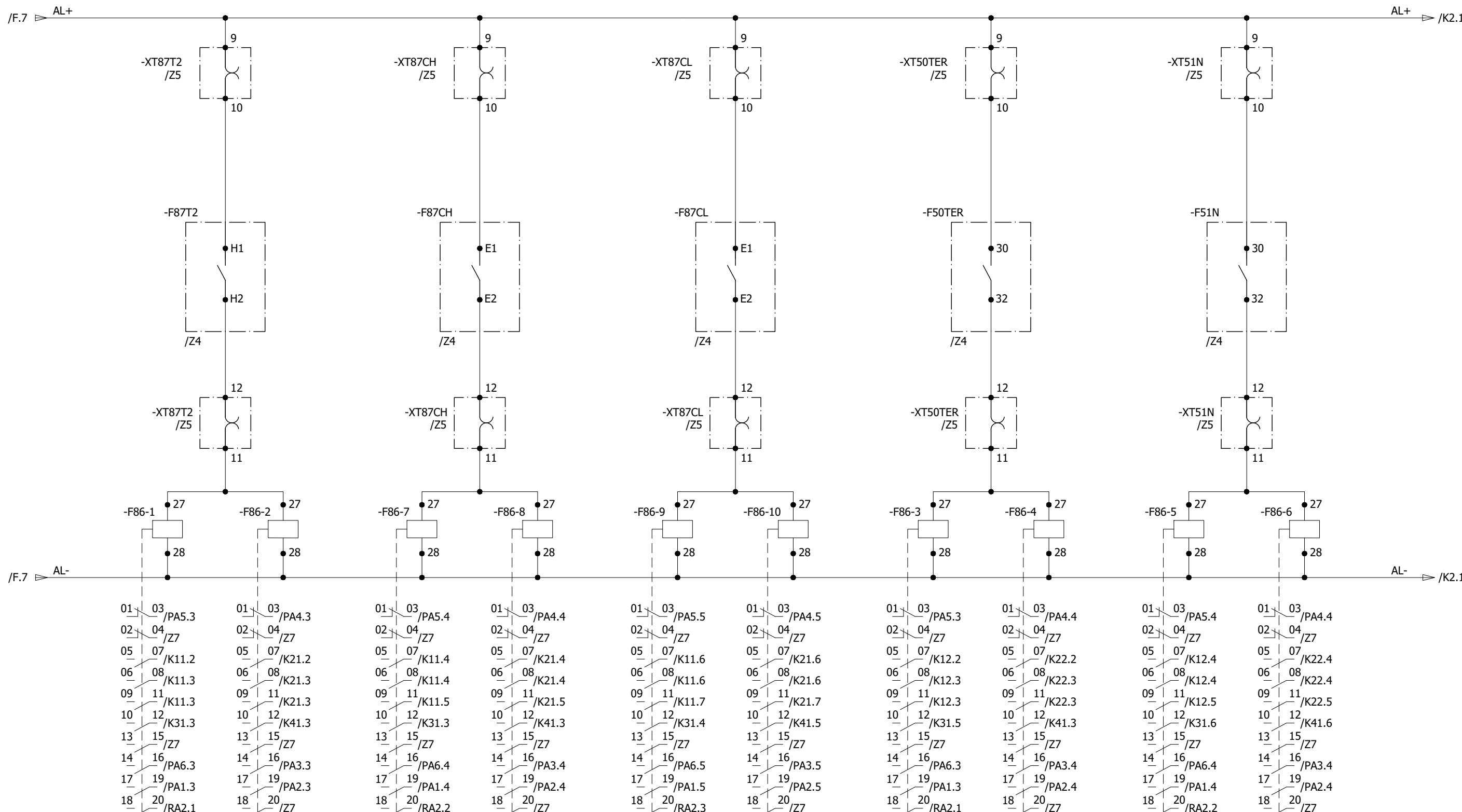
TRIP

TRIP

TRIP

TRIP

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



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 (=D03+R4) PROTECTION TRIPS	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type K1	Sheet no. 19
1	2	3	4	5	6	7	8					

PRESSURE RELIEF

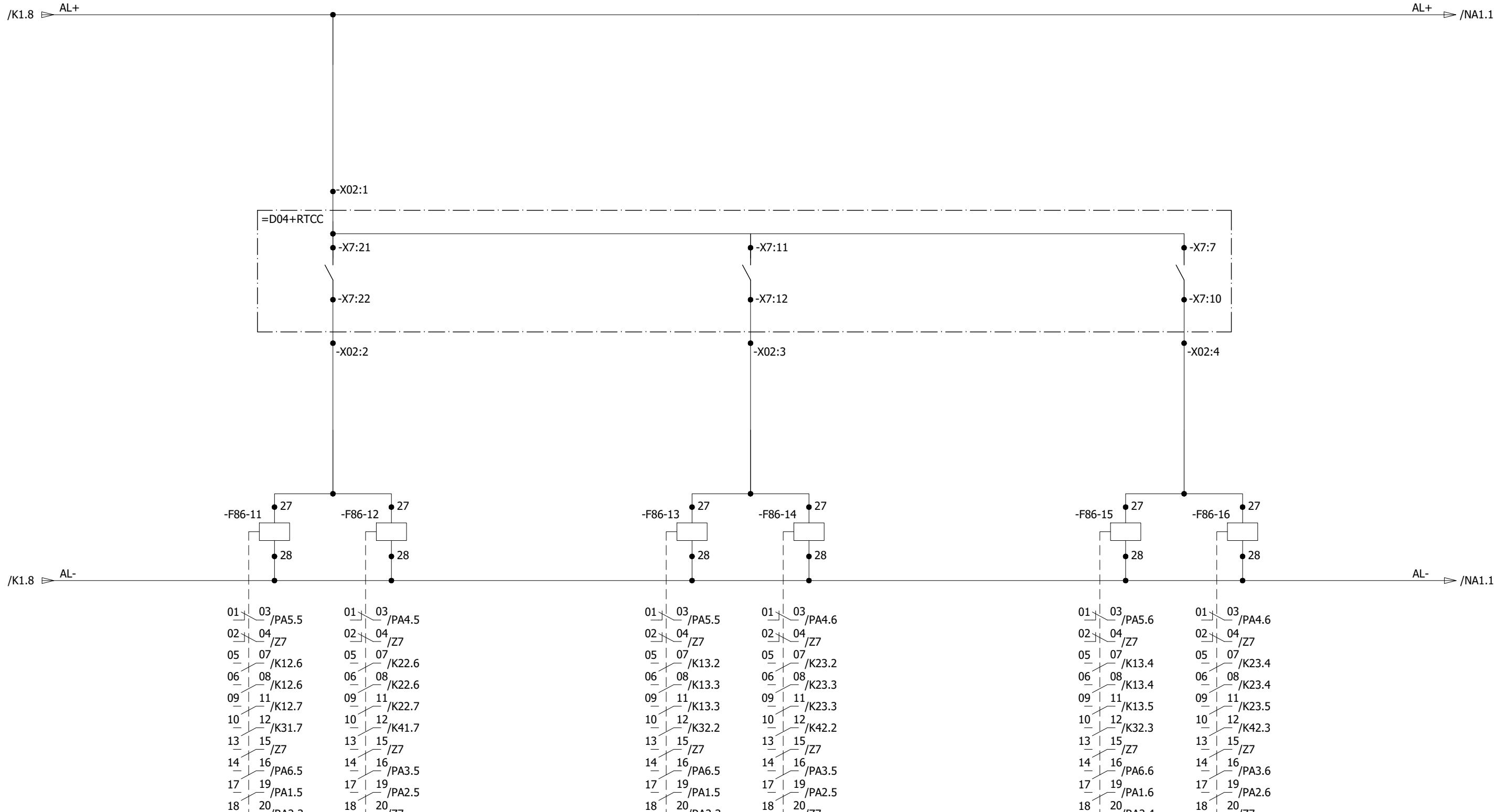
BUCHOLZ OLTC

BUCHOLZ TRAFO

TRIP

TRIP

TRIP



A
B
C
D
E
F

A
B
C
D
E
F

0	AS BUILT	22.11.2018	ASJ	Manufacturer EPE SOL 7-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 (=D03+R4) PROTECTION TRIPS	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type K2
									Sheet no. 20

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

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

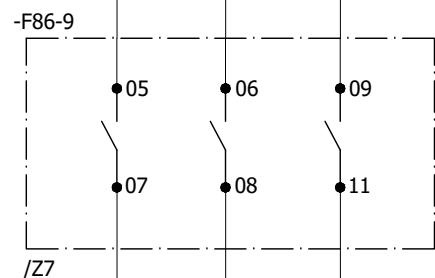
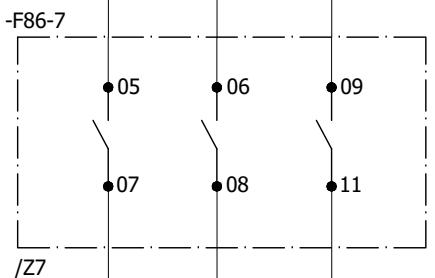
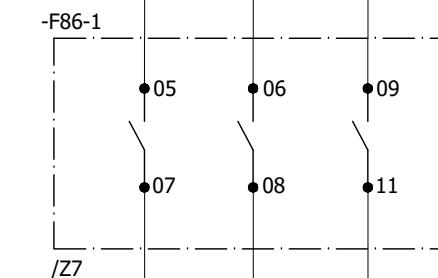
RED-PH YELLOW-PH BLUE-PH

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

B

C

D

E

F

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 (=D03+R4) TRIP CIRCUIT FOR COIL - 1 (D04-Q0)	P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type K11 Sheet no. 21

TERTIARY OVERCURRENT & EARTHFAULT TRIP

RED-PH YELLOW-PH BLUE-PH

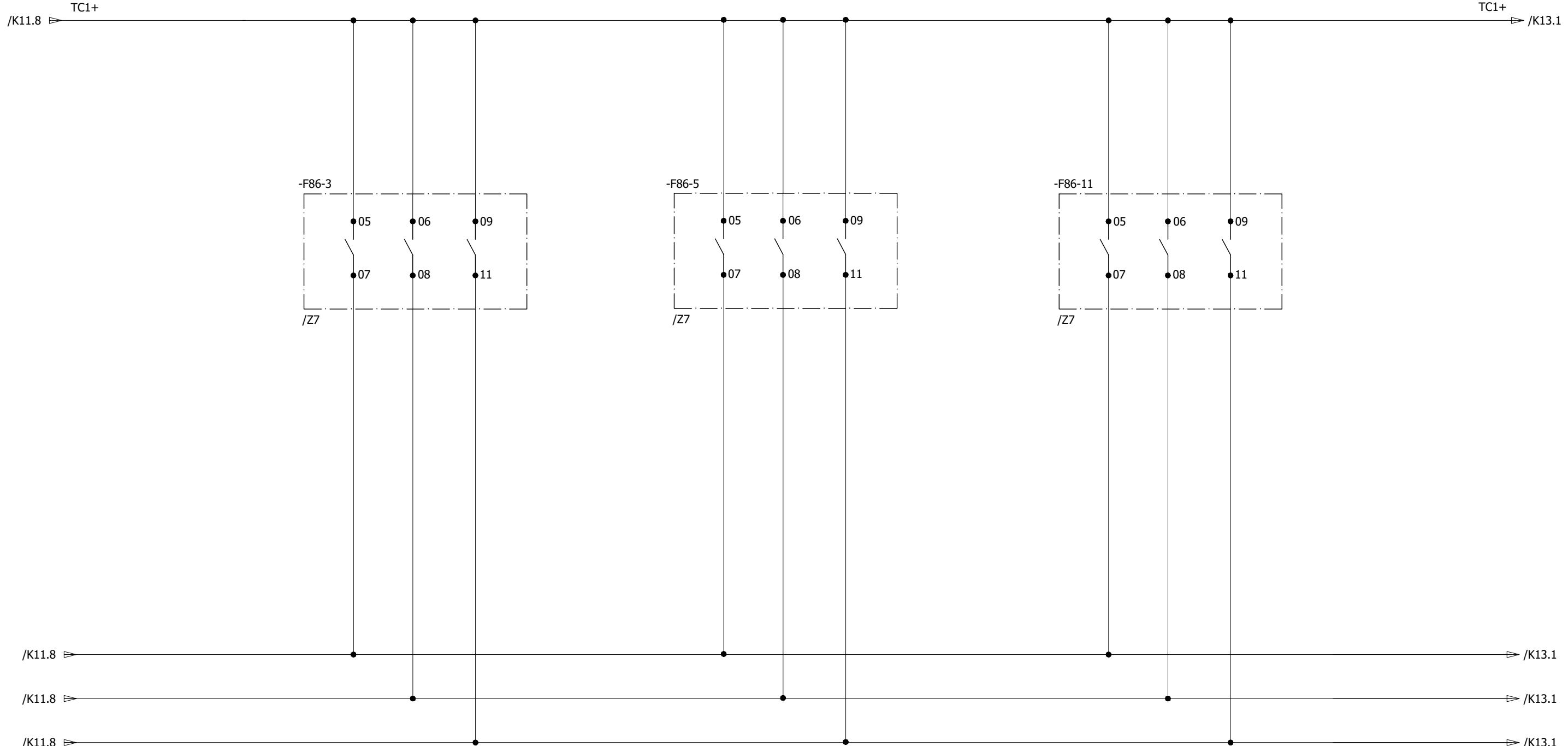
NEUTRAL OVERCURRENT TRIP

RED-PH YELLOW-PH BLUE-PH

PRESSURE RELIEF TRIP

RED-PH YELLOW-PH BLUE-PH

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



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 (=D03+R4) TRIP CIRCUIT FOR COIL - 1 (D04-Q0)	Drawing no. P60194-E-DTR-SC-002
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type K12
									Sheet no. 22

1

2

3

4

5

6

7

8

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

BUCHOLZ OLTC TRIP

RED-PH YELLOW-PH BLUE-PH

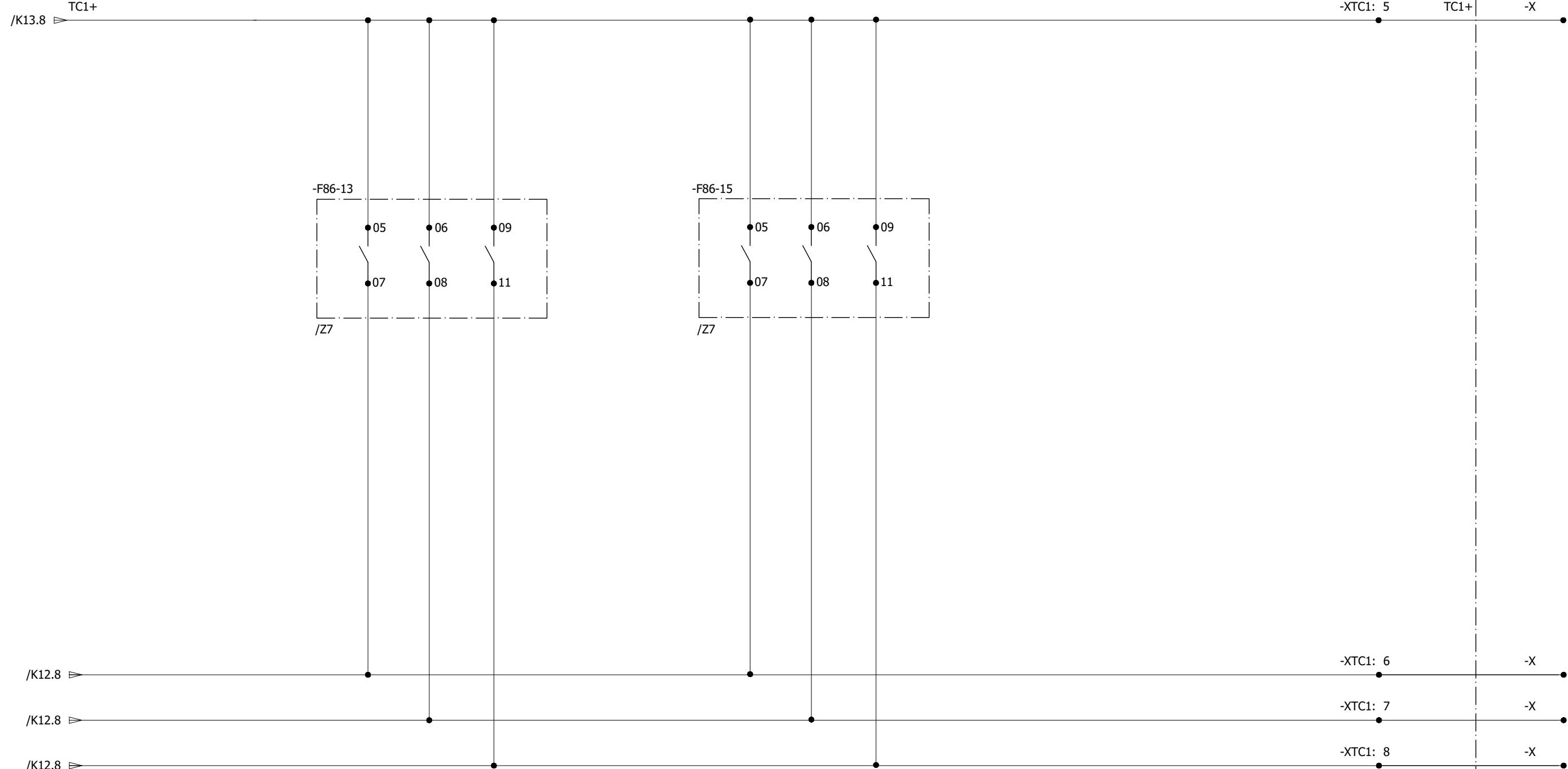
BUCHOLZ TRAFO TRIP

RED-PH YELLOW-PH BLUE-PH

220KV CIRCUIT BREAKER FAILURE PANEL

=D00+R5A

/Z



A
B
C
D
E
F

A
B
C
D
E
F

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 (=D03+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

1

2

3

4

5

6

7

8

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

220kV GIS LCC PANEL

OVERALL TRAFO DIFFERENTIAL PROTECTION TRIP

HV CONNECTION DIFFERENTIAL TRIP

LV CONNEVCTION DIFFERENTIALTRIP

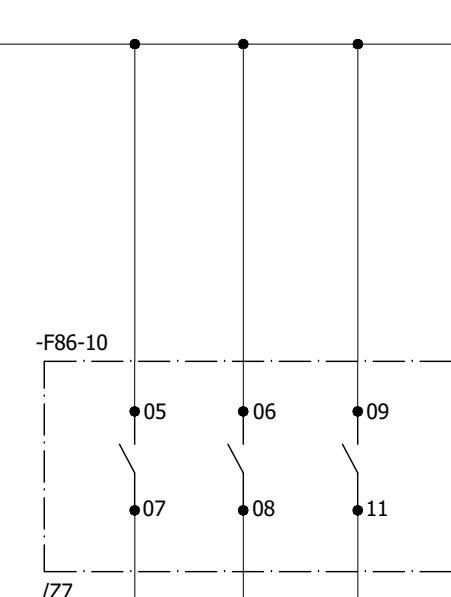
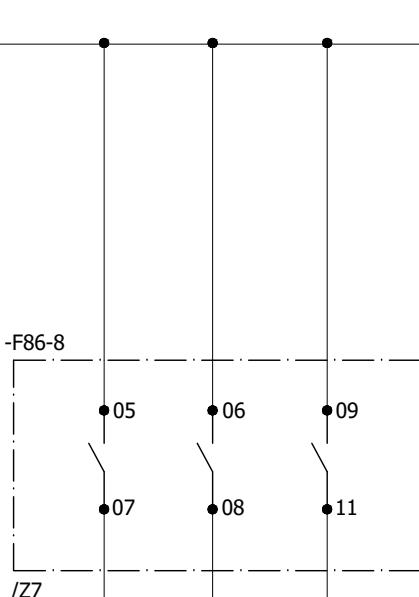
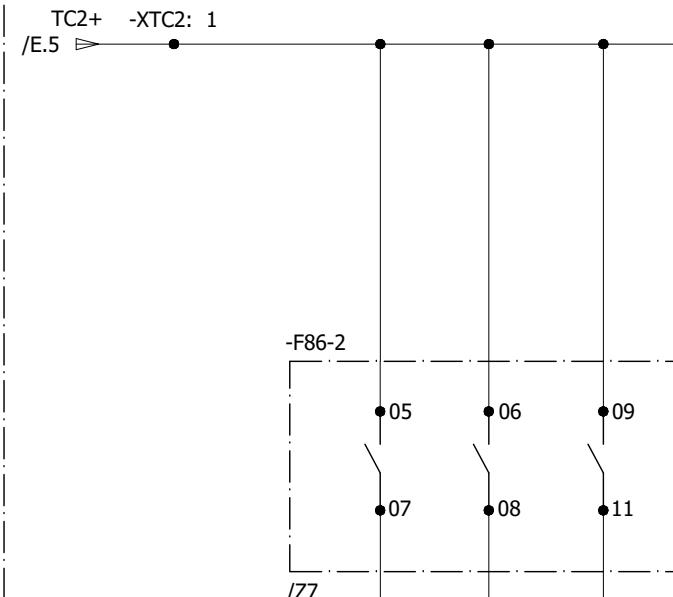
=D04+GIS LCC

RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

/L53



-X0: 24

-XTC2: 2

→ /K22.1

-X0: 25

-XTC2: 3

→ /K22.1

-X0: 26

-XTC2: 4

→ /K22.1

A

A

B

B

C

C

D

D

E

E

F

F

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 (=D03+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

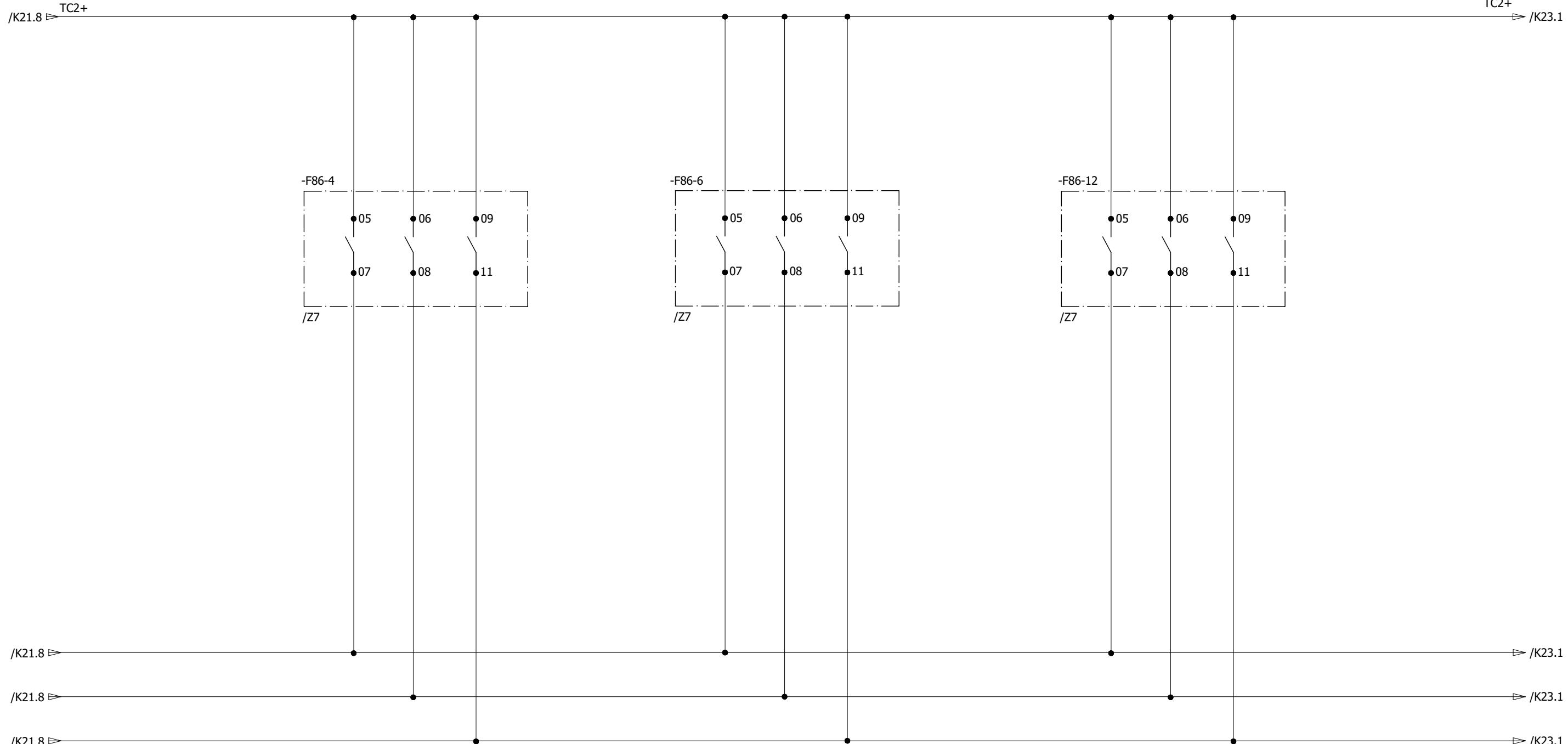
NEUTRAL OVERCURRENT TRIP

RED-PH YELLOW-PH BLUE-PH

PRESSURE RELIEF TRIP

RED-PH YELLOW-PH BLUE-PH

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



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 (=D03+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

1 2 3 4 5 6 7 8

BUCHOLZ OLTC TRIP

BUCHOLZ TRAFO TRIP

220KV TRAFO RELAY PANEL
SET-1

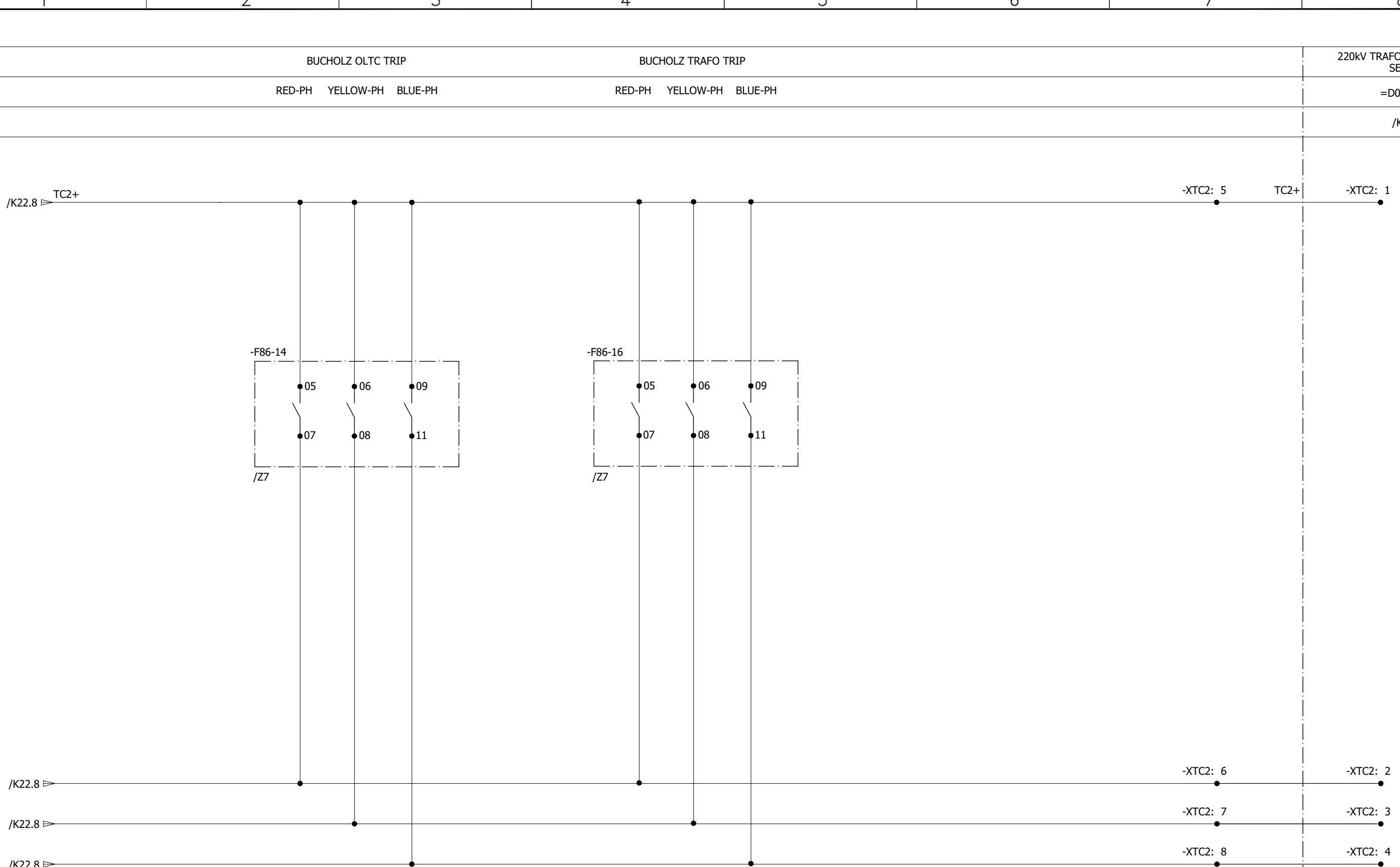
RED-PH YELLOW-PH BLUE-PH

RED-PH YELLOW-PH BLUE-PH

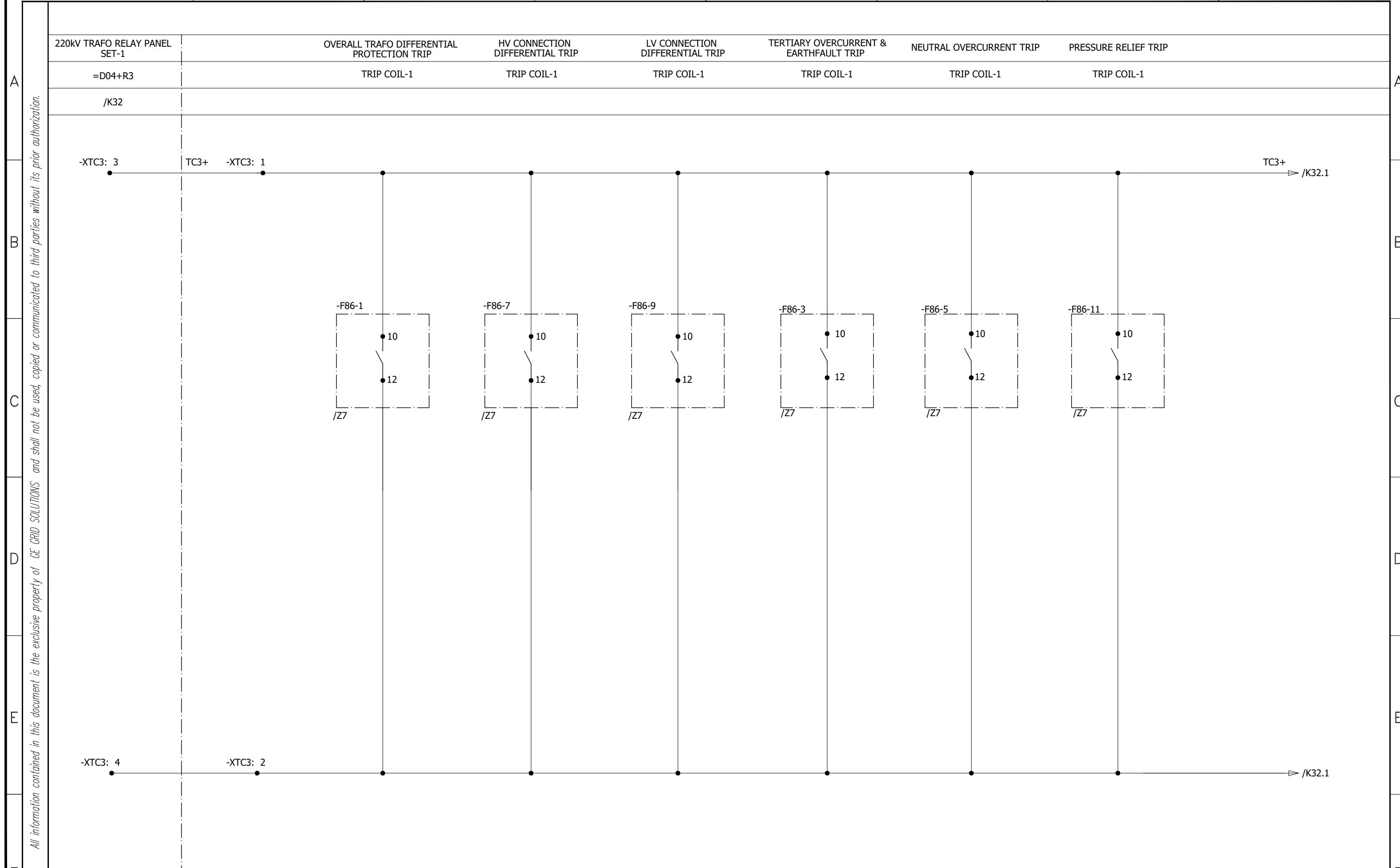
=D04+R3

/K11

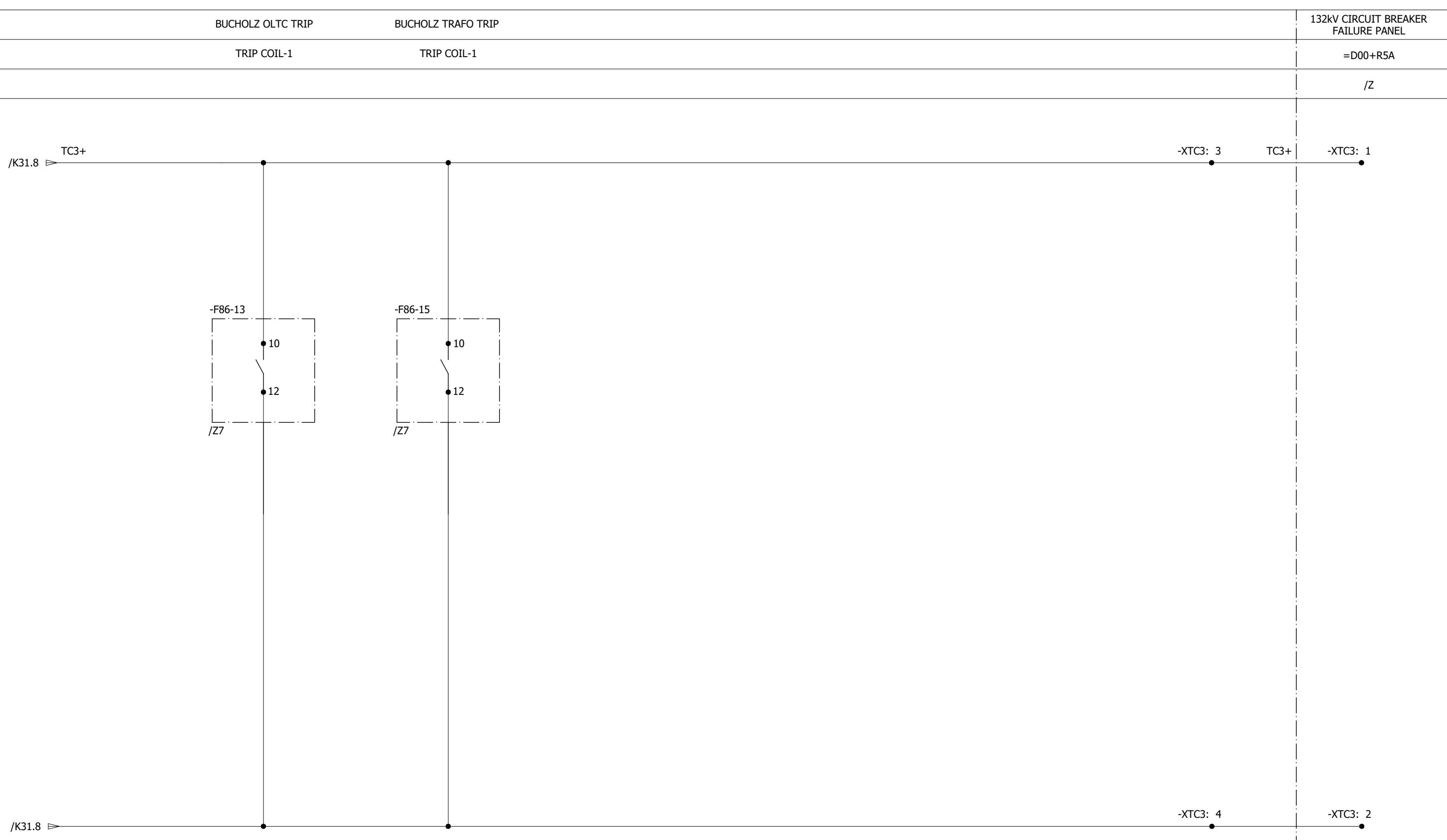
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

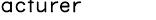
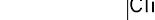


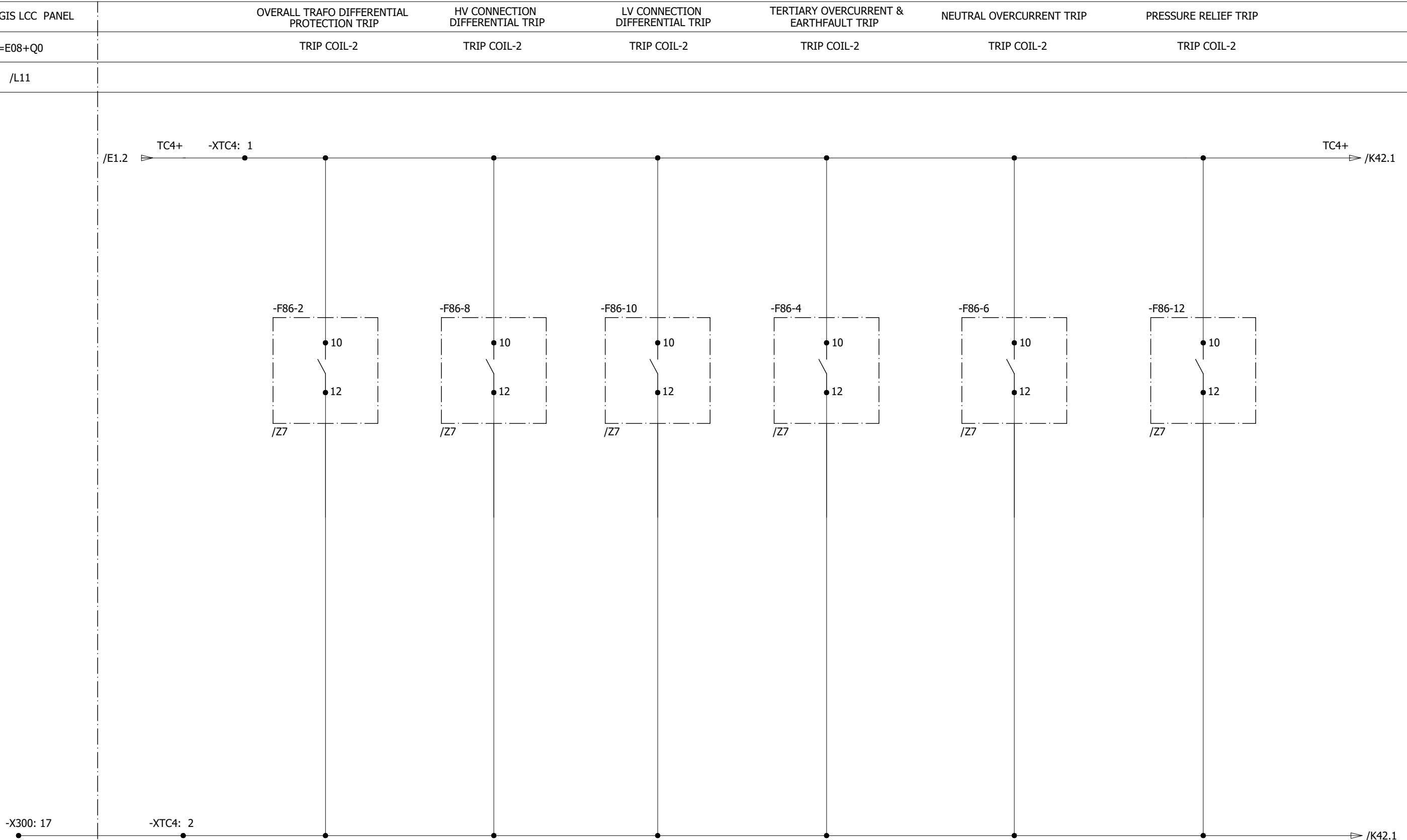
0	AS BUILT		22.11.2018	ASJ	Manufacturer  EPE SOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D03+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 K23	Sheet no. 26
1	2	3	4	5	6	7	8					



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 (=D03+R4) TRIP CIRCUIT FOR COIL - 1 (E08-Q0)	Project no.	Sheet type	Sheet no.
REV.	DESCRIPTION		DATE	DRAWER						P-60194	K31	27
1			2	3	4	5	6	7	8			



0	AS BUILT	22.11.2018	ASJ	Manufacturer  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 (=D03+R4) TRIP CIRCUIT FOR COIL - 1 (E08-Q0)	Drawing no. P60194-E-DTR-SC-002		
									Project no.	Sheet type	
									P-60194	K32	
REV.	DESCRIPTION	DATE	DRAWER						Sheet no.	28	



All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

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 (=D03+R4) TRIP CIRCUIT FOR COIL - 2 (E08-Q0)	Drawing no. P60194-E-DTR-SC-002	
									Project no. P-60194	
REV.	DESCRIPTION	DATE	DRAWER						Sheet type K41	Sheet no. 29

1

2

3

4

5

6

7

8

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

BUCHOLZ OLTC TRIP

BUCHOLZ TRAFO TRIP

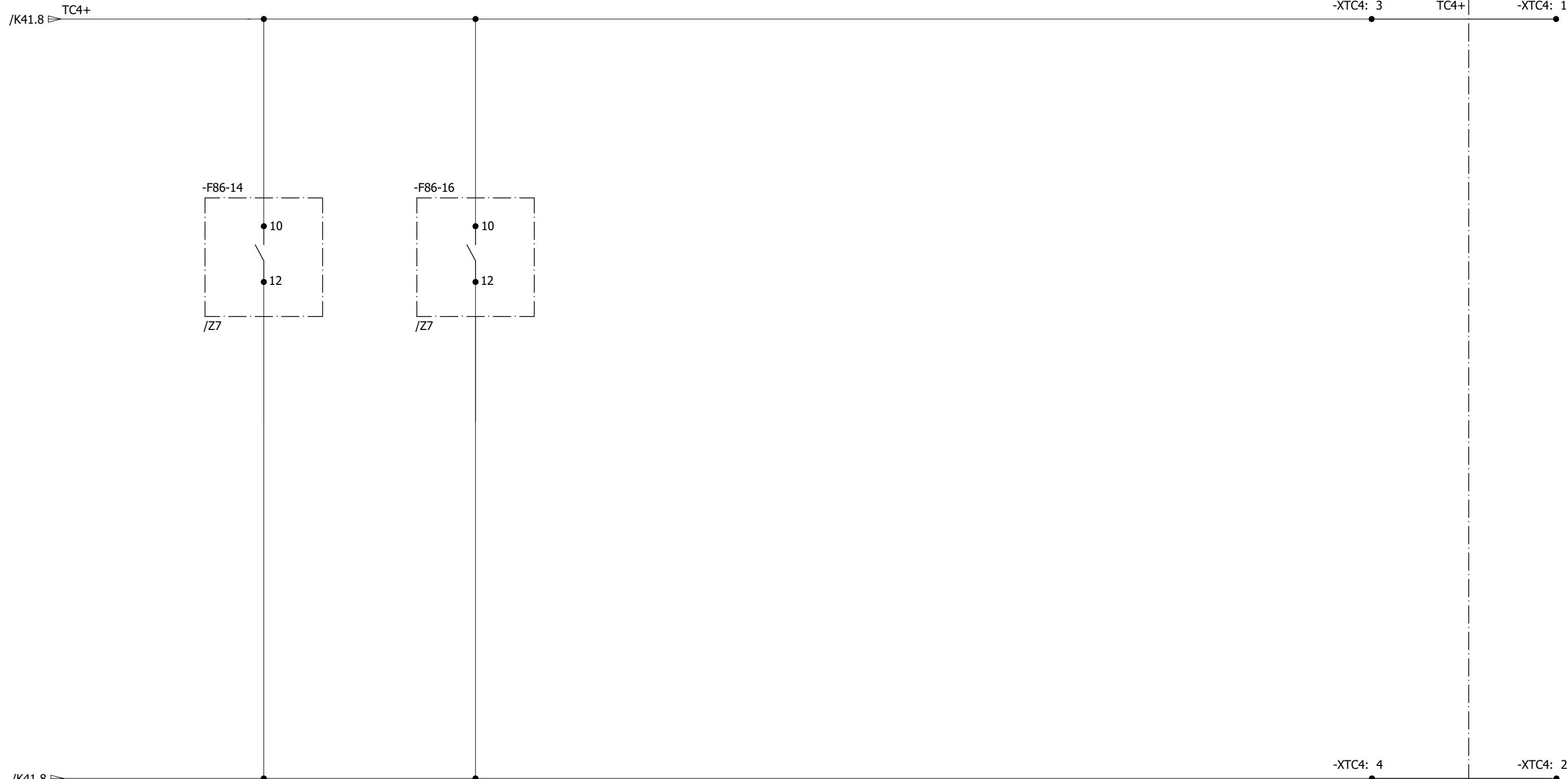
TRIP COIL-2

TRIP COIL-2

220KV TRAFO RELAY PANEL
SET-1

=D04+R3

/K41



0	AS BUILT	22.11.2018	ASJ	Manufacturer  7-8 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 (=D03+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

1

2

3

4

5

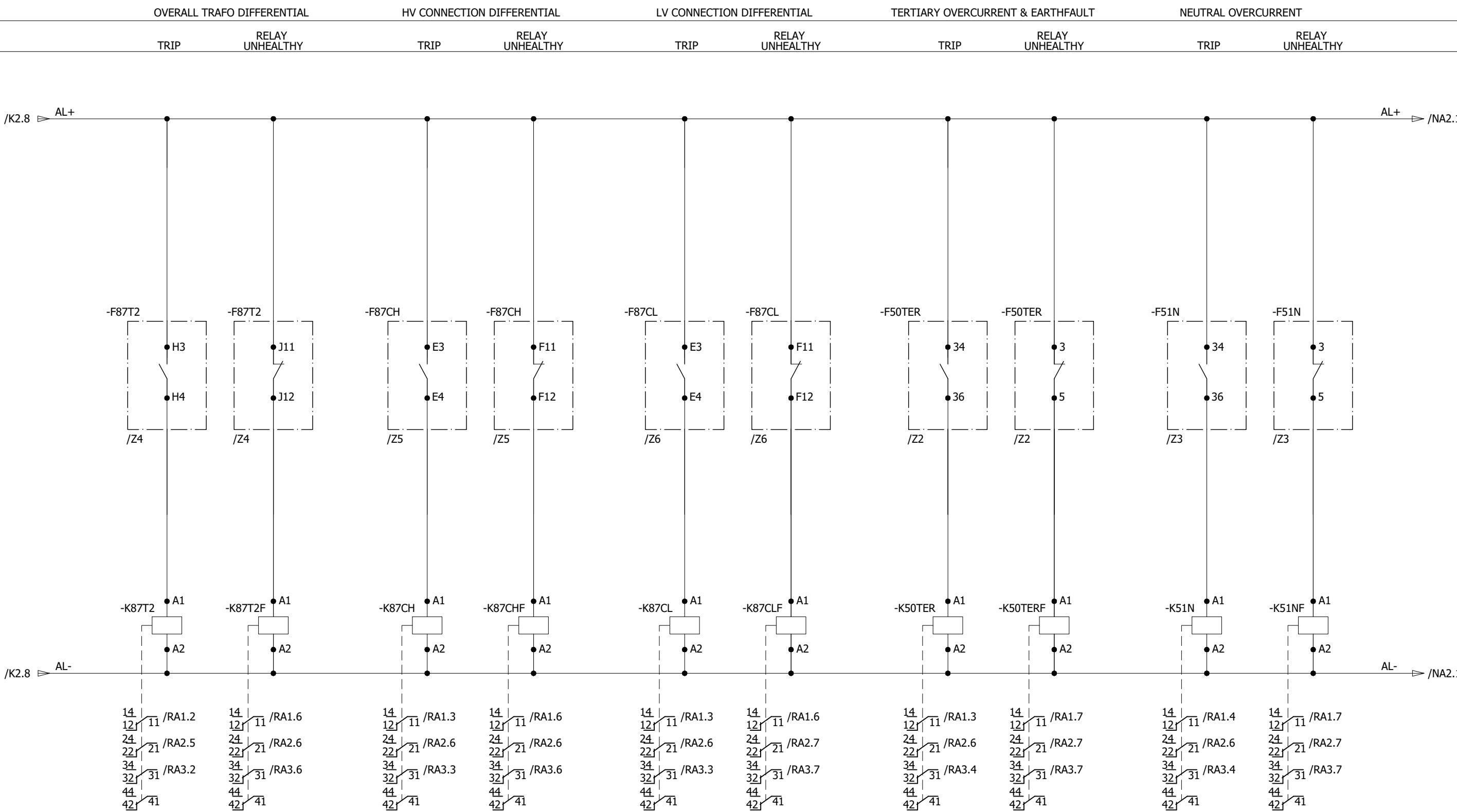
6

7

8

220KV TRAFO RELAY SET-2 PANEL ALARMS

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



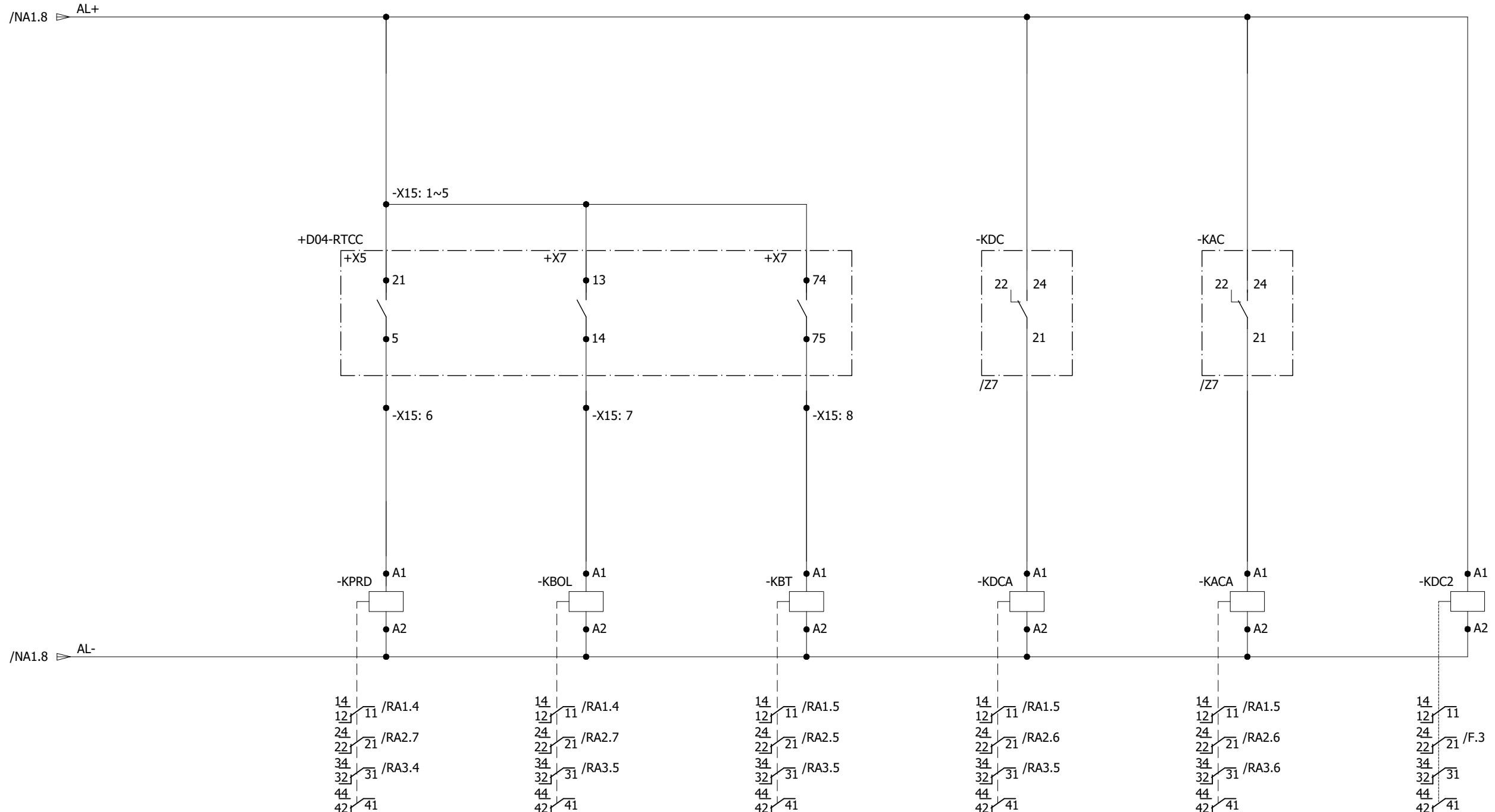
0	AS BUILT	22.11.2018	ASJ	Manufacturer  7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV TRAFO RELAY SET-2 PANEL (=D03+R4) PROTECTION TRIPS & RELAY FAULTY	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						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



All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

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 (=D03+R4)
PROTECTION TRIPS & RELAY FAULTY**

Drawing no.
P60194-E-DTR-SC-002

Project no. **P-60194** Sheet type **NA2** Sheet no. **32**

REV.

DESCRIPTION

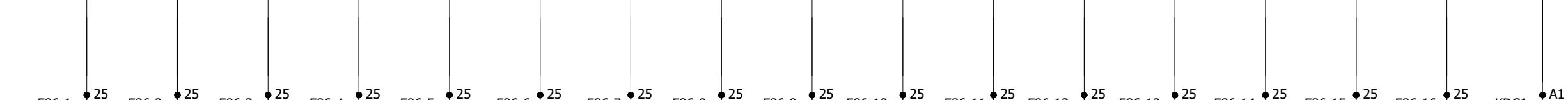
DATE

DRAWER

PUSH BUTTON

TRIP RELAY RESET

/G.8 R2+

-S86
/Z1
1
214
12
24
22
34
32
44
42
11
21
31
41
/F.3

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A
B
C
D
E
FA
B
C
D
E
F

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 (=D03+R4) HAND RESET OF TRIPPING RELAYS	Drawing no. P60194-E-DTR-SC-002
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type O1
									Sheet no. 33

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

B

C

D

E

F

A

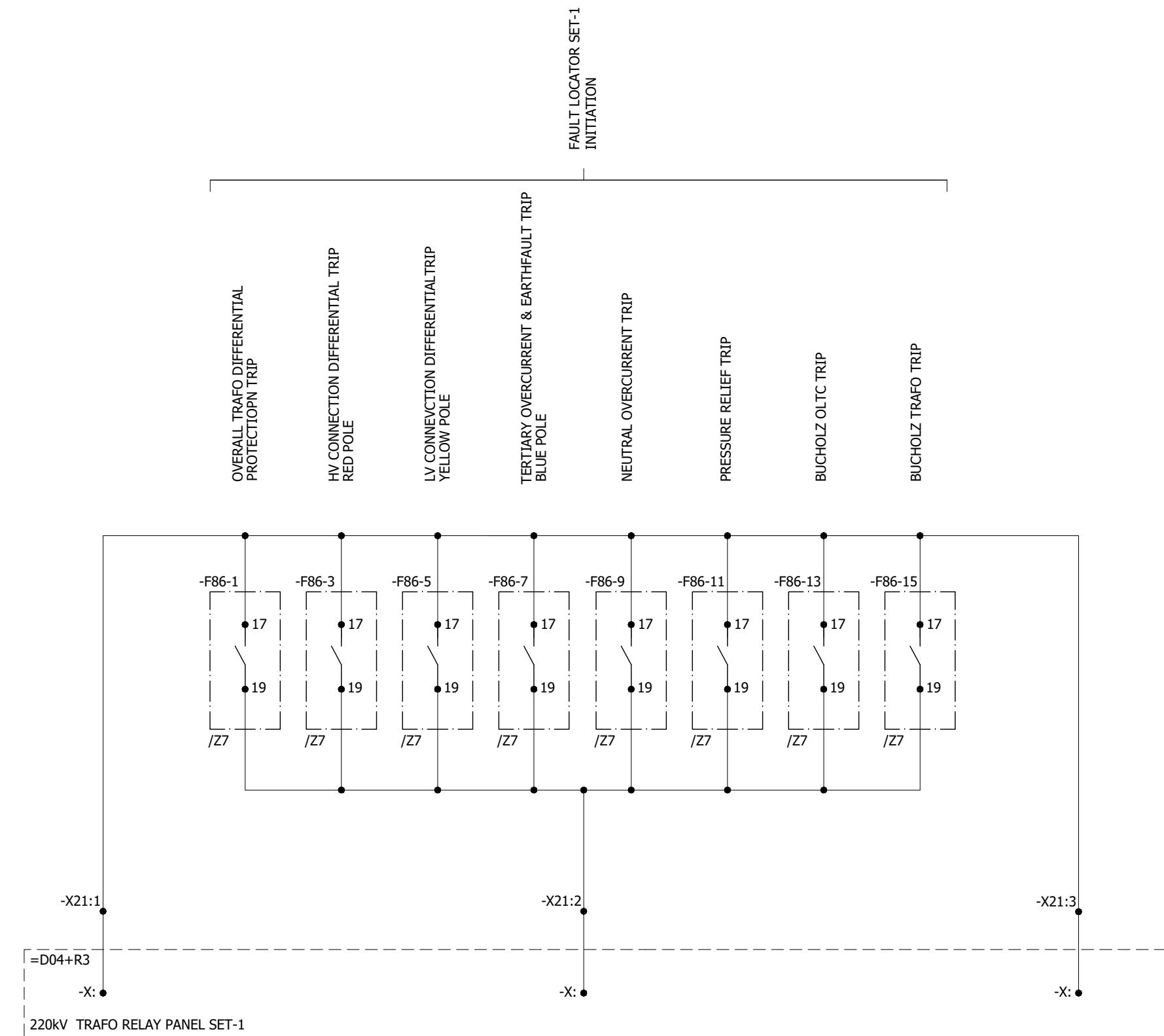
B

C

D

E

F



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 (=D03+R4) PROTECTION INTER-CIRCUITS	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type PA1	Sheet no. 34
1	2	3	4	5	6	7	8					

1

2

3

4

5

6

7

8

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

B

C

D

E

F

A

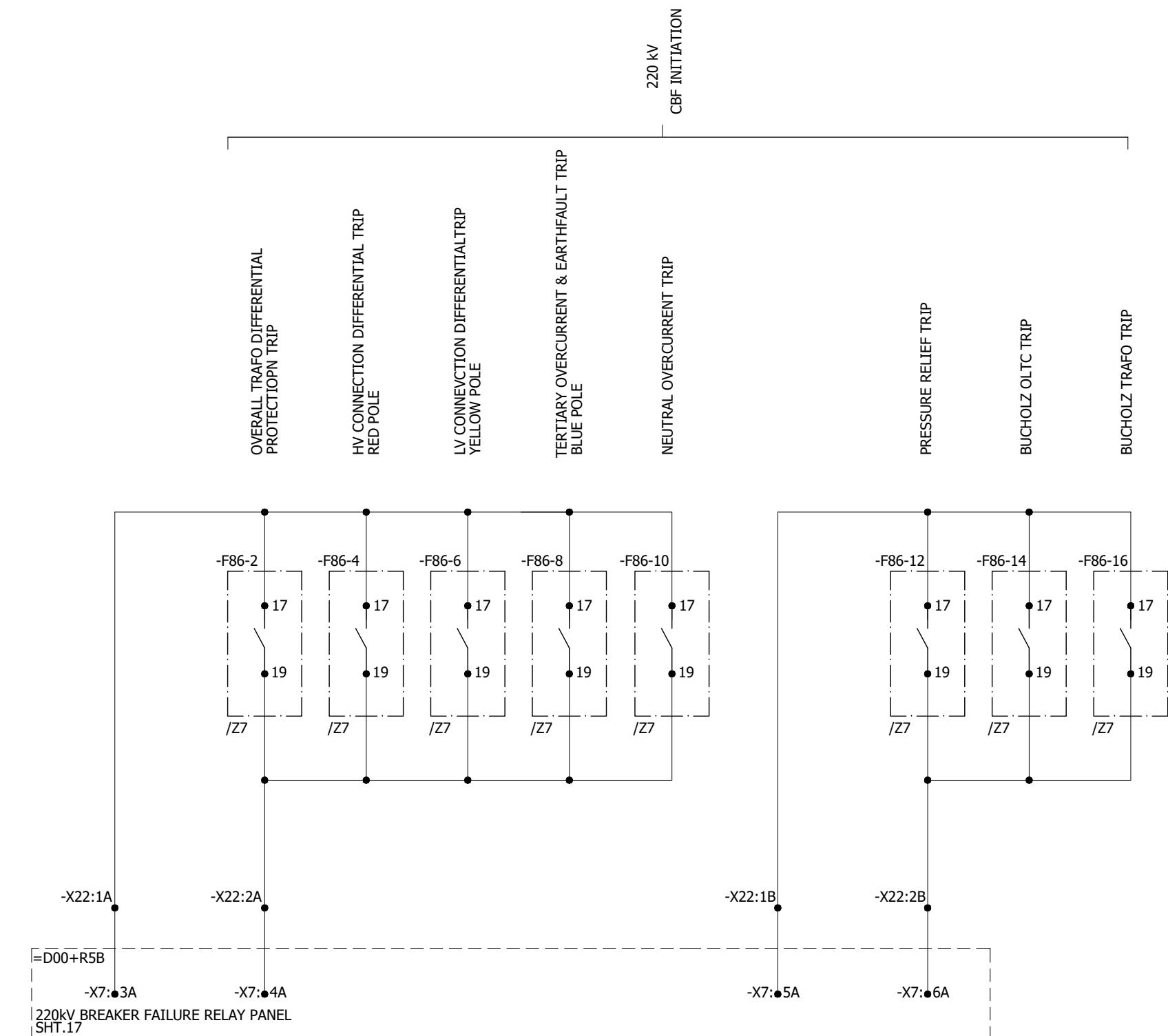
B

C

D

E

F



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 (=D03+R4) PROTECTION INTER-CIRCUITS	Project no.	Sheet type	Sheet no.
1	1		2	3	4	5	6	7	8	P-60194	PA2	35

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

B

C

D

E

F

A

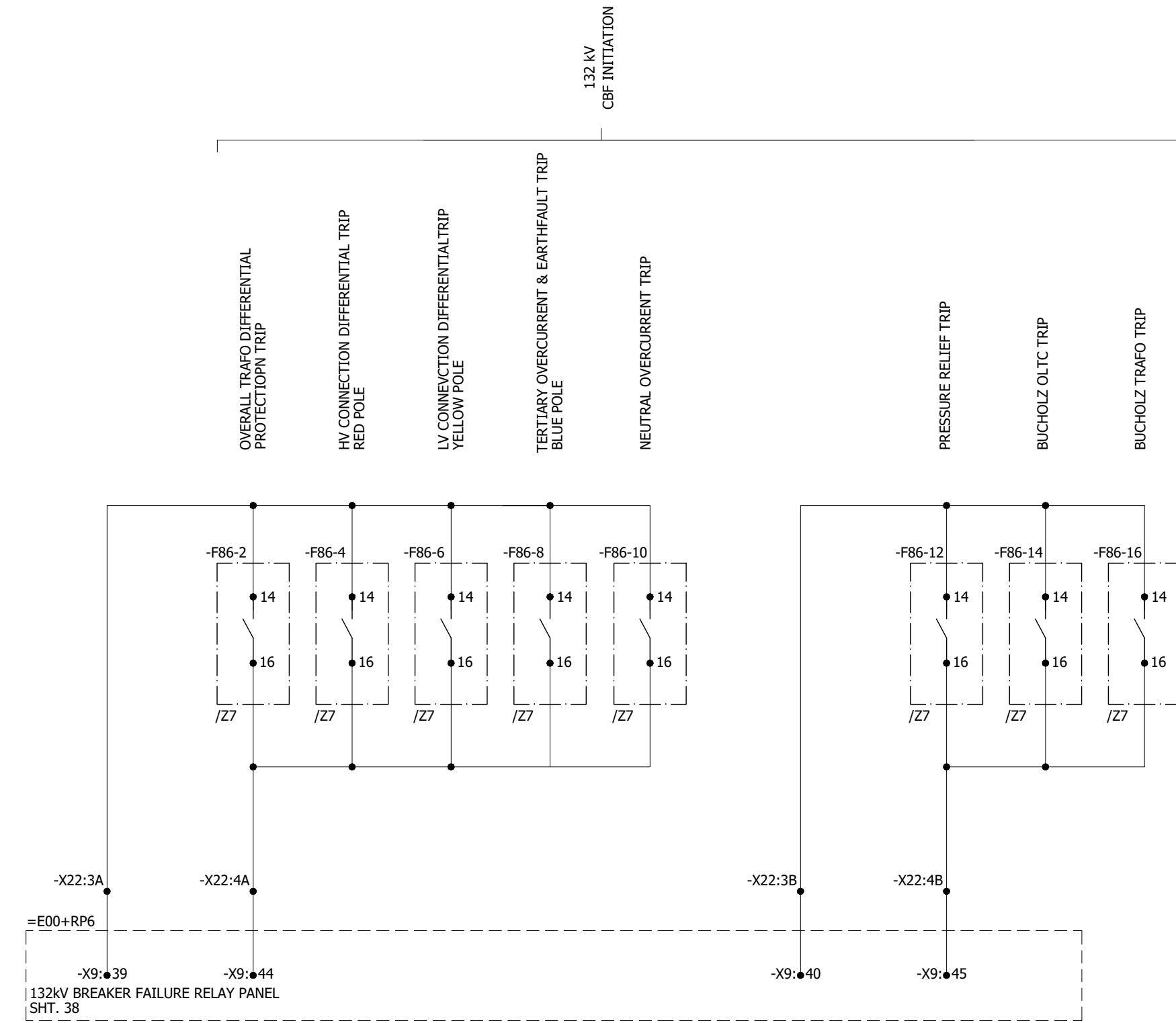
B

C

D

E

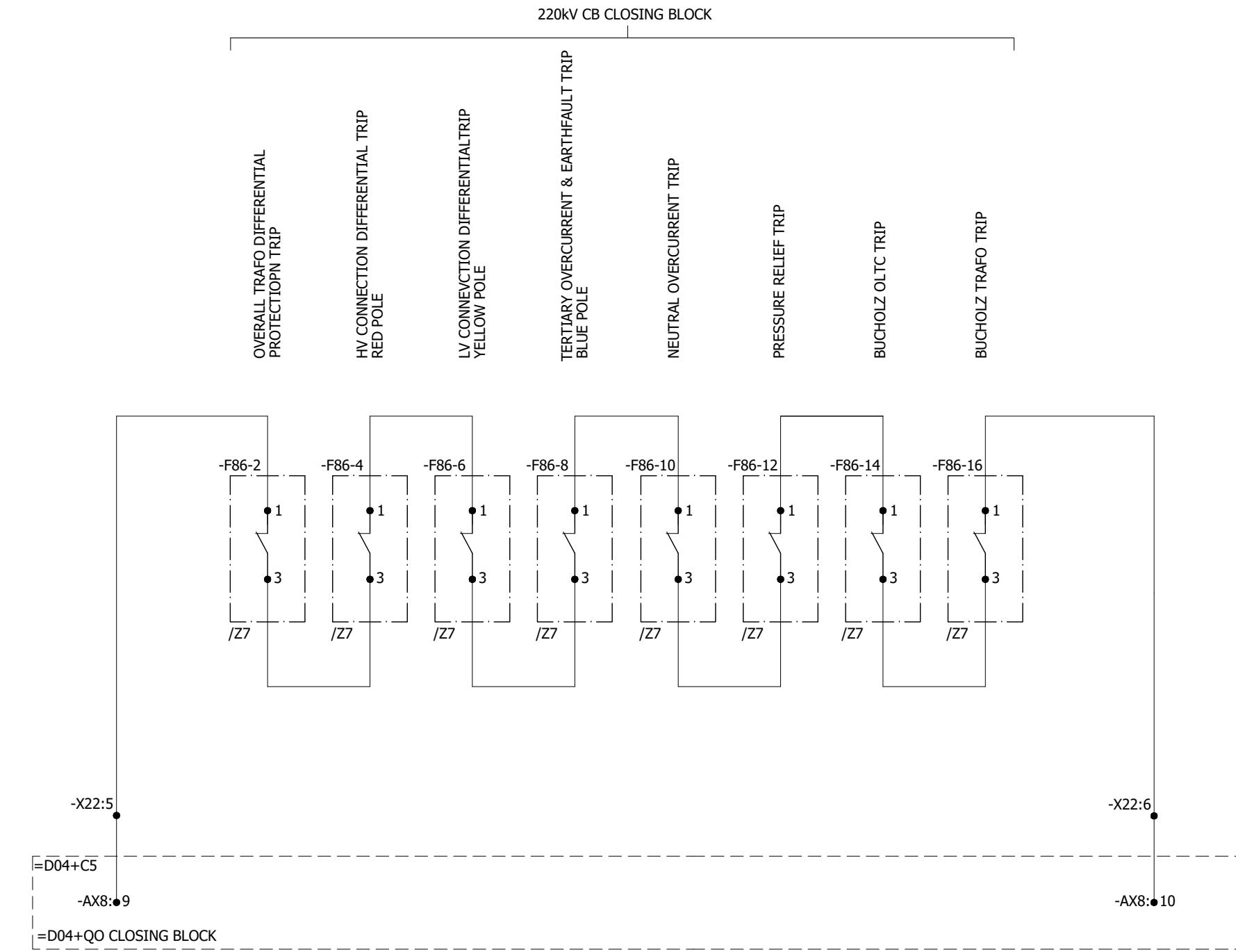
F



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 (=D03+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

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

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 (=D03+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
1			2	3	4	5	6	7	8			



All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

B

C

D

E

F

A

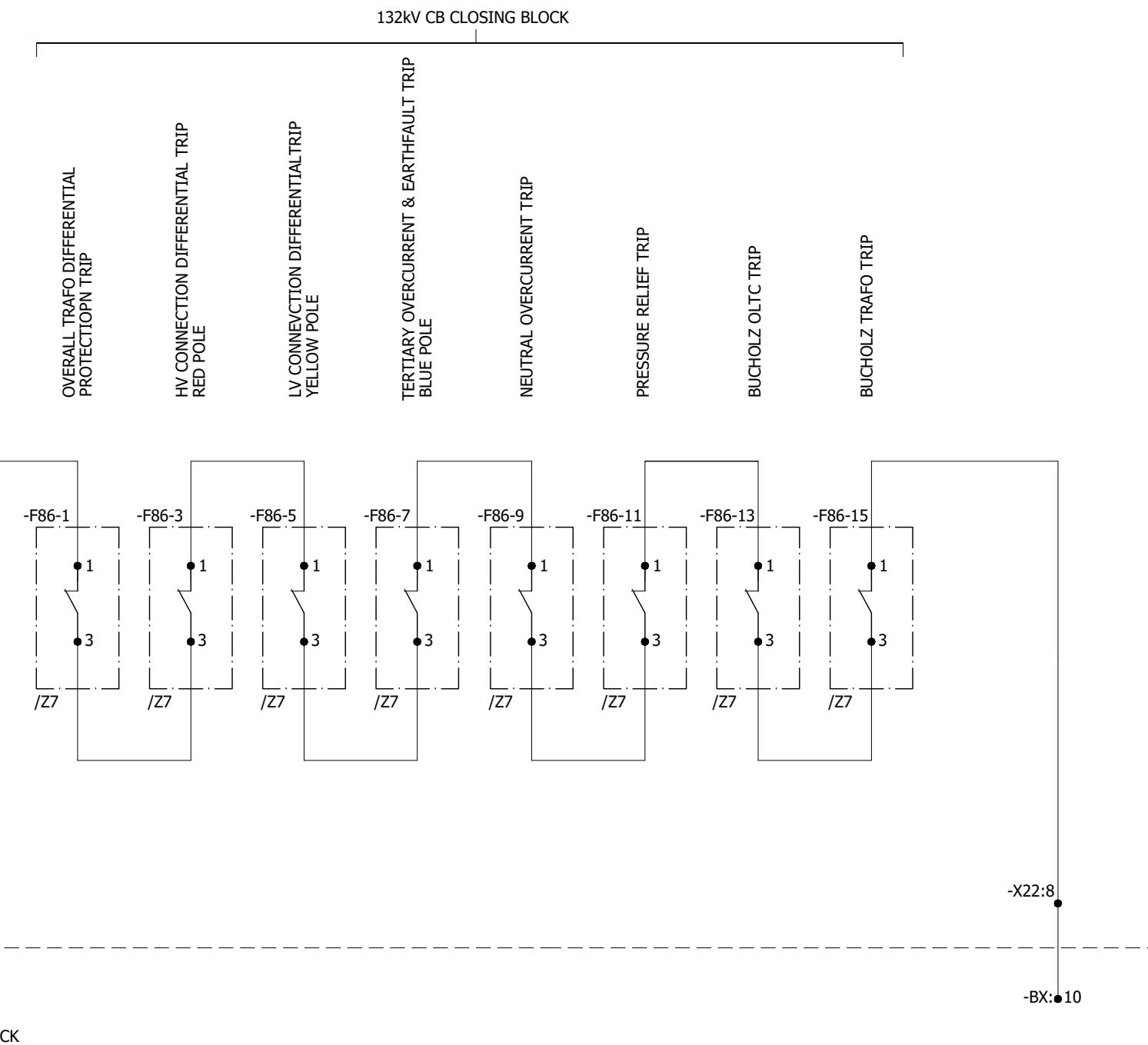
B

C

D

E

F



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 (=D03+R4) =D04+Q0 CLOSING BLOCK	Drawing no. P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type PA5
									Sheet no. 38

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

卷之三

0	AS BUILT
REV.	DESCRIPT

	22.11.2018	ASJ
	DATE	DRAWER

Manufacturer
**E P E S O**
71-B Garden Block,
New Garden Town
Lahore, Pakistan

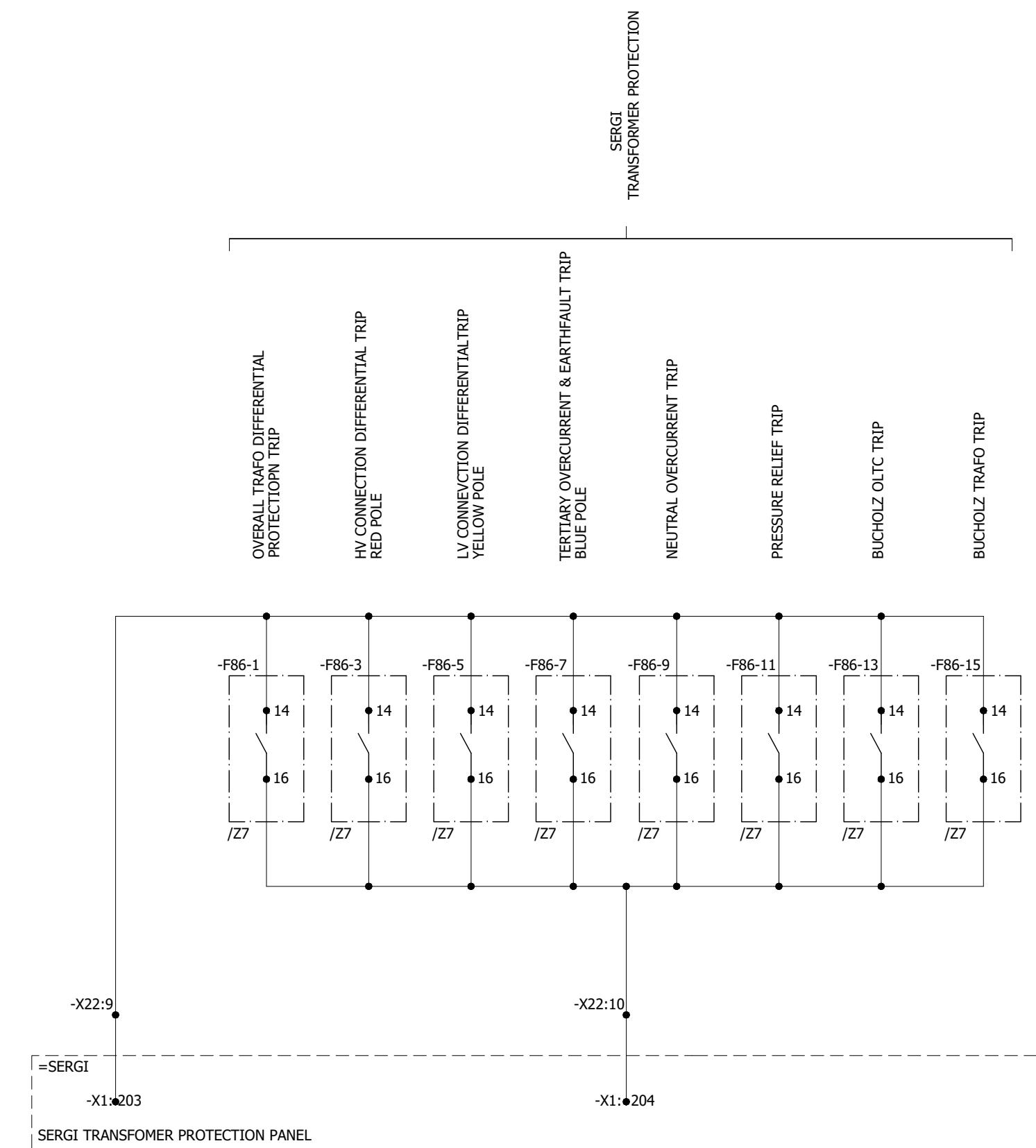
OL Contractor Grid Solutions
 A GE and Alstom joint venture

Project	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE
ON & ITED	

1

e
220kV TRAFO RELAY SET-2 PANEL
(=D03+R4)
PROTECTION INTER-CIRCUITS

Drawing no.	P60194-E-DTR-SC-002	
Project no.	Sheet type	Sheet no.
P-60194	PA6	39



1

1

2

3

Table 1. Summary of the main characteristics of the four groups.

4

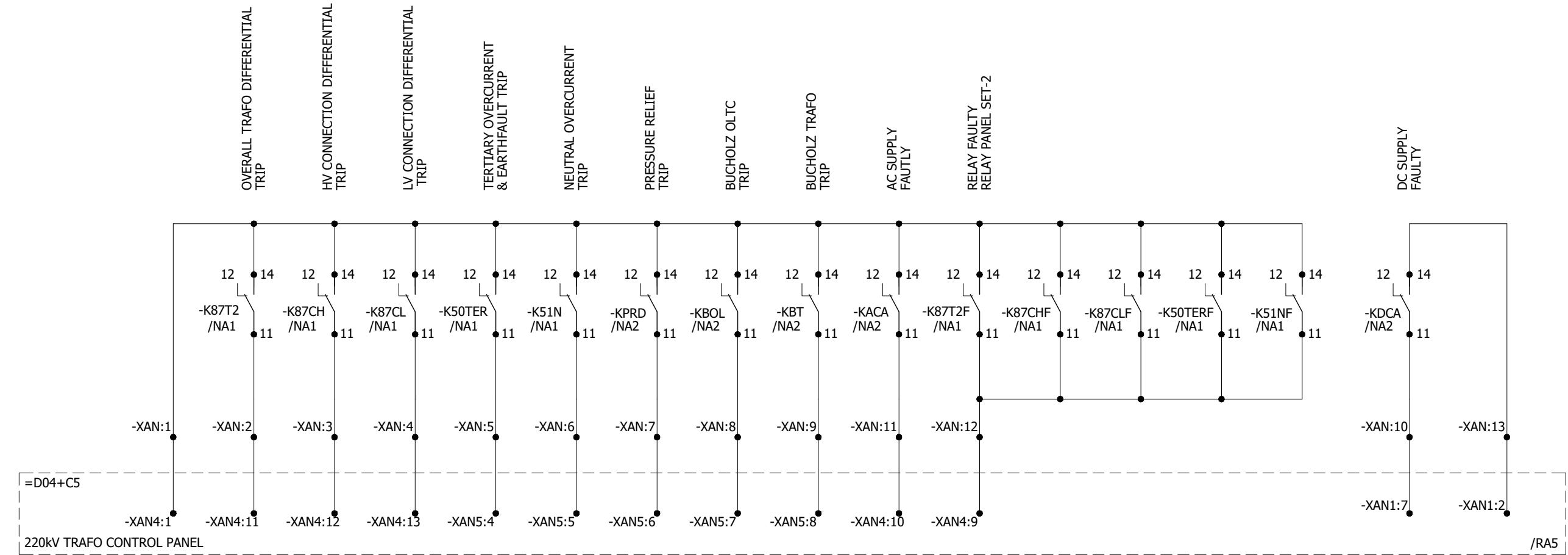
5

100

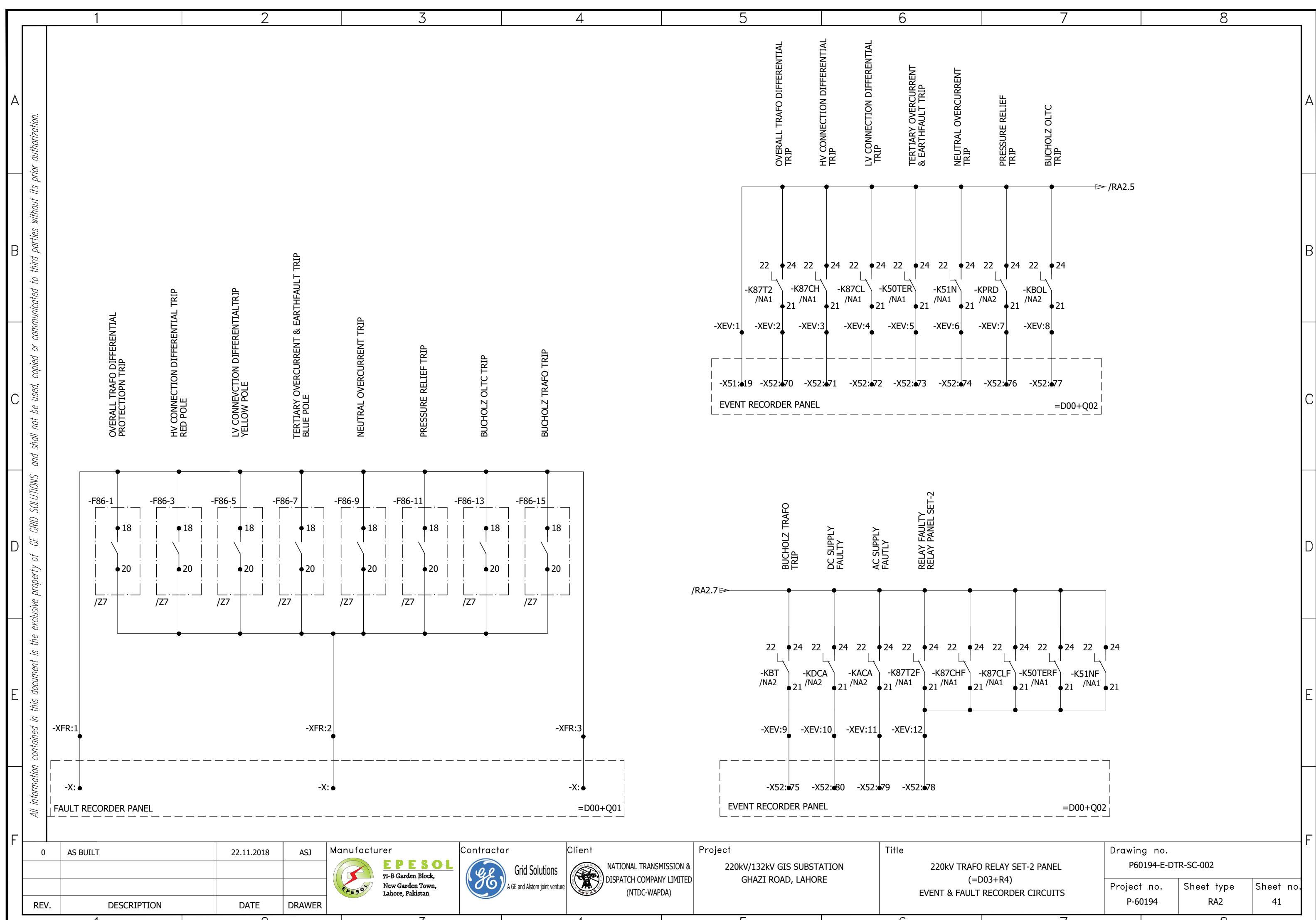
6 7

8

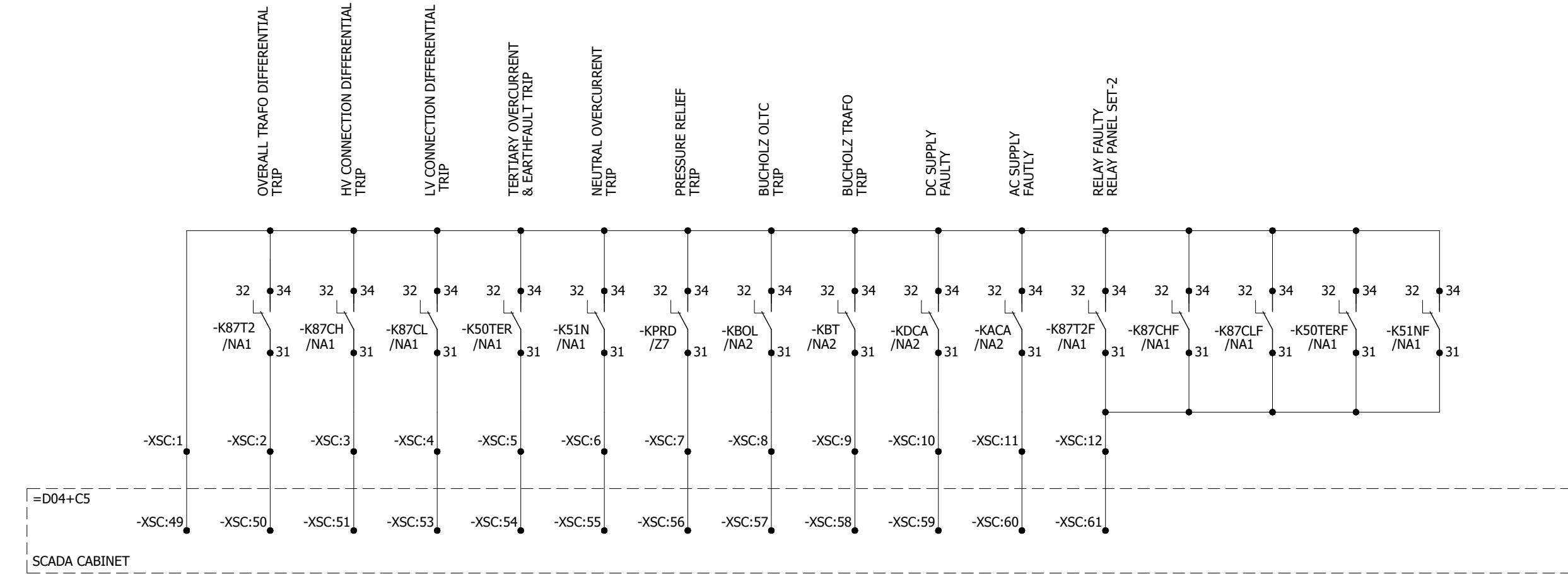
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT		22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
REV.	DESCRIPTION		DATE	DRAWER	E P E S O L 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 (=D03+R4) ANNUNCIATION CIRCUIT	P60194-E-DTR-SC-002		
										Project no. P-60194	Sheet type RA1	Sheet no. 40
1			2		3	4	5	6	7	8		



All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



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 (=D03+R4) SCADA CIRCUIT	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type RA3	Sheet no. 42
1	2	3	4	5	6	7	8					

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

A

B

B

C

C

D

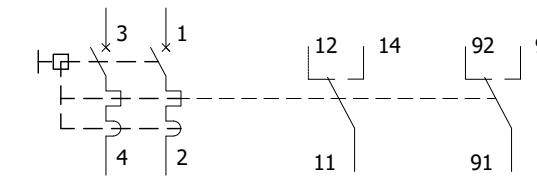
D

E

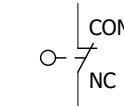
E

F

F



-F101	D.2	F.6	
-F102	D.4	F.6	
-F103	D.6	F.6	
-F201	E.2	F.2	
-F202	E.3	F.2	
-F203	E.4	F.2	
-F204	E.5	F.3	
-F205	E1.2	F.4	



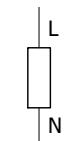
-S100	D.3
-------	-----



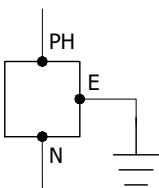
-B100	D.4	D.5
-------	-----	-----



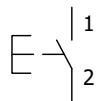
-H100	D.3
-H200	F.4



-R100	D.5
-------	-----



-X100	D.7
-------	-----



-S86	O.5
------	-----

0 AS BUILT 22.11.2018 ASJ Manufacturer E P E S O L 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)

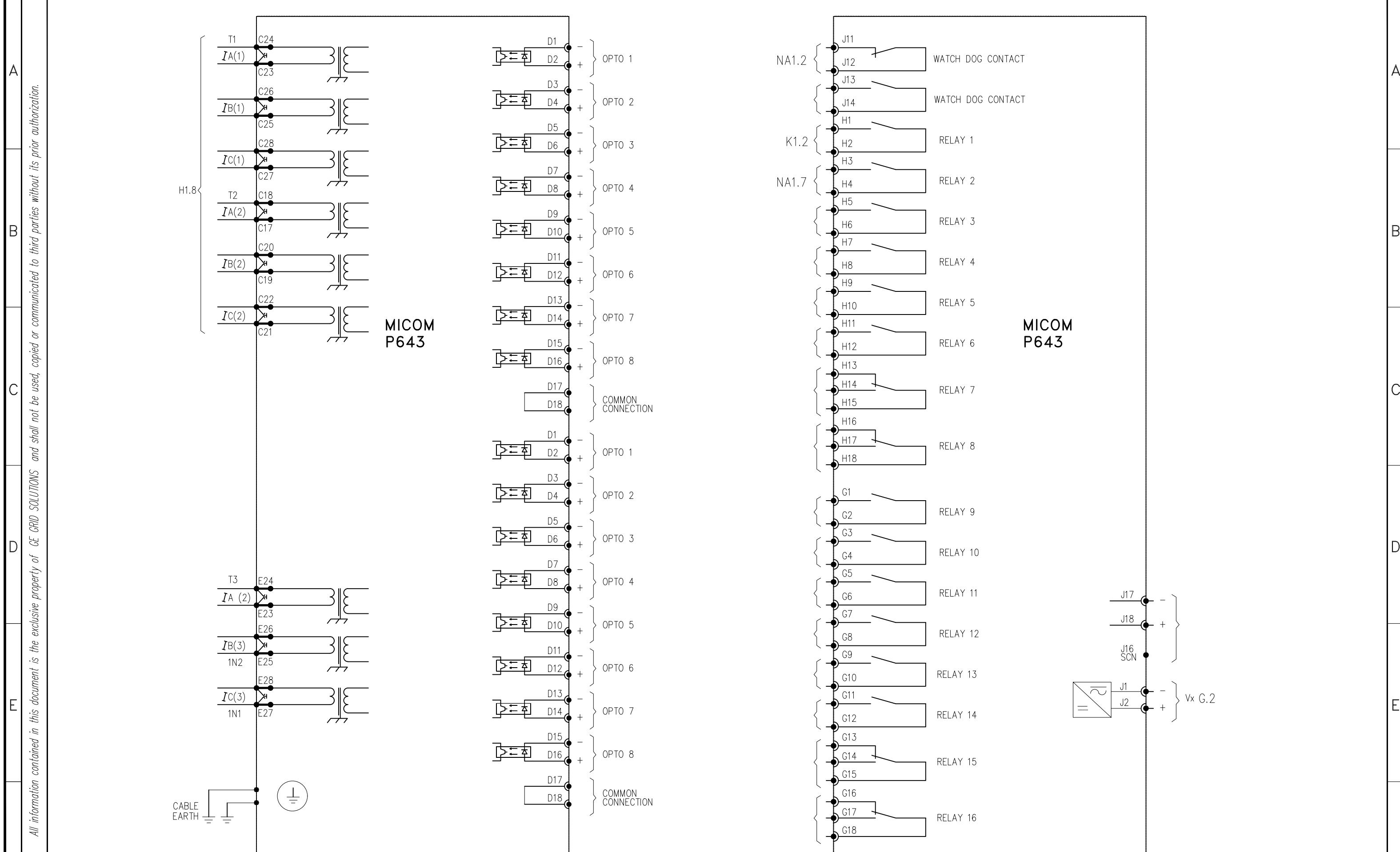
Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE Title 220KV TRAFO RELAY SET-2 PANEL (=D03+R4) COMPONENT DIAGRAM Drawing no. P60194-E-DTR-SC-002 Project no. P-60194 Sheet type Z1 Sheet no. 43

REV.

DESCRIPTION

DATE

DRAWER



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 (=D03+R4) COMPONENT DIAGRAM	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type Z2	Sheet no. 44
1	2	3	4	5	6	7	8					

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

B

C

D

E

F

A

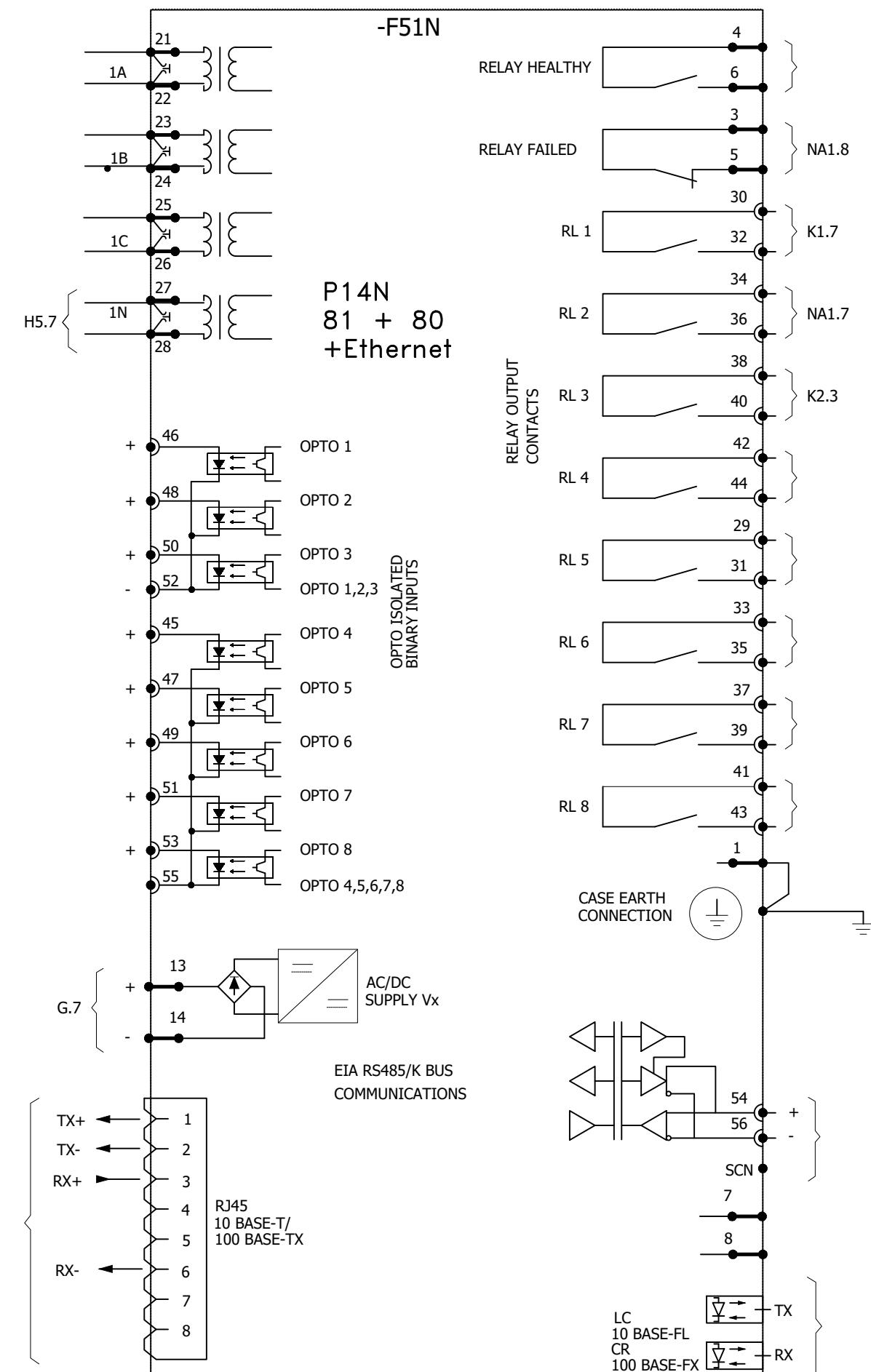
B

C

D

E

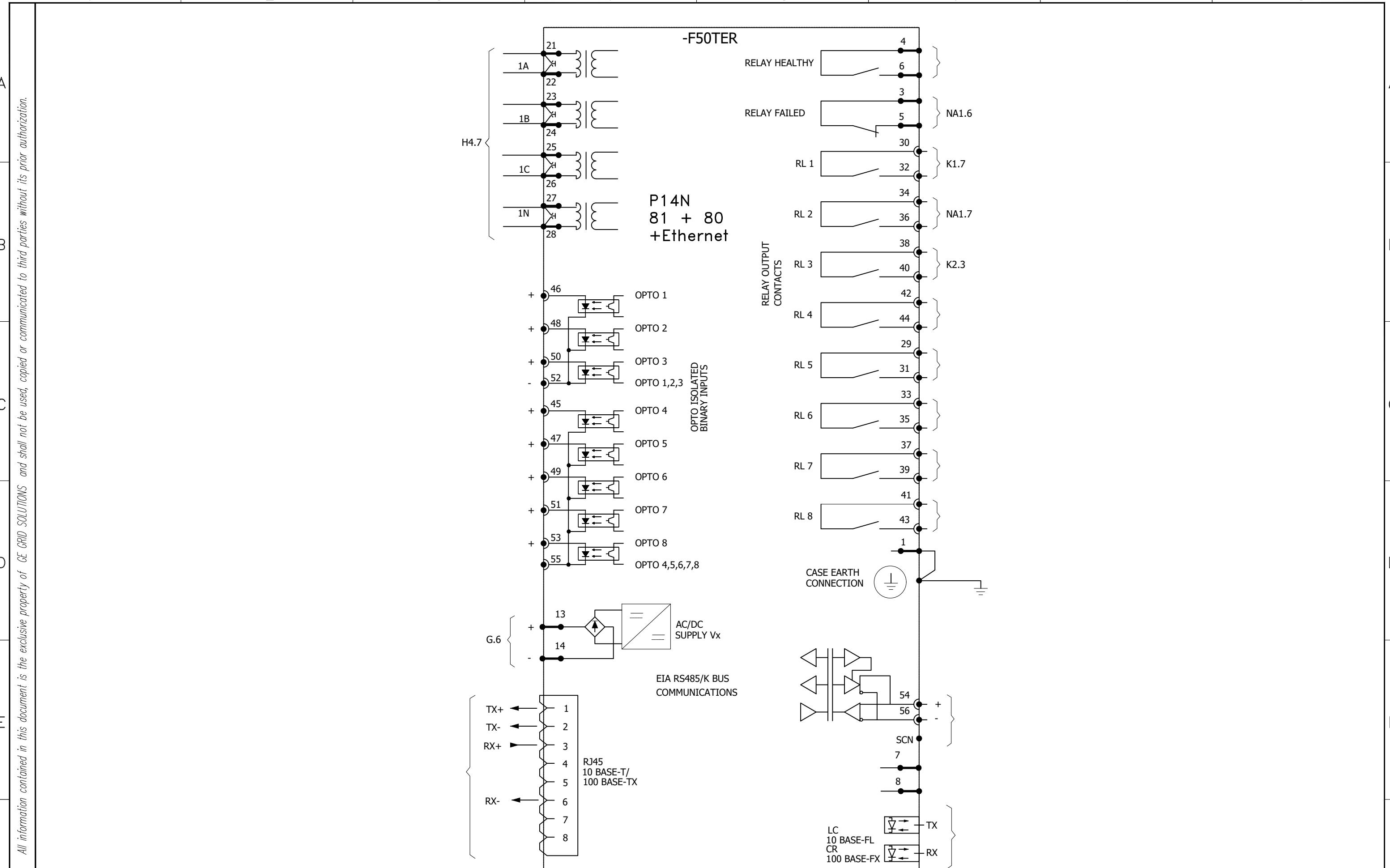
F

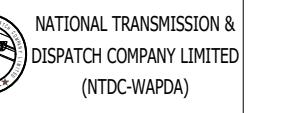


0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
REV.	DESCRIPTION	DATE	DRAWER	EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	220KV TRAFO RELAY SET-2 PANEL (=D03+R4) COMPONENT DIAGRAM	P60194-E-DTR-SC-002
									Project no. P-60194 Sheet type Z3 Sheet no. 45

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

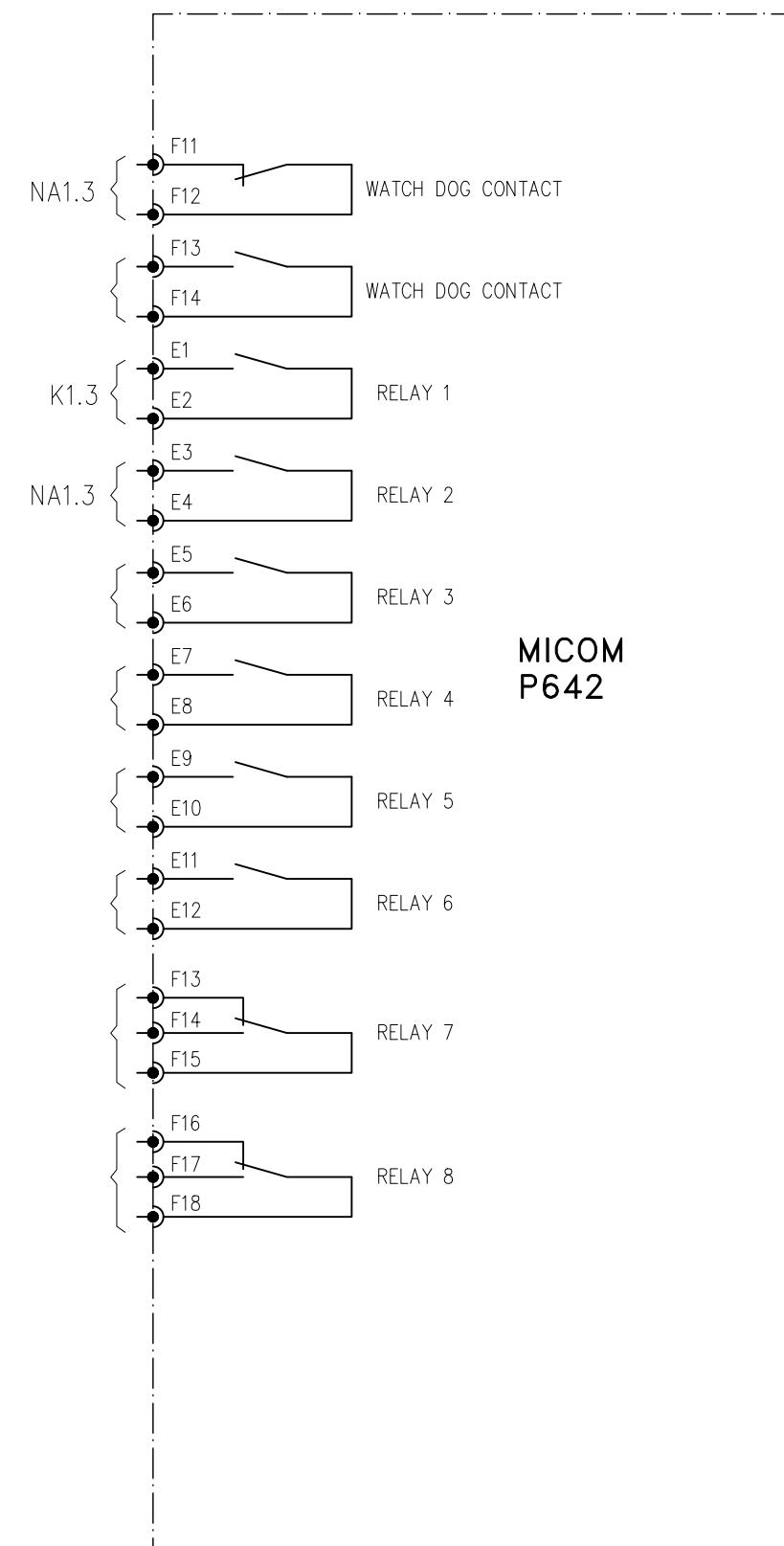
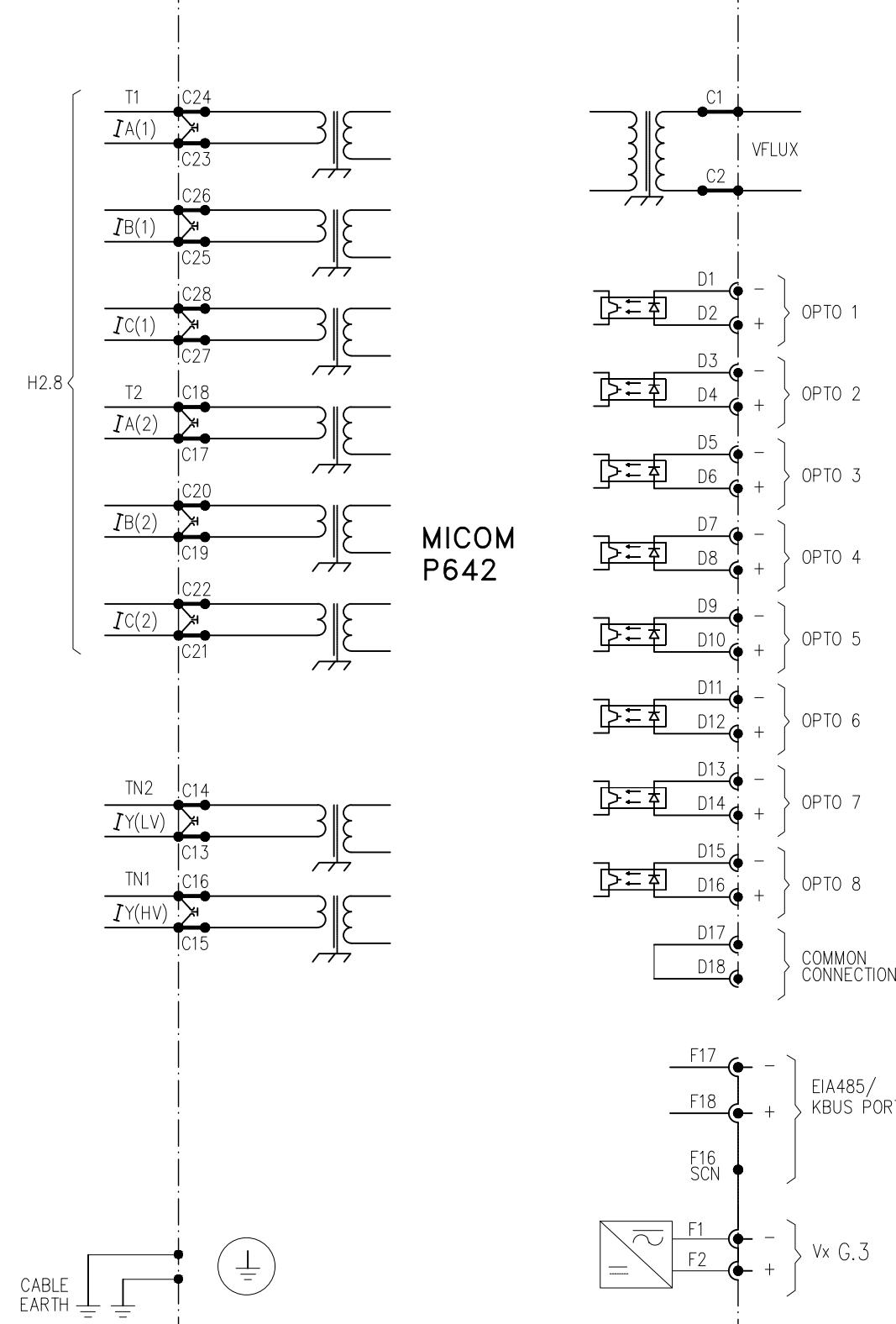
1 2 3 4 5 6 7 8



0	AS BUILT	22.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				 7-B Garden Block, New Garden Town, Lahore, Pakistan	 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 (=D03+R4) COMPONENT DIAGRAM	P60194-E-DTR-SC-002
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type Z4 Sheet no. 46

1 2 3 4 5 6 7 8

-F87CH

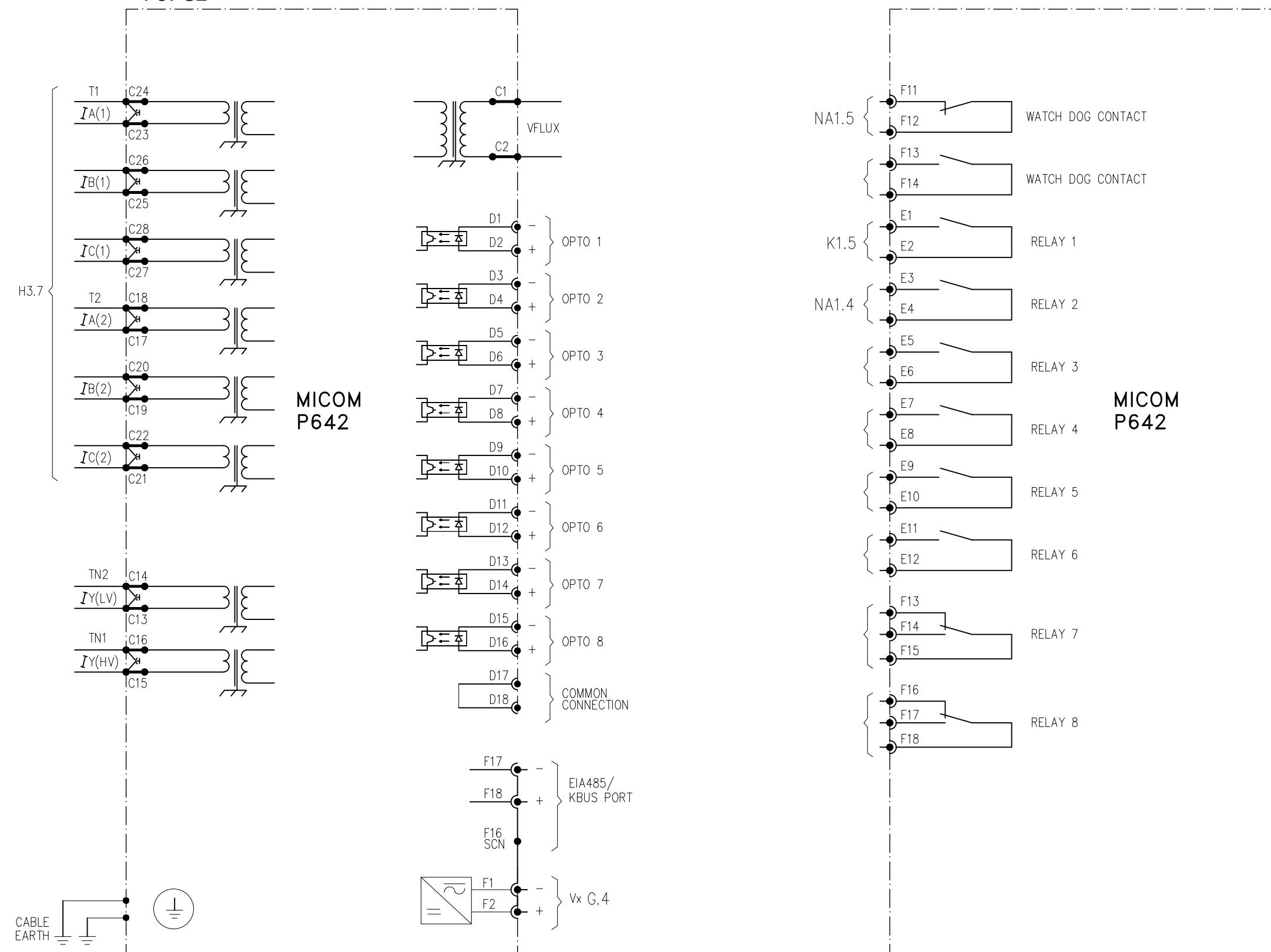


All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	22.11.2018	ASJ	Manufacturer EPE SOL 7-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 (=D03+R4) COMPONENT DIAGRAM	Drawing no. P60194-E-DTR-SC-002		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type Z5	Sheet no. 47

All information contained in this document is the exclusive property of GE R&D SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

-F87C



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 (=D03+R4) COMPONENT DIAGRAM	Drawing no. P60194-E-DTR-SC-002
									Project no. P-60194
									Sheet type Z6
REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 48
1	2	3	4	5	6	7	8		

1

1

1

1

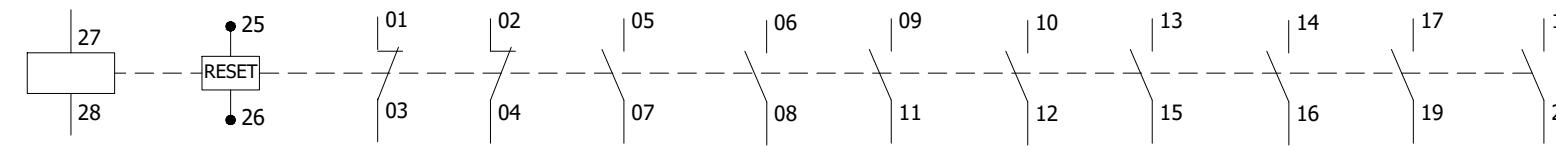
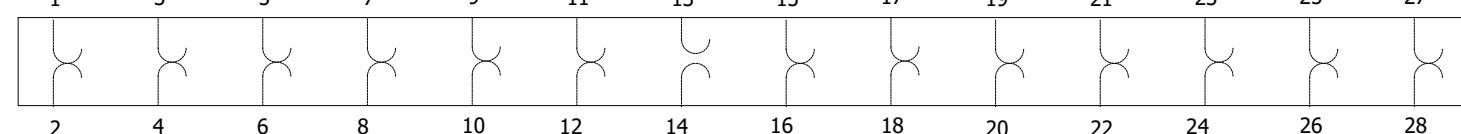
1

1

1

1

1 E D C B



REV.	DESCRIPTION	DATE	DRAWER	EPESOL New Garden Town, Lahore, Pakistan	AGC and Alstom Joint Venture	(NTDC-WAPDA)	COMPONENT DIAGRAM	Project No.	Sheet Type	Sheet No.
								P-60194	Z7	49