NOTES:

1. MANUFACTURE TO PROVIDE INTERNAL PANEL WIRINGS OR INTERPANEL WIRINGS AS REQUIRED.

2. TYPICAL MANUFACTURE CIRCUITS.

3. TERMINATION OF MULTIPLE WIRES: ETS004 CLAUSE 5.4 CABLE TERMINATION:

THERE SHALL BE NO MORE THAN TWO WIRES AT ANY TERMINATION.
WHERE TWO RING TERMINATIONS ARE USED AT ONE TERMINAL, THE RING LUGS SHALL BE PLACED BACK TO BACK.
NON SPRING LOADED RAIL TERMINALS: ONLY ONE BOOTLACE FERRULE FOR EACH TERMINAL SHOULD BE USED.
SPRING LOADED RAIL TERMINALS: TWO LIP BLADE LUGS CAN BE USED, PLACED BACK TO BACK.

11kV 2000A BUSBAR - SECTION @

R
W
B

VOLATGE INDICATION SYSTEM

VI-L

CR-L
CW-L
CB-L
(GN/Y)

VT1
11000/sqr3:110/sqr3 V
75VA, 0.5M, 3P, OVF1.9/60sec

0.62A
0.62A
0.62A

E10 (R) LKA-R E11 (R)
E30 (W) LKA-W E31 (W)
E50 (B) LKA-B E51 (B)
E70 (Bk) LKA-N E71 (Bk)
E70 (Bk) ET3 E3 (GN/Y)

Q89E-L

P1 P1 P1

CT1
PROTECTION CT's
2000/5SOO/1000/1A
0.15PX100 Rct=4 OHM 2000/1A

1AS1 (R) X2
1AS2 (R)
1AS3 (R)
1AS4 (R)
1BS1 (W)
1BS2 (W)
1BS3 (W)
1BS4 (W)
1CS1 (B)
1CS2 (B)
1CS3 (B)
1CS4 (B)

(Bk) ET1 E1 (GN/Y)

SPARE

2AS1 (R) X2 C70 (Bk) ET2 E2 (GN/Y)
2AS2 (R)
2AS3 (R)
2AS4 (R) C10 (RED)
2BS1 (W)
2BS2 (W)
2BS3 (W) C30 (W)
2BS4 (W)
2CS1 (B) C70 (Bk)
2CS2 (B)
2CS3 (B) C50 (B)
2CS4 (B)

FORWARD CURRENT
REVERSE CURRENT

P2 P2 P2

Q89E-R

VI-R

VOLATGE INDICATION SYSTEM

CR-R
CW-R
CB-R
(GN/Y)

11kV 2000A BUSBAR - SECTION #

R
W
B

CVD
ABB-560CVD03

SLIDING LINK SPRING LOADED TERMINALS (ABB 086/8.ST1.RS)

110V AC AUX SUPPLY

RS485

E210 X3-1 E211
E230 X3-2 E231
E250 X3-3 E251
X3-4 E261

PA Va
PB Vb
PC Vc
PN Vn

E230(R) X1894
E230(W) X1895
E250(B) X1896
E71 (Bk) X1897

TO METERING PANEL

E190(R) X1890
E130 (W) X1891
E150 (B) X1892
E71 (Bk) X1893

PROTECTION SPARE

DOC & DEF PROTN

SEL 351A 67

Va Z09
Vb Z10
Vc Z11
Vn Z12

E11 Q101-R E110 LK20 E111 (R)
E31 Q101-W E130 LK21 E131 (W)
E51 Q101-B E150 LK22 E151 (B)
E71 LK23 E171 (Bk)

DNP3 TO SCADA

(GN/Y) Z27

C10 (R) LK15 C11 (R) Ia Z01 Z02 C73 (Bk)
C30 (W) LK16 C31 (W) Ib Z03 Z04 C73 (Bk)
C50 (B) LK17 C51 (B) Ic Z05 Z06 C73 (Bk)
C70 (Bk) LK18 C71 (Bk) In Z07 Z08 C72 (Bk) LK19

CIRCUIT BREAKER
52

52A X167
52B X169
52A X191
52B X193

No.1 PROTN SPARE AUX CONTACTS
No.2 PROTN SPARE AUX CONTACTS

CB SPARE AUXILIARIES

X2 J33 FS4 J33A
18V BBP SUPPLY 125V DC -VE
SUPPLY INTERFACE CONNECTION X152

SEL 351A 67

BB BLOCK @ OUT103 A05
BB TRIP @ OUT105 A09
RELAY FAIL ALARM A15
BB BLOCK # OUT102 A03
BB TRIP # OUT104 A07
BB BLOCK @ IN105 A25
BB TRIP @ IN106 A27
BB BLOCK # IN102 A19
BB TRIP # IN104 A23
RELAY FAIL IN101 A17
CBF INITIATE IN103 A21

P933A/Z@
P934A/Z@
P935A
P933A/Z#
P934A/Z#
P933A/Z@
P934B/Z@ LK2
P933A/Z#
P934B/Z# LK7
P935A
K11S LK13 FOR TESTING

80/3

SEE TABLE 1

LK4 P933/Z@ BLOCKING BUS @
LK1 (REQ) P934/Z@ TRIP BUS @
LK3 P935/Z@ RELAY FAIL BUS @
LK9 P933/Z# BLOCKING BUS #
LK6 (REQ) P934/Z# TRIP BUS #
LK8 P935/Z# RELAY FAIL BUS #

ZONE @ & # BBP AND CBF CIRCUIT

X2 J34 LK27 J34A D1 J34B
18V BBP SUPPLY 125V DC -VE
SUPPLY INTERFACE CONNECTION X153

ALL DC SUPPLIES INTERFACE TERMINAL BLOCKS OF SPRING LOADED TYPE WDU10-SL

X2 J1 FS1 J1A LK25 J1B
No.1 PROTN 120V DC +VE
SUPPLY INTERFACE CONNECTION X150

SEL 351A 67
AUX SUPPLY
J2B LK26 J2A LK31 J2 X2
No.1 PROTN 120V DC -VE
SUPPLY INTERFACE CONNECTION X151

CIRCUIT BREAKER (SEE NOTE 2)
52
TC1

80/1 K101 X2
52B
52A
K302 X2
SEL 351A 67 PROTN TRIP A02 OUT101 A01
K102 LK11 K103 S312 X104 X2
J1A X356 9503-1 BK X356
471 K103

X2 J11 FS3 10A J11A S312 J11B S315 J11C 472
J12A LK29 J12 X2
CONTROL 120V DC +VE
SUPPLY INTERFACE CONNECTION X370
CONTROL SUPPLY 120V DC -VE
SUPPLY INTERFACE CONNECTION X371
S315 K1 K1 X2
APD 52B Y3 X1
4C J11A

X2 J21 FS2 J21A
No.2 PROTN 120V DC +VE
SUPPLY INTERFACE CONNECTION X180
80/2 K201 X2
52B TC2
X2 J22A LK30 J22 X2
No.2 PROTN 120V DC -VE
SUPPLY INTERFACE CONNECTION X181
K202 X2
52A
LX12 K203 S312 K204 X2
52A

TABLE 1

PANEL NO.	ZONE	
	@	#
8	1	2
16	2	3

EQUAQUIP - TEST LINKS

LINK No	COLOUR	DESCRIPTION
LK1	RED	BB TRIP BUS @
LK2	GREY	BB TRIP IN BUS @
LK3	GREY	RELAY FAIL BUS @
LK4	GREY	BB BLOCKING BUS @
LK5		
LK6	RED	BB TRIP BUS #
LK7	GREY	BB TRIP IN BUS #
LK8	GREY	RELAY FAIL BUS #
LK9	GREY	BB BLOCKING BUS #
LK10		
LK11	GREY	CB No.1 PROT TRIP
LK12	GREY	CB No.2 PROT TRIP
LK13	GREY	CBF INITIATE INPUT
LK14		
LK15	BLACK	CT SUPPLY - A
LK16	BLACK	CT SUPPLY - B
LK17	BLACK	CT SUPPLY - C
LK18	BLACK	CT SUPPLY - N
LK19	BLACK	RELAY STAR POINT
LK20	WHITE	VT SUPPLY - A
LK21	WHITE	VT SUPPLY - B
LK22	WHITE	VT SUPPLY - C
LK23	WHITE	VT SUPPLY - N
LK24		
LK25	GREY	RELAY SUPPLY POS
LK26	GREY	RELAY SUPPLY NEG
LK27	GREY	BBP SUPPLY NEG
LK28	GREY	DIU NEG
LK29	GREY	CONTROL NEG
LK30	GREY	No.2 PROTN NEG
LK31	GREY	No.1 PROTN NEG

EQUIPMENT

ITEM	DESCRIPTION
X1	INTERFACE TERMINAL BLOCKS
X2,5	MANUFACTURE TERMINAL BLOCKS
X3	MANUFACTURE TEST TERMINAL BLOCKS
ET1,2,3	MANUFACTURE TERMINAL BLOCK TEST LINK (WTL6 SL)
S312	CB CONTROL SELECTOR SWITCH
S315	CB MANUAL CONTROL SWITCH
67	DIRECTIONAL CC & E/F PROTECTION RELAY
80/1	No.1 TRIP CIRCUIT SUPERVISION RELAY
80/2	No.2 TRIP CIRCUIT SUPERVISION RELAY
80/3	BBP FUSE SUPERVISION RELAY
4C	SUPERVISORY CONTROL CLOSE RELAY
4T1	SUPERVISORY CONTROL TRIP RELAY
4T2	MANUAL CONTROL TRIP RELAY
D1	TERMINAL BLOCK DIODE - WEIDMULLER DK4D/35
9503/1	CONTACT ARC SUPPRESSOR (SEL 9501)
CVD	CT & VT MULTIMETER ABB 560CVD03
FS1	No.1 PROTECTION +VE
FS2	No.2 PROTECTION +VE
FS3	CONTROL +VE
FS4	BBP SUPPLY POSITIVE
LKA	VT SUPPLY ISOLATION LINKS
Q1	MCB HEATER SUPPLY
FSM, LKM	MOTOR SUPPLY
Q101,Q102	PROTECTION VT SUPPLY
H	PANEL HEATER - 100W, 240 V AC, 50Hz
S2A	CB AUXILIARY OPEN WITH CB OPEN
S2B	CB AUXILIARY CLOSED WITH CB OPEN
APD	ANTI PUMPING DEVICE
Y1,Y2	CB TRIP COIL
Y3	CB SPRING RELEASE COIL
M	MOTOR, (REYROLLE 97SP6122, 350W)
LS1,2	SPRING CHARGE LIMIT SWITCH
	ENDEAVOUR INTERFACE TERMINAL BLOCK
Ø	MANUFACTURER TERMINAL BLOCK

PROTECTION & CONTROL

SUPERVISORY CLOSE CB X174 X50C 4C S312 J66B LK28 J66A X5209 SCADA 120V DC -VE
SUPERVISORY OPEN CB X175 X50T 4T1
CB AVAILABLE X1291 X1 S312 X112 CB RACKING SWITCH 52D/E2 X64

CIRCUIT BREAKER
52

CB CLOSED STATUS X5202 X2 52A
CB OPEN STATUS X1203 X3 52B
CB SPRING CHARGED X1204 X4 LS1 X64

LEFT BUSBAR EARTHSWITCH CLOSED X1320 X5 Q89E-L X1360
RIGHT BUSBAR EARTHSWITCH CLOSED X1329 X6 Q89E-R X1369

TRIP CIRCUIT SUPERVISION & BBP/CBF SUPPLY FAIL X2208 X4.01 80/1 80/2 80/3

VT SUPPLY FAIL X1817 X403 Q101-R Q101-W Q101-B Q102-R Q102-W Q102-B X1816

SEL 351A 67
PROTN TRIP A12 OUT106 A11
PROTN TRIP X1207 X101
RELAY FAIL A14 OUT107 A13
PROTECTION RELAY FAIL (INVERTED) X1378 X402

SCADA CIRCUIT

HEATER SUPPLY 240V AC ACTIVE X5 H1 Q1 H3 2A THT H7 H 100W H4 Q1 2A H2 X5 HEATER SUPPLY 240V AC NEUTRAL
SUPPLY INTERFACE CONNECTION X33 X13

HEATER SUPPLY

SPRING CHARGE MOTOR SUPPLY 125V DC -VE X2 M1 FSM 10A M3 23 CLS 52 M 24 M4 LKM M2 X2 SPRING CHARGE MOTOR SUPPLY 125V DC -VE
SUPPLY INTERFACE CONNECTION X340 X342

MOTOR SUPPLY

AMENDMENTS
ORIGINAL ISSUE
A
Job No.

ORIGINAL SCALE

		APPROVED	
DRAWN	PLE	PROTN	P.C
DATE	5-12-13		
CH'D	L.Li		

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Endeavour Energy

11/22KV SWITCHGEAR PANEL LAYOUT AND MATERIAL LIST	390841
11/22KV SWITCHGEAR INTERFACE TERMINAL BLOCK RAIL	390851
REFERENCE DRAWINGS	

DO NOT SCALE
DIMENSIONS IN MILLIMETRES

AUTHORISED
MANAGER PROJECT DEVELOPMENT 25-5-14

EQUIPMENT TECHNICAL SPECIFICATION (ETS0003)
11/22KV BUS SECTION CB CONTROL, PROTECTION & INDICATION
BUSBAR BLOCKING SCHEME
TYPICAL CIRCUIT DIAGRAM

A1 | 390844 | Rev. A

SHEET No 1 OF 1 SHEETS

FRAME_A1_02