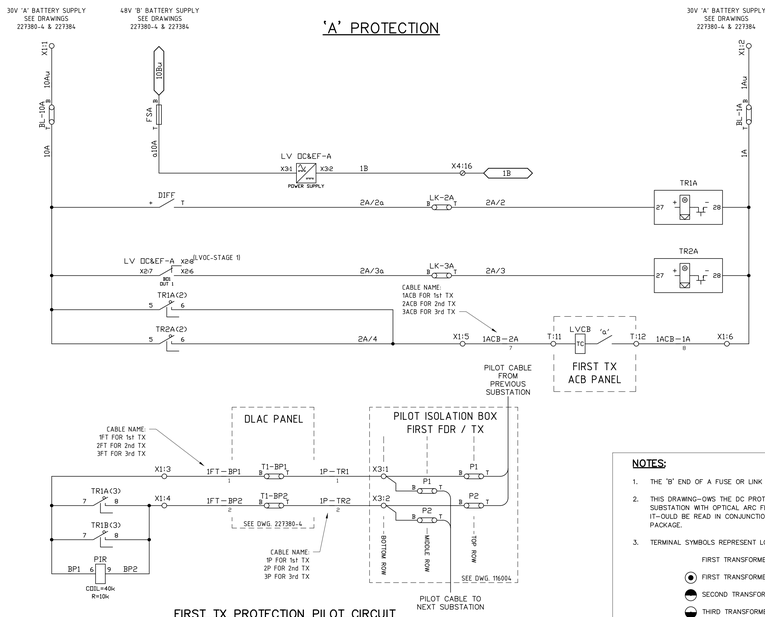
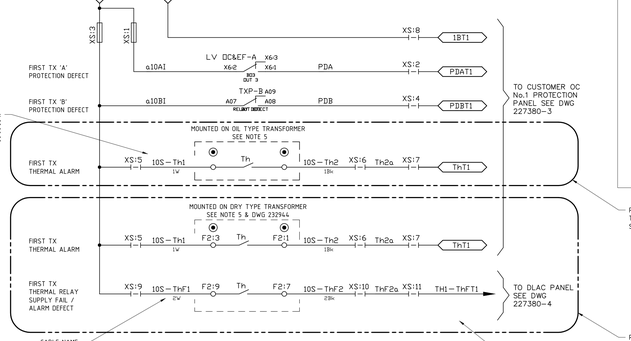


FIRST TX PROTECTION PILOT CIRCUIT



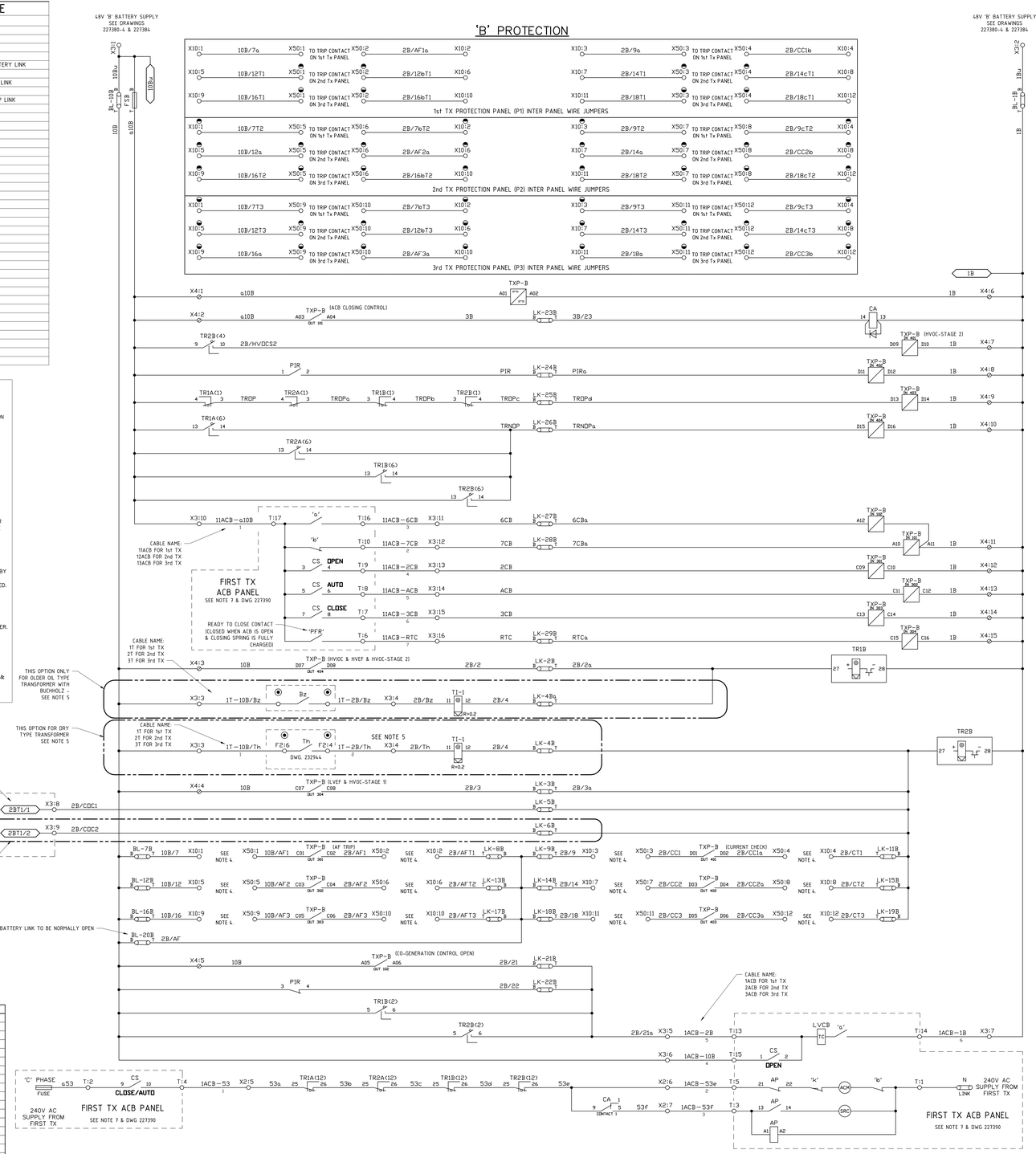
FIRST TX PROTECTION DEFECT ALARMS & TX SIGNAL

DC TEST LINK FUNCTION TABLE

LINK No.	LINK FUNCTION
BL-7B	FIRST Tx ARC FLASH - BATTERY LINK
BL-12B	SECOND Tx ARC FLASH - BATTERY LINK
BL-16B	THIRD Tx ARC FLASH - BATTERY LINK
BL-20B	ARC FLASH BYPASS NORMALLY OPEN - BATTERY LINK
LK-2A, 2B	Tx PROTECTION MULITTRIP TRIA (TRIB) - TRIP LINK
LK-2Ba	Tx BUCHHOLZ - TRIP LINK
LK-3A, 3B	Tx PROTECTION MULITTRIP TR2A (TR2B) - TRIP LINK
LK-4B	Tx THERMAL - TRIP LINK
LK-5B	CUSTOMER OC No.1 - TRIP LINK
LK-6B	CUSTOMER OC No.2 - TRIP LINK
LK-8B	FIRST Tx ARC FLASH - TRIP LINK
LK-9B	FIRST Tx CURRENT - CHECK LINK
LK-11B	FIRST Tx CURRENT CHECK - TRIP LINK
LK-13B	SECOND Tx ARC FLASH - TRIP LINK
LK-14B	SECOND Tx CURRENT CHECK- LINK
LK-15B	SECOND Tx CURRENT CHECK - TRIP LINK
LK-17B	THIRD Tx ARC FLASH - TRIP LINK
LK-18B	THIRD Tx CURRENT CHECK - LINK
LK-19B	THIRD Tx CURRENT CHECK - TRIP LINK
LK-21B	CO-GENERATION OPEN Tx ACB - TRIP LINK
LK-22B	PILOT INTERLOCK OPEN Tx ACB - TRIP LINK
LK-23B	Tx ACB CLOSE RELAY - LINK
LK-24B	11kV FEEDER IN SERVICE - CHECK LINK
LK-25B	Tx PROTECTION OPERATED - LINK
LK-26B	Tx PROTECTION OPERATED CHECK - LINK
LK-27B	Tx ACB STATUS - LINK
LK-28B	Tx ACB STATUS CHECK - LINK
LK-29B	Tx ACB READY TO CLOSE - LINK
FSA	48V 'a10A' PROTECTION FUSE
BL-10A	30V 'A' +VE BATTERY LINK
BL-1A	'A' -VE SUPPLY BATTERY LINK
FSB	48V 'a10B' PROTECTION FUSE
BL-10B	48V 'B' +VE BATTERY LINK
BL-1B	'B' -VE SUPPLY BATTERY LINK

NOTES:

1. THE 'B' END OF A FUSE OR LINK THUS (^{B}—^{T}) INDICATES THE BOTTOM CONNECTION.
2. THIS DRAWING-OWS THE DC PROTECTION & CONTROL SCHEMATIC FOR A TRANSFORMER IN A CITY DISTRIBUTION SUBSTATION WITH OPTICAL ARC FLASH DETECTION AND A DISTRIBUTION LOCAL AUTOMATION CONTROL PANEL. IT-OULD BE READ IN CONJUNCTION WITH NETWORK STANDARDS AND THE SUBSTATION DESIGN INFORMATION PACKAGE.
3. TERMINAL SYMBOLS REPRESENT LOCATION OF TERMINALS.
   FIRST TRANSFORMER PROTECTION PANEL
   FIRST TRANSFORMER CONNECTION BOX
   SECOND TRANSFORMER PROTECTION PANEL
   THIRD TRANSFORMER PROTECTION PANEL
4. SHOWN IS FIRST TRANSFORMER PROTECTION PANEL WITH OPTICAL ARC FLASH DETECTION. EACH TRANSFORMER PROTECTION INTEGRATES WITH THE OTHER. EACH PROTECTION PANEL IS TO BE CONFIGURED ON SITE, BY WIRE JUMPERING BETWEEN TERMINAL RAILS X10 & X50 TO PROTECT ITS' RELEVANT TRANSFORMER AND THE 415V BUSBAR.
5. WHEN A DRY TYPE TRANSFORMER IS USED THE THERMAL RELAY (Th) AND A TRIP INDICATOR ARE TO BE INSTALLED. THE THERMAL RELAY IS LOCATED & SUPPLIED ON THE TRANSFORMER BY THE TRANSFORMER MANUFACTURER. THE TRIP INDICATOR IS LOCATED ON THE TRANSFORMER PROTECTION PANEL & IS SUPPLIED BY AUSGRID.
   WHEN A SEALED OIL TYPE TRANSFORMER IS USED THE THERMAL RELAY & TRIP INDICATORS ARE NOT REQUIRED. A THERMAL ALARM IS TO BE INSTALLED ACTIVATED BY A MECHANICAL GAUGE FROM THE TRANSFORMER, IF EXISTING.
   FOR OIL TYPE TRANSFORMERS WITH A BUCHHOLZ TYPE RELAY THE BUCHHOLZ TRIP ARRANGEMENT IS TO BE INSTALLED.
6. FOR CLARITY, TRANSFORMERS ARE REFERENCED AS 1st TRANSFORMER, 2nd TRANSFORMER & 3rd TRANSFORMER. ACTUAL DESIGNATION WILL DEPEND ON WHICH CITY TRIPLEX FEEDERS ARE SUPPLYING THE DISTRIBUTION SUBSTATION.
   TYPICAL DESIGNATION FOR 1st, 2nd, & 3rd TRANSFORMERS ARE:
   'A', 'B', & 'C' ; 'D', 'E', & 'F' ; 'G', 'H', & 'J' ; or 'K', 'L', & 'M'
   SEE DESIGN PACKAGE FOR PROJECT DETAIL.
7. THE TRANSFORMER ACB PANELS (ACB INCLUDED) ARE TO BE WIRED TO MATCH AUSGRID DRAWING 227390-1 & MANUFACTURERS DRAWING 234374-1.
   ACB IS-OWN OPEN, CHARGING SPRING AND ALL RELAYS DE-ENERGISED.



TITLE	DWG No.
EPOXY RESIN ENCASED PROTECTION CURRENT TRANSFORMER OUTLINE AND DETAILS	125190-1
RMICB SUBSTATIONS WITH E TYPE LV BOARD WITH OPTICAL ARC FLASH DETECTION FIBRE LOOPING AND GENERAL MOUNTING DETAILS	227350-5
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OAFD CUSTOMER ACB INTERNAL WIRING AND ACB PANEL CONTROL WIRING SCHEMATIC	227390-2
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OAFD TRANSFORMER ACB INTERNAL WIRING AND ACB PANEL CONTROL WIRING SCHEMATIC	227390-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD, OAFD, & CUSTOMER OC No1 PROTECTION, DISTRIBUTION AUTOMATION CONTROL PANEL WIRING & CABLING DIAGRAM	227389-2
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD, OAFD, & CUSTOMER OC No1 & No2 PROTECTION, DISTRIBUTION AUTOMATION CONTROL PANEL WIRING & CABLING	227389-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OAFD DISTRIBUTION LOCAL AUTOMATION CONTROL PANEL LAYOUT AND LABEL DETAILS	227388-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OAFD 1500kVA TX'S AND VENTILATION FAN AC SERVICE BOARD LAYOUT, WIRING, & CONNECTIONS	227387-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OPTICAL ARC FLASH DETECTION CABLE SCHEDULE	227386-2
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OPTICAL ARC FLASH DETECTION CABLING DIAGRAM	227386-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OAFD CUSTOMER OC No.1 (& No.2) PROTECTION PANEL WIRING AND CABLE CONNECTIONS	227385-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD, OIL TYPE TX, & OAFD, TRANSFORMER PROTECTION PANEL CABLE CONNECTION DIAGRAM	227384-2
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD, DRY TYPE TX, & OAFD, TRANSFORMER PROTECTION PANEL CABLE CONNECTION DIAGRAM	227384-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD, OIL TYPE TX, & OAFD, TRANSFORMER PROTECTION PANEL WIRING DIAGRAM	227383-2
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD, DRY TYPE TX, & OAFD, TRANSFORMER PROTECTION PANEL WIRING DIAGRAM	227383-1
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD & OAFD, TRANSFORMERS AND CUSTOMER OVERCURRENT PROTECTION FREE STANDING PANELS LABEL DETAILS	227382-1
CITY DISTRIBUTION SUBSTATIONS WITH OPTICAL ARC FLASH DETECTION (E TYPE LV) TRANSFORMERS AND CUSTOMER OVERCURRENT FREE STANDING PANELS LAYOUT DETAILS	227381-1
CITY DISTRIBUTION SUB WITH E TYPE LV BOARD AND OAFD, DLAC PANEL SCHEMATIC, GENERAL DC SUPPLIES INTER-PANEL WIRING, FIBRE COMMS & CABLING DIAGRAM	227380-4
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OPTICAL ARC FLASH DETECTION CUSTOMER OVERCURRENT DC SCHEMATIC	227380-3
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD, & OPTICAL ARC FLASH DETECTION TRANSFORMER DC SCHEMATIC	227380-2
CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD AND OPTICAL ARC FLASH DETECTION AC SCHEMATIC	227380-1

REFERENCE DRAWINGS

TAGNAME	MFG	CATNO	DESC	REF_DWG
BL, LK	EUGAGUIP	MOULDED TYPE M5	BATTERY/TEST LINK	507111-1
CA	IDEC	RH2B-ULD 48V DC	AUXILIARY RELAY WITH BASE-2B-05C	169175-1
DIFF	-	K3M	3 ELEMENT FUSE RELAY	113243-1
FSA, FSB	ALSTOM	RS20P Black	FUSE - 2 STUD BACK CONNECTED	-
LV DC&EF-A	SIEMENS	7SR4504-2HB20-1AA0	OVERCURRENT & EARTH FAULT RELAY	-
PIR	RMS	PIR	PILOT INTERLOCK RELAY	53829-1
TR1B, TR2B	RMS	TR12-CD-22	LATCHING MULTITRIP RELAY 48V DC	223206-1 & 2
TR1A, TR2A	RMS	TR12-BD-22	LATCHING MULTITRIP RELAY 32V DC	223206-1 & 2
TXP-B	SCHWEITZER	SEL-751A	TRANSFORMER PROTECTION RELAY	222614-1
TI-1	RMS	3A32K37	TRIP INDICATOR TI-3 (0.2 ohm)	123399-1
Th	-	-	THERMAL RELAY (SEE NOTE 5)	-
AP	-	-	ANTI-PUMP RELAY (ACB PANEL)	23437A-1
ACM	-	-	AC MOTOR FOR SPRING CHARGING (ACB INTERNAL)	23437A-1
CS	-	-	CONTROL SWITCH (ACB PANEL)	23437A-1
SRC	-	-	SPRING RELEASE COIL (ACB INTERNAL)	23437A-1
TC	-	-	TRIP COIL (ACB INTERNAL)	23437A-1
'a'	-	-	AUXILIARY SWITCH (Open when CB Open)	23437A-1
'b'	-	-	AUXILIARY SWITCH (Closed when CB Open)	23437A-1
'k'	-	-	AUXILIARY SWITCH (Spring Charge)	23437A-1
'PFR'	-	-	READY TO CLOSE CONTACT (ACB INTERNAL)	23437A-1
T	UTILUX	3820	RAIL MOUNTED TERMINAL (ACB PANEL)	23437A-1
X1, X3, X10, X50	UTILUX	3820	RAIL MOUNTED TERMINAL	118547-1
X2	PHOENIX	UT 10 OG 3046281	FEED-THROUGH TERMINAL BLOCK	-
X4	WEIDMULLER	SAK2.5	RAIL MOUNTED TERMINAL CAT No. 27966	-
X5	WEIDMULLER	ASK1	RAIL MOUNTED FUSE CAT No. 37676	-
XS	WEIDMULLER	SAKR	RAIL MOUNTED ISOLATING TERM CAT No.41226	-
LEGEND				

AMENDMENTS

AMD	DATE	DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
0	17/06/2015	DRAWING TITLE BLOCK UPDATED. ADDED TERMINAL NUMBER & AMENDED ACB INTERNAL CONNECTIONS AS SHOWN FROM MANUFACTURERS DRAWINGS. AMENDED NOTE 7 & RTC CONTACT DETAILS. ADDED DETAILS TO LEGEND.	L.MARTINUZZI	L.MARTINUZZI	M.BENNETT	M.BENNETT
2	19/09/2024	REPLACED SCHNEIDER P115 WITH SIEMENS 7SR4504 IN LEGEND & SCHEMATIC CONNECTIONS. LVOC-STAGE 2 TRIP REMOVED FROM PROTECTION A.	L.M.	L.M.	M.B.	M.B.
3	10/09/2025	DRAWING BORDER UPDATED. UTILUX H2238 ORANGE RAIL MOUNTED TERMINALS REPLACED BY PHOENIX 'UT 10 OG 3046281' FEED-THROUGH TERMINAL BLOCK. LEGENDS TABLE UPDATED.	H.O.	H.O.	M.B.	M.B.

Ausgrid
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SYDNEY NSW 2000
P: 9272 3805

ISSUED FOR CONSTRUCTION ISSUE

SCALE	NTS
DESIGNED	-
DRAWN	L.MARTINUZZI/E.KAIROUZ
CHECKED	C.MURPHY
APPROVED	C.MURPHY
DATE	17/06/2015
TRIM REF	-
PROJECT NUMBER	OPEX-6923-1

CITY DISTRIBUTION SUBSTATIONS WITH E TYPE LV BOARD & OPTICAL ARC FLASH DETECTION TRANSFORMER DC SCHEMATIC

DRAWING No 227380 | SHEET 2 | AMD 3 | SIZE A0

C&P - DISTRIBUTION SUBSTATIONS