



Grid Solutions
A GE and Alstom joint venture

220kV/132kV GIS SUBSTATION GHAZI ROAD , LAHORE

220kV LINE CONTROL PANEL (=D01+C4) SCHEMATIC DRAWINGS

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	30.10.2018	ASJ	AMR	NAH	AS BUILT			
Scale					Sheet size			
NOT-TO-SCALE					A3			
Client								
			NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)					
Contractor								
			Grid Solutions A GE and Alstom joint venture					
Manufacturer								
			EPESOL 71-B Garden Block, New Garden Town, Lahore Pakistan					
Project								
220kV / 132kV GIS SUBSTATION GHAZI ROAD , LAHORE								
Title								
220kV LINE CONTROL PANEL (=D01+C4) SCHEMATIC DRAWINGS								
Order no			Document no					
P-60194			P60194-E-RLC-SC-003					
Sheet type		Total sheets	Sheet no					
A		40	1					

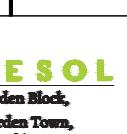
	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A		CIRCUIT BREAKER		MINIATURE CIRCUIT BREAKER		AUXILIARY CONTACTOR NO+NC	21	DISTANCE
B		SWITCH/ISOLATOR		KEY OPERATED SELECTOR SWITCH		AMMETER	24	OVEREXCITATION
C		EARTHING		LIMITED SWITCH		VOLTMETER	25	SYNCHROCHECK
D		SF6 TO 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

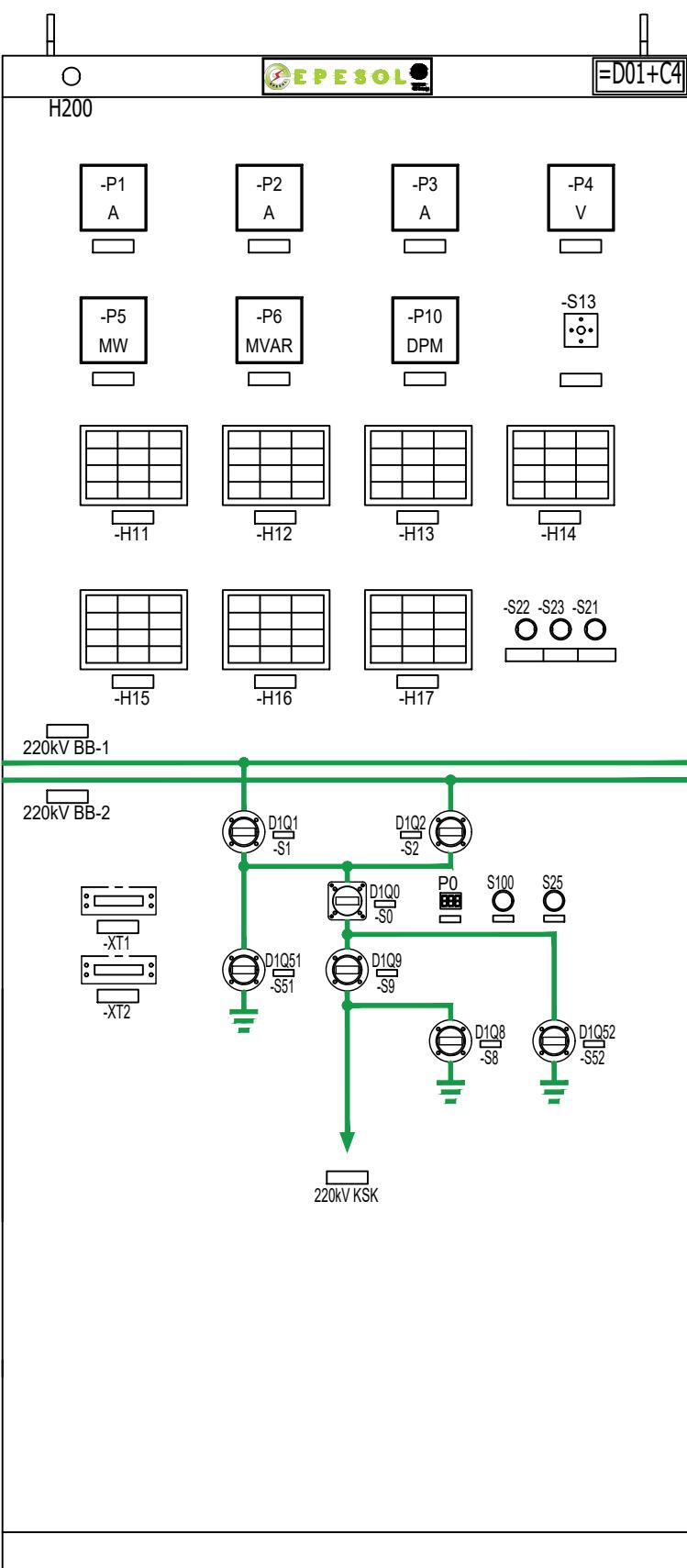
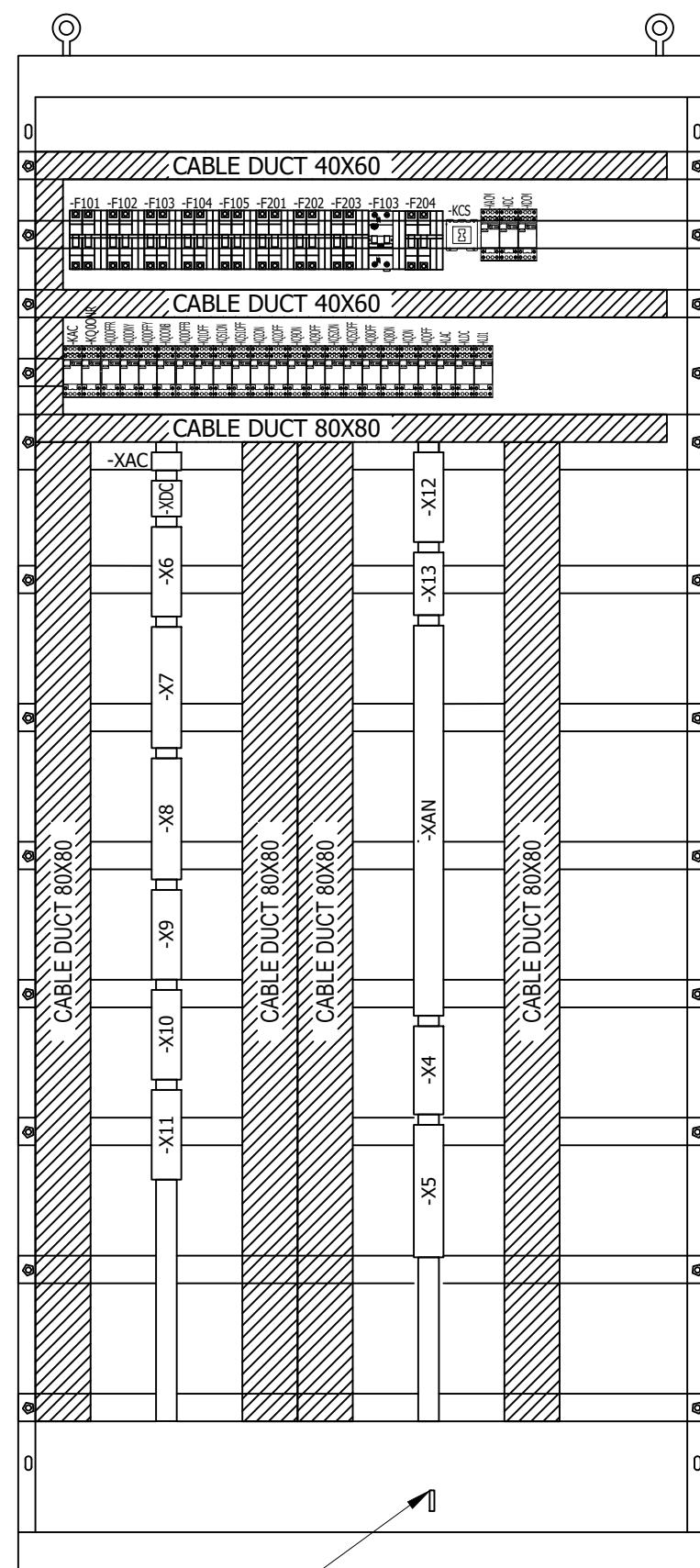
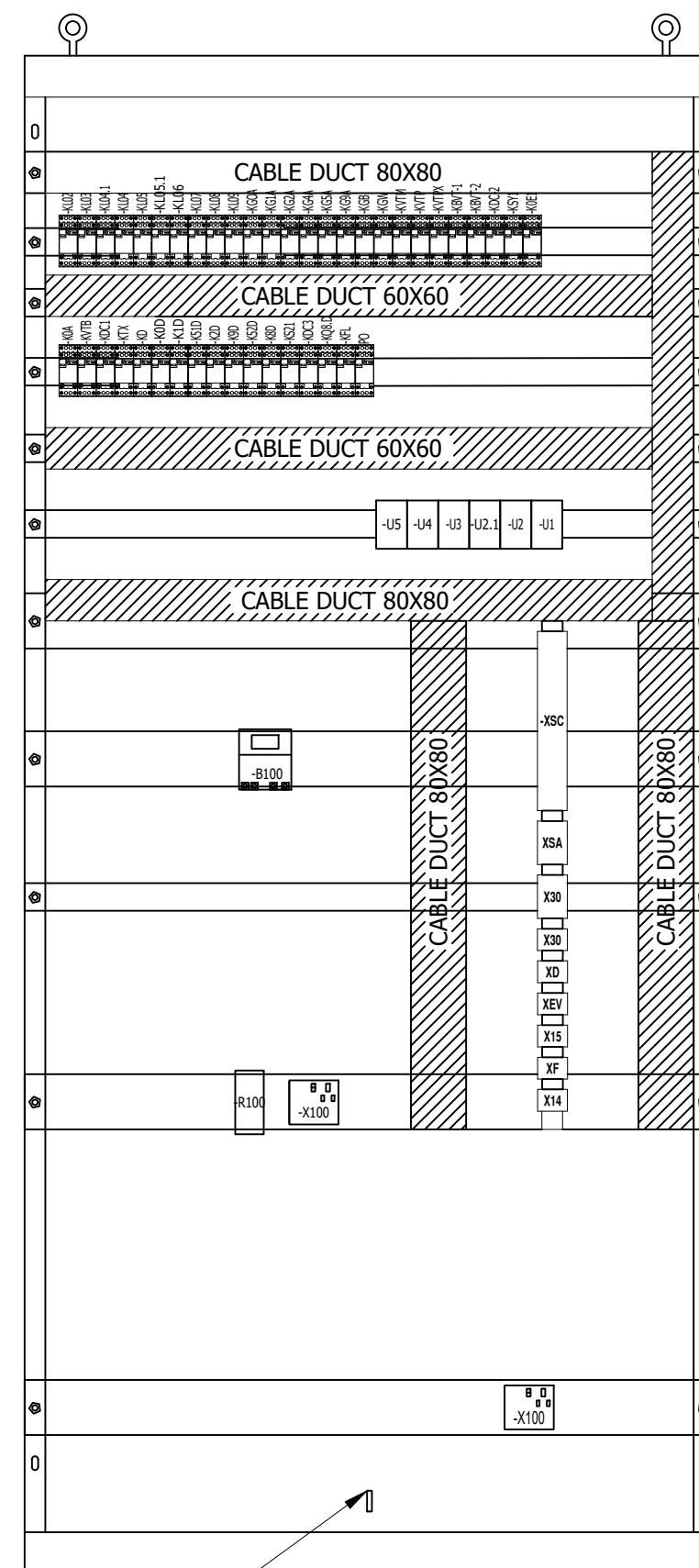
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0	AS BUILT	30.10.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE CONTRPL PANEL (=D01+C4) SYMBOLA AND LEGENDS	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type AB
									Sheet no. 04

	1	2	3	4	5	6	7	8		
	QTY.	DEVICE DESCRIPTION	DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION	MANUFACTURER			
A	01	DIGITAL POWER METER	ENERIUM-150, Accuracy: 0.5S, IP Class: IP52, COM Port: RS485, Size: 96x96 Sq.mm. Supply: 110-375VDC, NOMINAL INPUT: 1/5A, 110VAC(L-L)	-P10			ENERDIS			
	02	ANALOG AMMETER	Type: A96MMA, In: 0...20/30mA, Deflection: 240°, Class: 1, Size: 96x96 Sq.mm, Scale-1: 0..600/900A, Scale-2: 0...1200/1800A, Scale-3: 0...2400/3600A	-P1,-P3			FRER			
B	01	DIGITAL AMMETER	Type: D96MMA, In: 0...20/30mA DC, Class: 1, Supply: 220VDC, Size: 96x96 Sq.mm.	-P2			FRER			
	01	ANALOG VOLTMETER	Type: A96MMV, In: 0...20/30mA DC, Deflection: 240°, Class: 1, Size: 96x96 Sq.mm. Scale: 0...220/330kV, Marked Red at 220kV	-P4			FRER			
C	01	ANALOG REAL POWER (MW) METER	Type: A96MMA, In: -12.5/10...0...+10/12.5mA DC, Deflection: 240° with CENTER ZERO,	-P5			FRER			
		Application: 3PH+4W Balanced System	Size: 96x96 Sq.mm., Class: 1, Scale-1: 450/300...0...300/450 MW (229 MW at 20mA) Scale-2: 625/500...0...500/625 MW (457 MW at 20mA), Scale-3: 1250/1000...0...1000/1250 MW (915 MW at 20mA)							
D	01	ANALOG REACTIVE POWER (MVAR) METER	Type: A96MMA, In: -12.5/10...0...+10/12.5mA DC, Deflection: 240° with CENTER ZERO,	-P6			FRER			
		Application: 3PH+4W Balanced System	Size: 96x96 Sq.mm., Class: 1, Scale-1: 450/300...0...300/450 MVAR (229 MVAR at 20mA) Scale-2: 625/500...0...500/625 MVAR (457 MVAR at 20mA), Scale-3: 1250/1000...0...1000/1250 MVAR (915 MVAR at 20mA)							
E	04	CURRENT TRANSDUCER	Type: MCOEAQ, Accuracy Class: 1, Input: 1/1.5A, Output: 0...20/30mA - 1 O/P, Frequency: 50Hz, Supply: 220VDC, CT Ratio: 600:1200:2400 / 1A	-U1,-U2, -U2.1, -U3			FRER			
	01	VOLTAGE TRANSDUCER	Type: MCOEVQ, Accuracy Class: 1, Input: 0...110/165VAC(L-L), Output: 0...20/30mA - 1 O/P Frequency: 50Hz, Supply: 220VDC, PT Ratio: 220/0.11 kV(L-L)	-U4			FRER			
F	01	PROGRAMMABLE UNIVERSAL TRANSDUCER	Type: MCUP4, 3-Phase 4 Wire Balanced Load Input Voltage: 110/137.5 VAC (L-L), Input Current: 1/1.25 A, Auxiliary Voltage: 220 VDC 4x Programmable DC mA O/P, Accuracy Class: 1, Output: -12.5/10...0...10/12.5 mA PT Ratio: 220/0.11 kV (L-L), CT Ratio: 600:1200:2400 / 1A.	-U5			FRER			
	01	DISCREPANCY SWITCH - CIRCUIT BREAKER	Type: YS-IC-4456-S4(49)-PM-K-G-D22-GM, Standard-type (Push & Turn 90° after 2-position) Square Type, Rating: 220VDC	-S0			YONGSUNG			
G	06	DISCREPANCY SWITCH - ISOLATOR / EARTHING SWITCHES	Type: YS-IC-4456-R4(49)-PM-K-G-D22-GM, Standard-type (Push & Turn 90° after 2-position) Round Type, Rating: 220VDC	-S1,-S51,-S2,-S9,-S52,-S8			YONGSUNG			
	01	SELECTOR SWITCH - VOLTMETER	Type: PO-160023R001, 7 Position (L1-L2,L2-L3,L3-L1,OFF,L1-N,L2-N,L3-N)	-S13			GIOVENZANA			
H	01	SELECTOR SWITCH - OPERATION (LOCAL-OFF-SCADA)	Type: YS-AK-2-3-44-D, 2 Position with OFF, 4-Pole, Ratings: 12A, 220VDC, Keytype	-S100			YONGSUNG			
	01	SELECTOR SWITCH - SYNCHRONIZATION (ON-BYPASS)	Type: YS-AK-2-2-44-D, 2 Position, 4-Pole, Ratings: 12A, 220VDC, Keytype	-S25			YONGSUNG			
I	0	AS BUILT	30.10.2018	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 CONTRPL PANEL (=D01+C4) COMPONENT LIST	Drawing no. P60194-E-RLC-SC-003
	REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type AC1

	1	2	3	4	5	6	7	8		
	QTY.	DEVICE DESCRIPTION	DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION	MANUFACTURER			
A	04	TERMINAL BLOCKS - AC SUPPLY DIST.	Screw-type, Feed Through Terminal, CBD-4	-XAC	CABUR	A				
	08	TERMINAL BLOCKS - DC SUPPLY DIST.	Screw-type, Feed Through Terminal, CBD-4	-XDC	CABUR					
	16	TERMINAL BLOCKS - CT METERING CIRCUIT	Screw-type, Feed Through Terminal, SCB-6	-X4	CABUR					
	28	TERMINAL BLOCKS - VT METERING CIRCUIT	Screw-type, Feed Through Terminal, SCB-6	-X5	CABUR					
	20	TERMINAL BLOCKS - POWER EQUIP. INPUT	Screw-type, Feed Through Terminal, CBD-4	-X6	CABUR					
	27	TERMINAL BLOCKS - POWER EQUIP. INPUT	Screw-type, Feed Through Terminal, CBD-4	-X7	CABUR					
B	27	TERMINAL BLOCKS - CB OPENING/CLOSING CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X8	CABUR	B				
	20	TERMINAL BLOCKS - CB OPENING/CLOSING CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X9	CABUR					
	20	TERMINAL BLOCKS - CB OPENING/CLOSING CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X10	CABUR					
	31	TERMINAL BLOCKS - ISO./ESW OPENING/CLOSING CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X11	CABUR					
C	20	TERMINAL BLOCKS - SYNC. CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X12	CABUR	C				
	14	TERMINAL BLOCKS - SYNC. CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X13	CABUR					
	05	TERMINAL BLOCKS - CONTROL CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X14	CABUR					
	16	TERMINAL BLOCKS - DISCREPANCY CHECK CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X15	CABUR					
D	07	TERMINAL BLOCKS - DISCREPANCY CHECK CIRCUIT	Screw-type, Feed Through Diode Terminal, DAS.4/6	-XD	CABUR	D				
	87	TERMINAL BLOCKS - ANNUNCIATION CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-XAN	CABUR					
	28	TERMINAL BLOCKS - ER/FR CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-XEV	CABUR					
	16	TERMINAL BLOCKS - SCADA SIGNALS	Screw-type, Feed Through Terminal, CBD-4	-XSC	CABUR					
E	06	TERMINAL BLOCKS - SCADA METERING SIGNALS	Screw-type, Feed Through Terminal, CBD-4	-XSA	CABUR	E				
	06	TERMINAL BLOCKS - CONTROL CIRCUIT	Screw-type, Feed Through Terminal, CBD-4	-X30	CABUR					
F	0	AS BUILT	30.10.2018	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 LINE CONTRPL PANEL (=D01+C4) COMPONENT LIST	Drawing no. P60194-E-RLC-SC-003
									Project no. P-60194	
									Sheet type AC2.1	
									Sheet no. 06a	
REV.	DESCRIPTION	DATE	DRAWER							

	1	2	3	4	5	6	7	8		
	QTY.	DEVICE DESCRIPTION	DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION	MANUFACTURER			
A	01	PUSH BUTTON - ACKNOWLEDGE	Type: Switch (A Type), Color : BLACK , Supply : 220VDC, Ord: YS-AP1-2-31-B-D-W			-S21	YONGSUNG			
	01	PUSH BUTTON - LAMP TEST	Type: Switch (A Type), Color : RED , Supply : 220VDC, Ord: YS-AP1-2-31-R-D-W			-S22	YONGSUNG			
	01	PUSH BUTTON - RESET	Type: Switch (A Type), Color : GREEN , Supply : 220VDC, Ord: YS-AP1-2-31-G-D-W			-S23	YONGSUNG			
	03	MCB - AC	2-Pole, Ratings: 2A, 240VAC, 10kA @ 240VAC, 2 C/O Contacts, Ord: G62C02+CAH(2)			-F101, -F102, -F104	GE			
	01	MCB - ELCB	2-Pole, Ratings: 16A, 30mA, 240VAC, 1P+N, 2 C/O Contacts, Ord: DM100C16/030+CAH(2)			-F103	GE			
	04	MCB - DC	2-Pole, Ratings: 4A, 250VDC, 10kA @ 250VDC, 2 C/O Contacts, Ord: EP102UCC04+CAH(2)			-F201, -F202, -F203, -F204	GE			
B	01	MCB - VT	4-Pole, Ratings: 4A, 110VAC, 10kA @ 110VAC, Ord: G64C02			-F105	GE			
	01	INDICATION LAMP - DC SUPPLY FAILURE	Type: Integrated LED, Color : RED , Supply : 230VAC @ 50Hz, Ord: YS-PL-2-AL-22-R-W			-H200	YONGSUNG			
	01	ANNUNCIATION MODULE	12-Window, Supply: 220 VAC			-H11	E-LABS			
	06	ANNUNCIATION MODULE	12-Window, Supply: 220 VDC			-H12,-H13,-H14,-H15,-H16,H17	E-LABS			
	02	CONTACTOR RELAY	Coil Voltage: 230VAC @ 50/60 Hz, 6A, 4 C/O Contacts, Ord: PRC4M40ANL			-KACM, -KDC	GE			
	01	AUXILIARY CONTACTOR - SUPPLY CHANGEOVER	Coil Voltage: 220VDC, 16A, 3 NO + 3 NC Contacts, Ord: MCRC022ATWN+MARN211AT			-KCS	GE			
C	65	CONTACTOR RELAY	Coil Voltage: 220VDC, DIODE, 4 C/O Contacts, Ord: PRC4M40DCML			-KDCM, -KAC, -KQ0.ONR, -KQ0.OFR, -KQ0.ONY, -KQ0.OFY	GE			
						-KQ0.ONB, -KQ0.OFB, -KQ1.ON, -KQ1.OF, -KQ51.ON, -KQ51.OF				
						-KQ2.ON, -KQ2.OF, -KQ9.ON, -KQ9.OF, -KQ52.ON, -KQ52.OF				
						-KQ8.ON, -KQ8.OF, -KQ.ON, -KQ.OFF, -KLAC, -KLDC, -KLO1				
						-KLO2, -KLO3, -KLO4, -KLO4.1, -KLO5, -KLO5.1, -KLO6, -KLO7, -KLO8				
						-KLO9, -KG0A, -KG1A, -KG2A, -KG4A, -KG5A, -KG9A, -KGB				
D						-KGW, -KVTM, -KVTP, -KVTPX, -KBVT1, -KBVT2, -KDC2				
						-KSY1, -KOE1, -KO A, -KVTB, -KDC1				
						-KTX, -KD				
						-K0D, -K1D, -K51D, -K2D, -K9D, -K52D, -K8D, -KS21, -KDC3				
	01	NO VOLT RELAY FOR VT	Rated Supply: 110 VAC @ 50 Hz			-KQ8.D	E-LABS			
	01	FLASHER RELAY	Rated Supply: 220 VDC			-KFL	E-LABS			
E	01	OPERATION COUNTER	Rated Supply: 220 VDC			-P0	E-LABS			
	01	PANEL LIGHT	230VAC @ 50Hz, 05W, Ord: YS-T8-30-5W			-H100	YONGSUNG			
	01	DOOR SWITCH	230VAC @ 50Hz, 1 NO Contact, Ord: YS P3315GW-B + YS MS-C			-DS	YONGSUNG			
	01	THREE PIN SOCKET	1N+PE, 16A, 230VAC @ 50Hz			-X100	LOCAL			
	01	PANEL HEATER	230VAC @ 50Hz, 60W			-R100	E-LABS			
	01	HUMIDITY & TEMPERATURE CONTROLLER	40-90%RH, 25-50 deg.C, 230VAC @ 50Hz			-B100	E-LABS			
F	01	TEST BLOCK - CT	YS-CTT-04S			-XT1	YONGSUNG			
	01	TEST BLOCK - VT	YS-PTT-04S			-XT2	YONGSUNG			
	0	AS BUILT	30.10.2018	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 CONTRPL PANEL (=D01+C4) COMPONENT LIST	Drawing no. P60194-E-RLC-SC-003
	REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	
								Sheet type AC2		
								Sheet no. 06		

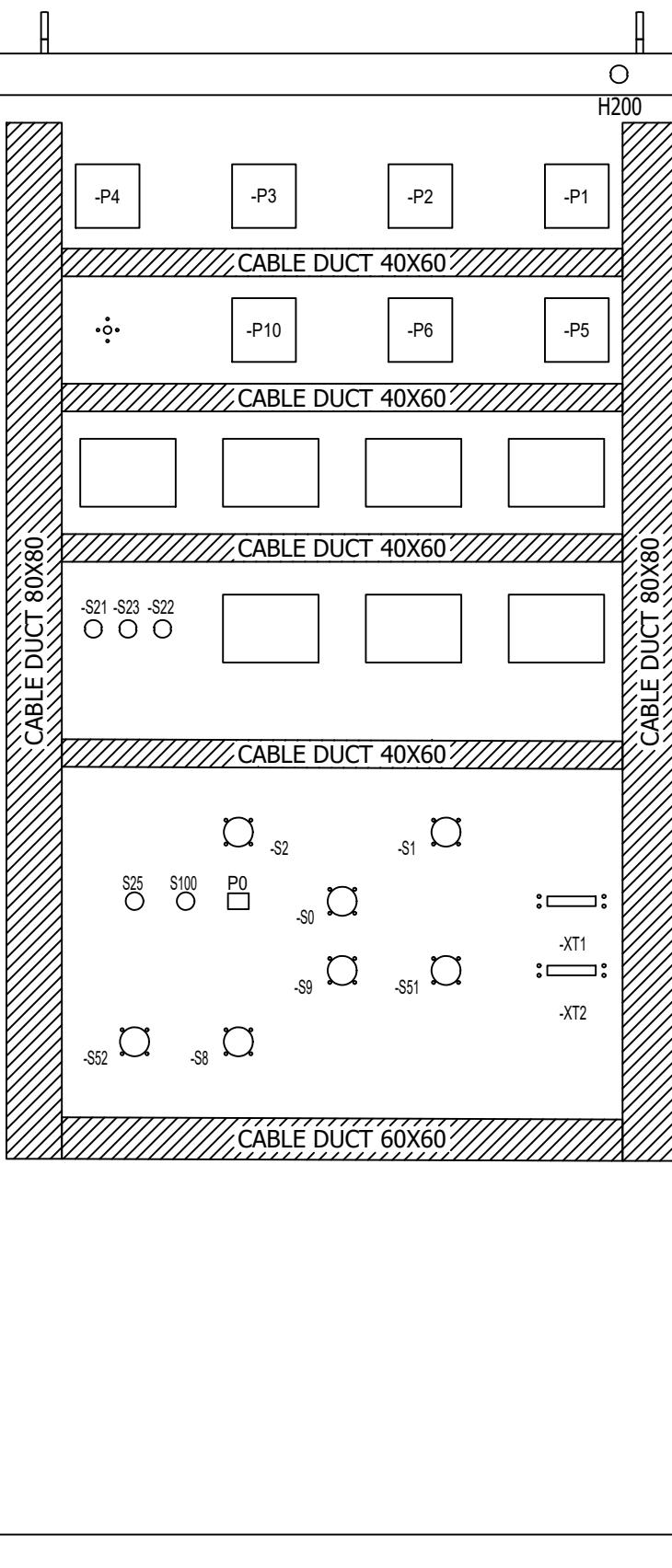
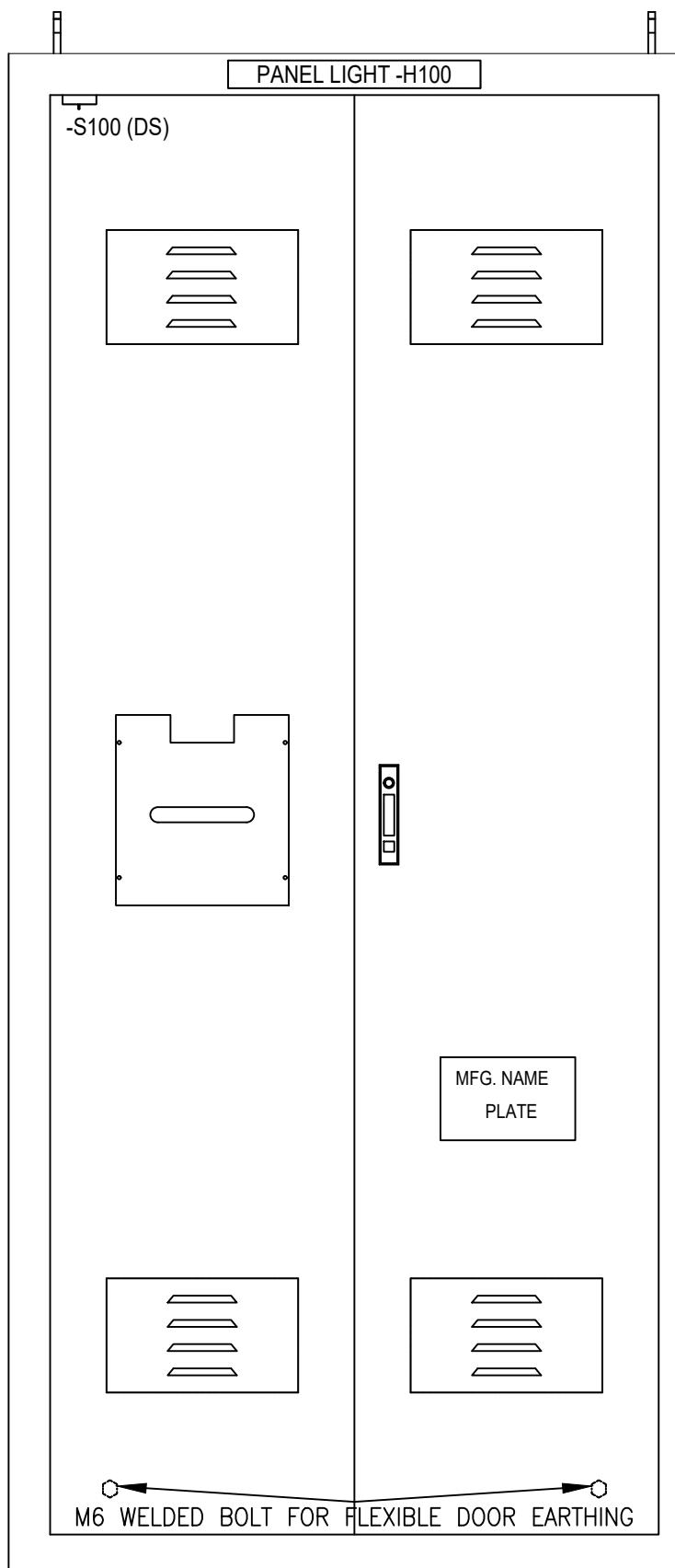
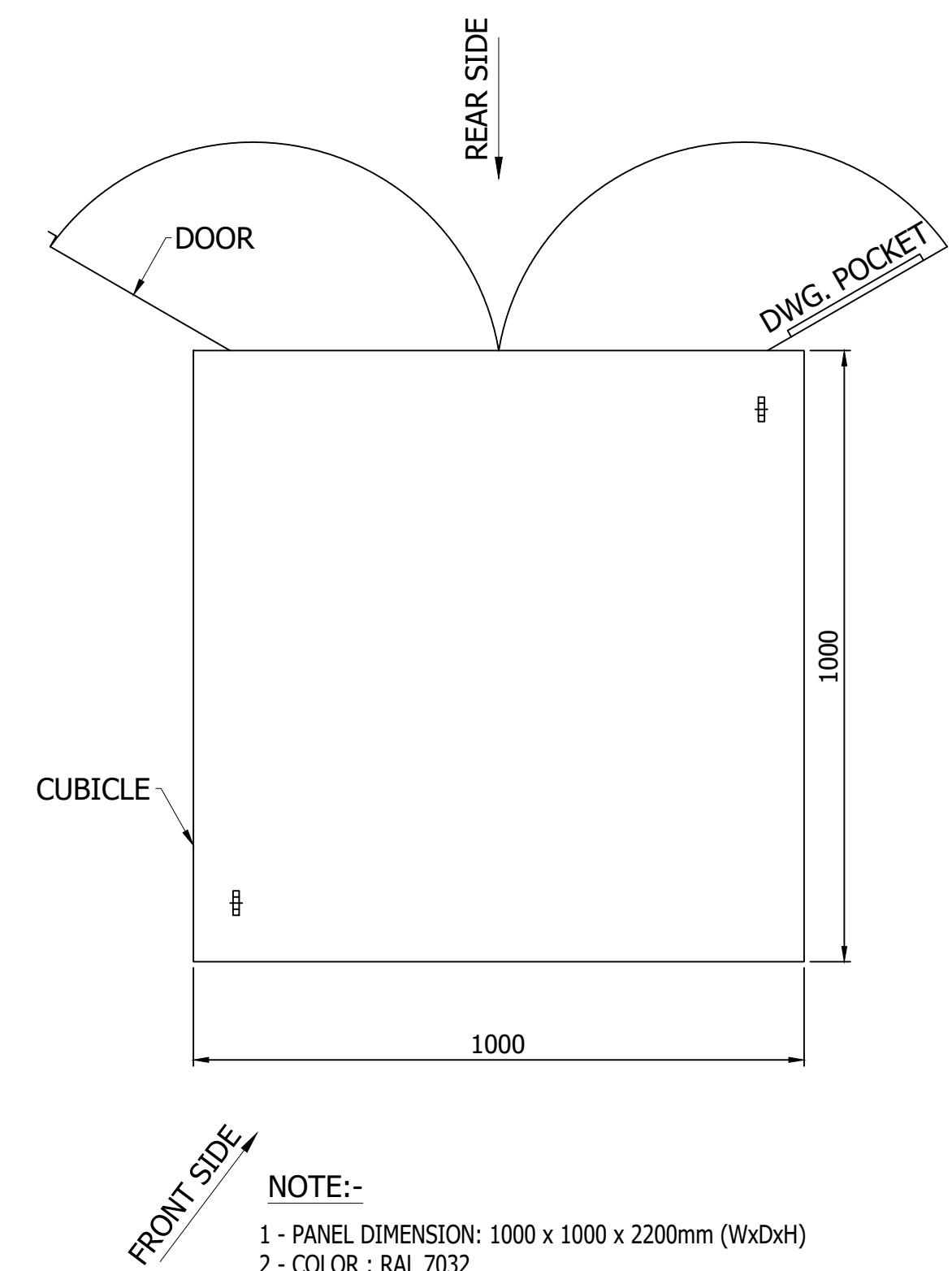
FRONT VIEWLEFT SIDE VIEWRIGHT SIDE VIEW

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MIMIC:

1. MIMIC COLOR: GREEN FOR 220kV

0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) PANEL VIEW	Drawing no. P60194-E-RLC-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AD	Sheet no. 07
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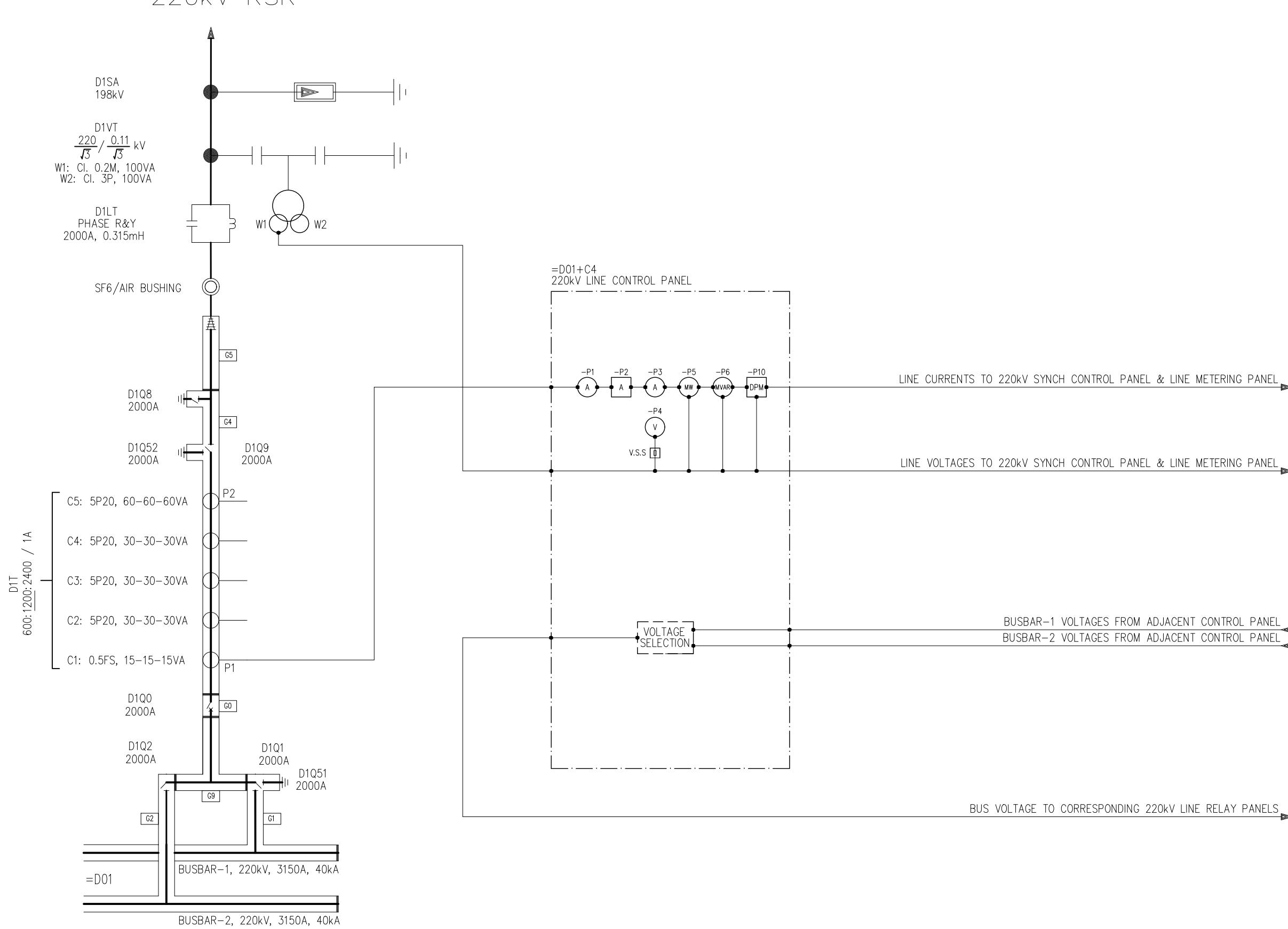
BACK VIEW WITHOUT DOORBACK VIEW WITH DOORTOP VIEW**NOTE:-**

- 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.

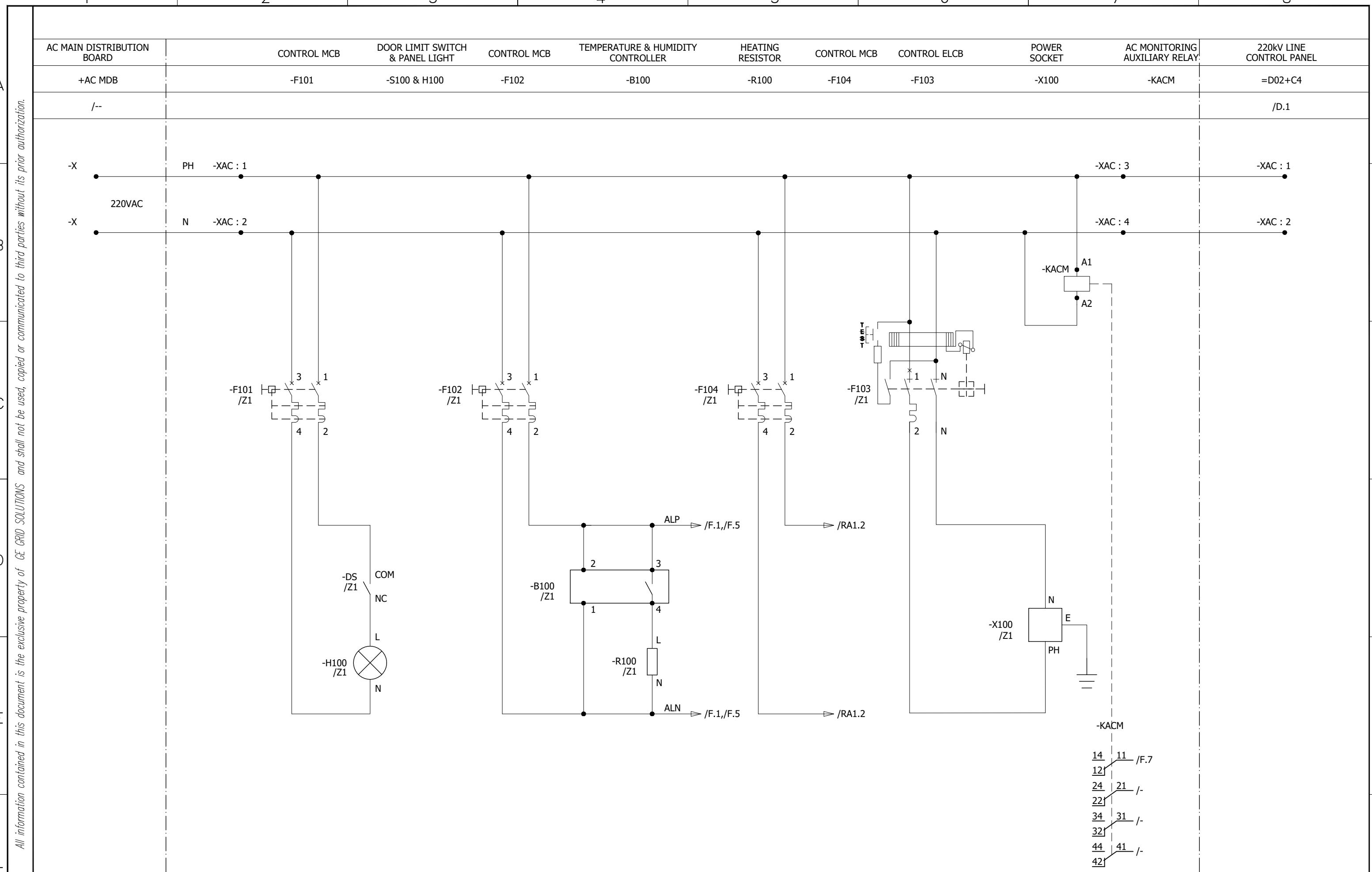
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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

220kV KSK

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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AE	Sheet no. 08
1		2									



0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) AC SUPPLY DISTRIBUTION	Drawing no. P60194-E-RLC-SC-003
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type D

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12 12 /-
24 21 /-
22 22 /-
34 31 /-
32 32 /-
44 41 /-
42 42 /-

A

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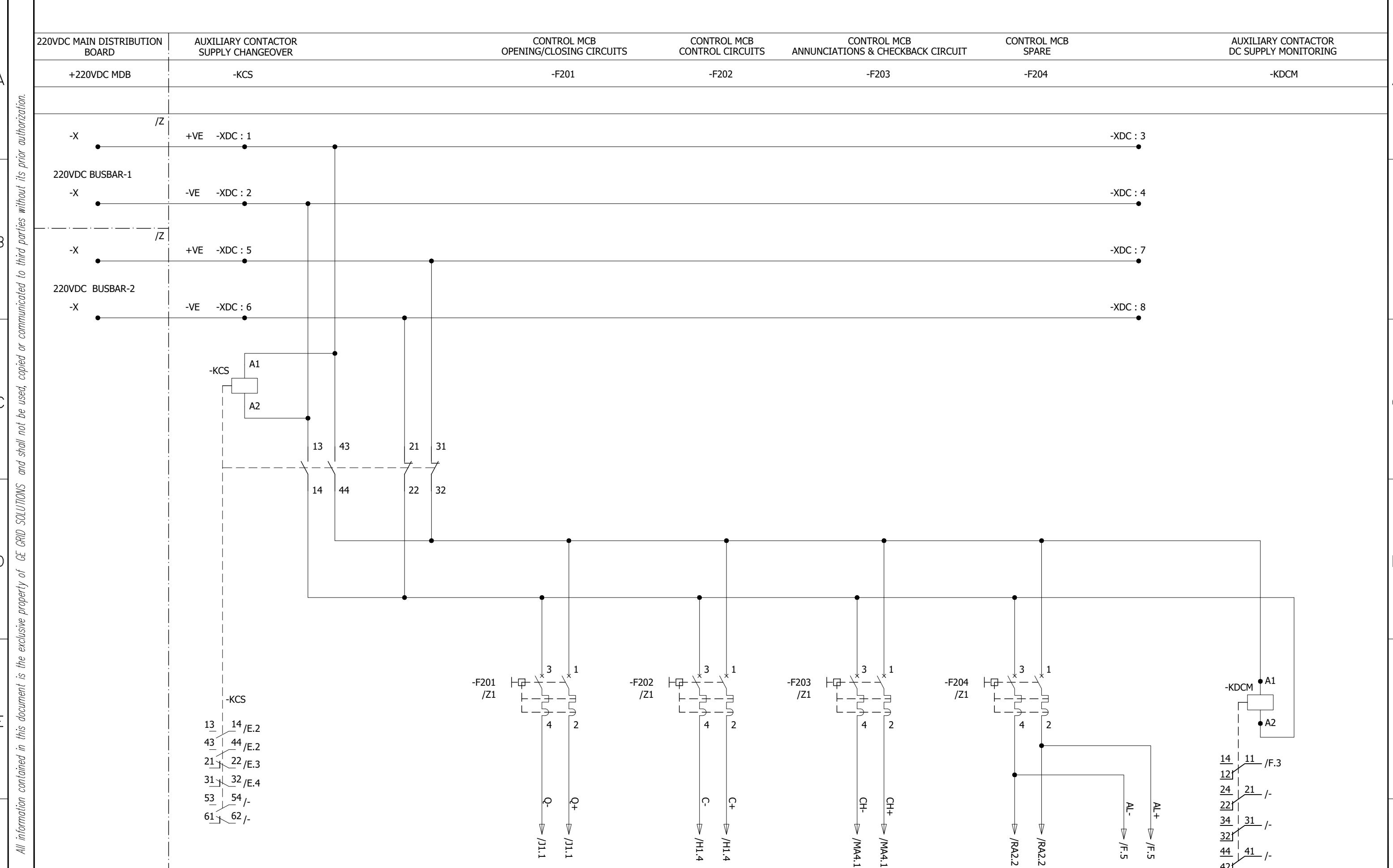
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8

1 2 3 4 5 6 7 8



0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) DC SUPPLY DISTRIBUTION	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type E
									Sheet no. 10

1 2 3 4 5 6 7 8

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220V DC CIRCUIT FAULTY

220V DC CIRCUIT FAULTY INDICATION

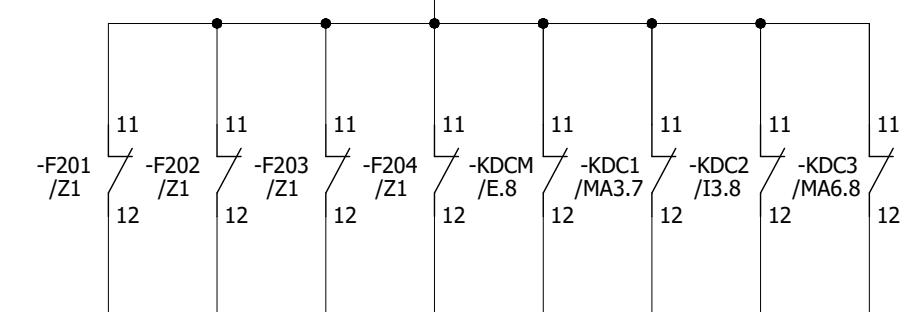
220V AC CIRCUIT FAULTY

-KDC

-H200

-KAC

/D.5 ➔ ALP



-KDC /F.3

21
24

/D.5 ➔ ALN

-KDC

A1

A2

-H200

/Z2

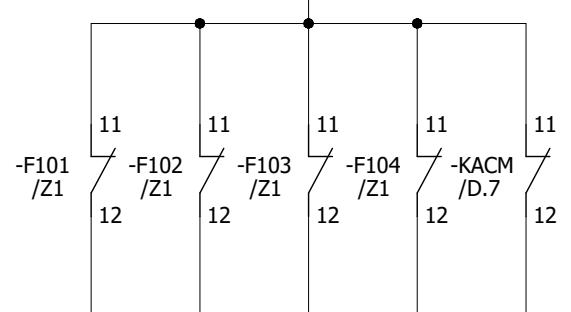
X1(+)

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X2(-)

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221 31 /RA1.4
34 31 /RA3.5
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44 41 /-

/E.5 ➔ AL+



-KAC

A1

A2

/E.5 ➔ AL-

-KAC

A1

A2

14 11 /RA7.7
121 21 /-
24 21 /-
221 31 /RA3.5
34 31 /RA3.5
321 41 /-
44 41 /-

A

A

B

B

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C

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D

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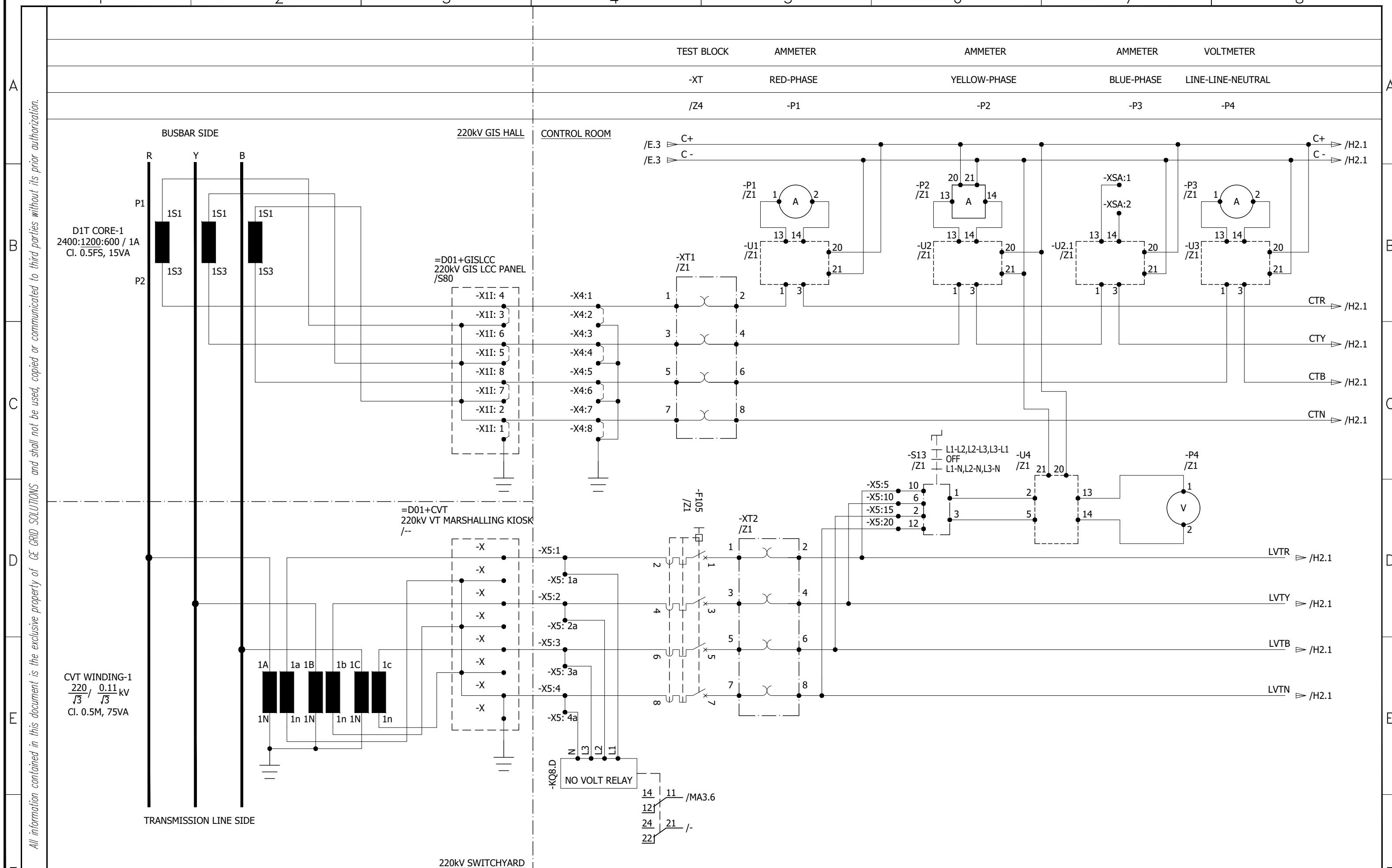
E

F

F

0	AS BUILT	30.10.2018	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 CONTROL PANEL (=D01+C4) AC/DC SUPPLY FAILURE CIRCUIT	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type F
									Sheet no. 11

1 2 3 4 5 6 7 8



0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPESOL	Grid Solutions	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	220kV LINE CONTROL PANEL (=D01+C4) CT/VT METERING CIRCUIT	P60194-E-RLC-SC-003
									Project no. P-60194 Sheet type H1 Sheet no. 12

REAL POWER METERING

REACTIVE POWER METER

DIGITAL POWER METER

220KV SYNCH CONTROL PANEL

LINE METERING PANEL

METER

SCADA

METER

SCADA

=D00+C6

=D00+EM

-P5

-P6

-P10

/--

/--

/H1.8 \Rightarrow C+
/H1.8 \Rightarrow C-
/H1.8 \Rightarrow C-

-P5 /Z1

-U5 /Z1

-XSA:3 /Z1

-XSA:4 /Z1

-P6 /Z1

-XSA:5 /Z1

-XSA:6 /Z1

-XSA:20 /Z1

-XSA:21 /Z1

-P10 /Z1

-XSA:12 /Z1

-XSA:13 /Z1

-XSA:14 /Z1

-XSA:15 /Z1

-XSA:16 /Z1

-XSA:17 /Z1

-XSA:18 /Z1

-XSA:19 /Z1

-XSA:20 /Z1

-XSA:21 /Z1

-XSA:22 /Z1

-XSA:23 /Z1

-XSA:24 /Z1

-XSA:25 /Z1

-XSA:26 /Z1

-XSA:27 /Z1

-XSA:28 /Z1

-XSA:29 /Z1

-XSA:30 /Z1

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-XSA:32 /Z1

-XSA:33 /Z1

-XSA:34 /Z1

-XSA:35 /Z1

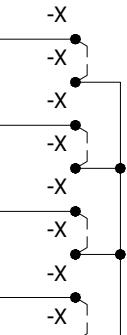
-XSA:36 /Z1

-XSA:37 /Z1

-XSA:38 /Z1

-XSA:39 /Z1

-XSA:40 /Z1



/H1.8 \Rightarrow CTR
/H1.8 \Rightarrow CTY
/H1.8 \Rightarrow CTB
/H1.8 \Rightarrow CTN

/H1.8 \Rightarrow LVTR

-X5: 6

-X5: 7

-X5: 8

-X2: 01

-X

/H1.8 \Rightarrow LVTY

-X5: 11

-X5: 12

-X5: 9

-X2: 02

-X

/H1.8 \Rightarrow LVTB

-X5: 16

-X5: 17

-X5: 13

-X2: 03

-X

/H1.8 \Rightarrow LVTN

-X5: 21

-X5: 22

-X5: 14

-X2: 04

-X

0 AS BUILT

30.10.2018

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 LINE CONTROL PANEL
(=D01+C4)
CT/VT METERING CIRCUIT

Drawing no.
P60194-E-RLC-SC-003

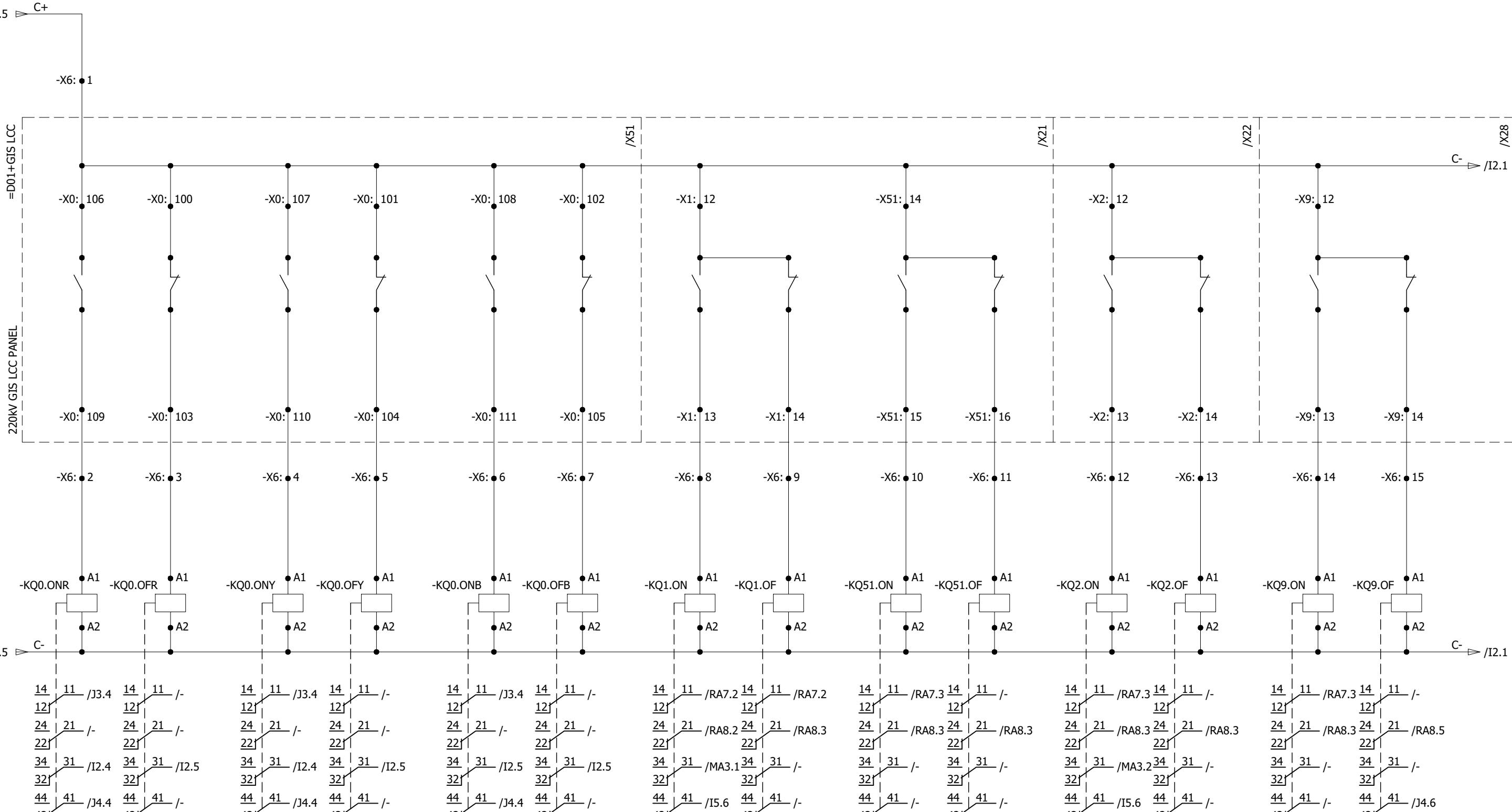
Project no. P-60194 Sheet type H2 Sheet no. 13

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REV. DESCRIPTION DATE DRAWER

POWER EQUIPMENT STATUS SIGNALS

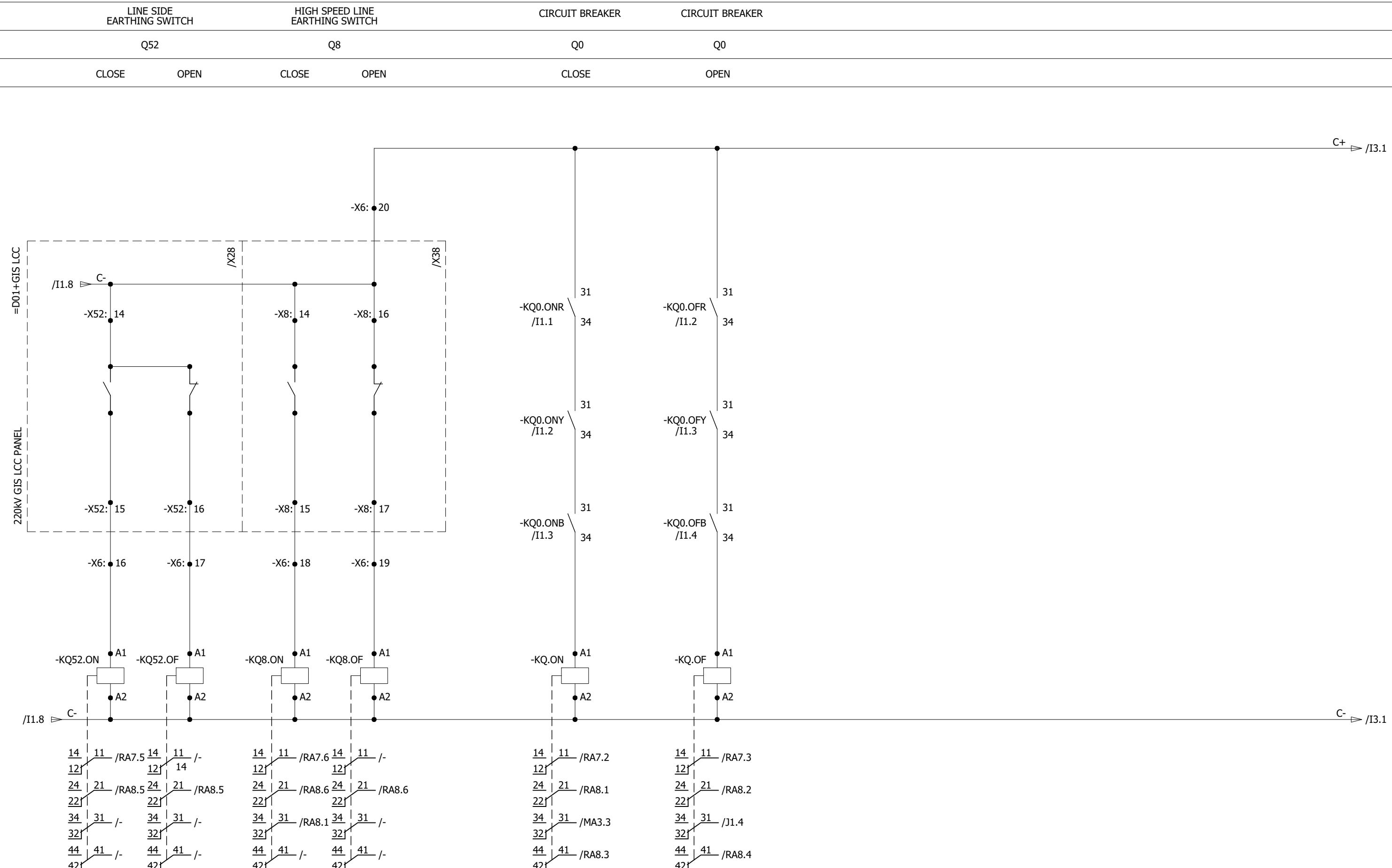
CIRCUIT BREAKER		CIRCUIT BREAKER		CIRCUIT BREAKER		BUS-1 ISOLATOR		BUS SIDE EARTHING SWITCH		BUS-2 ISOLATOR		LINE ISOLATOR	
Q0 - RED POLE		Q0 - YELLOW POLE		Q0 - BLUE POLE		Q1		Q51		Q2		Q9	
CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN



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0	AS BUILT	30.10.2018	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 CONTROL PANEL (=D01+C4) POWER EQUIPMENT INPUTS	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type I1
									Sheet no. 14

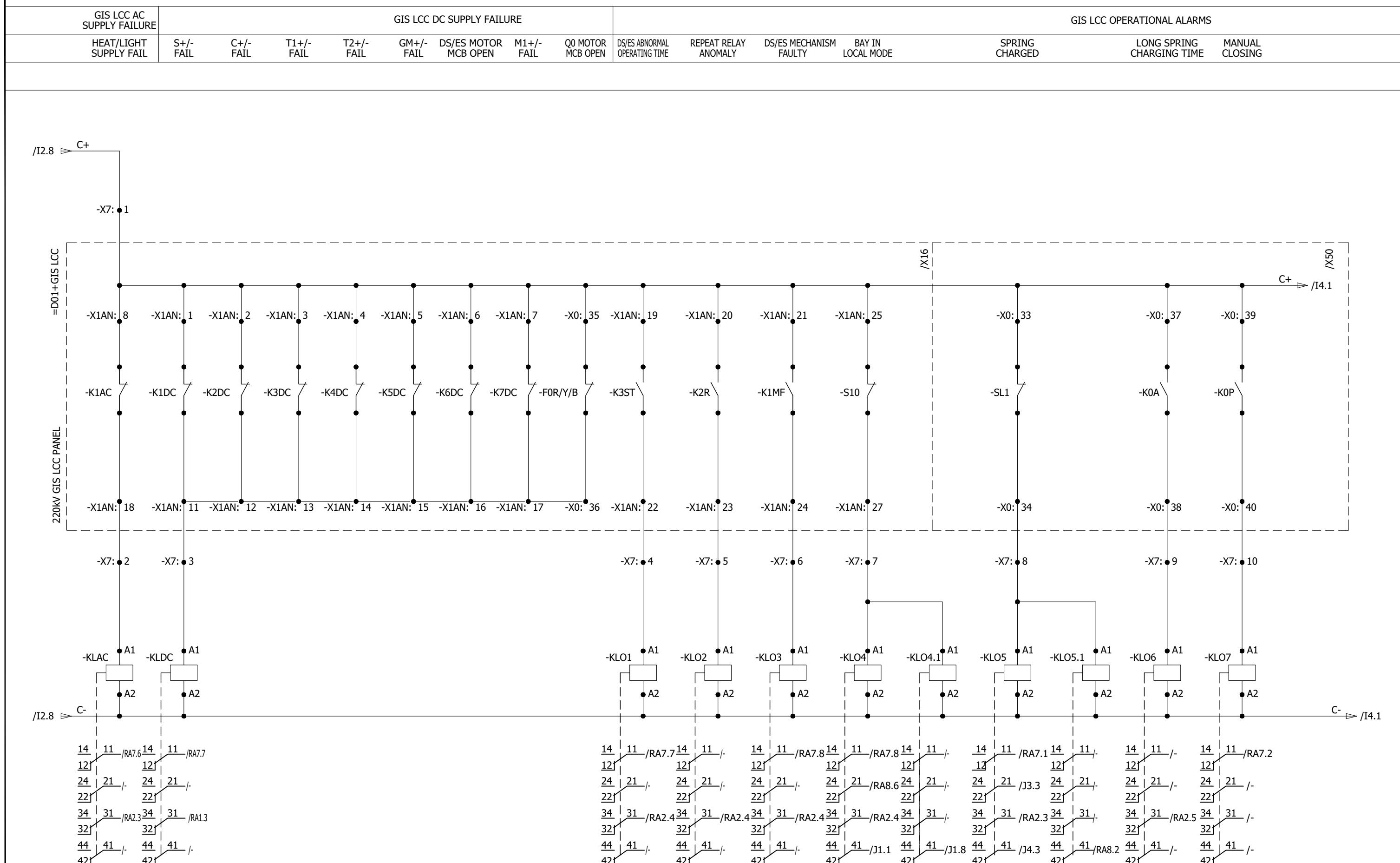
POWER EQUIPMENT STATUS SIGNALS



0	AS BUILT	30.10.2018	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 CONTROL PANEL (=D01+C4) POWER EQUIPMENT INPUTS	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type I2
									Sheet no. 15

POWER EQUIPMENT INPUT SIGNALS

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0	AS BUILT		30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.				
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 LINE CONTROL PANEL (=D01+C4) POWER EQUIPMENT INPUTS	P-60194-E-RLC-SC-003		Project no.	Sheet type	Sheet no.
										P-60194	I3	16		

POWER EQUIPMENT INPUT SIGNALS

GIS LCC OPERATIONAL ALARMS

GIS LCC GAS COMPARTMENT ALARMS

MANUAL TRIPPING PHASE DISCREPANCY PHASE DISCREPANCY

G0 LEVEL-1 G1 LEVEL-1 G2 LEVEL-1 G4 LEVEL-1 G5 LEVEL-1 G9 LEVEL-1 G0 LEVEL-2 G1 LEVEL-2 G2 LEVEL-2 G4 LEVEL-2 G5 LEVEL-2 G9 LEVEL-2

TRIP-1

TRIP-2

ALARM

ALARM

ALARM

ALARM

ALARM

ALARM

BLOCK

BLOCK

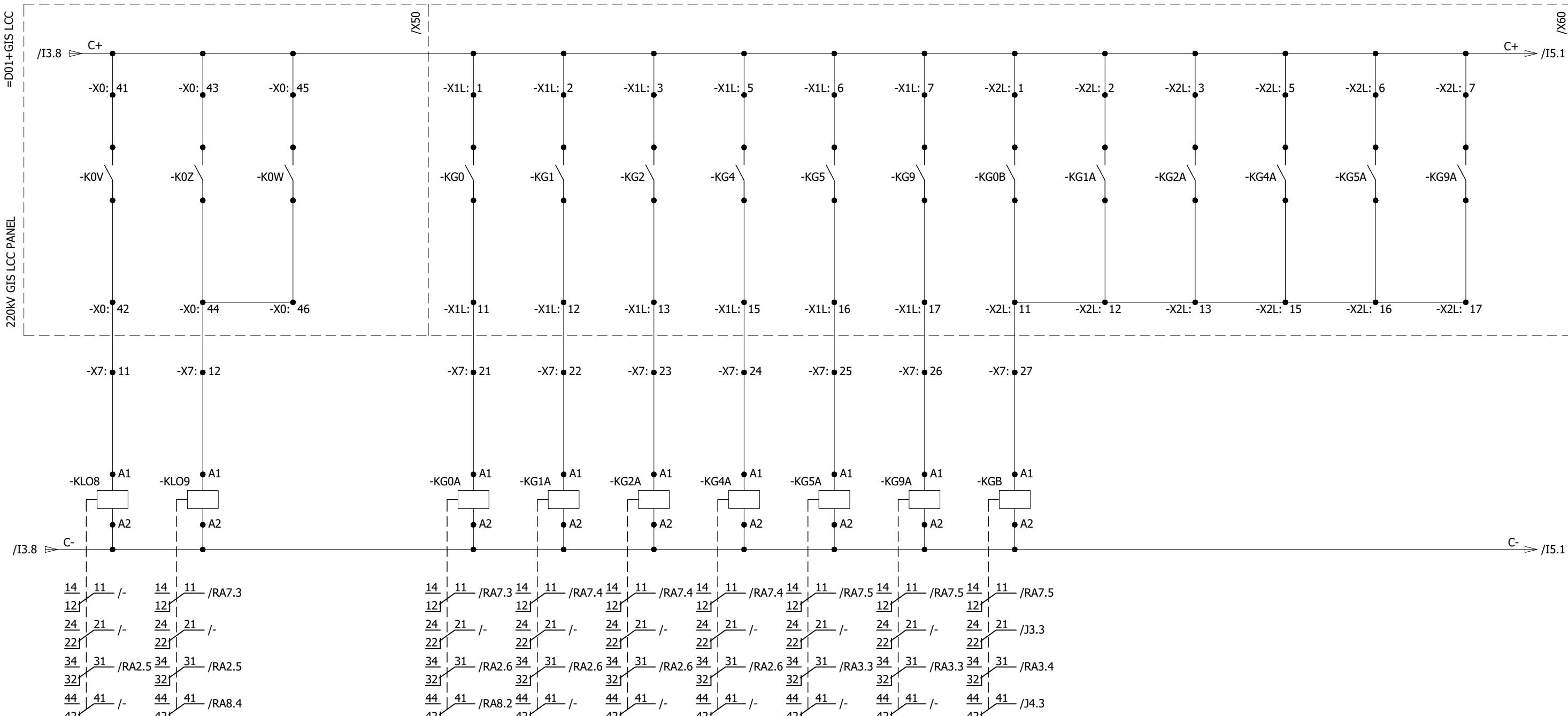
BLOCK

BLOCK

BLOCK

BLOCK

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0	AS BUILT	30.10.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NTDC-WAPDA NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE CONTROL PANEL (=D01+C4) POWER EQUIPMENT INPUTS	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type I4
									Sheet no. 17

POWER EQUIPMENT INPUT SIGNALS

GIS LCC GAS COMPARTMENT ALARMS

G0 SELF WIRING	G1 SELF WIRING	G2 SELF WIRING	G4 SELF WIRING	G5 SELF WIRING	G9 SELF WIRING
CHECK	CHECK	CHECK	CHECK	CHECK	CHECK

LINE VT ALARMS

METERING WINDING	PROTECTION WINDING
MCB TRIPPED	MCB TRIPPED

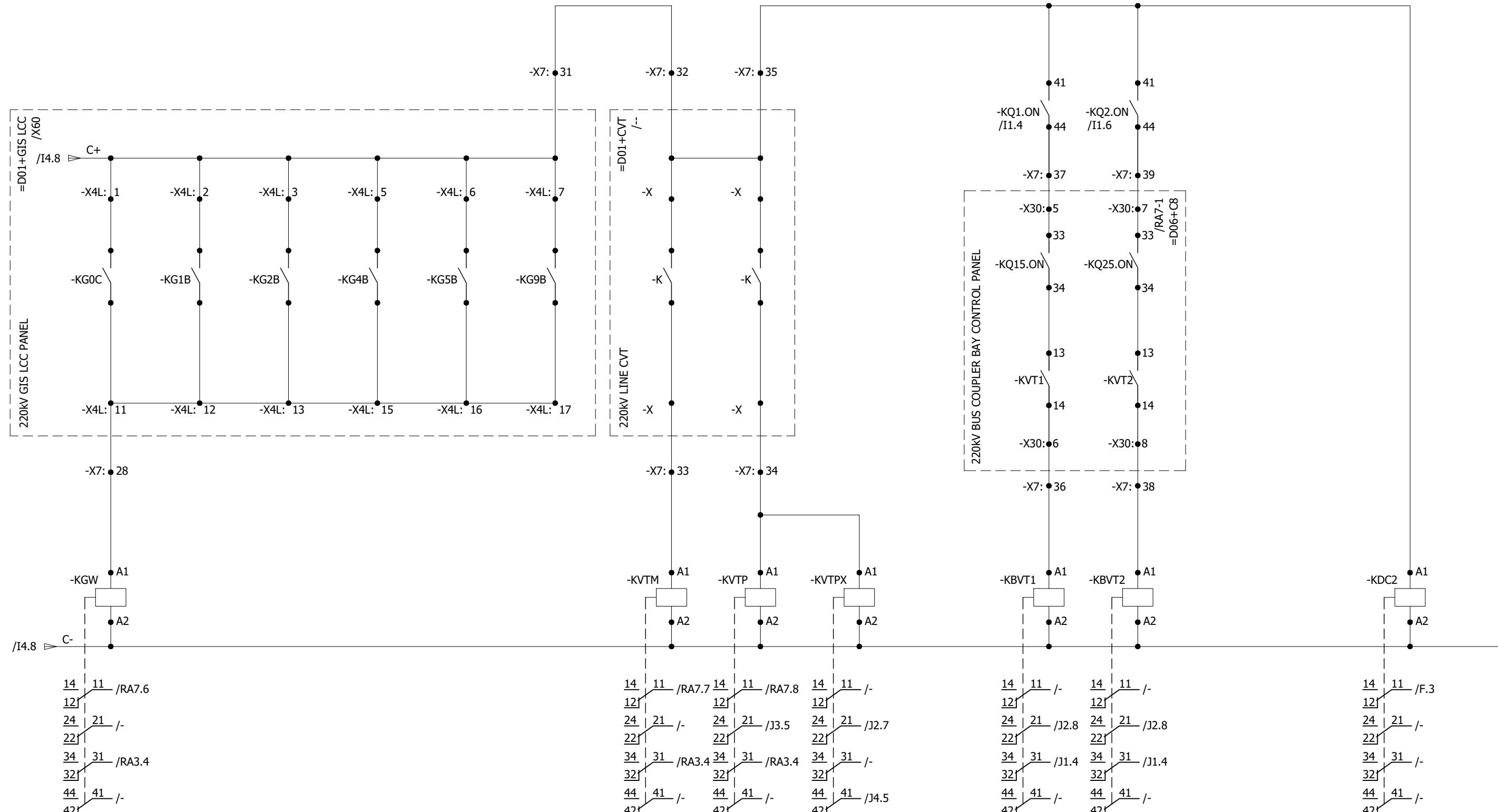
BUS VT SIGNAL FOR SYNCH.

BUS VT-1	BUS VT-2
MCB HEALTHY	MCB HEALTHY

DC CIRCUIT C+/C-
MONITORING

-KDC2

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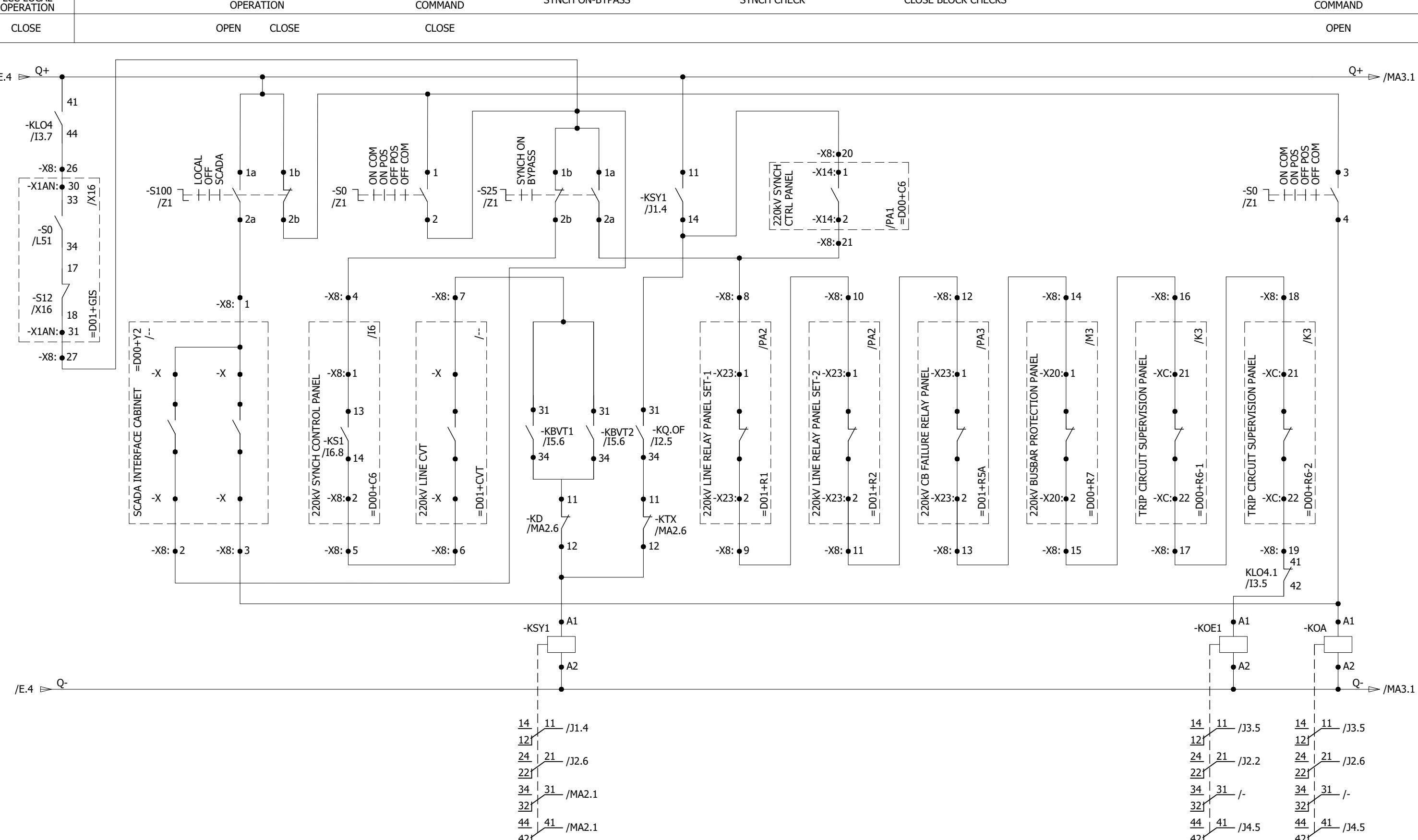


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REV.	DESCRIPTION	DATE	DRAWER	EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	220KV LINE CONTROL PANEL (=D01+C4) POWER EQUIPMENT INPUTS	P-60194-E-RLC-SC-003
									Project no. P-60194 Sheet type I5 Sheet no. 18

CIRCUIT BREAKER CLOSING / OPENING CIRCUIT

LOCAL OPERATION

A



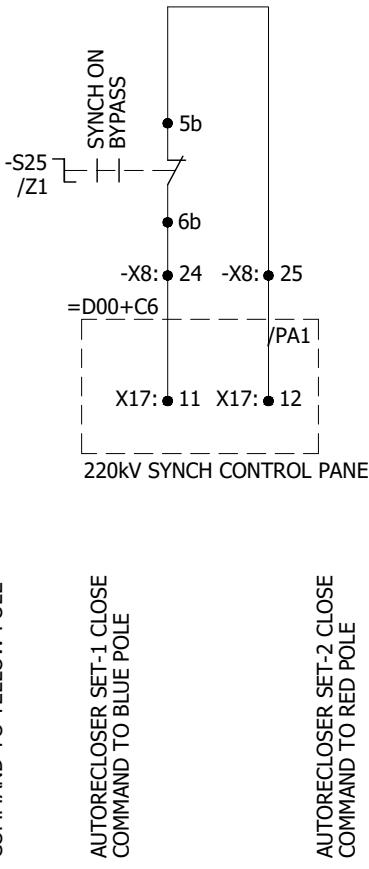
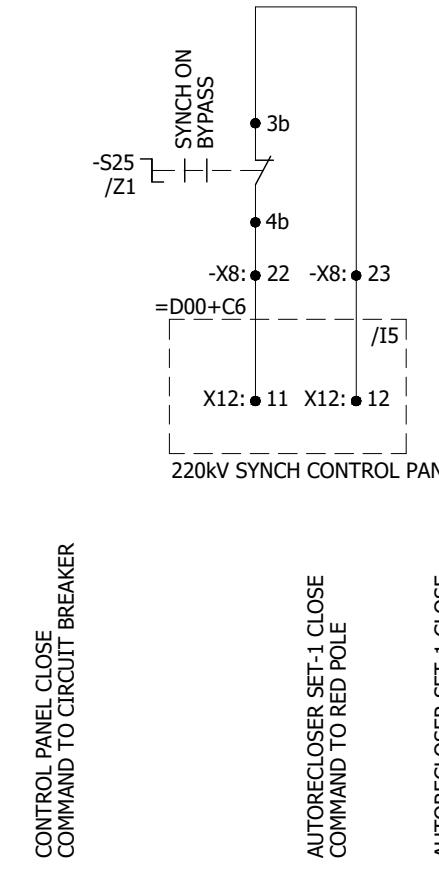
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	30.10.2018	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 CONTROL PANEL (=D01+C4) CIRCUIT BREAKER OPENING/CLOSING CIRCUIT	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type J1
									Sheet no. 19

CIRCUIT BREAKER CLOSING / OPENING COMMANDS TO GIS LCC

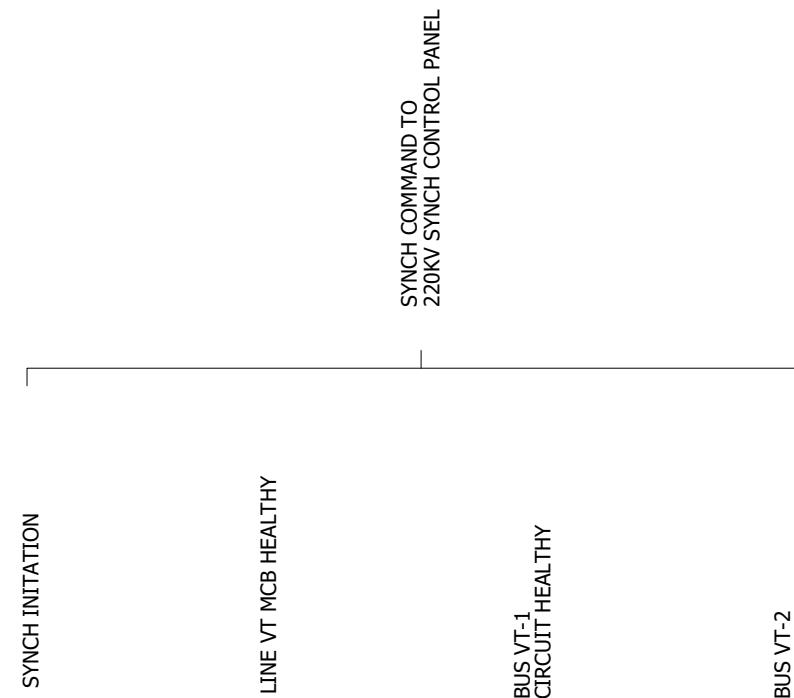
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

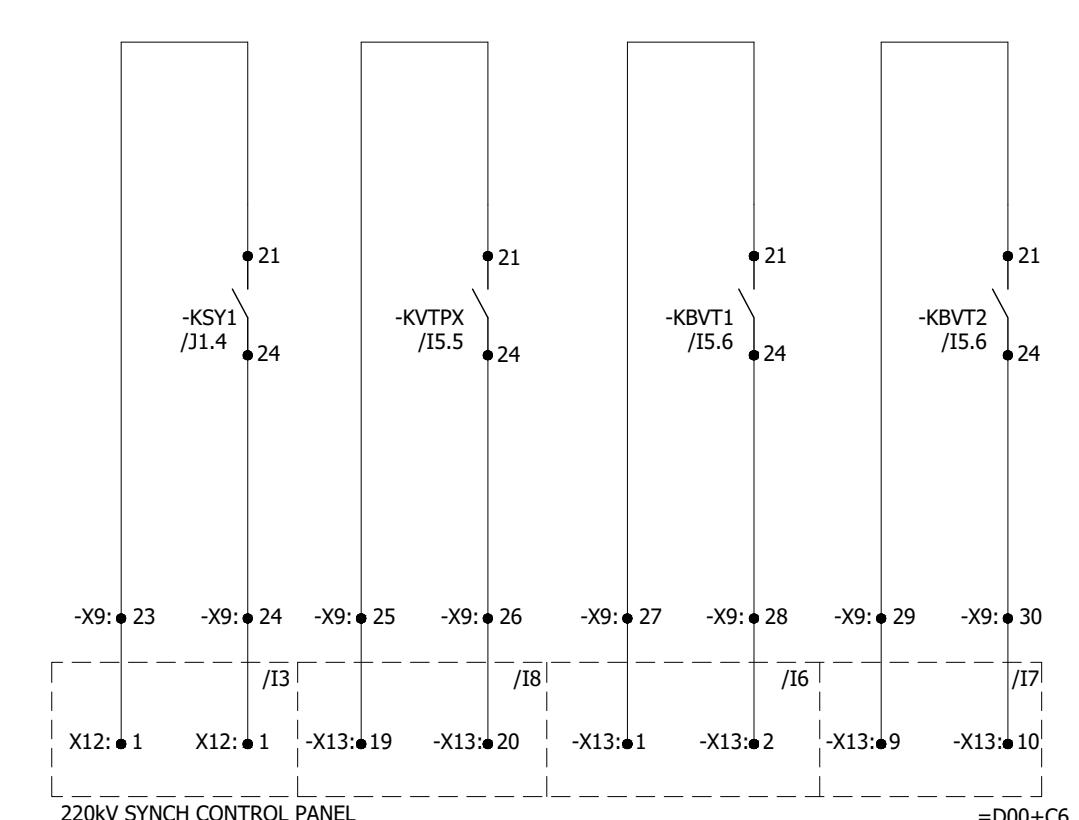
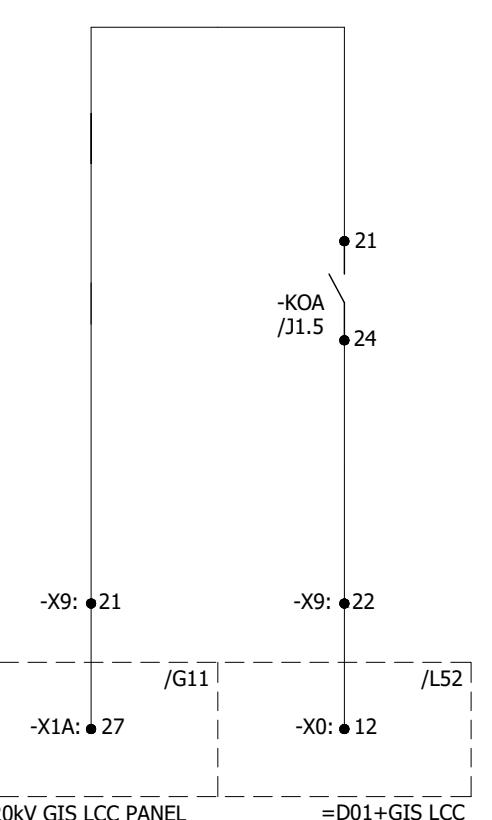
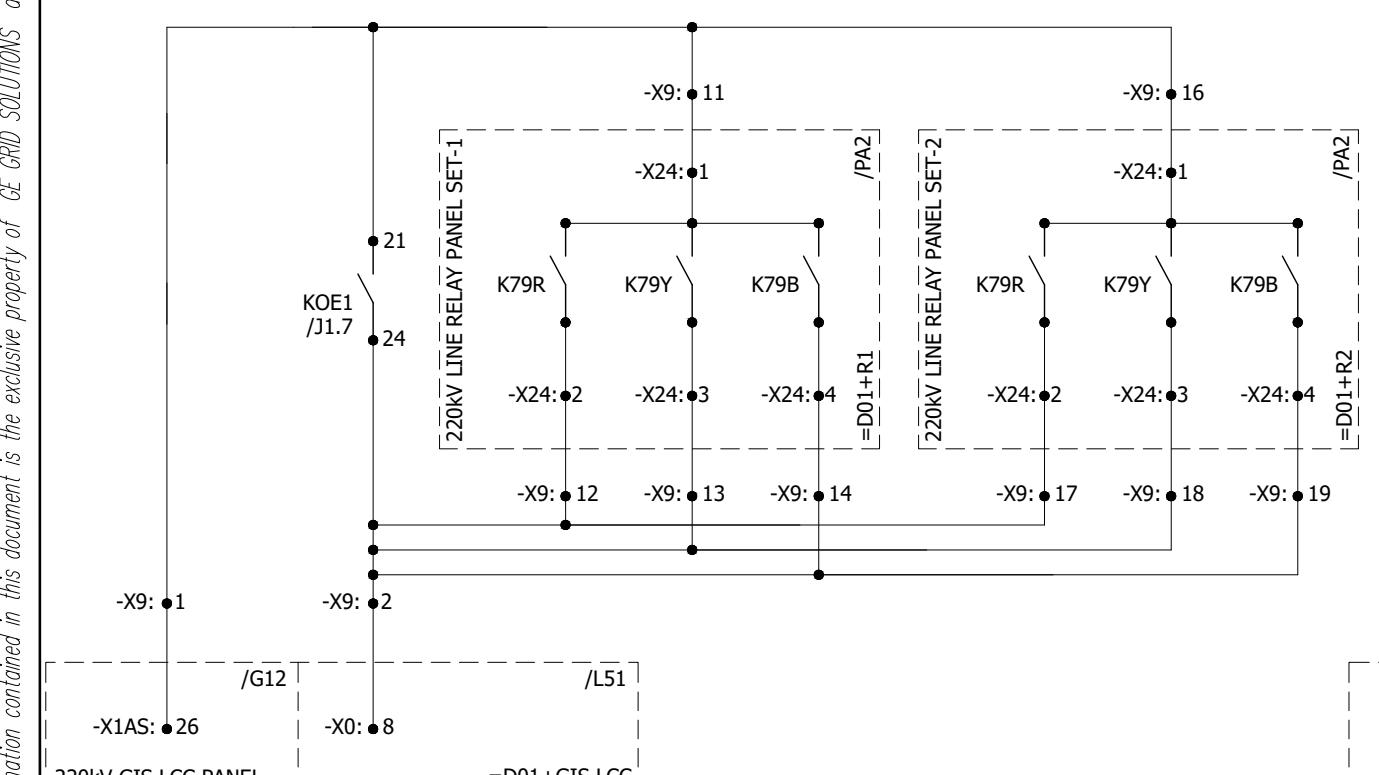


MANUAL OPENING
COMMAND TO ALL POLES

CONTROL PANEL OPENING
COMMAND TO ALL POLES



B



0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) CIRCUIT BREAKER OPENING/CLOSING CIRCUIT	Drawing no. P60194-E-RLC-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type J2	Sheet no. 20
1	2	3	4	5	6	7	8				

CIRCUIT BREAKER CLOSING / OPENING INTER-CIRCUITS

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A

B

C

D

E

F

A

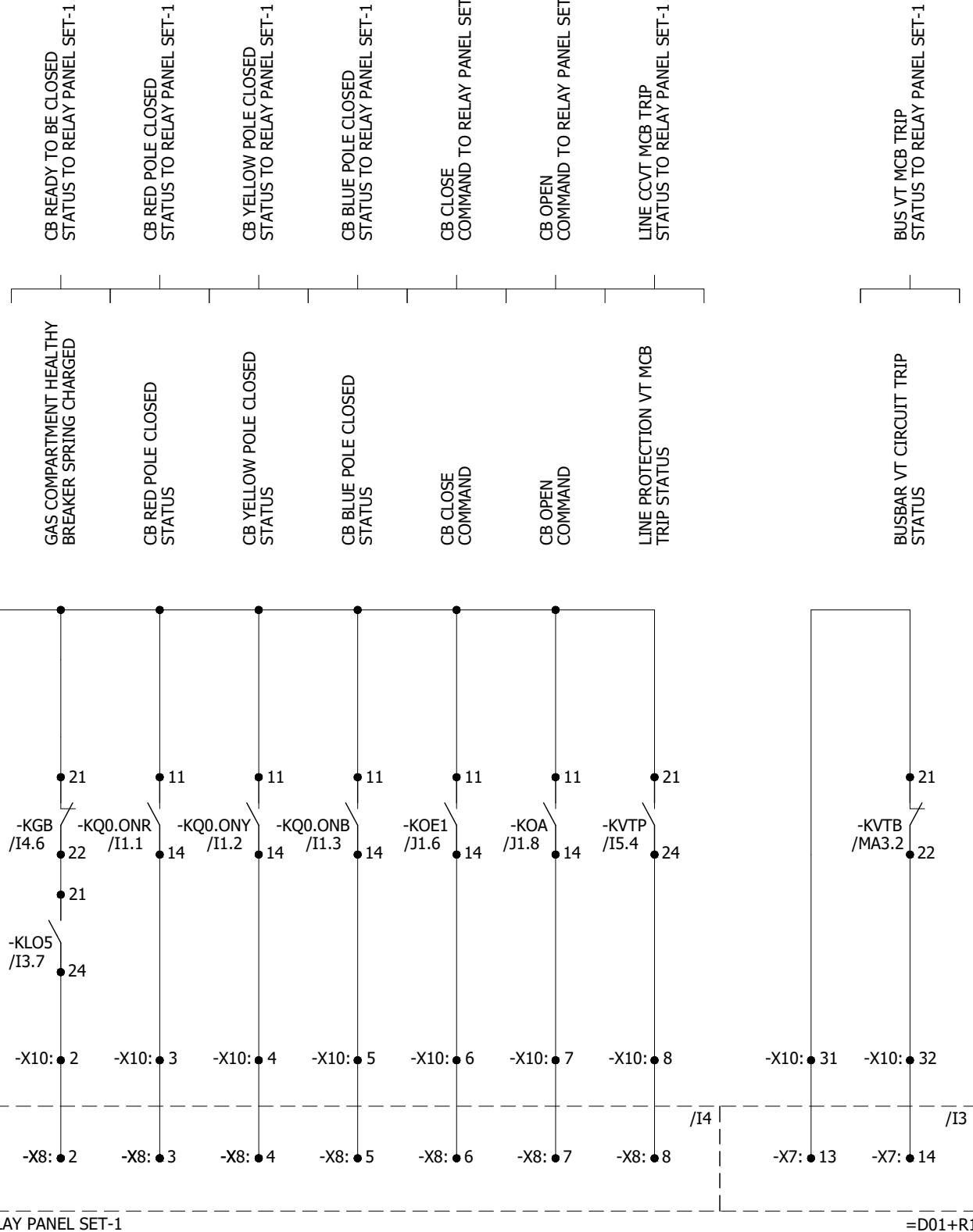
B

C

D

E

F



0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) CIRCUIT BREAKER OPENING/CLOSING CIRCUIT	Drawing no. P60194-E-RLC-SC-003	
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type J3	Sheet no. 21

CIRCUIT BREAKER CLOSING / OPENING INTER-CIRCUITS

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A

B

C

D

E

F

A

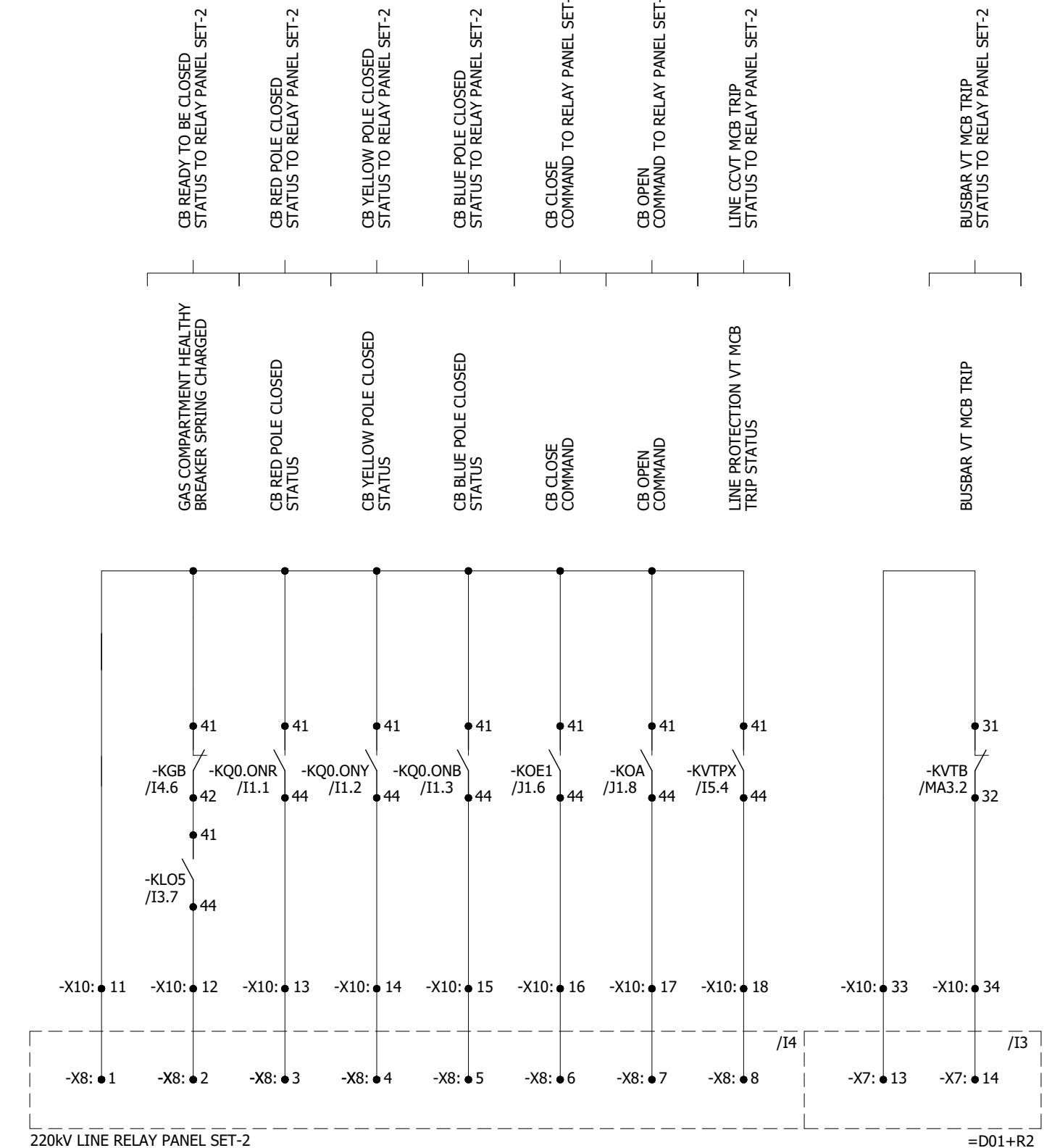
B

C

D

E

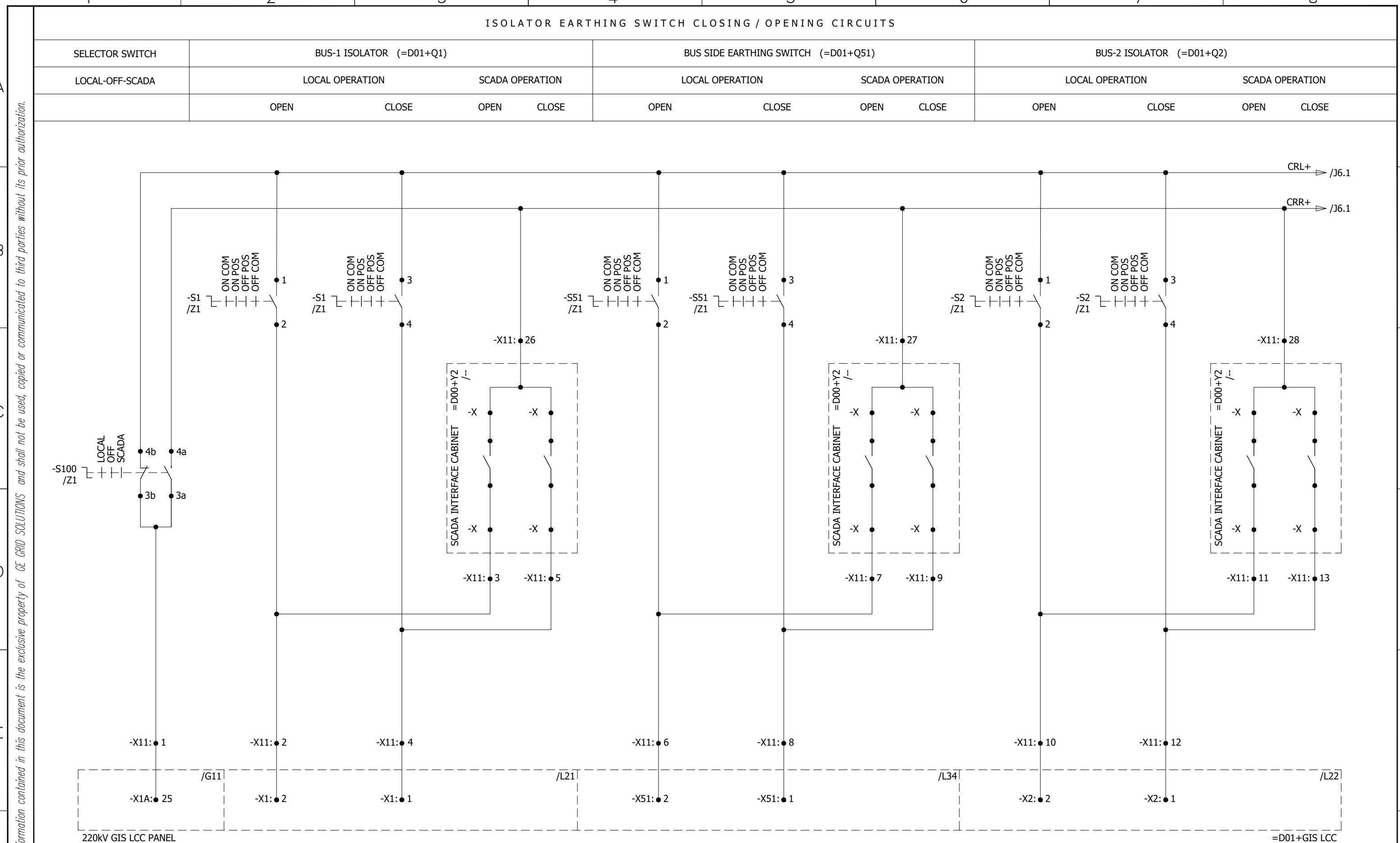
F



0	AS BUILT	30.10.2018	ASJ
REV.	DESCRIPTION	DATE	DRAWER

Manufacturer	Contractor	Client	Project	Title	Drawing no.
 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 LINE CONTROL PANEL (=D01+C4) CIRCUIT BREAKER OPENING/CLOSING CIRCUIT	P60194-E-RLC-SC-003
					Project no. P-60194 Sheet type J4 Sheet no. 22

ISOLATOR EARTHING SWITCH CLOSING / OPENING CIRCUITS



0	AS BUILT		30.10.2018	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 CONTROL PANEL (=D01+C4) ISOLATOR/EARTHING SW. OPENING/CLOSING CIRCUIT	Drawing no. P60194-E-RLC-SC-003			
REV.	DESCRIPTION		DATE	DRAWER							Project no. P-60194	Sheet type J5	Sheet no. 23
1	2	3	4	5	6	7	8	1	2	3	4	5	

ISOLATOR EARTHING SWITCH CLOSING / OPENING CIRCUITS

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A

LINE ISOLATOR (=D01+Q9)

LINE SIDE EARTHING SWITCH (=D01+Q52)

HIGH SPEED LINE EARTHING SWITCH (=D01+Q8)

LOCAL OPERATION

SCADA OPERATION

LOCAL OPERATION

SCADA OPERATION

LOCAL OPERATION

SCADA OPERATION

CLOSE

OPEN

CLOSE

OPEN

CLOSE

OPEN

CLOSE

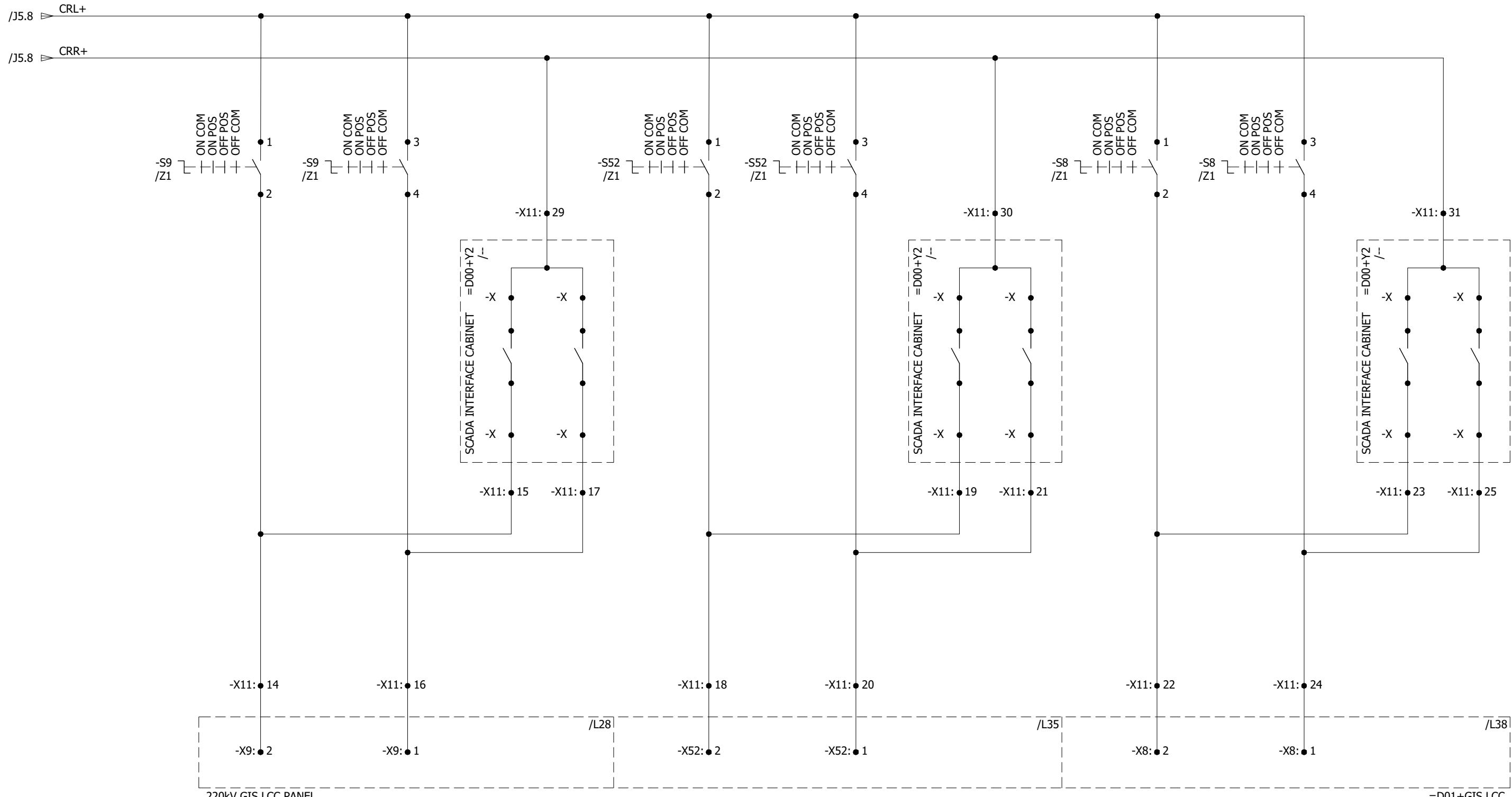
OPEN

CLOSE

OPEN

CLOSE

OPEN



0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) ISOLATOR/EARTHING SW. OPENING/CLOSING CIRCUIT'	Drawing no. P60194-E-RLC-SC-003
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type J6

VOLTAGE SELECTION CIRCUIT FOR SYNCHRONIZATION

220KV SHALAMAR LINE
CONTROL PANEL

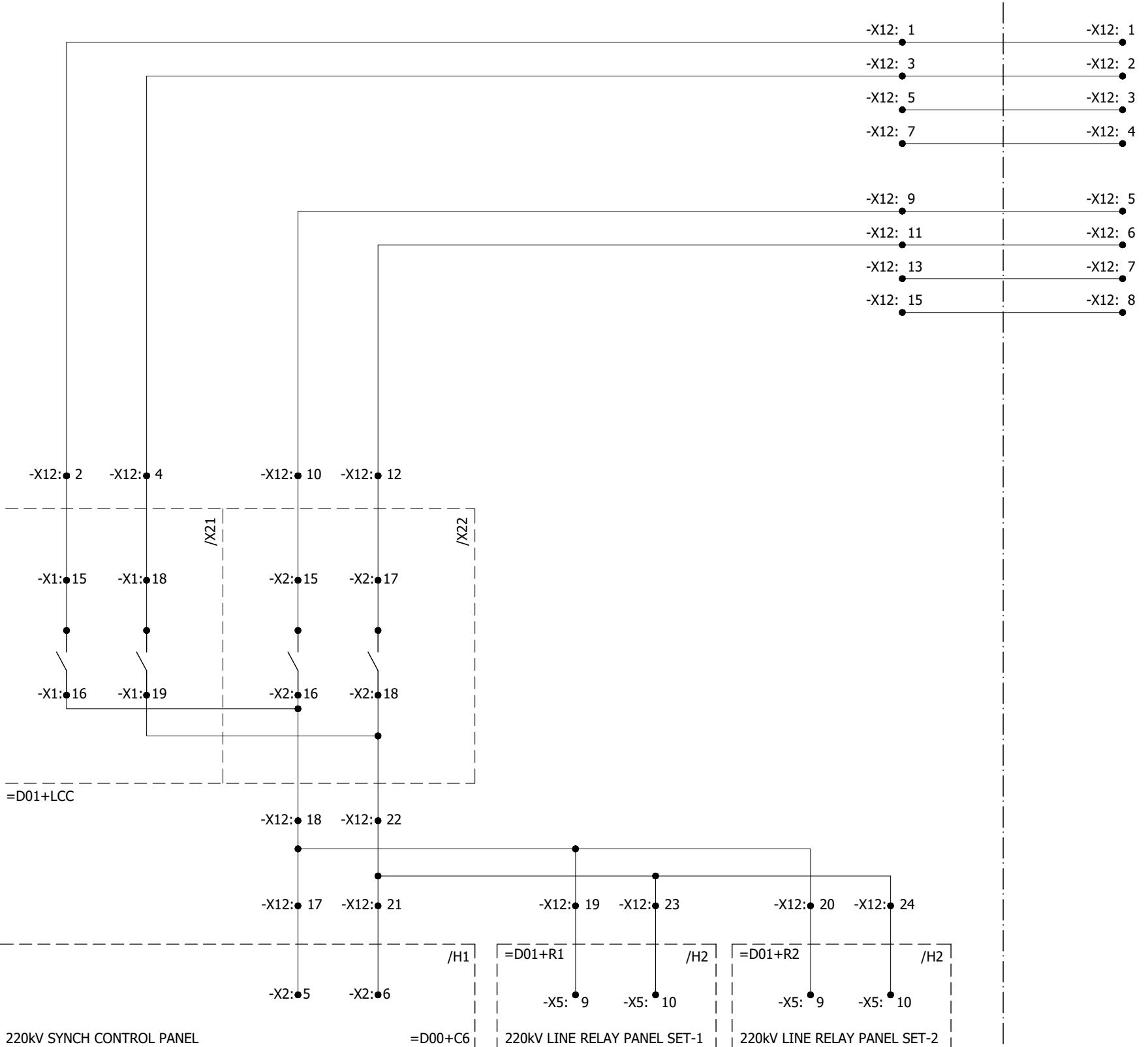
BUS-1 VOLTAGES SELECTION

BUS-2 VOLTAGES SELECTION

VOLTAGES TO
RELAY PANEL SET-1VOLTAGES TO
RELAY PANEL SET-2

=D02+C4

/MA1

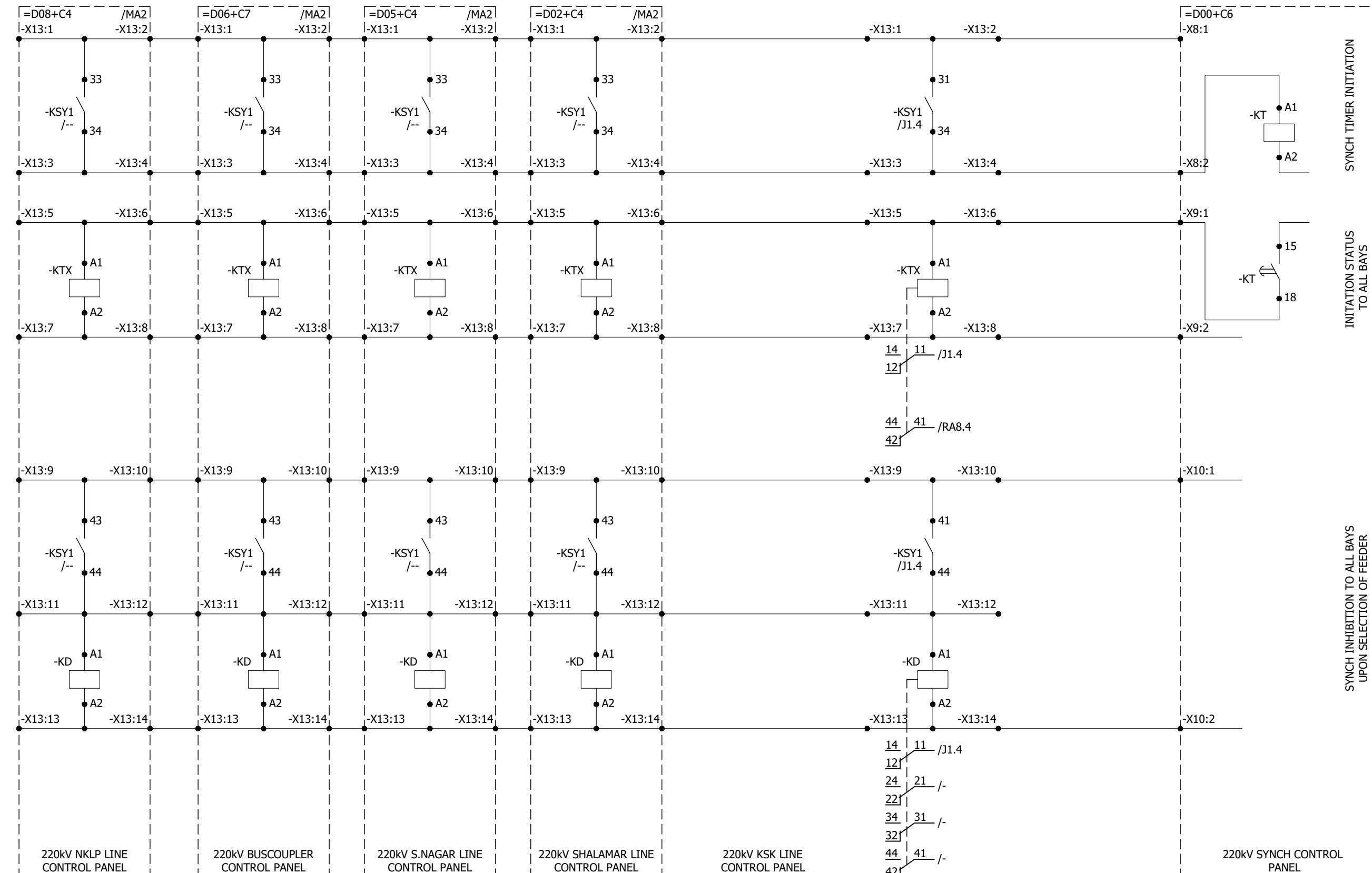


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0	AS BUILT	30.10.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NTDC-WAPDA NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE CONTROL PANEL (=D01+C4) SYNCH CIRCUIT	Drawing no. P60194-E-RLC-SC-003
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type MA1

SYNCHRONIZATION INITIATION & INHIBITION CIRCUIT

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0	AS BUILT	30.10.2018	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 (PTDC-WAPDA/PTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE CONTROL PANEL (=D01+C4) SYNCH CIRCUIT	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type MA2
									Sheet no. 26

CONTROL CIRCUIT

BUSBAR-1 VT
PROTECTION WINDINGBUSBAR-2 VT
PROTECTION WINDINGCIRCUIT BREAKER
OPERATION COUNTERINTERLOCK FOR
LINE EARTHING SWITCHDC CIRCUIT Q+/Q-
MONITORING

TRIP STATUS

TRIP STATUS

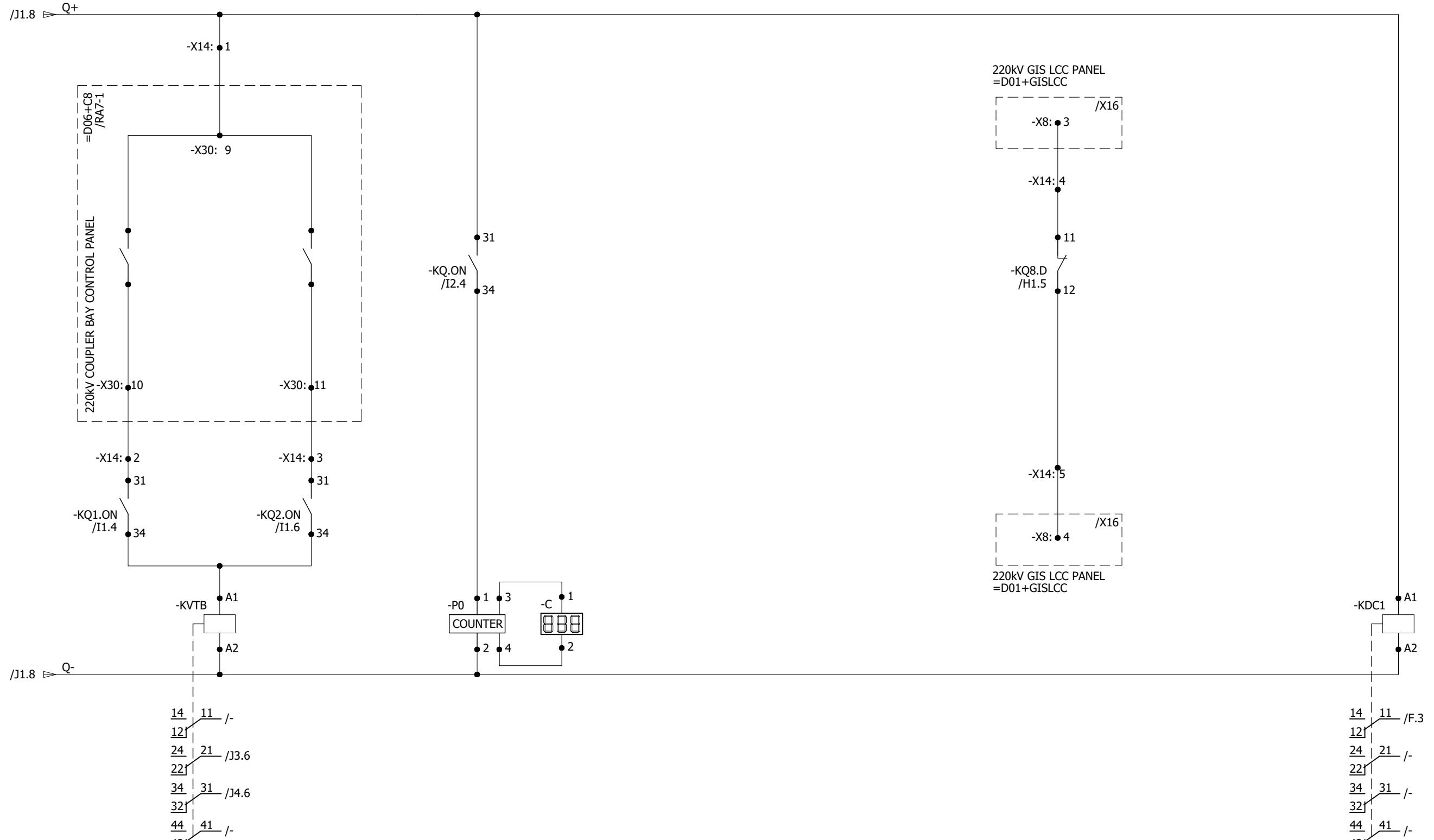
-P0

-KDC1

=D00+C6

=D00+C6

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0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
				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 LINE CONTROL PANEL (=D01+C4) CONTROL CIRCUIT	P-60194-E-RLC-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type MA3	Sheet no. 27

DISCREPANCY CHECK CIRCUIT

CIRCUIT BREAKER

BUS-1 ISOLATOR

BUS SIDE EARTHING SWITCH

BUS-2 ISOLATOR

LINE ISOLATOR

-Q0

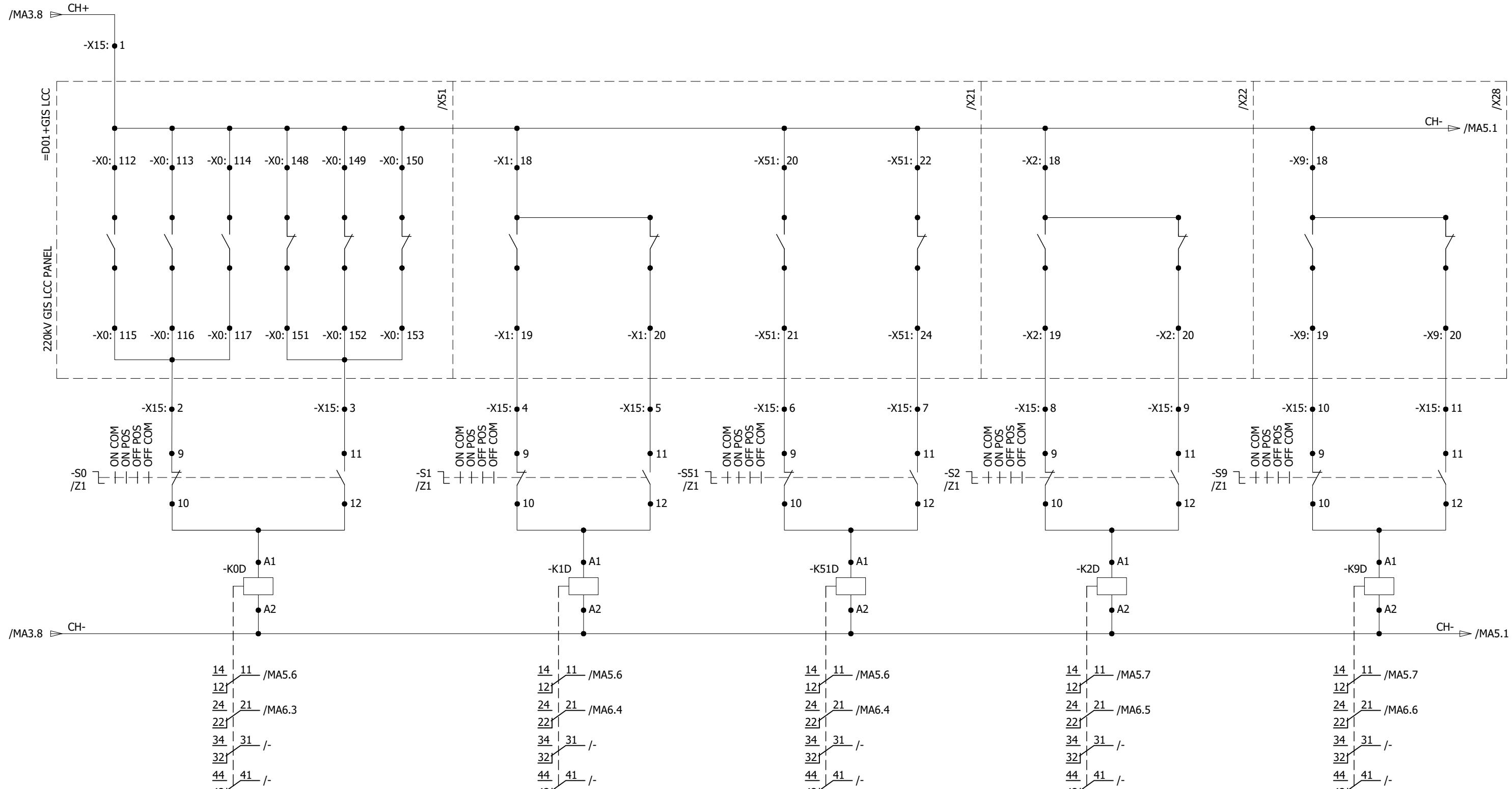
-Q1

-Q51

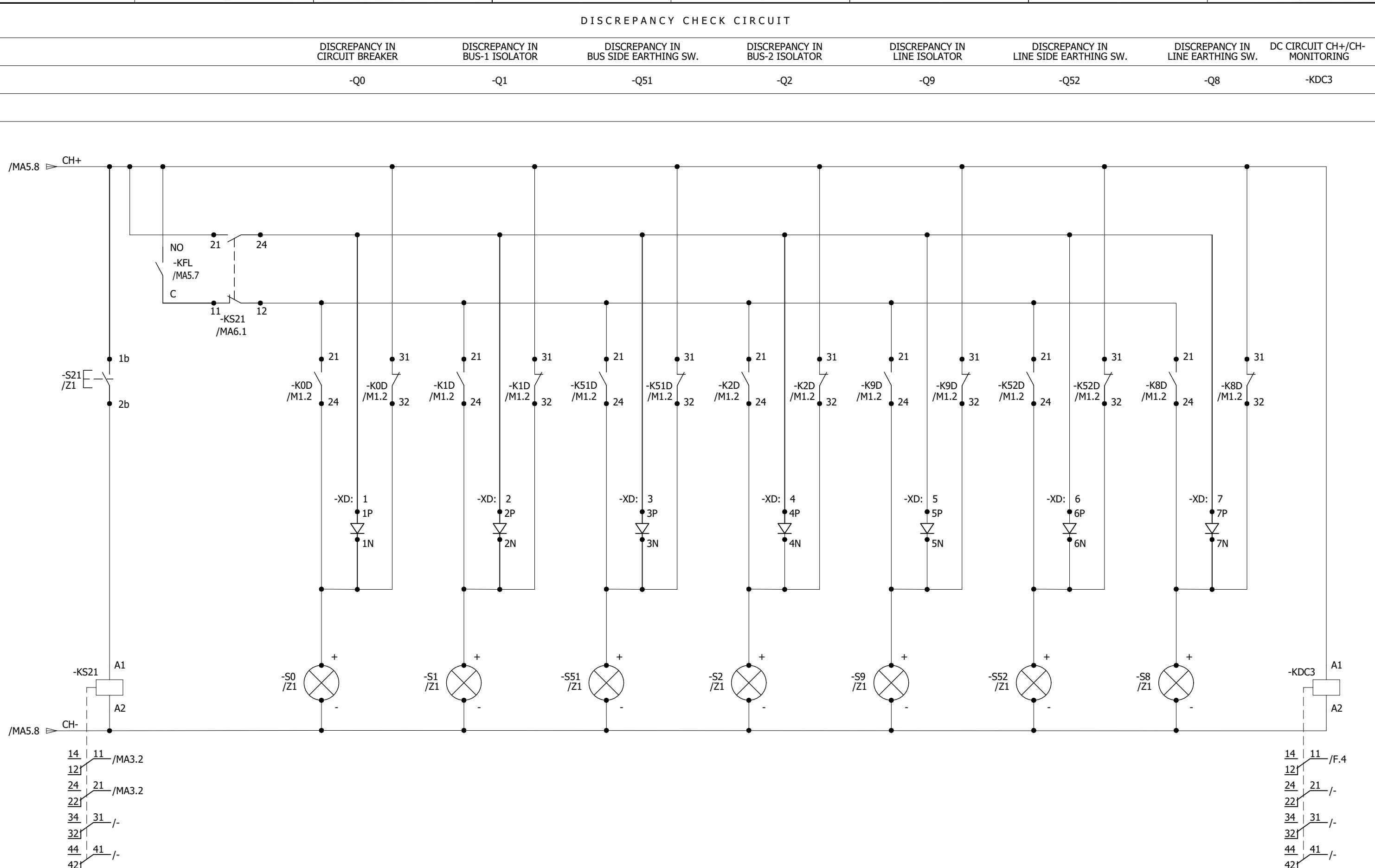
-Q2

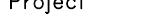
-Q9

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0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) DISCREPANCY CHECK CIRCUIT	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type MA4
									Sheet no. 28

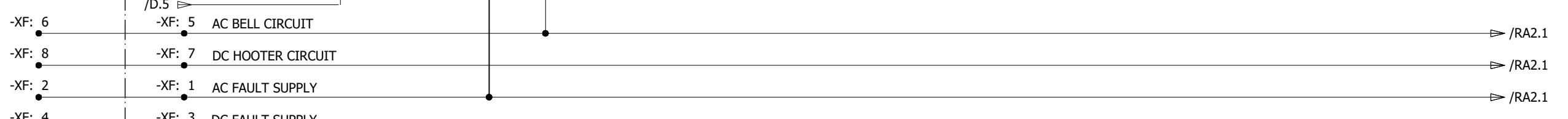
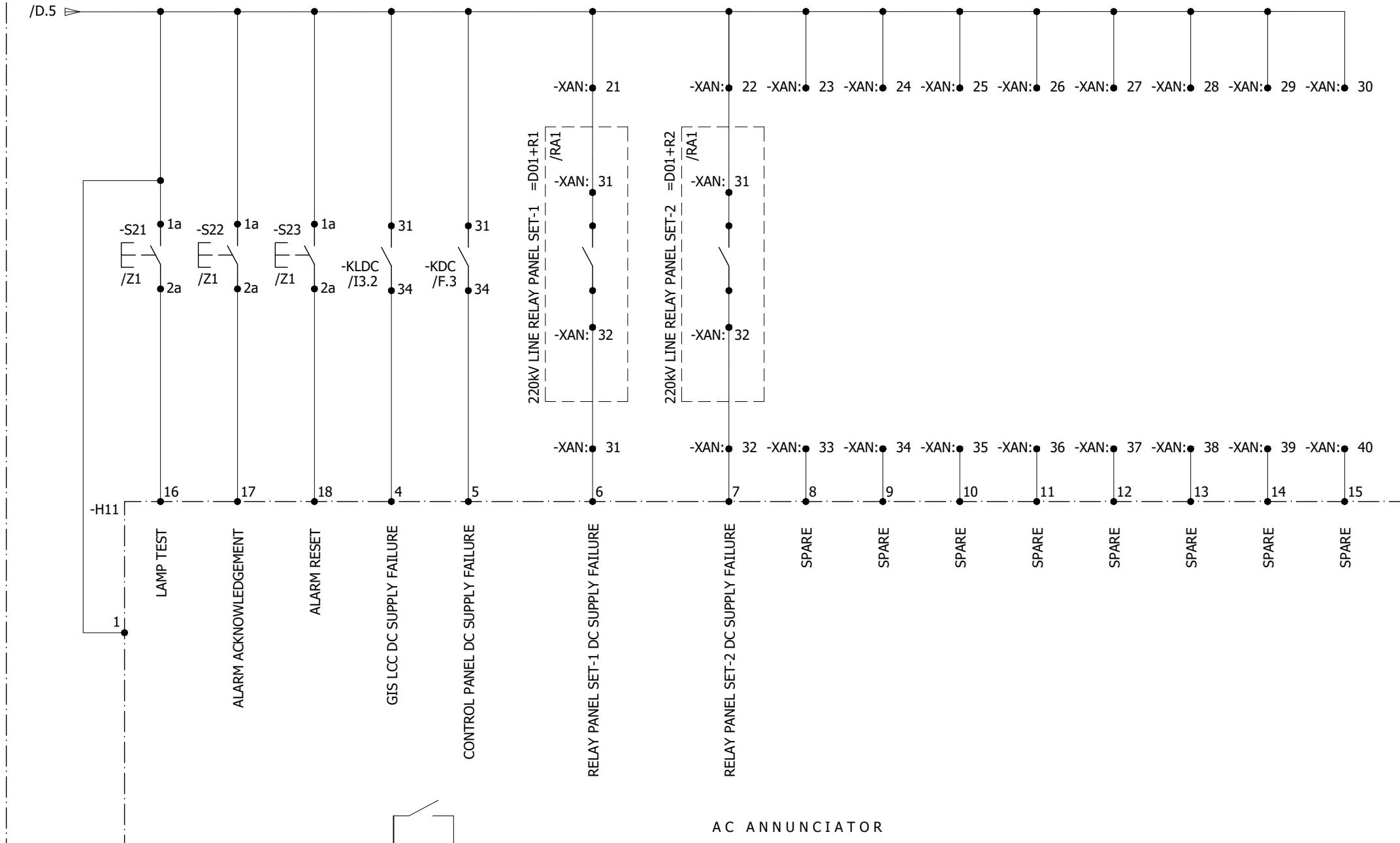


0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE CONTROL PANEL (-D01+C4) DISCREPANCY CHECK CIRCUIT	Drawing no. P60194-E-RLC-SC-003
01									Project no. P-60194
									Sheet type MA6
REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 30

ANNUNCIATION CIRCUIT

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220KV SYNCH CONTROL
PANEL
=D00+C6
/RA3



0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) AC ANNUNCIATIONS	P60194-E-RLC-SC-003		
									Project no. P-60194	Sheet type RA1	Sheet no. 31

ANNUNCIATION CIRCUIT

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.

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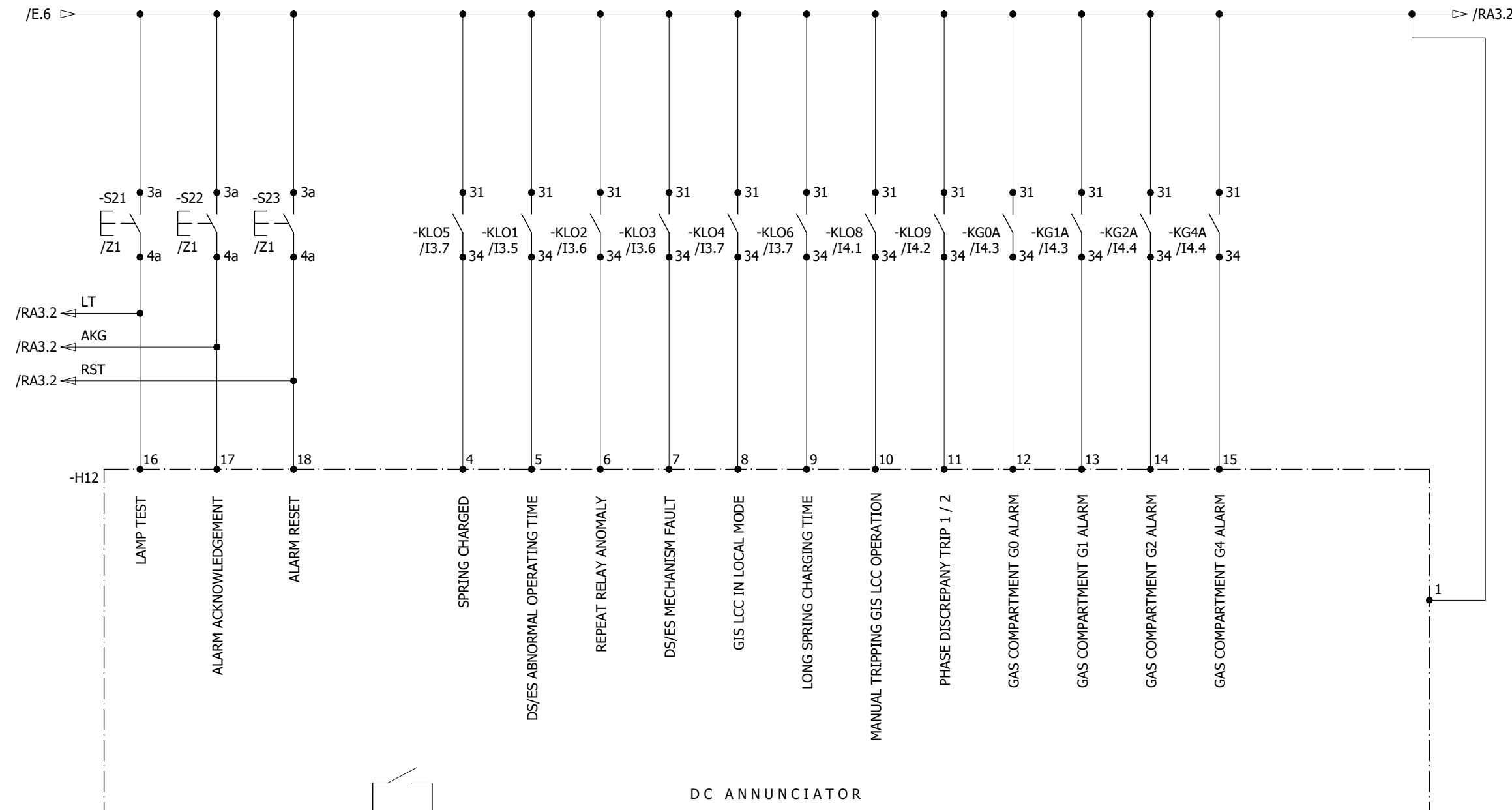
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DC ANNUNCIATOR

0	AS BUILT	30.10.2018	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 CONTROL PANEL (=D01+C4) PROTECTION TRIPS	Drawing no. P60194-E-RLC-SC-003	
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type RA2	Sheet no. 32

ANNUNCIATION CIRCUIT

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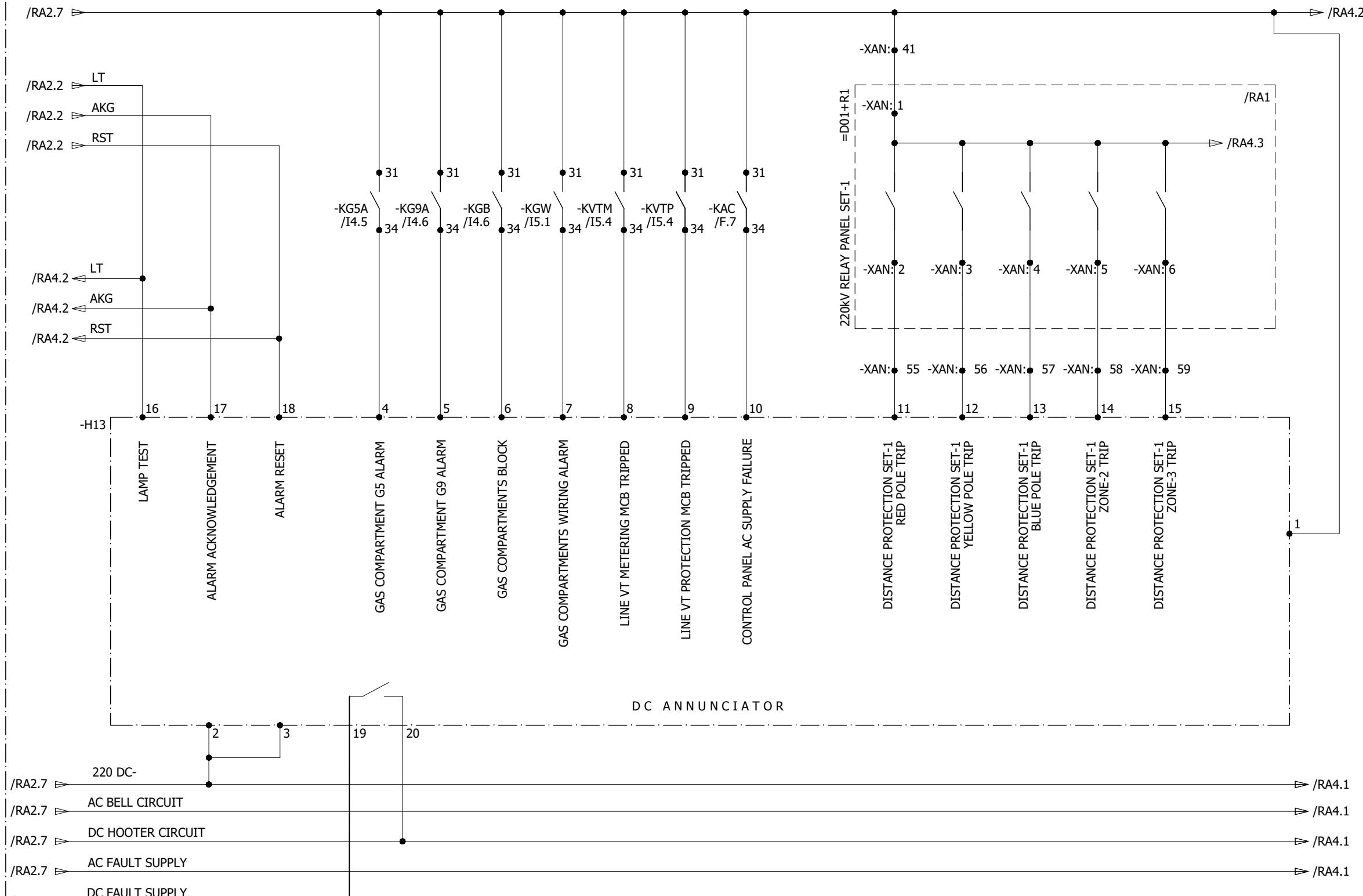
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0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE CONTROL PANEL (=D01+C4) ANNUNCIATOR ALARMS	Drawing no. P60194-E-RLC-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA3	Sheet no. 33
1	2	3	4	5	6	7	8				

ANNUNCIATION CIRCUIT

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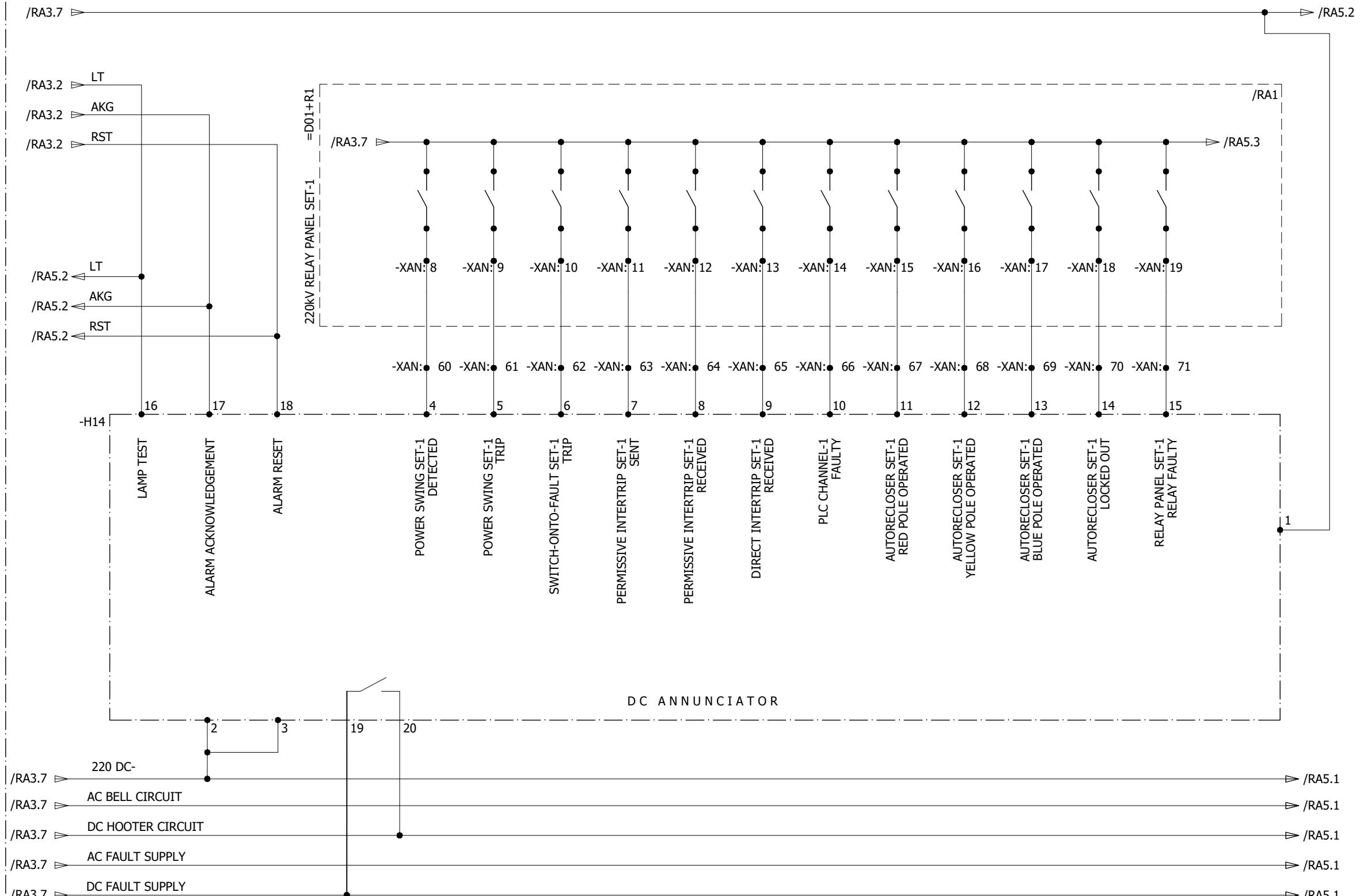
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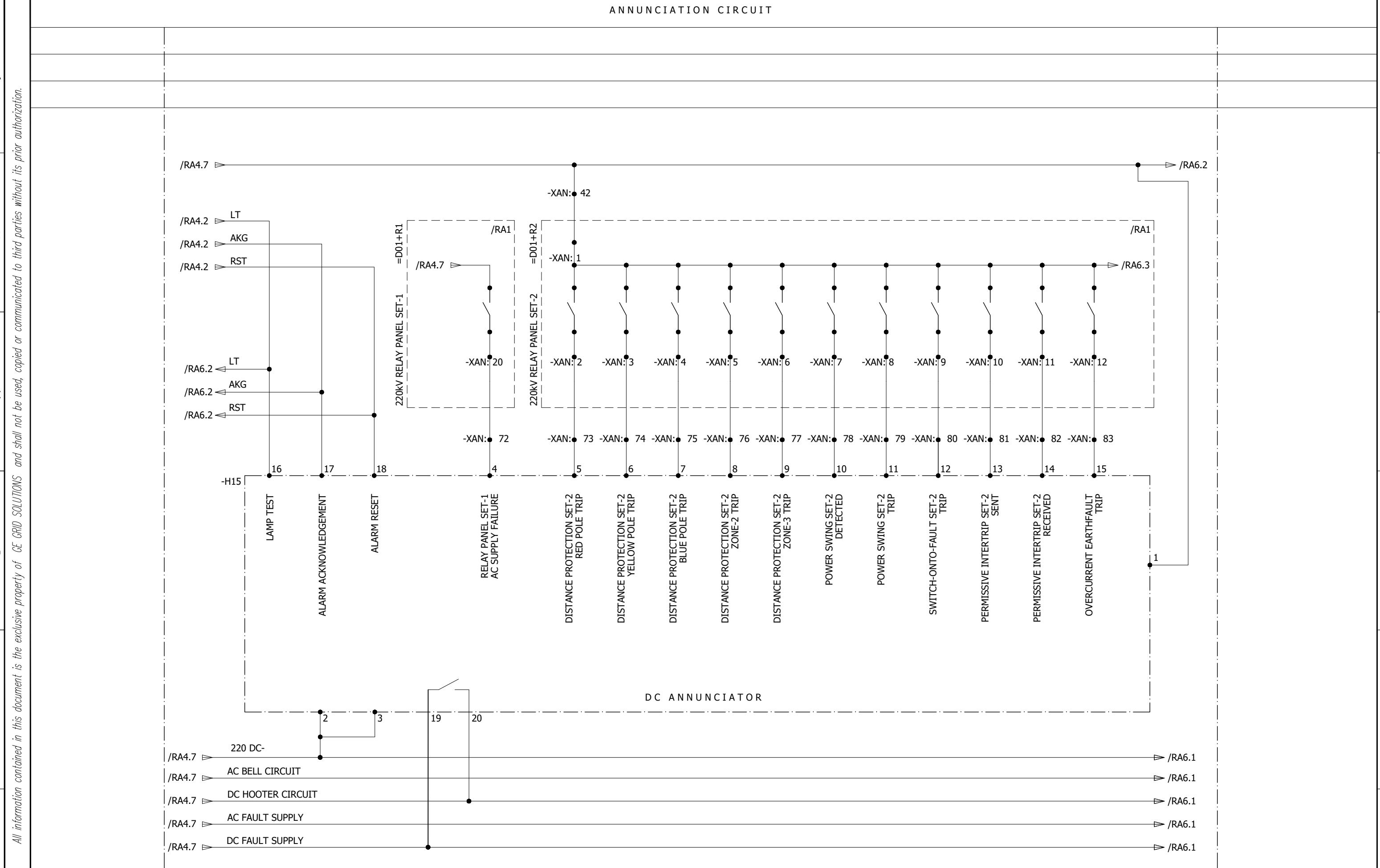
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0	AS BUILT	30.10.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV LINE CONTROL PANEL (=D01+C4) ANNUNCIATOR ALARMS	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

ANNUNCIATION CIRCUIT

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0	AS BUILT	30.10.2018	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 LINE CONTROL PANEL (=D01+C4) ANNUNCIATOR ALARMS	Drawing no. P60194-E-RLC-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA5	Sheet no. 35
1	2	3	4	5	6	7	8				

ANNUNCIATION CIRCUIT

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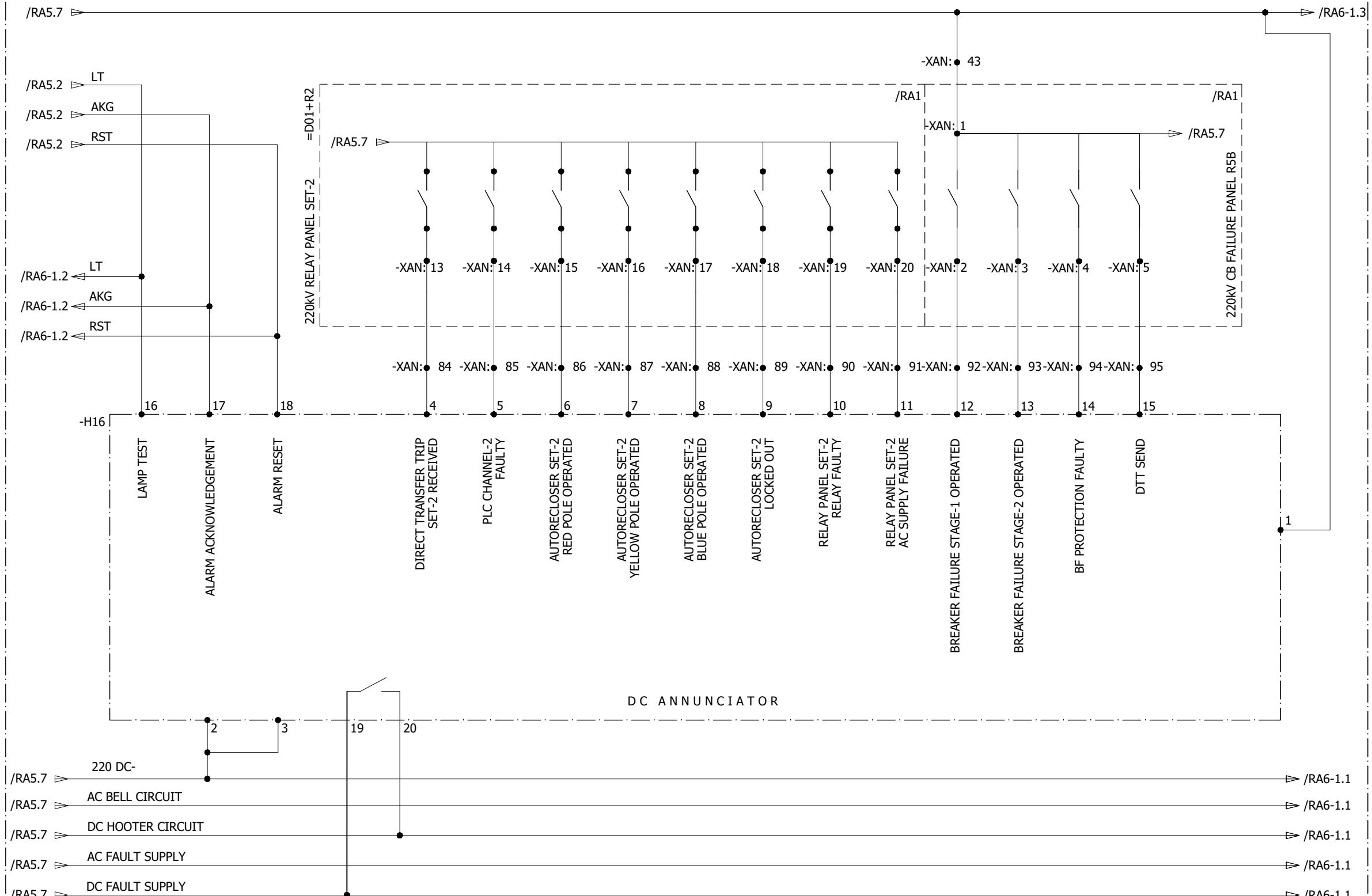
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0	AS BUILT	30.10.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220KV LINE CONTROL PANEL (=D01+C4) ANNUNCIATOR ALARMS	Drawing no. P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

ANNUNCIATION CIRCUIT

220KV LINE CONTROL PANEL

=D02+C4

/RA1

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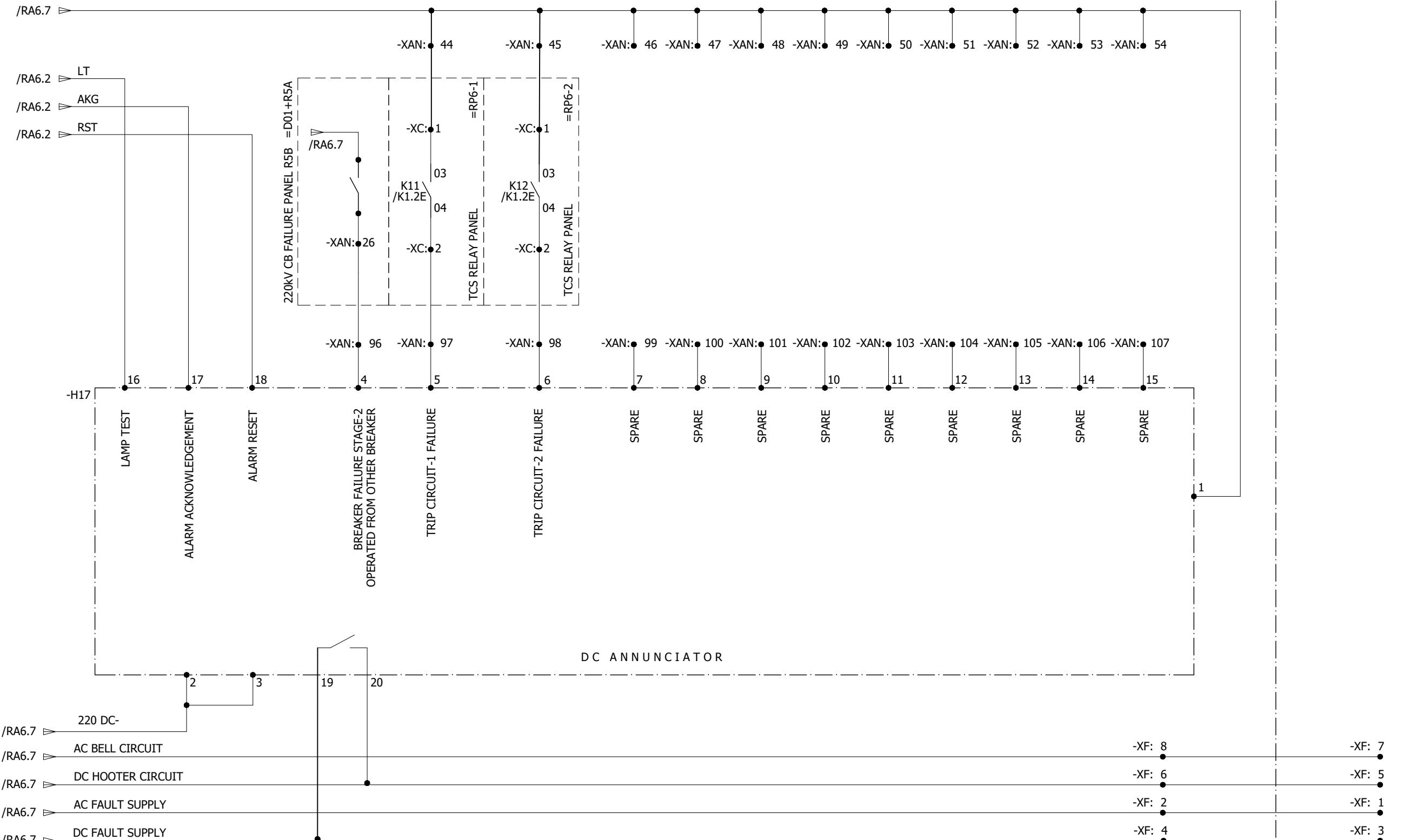
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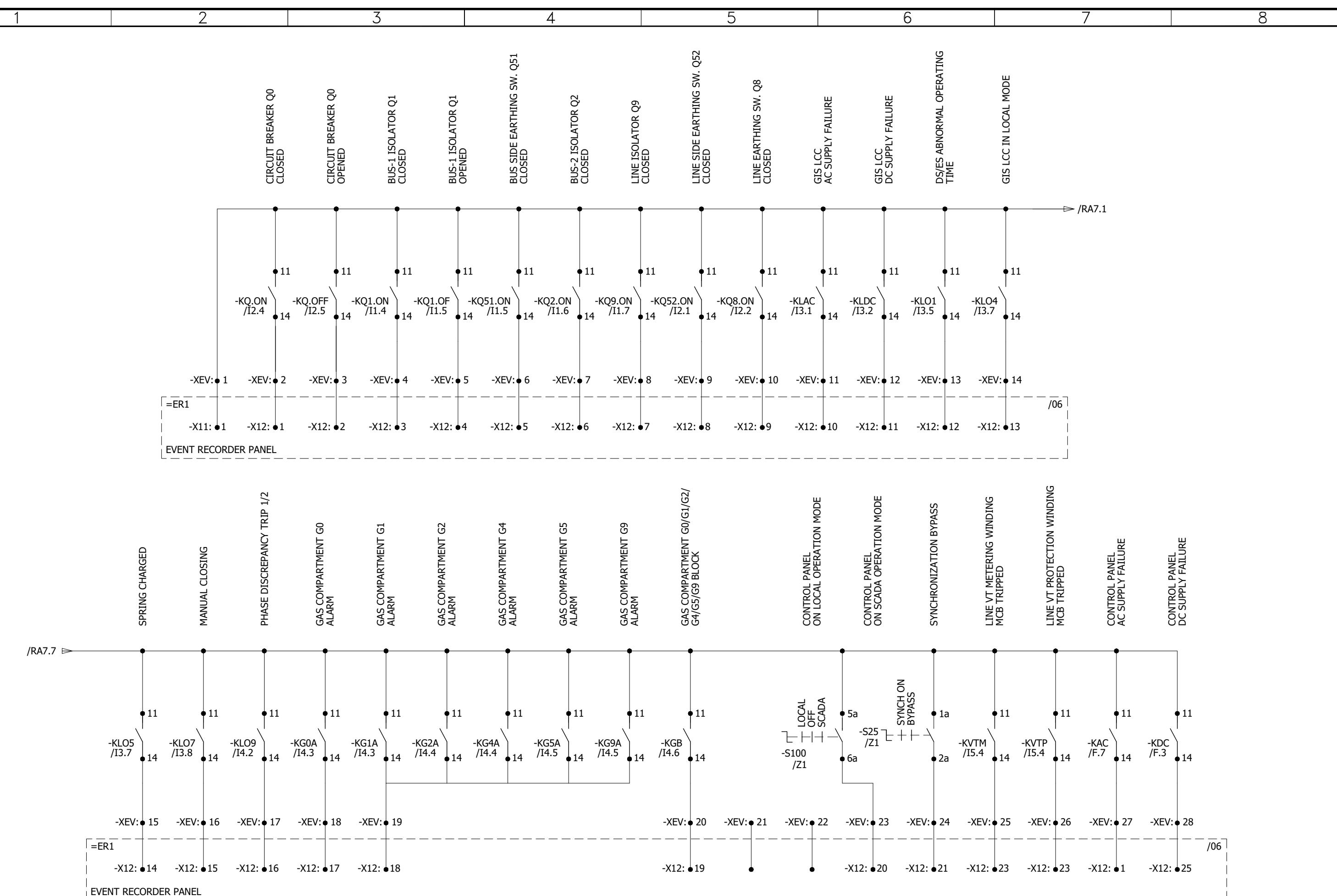
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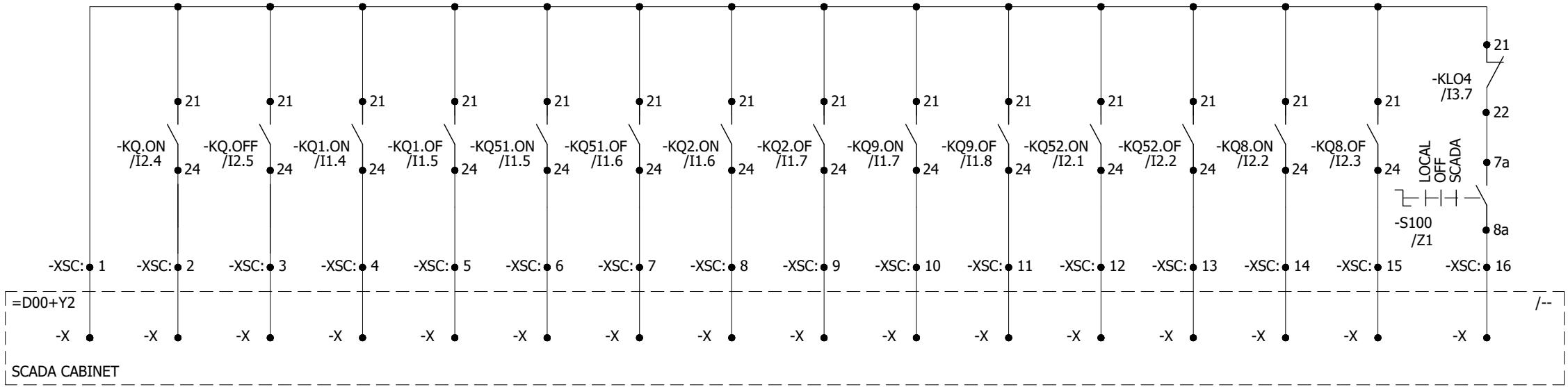


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REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194



0	AS BUILT	30.10.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NTDC-WAPDA NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 220kV LINE CONTRPL PANEL (=D01+C4) EVENT & FAULT RECORDER CIRCUITS	Drawing no. P60194-E-RLC-SC-003		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type RA7	Sheet no. 38
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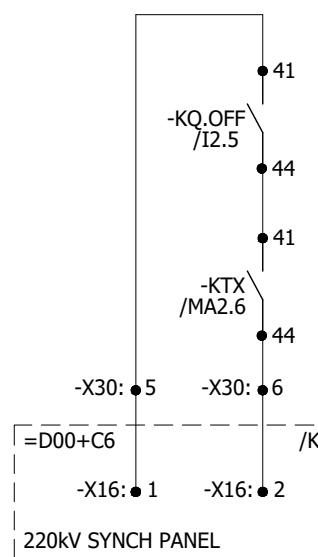
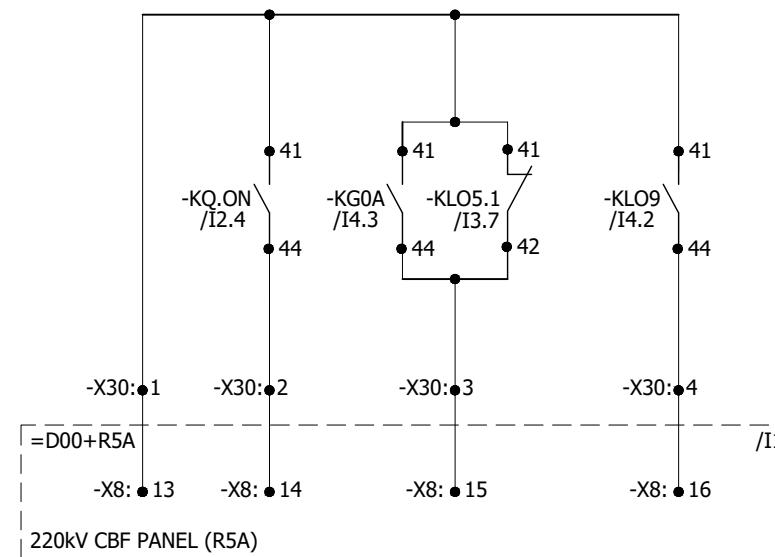
1	2	3	4	5	6	7	8
CIRCUIT BREAKER Q0 CLOSED	CIRCUIT BREAKER Q0 OPENED	BUS-1 ISOLATOR Q1 CLOSED	BUS-1 ISOLATOR Q1 OPENED	BUS SIDE EARTHING SW. Q51 CLOSED	BUS SIDE EARTHING SW. Q51 OPENED	BUS SIDE EARTHING SW. Q52 CLOSED	BUS SIDE EARTHING SW. Q52 OPENED
LINE ISOLATOR Q9 CLOSED	LINE ISOLATOR Q9 OPENED	LINE SIDE EARTHING SW. Q52 CLOSED	LINE SIDE EARTHING SW. Q52 OPENED	LINE SIDE EARTHING SW. Q8 CLOSED	LINE SIDE EARTHING SW. Q8 OPENED	LINE EARTHING SW. Q8 CLOSED	LINE EARTHING SW. Q8 OPENED
CB ON REMOTE (SCADA)							



CIRCUIT BREAKER Q0
CLOSED

CIRCUIT BREAKER
ABNORMAL CONDITION

POLE DISCREPANCY
(=D01+C4)

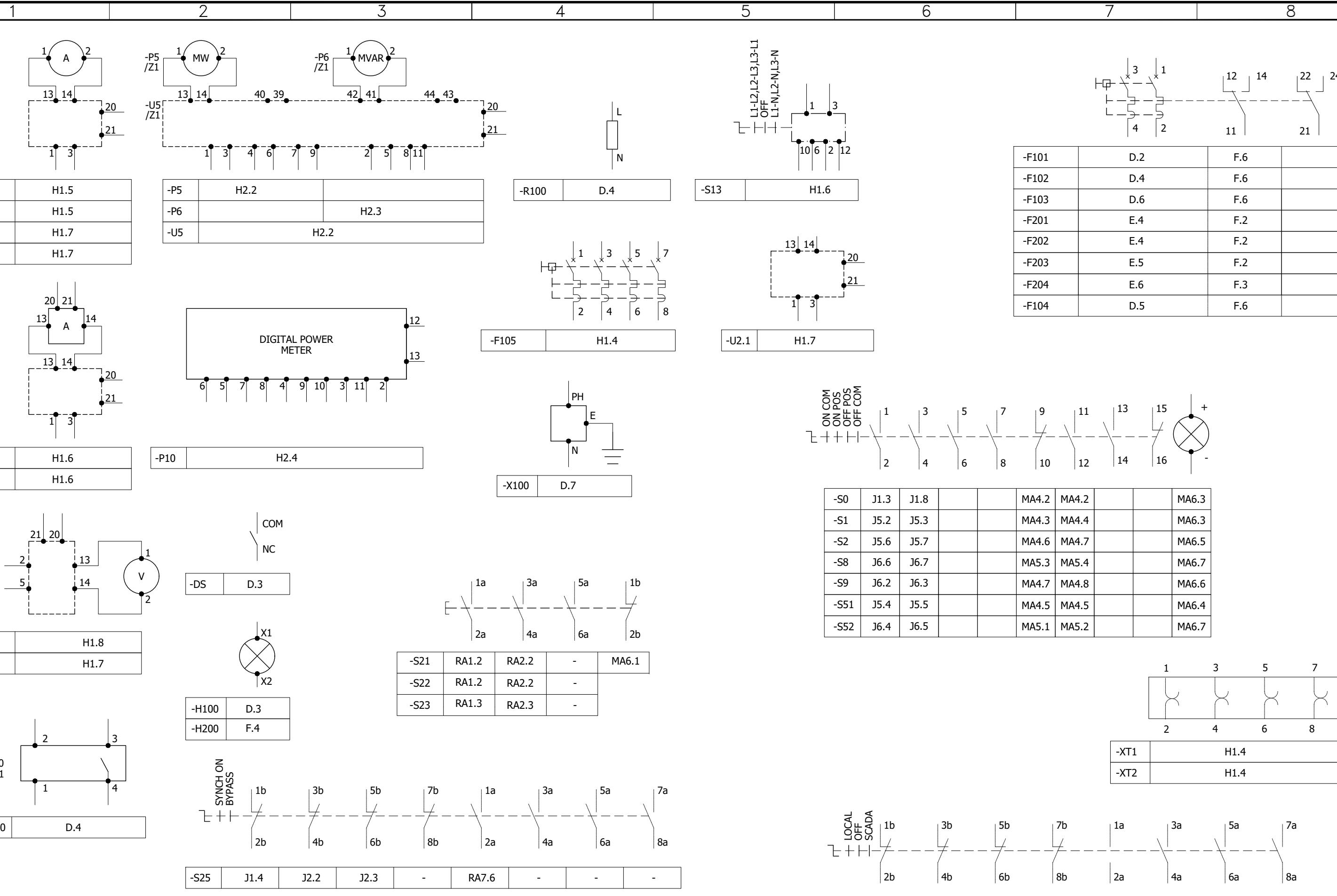


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0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	220KV LINE CONTRPL PANEL (=D01+C4) SCADA CIRCUIT	P60194-E-RLC-SC-003
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type RA8 Sheet no. 39

1	2	3	4	5	6	7	8
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0	AS BUILT	30.10.2018	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 CONTRPL PANEL (=D01+C4) COMPONENT DIAGRAM	Drawing no. P60194-E-RLC-SC-003	
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type Z1	Sheet no. 40
1	2	3	4	5	6	7	8			