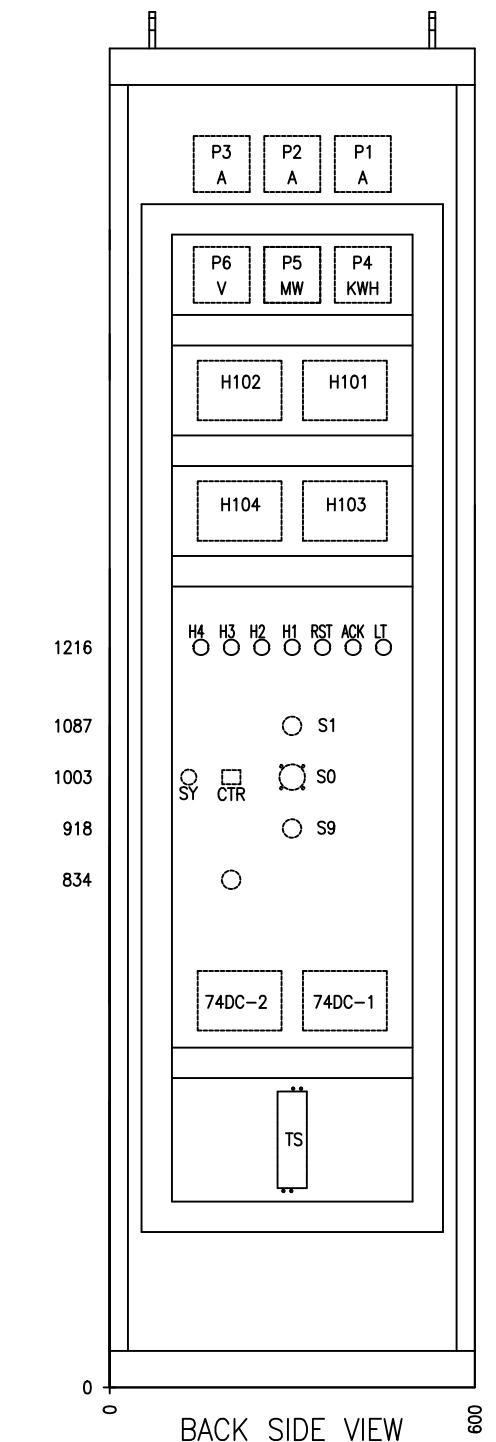
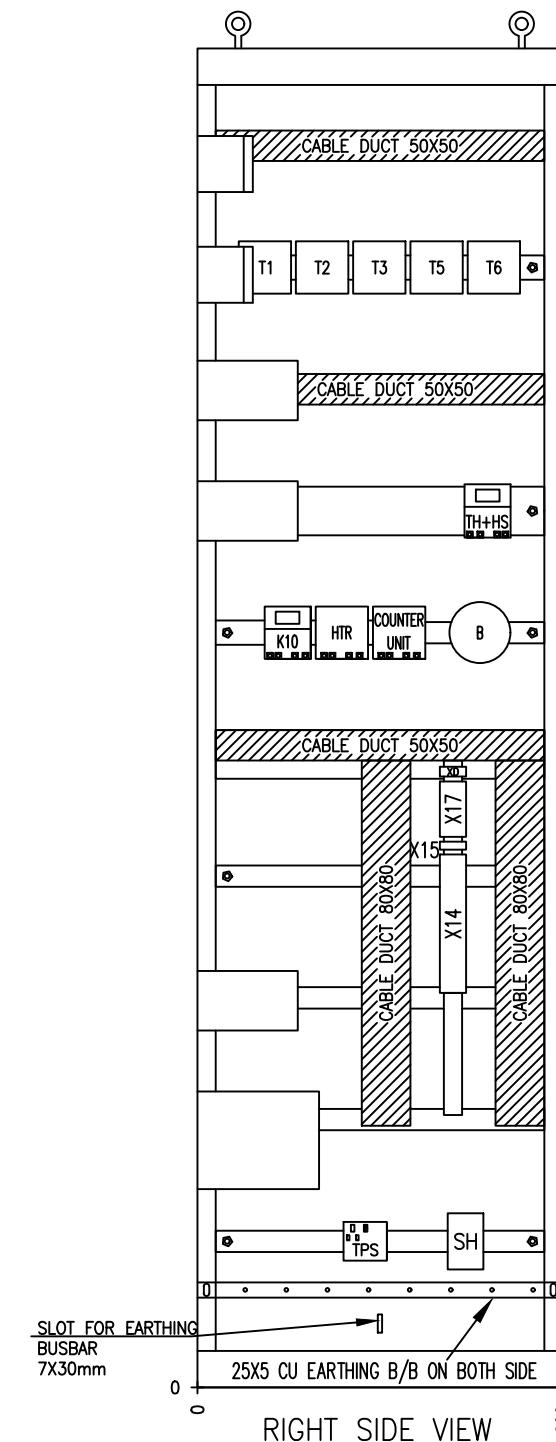
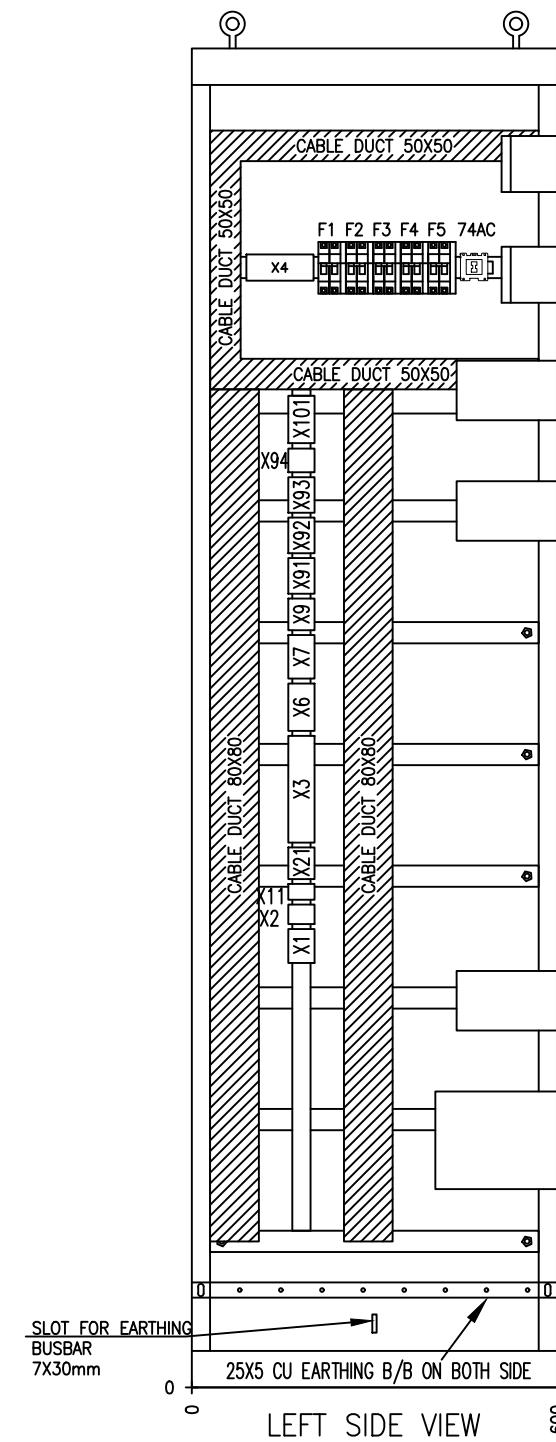
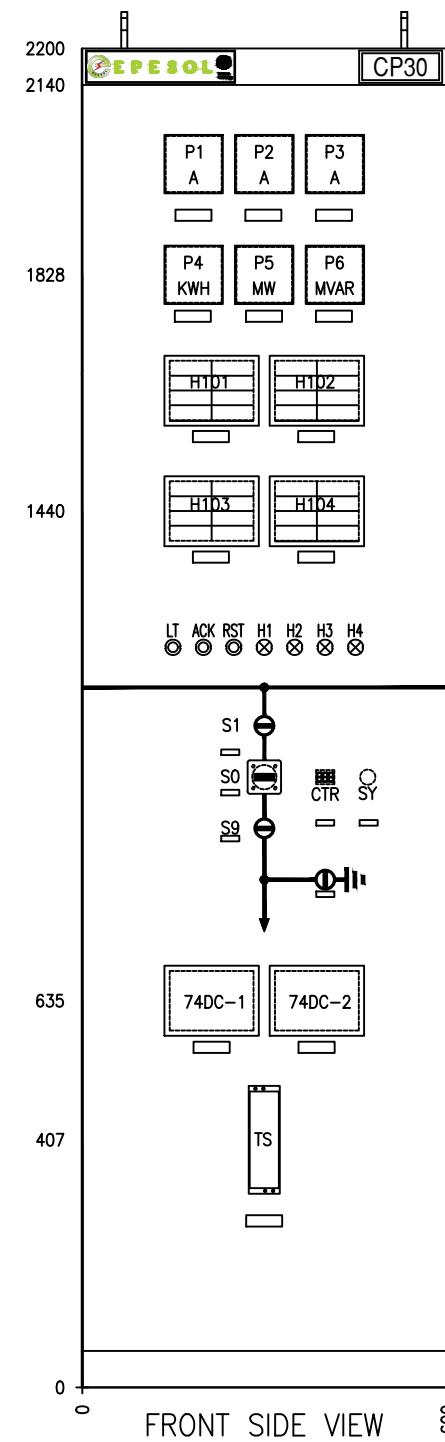


LAYOUT DRAWING

132kV LINE CONTROL PANEL

TYPE CP30

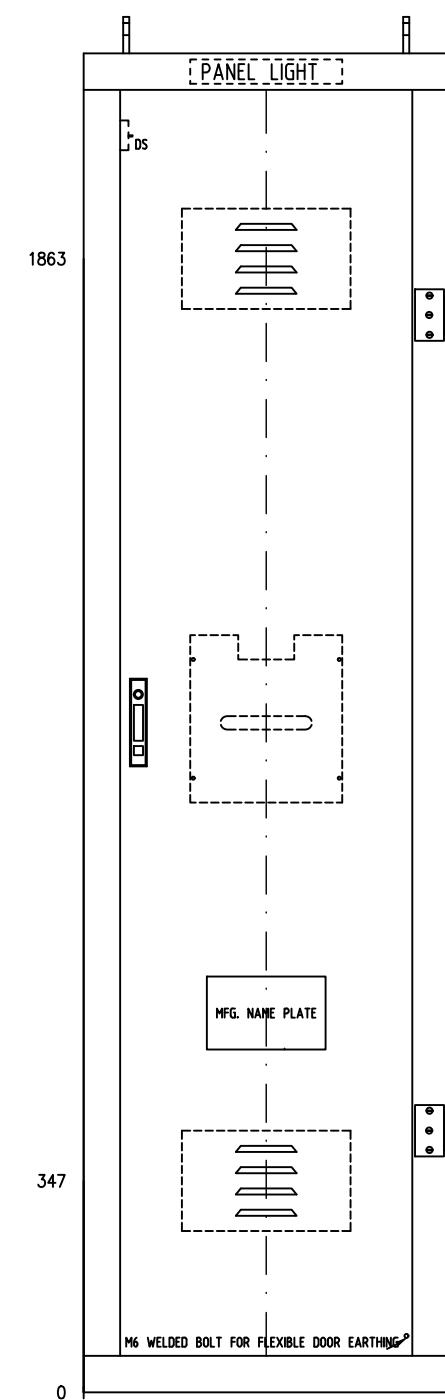
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132kV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: COVER SHEET 132kV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1395	SHT: 01 OF 03
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:27.01.2018	FOR APPROVAL



NOTES

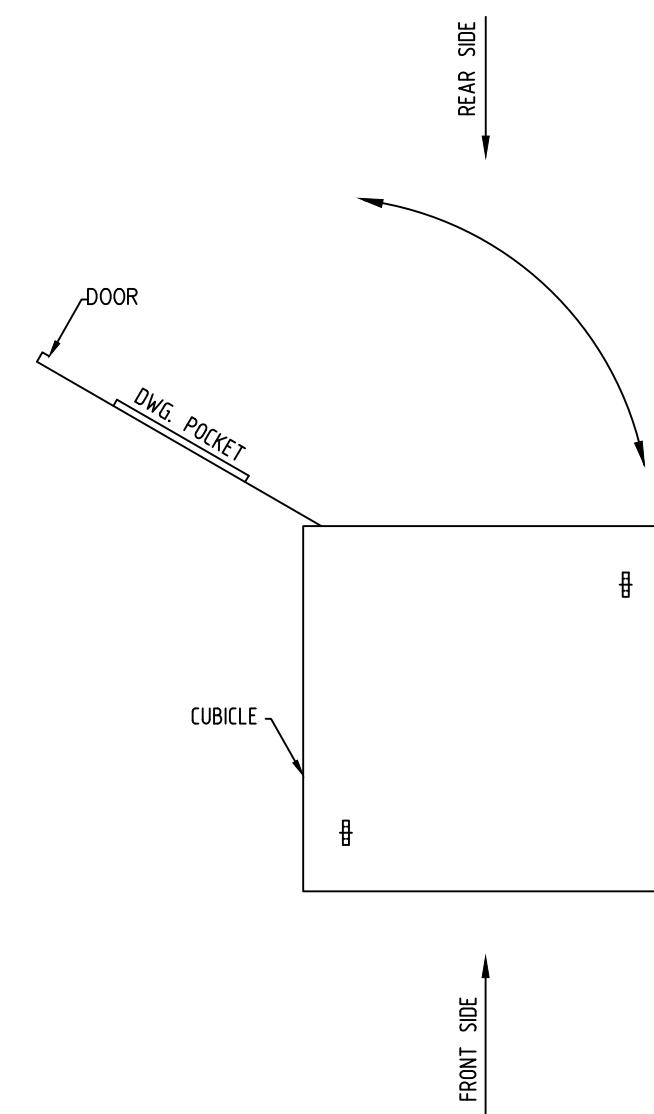
1. CONTROL PANEL: 600x600x2200 mm
 2. FACE SHEET: 600x2200 mm
 3. EARTHING BUSBAR 25x5 mm²
 4. FLEXIBLE EARTHING STRAP 16mm²
 5. COLOUR: RAL7032
 6. CLASS OF PROTECTION: IP51
 7. APPLICABLE SPECS: P-151 : 2008
 8. MIMIC BUS 6mm(W)x4mm(D) COLOURED RED FOR 132kV & BLUE FOR 11kV
 9. PANEL SHEET THICKNESS 2.5 mm

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132kV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: GENERAL ARRANGEMENT 132kV LINE CONTROL PANEL TYPE CP30	 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1395	SHT: 02 OF 03
NAH	ABA	MSC				DATE:27.01.2018	FOR APPROVAL



REAR VIEW (WITH DOOR)

[:: PANEL LIGHT ::]

TOP VIEW
DOOR OPENING DETAIL

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: GENERAL ARRANGEMENT 132KV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1395	SHT: 03 OF 03
NAH	ABA	MSC	EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan			DATE: 27.01.2018 FOR APPROVAL
1	2	3	4	5	6	8

LIST OF APPARATUS

132kV LINE CONTROL PANEL

TYPE CP30

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: COVER SHEET 132kV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1396	SHT: 01 OF 04
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:27.01.2018	FOR APPROVAL REV: 0

		1	2	3	4	5	6	7	8		
SR. #	ITEM DESIGNATION	DESCRIPTION				QTY	TYPE	MAKE	COUNTRY OF ORIGIN	ORDERING INFORMATION	SHEET NO
A	1 P1+T1, P3+T3	METER: 240 DEGREE TRANSDUCER OPERATED ANALOGUE AMPERE METER, INPUT 0...20/30 mA, ACCURACY CLASS 1, 0...400/600A AUX. VOLTAGE 110 VDC, CURRENT TRANSDUCER: NOMINAL INPUT CURRENT 5/7.5A, OUTPUT 0...20/30mA, AUX. VOLTAGE 110 VDC, ACCURACY CLASS 1	2	A96MMA+	FRER	ITALY	A96MMA+MCOEAQ	05			
				MCOEAQ							
B	2 P2+T2	METER: TRANSDUCER OPERATED DIGITAL AMPERE METER, INPUT 0...20/30 mA, ACCURACY CLASS 1, SCALE 0...400/600A AUX. VOLTAGE 110 VDC, CURRENT TRANSDUCER: NOMINAL INPUT CURRENT 5/7.5A, OUTPUT 0...20/30 mA, AUX. VOLTAGE 110 VDC, ACCURACY CLASS 1	1	D96MMA+	FRER	ITALY	D96MMA+MCOEAQ	05			
				MCOEAQ							
C	3 P4	THREE PHASE DIGITAL POWER METER, ACCURACY CLASS 0.5s, INPUT NOMINAL CURRENT 1/5A, INPUT NOMINAL VOLTAGE 100–480 VAC, AUXILIARY VOLTAGE 110–375 VDC	1	ENERIUM	150NERDIS	FRANCE	ENERIUM 150	05			
D	4 P5+T5	METER: 240 DEGREE TRANSDUCER OPERATED ANALOGUE MW METER, INPUT -12.5/10...0...10/+12.5 mA, ACCURACY CLASS 1, SCALE 375/300-0-300/375 MW. MW TRANSDUCER: NOMINAL INPUT VOLTAGE 110/137.5 VAC (L-L), NOMINAL INPUT CURRENT 5/6.25A, OUTPUT -12.5/10...0...10/+12.5 mA, AUXILIARY VOLTAGE 110VDC, ACCURACY CLASS 1	1	A96MMA+	FRER	ITALY	A96MMA+MCOWT	05			
				MCOWT							
E	5 P6+T6	METER: 240 DEGREE TRANSDUCER OPERATED ANALOGUE MVAR METER, INPUT -12.5/10...0...10/+12.5 mA, ACCURACY CLASS 1, SCALE 375/300-0-300/375 MVAR. MVAR TRANSDUCER: NOMINAL INPUT VOLTAGE 110/137.5 VAC (L-L), NOMINAL CURRENT 5/6.25A, OUTPUT -12.5/10...0...10/+12.5 mA, AUXILIARY VOLTAGE 110VDC, ACCURACY CLASS 1	1	A96MMA+	FRER	ITALY	A96MMA+MCORT	05			
				MCORT							
F	6 H101, H102, H103	EIGHT WINDOW ANNUNCIATOR, RATED VOLTAGE 110 VDC	3	AM101	ELABS	PAKISTAN	AM-101	11,12,13			
G	7 H104	EIGHT WINDOW ANNUNCIATOR, RATED VOLTAGE 240 VAC	1	AM101	ELABS	PAKISTAN	AM-101	14			
H	8 TS	TEST BLOCK (14 FINGER) FOR METERING CIRCUIT	1	saTECH	ARTECHE	SPAIN	TSB-14-222211111B-V	05,17			
I	9 F1, F2, F3	DC MCB 2POLE 10A, WITH ONE C/O CONTACT, 10kA	3	EP-100	GE	HUNGRY	EP102UCC10+(CAH1)	06			
J	10 F4, F5	AC MCB 2POLE 10A, WITH ONE C/O CONTACT, 10kA	2	G60	GE	HUNGRY	G62C10+(CAH1)	16			
K	11 74DC-1, 74DC-2	DC SUPPLY SUPERVISION RELAY, RATED VOLTAGE 110 VDC	2	TS101	ELABS	PAKISTAN	TS101	10,13			
L	12 74AC	AC SUPPLY SUPERVISION RELAY, RATED VOLTAGE 240 VAC 3 C/O CONTACTS	1	MCR	GE	POLAND	MCRA022ATN	14			
M	13 K10	FLASHER RELAY, 1 C/O CONTACT, RATED VOLTAGE 110 VDC	1		ELABS	PAKISTAN		09			
N	14 S0	CONTROL DISCREPANCY SWITCH WITH LAMP ACCESSORIES (CB), SQUARE TYPE, 110 VDC	1	YS-IC-4456	YONGSUNG	SOUTH KOREA	YS-IC-4456-S4(49)	07			
O	15 S1, S9, S8	SEMAPHORE INDICATOR FOR ISOLATOR POSITION INDICATION	3	SPR-30S	FUJI	JAPAN		09			
P	16 TS+HS	THERMOSTAT AND HUMIDSTAT	1	ELH220	ELABS	PAKISTAN	ELH220	16			
Q	17 SH	SPACE HEATER	1	ELH220	ELABS	PAKISTAN	ELH220	16			
R	18 DS	DOOR SWITCH WITH COVER	1	YSP+YSMS	YONGSUNG	SOUTH KOREA	YSP3315GWB+YSMS-C	16			
S	19 IL	ILLUMINATION LIGHT, 5W, 260 VAC	1	YST8	YONGSUNG	SOUTH KOREA	YST8-30-5W	16			
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: LIST OF APPARATUS 132KV LINE CONTROL PANEL TYPE CP30	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1396	SHT: 02 OF 04				
NAH	ABA	MSC				DATE: 27.01.2018	FOR APPROVAL	REV: 0			

		1	2	3	4	5	6	7	8		
SR. #	ITEM DESIGNATION	DESCRIPTION				QTY	TYPE	MAKE	COUNTRY OF ORIGIN	ORDERING INFORMATION	SHEET NO
A 20	TPS	THREE PIN SOCKET OUTLET, 240 VAC, 16A				1	LEAR	CHINA			16 A
21	HI,H2,H3,H4	INDICATION LAMPS, COLOURED RED				4	YSPL	YONGSUNG	SOUTH KOREA	YSPL2-DL12RW	09,10,13
22	LT, ACK, RST	PUSH BUTTON FOR ANNUNCIATORS LAMP TEST, ACKNOWLEDGE AND RESET, FOUR NO CONTACTS EACH				3	YSAP1	YONGSUNG	SOUTH KOREA	YSAP1240RDW+YSAP1240GDW	11
23	CTR	COUNTER FOR CIRCUIT BREAKER				1	ELABS	PAKISTAN			07
B 24	SY	KEY OPERATED SWITCH FOR BREAKER LOCAL-OFF-REMOTE CONTROL				1	YSAK	YONGSUNG	SOUTH KOREA	YSAK2380D	07 B
25	HTR	HOOTER, RATED VOLTAGE 110VDC				1	AH-101	ELABS	PAKISTAN		11
26	B	BELL, RATED VOLTAGE 240VAC				1	YSMB	YONGSUNG	SOUTH KOREA	YSMB-722A	14
27	X1	DISCONNECTING TERMINAL BLOCK (SCREW TYPE) FOR CT CIRCUIT WITH SHORTENING ARRANGEMENT				7	SCB-6	CABUR	ITALY		
c 28	X2	DISCONNECTING TERMINAL BLOCK (SCREW TYPE) FOR VT CIRCUIT				4	SCB-6	CABUR	ITALY		c
29	X3	TERMINAL BLOCKS FOR CONTROL FUNCTION				29	CBD-4	CABUR	ITALY		
30	X6	TERMINAL BLOCKS FOR TRIP CIRCUIT-1				12	CBD-4	CABUR	ITALY		
31	X7	TERMINAL BLOCKS FOR TRIP CIRCUIT-2				11	CBD-4	CABUR	ITALY		
D 32	X9	TERMINAL BLOCKS FOR ANNUNCIATION SUPPLY DISTRIBUTION				8	CBD-4	CABUR	ITALY		D
33	X11	TERMINAL BLOCKS FOR CURRENT METERING CIRCUIT				4	CBD-4	CABUR	ITALY		
34	X14	TERMINAL BLOCKS FOR SCADA/TELECOM				35	CBD-4	CABUR	ITALY		
E 35	X15	TERMINAL BLOCKS FOR RS485 COMMUNICATION				2	CBD-4	CABUR	ITALY		E
36	X17	TERMINAL BLOCKS FOR AC SUPPLY DISTRIBUTION				14	CBD-4	CABUR	ITALY		
37	X21	TERMINAL BLOCKS FOR VOLTAGE METERING CIRCUIT				26	CBD-4	CABUR	ITALY		
F 38	X91	TERMINAL BLOCKS FOR ANNUNCIATION CIRCUIT				9	CBD-4	CABUR	ITALY		F
39	X92	TERMINAL BLOCKS FOR ANNUNCIATION CIRCUIT				9	CBD-4	CABUR	ITALY		
40	X93	TERMINAL BLOCKS FOR ANNUNCIATION CIRCUIT				9	CBD-4	CABUR	ITALY		
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: LIST OF APPARATUS 132KV LINE CONTROL PANEL TYPE CP30	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1396	SHT: 03 OF 04				
NAH	ABA	MSC				DATE:27.01.2018	FOR APPROVAL	REV: 0			

		1	2	3	4	5	6	7	8		
SR. #	ITEM DESIGNATION	DESCRIPTION				QTY	TYPE	MAKE	COUNTRY OF ORIGIN	ORDERING INFORMATION	SHEET NO
A 40	X94	TERMINAL BLOCKS FOR ANNUNCIATION CIRCUIT				6	CBD-4	CABUR	ITALY		A
41	X101	TERMINAL BLOCKS FOR DC SUPPLY DISTRIBUTION				22	CBD-4	CABUR	ITALY		
42	XD	TERMINAL BLOCKS WITH DIODE TYPE IN-D4007, RATED MAXIMUM VOLTAGE 350VDC, RATED BREAK DOWN VOLTAGE 430VDC				2	DAS.4/6	CABUR	ITALY		
B 43	X4	SPARE TERMINAL BLOCKS				17	CBD-4	CABUR	ITALY		B
c											c
d											d
e											e
f											f
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4			TITLE: LIST OF APPARATUS 132KV LINE CONTROL PANEL TYPE CP30	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan		DWG# EPE/ENU-18/P1396	SHT: 04 OF 04	
NAH	ABA	MSC						DATE:27.01.2018	FOR APPROVAL	REV: 0	

SCHEMATIC DIAGRAMS

132kV LINE CONTROL PANEL

TYPE CP30

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: COVER SHEET 132kV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1397	SHT: 01 OF 18
NAH	ABA	MSC			DATE:27.01.2018	FOR APPROVAL

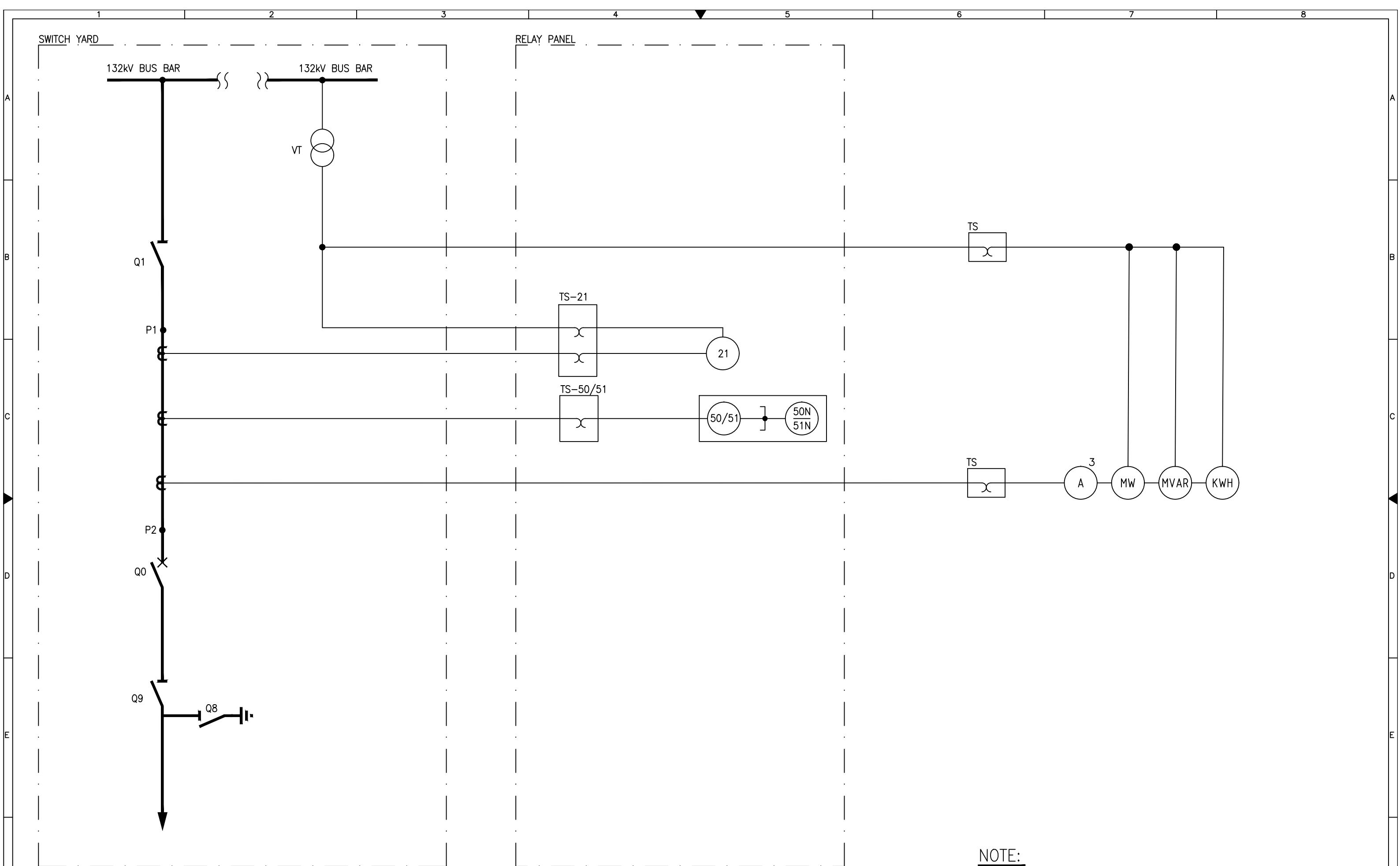


E P E S O L *Pvt. Ltd.*
71-B Garden Block, New Garden Town, Lahore, Pakistan

DESCRIPTION	SHEET NO
COVER SHEET	01
LIST OF CONTENTS	02
LIST OF SYMBOLS	03
SINGLE LINE DIAGRAM	04
AC SCHEMATIC DIAGRAM	05
DC SUPPLY DISTRIBUTION	06
CB CONTROL & TRIP CIRCUIT-1	07
CB TRIP CIRCUIT - 2	08
DEVICE POSITION INDICATION	09
ISOLATOR & EARTH SWITCH INTERLOCKING	10
ANNUCIATOR UNIT - 1	11
ANNUCIATOR UNIT - 2	12
ANNUCIATOR UNIT - 3	13
ANNUCIATOR UNIT - 4	14
TERMINAL BLOCKS FOR SCADA/TELECOM	15
AC SUPPLY DISTRIBUTION	16
RS485 COMMUNICATION	17
TEST BLOCK TYPE TSB-14 DETAILS	18

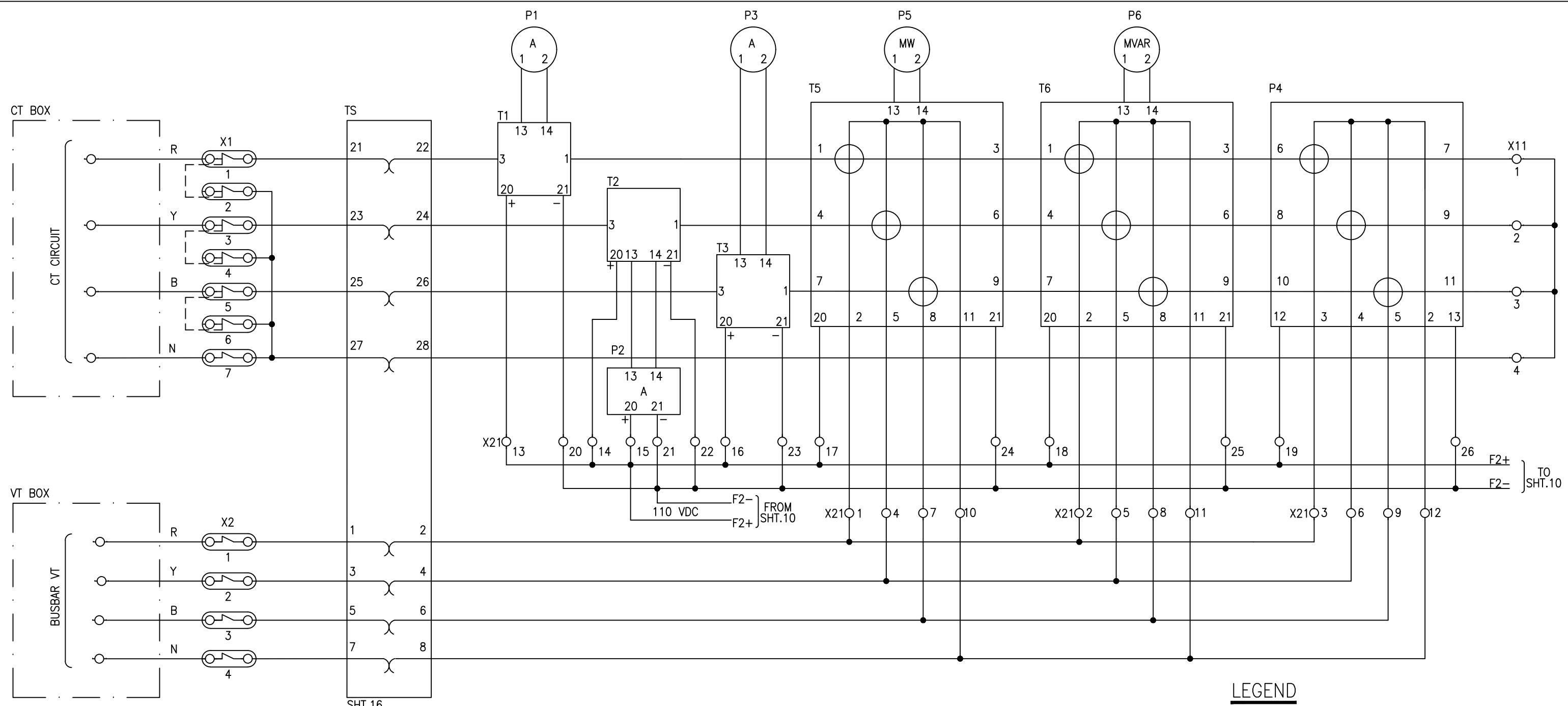
LIST OF SYMBOLS

A		HV DISCONNECTOR		EQUIPMENT WITHIN PANEL
B		HV CIRCUIT BREAKER		INDEPENDENT PANEL
C		CURRENT TRANSFORMER		INDEPENDENT PANEL
D		POWER TRANSFORMER	21	DISTANCE RELAY
E		RELAY PANEL TERMINAL BLOCK	50/51	OVER CURRENT & EARTH FAULT RELAY
F		CONTROL PANEL TERMINAL BLOCK	TS	TEST BLOCK
		EARTH CONNECTION	74DC-1/2	DC SUPPLY SUPERVISION RELAY
		TEST BLOCK TERMINAL	X	TERMINAL BLOCK
		NORMALLY CLOSED CONTACT		MEGAWATT METER
		NORMALLY OPEN CONTACT		MEGAVAR METER
		CHANGE OVER CONTACT		ENERGY METER
		MINIATURE CIRCUIT BREAKER		
		INDICATING BULB/LED		
		240 VAC SOCKET		
		SPACE HEATER		
		VOLTAGE SELECTOR SWITCH		
		COIL		
		AMPERE METER		



APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132kV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: SINGLE LINE DIAGRAM 132kV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1397	SHT: 04 OF 18
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 27.01.2018	FOR APPROVAL REV: 0

ANALOGUE AMMETER DIGITAL AMMETER ANALOGUE AMMETER ANALOGUE MW METER ANALOGUE MVAR METER DIGITAL POWER METER

NOTE:

1. CT CIRCUIT WIRE SIZE IS 4mm² (COLOURED RED, YELLOW, BLUE AND BLACK).
2. VT CIRCUIT WIRE SIZE IS 2.5mm² (COLOURED RED, YELLOW, BLUE AND BLACK).

APPROVED	CHECKED	DRAWN
NAH	ABA	MSC

PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4

TITLE: AC SCHEMATIC DIAGRAM
132kV LINE CONTROL PANEL TYPE CP30

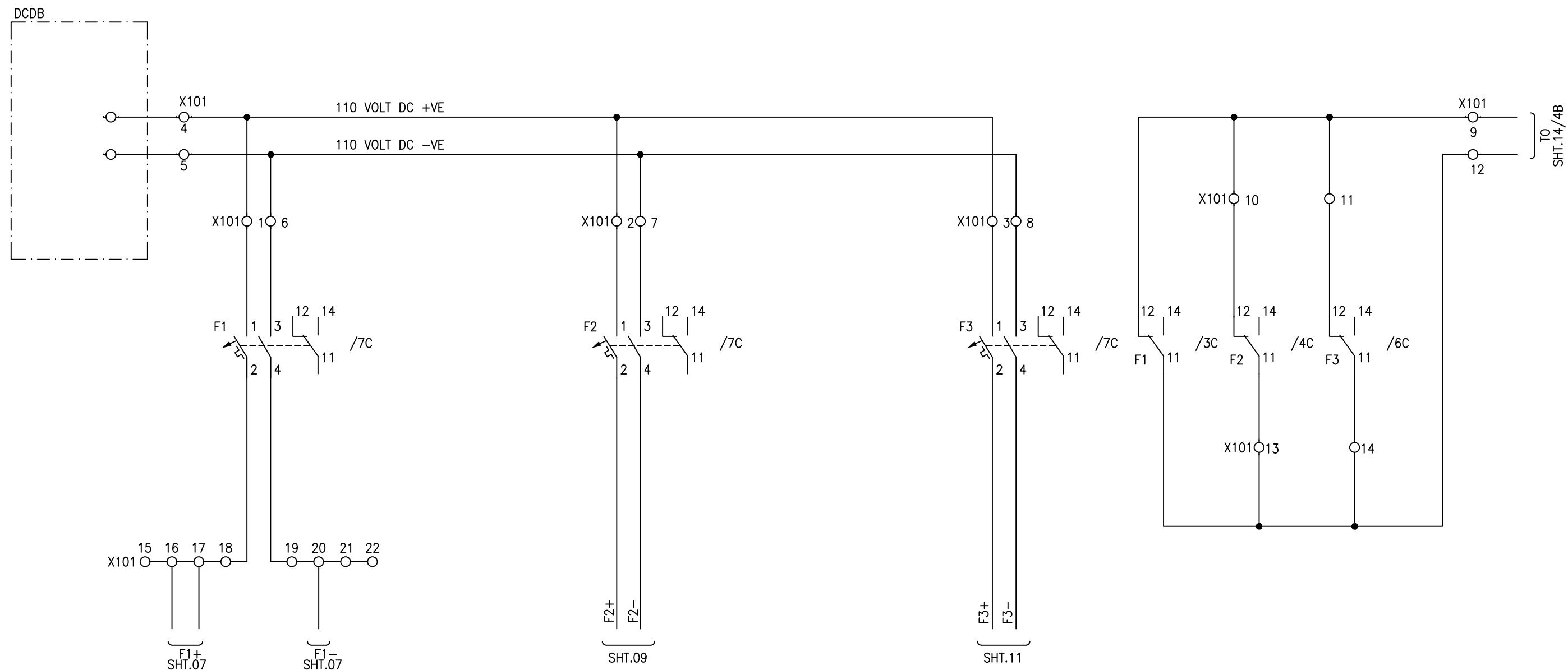


DWG# EPE/ENU-18/P1397	SHT: 05 OF 18
DATE: 27.01.2018	FOR APPROVAL

CB & ISOLATORS
CONTROL SUPPLY

POSITION INDICATION
& DEVICE INTERLOCKING
SUPPLY

ANNUNCIATION
SUPPLY



LEGEND

DES:	DESCRIPTION	TYPE	MAKE
F1, F2, F3	DC MCB, 2P, 10A	EP-100	GE

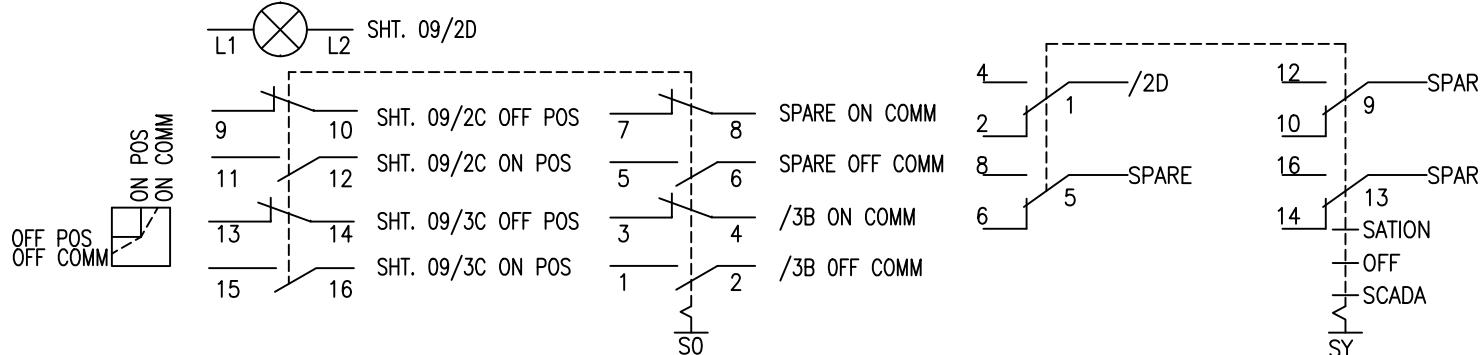
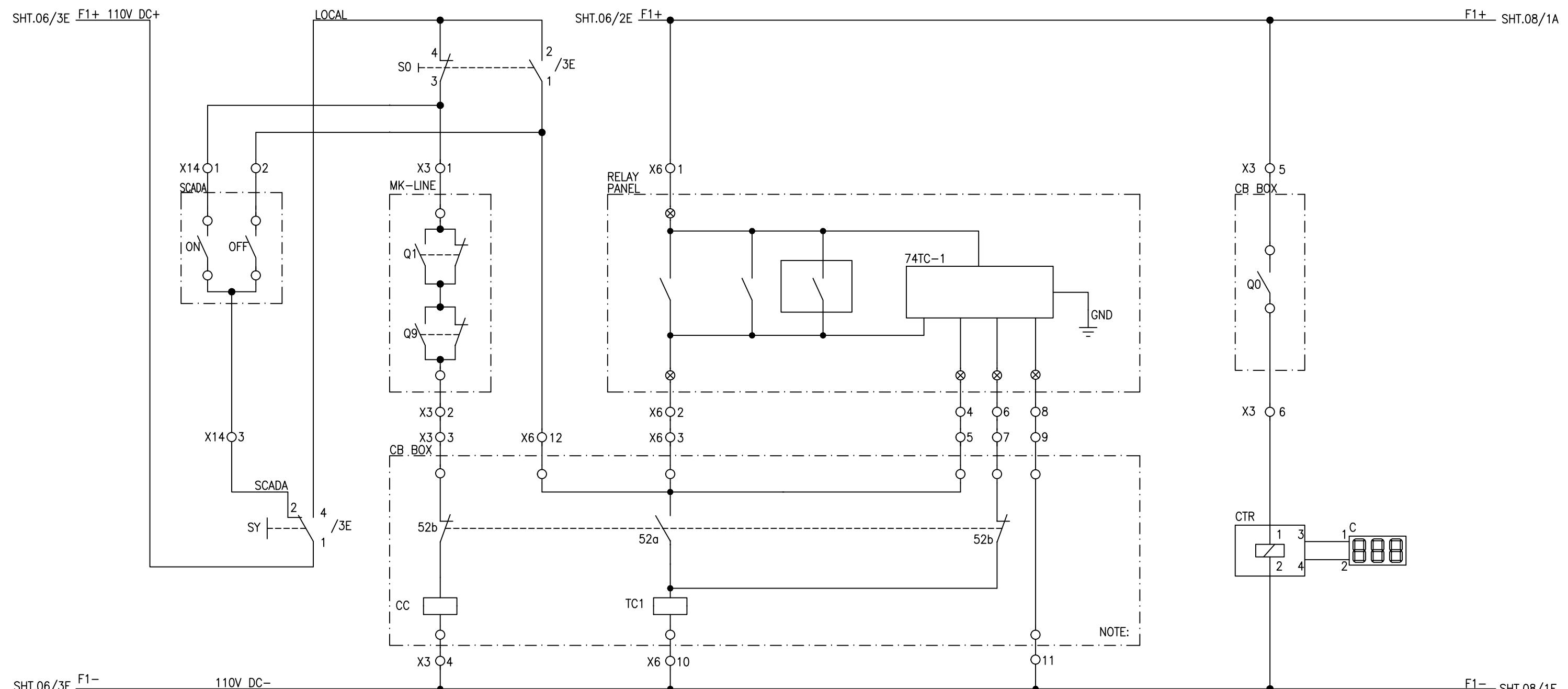
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NAH	ABA	MSC		 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 27.01.2018	FOR APPROVAL

C.B Q0
ON OFF

PROTECTION TRIPPINGS

TRIP CIRCUIT-1

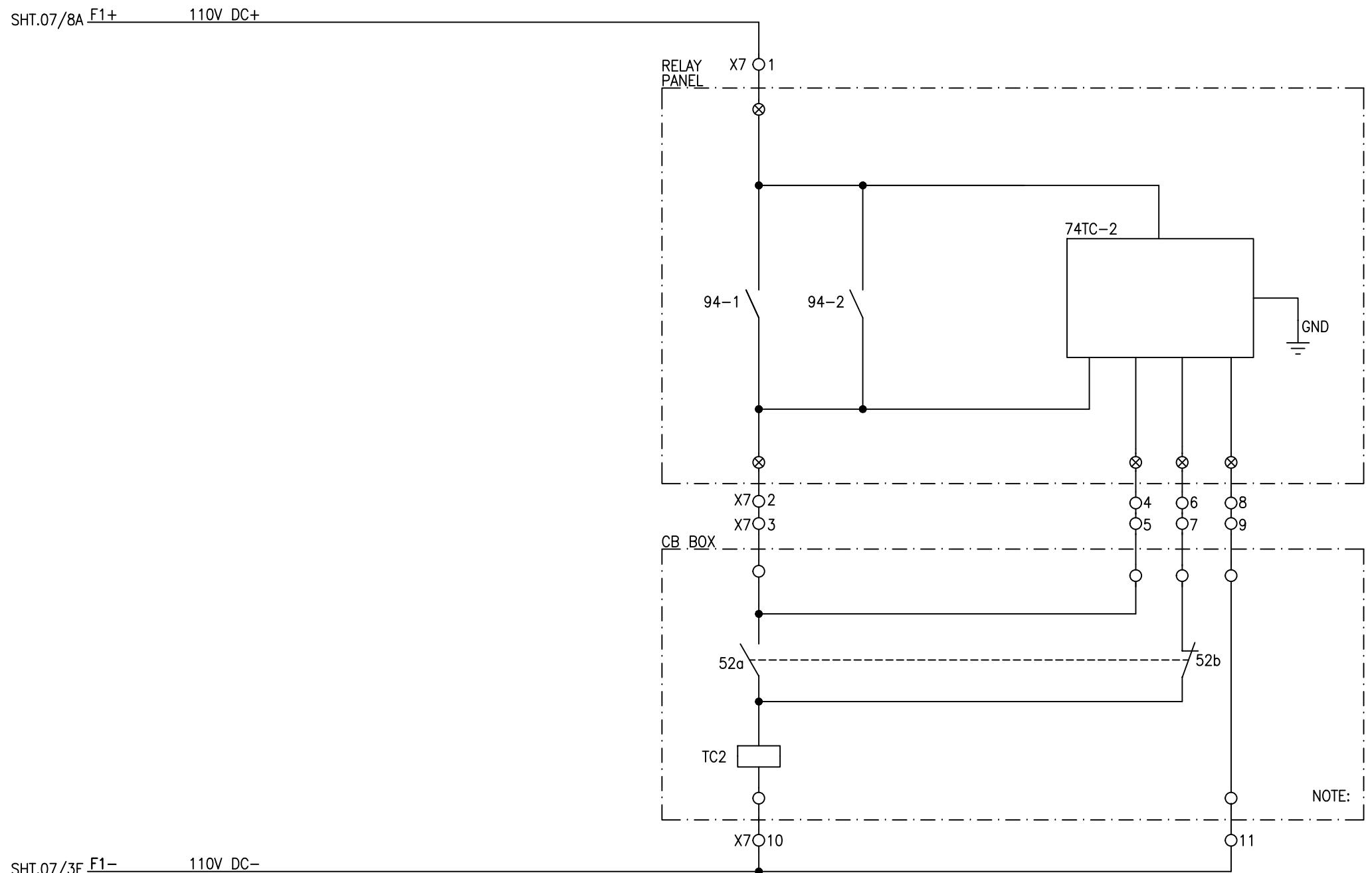
SUPERVISION

CB OPERATION
COUNTER

NOTE:
THE INTERNAL MECHANISM OF CIRCUIT BREAKER CONTROL
IS NOT THE PART OF CONTROL PANEL.
IT HAS BEEN SHOWN ONLY FOR CLARITY OF SCHEME.

DES.	DESCRIPTION	TYPE	MAKE
S0	CONTROL & DESCREPANCY SWITCH	YS-IC-4456	YONGSUNG
CTR	COUNTER	-	ELABS
SY	KEY OPERATED SWITCH FOR LOCAL/REMOTE	YSAK	YONGSUNG

PROTECTION TRIPPINGS

TRIP CIRCUIT-2
SUPERVISION

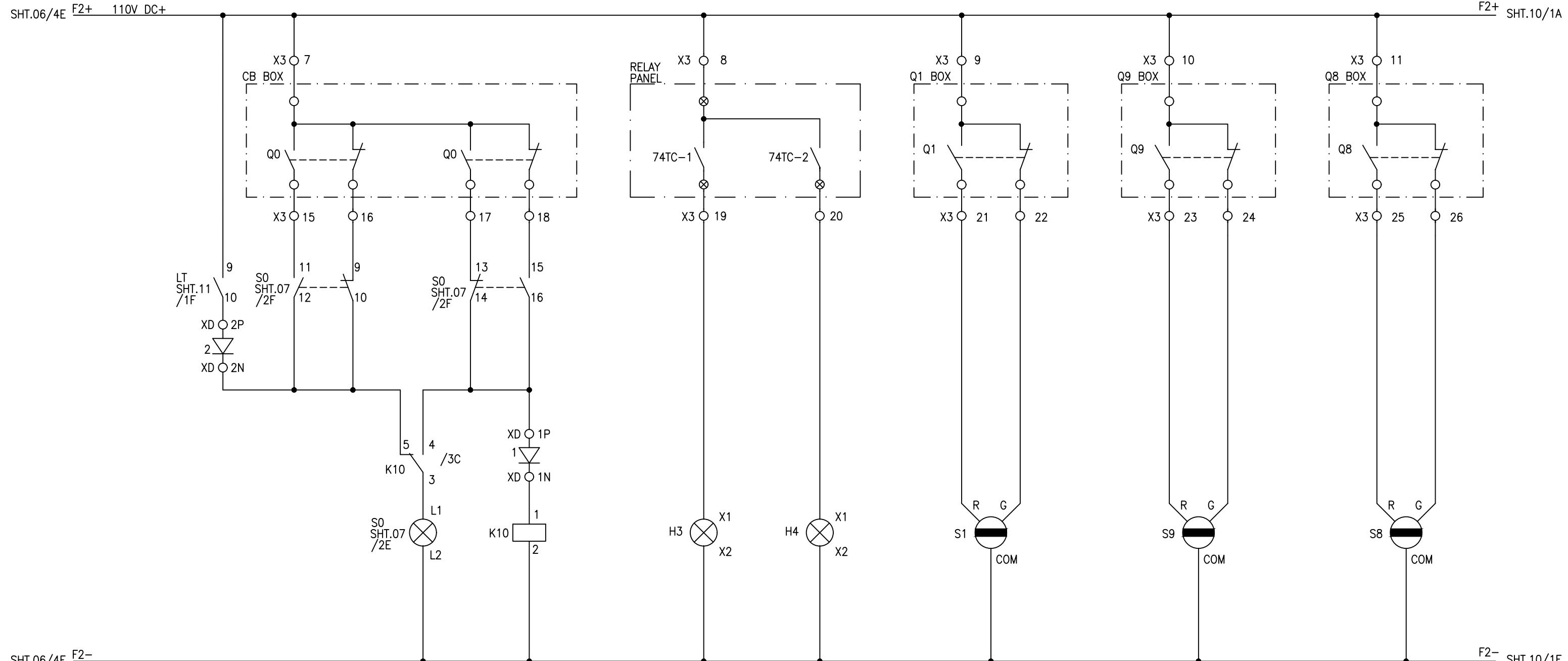
NOTE:
THE INTERNAL MECHANISM OF CIRCUIT BREAKER CONTROL
IS NOT THE PART OF CONTROL PANEL.
IT HAS BEEN SHOWN ONLY FOR CLARITY OF SCHEME.

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: CB TRIP CIRCUIT-2 132KV LINE CONTROL PANEL TYPE CP30	EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1397	SHT: 08 OF 18
NAH	ABA	MSC				DATE: 27.01.2018	FOR APPROVAL

DESCREPANCY
LIGHTDESCREPANCY INITIATION
CIRCUIT BREAKER
Q0CIRCUIT BREAKER
TRIP CKT HEALTHY
TC-1 TC-2POSITION INDICATION
LINE ISOLATOREARTH SWITCH
Q8

A

A

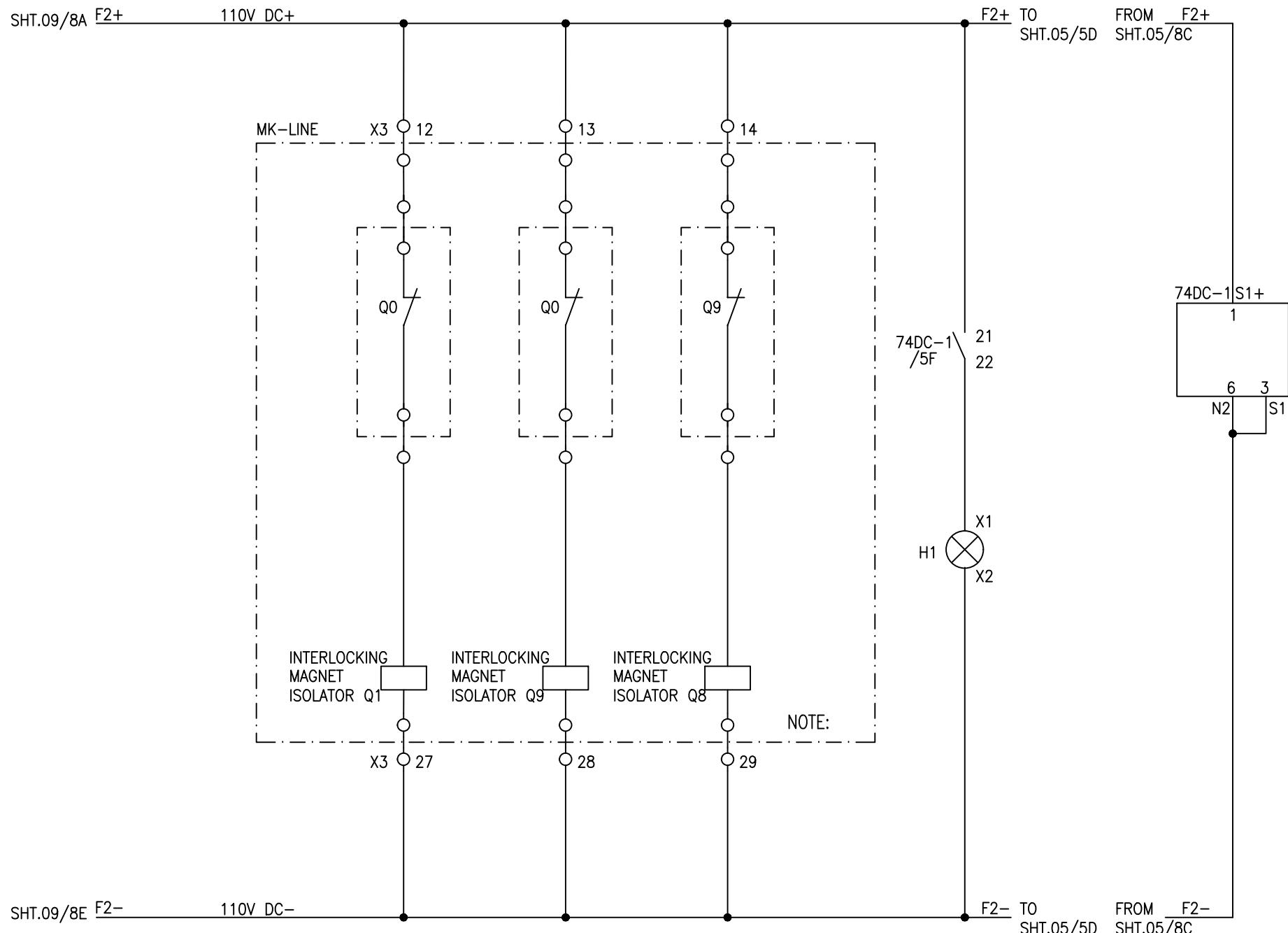
LEGEND

DES.	DESCRIPTION	TYPE	MAKE
S0	CONTROL & DESCREPANCY SWITCH, SQUARE TYPE	YS-IC-4456	YONGSUNG
S1, S9, S8	SEMAPHORE INDICATOR	SPR30S	FUJI
K10	FLASHER RELAY	-	ELABS

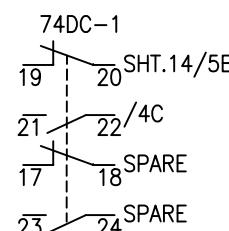
LEGEND

DES.	DESCRIPTION	TYPE	MAKE
H3, H4	INDICATION LAMP	YSPL	YONGSUNG

ISOLATOR Q1 INTERLOCKING	ISOLATOR Q9 INTERLOCKING	ESW Q8 INTERLOCKING	INDICATION SUPPLY HEALTHY	INDICATION SUPPLY SUPERVISION
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NOTE:
THE ISOLATOR INTERLOCKING DETAILS ARE ONLY SHOWN FOR CLARITY OF SCHEME.
THE CONTROL PANEL IS ONLY EQUIPPED WITH TERMINAL BLOCKS FOR THIS PURPOSE.



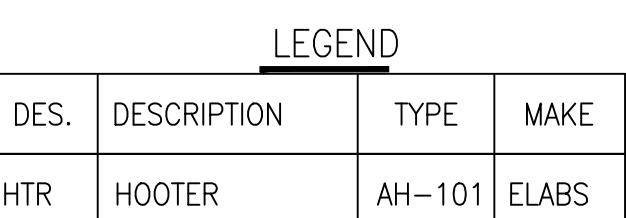
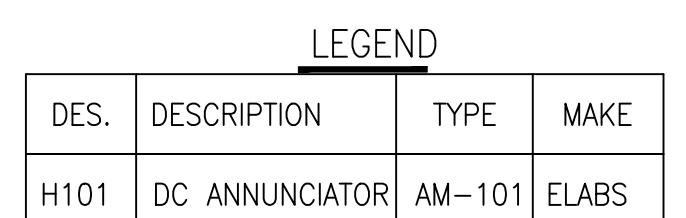
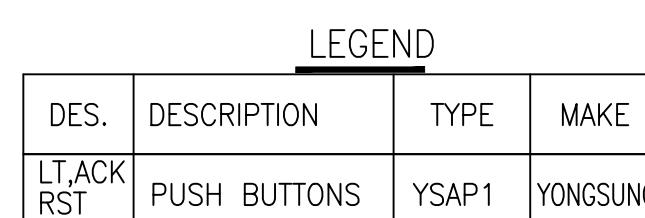
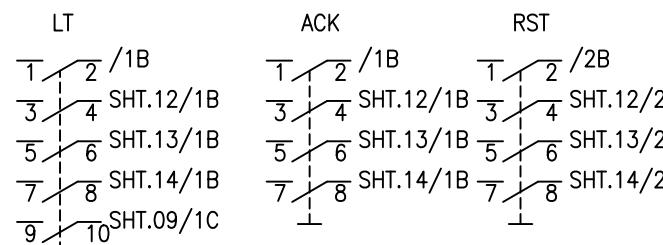
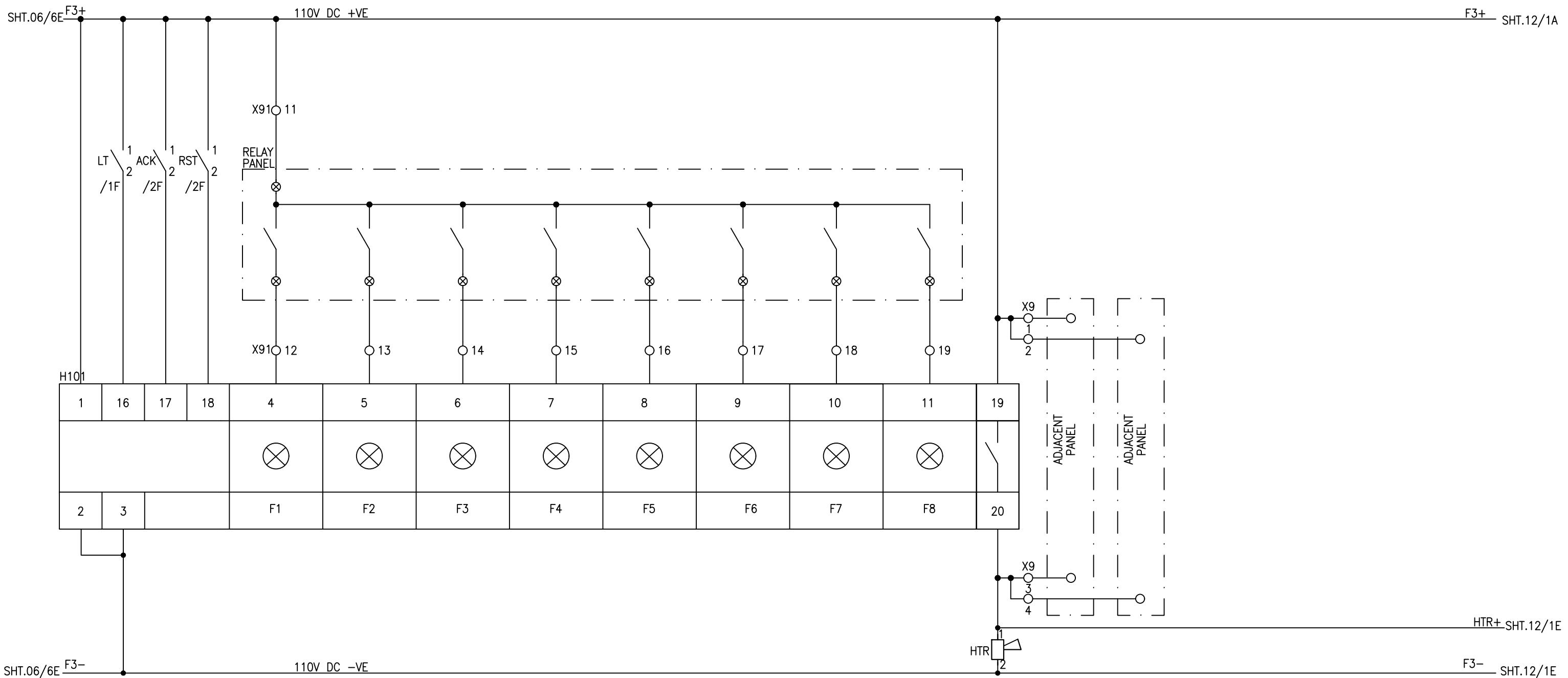
DES.	DESCRIPTION	TYPE	MAKE
74DC-1	DC SUPPLY SUPERVISION RELAY	TS101	ELABS
H1	INDICATION LAMP	YSPL	YONGSUNG



E P E S O L Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: ISOLATOR & EARTH SWITCH INTERLOCKING 132kV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1397	SHT: 10 OF 18
NAH	ABA	MSC			DATE: 27.01.2018	FOR APPROVAL

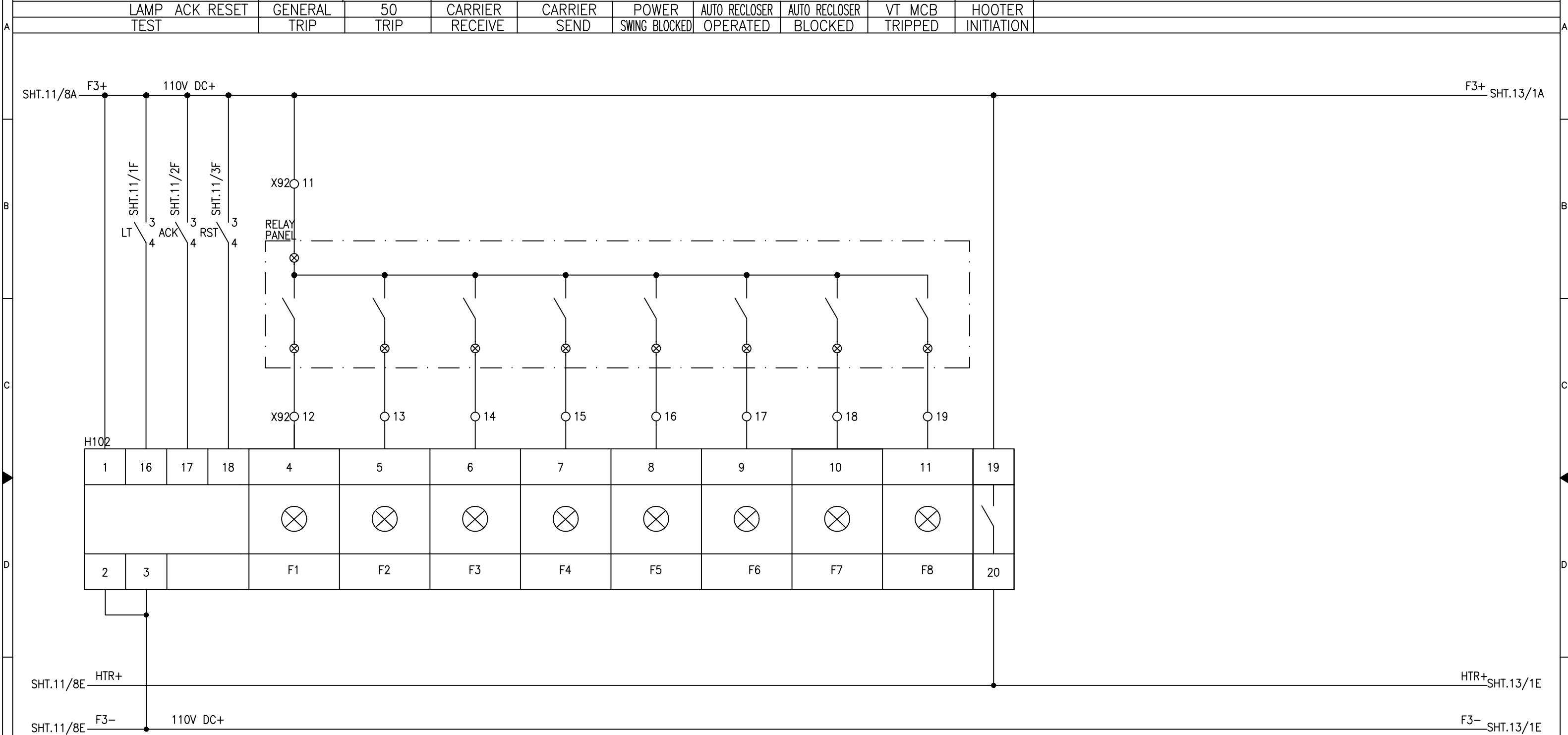
21



APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: ANNUNCIATOR UNIT-1 132KV LINE CONTROL PANEL TYPE CP30	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1397	SHT: 11 OF 18
NAH	ABA	MSC				DATE:27.01.2018	FOR APPROVAL

50/51

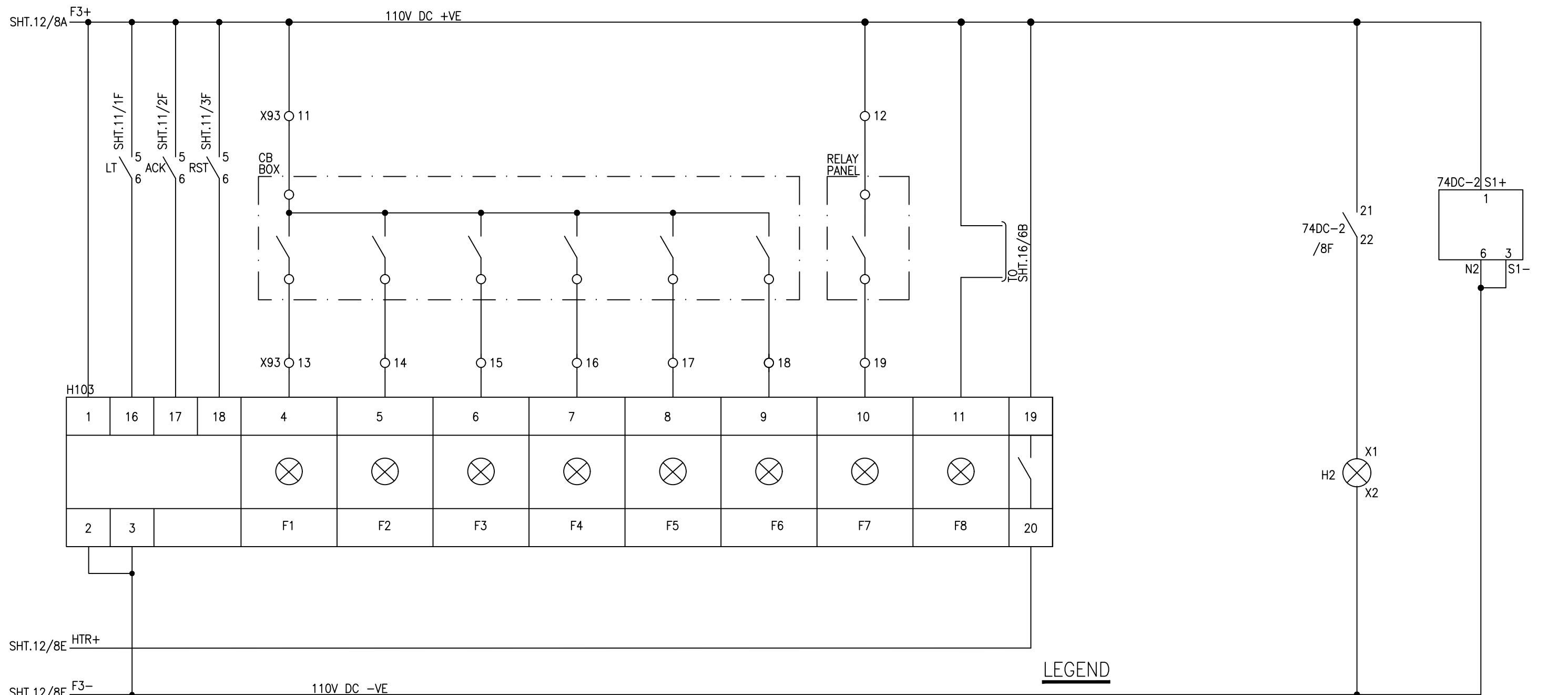
21

LEGEND

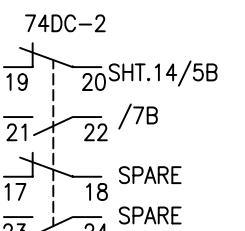
DES.	DESCRIPTION	TYPE	MAKE
H102	DC ANNUNCIATOR	AM-101	ELAB
LT,ACK RST	PUSH BUTTONS	YSAP1	YONGSUNG

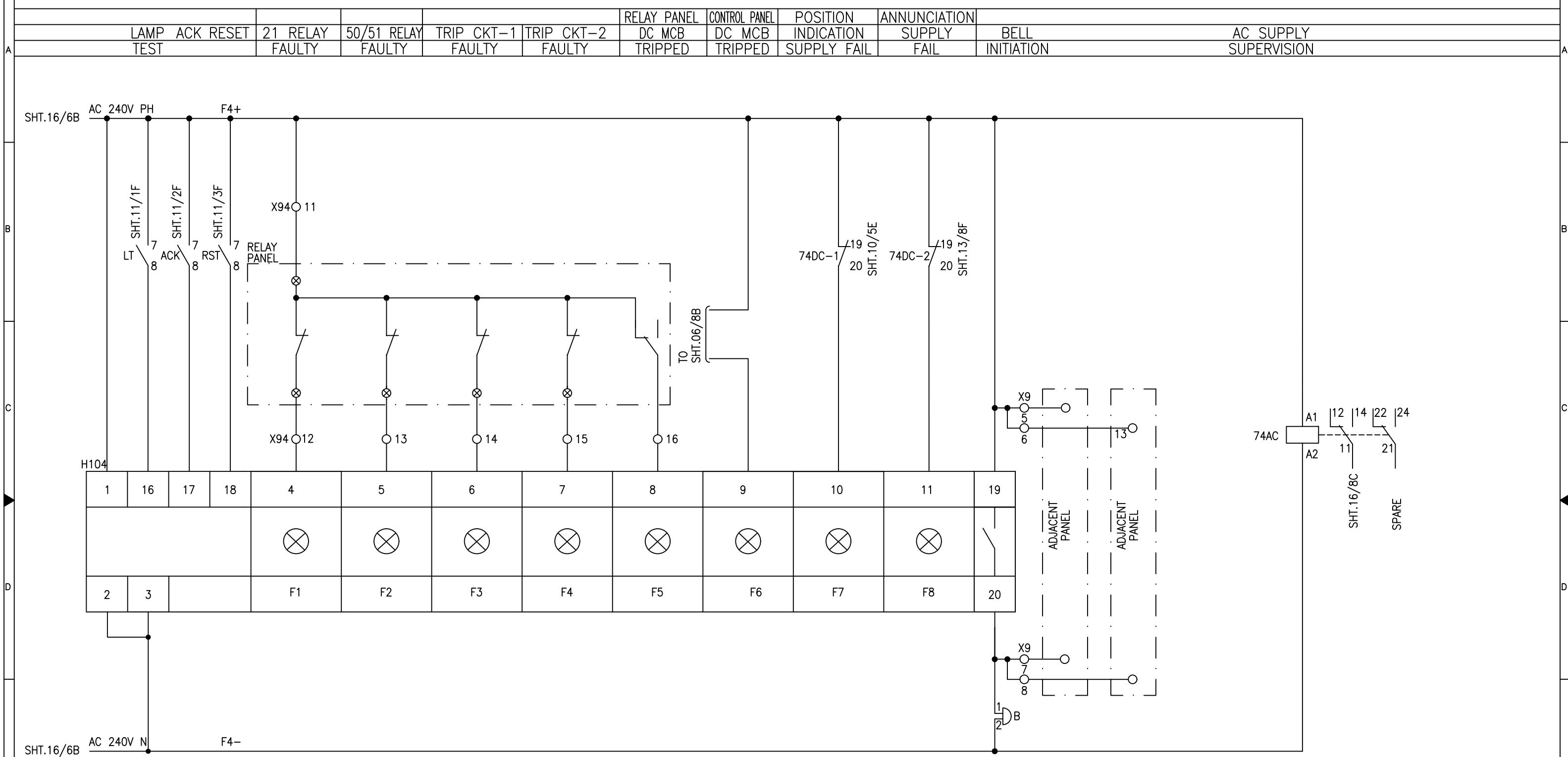
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: ANNUNCIATOR UNIT-2 132kV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1397	SHT: 12 OF 18
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 27.01.2018	FOR APPROVAL

			CIRCUIT BREAKER				RELAY PANEL		CONTROL PANEL		ANN		ANN	
LAMP ACK RESET			OIL/AIR/SF6	MECHANICAL	SPRING	MOTOR	TRIP	OIL/AIR/SF6	AC SUPPLY	AC SUPPLY	HOOTER	SUPPLY	SUPPLY	
TEST			PRES. LOW	FAILURE	UNCHARGED	SUPPLY FAIL	LOCK OUT	PRES. HIGH	FAIL	FAIL	INITIATION	HEALTHY	SUPVN	



DES.	DESCRIPTION	TYPE	MAKE
74DC-2	DC SUPPLY SUPERVISION RELAY	TS101	ELABS
H103	DC ANNUNCIATOR	AM101	ELABS
H2	INDICATION LAMP	YSPL	YONGSUNG
LT,ACK RST	PUSH BUTTONS	YSAP1	YONGSUNG



LEGEND

DES.	DESCRIPTION	TYPE	MAKE
LT,ACK RST	PUSH BUTTONS	YSAP1	YONGSUNG
B	BELL	YSMB	YONGSUNG

LEGEND

DES.	DESCRIPTION	TYPE	MAKE
H104	AC ANNUNCIATOR	AM-101	ELABS
74AC	AC SUPPLY SUPERVISION RELAY	MCR	GE

LEGEND

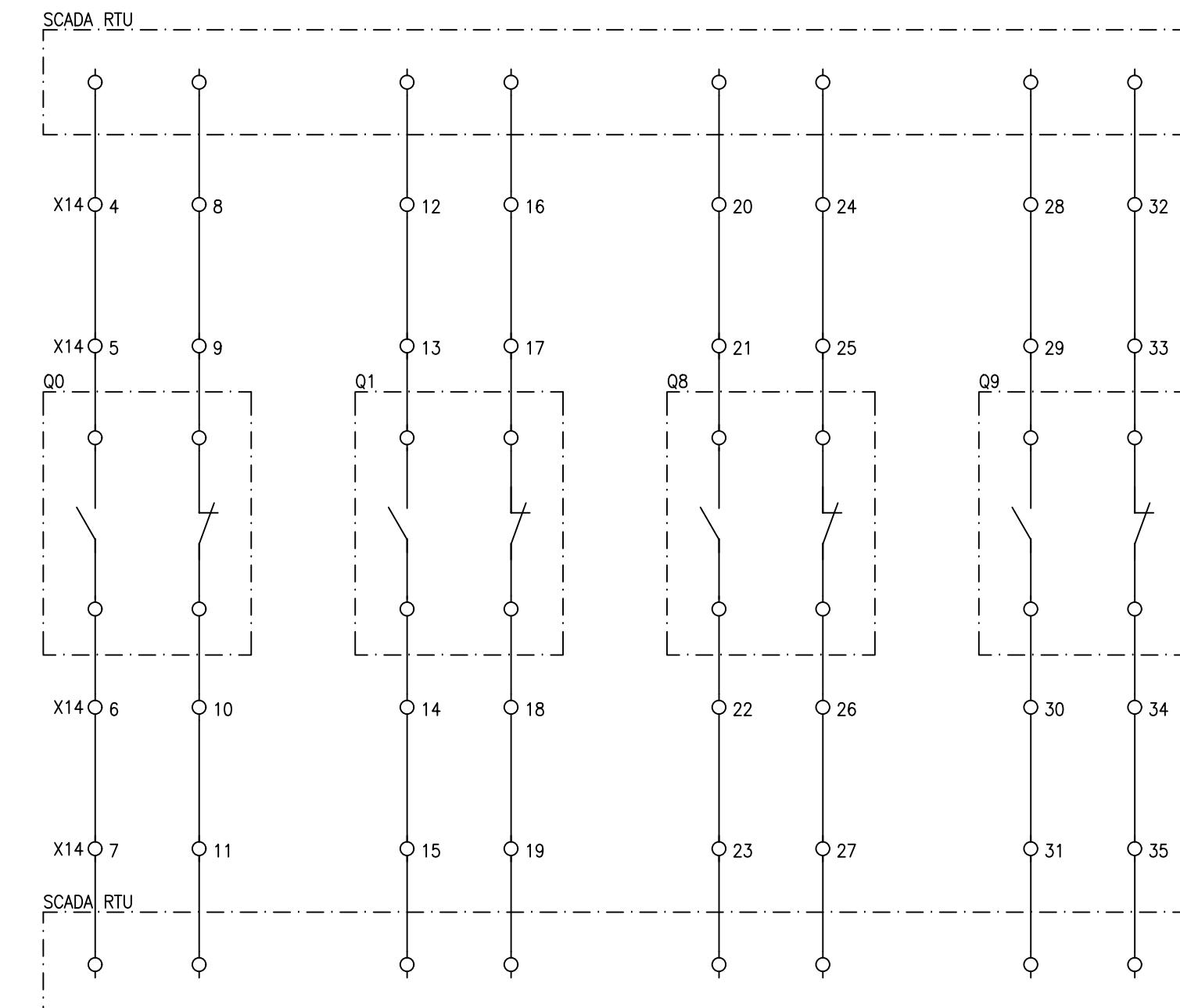
DES.	DESCRIPTION	TYPE	MAKE
74DC-1 74DC-2	DC SUPPLY SUPERVISION RELAY	TS101	ELABS

CIRCUIT BREAKER Q0

BUS ISOLATOR Q1

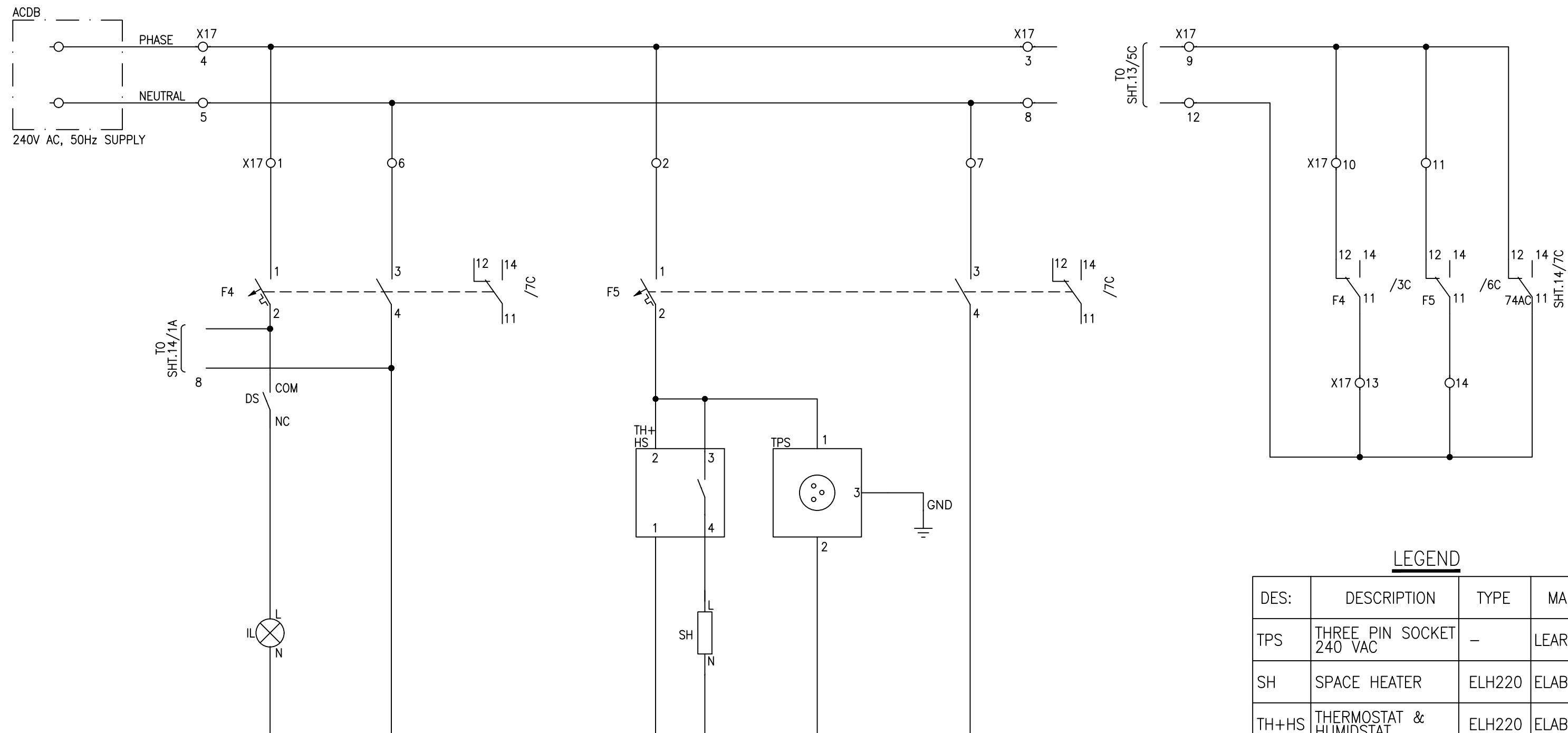
EARTH SWITCH Q8

LINE ISOLATOR Q9



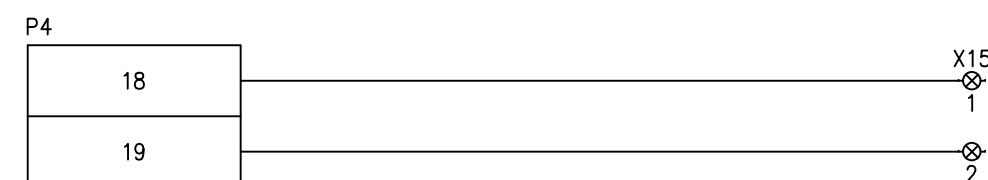
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: TERMINAL BLOCKS FOR SCADA/TELECOM 132KV LINE CONTROL PANEL TYPE CP30	E P E S O L P v t . L t d. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1397	SHT: 15 OF 18
NAH	ABA	MSC				DATE:27.01.2018 FOR APPROVAL	REV: 0

AC SUPPLY DISTRIBUTION
DOOR SWITCH & CUBICLE LIGHT SPACE HEATER THREE THERMOSTAT PIN SOCKET

LEGEND

DES:	DESCRIPTION	TYPE	MAKE
TPS	THREE PIN SOCKET 240 VAC	-	LEAR
SH	SPACE HEATER	ELH220	ELABS
TH+HS	THERMOSTAT & HUMIDSTAT	ELH220	ELABS
DS	DOOR SWITCH	YSP+YSMS	YONGSUNG
F4, F5	AC MCB, 2P, 10A	G60	GE
IL	ILLUMINATION LIGHT	YST8	YONGSUNG

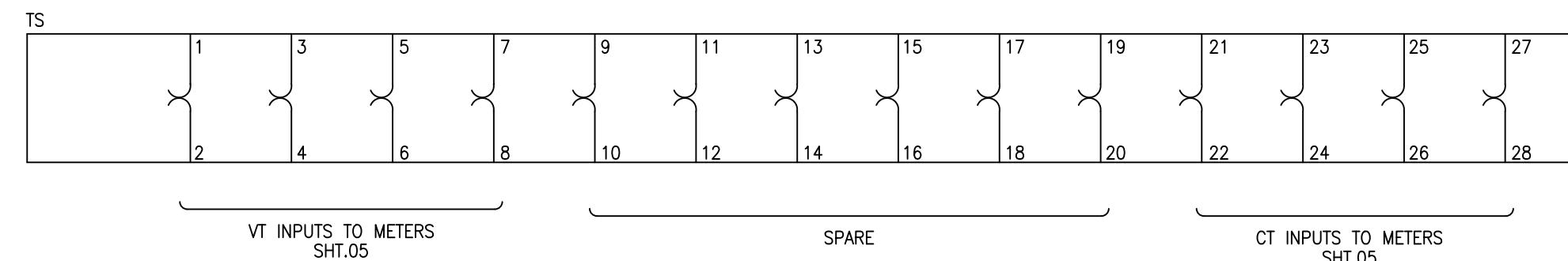
P4 RS485

LEGEND

DES:	DESCRIPTION	TYPE	MAKE
P4	DIGITAL POWER METER	ENERIUM 150	ENERDIS

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: RS485 COMMUNICATION 132KV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1397	SHT: 17 OF 18
NAH	ABA	MSC		 E P E S O L P v t . L t d . 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:27.01.2018	FOR APPROVAL

TS
TEST BLOCK TYPE TSB14-222211111AAAB-V

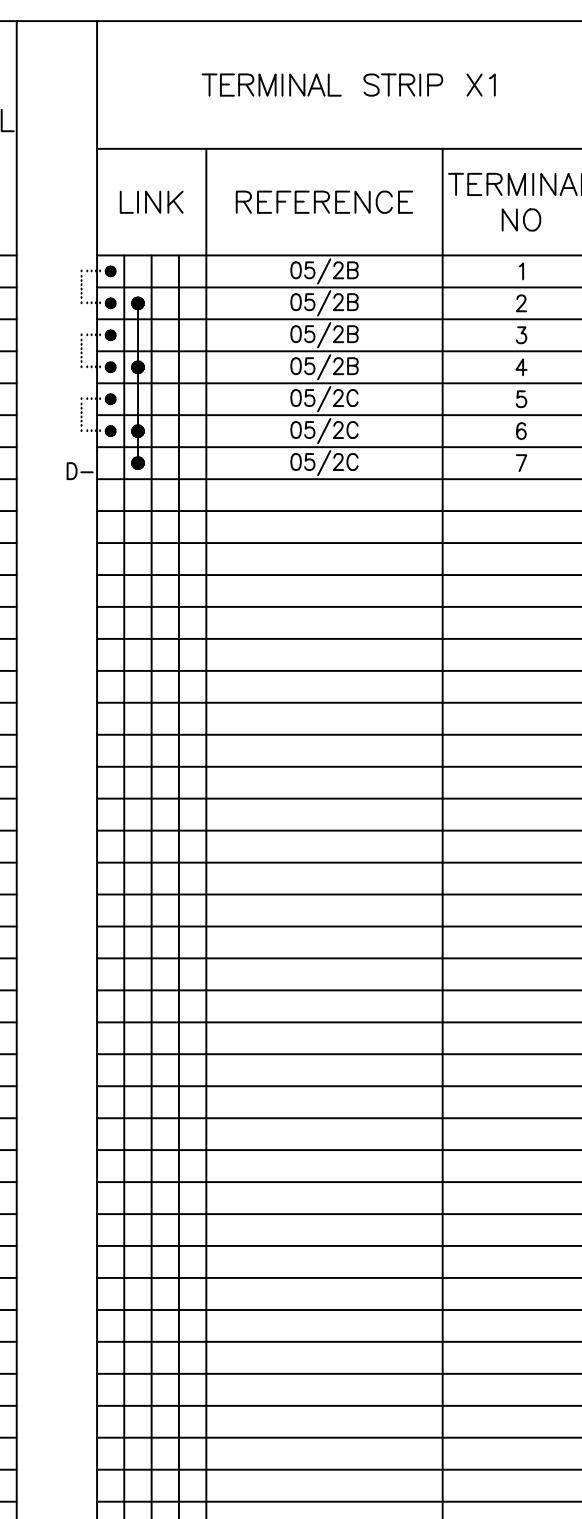


LEGEND

DES.	DESCRIPTION	TYPE	MAKE
TS	TEST BLOCK	TSB-14	ARTECHE

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: TEST BLOCK TYPE TSB-14 DETAILS 132KV LINE CONTROL PANEL TYPE CP30	DWG# EPE/ENU-18/P1397 71-B Garden Block, New Garden Town, Lahore, Pakistan	SHT: 06 OF 18
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:27.01.2018	FOR APPROVAL REV: 0

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION			
1				A	D-	TERMINAL NO
2						
3						
4						
5						
6				B	REMOTE DESTINATION	TERMINAL BLOCK
7						
8						
9						
10						
11				C		
12						
1	2	3	4			
				D		
				E		
				F		



DWO #_ EDE /ENMU_ 12 /D1320_ GUT 21-CE-12

DATE:27.01.2018 FOR REV: 0



E P E S O L P v t . L t d .

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5
NAH	ABA	MSC	

TITLE: / OF P4 TERMINAL DETAIL
132kV LINE CONTROL PANEL TYPE CP30



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, PR3 & PR5


TITLE: TERMINAL DETAIL
132kV LINE CONTROL PANEL TYPE CR30



E P E S O L P v t . L t d .

DWG# EPE/ENU-18/P1398	SHT:02 OF 18
DATE:27.01.2018	FOR REV: 0

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION
A 1			
2			
3			
4			
5			
6			
7			
8			
B 9			
10			
11			
12			
	1	2	3
	4	5	6
	7	8	9
	10	11	12
c			
d			
e			
f			

LEGEND



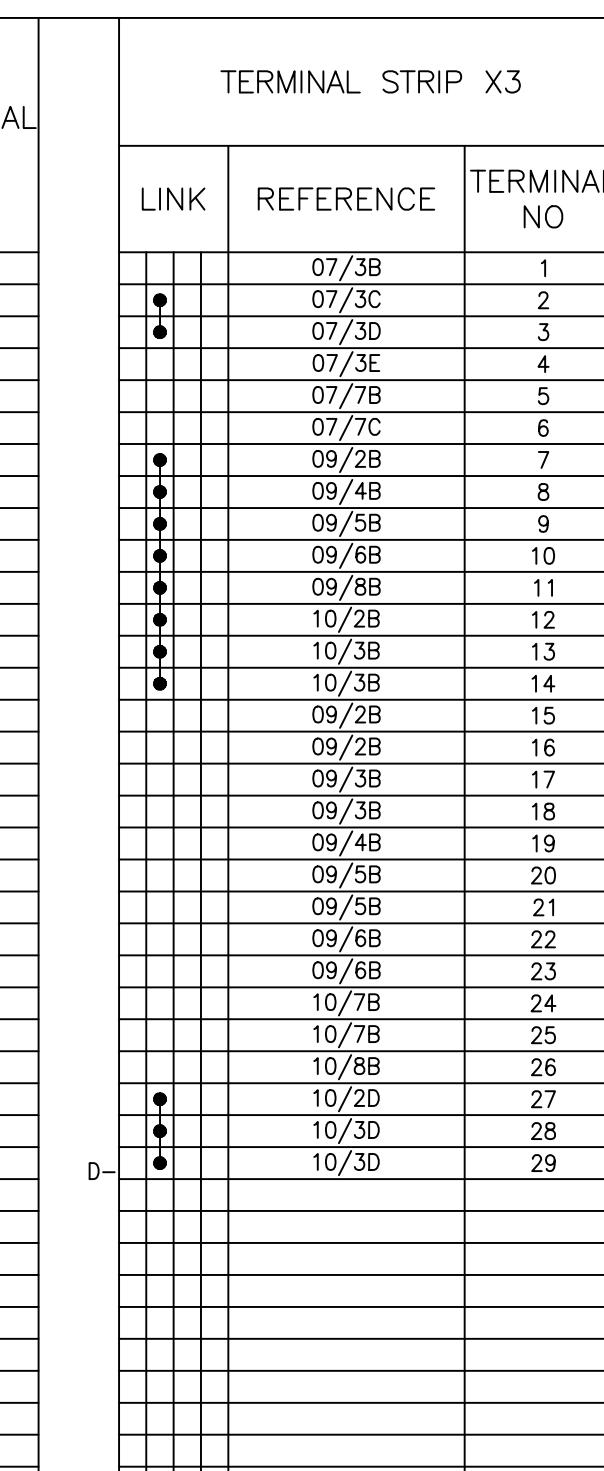
TEMPORARY SHORTENING LINK



PERMANENT LINK

D

END COVER



APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & R
NAH	ABA	MSC	

TITLE: /
OF
4 TERMINAL DETAIL
1721W LINE CONTROL PANEL TYPE CR30



E P E S O L P v t . L t d .
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1398 SHT:03 OF 18
 DATE:27.01.2018 FOR APPROVAL REV: 0

SCHEME DWG. REF: EPE/ENU-18/P1397

	1	2	3	4	5
Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION		
A 1					
2					
3					
4					
5					
6					
7					
8					
B 9					
10					
11					
12					
	1	2	3	4	5
c					
D					
E					
F					

LEGEND:

The legend consists of three symbols: a dashed square with a dot in the top-right corner representing 'REMOTE DESTINATION'; a vertical line with two dots at the ends representing 'TERMINAL BLOCK'; and a single dot representing 'TERMINAL NO'.

LEGEND:



TEMPORARY SHORTENING LINK



PERMANENT LINK

D-

END COVER

APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: 132kV LINE CONTROL PANEL TYPE CP30	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1398	SHT:04 OF 18
NAH	ABA	MSC				DATE:27.01.2018	FOR APPROVAL



E P E S O L Pvt Ltd
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWC# EPE /ENI -18 /P139

DATE:27.01.2018 FOR

SHT:05 OF 18

REV. 0



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5

TITLE: / OF 4 TERMINAL DETAIL
132kV LINE CONTROL PANEL TYPE CP30



E P E S O L Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1398	SHT:06 OF 18
DATE:27.01.2018	FOR REV: 0

SCHEME DWG. REF: EPE/ENU-18/P1397

LEGEND:



TEMPORARY SHORTENING LINK



PERMANENT LINK

D-

END COVER

PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5

TITLE: TERMINAL DETAIL
1721V LINE CONTROL PANEL TYPE CR70



E P E S O L P v t . L t d .
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWC // EBE /ENU 18 /D1308

SUT-07-05-18

DATE:27.01.2018 FOR APPROVAL

REV: 0

LEGEND:



TEMPORARY SHORTENING LINK



PERMANENT LINK

D-

END COVER

REMOTE DESTINATION	TERMINAL BLOCK	TERMINAL NO	TERMINAL STRIP X14			ITEM DESIGNATION	TERMINAL NO
			LINK	REFERENCE	TERMINAL NO		
D-				07/2B	1	S0	3
D-				07/2B	2	S0	1
D-				07/2D	3	SY	2
D-			●	15/3B	4		
D-			●	15/3C	5		
D-			●	15/3D	6		
D-			●	15/3E	7		
D-			●	15/3B	8		
D-			●	15/3C	9		
D-			●	15/3D	10		
D-			●	15/3E	11		
D-			●	15/4B	12		
D-			●	15/4C	13		
D-			●	15/4D	14		
D-			●	15/4E	15		
D-			●	15/4B	16		
D-			●	15/4C	17		
D-			●	15/4D	18		
D-			●	15/4E	19		
D-			●	15/5B	20		
D-			●	15/5C	21		
D-			●	15/5D	22		
D-			●	15/5E	23		
D-			●	15/5B	24		
D-			●	15/5C	25		
D-			●	15/5D	26		
D-			●	15/5E	27		
D-			●	15/6B	28		
D-			●	15/6C	29		
D-			●	15/6D	30		
D-			●	15/6E	31		
D-			●	15/6B	32		
D-			●	15/6C	33		
D-			●	15/6D	34		
D-			●	15/6E	35		



E P E S O L Pvt. Ltd
71-B Garden Block, New Garden Town, Lahore, Pakistan

TITLE: TERMINAL DETAIL
1720V LINE CONTROL PANEL TYPE CR30

DWC // EPE /ENCL 18 /P1308

SUT:08 OF 18

DATE:27.01.2018 FOR APPROVAL

REV: 0

APPROVED	CHECKED	DRAWN
NAH	ABA	MSC

PROJECT:
PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5



PROJECT:
PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5

TITLE: / OF 4 TERMINAL DETAIL
132kV LINE CONTROL PANEL TYPE CP30



E P E S O L P v t . L t d .

DWS II_EBE/ENH_12/2013

D

SII_EBDE/ENH-12/P1302

G#

OUT 20-05-12

3

LEGEND:



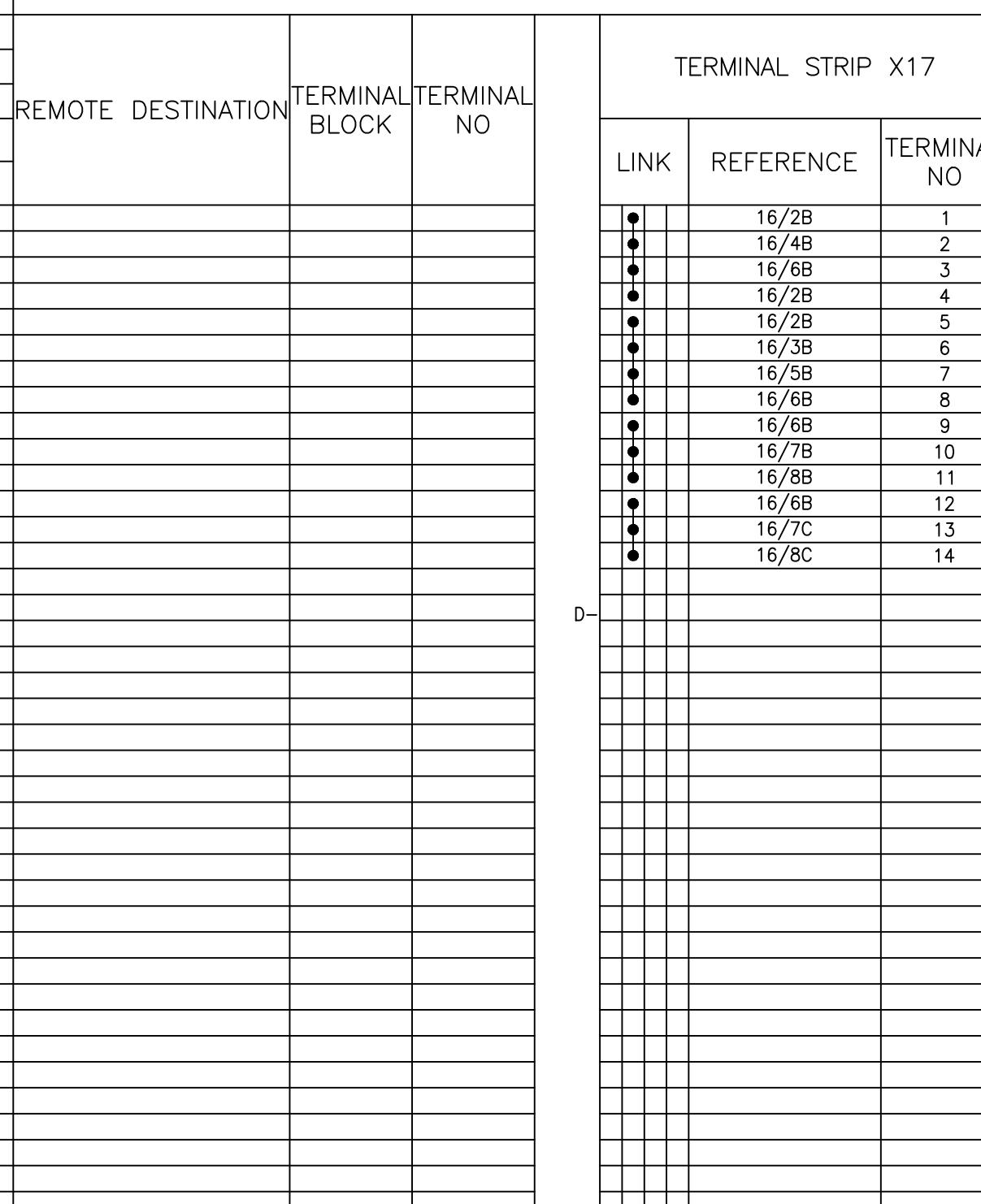
TEMPORARY SHORTENING LINK



PERMANENT LINK

D-

END COVER



F	APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY 132kV RELAY & CONTROL PANELS TYPE CR20, CR30, CR50, PR3 & PR50
	NAH	ABA	MSC	



PROJECT:
PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY
132kV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, PR3, & PR5

TITLE: /
DF TERMINAL DETAIL
M 132KV LINE CONTROL PANEL TYPE CR30



E P E S O L Pvt. Ltd.

Figure 1. A schematic diagram of the experimental setup.

DATE:27.01.2018 FOR

Page 1

REV: 0

LEGEND:



TEMPORARY SHORTENING LINK



PERMANENT LINK

D-

END COVER

TERMINAL STRIP X21			
LINK	REFERENCE	TERMINAL NO	
	05/5D	1	
	05/6D	2	
	05/7D	3	
	05/5D	4	
	05/6D	5	
	05/7D	6	
	05/5D	7	
	05/6D	8	
	05/8D	9	
	05/5D	10	
	05/7D	11	
	05/8D	12	
	05/3C	13	
	05/3C	14	
	05/4C	15	
	05/4C	16	
	05/5C	17	
	05/6C	18	
	05/7C	19	
	05/3C	20	
	05/4C	21	
	05/4C	22	
	05/5C	23	
	05/6C	24	
	05/7C	25	
	05/8C	26	
	SPARE	27	
	SPARE	28	
	SPARE	29	

1

TERMINATION B



E P E S O L Pvt. Ltd
71-B Garden Block, New Garden Town, Lahore, Pakistan

TITLE:	
/	
OF	
TERMINAL DETAIL	
ARMED FORCES OF THE UNITED STATES	

DWO // EPE /ENL 10 /P1300

SLT 1.1 QE 1.0

DATE:27.01.2018 FOR

REV: 0

4

APPROVED CHECKED DRAWN



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3, & RP5

TITLE:	
/	
OF	
TERMINAL DETAIL	
ARMED FORCES OF THE UNITED STATES	



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5


TITLE: / DF 4 132kV LINE CONTROL PANEL TERMINAL DETAIL TYPE CP30



E P E S O L Pvt. Ltd
71-B Garden Block, New Garden Town, Lahore, Pakistan

BWB // EDE /ENMU-12 /D132

DATE:27.01.2018 FOR

OUT 10 SEP 18

REV: 0



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132kV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5

TITLE: TERMINAL DETAIL
132kV LINE CONTROL PANEL TYPE CP30



E P E S O L P v t . L t d .

DWG# EPE/ENU-18/P1398 SHT:13 OF 18
DATE:27.01.2018 FOR REV: 0



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP5

TITLE: / OF 4 TERMINAL DETAIL
132kV LINE CONTROL PANEL TYPE CP30



E P E S O L Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

BWB-LL-EPB-1700-10-01470

DATE:27.01.2018 FOR

SMT 4.4.2E-16

REV: 0



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132kV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3, & RP5

TITLE: TERMINAL DETAIL
1721V LINE CONTROL PANEL TYPE CR70



E P E S O L P v t . L t d .

DWG# EPE/ENU-18/P1398 SHT:15 OF 18
DATE:27.01.2018 FOR REV: 0



E P E S O L Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1398	SHT:16 OF 18
DATE:27.01.2018	FOR
	REV: 0



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO,
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF
132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, PR3 & PR5


TITLE: TERMINAL DETAIL
132kV LINE CONTROL PANEL TYPE CR30



E P E S O L P v t . L t d .

DWG# EPE/ENU-18/P1398 SHT:17 OF 18
DATE:27.01.2018 FOR REV: 0



PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO
2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY
132kW RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & R

TITLE: / DF 4 132kV LINE CONTROL PANEL TYPE CP30



E P E S O L P v t . L t d .
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1398	SHT:18 OF 18
DATE:27.01.2018	FOR APPROVAL REV: 0