ELECTRANET LINE BAY (+D01-T11)				
ID	CORE	RT	CLASS	BURDEN
CT7088	1	800/1A	PX	860V, RCt ≤ 1.8Ω
	2	800/1A	PX	860V, RCt ≤ 1.8Ω
	3	800/1A	PX	860V, RCt ≤ 1.8Ω
	4	800/1A	PX	860V, RCt ≤ 1.8Ω
	5	400/1A	0.2S	10VA
	6	400/1A	0.2S	10VA
	7	400/1A	0.2S	10VA

TRANSFORMER BUSHING - HV SIDE (+T01-T11)				
ID	CORE	RT	CLASS	BURDEN
CT01	1	400/1A	0.2s	10VA
	2	400/1A	0.2s	10VA
	-	-	-	-

TRANSFORMER BUSHING - HV NEUTRAL SIDE (+T01-T12)				
ID	CORE	RT	CLASS	BURDEN
CT02	1	800/1A	PX	860V, RCt ≤ 1.8Ω
	2	800/1A	PX	860V, RCt ≤ 1.8Ω
	-	-	-	-

TRANSFORMER MV NEUTRAL SIDE (+T01-T14)				
ID	CORE	RT	CLASS	BURDEN
CT03	1	1600/1A	PX	Vk>450V, RCt ≤ 10Ω
	2	1600/1A	PX	Vk>450V, RCt ≤ 10Ω
	-	-	-	-

33KV SWITCHGEAR INCOMER (+1F04-T11)				
ID	CORE	RT	CLASS	BURDEN
CT04	1	1600/1A	PX	Vk>450V, RCt ≤ 10Ω
	2	1600/1A	PX	Vk>450V, RCt ≤ 10Ω
	3	1600/1A	0.2s	10VA
	-	-	-	-

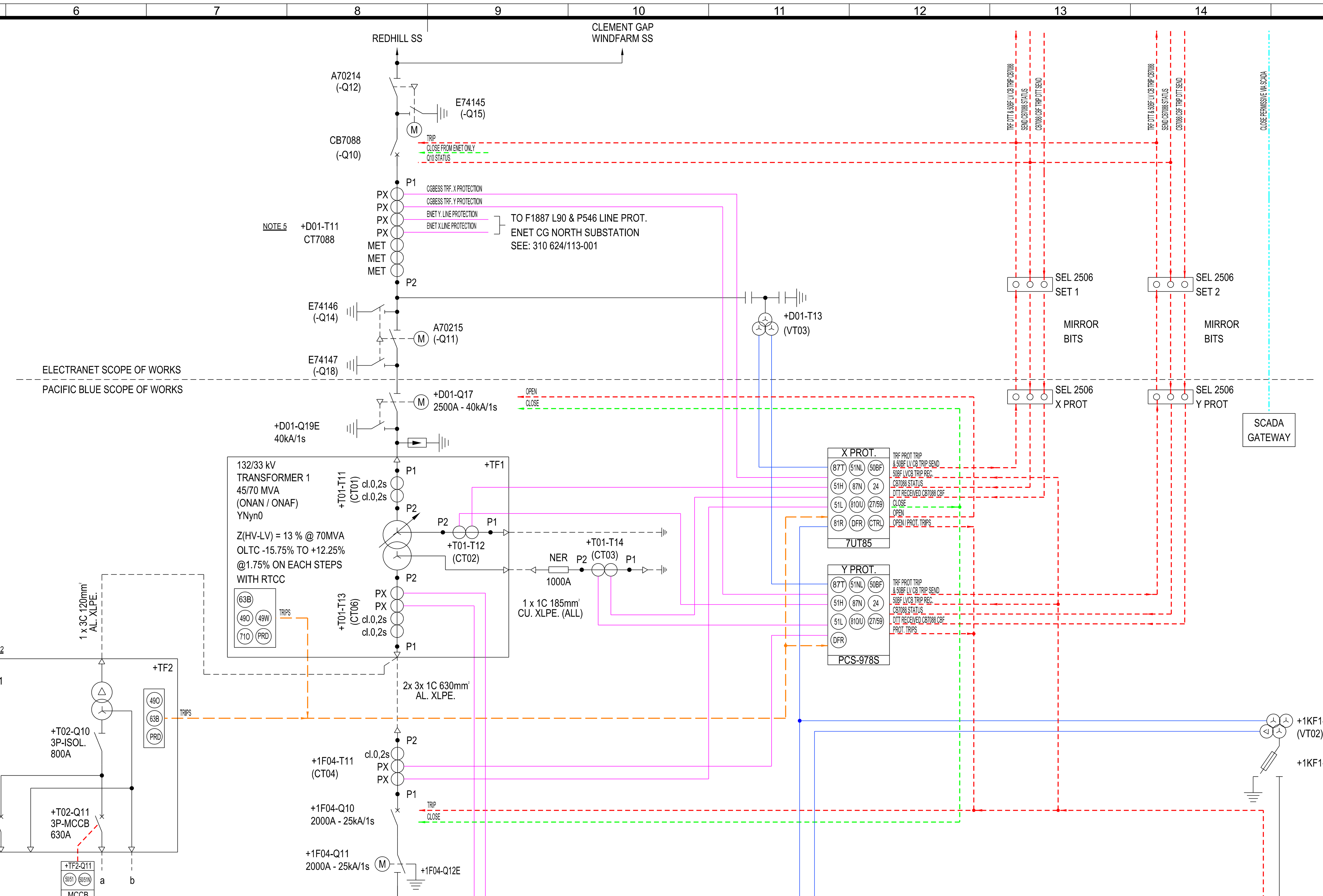
33KV SWITCHGEAR FEEDERS (+1Fxx-T11)				
ID	CORE	RT	CLASS	BURDEN
CT05	1	600/1A	5P20	15VA
	2	1600/1A	PX	Vk>450V, RCt ≤ 10Ω
	3	1600/1A	PX	Vk>450V, RCt ≤ 10Ω

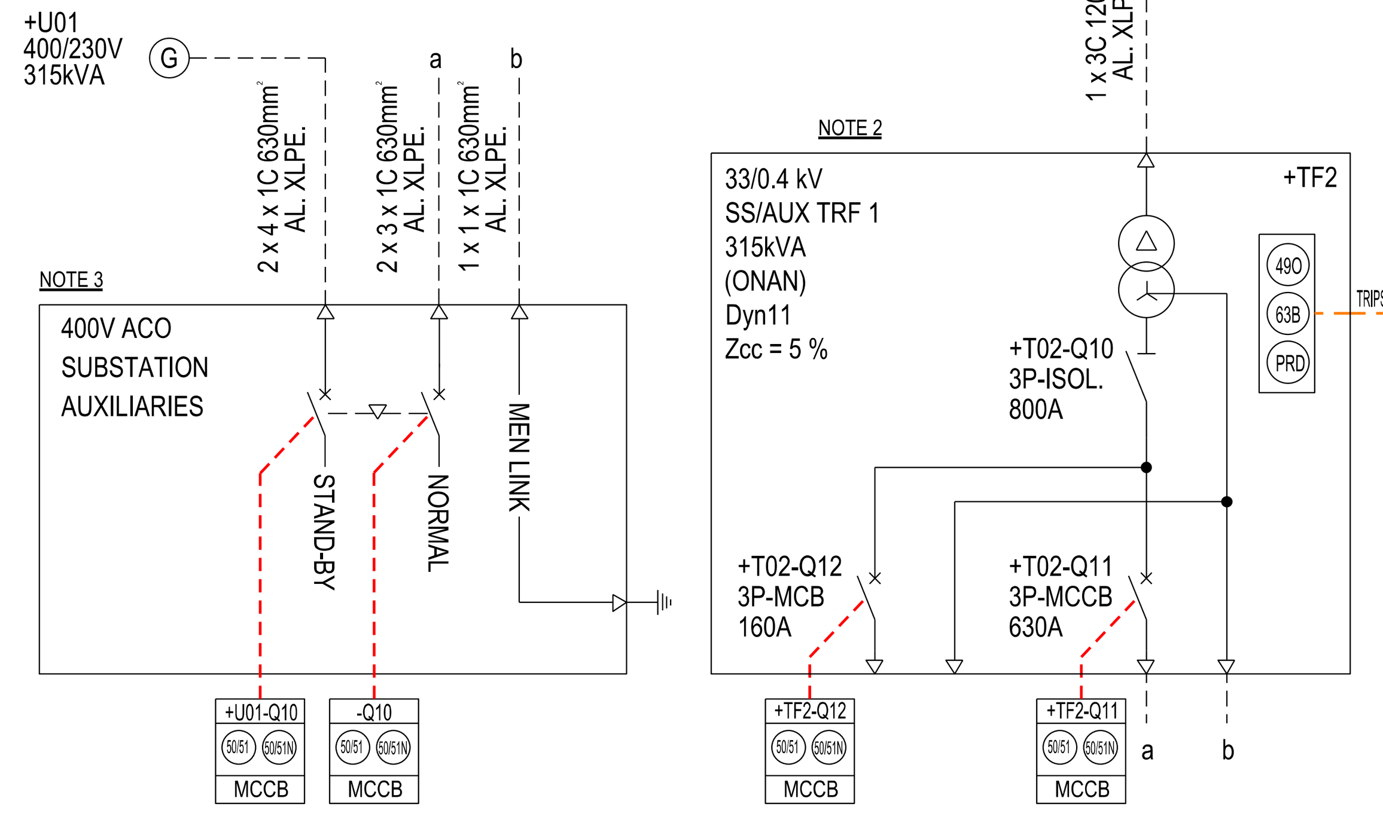
TRANSFORMER BUSHING - MV SIDE (+T01-T13)				
ID	CORE	RT	CLASS	BURDEN
CT06	1	1600/1A	0.2s	10VA
	2	1600/1A	0.2s	10VA
	3	1600/1A	PX	Vk>450V, RCt ≤ 10Ω
	4	1600/1A	PX	Vk>450V, RCt ≤ 10Ω

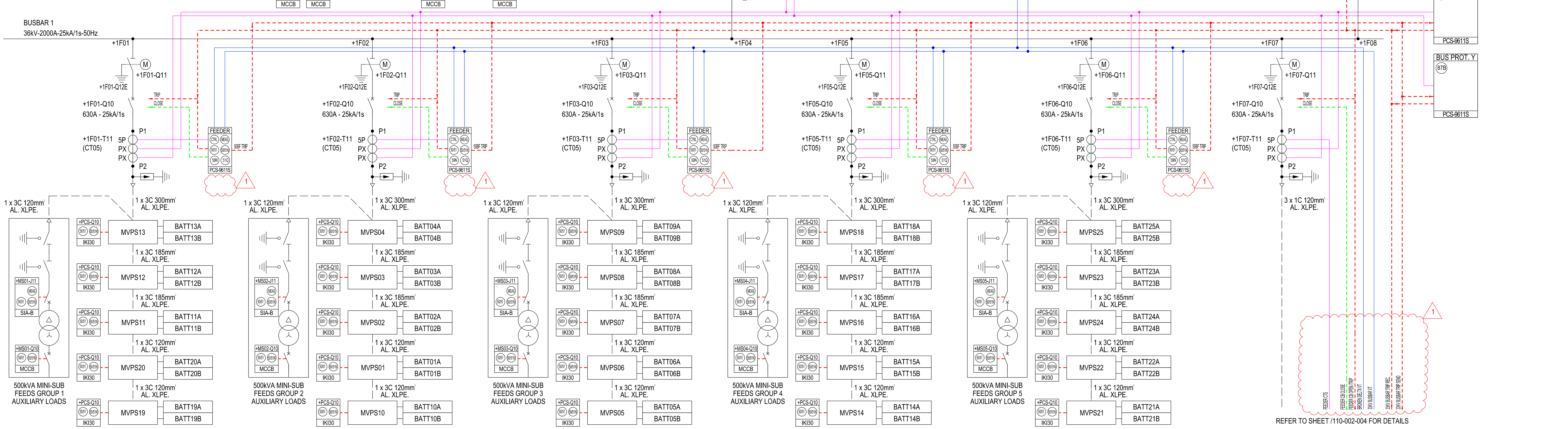
ELECTRANET LINE BAY (+D01-Q10)				
ID	CORE	RT	CLASS	BURDEN
+D01-T13 (VT03)	1	132/sqrt(3):0.11/sqrt(3) kV	0.5/3P	25VA
	2	132/sqrt(3):0.11/sqrt(3) kV	0.5/3P	25VA
	-	-	-	-

33kV SWITCHGEAR BUSBAR				
ID	CORE	RT	CLASS	BURDEN
+1KF1-T11 (VT02)	1	33/sqrt(3):0.11/sqrt(3) kV	0.5/3P	30VA
	2	33/sqrt(3):0.11/sqrt(3) kV	0.2	30VA
	3	33/sqrt(3):0.11/3 kV	3P	50VA - BROKEN DELTA

ANSI LEGEND	
ID	FUNCTION
24	VOLTS/HERTZ OVER EXCITATION
27/59	UNDER / OVER VOLTAGE
49	OIL TEMP / WINDING TEMP HIGH TRIPS
50BF	CIRCUIT BREAKER FAILURE
50/51	PHASE OVERCURRENT HIGH-SET AND TIME DELAYED
50N/51N	RESIDUAL OVERCURRENT HIGH-SET AND TIME DELAYED
51H / 51L	TRANSFORMER HV / LV SIDE OVERCURRENT
51NL	TRANSFORMER LV SIDE NEUTRAL OVERCURRENT
51Q	NEGATIVE SEQUENCE BACK-UP OVERCURRENT
59N	NEUTRAL OVER VOLTAGE / NEUTRAL DISPLACEMENT
63B	GAS RELAY (BUCHHOLZ DEVICE) TRIPS
71O	OIL LEVEL ALARM / TRIPS
81O/U	OVER / UNDER FREQUENCY PROTECTION
81R	RATE OF CHANGE OF FREQUENCY
86	LOCK-OUT FUNCTIONS
87B	BUSBAR DIFFERENTIAL PROTECTION (BUSZONE)
87L	LINE DIFFERENTIAL PROTECTION
87T	TRANSFORMER DIFFERENTIAL PROTECTION
87N	TRANSFORMER HV / LV SIDE RESTRICTED EARTHFAULT
60N / 68	HARMONIC FILTER UNBALANCE / DISCHARGE DELAY
CTRL	CONTROL
POW	POINT OF WAVE SWITCHING
PRD	PRESSURE RELEASE DEVICE
DFR	DISTURBANCE FAULT RECORDER







LEGEND:

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	MOTORIZED DISCONNECTOR
	CURRENT TRANSFORMER (CT)
	CAPACITOR VOLTAGE TRANSFORMER (CVT)
	VOLTAGE TRANSFORMER (VT)
	EARTH SWITCH
	SURGE ARRESTOR
	EARTHING TRANSFORMER
	POWER TRANSFORMER
	MECHANICAL INTERLOCK
	FUSE SWITCH DISCONNECTOR

ISSUED FOR CONSTRUCTION
S.H — Initials
12.02.2025 — Date

CURRENT TRANSFORMER CIRCUITS
VOLTAGE TRANSFORMER CIRCUITS
TRIPPING SIGNAL ROUTES (DIRECT)
TRIPPING SIGNAL ROUTES (NON-DIRECT)
CLOSING SIGNAL ROUTES
INTERLOCK SIGNAL ROUTES

NOTES:

1. ALL CABLE SIZES TO BE CONFIRMED.
2. AUX TRANSFORMER AS PER AC SIZING REPORT.
3. DIESEL GENERATOR AS PER AC SIZING REPORT.
4. KIOSK AUX TRANSFORMER SIZING AS PER AUX REQUIREMENTS FROM TRINA ANS SMA.
5. ENET CT. SEE 510 2CT/503-093

REV	DESCRIPTION	RVD	CKD	APD	DATE
1	ISSUED FOR CONSTRUCTION - UPDATES	EL	KT	SH	02/25

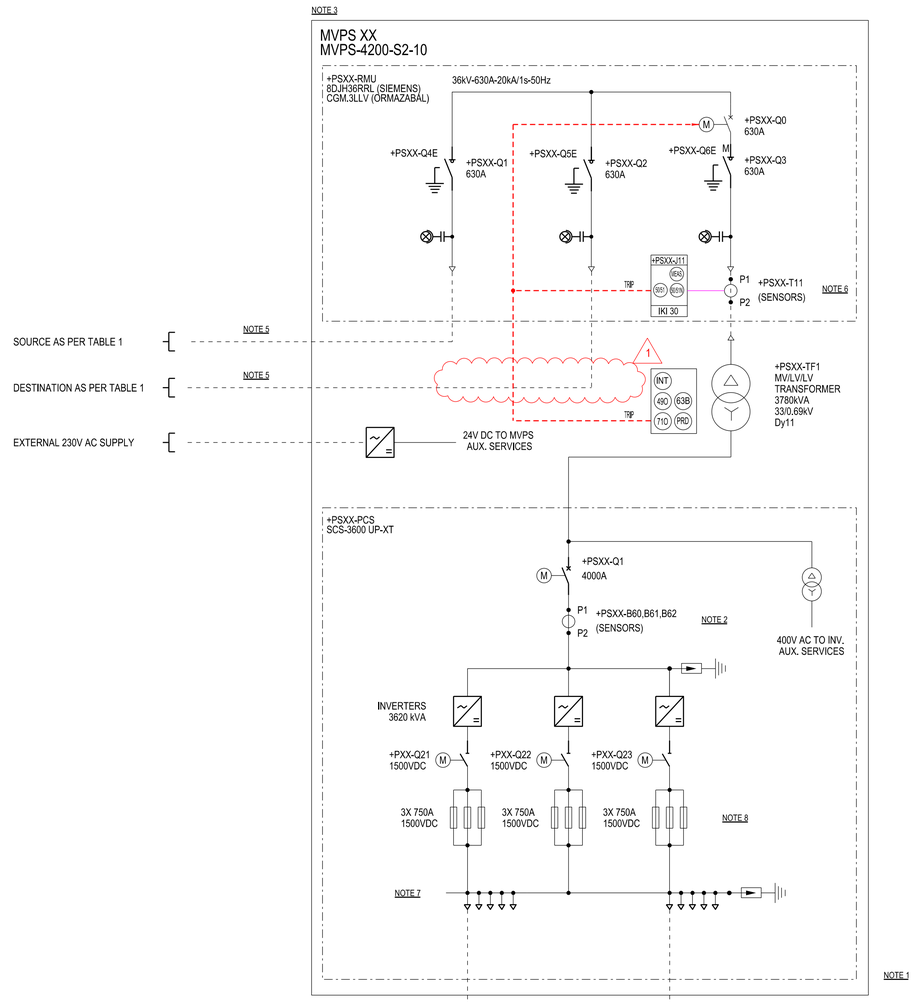
SIZE	A1
SCALE	NTS
STATUS	FOR CONSTR.
SHEET NO.	01 OF 04
PROJECT	CLEMENTS GAP BESS
TITLE	132/33kV SUBSTATION PROTECTION & CONTROL SINGLE LINE DIAGRAM
DRAWING No.	PSD1834-110-002-001
REV	1

TABLE 1

MVPS	FROM	TO
01	MVSP02	MVPS10
02	MVPS03	MVPS01
03	MVPS04	MVPS02
04	+1F02	MVPS03
05	MVPS06	-
06	MVPS07	MVPS05
07	MVPS08	MVPS06
08	MVPS09	MVPS07
09	+1F03	MVPS08
10	MVPS01	-
11	MVPS12	MVPS20
12	MVPS13	MVPS11
13	+1F01	MVPS12
14	MVPS15	-
15	MVPS16	MVPS14
16	MVPS17	MVPS15
17	MVPS18	MVPS16
18	+1F05	MVPS17
19	MVPS20	-
20	MVPS11	MVPS19
21	MVPS22	-
22	MVPS24	MVPS21
23	MVPS25	MVPS24
24	MVPS23	MVPS22
25	+1F06	MVPS23

TABLE 2

BATTERY GROUPS		
PCS	BATTERY A	BATTERY B
01	BATT 01A	BATT 01B
02	BATT 02A	BATT 02B
03	BATT 03A	BATT 03B
04	BATT 04A	BATT 04B
05	BATT 05A	BATT 05B
06	BATT 06A	BATT 06B
07	BATT 07A	BATT 07B
08	BATT 08A	BATT 08B
09	BATT 09A	BATT 09B
10	BATT 10A	BATT 10B
11	BATT 11A	BATT 11B
12	BATT 12A	BATT 12B
13	BATT 13A	BATT 13B
14	BATT 14A	BATT 14B
15	BATT 15A	BATT 15B
16	BATT 16A	BATT 16B
17	BATT 17A	BATT 17B
18	BATT 18A	BATT 18B
19	BATT 19A	BATT 19B
20	BATT 20A	BATT 20B
21	BATT 21A	BATT 21B
22	BATT 22A	BATT 22B
23	BATT 23A	BATT 23B
24	BATT 24A	BATT 24B
25	BATT 25A	BATT 25B



ANSI LEGEND	
ID	FUNCTION
24	VOLTS/HERTZ OVER EXCITATION
27/59	UNDER / OVER VOLTAGE
49	OIL TEMP / WINDING TEMP HIGH TRIPS
50BF	CIRCUIT BREAKER FAILURE
50/51	PHASE OVERCURRENT HIGH-SET AND TIME DELAYED
50N/51N	RESIDUAL OVERCURRENT HIGH-SET AND TIME DELAYED
51H / 51L	TRANSFORMER HV / LV SIDE OVERCURRENT
51NL	TRANSFORMER LV SIDE NEUTRAL OVERCURRENT
51Q	NEGATIVE SEQUENCE BACK-UP OVERCURRENT
59N	NEUTRAL OVER VOLTAGE / NEUTRAL DISPLACEMENT
63B	GAS RELAY (BUCHHOLZ DEVICE) TRIPS
71O	OIL LEVEL ALARM / TRIPS
81O/U	OVER / UNDER FREQUENCY PROTECTION
81R	RATE OF CHANGE OF FREQUENCY
86	LOCK-OUT FUNCTIONS
87B	BUSBAR DIFFERENTIAL PROTECTION (BUSZONE)
87L	LINE DIFFERENTIAL PROTECTION
87T	TRANSFORMER DIFFERENTIAL PROTECTION
87RGF / EF	TRANSFORMER HV / LV SIDE RESTRICTED EARTHFAULT
CTRL	CONTROL
POW	POINT OF WAVE SWITCHING
PRD	PRESSURE RELEASE DEVICE
DFR	DISTURBANCE FAULT RECORDER
INT	INTERLOCK

NOTES:

1. INVERTER DETAILED DRAWING BY SMA. REF TO DWG: D_10001195_01_MVPSXXXX-S2-A4_STATION
2. MEASUREMENTS ONLY ON THE FOLLOWING:
   MVPS 09 = ELECTRICALLY CLOSEST
   MVPS 19 = ELECTRICALLY FURTHEST
3. REPLACE ACCORDING TO THE NUMBERING SEQUENCE "FROM" AND "TO" IN THE TABLE 1.
4. REPLACE "YY" ACCORDING TO THE BATTERY TABLE 2 NUMBERING.
5. SOURCE / DESTINATION AS PER TABLE 1.
6. LOW VOLTAGE SENSOR SPECIFIED BY RMU RELAY OEM.
7. MAXIMUM OF 36 CONNECTIONS PER DC POLE, MAX. 400MM2 DC CABLE
8. 'FUSED SINGLE BUSBAR' OPTION SELECTED WITH 3 FUSES PER INVERTER STACK.

CURRENT TRANSFORMER CIRCUITS
VOLTAGE TRANSFORMER CIRCUITS
TRIPPING SIGNAL ROUTES (DIRECT)
TRIPPING SIGNAL ROUTES (NON-DIRECT)
CLOSING SIGNAL ROUTES
INTERLOCK SIGNAL ROUTES

ISSUED FOR CONSTRUCTION
S.H 12.02.2025
Initials Date

REV	DESCRIPTION	RVD	CKD	APD	DATE
1	ISSUED FOR CONSTRUCTION - UPDATES	EL	KT	SH	02/25

SIZE	A1
SCALE	NTS
STATUS	FOR CONSTR.
SHEET NO.	02 OF 04
PROJECT	CLEMENTS GAP BESS
TITLE	132/33kV SUBSTATION PROTECTION & CONTROL SINGLE LINE DIAGRAM
DRAWING No.	PSD1834-110-002-002
REV	1

TABLE 1

+MS01			
MCB	CCT	CABLE SIZE	CABLE NO.
Q01	BATT11A	1x4C 35mmsq CU. PVC	=WD/KS01-BATT11.A/001
Q02	BATT11B	1x4C 35mmsq CU. PVC	=WD/KS01-BATT11.B/001
Q03	BATT12A	1x4C 35mmsq CU. PVC	=WD/KS01-BATT12.A/001
Q04	BATT12B	1x4C 35mmsq CU. PVC	=WD/KS01-BATT12.B/001
Q05	BATT13A	1x4C 35mmsq CU. PVC	=WD/KS01-BATT13.A/001
Q06	BATT13B	1x4C 35mmsq CU. PVC	=WD/KS01-BATT13.B/001
Q07	BATT19A	1x4C 35mmsq CU. PVC	=WD/KS01-BATT19.A/001
Q08	BATT19B	1x4C 35mmsq CU. PVC	=WD/KS01-BATT19.B/001
Q09	BATT20A	1x4C 35mmsq CU. PVC	=WD/KS01-BATT20.A/001
Q10	BATT20B	1x4C 35mmsq CU. PVC	=WD/KS01-BATT20.B/001

TABLE 2

+MS02			
MCB	CCT	CABLE SIZE	CABLE NO.
Q01	BATT01A	1x4C 35mmsq CU. PVC	=WD/KS02-BATT01.A/001
Q02	BATT01B	1x4C 35mmsq CU. PVC	=WD/KS02-BATT01.B/001
Q03	BATT02A	1x4C 35mmsq CU. PVC	=WD/KS02-BATT02.A/001
Q04	BATT02B	1x4C 35mmsq CU. PVC	=WD/KS02-BATT02.B/001
Q05	BATT03A	1x4C 35mmsq CU. PVC	=WD/KS02-BATT03.A/001
Q06	BATT03B	1x4C 35mmsq CU. PVC	=WD/KS02-BATT03.B/001
Q07	BATT04A	1x4C 35mmsq CU. PVC	=WD/KS02-BATT04.A/001
Q08	BATT04B	1x4C 35mmsq CU. PVC	=WD/KS02-BATT04.B/001
Q09	BATT10A	1x4C 35mmsq CU. PVC	=WD/KS02-BATT10.A/001
Q10	BATT10B	1x4C 35mmsq CU. PVC	=WD/KS02-BATT10.B/001

TABLE 3

+MS03			
MCB	CCT	CABLE SIZE	CABLE NO.
Q01	BATT05A	1x4C 35mmsq CU. PVC	=WD/KS03-BATT05.A/001
Q02	BATT05B	1x4C 35mmsq CU. PVC	=WD/KS03-BATT05.B/001
Q03	BATT06A	1x4C 35mmsq CU. PVC	=WD/KS03-BATT06.A/001
Q04	BATT06B	1x4C 35mmsq CU. PVC	=WD/KS03-BATT06.B/001
Q05	BATT07A	1x4C 35mmsq CU. PVC	=WD/KS03-BATT07.A/001
Q06	BATT07B	1x4C 35mmsq CU. PVC	=WD/KS03-BATT07.B/001
Q07	BATT08A	1x4C 35mmsq CU. PVC	=WD/KS03-BATT08.A/001
Q08	BATT08B	1x4C 35mmsq CU. PVC	=WD/KS03-BATT08.B/001
Q09	BATT09A	1x4C 35mmsq CU. PVC	=WD/KS03-BATT09.A/001
Q10	BATT09B	1x4C 35mmsq CU. PVC	=WD/KS03-BATT09.B/001

TABLE 4

+MS04			
MCB	CCT	CABLE SIZE	CABLE NO.
Q01	BATT14A	1x4C 35mmsq CU. PVC	=WD/KS04-BATT14.A/001
Q02	BATT14B	1x4C 35mmsq CU. PVC	=WD/KS04-BATT14.B/001
Q03	BATT15A	1x4C 35mmsq CU. PVC	=WD/KS04-BATT15.A/001
Q04	BATT15B	1x4C 35mmsq CU. PVC	=WD/KS04-BATT15.B/001
Q05	BATT016A	1x4C 35mmsq CU. PVC	=WD/KS04-BATT16.A/001
Q06	BATT16B	1x4C 35mmsq CU. PVC	=WD/KS04-BATT16.B/001
Q07	BATT17A	1x4C 35mmsq CU. PVC	=WD/KS04-BATT17.A/001
Q08	BATT17B	1x4C 35mmsq CU. PVC	=WD/KS04-BATT17.B/001
Q09	BATT18A	1x4C 35mmsq CU. PVC	=WD/KS04-BATT18.A/001
Q10	BATT18B	1x4C 35mmsq CU. PVC	=WD/KS04-BATT18.B/001

TABLE 5

+MS05			
MCB	CCT	CABLE SIZE	CABLE NO.
Q01	BATT23A	1x4C 35mmsq CU. PVC	=WD/KS05-BATT23.A/001
Q02	BATT23B	1x4C 35mmsq CU. PVC	=WD/KS05-BATT23.B/001
Q03	BATT24A	1x4C 35mmsq CU. PVC	=WD/KS05-BATT24.A/001
Q04	BATT24B	1x4C 35mmsq CU. PVC	=WD/KS05-BATT24.B/001
Q05	BATT25A	1x4C 35mmsq CU. PVC	=WD/KS05-BATT25.A/001
Q06	BATT25B	1x4C 35mmsq CU. PVC	=WD/KS05-BATT25.B/001
Q07	BATT22A	1x4C 35mmsq CU. PVC	=WD/KS05-BATT22.A/001
Q08	BATT22B	1x4C 35mmsq CU. PVC	=WD/KS05-BATT22.B/001
Q09	BATT21A	1x4C 35mmsq CU. PVC	=WD/KS05-BATT21.A/001
Q10	BATT21B	1x4C 35mmsq CU. PVC	=WD/KS05-BATT21.B/001

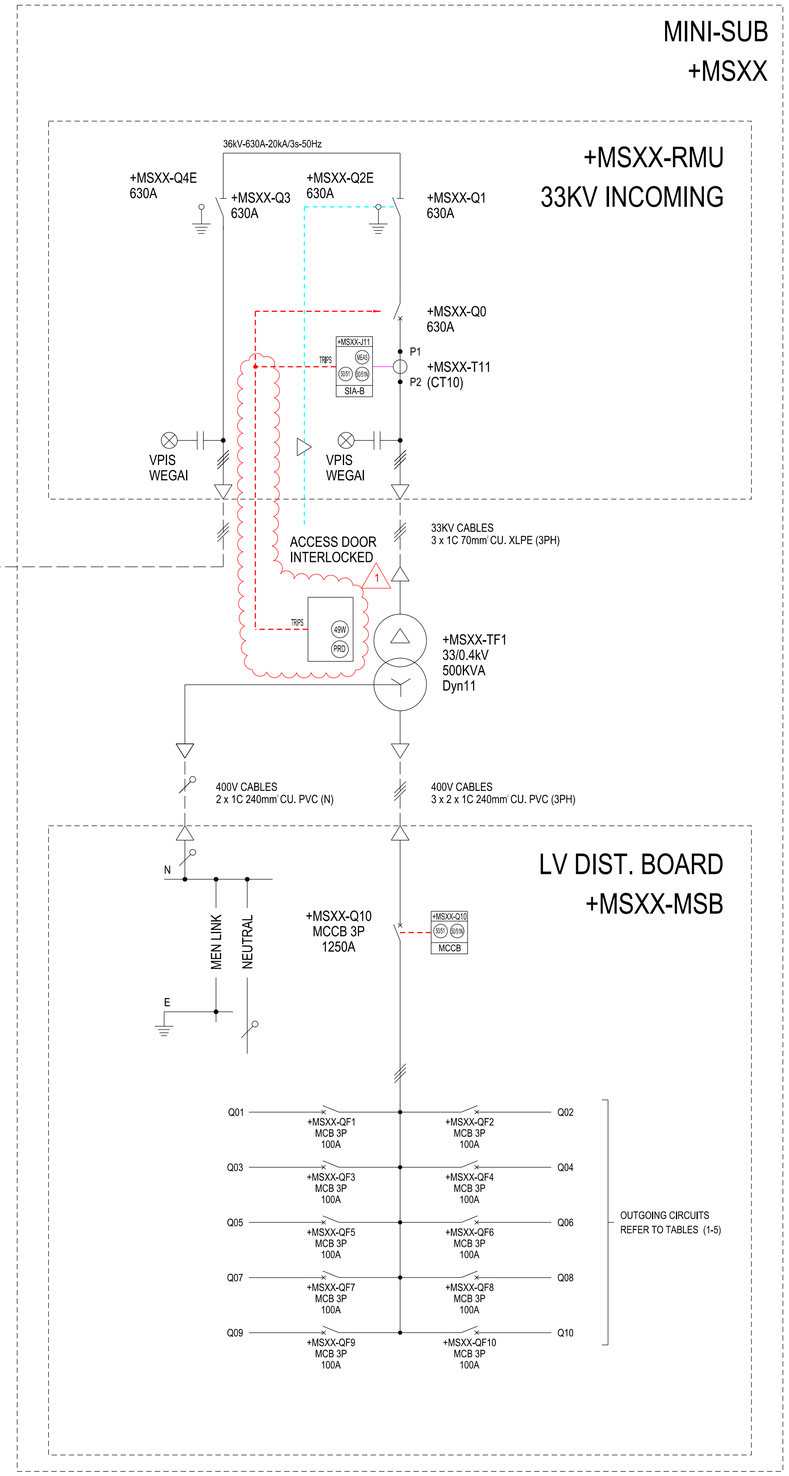
RMU PROTECTION - MV SIDE (OEM INFORMATION)

ID	CORE	RT	CLASS	BURDEN
CT10	1	100 / 50:1	5P10	2.5VA

NOTES:
1. "XX" MUST BE REPLACED WITH FEEDER NO.
2. 33KV NETWORK CONNECTIONS, CABLE TYPES AND SIZE AS PER SHEET 1.
3. INTERLOCKING TO TRANSFORMER ACCESS DOOR, SUCH THAT RMU EARTHING SWITCH SHALL BE CLOSED BEFORE DOOR TO ACCESS TRANSFORMER BAY CAN BE ACCESSED. (1)

CURRENT TRANSFORMER CIRCUITS
VOLTAGE TRANSFORMER CIRCUITS
TRIPPING SIGNAL ROUTES (DIRECT)
TRIPPING SIGNAL ROUTES (NON-DIRECT)
CLOSING SIGNAL ROUTES
INTERLOCK SIGNAL ROUTES

CONNECTION FROM MVPS XX
NOTE 2



ANSI LEGEND	
ID	FUNCTION
24	VOLTS/HERTZ OVER EXCITATION
27/59	UNDER / OVER VOLTAGE
49	OIL TEMP / WINDING TEMP HIGH TRIPS
50BF	CIRCUIT BREAKER FAILURE
50/51	PHASE OVERCURRENT HIGH-SET AND TIME DELAYED
50N/51N	RESIDUAL OVERCURRENT HIGH-SET AND TIME DELAYED
51H / 51L	TRANSFORMER HV / LV SIDE OVERCURRENT
51NL	TRANSFORMER LV SIDE NEUTRAL OVERCURRENT
51Q	NEGATIVE SEQUENCE BACK-UP OVERCURRENT
59N	NEUTRAL OVER VOLTAGE / NEUTRAL DISPLACEMENT
63B	GAS RELAY (BUCHHOLZ DEVICE) TRIPS
71O	OIL LEVEL ALARM / TRIPS
81O/U	OVER / UNDER FREQUENCY PROTECTION
81R	RATE OF CHANGE OF FREQUENCY
86	LOCK-OUT FUNCTIONS
87B	BUSBAR DIFFERENTIAL PROTECTION (BUSZONE)
87L	LINE DIFFERENTIAL PROTECTION
87T	TRANSFORMER DIFFERENTIAL PROTECTION
87RGF / EF	TRANSFORMER HV / LV SIDE RESTRICTED EARTHFAULT
CTRL	CONTROL
POW	POINT OF WAVE SWITCHING
PRD	PRESSURE RELEASE DEVICE
DFR	DISTURBANCE FAULT RECORDER
INT	INTERLOCK

ISSUED FOR CONSTRUCTION
S.H (Initials) 12.02.2025 (Date)

REV	DESCRIPTION	RVD	CKD	APD	DATE
1	ISSUED FOR CONSTRUCTION - UPDATES	EL	KT	SH	03/24

PacificBlue | enzen | psd energy

SIZE A1 | SCALE NTS | STATUS FOR CONSTR. | SHEET NO. 03 OF 04

PROJECT: CLEMENTS GAP BESS
TITLE: 132/33kV SUBSTATION PROTECTION & CONTROL SINGLE LINE DIAGRAM
DRAWING No. PSD1834-110-002-003 | REV 1

FROM 33kV FILTER FEEDER +1F07
DWG: PSD1834-110-002-001

FROM 33kV FILTER FEEDER +1F07
DWG: PSD1834-110-002-001

FEEDER VTS
FEEDER CB CLOSE
FEEDER CB OPEN STATUS
BUSZONE TRIP
33kV BUSBAR TRIP REC.
33kV BUSBAR TRIP SIGNAL

+2A3-J31
+1F07 | +HF1A | +HF1B
7SJ85

3 x 1C 120mm²
AL. XLPE.

-SA

+F01A-Q20
630A - 25 kA/3s

+F01A-Q20E MUST BE OPEN TO CLOSE +F01A-Q20
+F01A-Q20 OPEN STATUS + DISCHARGE A TIMER START

+F01A-Q21
630A - 25kA/3s

+F01A-Q21 OPEN STATUS REQUIRED FOR KEY RELEASE LOGIC

+F01A-Q22E
25kA/3s

+F01A-Q20 OPEN + DISCHARGE TIME A = RELEASE CLOSING OF +F01A-Q20E
+F01A-Q20E CLOSED STATUS REQUIRED FOR KEY RELEASE LOGIC

+F01A-Q20 OPEN & +F01B-Q20 OPEN,
+F01A-Q20E CLOSED & +F01B-Q20E CLOSED,
DISCHARGE TIMERS A&B TIMED OUT,
= ENERGISE TO RELEASE KEY

REQUIRED TO OPEN +F01A-Q20E & +F01B-Q20E
(CONTACT CLOSED WHEN KEY TRAPPED)

+D01-A10
KEY RELEASE SOLENOID
KEY
SOL
CON
YMK

KEY TO UNLOCK GATE (SAFETY KEY RELEASED WHEN GATE UNLOCKED)

KEY
KEY

ACCESS GATE

SAFETY KEY RETAINED BY PERSON ACCESSING BAY
SAFTEY MUST BE TRAPPED TO LOCK GATE AGAIN

HARMONIC FILTER BANK 1A/1B
LIVE YARD - ACCESS CONTROLLED

+F01A-T21
(CT12)
5P
cl.0,2s
P1
P2

R W B

-L01
-SA
-C02
-RS01
-C01
-C01

R W B R W B

10P
P2 P1

+F01A-T22
(CT13)

3 x 1C 120mm²
AL. XLPE.

+F01B-Q20
630A - 25kA/3s

+F01B-Q20E MUST BE OPEN TO CLOSE +F01B-Q20
+F01B-Q20 OPEN STATUS + DISCHARGE TIMER B START

+F01B-Q21
630A - 25kA/3s

+F01B-Q21 OPEN STATUS REQUIRED FOR KEY RELEASE LOGIC

+F01B-Q22E
25kA/3s

+F01B-Q20 OPEN + DISCHARGE TIME B = RELEASE CLOSING OF +F01B-Q22E
+F01B-Q22E CLOSED STATUS REQUIRED FOR KEY RELEASE LOGIC

+F01B-T21
(CT12)
5P
cl.0,2s
P1
P2

R W B

-L01
-SA
-C02
-RS01
-C01
-C01

R W B R W B

10P
P2 P1

+F01B-T22
(CT13)

ANSI LEGEND	
ID	FUNCTION
24	VOLTS/HERTZ OVER EXCITATION
27/59	UNDER / OVER VOLTAGE
49	OIL TEMP / WINDING TEMP HIGH TRIPS
50BF	CIRCUIT BREAKER FAILURE
50/51	PHASE OVERCURRENT HIGH-SET AND TIME DELAYED
50N/51N	RESIDUAL OVERCURRENT HIGH-SET AND TIME DELAYED
51H / 51L	TRANSFORMER HV / LV SIDE OVERCURRENT
51NL	TRANSFORMER LV SIDE NEUTRAL OVERCURRENT
51Q	NEGATIVE SEQUENCE BACK-UP OVERCURRENT
59N	NEUTRAL OVER VOLTAGE / NEUTRAL DISPLACEMENT
63B	GAS RELAY (BUCHHOLZ DEVICE) TRIPS
71O	OIL LEVEL ALARM / TRIPS
81O/U	OVER / UNDER FREQUENCY PROTECTION
81R	RATE OF CHANGE OF FREQUENCY
86	LOCK-OUT FUNCTIONS
87B	BUSBAR DIFFERENTIAL PROTECTION (BUSZONE)
87L	LINE DIFFERENTIAL PROTECTION
87T	TRANSFORMER DIFFERENTIAL PROTECTION
87RGF / EF	TRANSFORMER HV / LV SIDE RESTRICTED EARTHFAULT
60 / 68	HARMONIC FILTER UNBALANCED CURRENT / DISCHARGE TIMER
CTRL	CONTROL
POW	POINT OF WAVE SWITCHING
PRD	PRESSURE RELEASE DEVICE
DFR	DISTURBANCE FAULT RECORDER
INT	INTERLOCK

1

SHEET UPDATED WITH ACTUAL OEM
HARMONIC FILTER ARRANGEMENTS.

FILTER BANK INTAKE - MV SIDE

ID	CORE	RT	CLASS	BURDEN
CT12	1	400/1A	5P20	15VA
	2	400/1A	0.2S	10VA

UNBALANCE PROTECTION (OEM INFORMATION)

ID	CORE	RT	CLASS	BURDEN
CT13	1	10/5A	10P10	15VA
	2	-	-	-
	3	-	-	-

CURRENT TRANSFORMER CIRCUITS
VOLTAGE TRANSFORMER CIRCUITS
TRIPPING SIGNAL ROUTES (DIRECT)
TRIPPING SIGNAL ROUTES (NON-DIRECT)
CLOSING SIGNAL ROUTES
INTERLOCK SIGNAL ROUTES

ISSUED FOR CONSTRUCTION
S.H 12.02.2025
Initials Date

REV	DESCRIPTION	RVD	CKD	APD	DATE
1	ISSUED FOR CONSTRUCTION - UPDATES	EL	KT	SH	02/25

PacificBlue | enzen | psd energy

SIZE A1 | SCALE NTS
STATUS FOR CONSTR.
SHEET NO. 04 OF 04

PROJECT: CLEMENTS GAP BESS
TITLE: 132/33kV SUBSTATION PROTECTION & CONTROL SINGLE LINE DIAGRAM
DRAWING No. PSD1834-110-002-004 | REV 1