



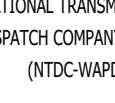
Grid Solutions
A GE and Alstom joint venture

220kV/132kV GIS SUBSTATION GHAZI ROAD , LAHORE

132kV BUS COUPLER CONTROL PANEL SCHEMATIC DRAWINGS

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

REFERENCE DRAWINGS								
SR. NO.	DRAWING TITLE			DOCUMENT NO.				
1.	220kV / 132kV Metering & Protection SLD			P60194-E-SLMP-001				
REV	DATE	DRW. BY	CHK. BY	APR. BY	REVISION DESCRIPTION			
0	05.11.2018	ASJ	MFT	NAH	AS BUILT			
REVISION HISTORY								
Scale	NOT-TO-SCALE			Sheet size	A3			
Client	 NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)							
Contractor	 Grid Solutions A GE and Alstom joint venture		Manufacturer					
Project	220kV / 132kV GIS SUBSTATION GHAZI ROAD , LAHORE							
Title	132kV BUS COUPLER CONTROL PANEL (=E11+CP40) SCHEMATIC DRAWINGS							
Order no	P-60194		Document no					
			P60194-E-EBC-SC-001					
Sheet type	Total sheets		Sheet no					
	A		29					
1								

	1	2	3	4	5	6	7	8							
	PAGE NO.	SHEET NAME	SHEET DESCRIPTION			ISSUE / REVISION									
						A	B	C	D	E	F	01	02	03	04
A	01	A	COVER SHEET					X							
	02	AA	LIST OF CONTENTS					X							
	03	AB	SYMBOL AND LEGENDS					X							
	04	AC1	COMPONENT LIST					X							
	05	AC2	COMPONENT LIST					X							
B	06	AD	PANEL VIEW					X							
	07	AE	SINGLE LINE DIAGRAM					X							
	08	D	AC SUPPLY DISTRIBUTION CIRCUIT					X							
	09	E	DC SUPPLY DISTRIBUTION CIRCUIT					X							
	10	F	AC/DC SUPPLY FAILURE CIRCUIT					X							
C	11	G	METERING					X							
	12	H1	CB CONTROL CIRCUIT					X							
	13	H2	CB CONTROL CIRCUIT					X							
	14	I1	DISCONNECTOR & EARTH SWITCH CONTROL					X							
	15	I2	DISCONNECTOR & EARTH SWITCH CONTROL					X							
	16	I3	DISCONNECTOR & EARTH SWITCH CONTROL					X							
	17	K1	SYSTEM ALARMS					X							
D	18	NA1	ALARM MULTIPLICATION					X							
	19	NA2	DISCREPANCY INITIATION					X							
	20	NA3	DISCREPANCY INITIATION					X							
	21	NA4	DISCREPANCY INITIATION					X							
	22	NA5	DISCREPANCY INDICATIONS					X							
E	23	RA1	ANNUNCIATOR-1 CIRCUIT					X							
	24	RA2	ANNUNCIATOR-2 CIRCUIT					X							
	25	RA3	ANNUNCIATOR-3 CIRCUIT					X							
	26	RA4	ANNUNCIATOR-4 CIRCUIT					X							
F	27-28	RA5-RA6	SCADA & ER SIGNALS					X							
	29	Z1	Component Diagram					X							
<i>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.</i>															
0	AS BUILT	05.11.2018	ASJ	Manufacturer  EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) LIST OF CONTANTS	Drawing no. P60194-E-EBC-SC-001						
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AA	Sheet no. 02				

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

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	05.11.2018	ASJ	Manufacturer EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) SYMBOL AND LEGENDS	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type AB
									Sheet no. 03

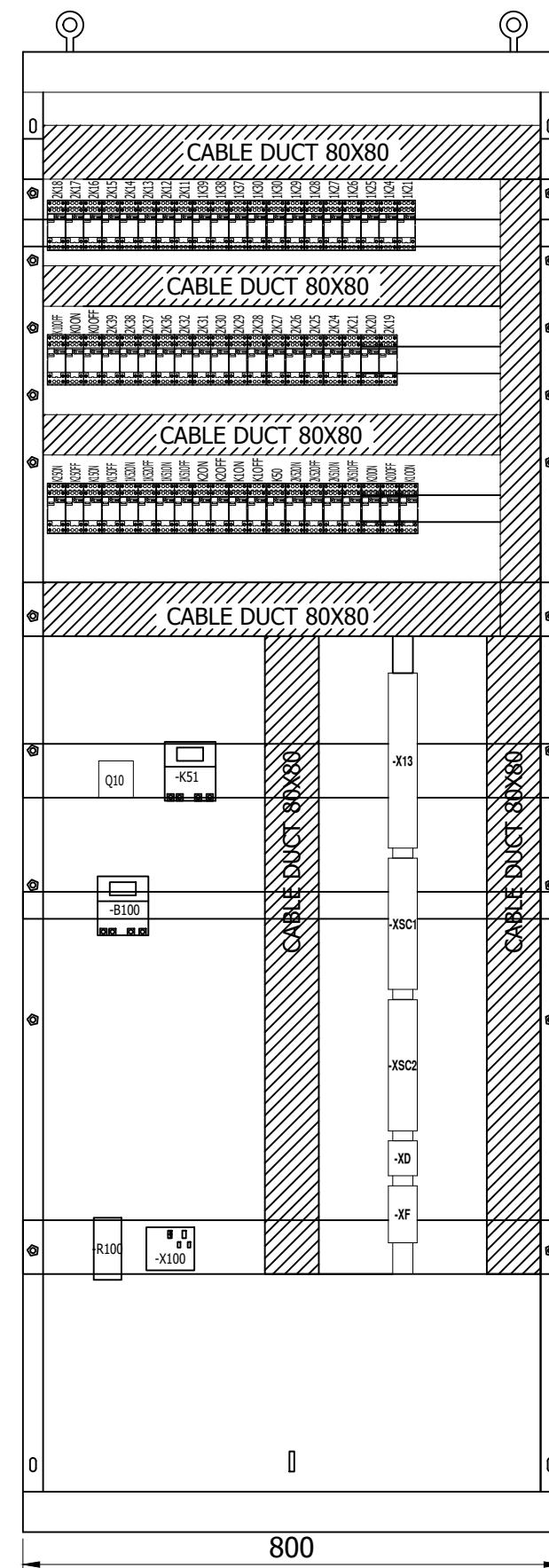
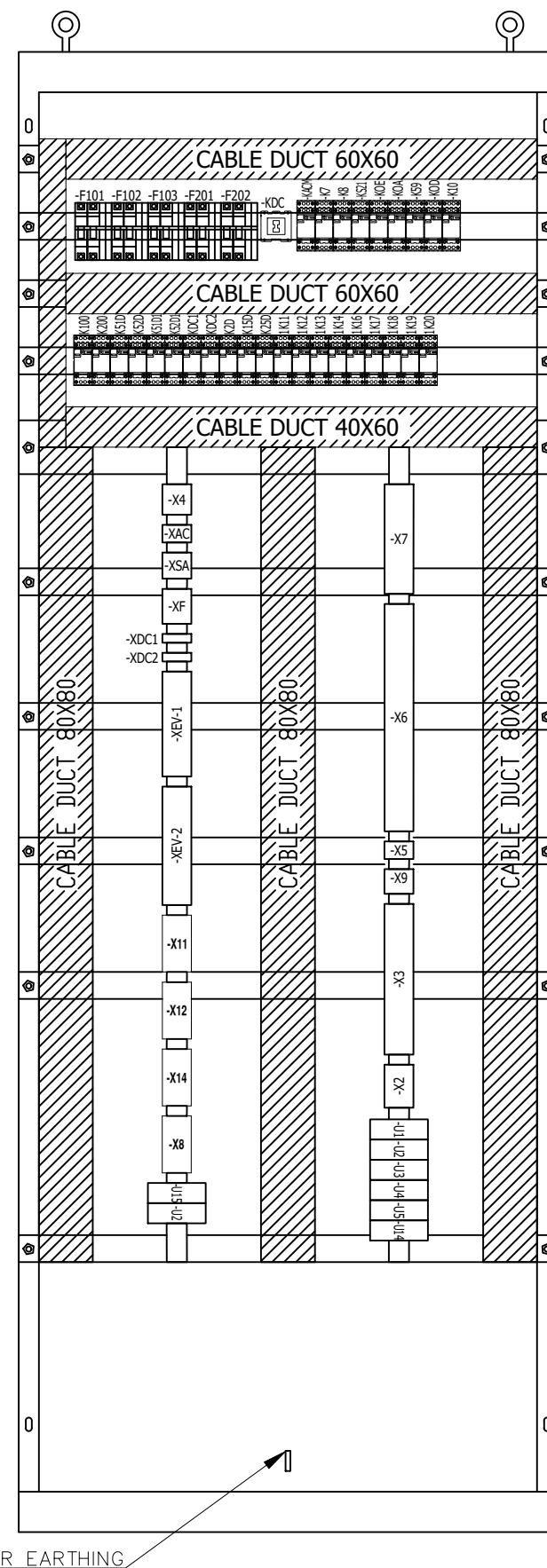
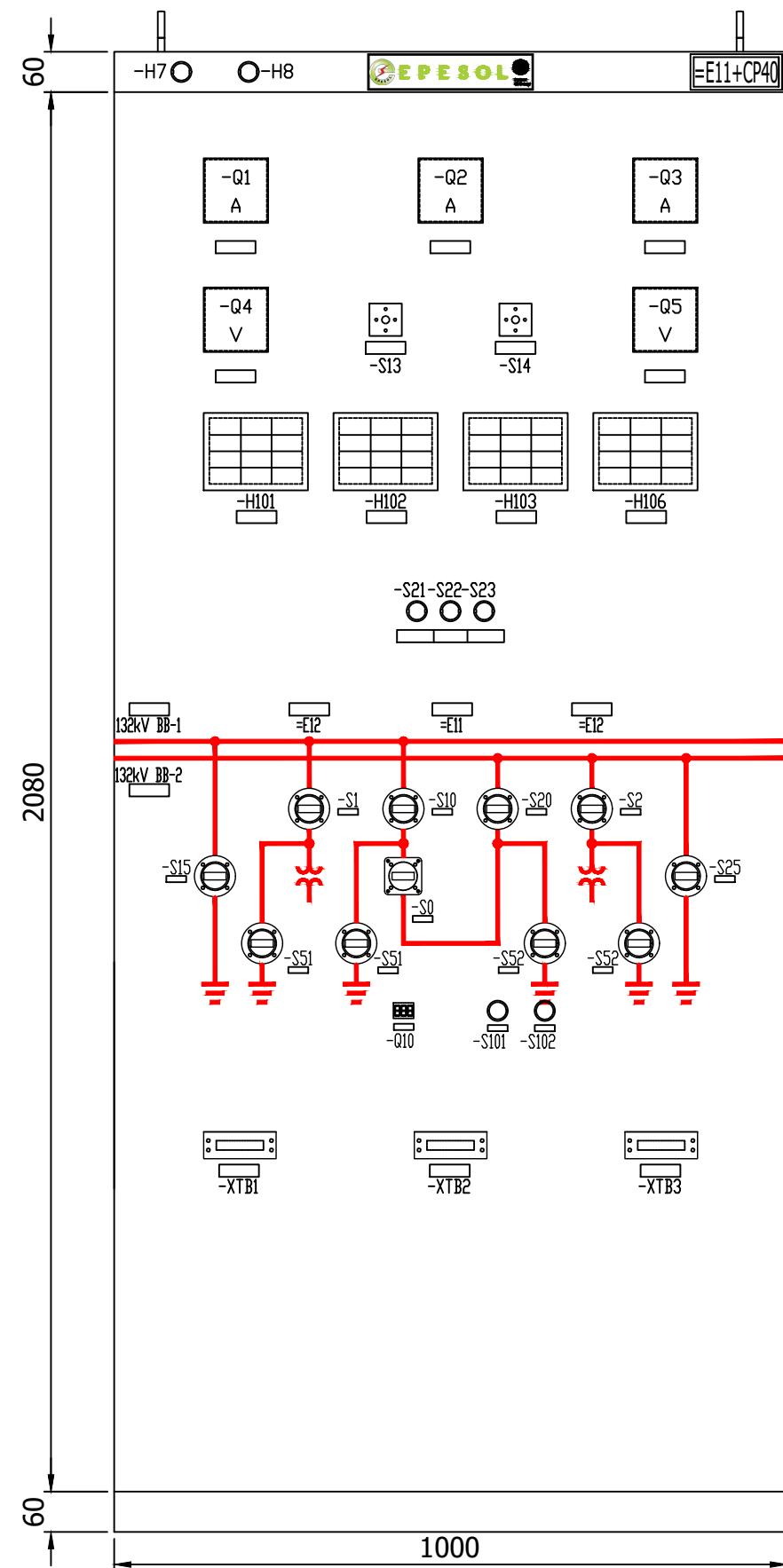
	1	2	3	4	5	6	7	8			
A	QTY.	DEVICE DESCRIPTION		DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION		MANUFACTURER		
	02	ANALOG AMMETER		METER: 240 DEGREE TRANSDUCER OPERATED ANALOGUE AMPERE METER, INPUT 0...20/30 mA, ACCURACY CLASS 1, SCALE_1: 0...800/1200A, SCALE_2: 0...1600/2400A, SCALE_3: 0...3200/4800A			-Q1 , -Q3		FRER		
B	02	CURRENT TRANSDUCER		CURRENT TRANSDUCER: NOMINAL INPUT CURRENT 1/1.5A, OUTPUT 0...20/30mA, AUXILIARY AUXILIARY VOLTAGE 110VDC, ACCURACY CLASS 1, CT RATIO 800:1600:3200/1A. ORD: A96MMA+MCOEAQ			-U1 , -U3		FRER		
C	01	DIGITAL AMMETER		METER: TRANSDUCER OPERATED DIGITAL AMPERE METER, INPUT 0...20/30 mA, ACCURACY CLASS 1, SCALE_1: 0...800/1200A, SCALE_2: 0...1600/2400A, SCALE_3: 0...3200/4800A, AUX. VOLTAGE 110 VDC.			-Q2		FRER		
D	02	CURRENT TRANSDUCER		CURRENT TRANSDUCER: 1-INPUT, 1-OUTPUT, NOMINAL INPUT CURRENT 1/1.5A, OUTPUT1: 0...20/30mA, OUTPUT2: 0...20/30mA, AUXILIARY VOLTAGE 110 VDC, ACCURACY CLASS 1, CT RATIO 800:1600:3200/1A. ORD: D96MMA+MCOEAQ			-U2, -U12		FRER		
E	02	ANALOG VOLTMETER		METER: 240 DEGREE TRANSDUCER OPERATED ANALOG VOLT METER, INPUT 0...20/30mA, ACCURACY CLASS 1, SCALE 0...132/198 KV (MARKED RED AT 132 KV).			-Q4, -Q5		FRER		
F	04	VOLTAGE TRANSDUCER		VOLTAGE TRANSDUCER: 1-INPUT, 1-OUTPUT, NOMINAL INPUT VOLTAGE, 0...110/165 VAC (L-L), OUTPUT1 0...20/30 mA, OUTPUT2 0...20/30mA, AUXILIARY VOLTAGE 110 VDC, ACCURACY CLASS 1, PT RATIO: 132/0.11 KV (L-L). ORD: A96MMA+MCOEVQ			-U4, -U14, -U5, -U15		FRER		
G	02	SELECTOR SWITCH - VOLTMETER		7 POSITION VOLTMETER SELECTOR SWITCH POSITION INSCRIPTION (L1-L2,L2-L3,L3-L1, OFF,L1-N,L2-N,L3-N), PO-160023R001.			-S13,-S14		GIOVENZANA		
H	02	SELECTOR SWITCH - OPERATION (LOCAL-OFF-SCADA)		3-POSITION (STATION-OFF-SCADA), 110VDC, KEYLOCKABLE TYPE, ORD: YS-AK-2-3-44-D			-S101,-S102		YONGSUNG		
I	85	AUXILIARY CONTACTOR		COIL VOLTAGE: 110VDC, 4 C/O CONTACTS, ORD: PRC4M40DCJL			-KS21,-K0E,-K0A,-K59,-KOD,-K1D,K10D,-K20D,-K51D -K52D,-K51D1,-K52D1,-KDC1-2,-K2D,K15D,K25D -1K11-14,16-21,24-30,36-39,-2K11-21,24-32,36-39, -K0OFF-ON,-K10OFF-ON,-K20OFF-ON,-2K51OFF-ON, -2K52OFF-ON,-K1OFF-ON,-K2OFF-ON,-1K51OFF-ON, -1K52OFF-ON,-K15OFF-ON,-K25OFF-ON,-K50			GE	
J	01	AUXILIARY CONTACTOR - SUPPLY CHANGEOVER		COIL VOLTAGE: 110VDC, 3 NO + 3 NC CONTACTS, ORD: MCRC022ATWJ-B+MARN211AT			-KDC		GE		
K	03	AUXILIARY CONTACTOR		COIL VOLTAGE:: 240VAC, 4 C/O CONTACTS, ORD: PRC4M40ANL			-KACM,-K7,-K8		GE		
L	10	CONTROL DISCREPANCY SWITCH - ISOLATORS & EARTHING SW.		CONTROL AND DISCREPANCY SWITCH FOR ISOLATOR CONTROL AND INDICATION, ROUND TYPE FOUR CONTACTS FOR COMMAND AND FOUR CONTACTS FOR INDICATION ORD:YS-IC-4456-R4(49)-PM-K-G-D11-G			-S10,-S20,-S51(E11),-S52(E11),-S1,-S2,-S51(E12),-S52(E12),-S15,-S25		YONGSUNG		
M	01	CONTROL DISCREPANCY SWITCH - CIRCUIT BREAKER		CONTROL AND DISCREPANCY SWITCH FOR ISOLATOR CONTROL AND INDICATION, SQUARE TYPE FOUR CONTACTS FOR COMMAND AND FOUR CONTACTS FOR INDICATION ORD:YS-IC-4456-S4(49)-PM-K-G-D11-G			-S0(E11)		YONGSUNG		
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		05.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS COUPLER CONTROL PANEL (=E11+CP40) COMPONENT LIST	Drawing no. P60194-E-EBC-SC-001	
REV.	DESCRIPTION		DATE	DRAWER					Project no. P-60194	Sheet type AC1	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	FLASHER RELAY	FLASHER RELAY, COIL VOLTAGE 110 VDC, ORD: FR-101-110			-K51	ELABS			
	03	ANNUNCIATOR	TWELVE WINDOW ANNUNCIATOR, RATED VOLTAGE 110 VDC, ORD: AM-101			-H101-103	ELABS			
	01	ANNUNCIATOR	TWELVE WINDOW ANNUNCIATOR, RATED VOLTAGE 240 VAC, ORD: AM-101			-H106	ELABS			
B	01	PUSH BUTTON - LAMP TEST	TYPE: SWITCH (A TYPE:), COLOR : BLACK , SUPPLY : 120VDC, Ord: YS-AP1-2-31-B-D-W			-S21	YONGSUNG			
	01	PUSH BUTTON - ALARM ACKNOWLEDGMENT	TYPE: SWITCH (A TYPE:), COLOR : RED , SUPPLY : 120VDC, Ord: YS-AP1-2-31-R-D-W			-S22	YONGSUNG			
	01	PUSH BUTTON - ALARM RESET	TYPE: SWITCH(A TYPE:), COLOR : GREEN , SUPPLY : 120VDC, Ord: YS-AP1-2-31-G-D-W			-S23	YONGSUNG			
C	03	TEST BLOCK	YS-CTT-04-S, (YS-PTT-04-S-2) (YS-CTT-04-S-1)			-XTB1, -XTB2, -XTB3	YONGSUNG			
	02	INDICATION LIGHT - AC AND DC SUPPLY	TYPE: LED , COLOR : RED , SUPPLY : 240VAC ORD: YS-PL-2-AL-22-R-W			-H7,-H8	YONGSUNG			
	01	OPERATION COUNTER	OPERATION COUNTER FOR CIRCUIT BREAKER, RATED VOLTAGE 110VDC			-Q10	ELABS			
D	02	CONTROL MCB - PANEL LIGHT & HEATER	2-Pole, Ratings: 2A, 240VAC, 6kA @ 240VAC, 2 C/O Contacts, Ord: G62C02+CAH(2)			-F101,-F102	GE			
	01	CONTROL ELCB - PANEL SOCKET	2-Pole, Ratings: 16A, 30mA, 240VAC, 1P+N, 2 C/O Contacts, Ord: DM100C16/030+CAH(2)			-F103	GE			
	02	CONTROL MCB - DC DISTRIBUTION	2-Pole, Ratings: 4A, 250VDC, 10kA @ 250VDC, 2 C/O Contacts, Ord: EP102UCC04+CAH(2)			-F201,-F202	GE			
E	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			-S100	YONGSUNG			
	01	THREE PIN SOCKET	1N+PE, 16A, 230VAC @ 50Hz			-X100	LOCAL			
F	01	PANEL HEATER	240VAC @ 50Hz, 50W			-R100	E-LABS			
	01	HUMIDITY & TEMPERATURE CONTROLLER	40-90%RH, 25-50 deg.C, 240VAC @ 50Hz			-B100	E-LABS			
	04	TERMINAL BLOCKS FOR AC SUPPLY	TYPE: CBD-4			-XAC	CABUR			
G	02	TERMINAL BLOCKS FOR DC SUPPLY BUS-1	TYPE: CBD-4			-XDC1	CABUR			
	02	TERMINAL BLOCKS FOR DC SUPPLY BUS-2	TYPE: CBD-4			-XDC2	CABUR			
	28	TERMINAL BLOCKS FOR AC ANNUNCIATOR	TYPE: CBD-4			-X14	CABUR			
H	0	AS BUILT	05.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS COUPLER CONTROL PANEL (=E11+CP40) COMPONENT LIST	Drawing no. P60194-E-EBC-SC-001
									Project no. P-60194	
	REV.	DESCRIPTION	DATE	DRAWER					Sheet type AC2	Sheet no. 05a

	1	2	3	4	5	6	7	8			
A	QTY.	DEVICE DESCRIPTION		DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION		MANUFACTURER		
	24	TERMINAL BLOCKS FOR EVENT RECORDER PANEL (=E12)		TYPE: CBD-4			-XEV-1		CABUR		
B	24	TERMINAL BLOCKS FOR SCADA (=E12)		TYPE: CBD-4			-XSC-1		CABUR		
C	06	TERMINAL BLOCKS FOR TRANSDUCER		TYPE: CBD-4			-XSA		CABUR		
D	08	TERMINAL BLOCKS FOR METERING		TYPE: SCB-6			-X2		CABUR		
E	28	TERMINAL BLOCKS FOR VOLT METER		TYPE: SCB-6			-X3		CABUR		
F	52	TERMINAL BLOCKS FOR DISCONNECTOR & EARTH SWITCH CONTROL		TYPE: CBD-4			-X6		CABUR		
G	25	TERMINAL BLOCKS FOR SYSTEM ALARM (=E12)		TYPE: CBD-4			-X7		CABUR		
H	07	TERMINAL BLOCKS FOR CB CONTROL CIRCUIT		TYPE: CBD-4			-X4		CABUR		
I	04	TERMINAL BLOCKS FOR CB CONTROL CIRCUIT		TYPE: CBD-4			-X5		CABUR		
J	28	TERMINAL BLOCKS FOR SYSTEM ALARM (=E11)		TYPE: CBD-4			-X8		CABUR		
K	13	TERMINAL BLOCKS FOR DC ANNUNCIATOR-1		TYPE: CBD-4			-X11		CABUR		
L	13	TERMINAL BLOCKS FOR DC ANNUNCIATOR-2		TYPE: CBD-4			-X12		CABUR		
M	26	TERMINAL BLOCKS FOR DISCREPENCY INITIATION		TYPE: CBD-4			-X9		CABUR		
N	08	TERMINAL BLOCKS FOR SIGNAL ALARM		TYPE: CBD-4			-XF		CABUR		
O	17	TERMINAL BLOCKS FOR DC ANNUNCIATOR-3		TYPE: CBD-4			-X13		CABUR		
P	27	TERMINAL BLOCKS FOR EVENT RECORDER PANEL (=E11)		TYPE: CBD-4			-XEV-2		CABUR		
Q	28	TERMINAL BLOCKS FOR SCADA (=E11)		TYPE: CBD-4			-XSC-2		CABUR		
R	30	SPARE TERMINAL BLOCKS		TYPE: CBD-4			-XSP		CABUR		
S	11	TERMINAL BLOCKS WITH DIODE TYPE IN-D4007, RATED MAXIMUM VOLTAGE 350VDC, RATED BREAK DOWN VOLTAGE 430VDC		TYPE: DAS.4/6			-XD		CABUR		
T	0	AS BUILT		05.11.2018	ASJ	Manufacturer  EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) COMPONENT LIST	Drawing no. P60194-E-EBC-SC-001
U	REV.	DESCRIPTION		DATE	DRAWER				Project no. P-60194	Sheet type AC3	Sheet no. 05b

FRONT VIEWLEFT SIDE VIEWRIGHT SIDE VIEW

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	05.11.2018	ASJ	Manufacturer EPESOL 7a-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) PANEL VIEWS	Drawing no. P60194-E-EBC-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AD	Sheet no. 06
1	2	3	4	5	6	7	8				

1

2

3

4

5

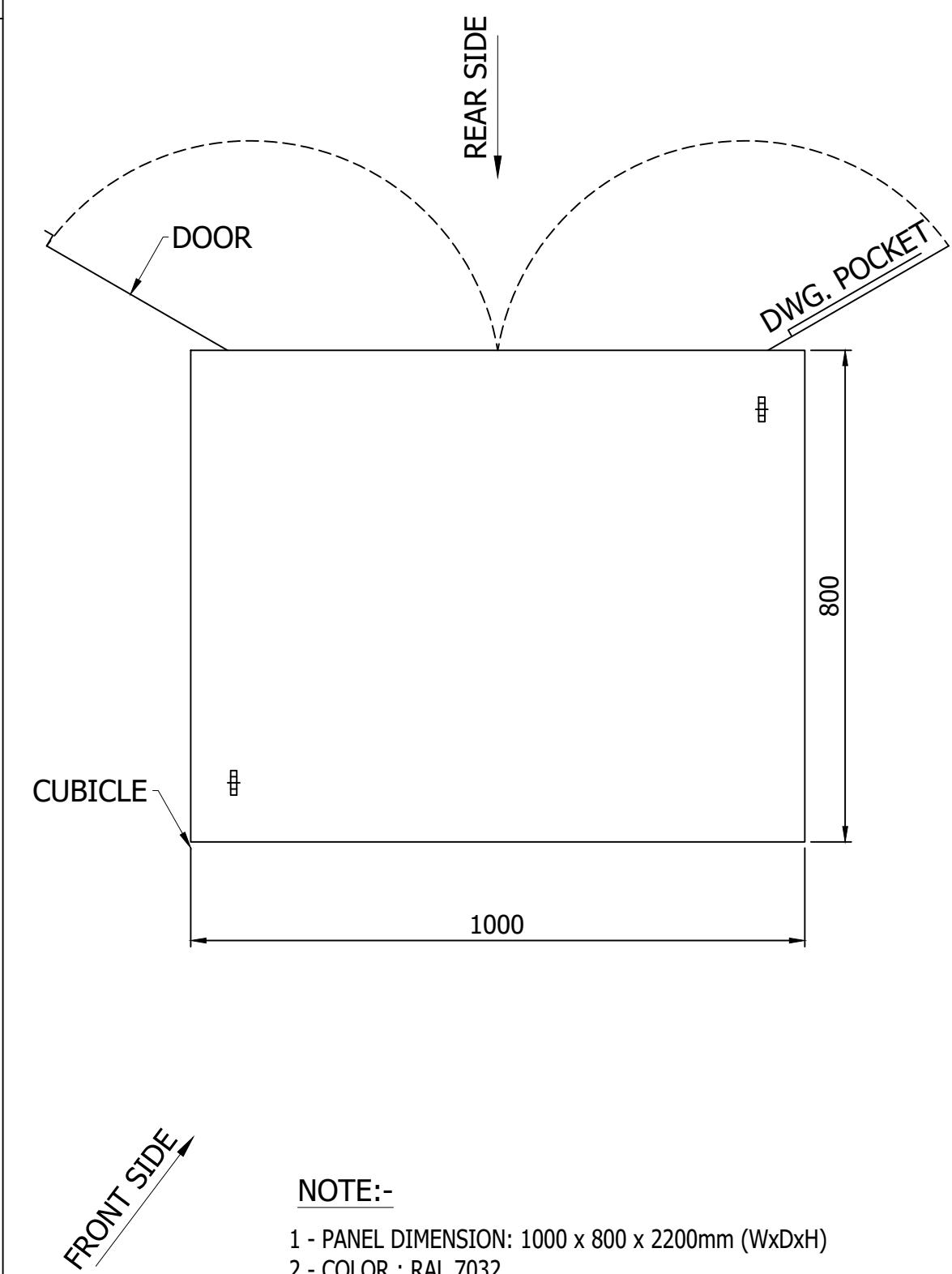
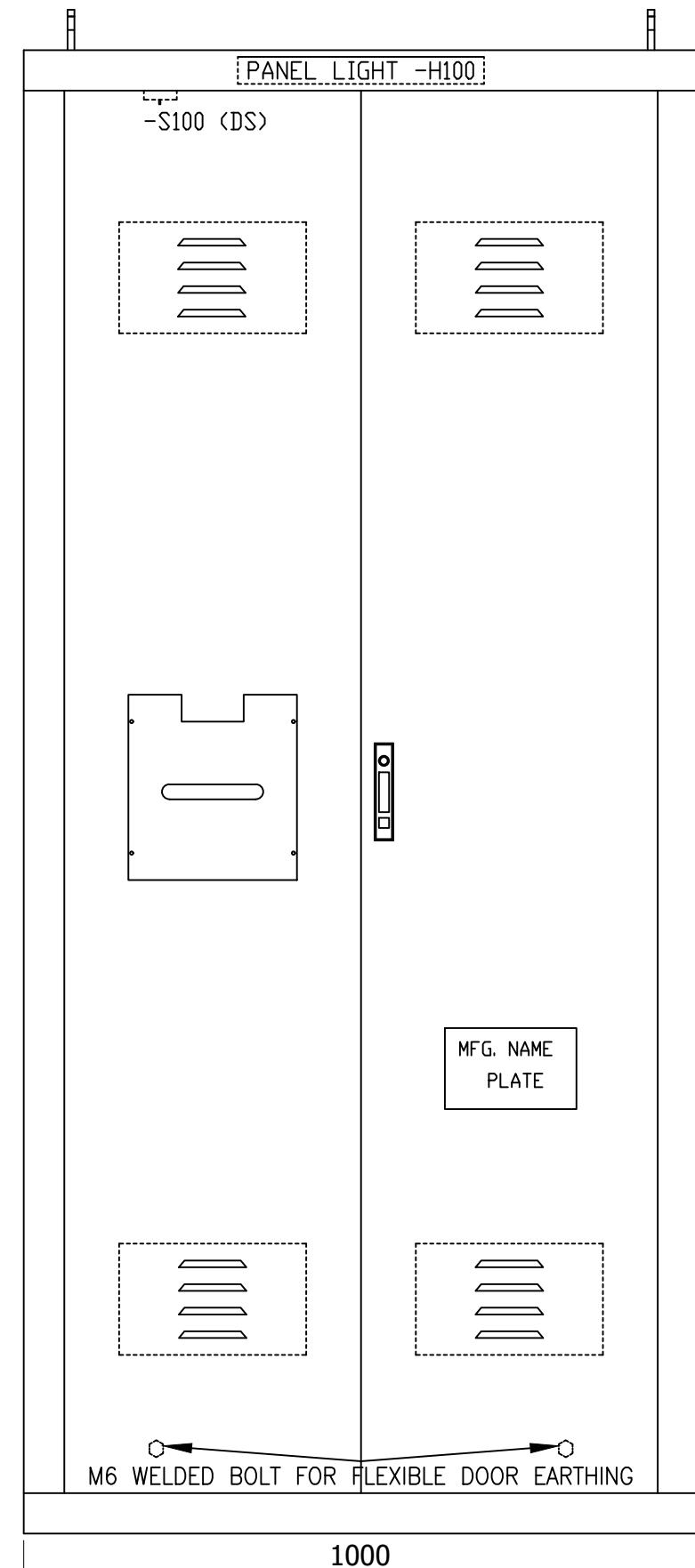
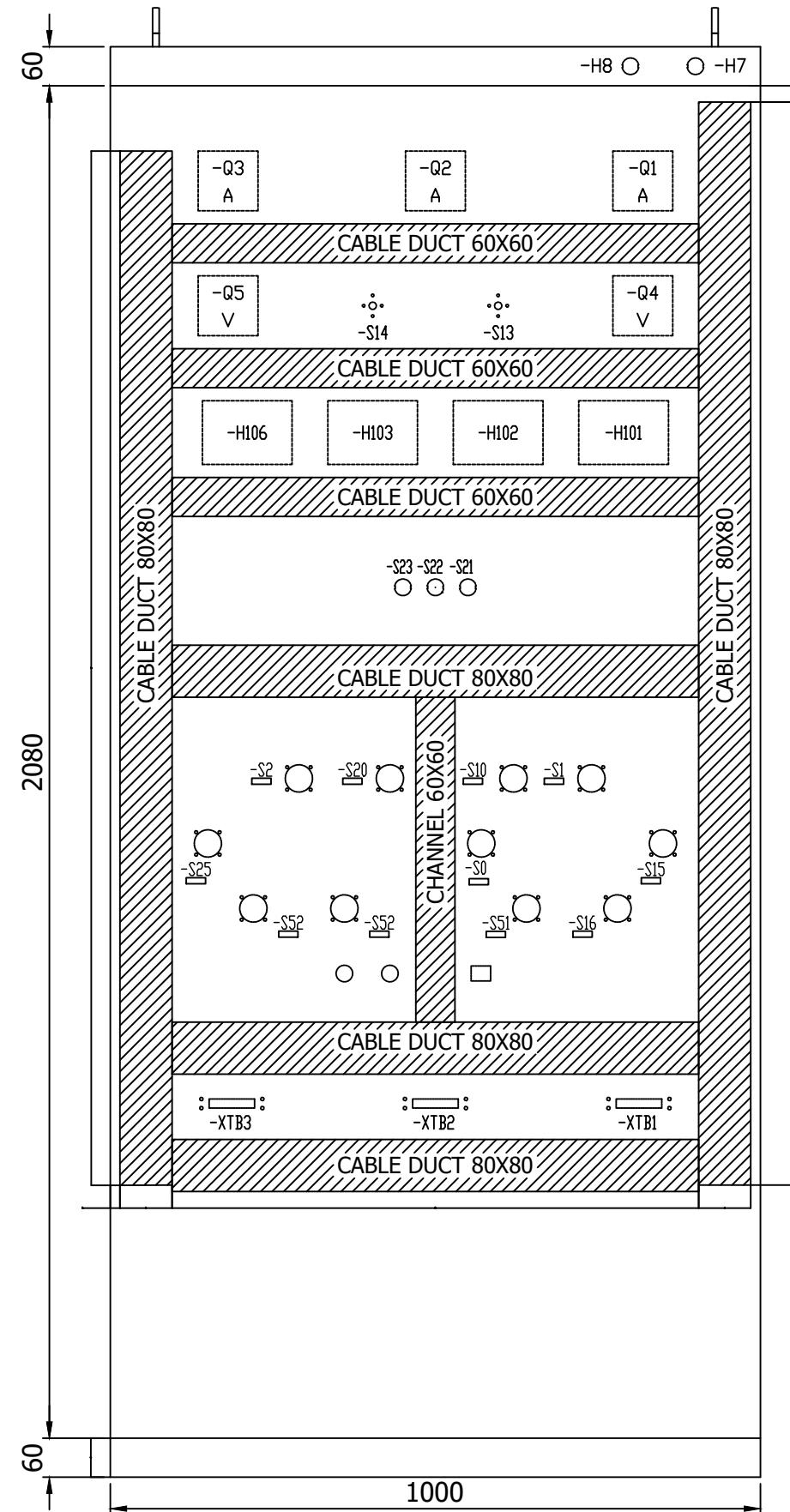
6

7

8

BACK VIEWBACK VIEW WITH DOORTOP VIEW

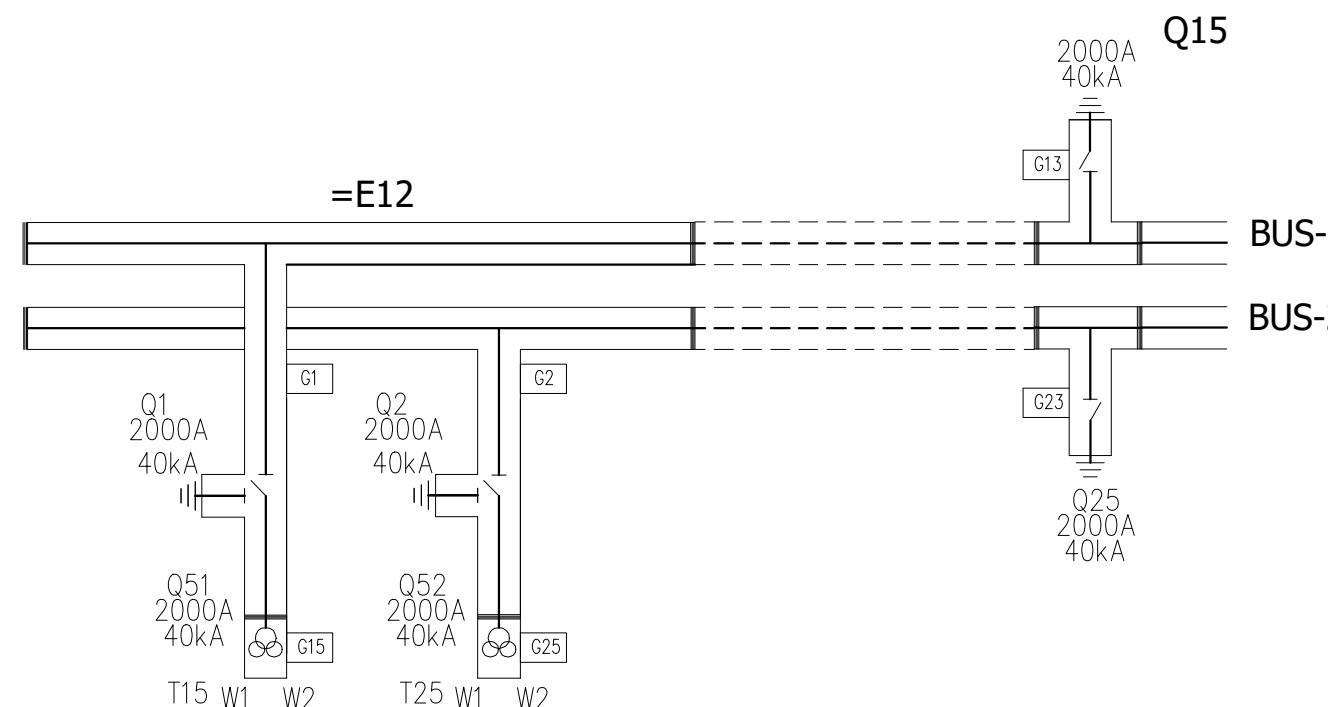
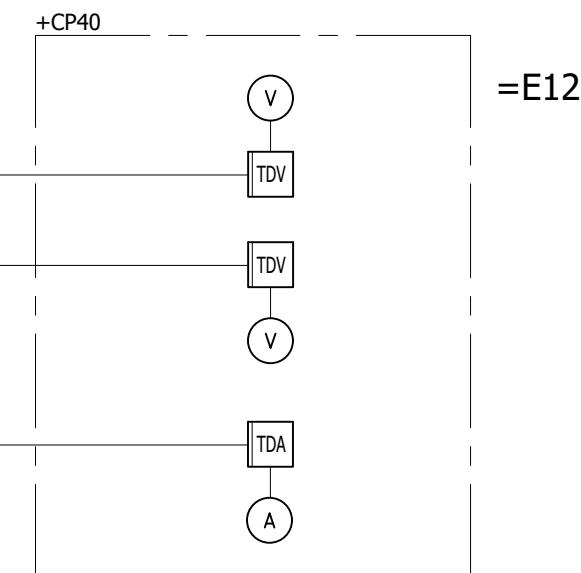
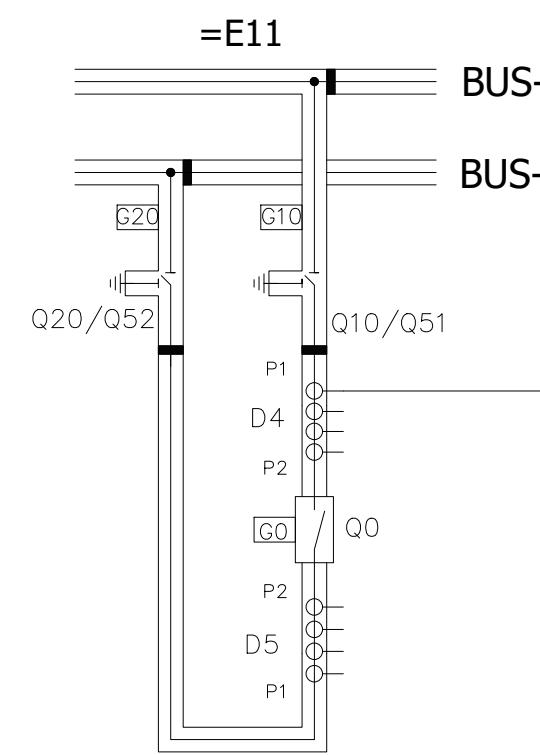
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

NOTE:-

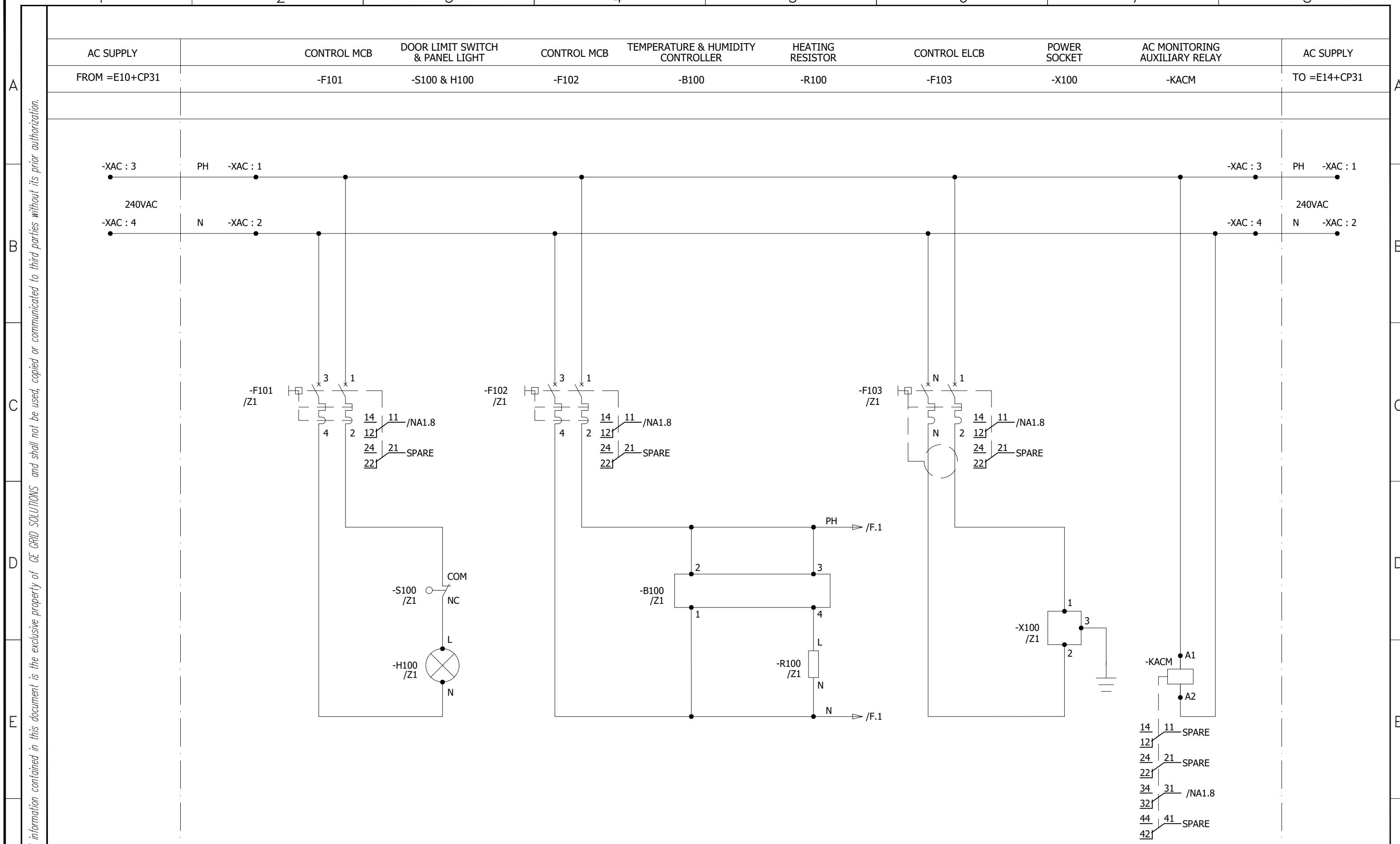
- 1 - PANEL DIMENSION: 1000 x 800 x 2200mm (WxDxH)
- 2 - COLOR : RAL 7032
- 3 - SHEET THICKNESS : 2-2.5 mm
- 4 - PROTECTION CLASS : IP-51 (INDOOR TYPE)
- 5 - ALL DOOR FITTED WITH 16mm EARTH STRAP & INSULATED WITH GREEN-YELLOW COLOUR.

0	AS BUILT	05.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) PANEL VIEWS	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194

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	05.11.2018	ASJ	Manufacturer  EPESOL 74-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) SINGLE LINE DIAGRAM	Drawing no. P60194-E-EBC-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AE	Sheet no. 07
1	2	3	4	5	6	7	8				



0	AS BUILT	05.11.2018	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 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) AC SUPPLY DISTRIBUTION CIRCUIT	Drawing no. P60194-E-EBC-SC-001
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type D
1	2	3	4	5	6	7	8		Sheet no. 08

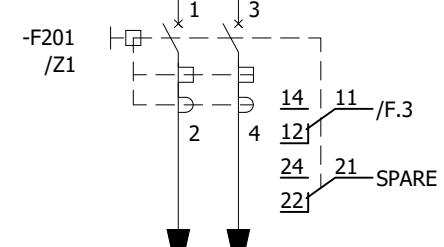
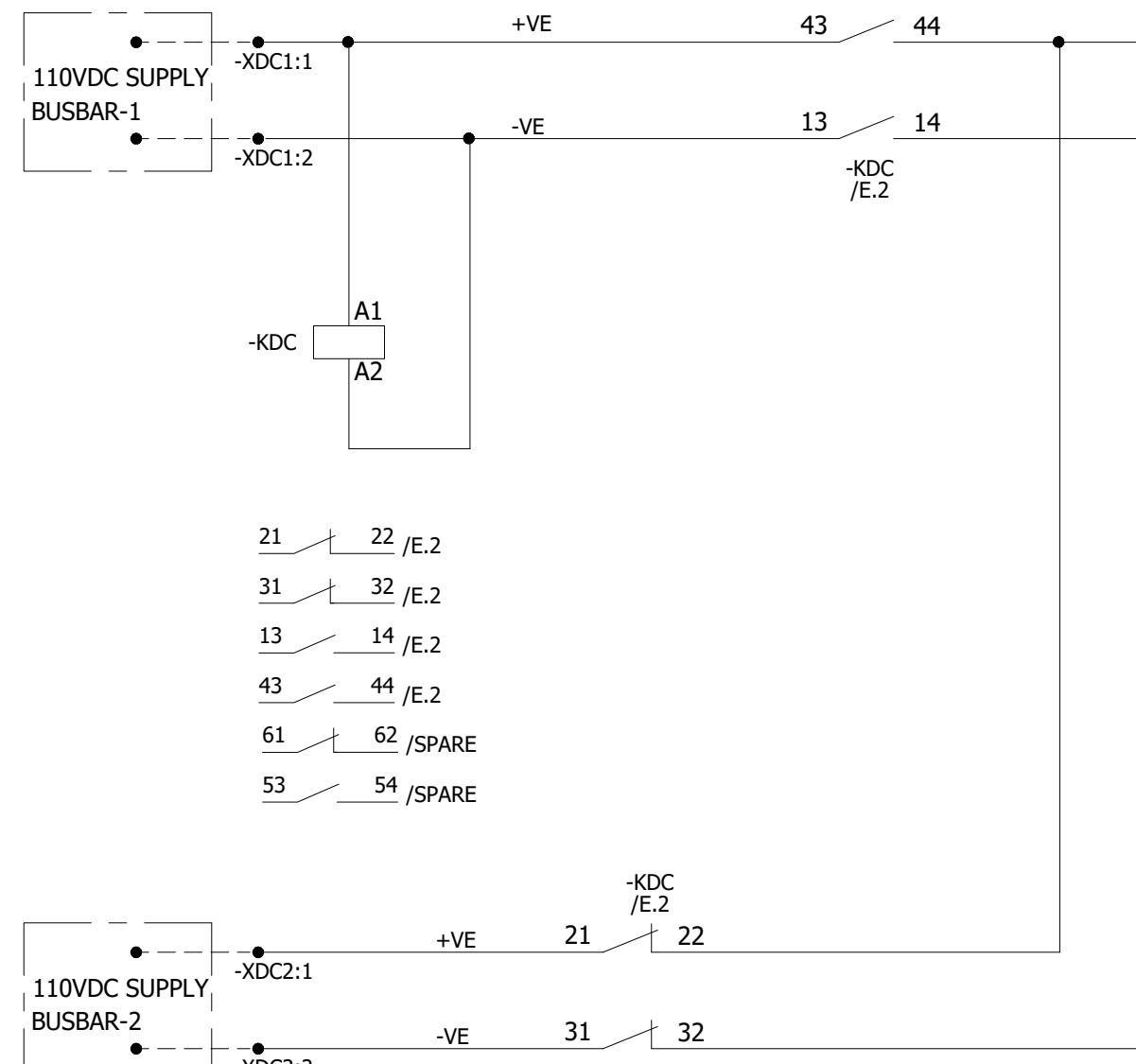
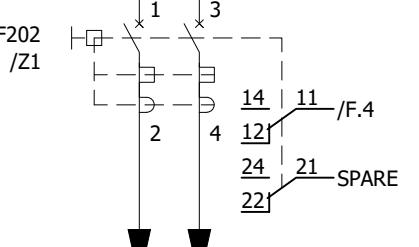
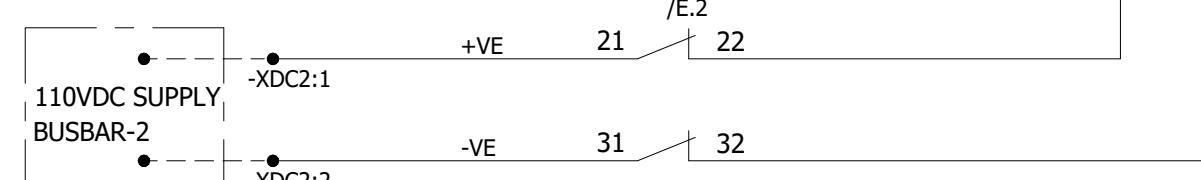
DC MCB FOR 132kV CB
CONTROL

-F201

DC MCB FOR
INDICATION

-F202

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.

DC SUPPLY FOR
=E01+Q0/H1.1DC SUPPLY FOR
INDICATION/G.3

0	AS BUILT	05.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DC SUPPLY DISTRIBUTION CIRCUIT	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type E
									Sheet no. 09

CONTROL SUPPLY

INDICATION SUPPLY

CONTROL SUPPLY CONTROL SUPPLY MCB

DC SUPERVISION RELAY TRIPPED

DC HEALTHY

IND. LAMP

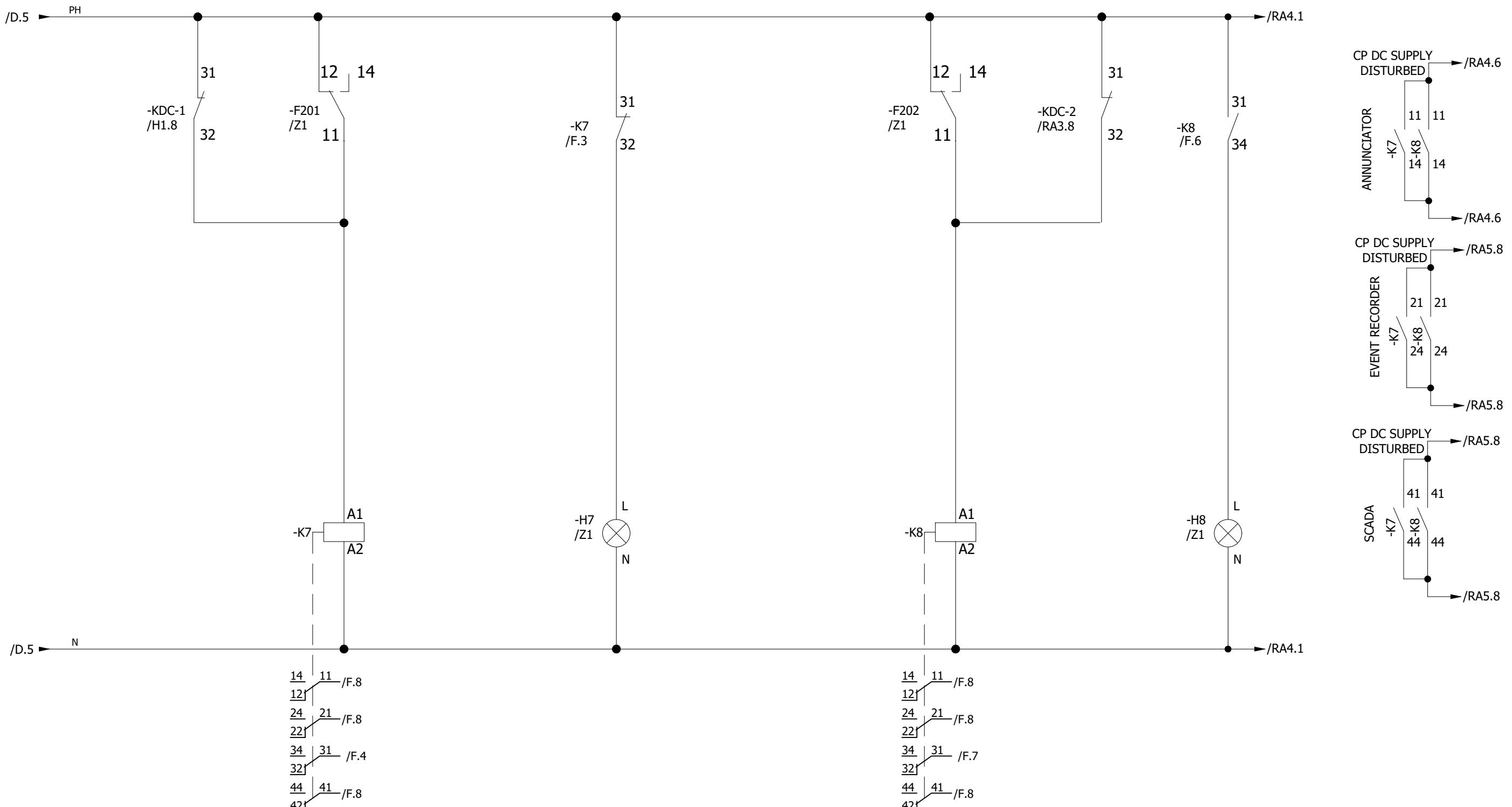
INDICATION SUPPLY MCB

TRIPPED

INDICATION SUPPLY DC UNHEALTHY

DC SUPERVISION RELAY

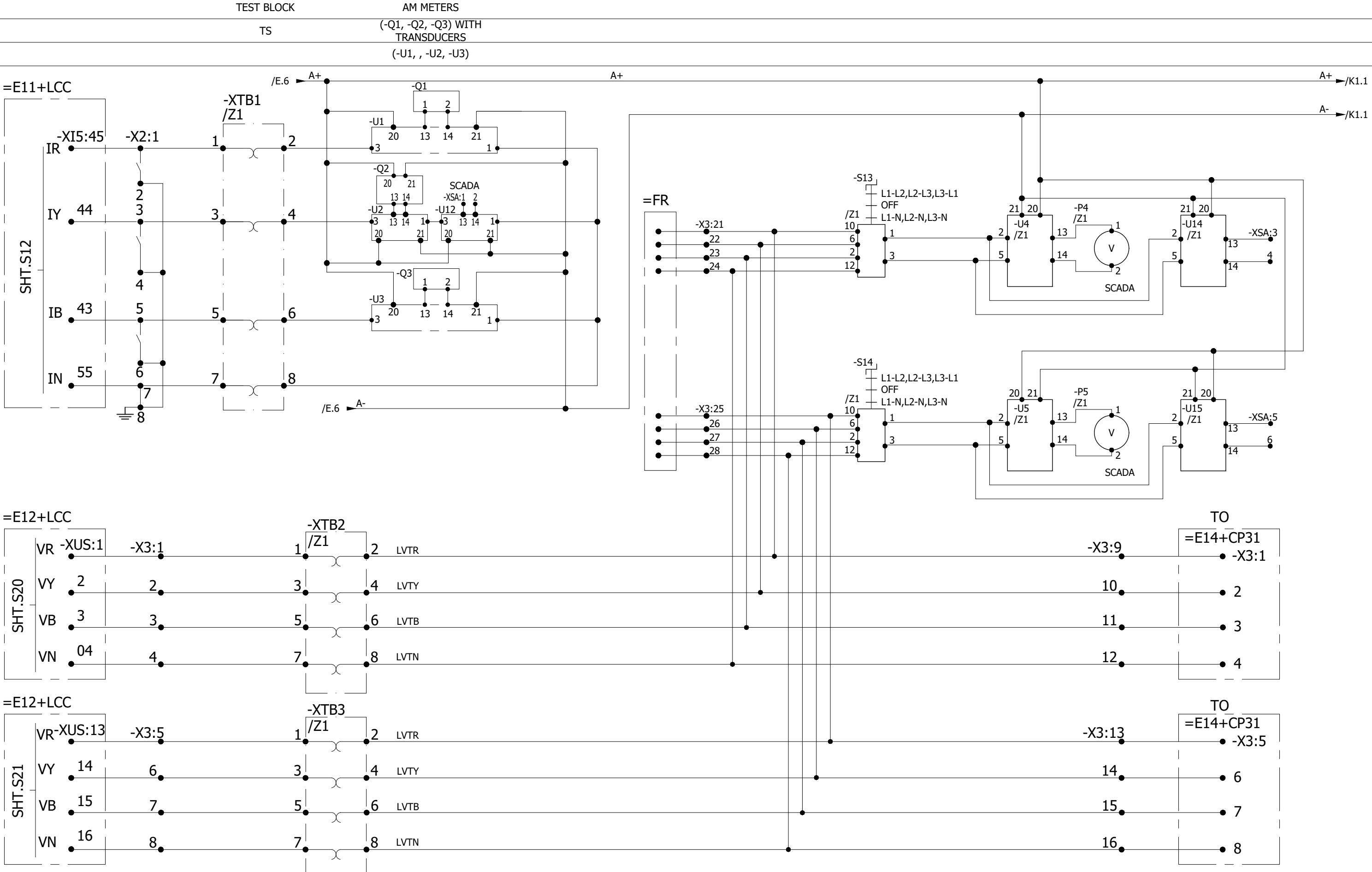
IND. LAMP

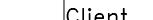
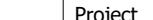


All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	05.11.2018	ASJ	Manufacturer EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) AC/DC SUPPLY FAILURE CIRCUIT	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type F
								Sheet no. 10	

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	05.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions <small>A GE and Alstom joint venture</small>	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED <small>(NTDC-WAPDA)</small>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL <small>(=E11+CP40)</small> METERING	Drawing no.		
									P60194-E-EBC-SC-001		
									Project no.		
									P-60194	G	11
REV.	DESCRIPTION	DATE	DRAWER	1	2	3	4	5	6	7	8

1 2 3 4 5 6 7 8

C O N T R O L R O O M

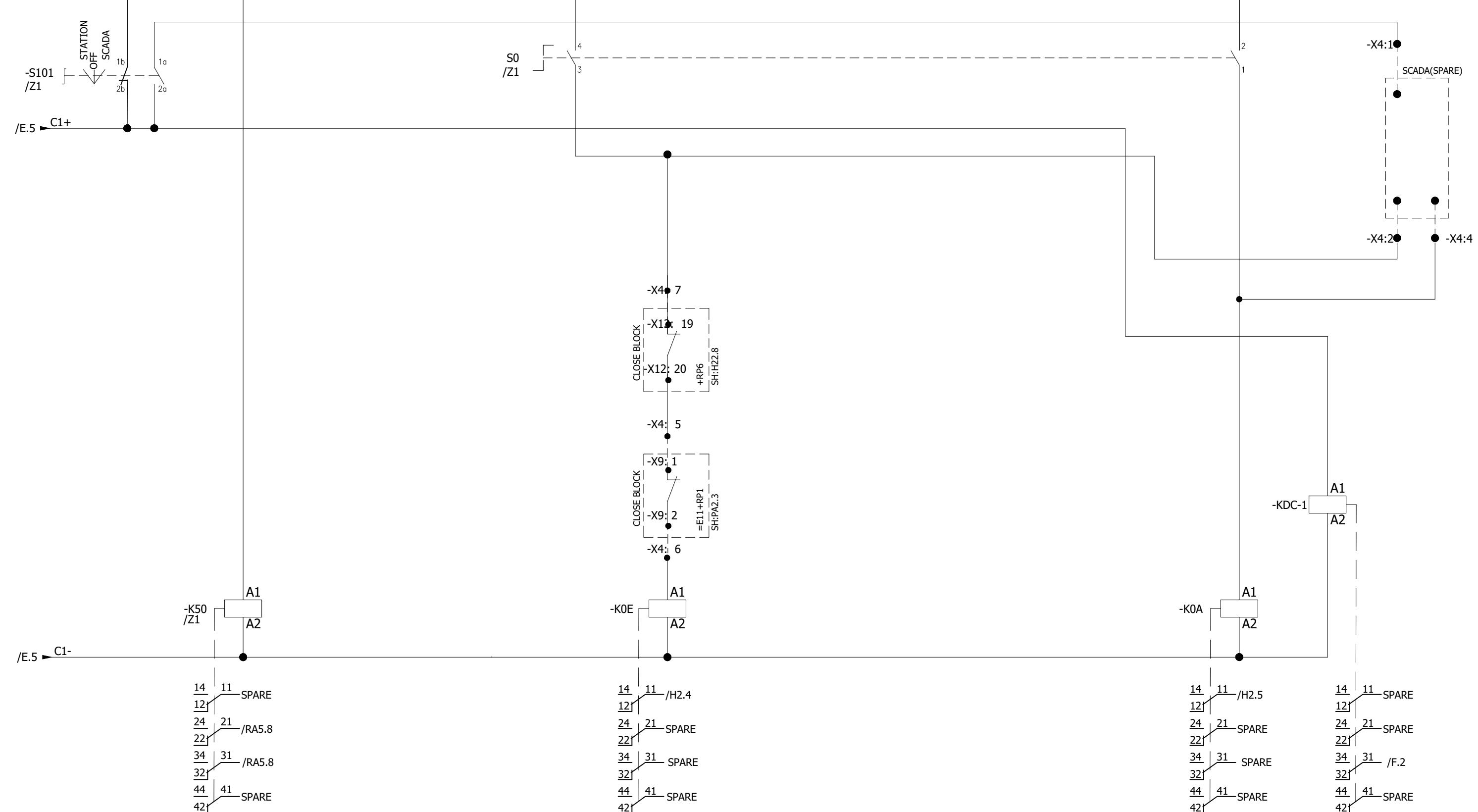
DC SUPERVISION
RELAY SCADA
CONTROL

CLOSE

OPEN KDC-1 CLOSE OPEN

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



0	AS BUILT	05.11.2018	ASJ	Manufacturer EPESOL 7a-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) CB CONTROL CIRCUIT	Drawing no. P60194-E-EBC-SC-001
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type H1
									Sheet no. 12

1 2 3 4 5 6 7 8

1

2

3

4

5

6

7

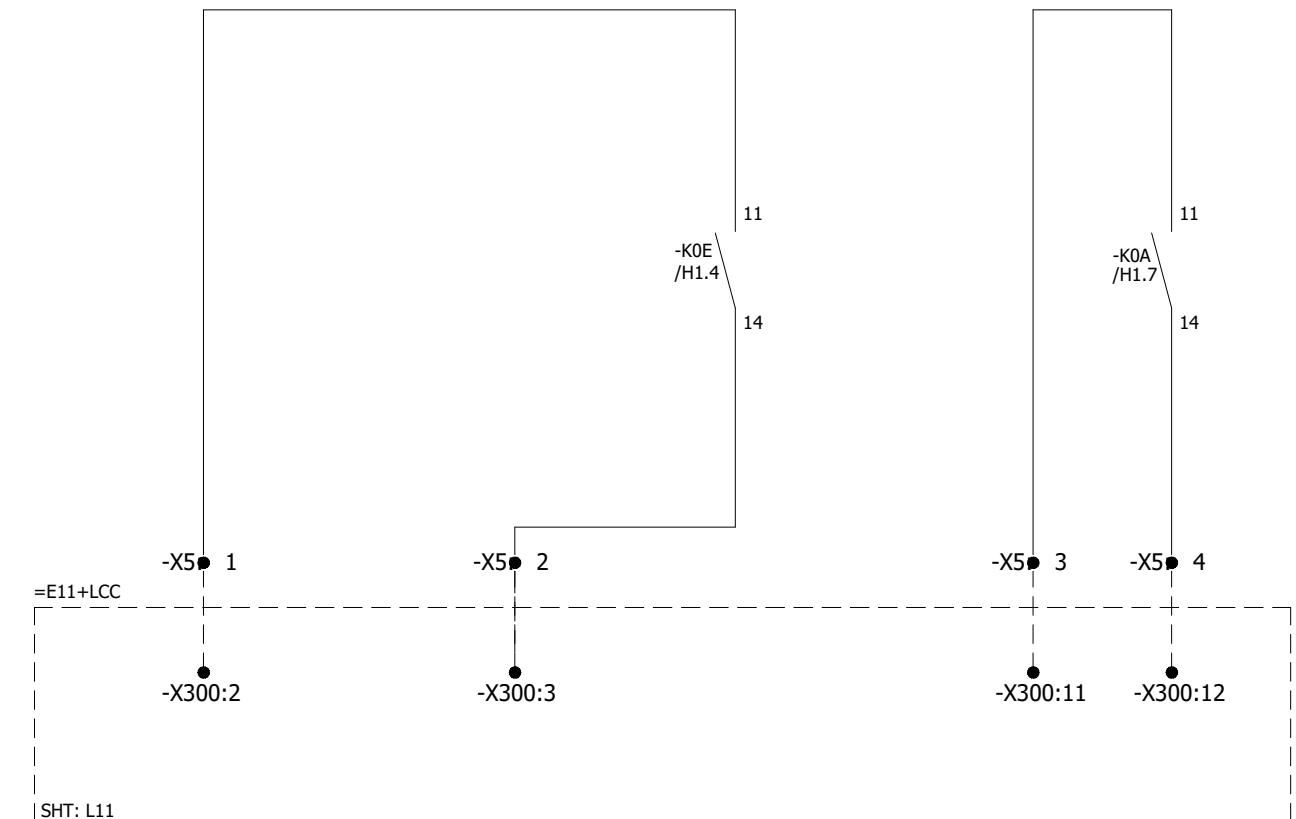
8

C O N T R O L R O O M C O N T R O L

CLOSE

OPEN

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	05.11.2018	ASJ	Manufacturer  EPESOL 7a-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) CB CONTROL CIRCUIT	Drawing no. P60194-E-EBC-SC-001
									Project no. P-60194
	DESCRIPTION	DATE	DRAWER						Sheet type H2
REV.									Sheet no. 13

1

2

3

4

5

6

7

8

1 2 3 4 5 6 7 8

=E11+Q

=E11+Q20

=E11+Q51

=E11+Q52

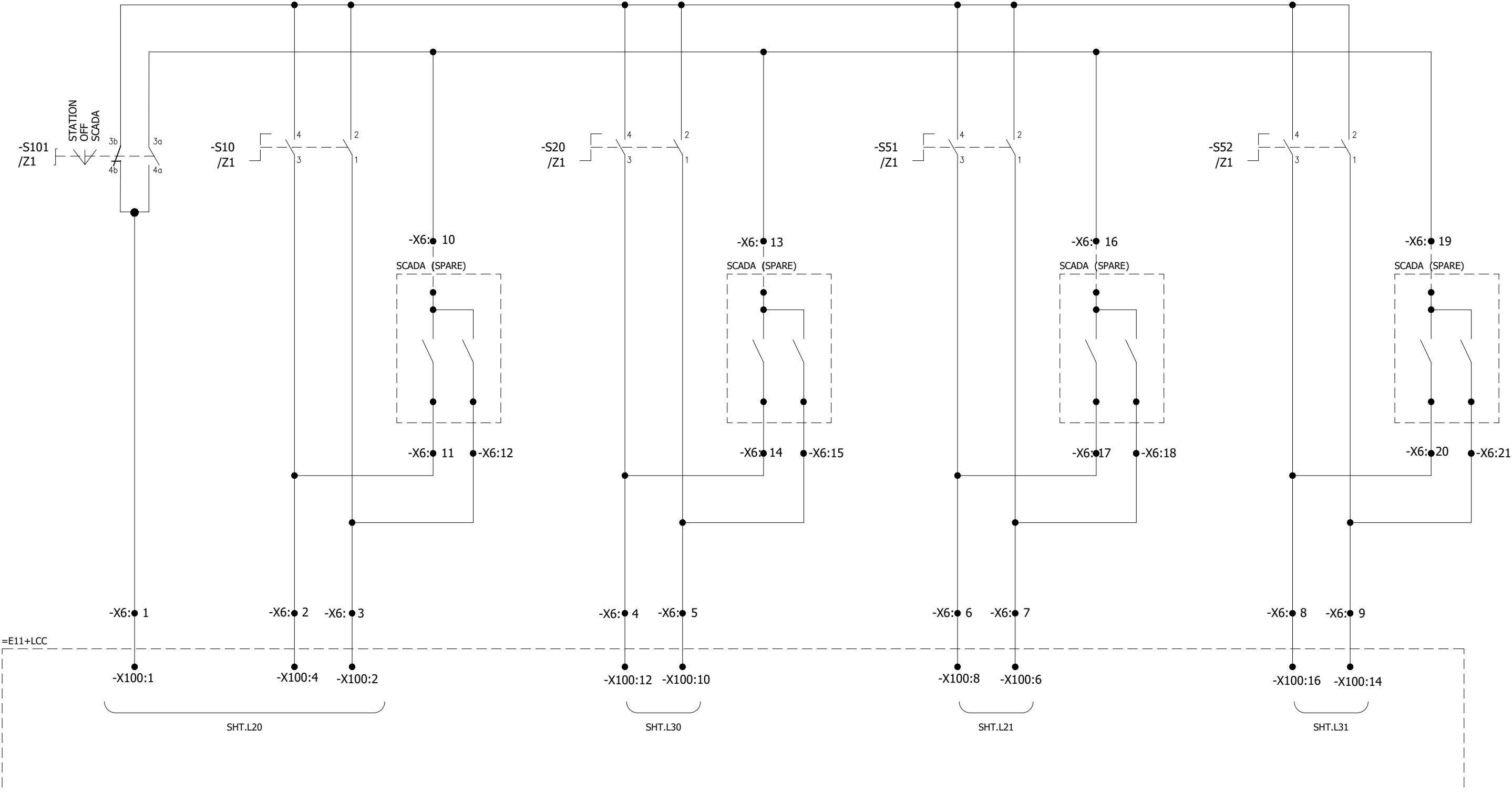
CLOSE OPEN

CLOSE OPEN

CLOSE OPEN

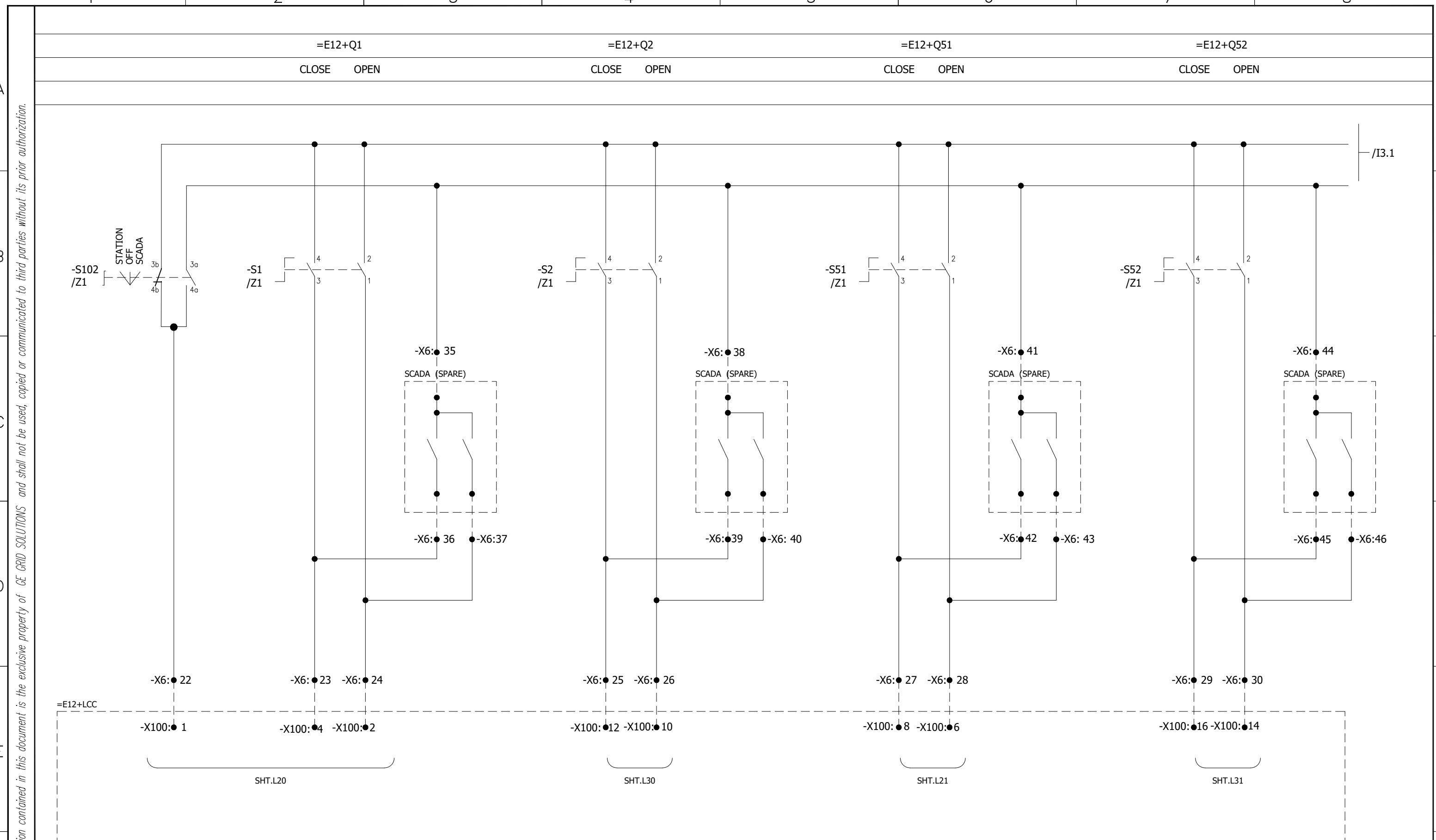
CLOSE OPEN

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	05.11.2018	ASJ	Manufacturer  EPESOL 73-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DISCONNECTOR & EARTH SWITCH CONTROL	Drawing no. P60194-E-EBC-SC-001
								Project no. P-60194	Sheet type I1
REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 14

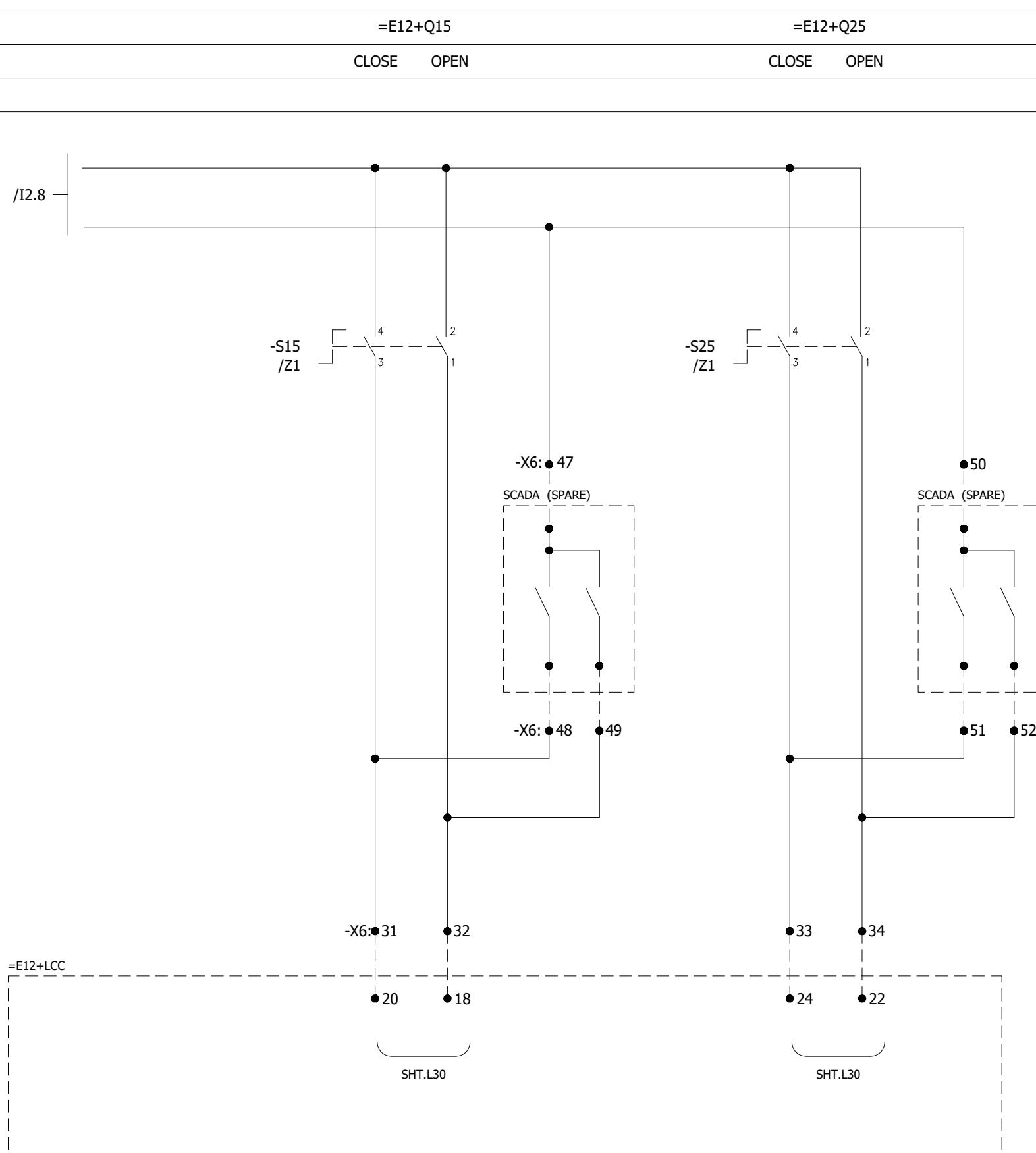
1 2 3 4 5 6 7 8



0	AS BUILT	05.11.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NTDC-WAPDA NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DISCONNECTOR & EARTH SWITCH CONTROL	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type I2

1 2 3 4 5 6 7 8

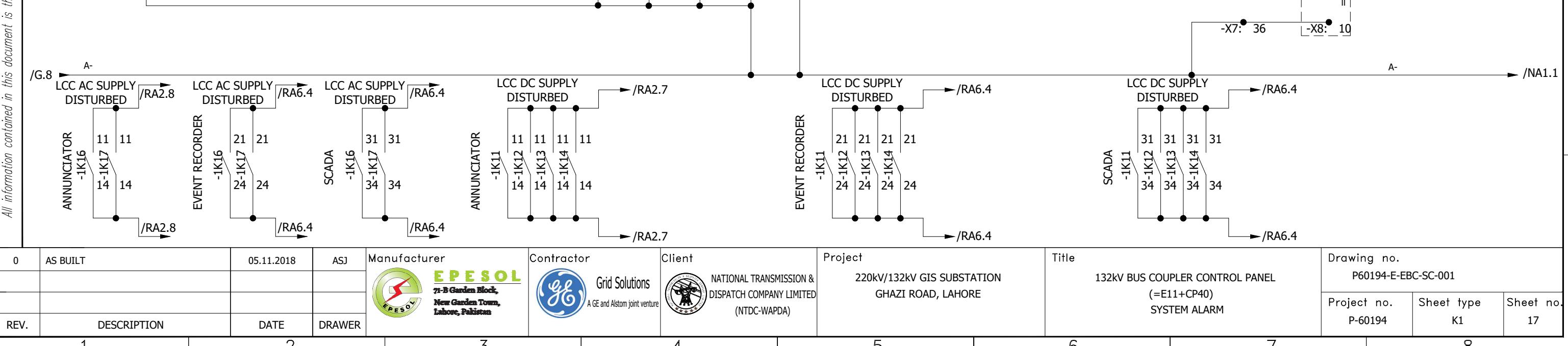
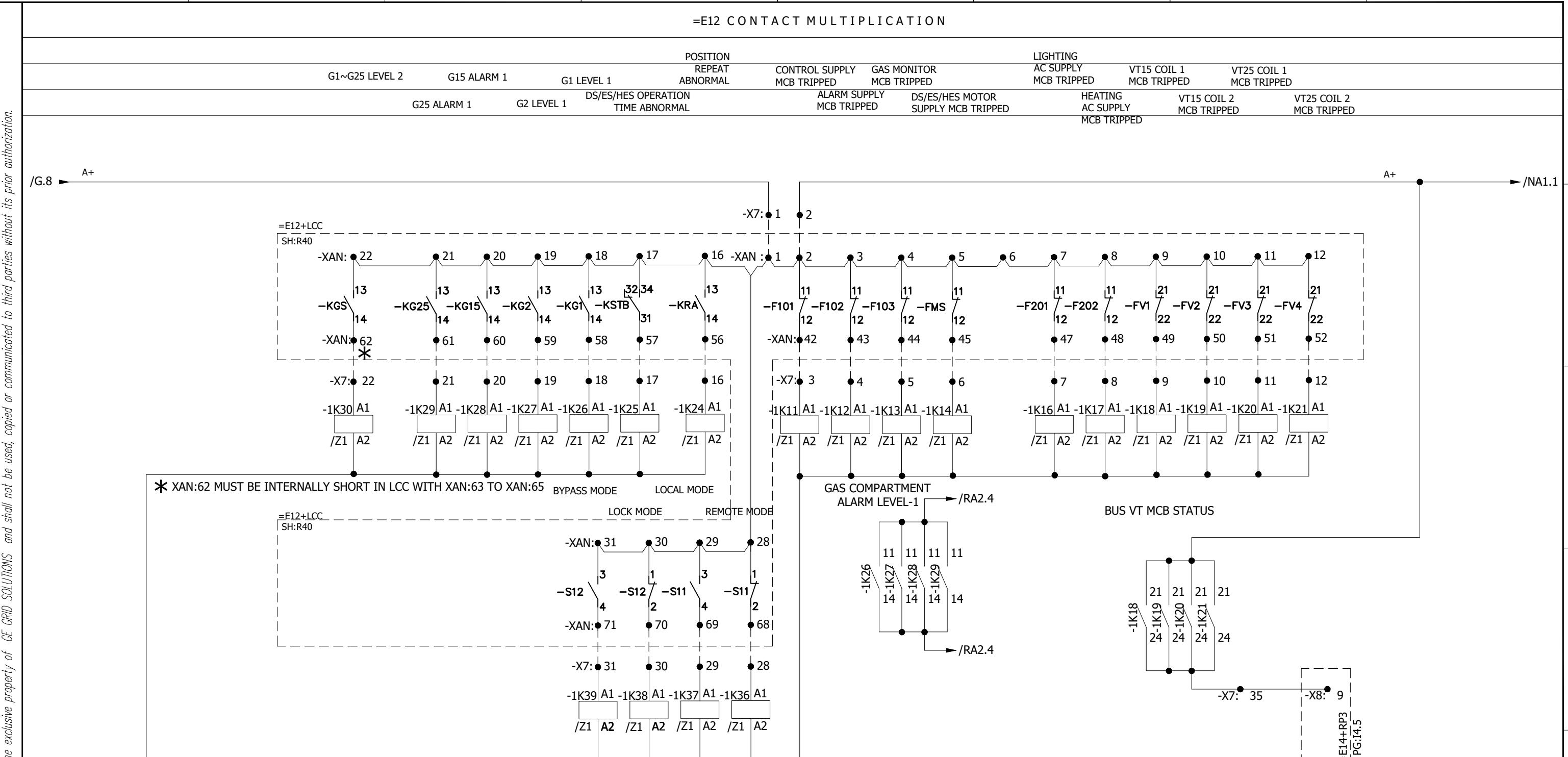
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

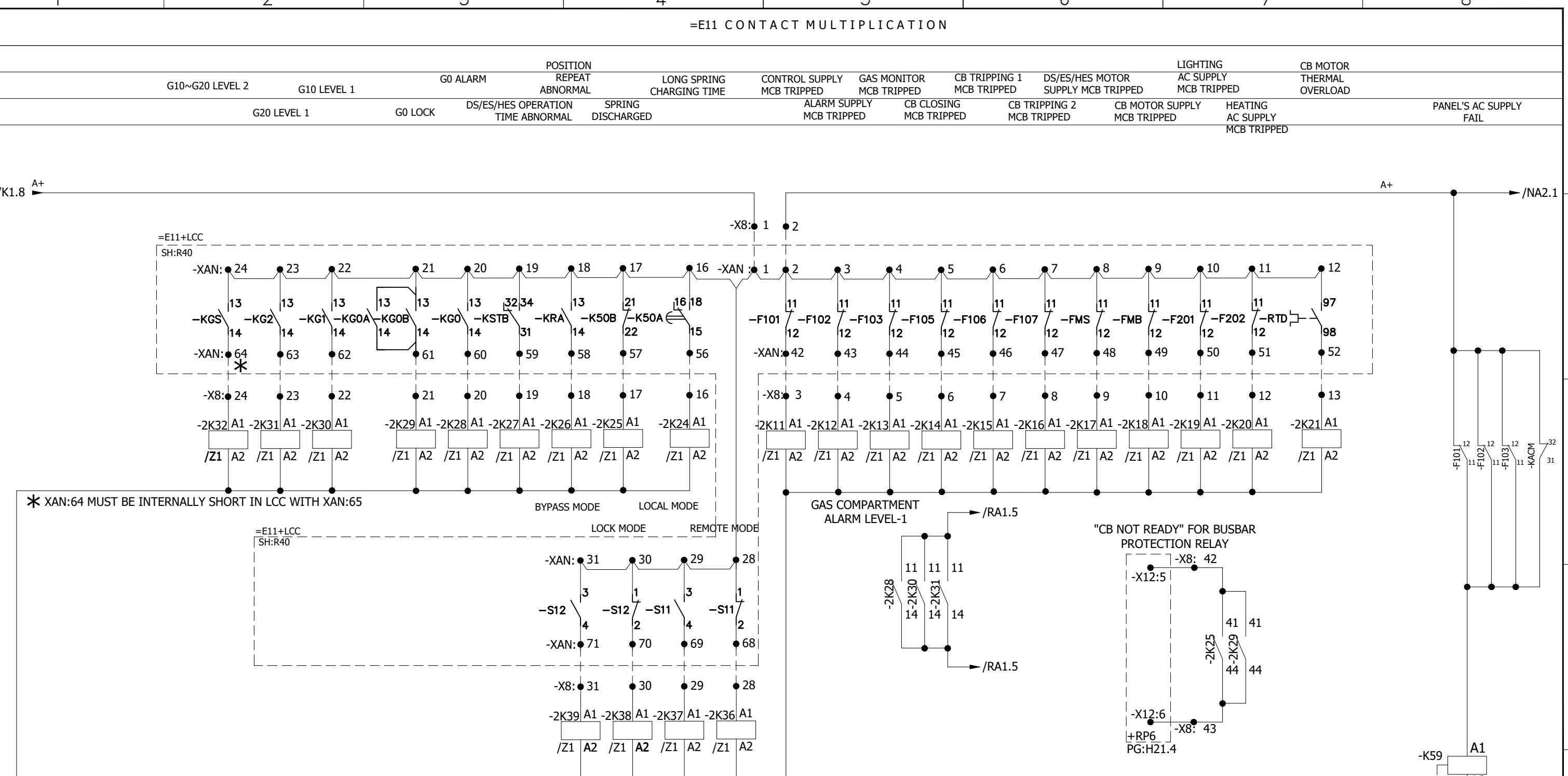


0	AS BUILT	05.11.2018	ASJ	Manufacturer EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DISCONNECTOR & EARTH SWITCH CONTROL	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type I3
									Sheet no. 16

=E12 CONTACT MULTIPLICATION

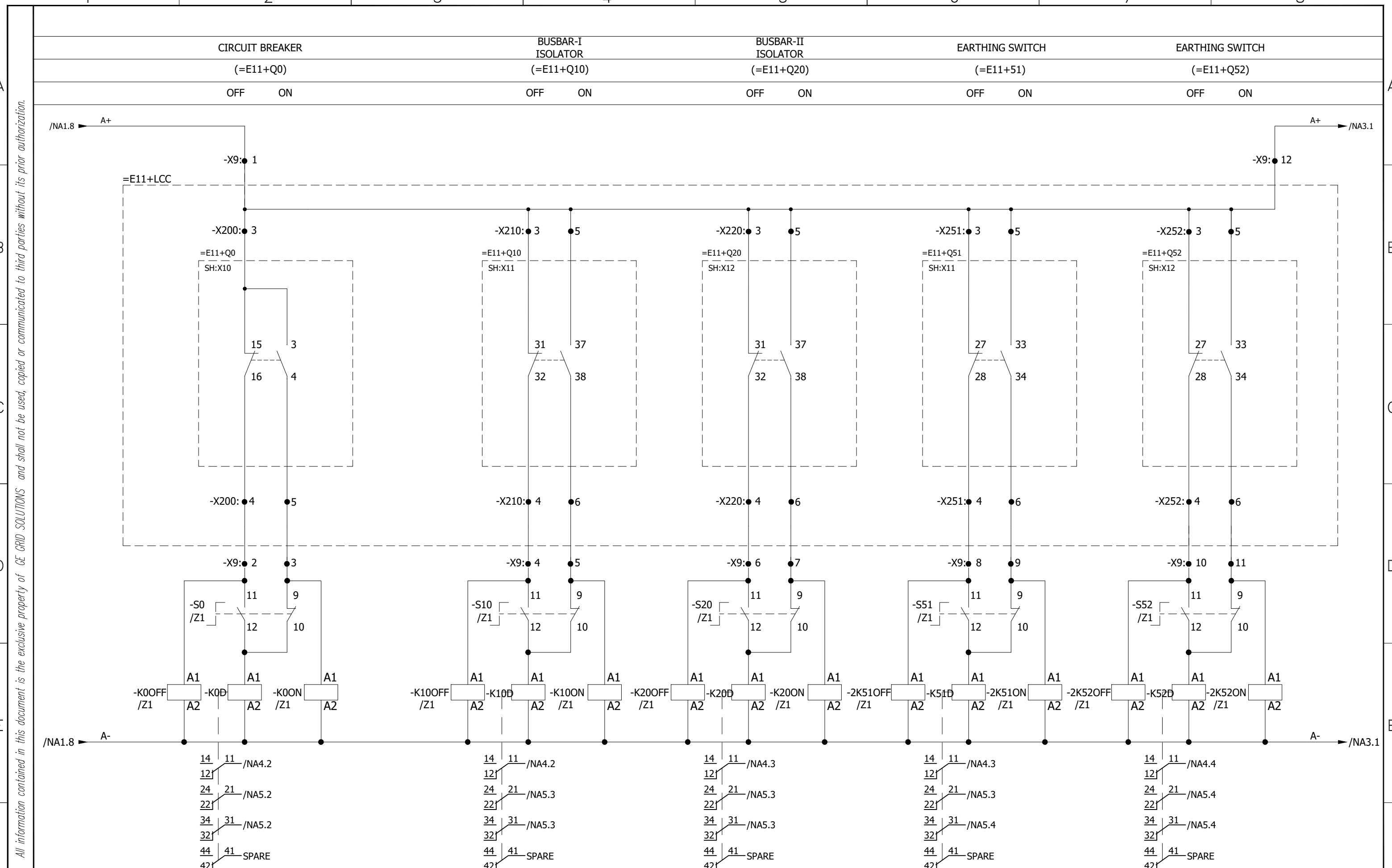
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.





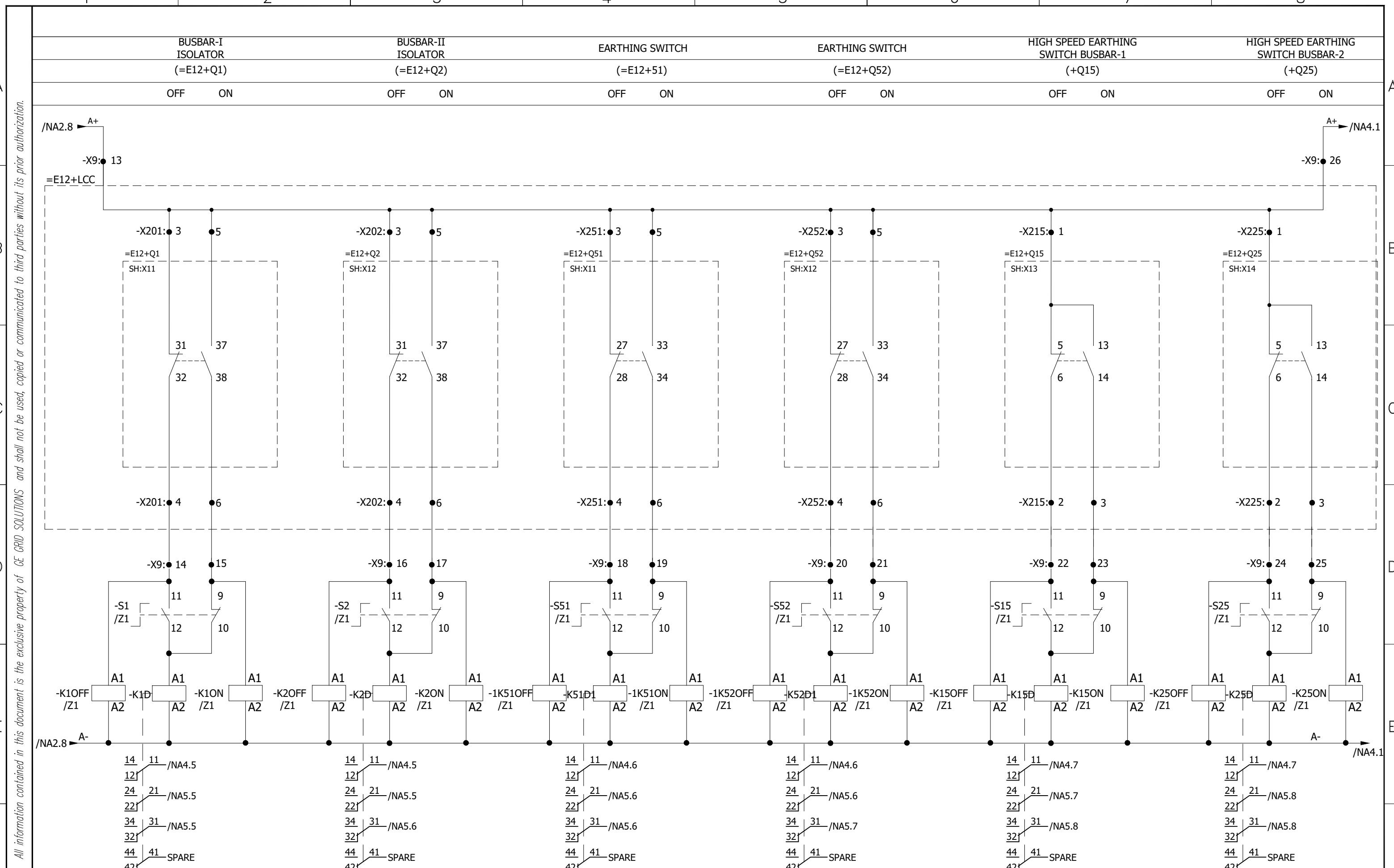
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

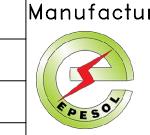
1 2 3 4 5 6 7 8



0	AS BUILT	05.11.2018	ASJ	Manufacturer EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DISCREPANCY INITIATION	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type NA2
									Sheet no. 19

1 2 3 4 5 6 7 8

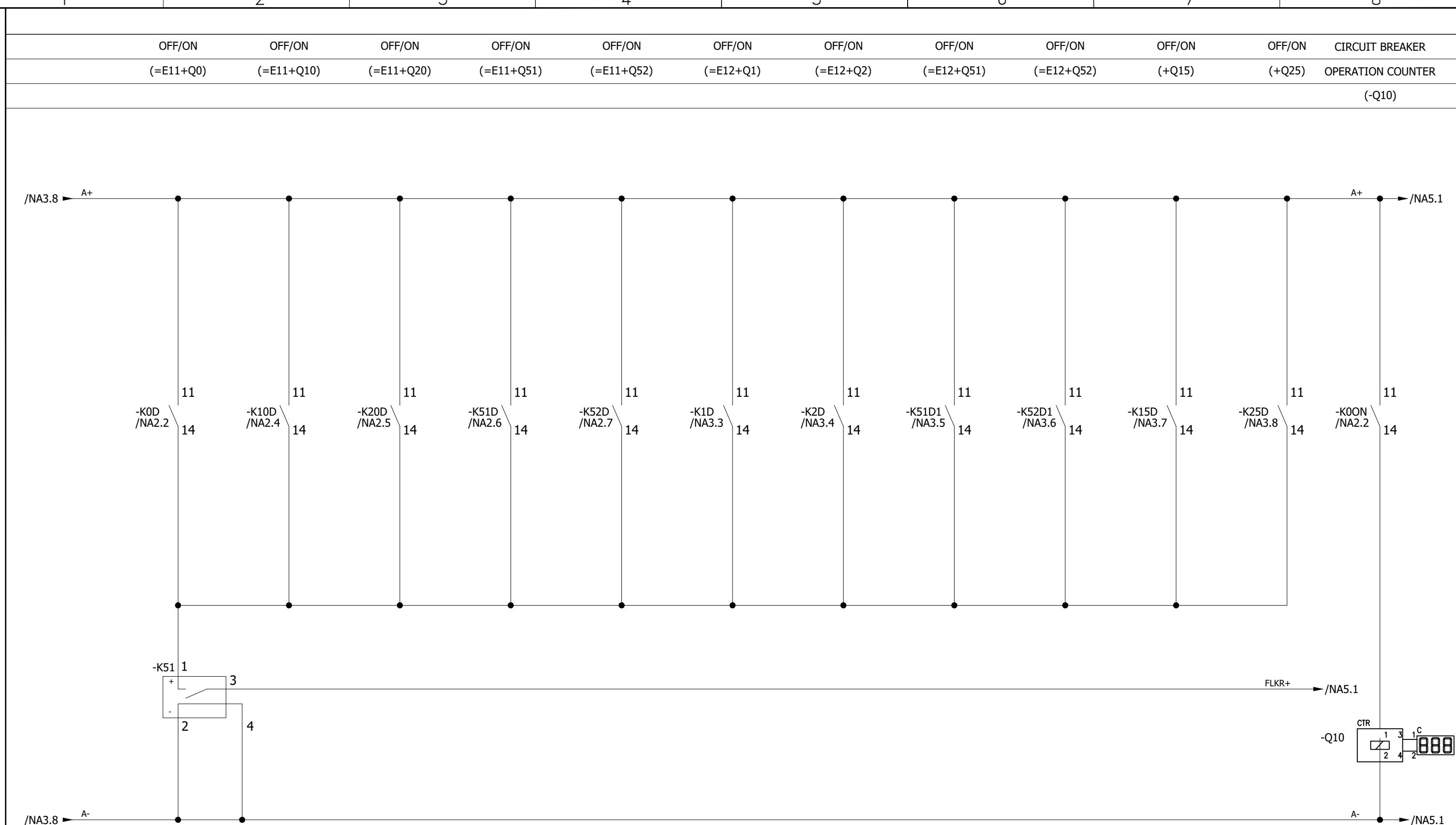


0	AS BUILT	05.11.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  GE Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DISCREPANCY INITIATION	Drawing no. P60194-E-EBC-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type NA3	Sheet no. 20
1		2	3	4	5	6	7	8			

1 2 3 4 5 6 7 8

	OFF/ON (=E11+Q0)	OFF/ON (=E11+Q10)	OFF/ON (=E11+Q20)	OFF/ON (=E11+Q51)	OFF/ON (=E11+Q52)	OFF/ON (=E12+Q1)	OFF/ON (=E12+Q2)	OFF/ON (=E12+Q51)	OFF/ON (=E12+Q52)	OFF/ON (+Q15)	OFF/ON (+Q25)	CIRCUIT BREAKER (-Q10)
--	---------------------	----------------------	----------------------	----------------------	----------------------	---------------------	---------------------	----------------------	----------------------	------------------	------------------	---------------------------

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.



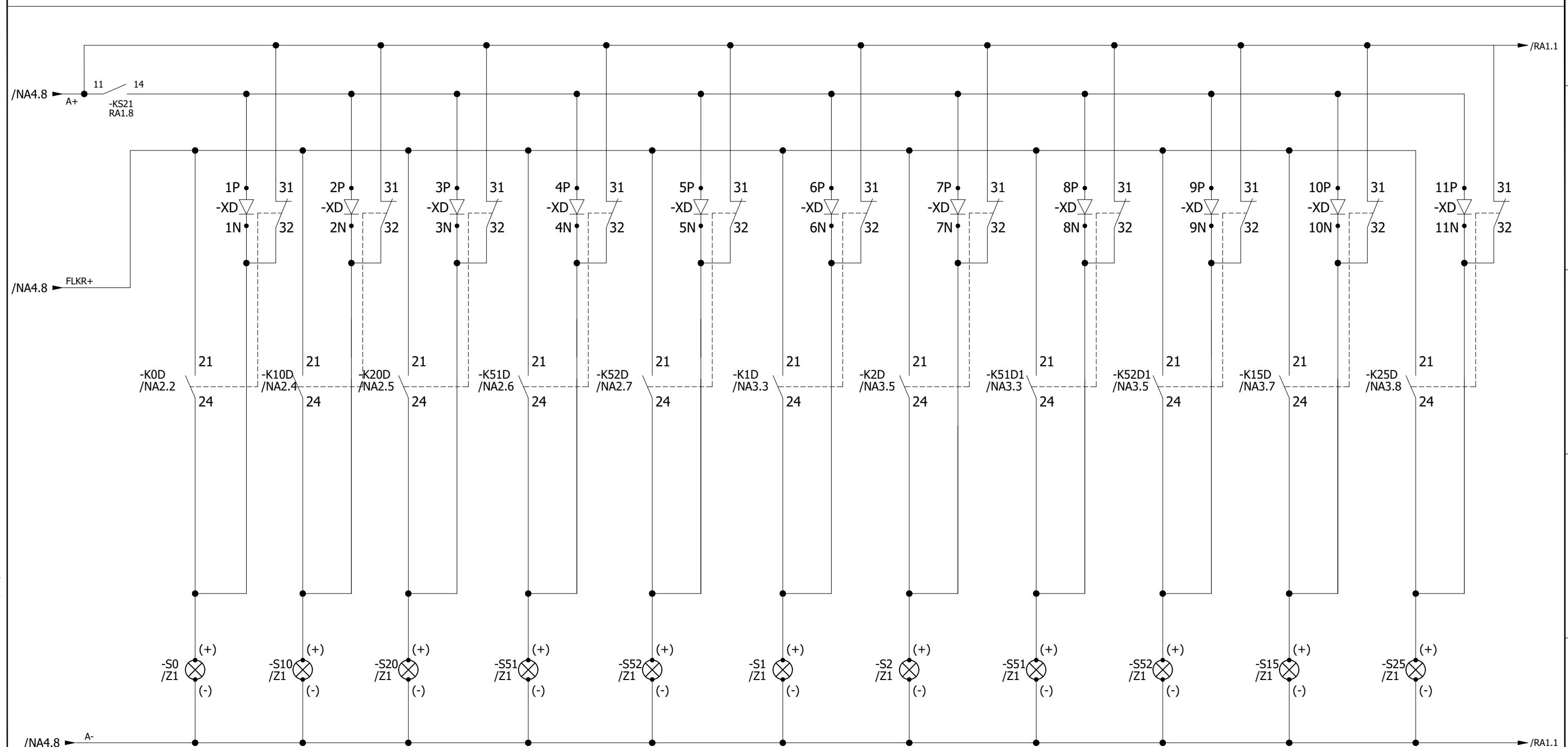
0	AS BUILT	05.11.2018	ASJ	Manufacturer  EPESOL 21-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DISCREPANCY INITIATION	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type NA4
									Sheet no. 21

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

(=E11+Q0) (=E11+Q10) (=E11+Q20) (=E11+Q51) (=E11+Q52) (=E12+Q1) (=E12+Q2) (=E12+Q51) (=E12+Q52) (+Q15) (+Q25)

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	05.11.2018	ASJ	Manufacturer EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor Grid Solutions A GE and Alstom joint venture	Client NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) DISCREPANCY INDICATIONS	Drawing no. P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type NA5
									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.

SPRING
DISCHARGED DS/ES/HES OPERATION
TIME ABNORMAL LONG SPRING
CHARGING TIME GAS COMPARTMENT
ALARM LEVEL-1 GAS COMPARTMENT
ALARM LEVEL-2 LCC BYPASS MODE LCC LOCAL MODE DC SUPPLY DISTURBED AC SUPPLY
DISTURBED GO LOCK CONTROL PANEL AC
SUPPLY FAILURE HOOTER

LCC

A

A

B

B

C

C

D

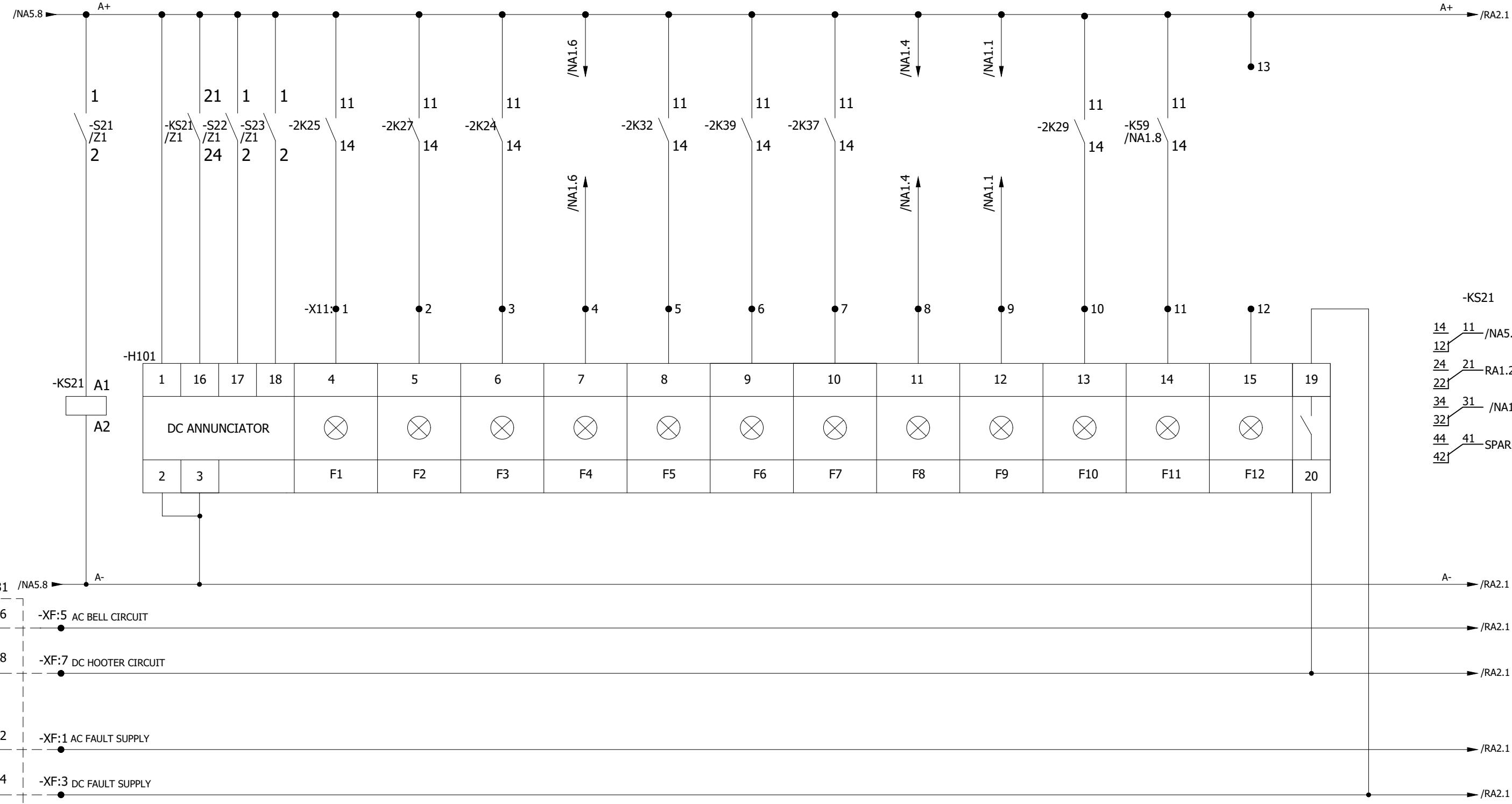
D

E

E

F

F



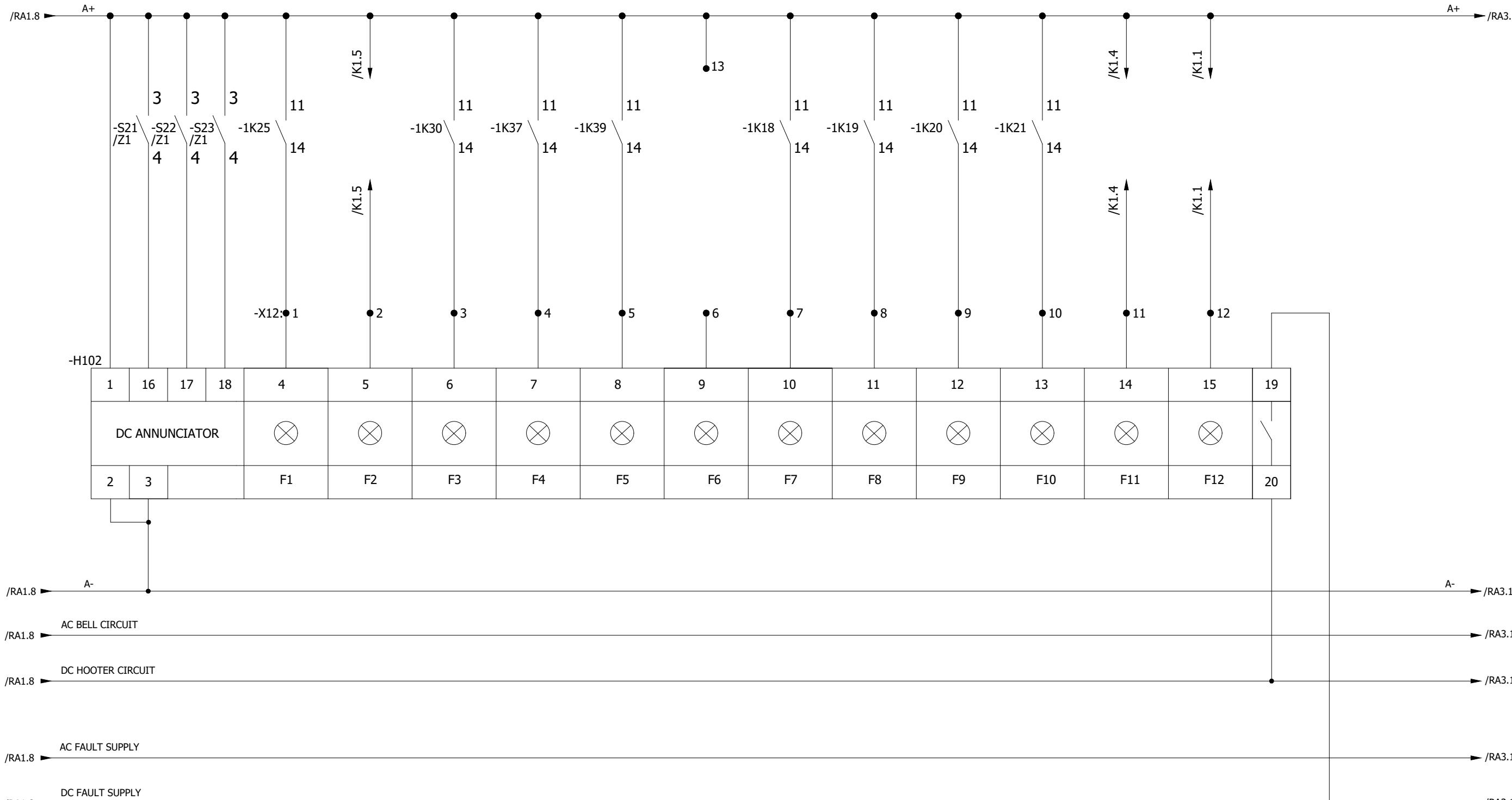
0	AS BUILT	05.11.2018	ASJ	Manufacturer EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor GE Grid Solutions A GE and Alstom joint venture	Client NTDC-WAPDA NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) ANNUNCIATOR-1 CIRCUIT	Drawing no. P60194-E-EBC-SC-001
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type RA1
									Sheet no. 23

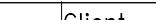
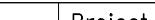
= E 1 2 + L C C

.CC

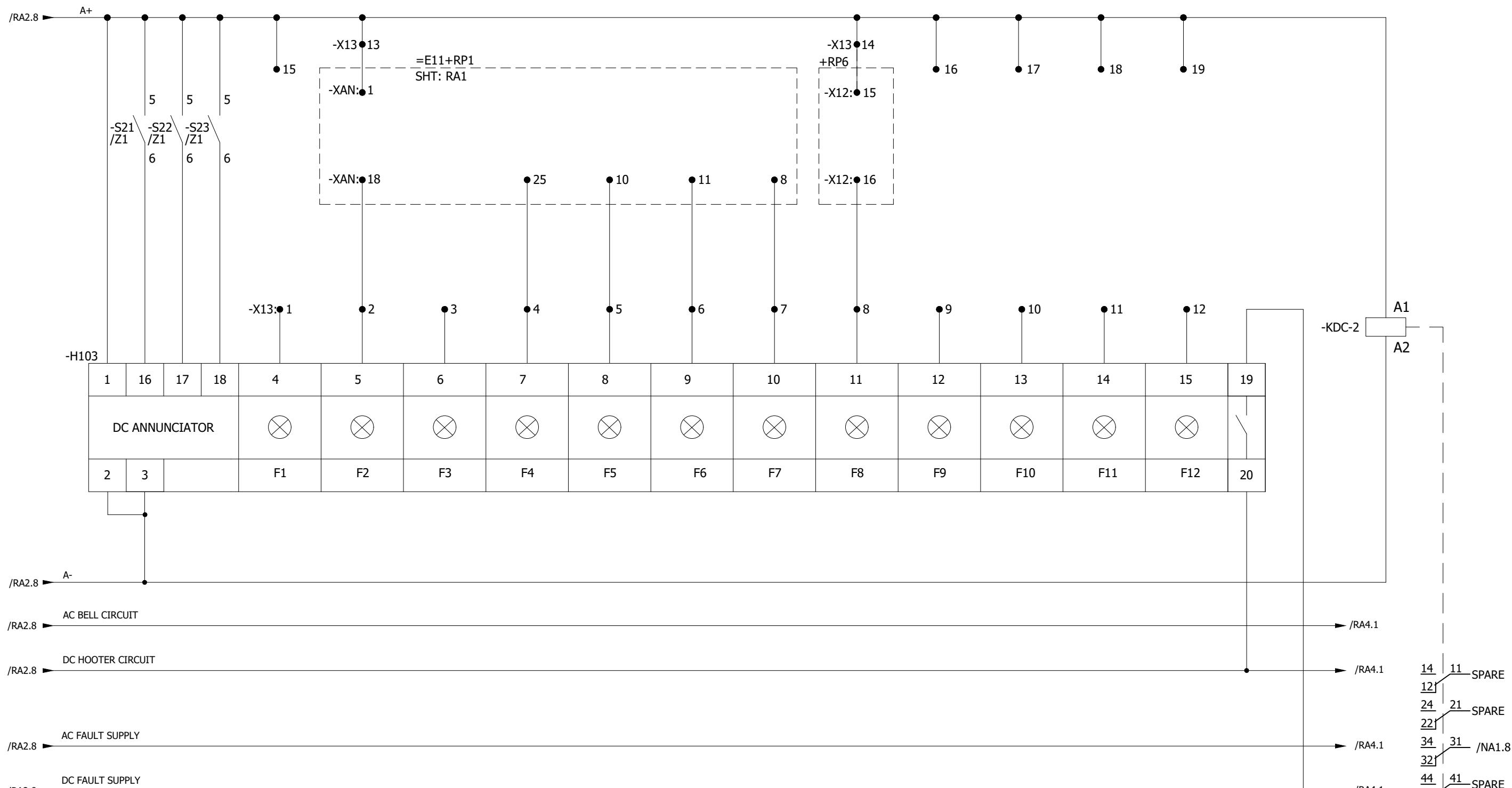
DS/ES/HES OPERATION TIME ABNORMAL	GAS COMPARTMENT ALARM LEVEL-1	GAS COMPARTMENT ALARM LEVEL-2	LCC LOCAL MODE	LCC BYPASS MODE	SPARE	VT 15 COIL-1 MCB TRIPPED	VT 15 COIL-2 MCB TRIPPED	VT 25 COIL-1 MCB TRIPPED	VT 25 COIL-2 MCB TRIPPED	DC SUPPLY DISTURBED	AC SUPPLY DISTURBED	SIREN
--------------------------------------	----------------------------------	----------------------------------	----------------	-----------------	-------	-----------------------------	-----------------------------	-----------------------------	-----------------------------	------------------------	------------------------	-------

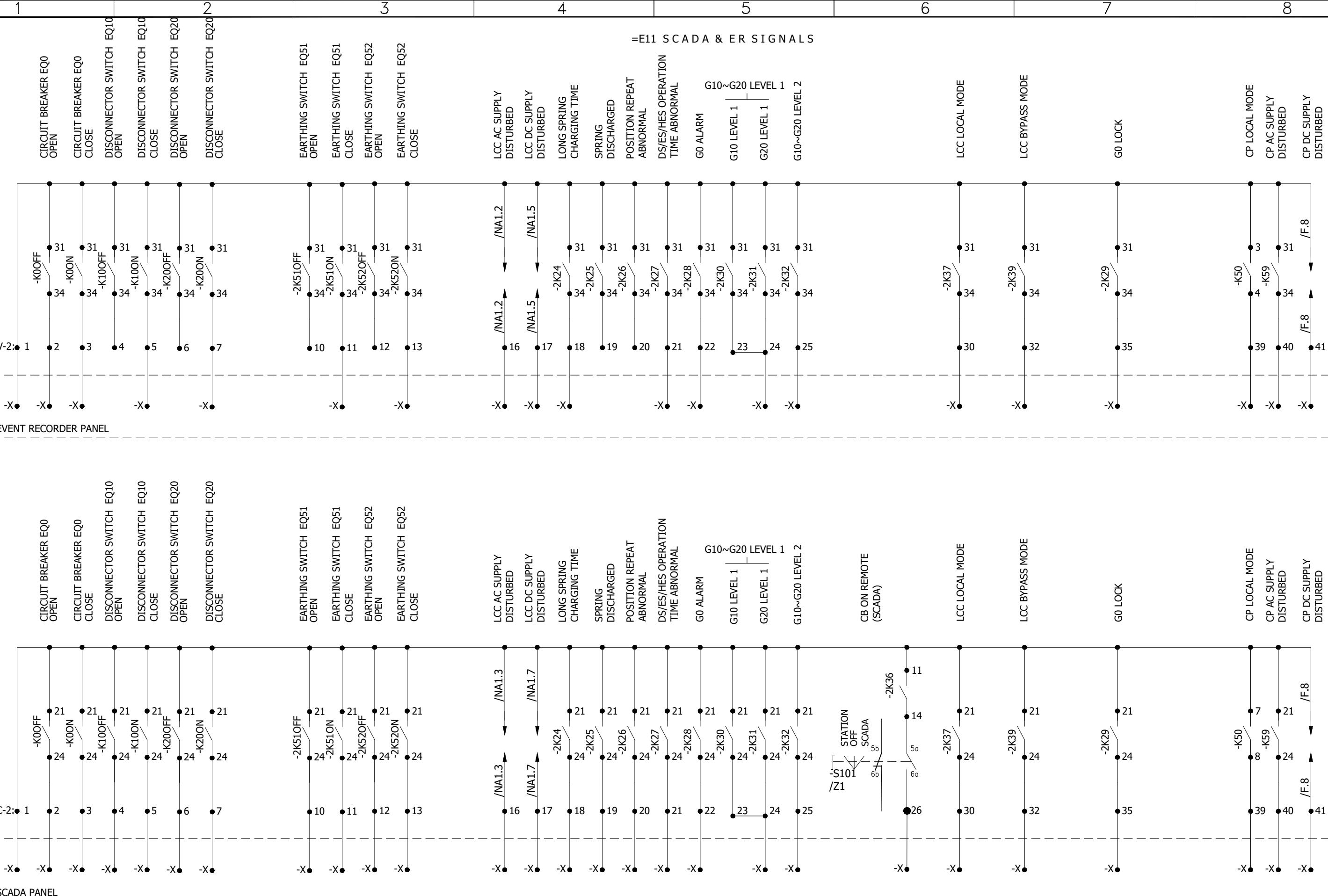
All information contained in this document is the exclusive property of GF GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	05.11.2018	ASJ	Manufacturer  EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS COUPLER CONTROL PANEL (=E11+CP40) ANNUNCIATOR-2 CIRCUIT	Drawing no. P60194-E-EBC-SC-001		
									Project no. P-60194		
									Sheet type RA2		
									Sheet no. 24		
REV.	DESCRIPTION	DATE	DRAWER								

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	05.11.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				 EPESOL 21-B Garden Block, New Garden Town, Lahore, Pakistan	 Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS COUPLER CONTROL PANEL (=E11+CP40) SCADA & ER SIGNALS	P60194-E-EBC-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type RA5 Sheet no. 27

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.

