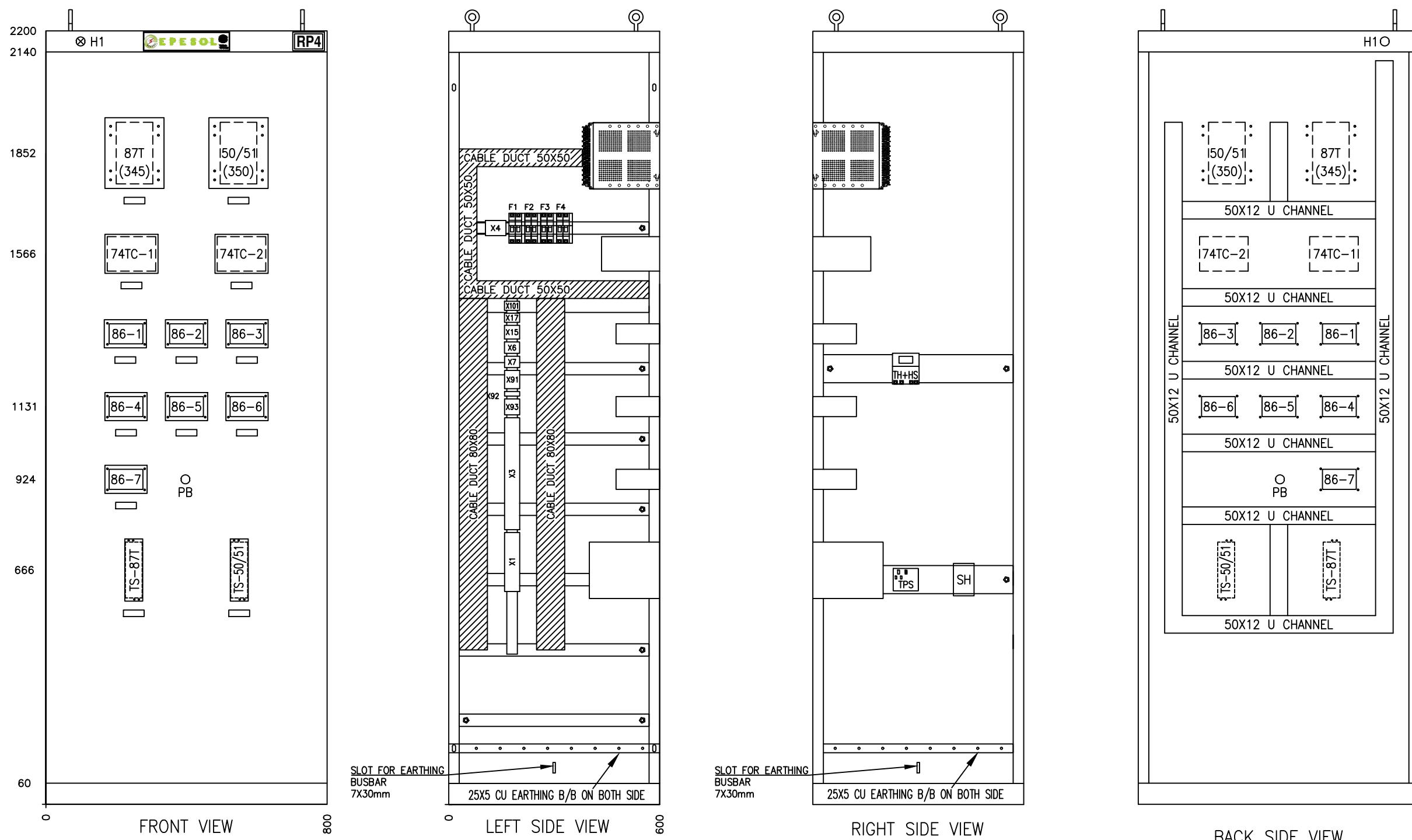


LAYOUT DRAWING OF 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4

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 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1407 DATE:27.01.2018	SHT: 01 OF 03 FOR APPROVAL
NAH	ABA	MSC					REV: 0

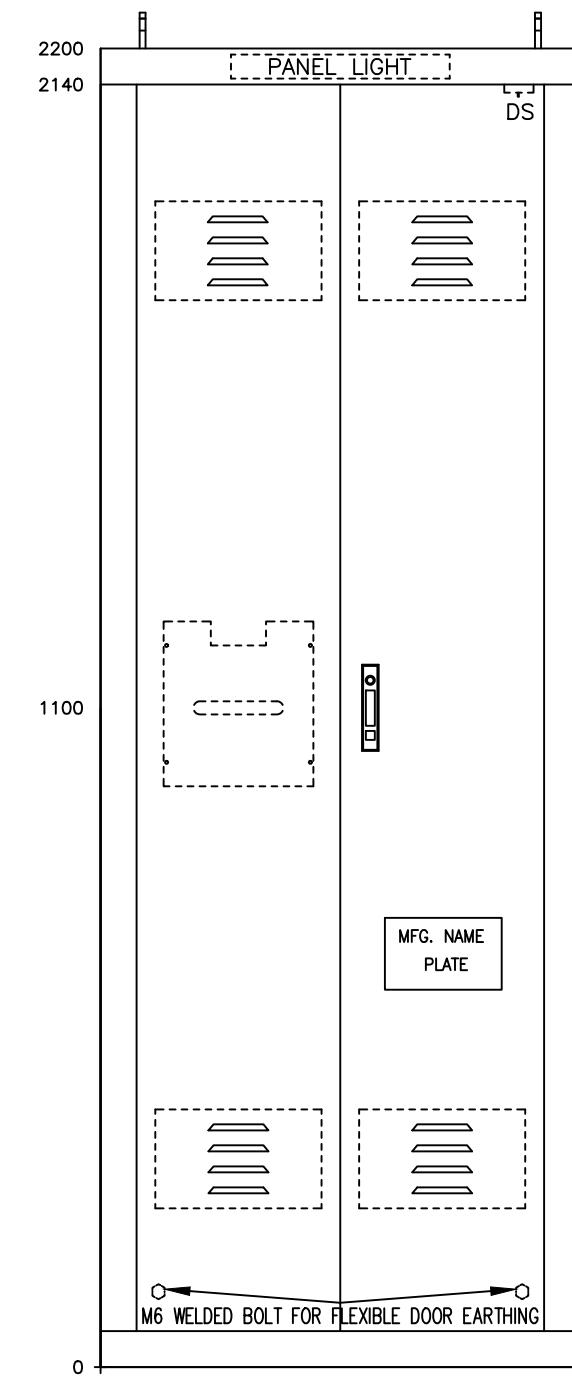


BACK SIDE VIEW
(WITH DOOR REMOVED)
FOR FIXING OF CABLE DUCT

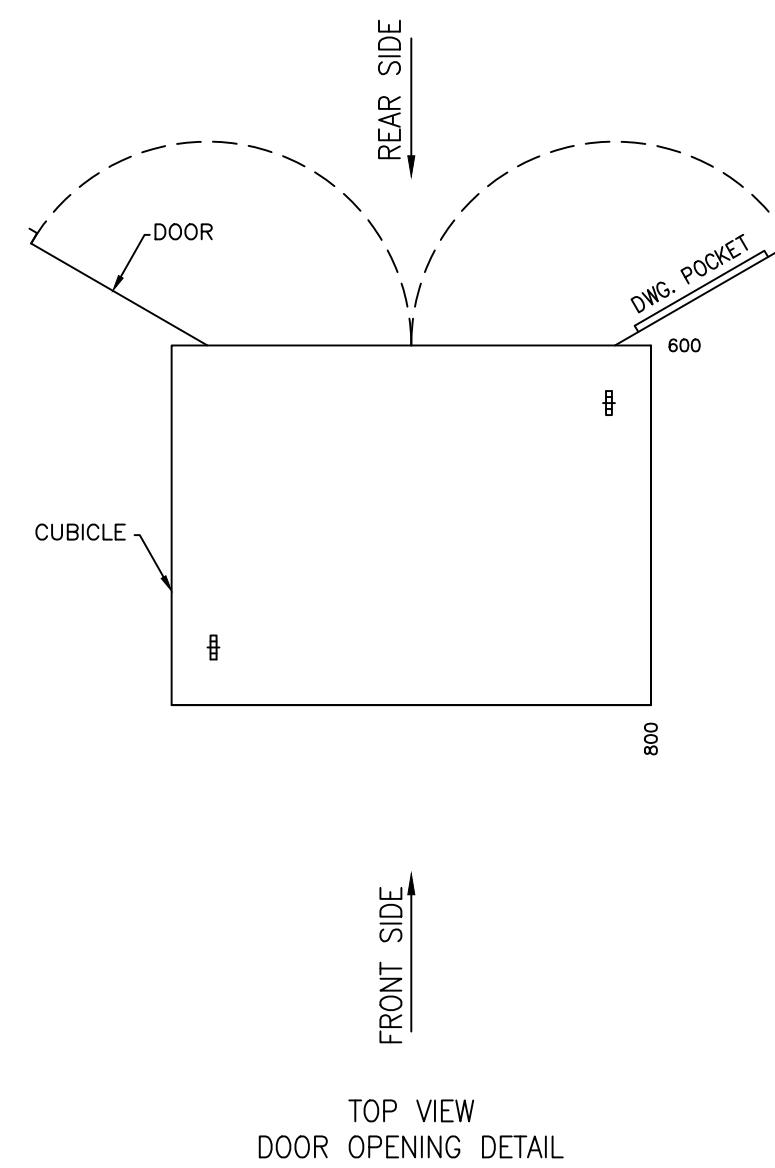
NOTES

1. RELAY PANEL: 800x600x2200 mm
2. FACE SHEET: 800x2200 mm
3. EARTHING STRIP 25x5 mm²
4. EARTHING STRAP 16mm²
5. COLOR: RAL7032
6. PROTECTION CLASS: IP51

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: LAYOUT DIAGRAM 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1407	SHT: 02 OF 03
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 27.01.2018	FOR APPROVAL



[:: PANEL LIGHT ::]



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: LAYOUT DIAGRAM 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1407	SHT: 03 OF 03
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
1	2	3	4	5	6	7

LIST OF APPARATUS

132/11kV TRANSFORMER PROTECTION PANEL

TYPE RP4

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 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1408	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 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 87T		TRANSFORMER DIFFERENTIAL PROTECTION RELAY FOR 2 WINDINGS POWER TRANSFORMER		1	345	GE	SPAIN	345-E-P5-G5-H-E-S-N-N-3E-D-N	17
	2 50/51		OVER CURRENT & EARTH FAULT PROTECTION RELAY		1	350	GE	SPAIN	350-E-P5-G5-H-E-E-N-N-3E-D-N	18
B	3 86-1, 86-2, 86-3, 86-4, 86-5, 86-6, 86-7		TRIP RELAY, LOCKOUT TYPE, ELECTRICAL & HAND RESET WITH 8 C/O CONTACTS, 110 VDC		7	BJ8RP	ARTECHE	SPAIN	BJ8RP-HB-110VDC	7,8
	4 TS-87T, TS-50/51		TEST BLOCK (14 FINGER)		2	saTECH-TSB14	ARTECHE	SPAIN	TSB14-11111AAABAAAB/111111111AAAB	20
	5 F1, F2		DC MCB, 2 POLE, 10A, WITH ONE C/O CONTACT, 10KA		2	EP100	GE	HUNGARY	EP102UCC10+(CAH1)	07
	6 F3, F4		AC MCB, 2 POLE, 10A, WITH ONE C/O CONTACT, 10KA		2	G60	GE	HUNGARY	G62C10+(CAH1)	15
c	7 74TC-1, 74TC-2		TRIP CIRCUIT SUPERVISION RELAY		2	TS101	E-LABS	PAKISTAN	TS101	19
	8 TH+HS		HUMIDSTAT & THERMOSTAT		1	ELH-220	E-LABS	PAKISTAN		15
	9 SH		SPACE HEATER		1	ELH-220	E-LABS	PAKISTAN		15
D	10 DS		DOOR SWITCH		1	YSP+YSMS	YONGSUNG	SOUTH KOREA	YSP3315GW-B+YSMS-C	15
	11 IL		CUBICLE LIGHTING, 5W, 260 VAC		1	YST8	YONGSUNG	SOUTH KOREA	YST8-30-5W	15
	12 TPS		240 VAC, 16A, THREE PIN SOCKET OUTLET		1		LEAR	CHINA		15
	13 H1		INDICATION LAMP RED		1	YSPL	YONGSUNG	SOUTH KOREA	YSPL2-DL12RW	08
	14 PB		RESET PUSH BUTTON		1	YSAP1	YONGSUNG	SOUTH KOREA	YSAP1240YDW	08
E	15 X1		DISCONNECTING TERMINAL BLOCK (SCREW TYPE) FOR CT WITH SHORTENING ARRANGEMENT		21	SCB-6	CABUR	ITALY		
	16 X3		TERMINAL BLOCKS FOR CONTROL FUNCTION		49	CBD-4	CABUR	ITALY		
	17 X6		TERMINAL BLOCKS FOR TRIP CIRCUIT-1		5	CBD-4	CABUR	ITALY		
	18 X7		TERMINAL BLOCKS FOR TRIP CIRCUIT-2		5	CBD-4	CABUR	ITALY		
F	19 X15		TERMINAL BLOCKS FOR RS485 COMMUNICATION		6	CBD-4	CABUR	ITALY		
	20 X17		TERMINAL BLOCKS FOR AC SUPPLY DISTRIBUTION		4	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 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1408		SHT: 02 OF 03		
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	21	X17	TERMINAL BLOCKS FOR AC SUPPLY DISTRIBUTION		4	CBD-4	CABUR	ITALY		A
	22	X91	TERMINAL BLOCKS FOR ANNUNCIATOR ALARMS		8	CBD-4	CABUR	ITALY		
	23	X92	TERMINAL BLOCKS FOR ANNUNCIATOR ALARMS		4	CBD-4	CABUR	ITALY		
B	24	X93	TERMINAL BLOCKS FOR ANNUNCIATION ALARMS		8	CBD-4	CABUR	ITALY		B
	25	X101	TERMINAL BLOCKS FOR DC SUPPLY DISTRIBUTION		4	CBD-4	CABUR	ITALY		
	26	X4	SPARE TERMINAL BLOCKS		8	CBD-4	CABUR	ITALY		
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 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan		DWG# EPE/ENU-18/P1408	SHT: 03 OF 03	
NAH	ABA	MSC						DATE:27.01.2018	FOR APPROVAL	REV: 0

SCHEMATIC DIAGRAMS

132/11kV TRANSFORMER PROTECTION PANEL

TYPE RP4

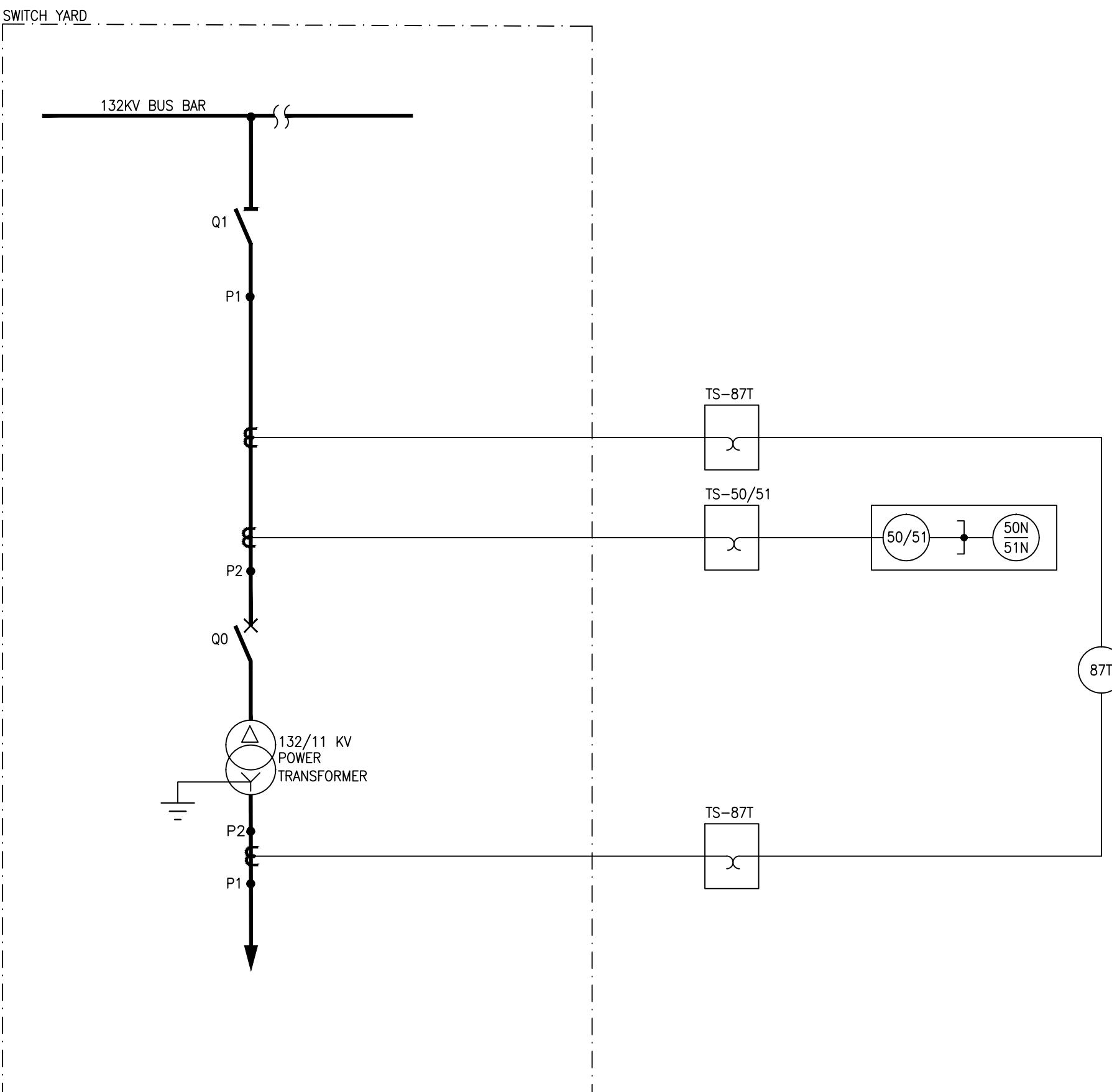
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132kV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: COVER SHEET 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 01 OF 20
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:27.01.2018	FOR APPROVAL REV: 0

DESCRIPTION	SHEET NO
COVER SHEET	01
LIST OF CONTENTS	02
LIST OF SYMBOLS	03
SINGLE LINE DIAGRAM	04
AC SCHEMATIC DIAGRAM	05
AC SCHEMATIC DIAGRAM	06
LOCKOUT RELAY INITIATION	07
LOCKOUT RELAY INITIATION	08
HV CB TRIP CIRCUIT-1	09
HV CB TRIP CIRCUIT-2	10
HV CB CLOSE BLOCK & LV CB TRIP	11
PROTECTION ALARMS	12
PROTECTION ALARMS	13
87-T & 50/51 SPARE IOs	14

DESCRIPTION	SHEET NO
AC SUPPLY DISTRIBUTION	15
87T RELAY TYPE 345 DETAILS	16
50/51 RELAY TYPE 350 DETAILS	17
TRIP CIRCUIT SUPERVISION RELAY TYPE TS101 DETAILS	18
TEST BLOCK TYPE TSB14 DETAILS	19

LIST OF SYMBOLS

	HV DISCONNECTOR		EQUIPMENT WITHIN PANEL
	HV CIRCUIT BREAKER		INDEPENDENT PANEL
	CURRENT TRANSFORMER		INDEPENDENT PANEL
	132/11 KV POWER TRANSFORMER	87T	TRANSFORMER DIFFERENTIAL PROTECTION RELAY
	RELAY PANEL TERMINAL BLOCK	50/51	OVER CURRENT & EARTH FAULT PROTECTION RELAY
	CONTROL PANEL TERMINAL BLOCK	TS	TEST BLOCK
	EARTH CONNECTION	86	LOCKOUT RELAY
	TEST BLOCK TERMINAL	74TC	TRIP CIRCUIT SUPERVISION RELAY
	PUSH BUTTON		DISCONNECTING TERMINAL BLOCK (SCREW TYPE) WITH SLIDING LINK, FOR CT CIRCUIT WITH SHORTENING ARRANGEMENT
	NORMALLY CLOSED CONTACT	X	TERMINAL BLOCK
	NORMALLY OPEN CONTACT		
	CHANGE OVER CONTACT		
	MINIATURE CIRCUIT BREAKER		
	INDICATING BULB/LED/CUBICLE LIGHT		
	220V SOCKET		
	SPACE HEATER		
	DIODE		
	COIL		

NOTES:

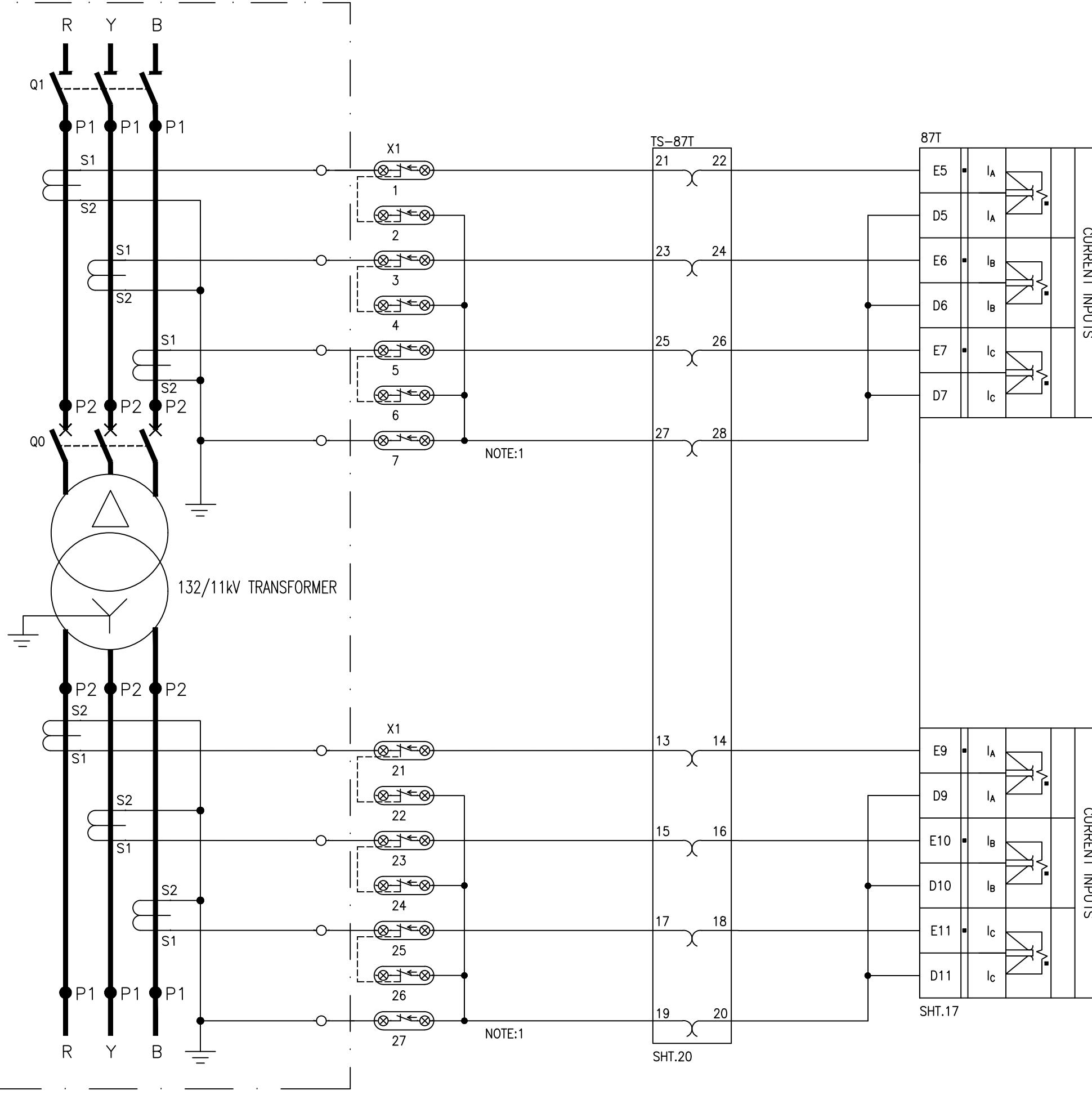
NOTE

THE SWITCH YARD PART IS INCLUDED FOR
CONCEPTUAL UNDERSTANDING OF AC SCHEME ONLY.

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 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 04 OF 20	
NAH	ABA	MSC	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan			DATE:27.01.2018	FOR APPROVAL
						REV: 0	

NOTE:

1. ALL CT WIRING SHALL BE OF 4mm² SIZE.
2. THE SWITCH YARD PART IS INCLUDED FOR CONCEPTUAL UNDERSTANDING OF AC SCHEME ONLY.



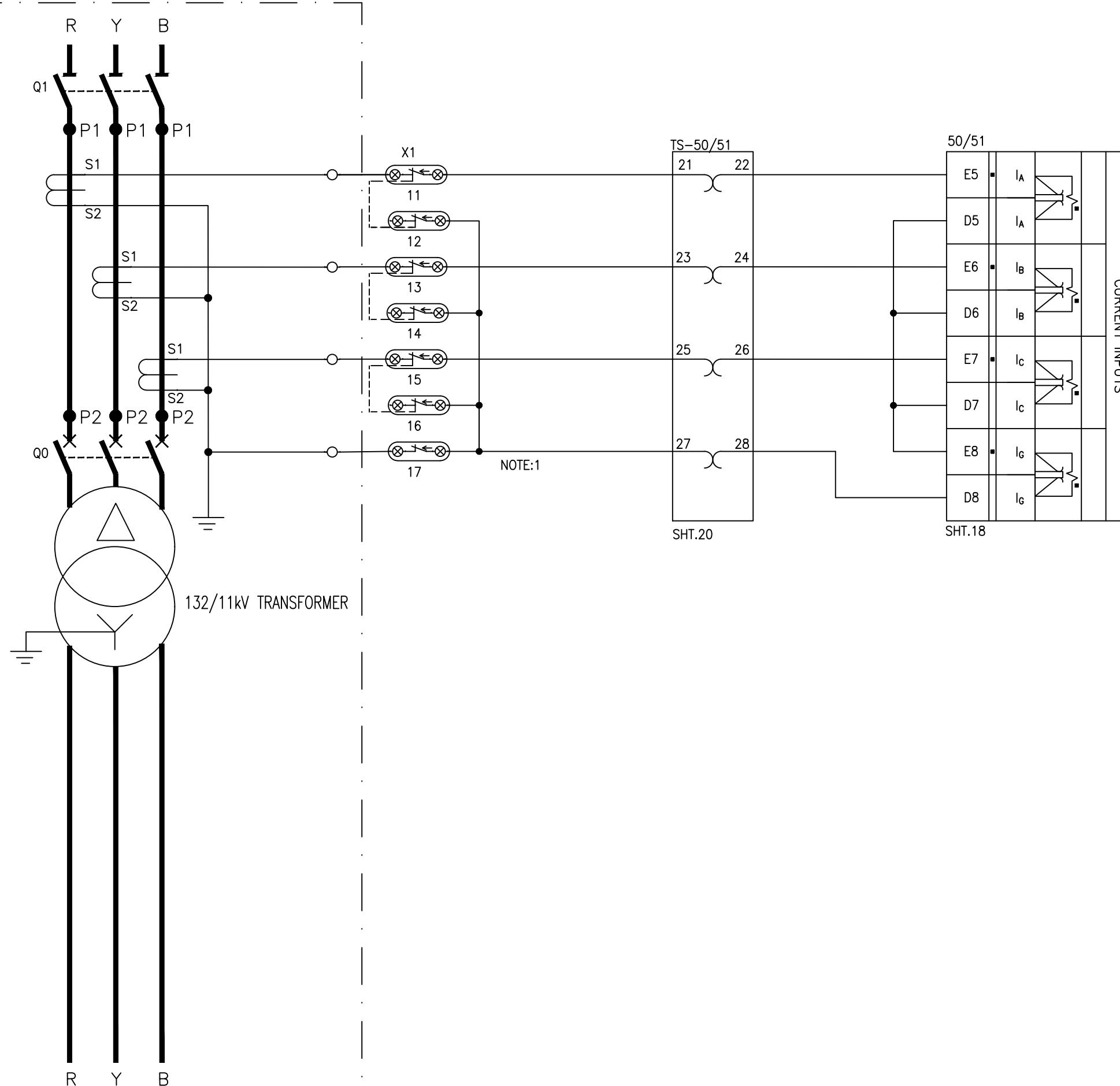
LEGEND

DES:	DESCRIPTION	TYPE	MAKE
TS-87T	TEST SWITCH	TSB14	ARTECHE
87T	TRANSFORMER DIFFERENTIAL RELAY	345	GE

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: AC SCHEMATIC DIAGRAM 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 05 OF 20
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:27.01.2018	FOR APPROVAL

NOTE:

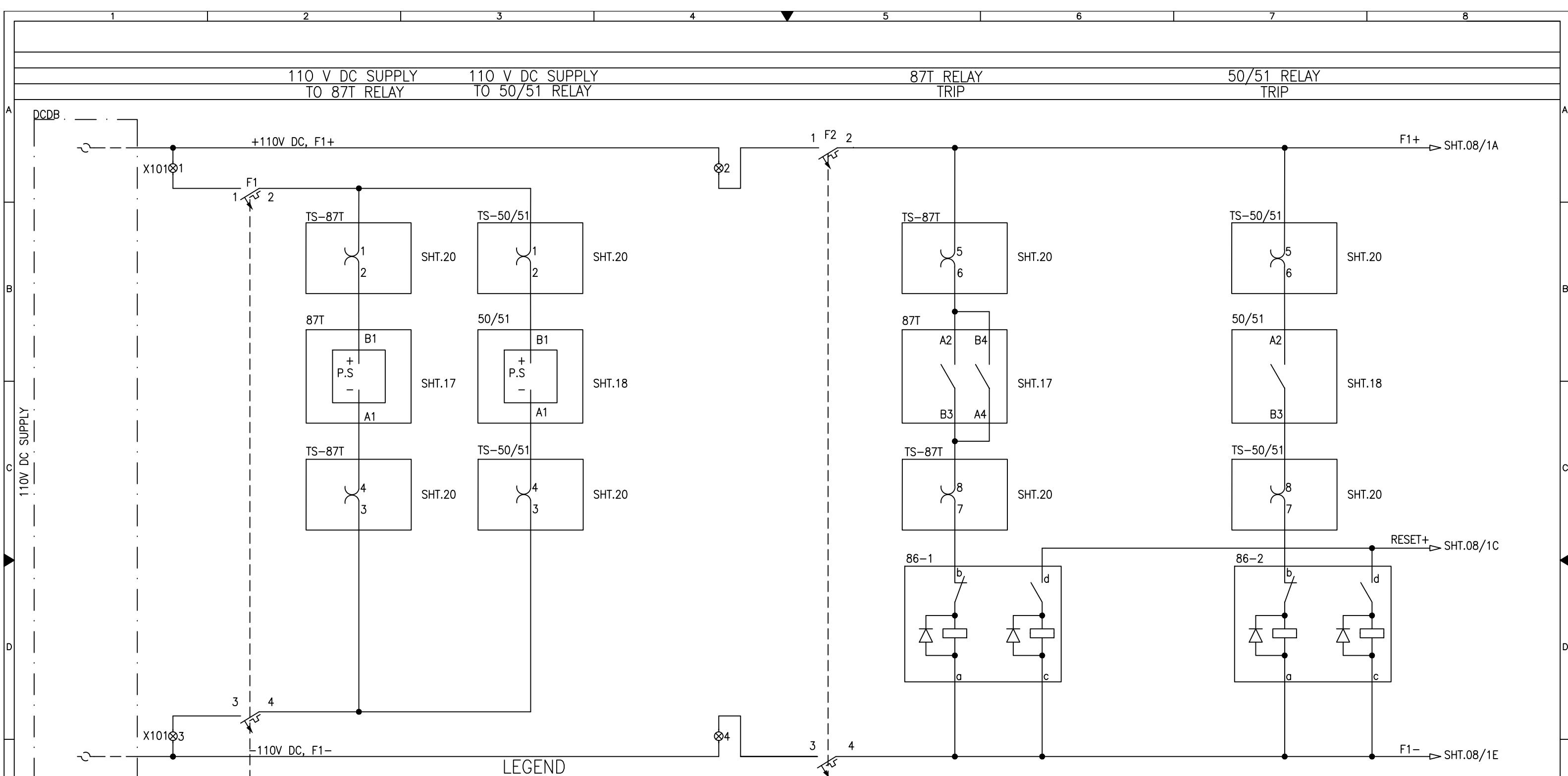
1. ALL CT WIRING SHALL BE OF 4mm² SIZE.
2. THE SWITCH YARD PART IS INCLUDED FOR CONCEPTUAL UNDERSTANDING OF AC SCHEME ONLY.



LEGEND

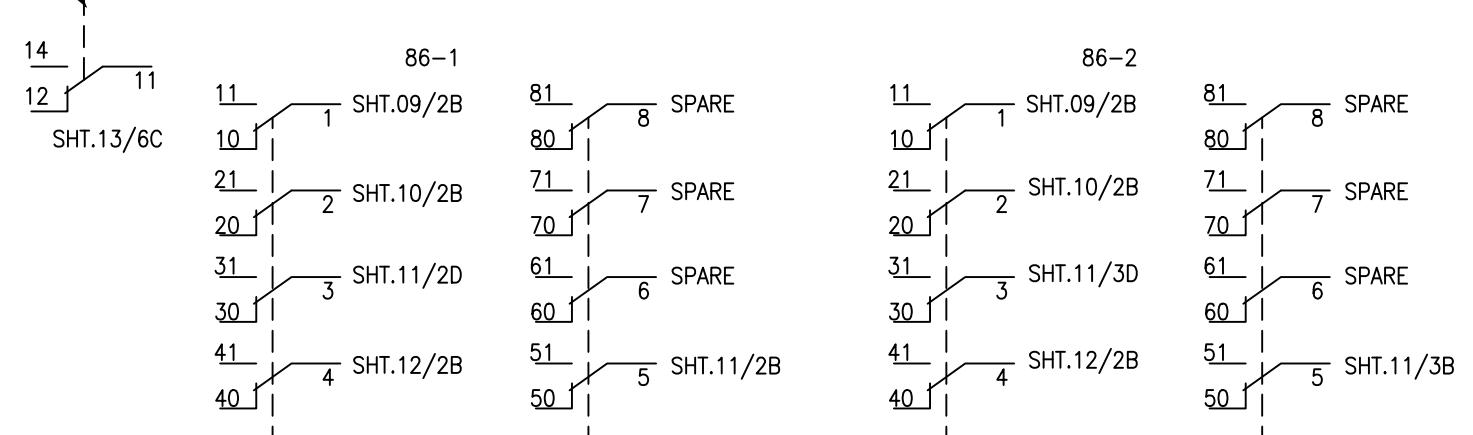
DES:	DESCRIPTION	TYPE	MAKE
TS-50/51	TEST SWITCH	TSB14	ARTECHE
50/51	OC/EF RELAY	350	GE

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: AC SCHEMATIC DIAGRAM 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 06 OF 20
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:27.01.2018	FOR APPROVAL

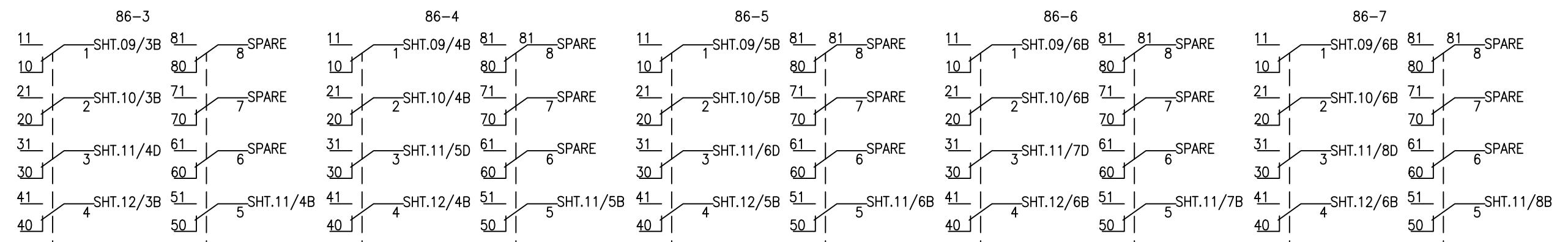
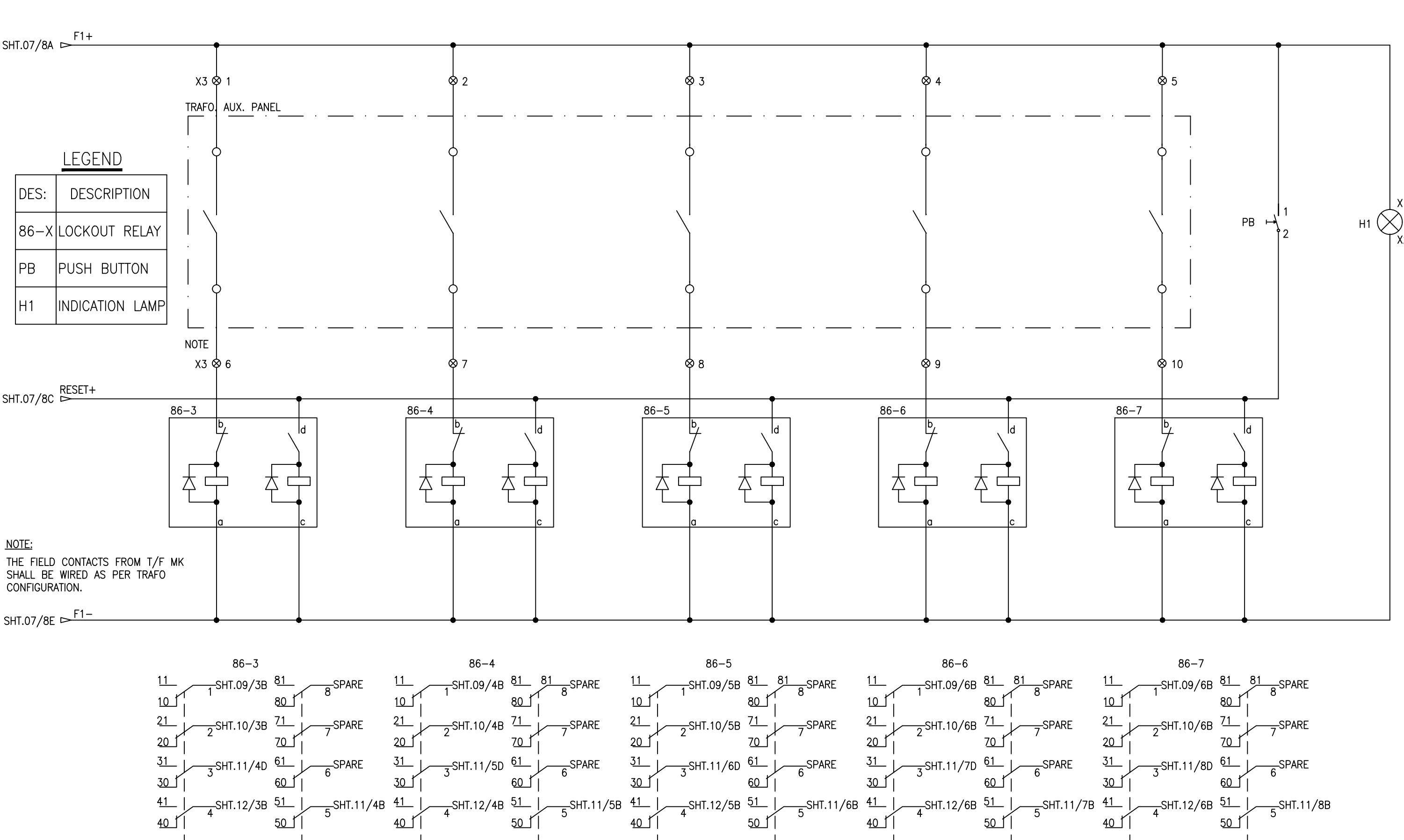


LEGEND

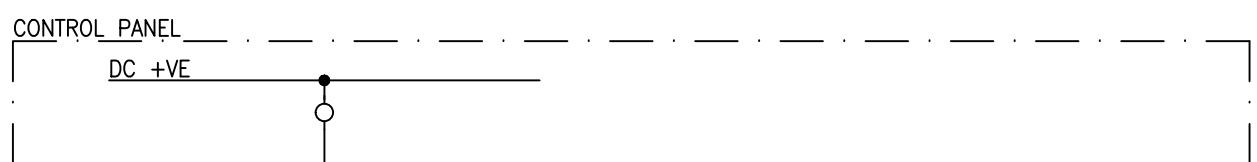
DES:	DESCRIPTION	TYPE	MAKE
F1	DC MCB 2P	EP100	GE
TS-X	TEST BLOCK	TSB14	ARTECHE
87T	TRANSFORMER DIFFERENTIAL RELAY	345	GE
50/51	OC/EF RELAY	350	GE
86-X	LOCKOUT RELAY	BJ8RP	ARTECHE



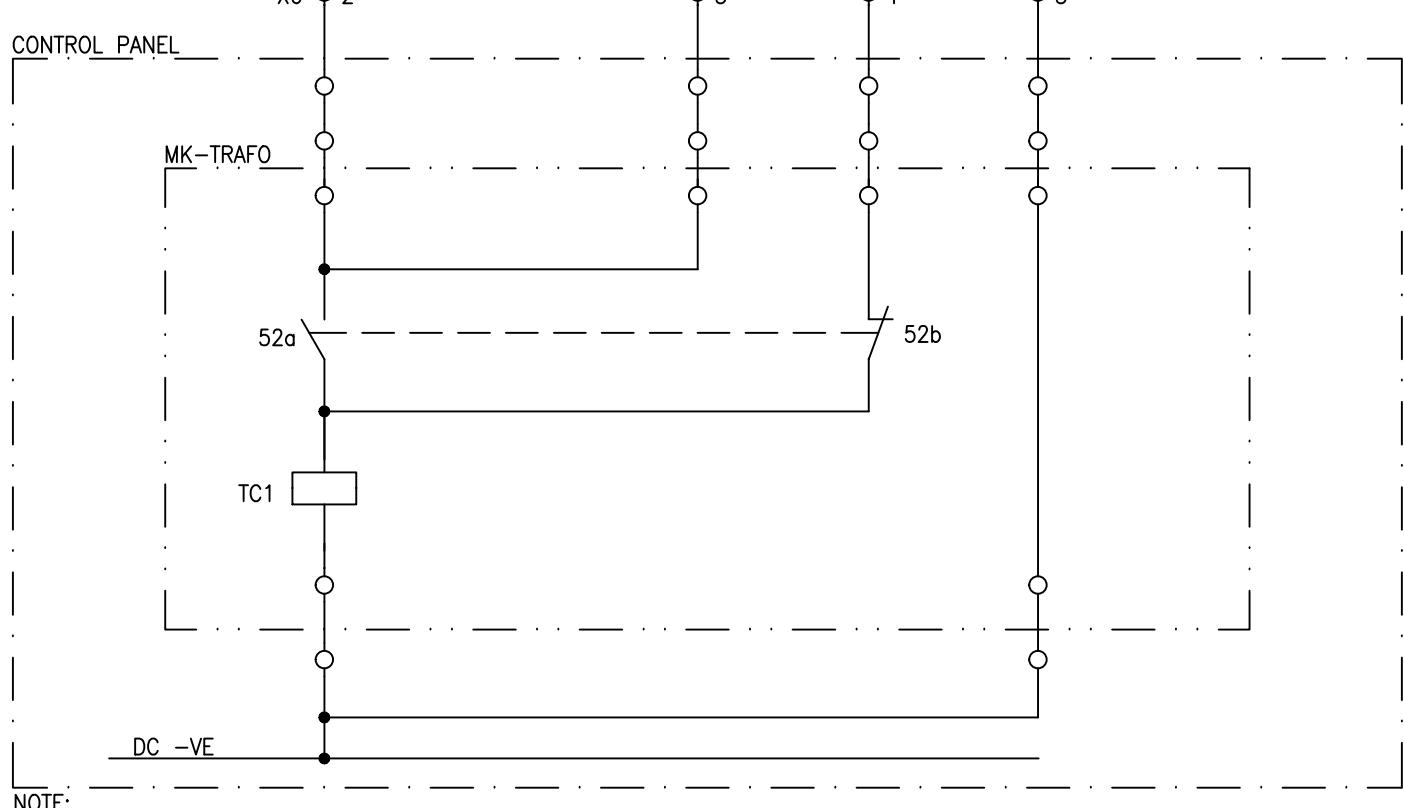
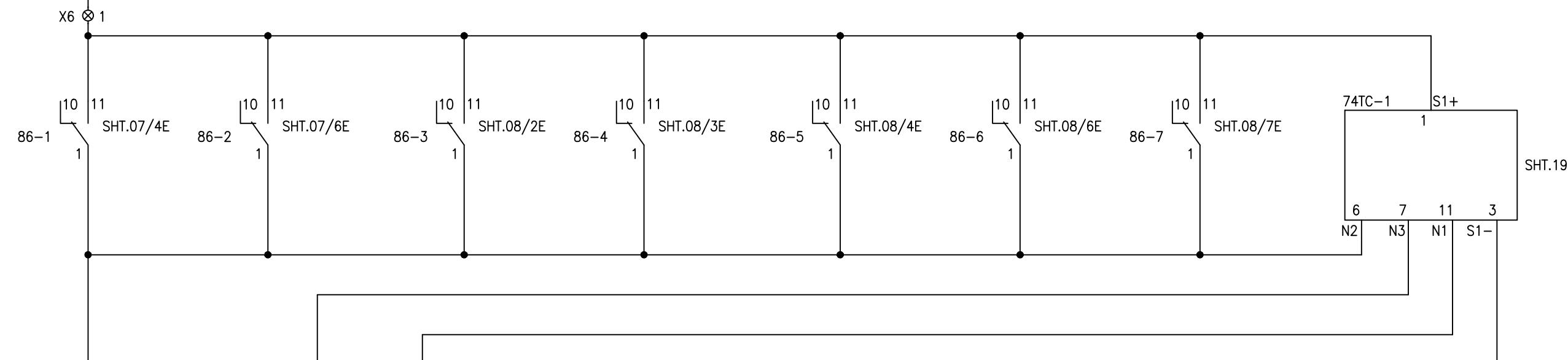
TRANSFORMER MECHANICAL PROTECTION

MAIN BUCHHOLZ
TRIPTAP CHANGER BUCHHOLZ
TRIPOIL TEMP.
TRIPWINDING TEMP.
TRIPPRESSURE RELIEF
VALVE TRIPPUSH BUTTON
FOR LOCKOUT
RELAY RESETINDICATION
LAMP
FOR DC HEALTHY

87T RELAY	50/51 RELAY	T/F MAIN	T/F TAP CHANGER	T/F OIL TEMP.	T/F WINDING	T/F PRESSURE RELIEF	TRIP CIRCUIT-1
TRIP	TRIP	BUCHHOLZ TRIP	BUCHHOLZ TRIP	TRIP	TEMP. TRIP	VALUE TRIP	SUPERVISION RELAY

**NOTE:**

CONTROL PANEL & MK CONNECTIONS ARE SHOWN FOR THE CONCEPTUAL UNDERSTANDING OF THE TRIP CIRCUIT SUPERVISION SCHEME.

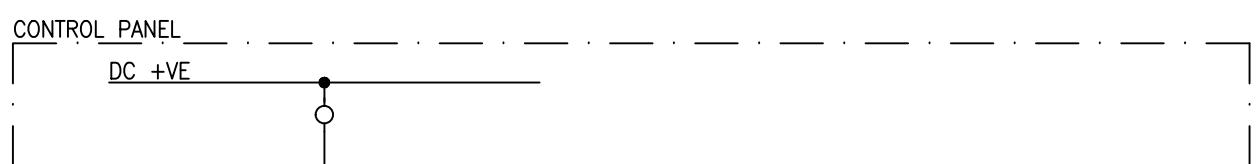


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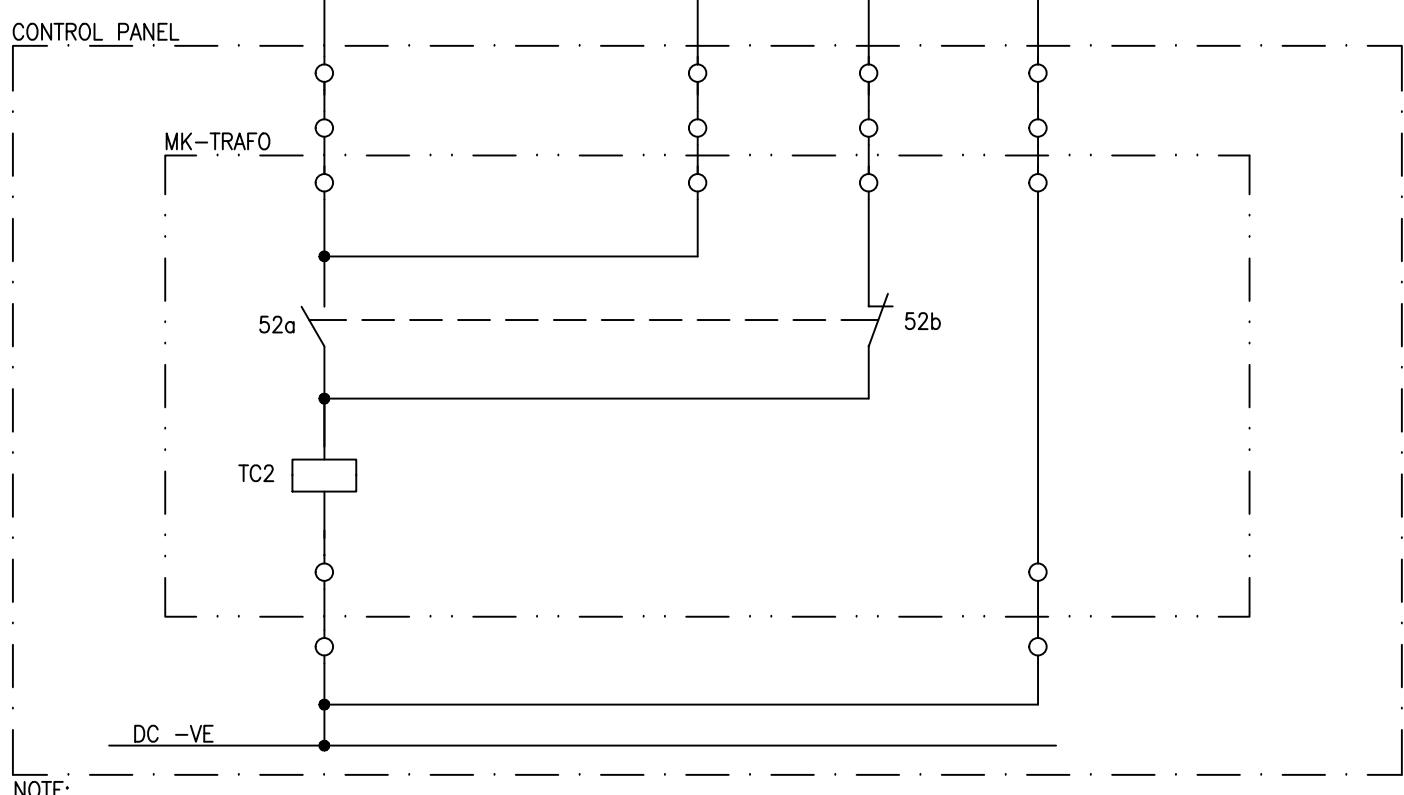
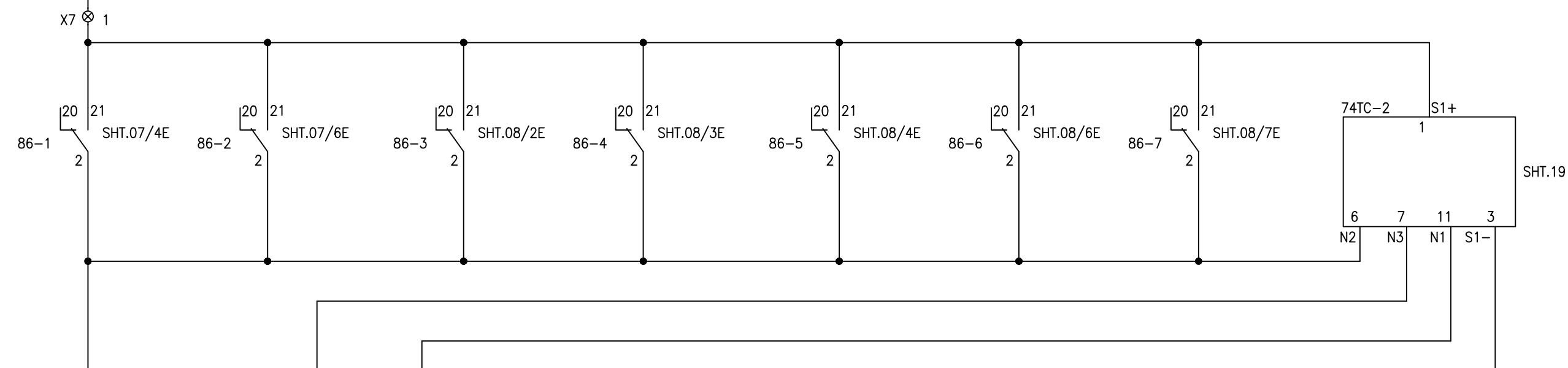
LEGEND

DES:	DESCRIPTION	TYPE	MAKE
86-X	LOCKOUT RELAY	BJ8RP	ARTECHE
74TC-1	TRIP CIRCUIT SUPERVISION RELAY	TS101	ELABS

87T RELAY TRIP	50/51 RELAY TRIP	T/F MAIN BUCHHOLZ TRIP	T/F TAP CHANGER BUCHHOLZ TRIP	T/F OIL TEMP. TRIP	T/F WINDING TEMP. TRIP	T/F PRESSURE RELIEF VALUE TRIP	TRIP CIRCUIT-2 SUPERVISION RELAY
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**NOTE:**

CONTROL PANEL & MK CONNECTIONS ARE SHOWN FOR THE CONCEPTUAL UNDERSTANDING OF THE TRIP CIRCUIT SUPERVISION SCHEME.



NOTE:

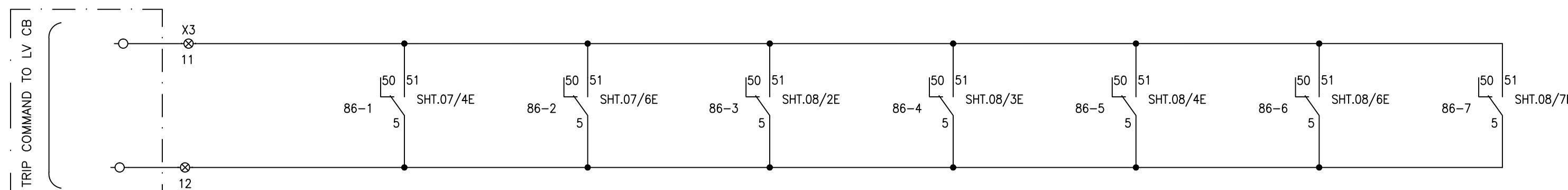
LEGEND

DES:	DESCRIPTION	TYPE	MAKE
86-X	LOCKOUT RELAY	BJ8RP	ARTECHE
74TC-2	TRIP CIRCUIT SUPERVISION RELAY	TS101	ELABS

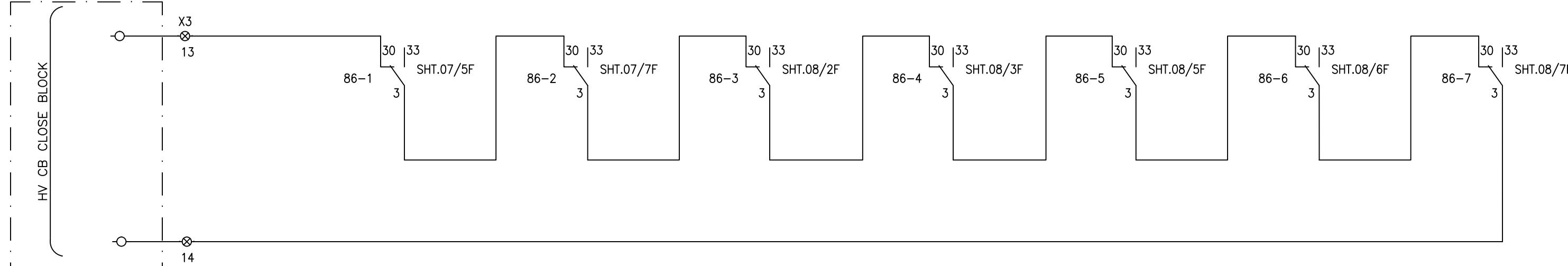
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: HV CB TRIP CIRCUIT-2 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 10 OF 20
NAH	ABA	MSC		EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 27.01.2018	FOR APPROVAL REV: 0

87T RELAY
TRIP50/51 RELAY
TRIPT/F MAIN
BUCHHOLZ TRIPT/F TAP CHANGER
BUCHHOLZ TRIPT/F OIL TEMP.
TRIPT/F WINDING
TEMP. TRIPT/F PRESSURE RELIEF
VALUE TRIP

11KV SWITCHGEAR PANEL



CONTROL PANEL

LEGEND

DES:	DESCRIPTION	TYPE	MAKE
86-X	LOCKOUT RELAY	BJ8RP	ARTECHE

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: HV CB CLOSE BLOCK,
LV CB TRIP & CB TRIP ALARM
132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4



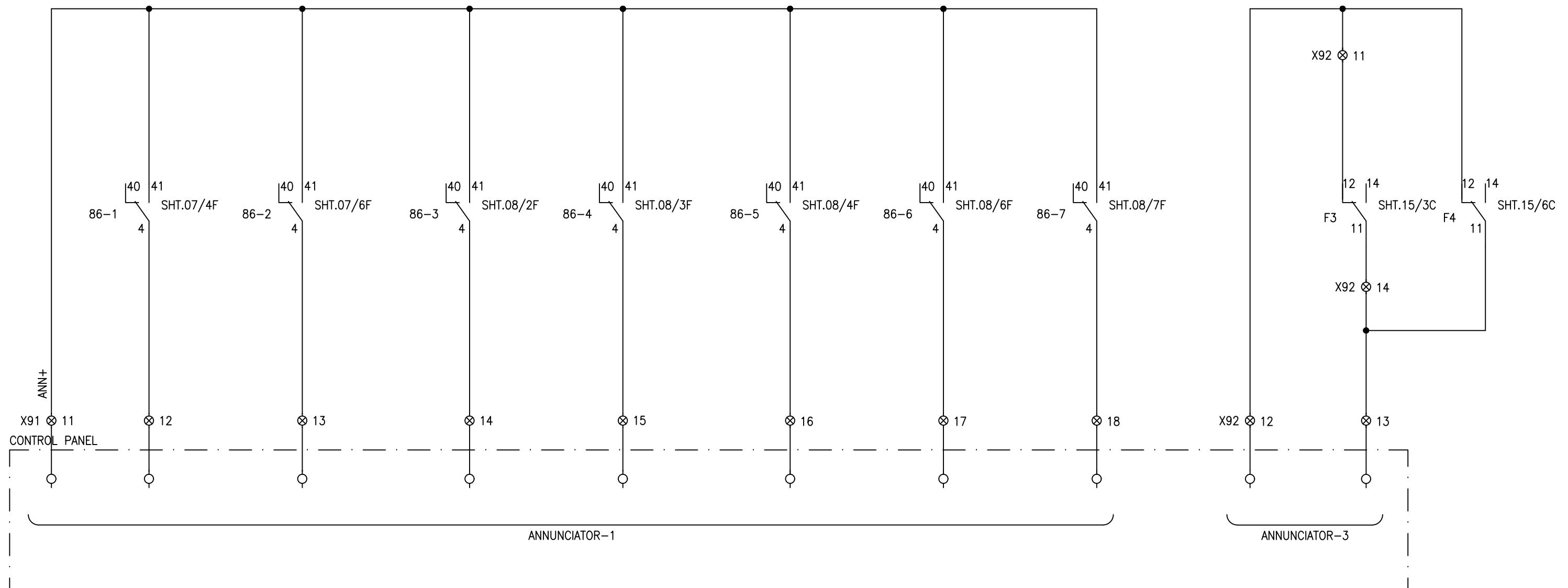
DWG# EPE/ENU-18/P1409 SHT: 11 OF 20
DATE: 27.01.2018 FOR APPROVAL REV: 0

87T RELAY 50/51 RELAY T/F MAIN T/F TAP CHANGER T/F OIL TEMP. T/F WINDING T/F PRESSURE RELIEF

TRIP TRIP BUCHHOLZ TRIP BUCHHOLZ TRIP TRIP TEMP. TRIP VALVE TRIP AC SUPPLY FAIL

A

A



ANNUNCIATOR-1

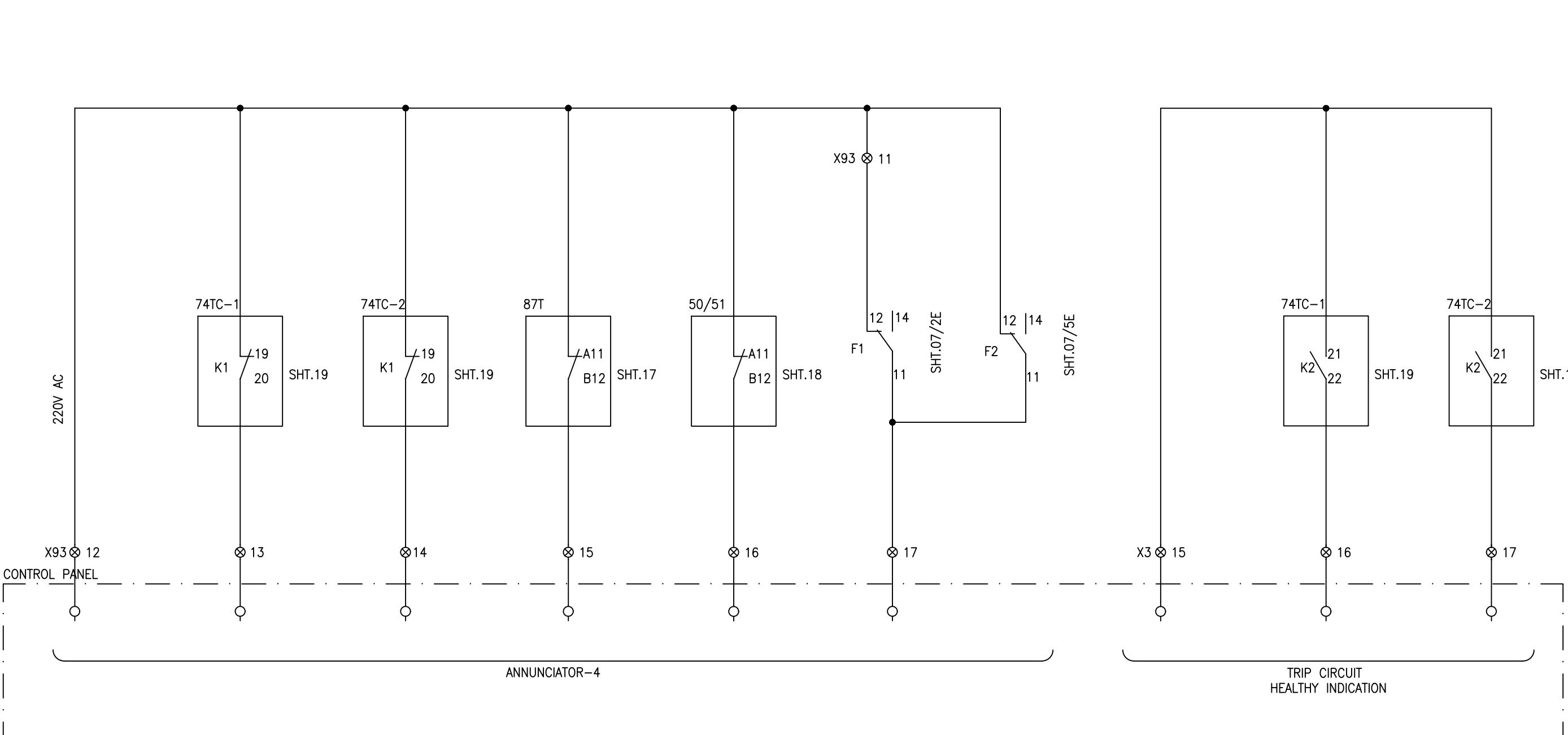
ANNUNCIATOR-3

LEGEND

DES:	DESCRIPTION	TYPE	MAKE
86-X	LOCKOUT RELAY	BJ8RP	ARTECHE
F1, F2	AC MCB 2P	G60	GE

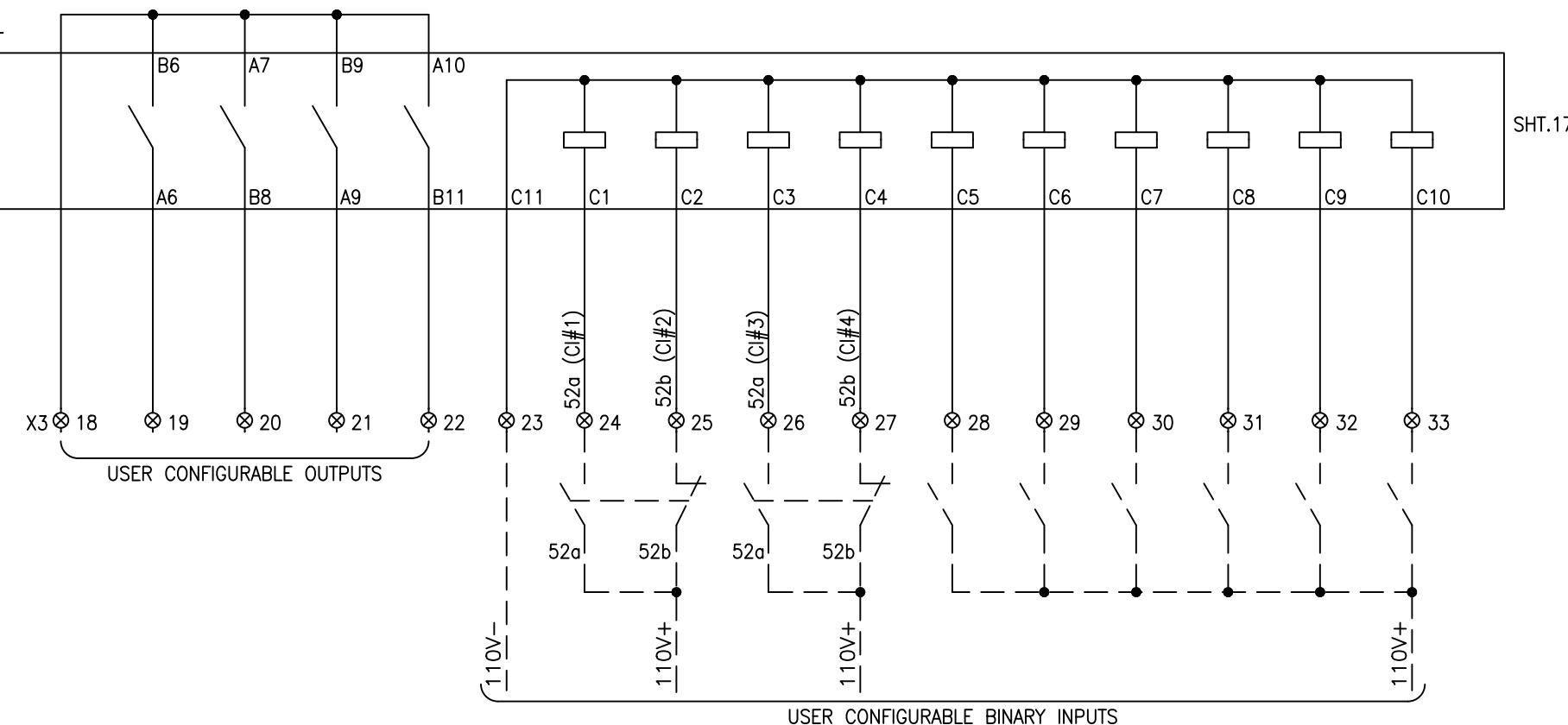
APPROVED	CHECKED	DRAWN	PROJECT: PO# 126/CE. (DEV.) PMU/FESCO/T-67/GSC & G-SO/ 2016-17/3816-20 DATED 12.01.2018 FOR THE SUPPLY OF 132KV RELAY & CONTROL PANELS TYPE CP20, CP30, CP50, RP3 & RP4	TITLE: PROTECTION ALARMS 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 12 OF 20
NAH	ABA	MSC		EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 27.01.2018	FOR APPROVAL REV: 0

TRIP CIRCUIT-1	TRIP CIRCUIT-2	87T RELAY	50/51 RELAY	CONTROL RELAY	RELAY	TRIP CIRCUIT-1	TRIP CIRCUIT-2
FAULTY	FAULTY	FAULTY	FAULTY	DC SUPPLY	DC SUPPLY	HEALTHY	HEALTHY
				FAULTY	FAULTY		

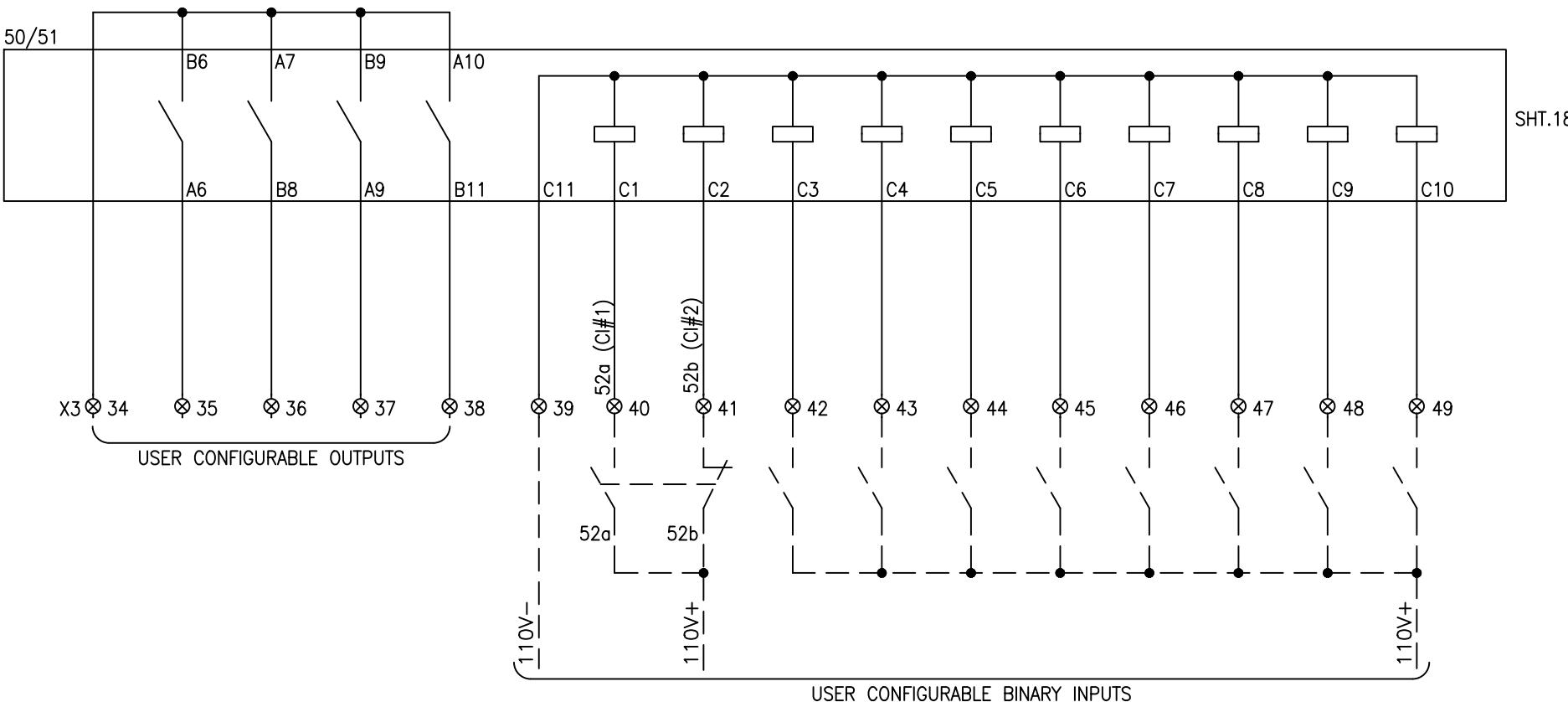
LEGEND

DES:	DESCRIPTION	TYPE	MAKE
74TC-X	TRIP CCT. SUP. RELAY	TS101	ELABS
87T	TRANSFORMER DIFFERENTIAL RELAY	345	GE
50/51	OC/EF RELAY	350	GE
F1, F2	DC MCB 2P	EP100	GE

87T RELAY SPARE BINARY INPUTS & OUTPUTS
USER CONFIGURABLE

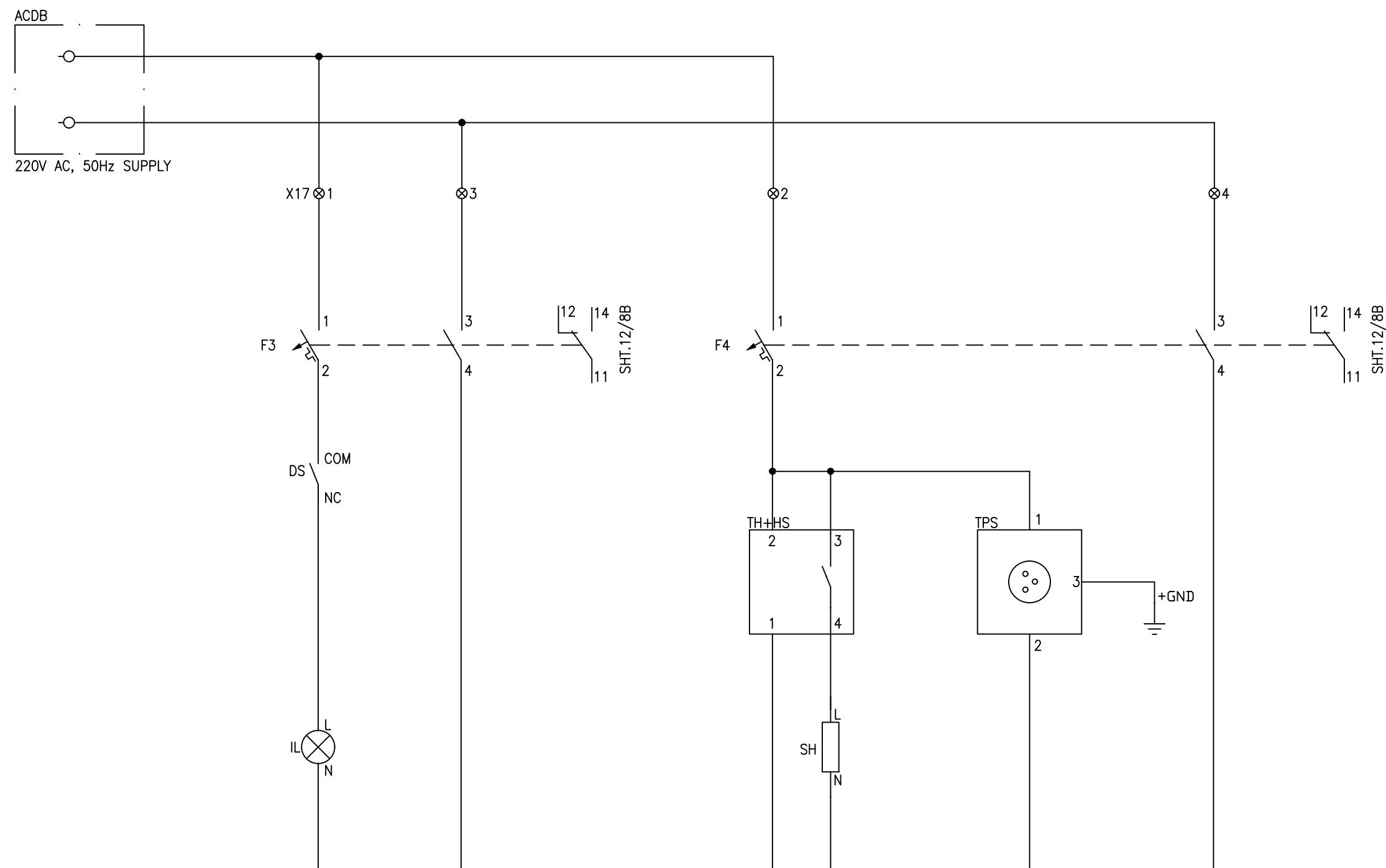


50/51 RELAY SPARE BINARY INPUTS & OUTPUTS
USER CONFIGURABLE



LEGEND

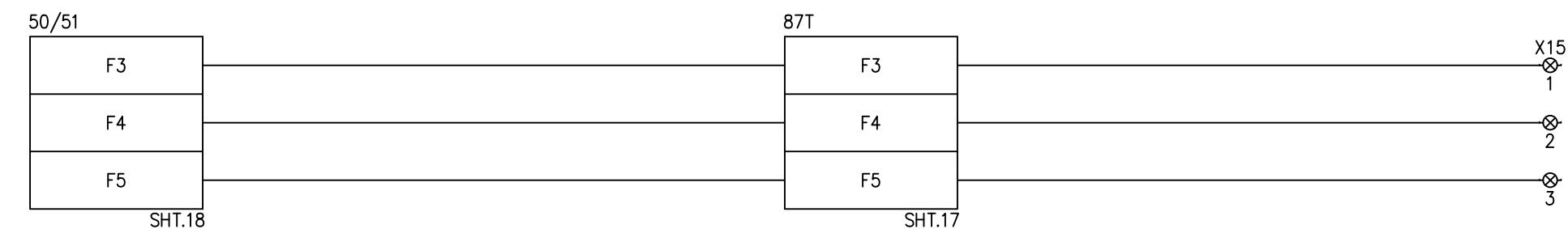
DES:	DESCRIPTION	TYPE	MAKE
87T	TRANSFORMER DIFFERENTIAL RELAY	345	GE
50/51	OC/EF RELAY	350	GE

DOOR SWITCH &
CUBICLE LIGHTAC SUPPLY DISTRIBUTION
SPACE HEATER
THERMOSTAT
THREE
PIN SOCKETLEGEND

DES:	DESCRIPTION	TYPE	MAKE
TPS	THREE PIN SOCKET	-	LEAR
SH	SPACE HEATER	ELH220	E-LABS
TH+HS	THERMOSTAT	ELH220	E-LABS
IL	CUBICLE LIGHT	YST8	YONGSUNG
DS	DOOR SWITCH	YSP+YSMS	YONGSUNG
F3, F4	AC MCB 2P	G60	GE

50/51 RSJ485

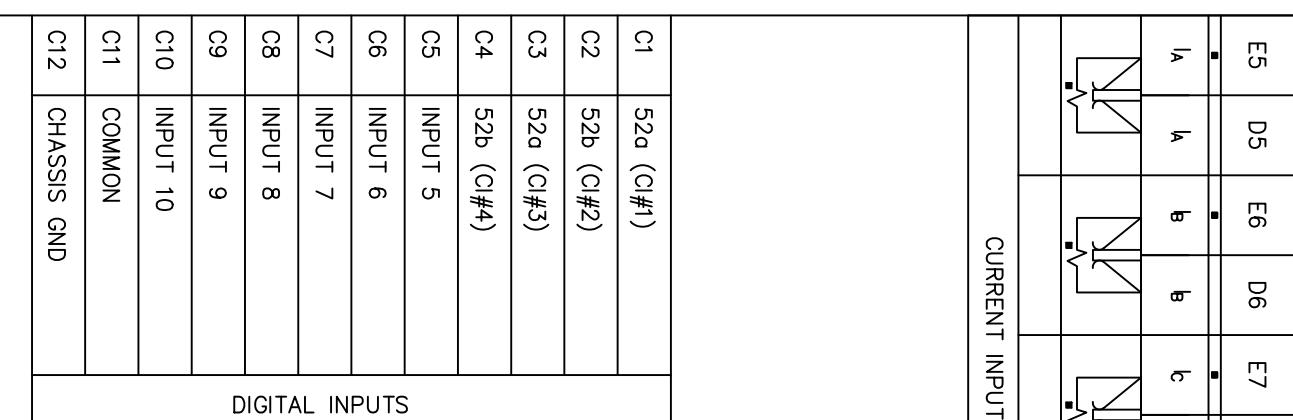
87T RSJ485

LEGEND

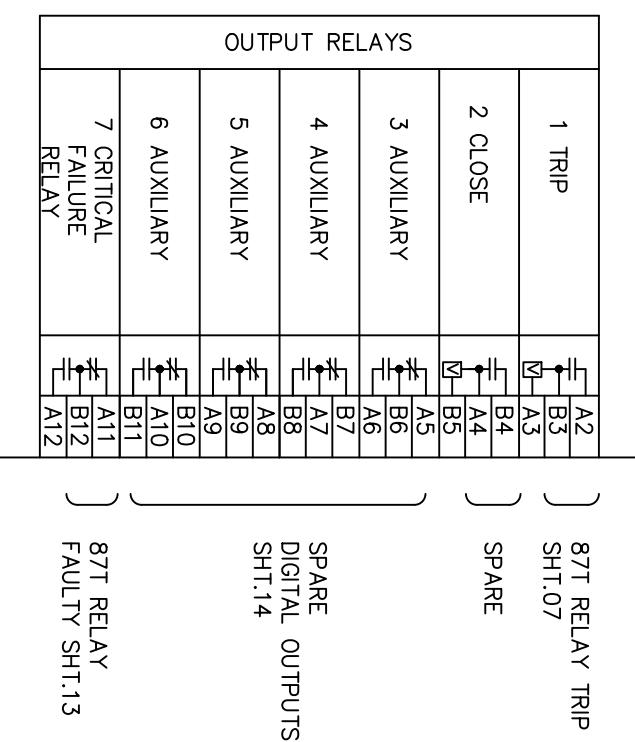
DES:	DESCRIPTION	TYPE	MAKE
50/51	O/C & E/F RELAY	350	GE
87T	TRAFO. DIFF. RELAY	345	GE

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 132/11kV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 16 OF 20
NAH	ABA	MSC		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 27.01.2018	FOR APPROVAL REV: 0

SPARE
DIGITAL INPUTS SHT.14

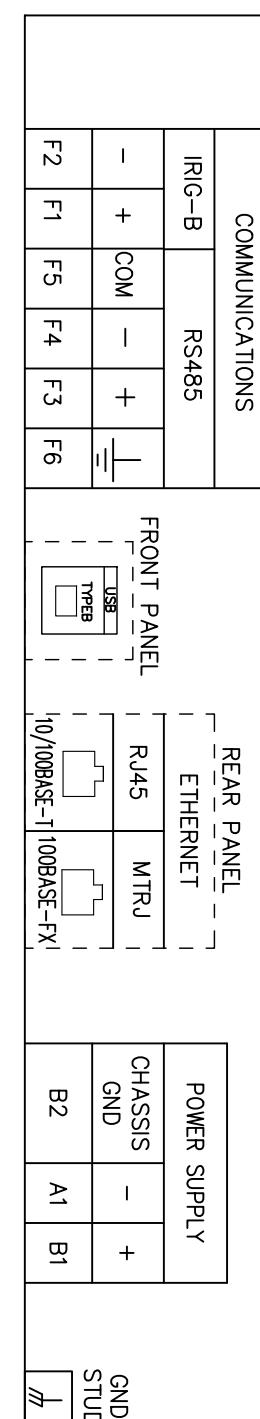


GE 345
TRANSFORMER PROTECTION SYSTEM



TRANSFORMER DIFFERENTIAL PROTECTION RELAY TYPE 345
345-E-P5-G5-H-E-S-N-N-3E-D-N

RS485 COMMUNICATION
SHT.16



POWER SUPPLY
SHT.07

TITLE:
87T RELAY TYPE 345 DETAILS
132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4



EPESOL Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1409
SHT: 17 OF 20

DATE: 27.01.2018 FOR APPROVAL
REV: 0

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: 87T RELAY TYPE 345 DETAILS 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4				DWG# EPE/ENU-18/P1409 SHT: 17 OF 20
NAH	ABA	MSC									DATE: 27.01.2018 FOR APPROVAL REV: 0

SPARE
DIGITAL INPUTS SHT.14

DIGITAL INPUTS							
C1	52a (C1#1)						
C2	52b (C1#2)						
C3	INPUT 3						
C4	INPUT 4						
C5	INPUT 5						
C6	INPUT 6						
C7	INPUT 7						
C8	INPUT 8						
C9	INPUT 9						
C10	INPUT 10						
C11	COMMON						
C12	CHASSIS GND						

GE 350
FEEDER PROTECTION SYSTEM

OUTPUT RELAYS							
1 TRIP	A2	B3	A3	A2	B3	A3	A2
2 CLOSE	B4	A4	B5	B4	A4	B5	B4
3 AUXILIARY	A5	B6	A6	A5	B6	A6	A5
4 AUXILIARY	B7	A7	B8	B7	A7	B8	B7
5 AUXILIARY	A8	B9	A9	A8	B9	A9	A8
6 AUXILIARY	B10	A10	B11	B10	A10	B11	B10
7 CRITICAL FAILURE RELAY	A11	B12	A12	A11	B12	A12	A11

50/51 RELAY FAULTY

SHT.13

50/51 RELAY TRIP

SHT.07

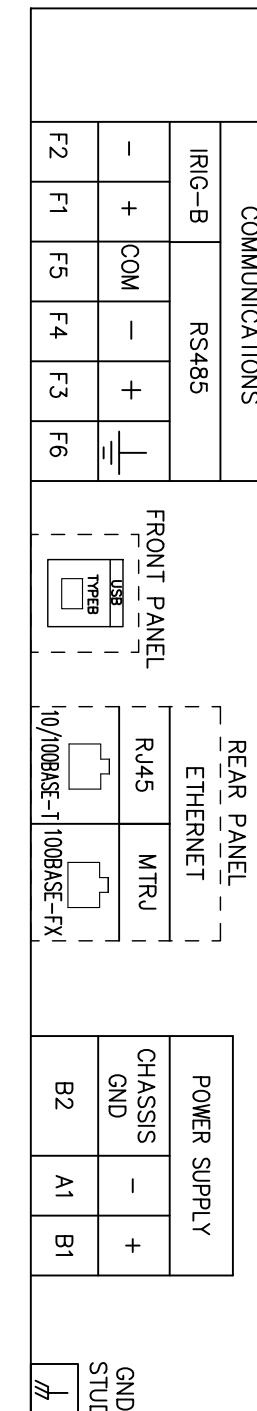
SPARE

50/51 DIGITAL OUTPUTS

SHT.14

50/51

50/51

OVER CURRENT & EARTH FAULT PROTECTION RELAY TYPE 350
350-E-P5-G5-H-E-E-N-N-3E-D-NRS485 COMMUNICATION
SHT.16POWER SUPPLY
SHT.07TITLE:
50/51 RELAY TYPE 350 DETAILS
132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4E P E S O L P v t . L t d.
71-B Garden Block, New Garden Town, Lahore, Pakistan

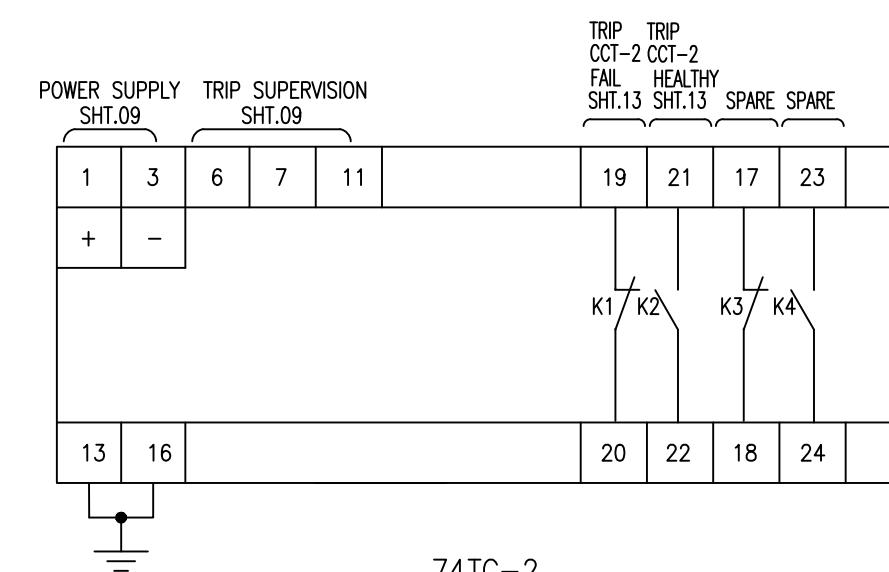
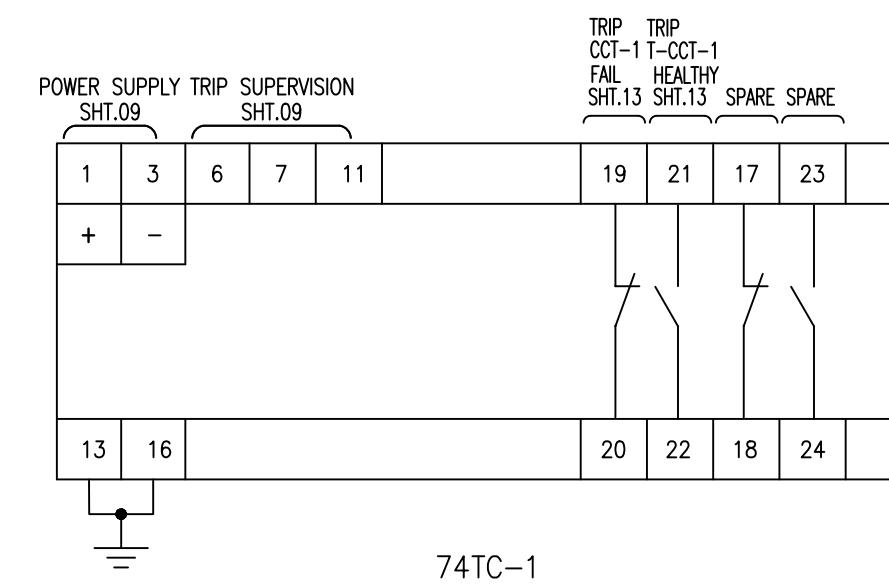
DWG# EPE/ENU-18/P1409 | SHT: 18 OF 20

DATE:27.01.2018 | FOR APPROVAL | 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 & RP4

APPROVED	CHECKED	DRAWN
NAH	ABA	MSC

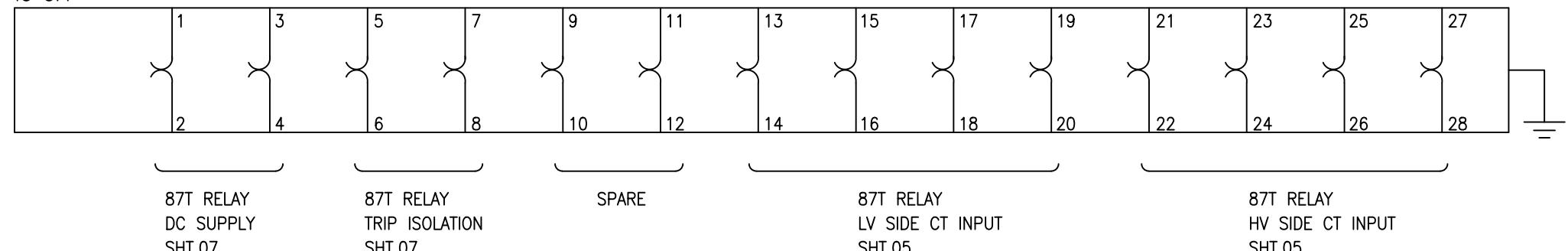
1 2 3 4 5 6 7 8



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: TRIP CIRCUIT SUPERVISION RELAY TYPE TS101 DETAILS 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4	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/P1409	SHT: 19 OF 20
NAH	ABA	MSC				DATE:27.01.2018	FOR APPROVAL

TS-87T
TEST BLOCK TYPE TSB14-111111AAABAAAB

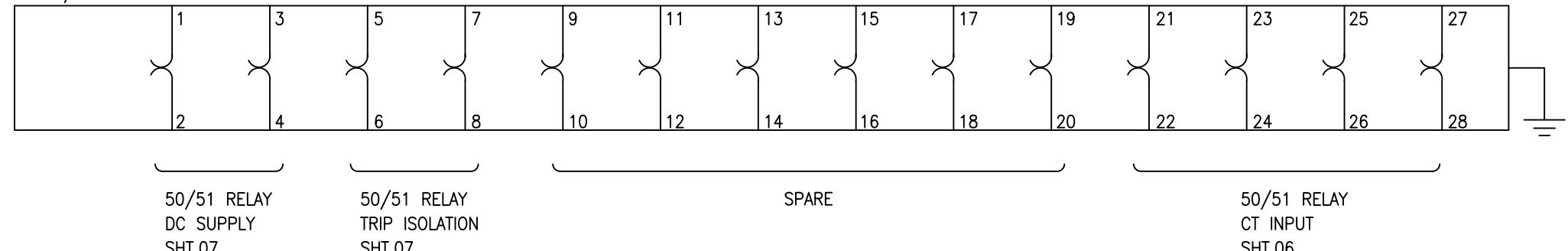
TS-87T



TS-50/51

TEST BLOCK TYPE TSB14-1111111111AAAB

TS-50/51



LEGEND

DES.	DESCRIPTION	TYPE	MAKE
TS-X	TEST BLOCK	TSB14	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 TSB14 DETAILS 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4	DWG# EPE/ENU-18/P1409	SHT: 20 OF 20
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	
A 1				
A 2				
A 3				
A 4				
A 5				
B 6				
B 7				
B 8				
B 9				
B 10				
B 11				
B 12				
c 1	2	3	4	5
c 2				6
c 3				7
c 4				8
c 5				9
c 6				10
c 7				11
c 8				12
D 9				
D 10				
D 11				
D 12				
E 13				
E 14				
E 15				
F 16				
F 17				
F 18				
F 19				
F 20				
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F 93				
F 94				
F 95				
F 96				
F 97				
F 98				
F 99				
F 100				

LEGEND:



TEMPORARY SHORTENING LINK



PERMANENT LINK

D-

END COVER

REMOTE DESTINATION TERMINAL BLOCK TERMINAL NO

TERMINAL STRIP X1

LINK	REFERENCE	TERMINAL NO
------	-----------	-------------

05/3A	1
05/3B	2
05/3B	3
05/3B	4
05/3B	5
05/3C	6
05/3C	7
05/3D	21
05/3E	22
05/3E	23
05/3E	24
05/3E	25
05/3E	26
05/3F	27
06/3A	11
06/3B	12
06/3B	13
06/3B	14
06/3B	15
06/3C	16
06/3C	17

TERMINATION B

ITEM DESIGNATION	TERMINAL NO
------------------	-------------

TS-87T 21

TS-87T 23

TS-87T 25

TS-87T 27

TS-87T 13

TS-87T 15

TS-87T 17

TS-87T 19

TS-50/51 21

TS-50/51 23

TS-50/51 25

TS-50/51 27

APPROVED DRAWN PROJECT:
 CHECKED MSC
 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 DETAIL
 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4



DWG# EPE/ENU-18/P1409 SHT: 01 OF 12

71-B Garden Block, New Garden Town, Lahore, Pakistan

DATE: 27.01.2018

FOR APPROVAL

REV: 0

Sr.	CABLE DESIGNATION	CORE CROSS SECTION		DESTINATION													
A	1																
	2																
	3																
	4																
	5																
	6																
	7																
	8																
	9																
	10																
	11																
	12																
c	1	2	3	4	5	6	7	8	9	10	11	12					
D																	
E																	
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: TERMINAL DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4			 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan						DWG# EPE/ENU-18/P1409	SHT: 02 OF 12	
NAH	ABA	MSC													DATE: 27.01.2018	FOR APPROVAL	REV: 0

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION								
A	1										
A	2										
A	3										
A	4										
A	5										
A	6										
A	7										
A	8										
B	9			REMOTE DESTINATION	TERMINAL BLOCK	TERMINAL NO	TERMINAL STRIP X3			TERMINATION B	
B	10						LINK	REFERENCE	TERMINAL NO	ITEM DESIGNATION	TERMINAL NO
B	11						14/3E	41		50/51	C2
B	12						14/3E	42		50/51	C3
c	1	2	3				14/4E	43		50/51	C4
c							14/4E	44		50/51	C5
c							14/4E	45		50/51	C6
c							14/4E	46		50/51	C7
c							14/5E	47		50/51	C8
c							14/5E	48		50/51	C9
c							14/5E	49		50/51	C10
D											
D											
E											
E											
F											
F											
F											
F											
F											
F											
F											

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 & RP4



TITLE:

TERMINAL DETAIL
132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4
EPESOL Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1409 SHT: 03 OF 12

DATE: 27.01.2018 FOR APPROVAL REV: 0

APPROVED	CHECKED	DRAWN
NAH	ABA	MSC


 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 DETAIL
132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION													SCHEME DWG. REF: EPE/ENU-18/P1408				
A 1																A				
A 2																A				
A 3																A				
A 4																A				
A 5																A				
B 6																B				
B 7																B				
B 8																B				
B 9																B				
B 10																B				
B 11																B				
B 12																B				
c 1	2	3	4	5	6	7	8	9	10	11	12						c			
c 2																	c			
c 3																	c			
c 4																	c			
c 5																	c			
c 6																	c			
c 7																	c			
c 8																	c			
c 9																	c			
c 10																	c			
c 11																	c			
c 12																	c			
D 1																	D			
D 2																	D			
D 3																	D			
D 4																	D			
D 5																	D			
D 6																	D			
D 7																	D			
D 8																	D			
E 1																	E			
E 2																	E			
E 3																	E			
E 4																	E			
F 1																	F			
F 2																	F			
F 3																	F			
F 4																	F			
F 5																	F			
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F 7																	F			
F 8																	F			
F 9																	F			
F 10																	F			
F 11																	F			
F 12																	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: TERMINAL DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4	EPESOL Pvt Ltd 71-B Garden Block, New Garden Town, Lahore, Pakistan			DWG# EPE/ENU-18/P1409	SHT: 04 OF 12
NAH	ABA	MSC													DATE: 27.01.2018	FOR APPROVAL	REV: 0			

				1	2	3	4	5	6	7	8	9			
Sr.	CABLE DESIGNATION	CORE CROSS SECTION		DESTINATION								SCHEME DWG. REF: EPE/ENU-18/P1408			
A	1														
	2														
	3														
	4														
	5														
	6														
	7														
	8														
B	9														
	10														
	11														
	12														
c	1	2	3	4	5	6	7	8	9	10	11	12			
D															
E															
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: TERMINAL DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan		DWG# EPE/ENU-18/P1409		SHT: 05 OF 12		
NAH	ABA	MSC									DATE: 27.01.2018	FOR APPROVAL	REV: 0		

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION					SCHEME DWG. REF: EPE/ENU-18/P1408
A	1							
A	2							
A	3							
A	4							
A	5							
B	6							
B	7							
B	8							
B	9							
B	10							
B	11							
B	12							
c	1	2	3	4	5	6	7	8
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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: TERMINAL DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4	EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1409	SHT: 06 OF 12	
NAH	ABA	MSC				DATE: 27.01.2018	FOR APPROVAL	REV: 0

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION								
A 1											
A 2											
A 3											
A 4											
A 5											
A 6											
A 7											
A 8											
B 9											
B 10											
B 11											
B 12											
C 1	2	3	4	5	6	7	8	9	10		
C 2											
C 3											
C 4											
C 5											
C 6											
C 7											
C 8											
C 9											
C 10											
C 11											
C 12											
D 1	2	3	4	5	6	7	8	9	10		
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F 12											
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 DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan			DWG# EPE/ENU-18/P1409	SHT: 07 OF 12
NAH	ABA	MSC							DATE: 27.01.2018	FOR APPROVAL	REV: 0

	1	2	3	4	5	6	7	8		
Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION						SCHEME DWG. REF: EPE/ENU-18/P1408	
A	1									
A	2									
A	3									
A	4									
A	5									
B	6									
B	7									
B	8									
B	9									
B	10									
B	11									
B	12									
c	1	2	3	4	5	6	7	8	9	
c									10	
c									11	
c									12	
c									13	
c									14	
c									15	
c									16	
c									17	
c									18	
D										
E										
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: TERMINAL DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4		EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1409	SHT: 08 OF 12
NAH	ABA	MSC						DATE: 27.01.2018	FOR APPROVAL	REV: 0

	1	2	3	4	5	6	7	8	9	10	11	12		7	8
Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION	LEGEND:											
A 1													TEMPORARY SHORTENING LINK		
2													PERMANENT LINK		
3													END COVER		
4															
5															
6															
7															
8															
B 9													TERMINATION B		
10															
11															
12															
c	1	2	3	4	5	6	7	8	9	10	11	12			
D															
E															
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: TERMINAL DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4		 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan				DWG# EPE/ENU-18/P1409	SHT: 09 OF 12	
NAH	ABA	MSC										DATE: 27.01.2018	FOR APPROVAL	REV: 0	
1	2	3	4	5	6	7	8								

Sr.	CABLE DESIGNATION	CORE CROSS SECTION		DESTINATION																
A	1																			
A	2																			
A	3																			
A	4																			
A	5																			
B	6																			
B	7																			
B	8																			
B	9																			
B	10																			
B	11																			
B	12																			
c	1	2	3	4	5	6	7	8	9	10	11	12								
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D																				
D																				
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E																				
F																				
F																				
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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: TERMINAL DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4				 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan				DWG# EPE/ENU-18/P1409		SHT: 100F 12			
NAH	ABA	MSC													DATE:27.01.2018		FOR APPROVAL	REV: 0		

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION																		
A	1																				
A	2																				
A	3																				
A	4																				
A	5																				
B	6																				
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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 DETAIL 132/11KV TRANSFORMER PROTECTION PANEL TYPE RP4				 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan				DWG# EPE/ENU-18/P1409				SHT: 12 OF 12		
NAH	ABA	MSC																	DATE: 27.01.2018	FOR APPROVAL	REV: 0