
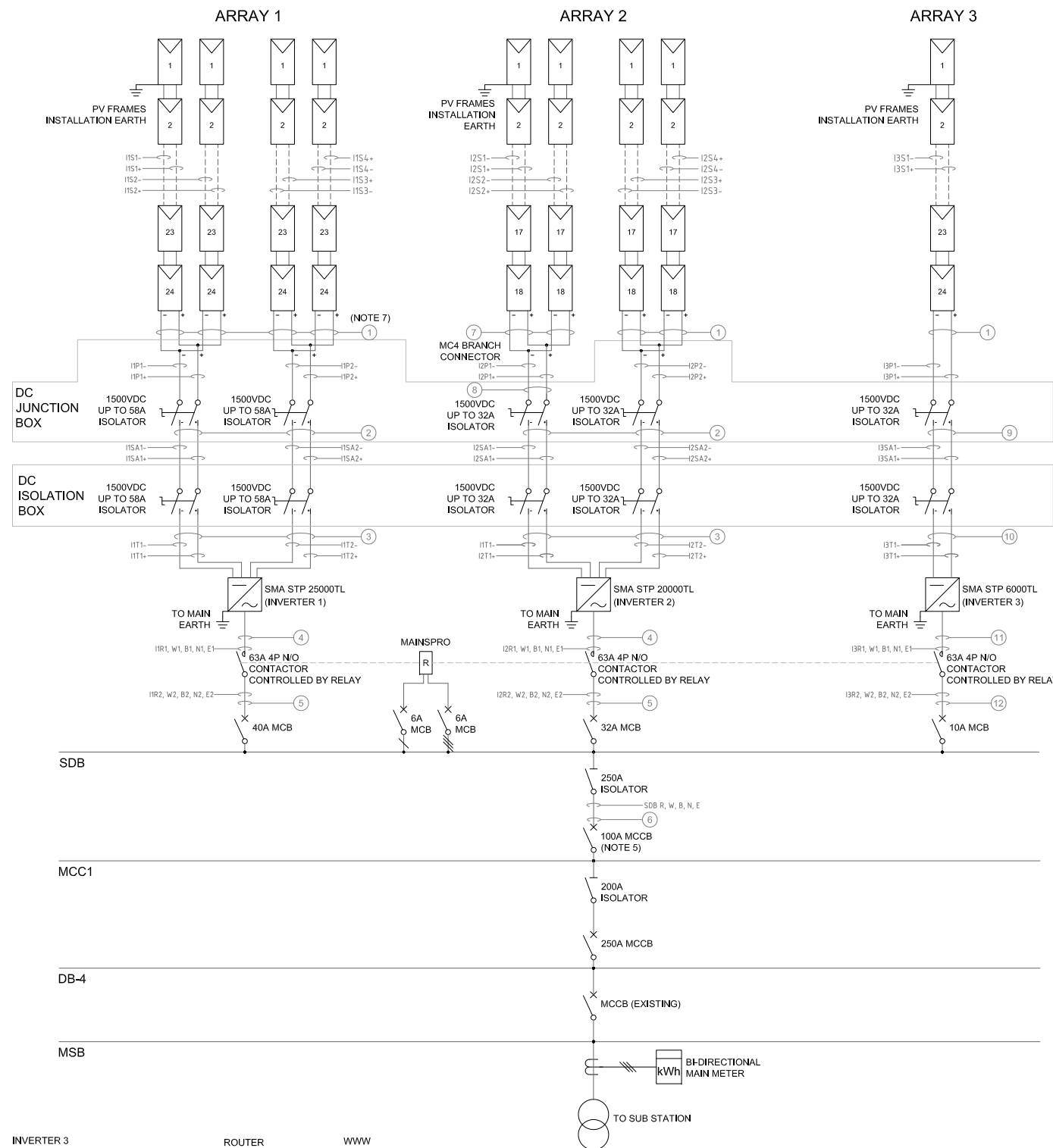


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1. Technology: Solar PV
 2. Maximum Power: 51 kW
 3. Contribution to fault levels: N/A
 4. Size & rating of the relevant Transformer: N/A
 5. Single line diagram: refer to following page
 6. Protection Systems & Communication Systems: refer to following page
 7. Voltage Control and reactive power capability: N/A
 8. Details specific to the location of facility: N/A

ITEM	SPECIFICATION	QTY
MODULE	TRINA SOLAR 260W	192
INVERTER	SMA STP 25000TL	1
	SMA STP 20000TL	1
	SMA STP 6000TL	1
TOTAL		49.92kWp

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- EXACT LOCATION OF ALL PARTS OF THE INSTALLATION TO BE DETERMINED ON SITE.
- CIRCUIT BREAKER TO MATCH MAKE, MODEL AND FAULT CURRENT OF EXISTING CIRCUIT BREAKERS.
- 2C 1.5mm² CONTROL CABLE.
- FOR CABLE SCHEDULE, REFER TO DWG. D-EL-12628P8-204.



ARRAY 1

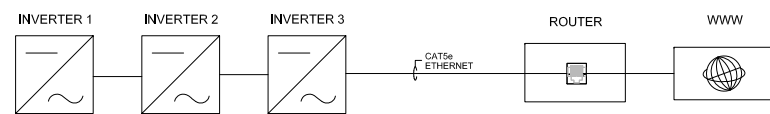
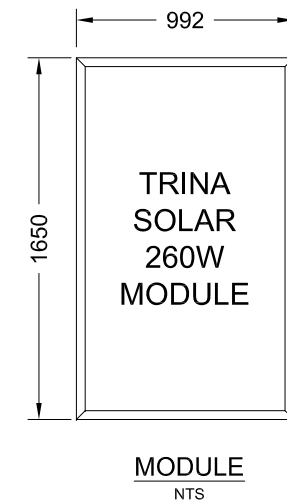
	MPPT1	MPPT2
Panel Type	Trina-Honey 260P	Trina-Honey 260P
Number of Panels in Series (N)	24	24
Number of Parallel Strings	2	2
Total Number of Panels	96	
Inverter Type	SMA STP25000TL-30	
Number of Individual MPPT's	2	
Rated Power (W)	12485	12485
Total Rated Power (W)	24970	
Panel Voc (V)	38.2	38.2
Panel Isc (A)	9	9
Fill Factor	0.756544503	0.756544503
Input Voc (V)	916.8	916.8
Input Isc (A)	18	18
PV Array Min Voltage	587.712	587.712
PV Array Max Voltage	990.14	990.14
Distance to Junction Box (m)	50	
DC Cable Resistance (Ohm*mm ² /m)	0.0172	
Min cable size (mm ²)	1.69	1.69
Cable Size selected (mm ²)	4	4
Voltage drop (%)	0.42	0.42
String Protection Needed	NO	NO
Distance to Inverter (m)	10	
DC Cable Resistance (Ohm*mm ² /m)	0.0172	
Min cable size (mm ²)	0.68	0.68
Cable Size selected (mm ²)	6	6
Voltage drop (%)	0.11	0.11
DC Isolation min voltage [per pole rating] (V)	990.14	990.14
DC Isolation min Current (A)	22.50	22.50
Phases output	3	
Max AC current [per phase; line to neutral] (A)	36.19	36.19
AC Breaker min Current (A)	36.19	36.19
AC Breaker max Current (A)	72.38	72.38
AC Breaker Chosen (A)	40	40
Distance to POC (m)	5.00	
Cable Impedance (Ohm*mm ² /m)	0.018	
Min cable size (mm ²)	2.71	2.71
AC Cable size (mm ²)	10.00	

ARRAY 2

	MPPT1	MPPT2
Panel Type	Trina-Honey 260P	Trina-Honey 260P
Number of Panels in Series (N)	18	18
Number of Parallel Strings	2	2
Total Number of Panels	72	
Inverter Type	SMA STP20000TL-30	
Number of Individual MPPT's	2	
Rated Power (W)	9364	9364
Total Rated Power (W)	18728	
Panel Voc (V)	38.2	38.2
Panel Isc (A)	9	9
Fill Factor	0.756544503	0.756544503
Input Voc (V)	687.6	687.6
Input Isc (A)	18	18
PV Array Min Voltage	440.784	440.784
PV Array Max Voltage	742.61	742.61
Distance to Junction Box (m)	50	
DC Cable Resistance (Ohm*mm ² /m)	0.0172	
Min cable size (mm ²)	2.25	2.25
Cable Size selected (mm ²)	4	4
Voltage drop (%)	0.56	0.56
String Protection Needed	NO	NO
Distance to Inverter (m)	10	
DC Cable Resistance (Ohm*mm ² /m)	0.0172	
Min cable size (mm ²)	0.90	0.90
Cable Size selected (mm ²)	6	6
Voltage drop (%)	0.15	0.15
DC Isolation min voltage [per pole rating] (V)	742.61	742.61
DC Isolation min Current (A)	22.50	22.50
Phases output	3	
Max AC current [per phase; line to neutral] (A)	27.14	27.14
AC Breaker min Current (A)	27.14	27.14
AC Breaker max Current (A)	54.28	54.28
AC Breaker Chosen (A)	32	32
Distance to POC (m)	5.00	
Cable Impedance (Ohm*mm ² /m)	0.018	
Min cable size (mm ²)	2.04	2.04
AC Cable size (mm ²)	10.00	

ARRAY 3

	Trina-Honey 260P
Panel Type	Trina-Honey 260P
Number of Panels in Series (N)	24
Number of Parallel Strings	1
Total Number of Panels	24
Inverter Type	SMA STP6000TL-20
Rated Power (W)	6243
Panel Voc (V)	38.2
Panel Isc (A)	9
Fill Factor	0.76
Input Voc (V)	916.8
Input Isc (A)	9
PV Array Max Voltage (V)	990.144
Distance to Junction Box (m)	50
DC Cable Resistance (Ohm*mm ² /m)	0.0172
Min cable size (mm ²)	1.69
Cable Size selected (mm ²)	4
Voltage drop (%)	0.42
String Protection Needed	No
Distance to Inverter (m)	10
DC Cable Resistance (Ohm*mm ² /m)	0.0172
Min cable size (mm ²)	0.34
Cable Size selected (mm ²)	4
Voltage drop (%)	0.08
DC Isolation min voltage [per pole rating] (V)	990.14
DC Isolation min Current (A)	11.25
Phases output	3
Max AC current [per phase; line to neutral] (V)	8.70
AC Breaker min Current (A)	10.88
AC Breaker max Current (A)	17.40
AC Breaker chosen (A)	10
Distance to POC (m)	5
AC Cable size (mm ²)	6



TYPICAL SYSTEM SCHEMATIC
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COMMUNICATIONS SCHEMATIC
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- LEGEND:**
- ISOLATOR
 - CIRCUIT BREAKER
 - ROTTARY SWITCH
 - EARTH POTENTIAL
 - SINGLE PHASE CIRCUIT
 - THREE PHASE CIRCUIT
 - NEUTRAL CONDUCTOR SYMBOL
 - EARTH CONDUCTOR SYMBOL
 - MOULDED CASE CIRCUIT BREAKER
100A DENOTES 100AMPS RATING
200A DENOTES MINIMUM FRAME SIZE
 - MAINSPRO RELAY
 - AC SUPPLY WIRING
 - CONTROL WIRING (NOTE 6)
 - 260W POLYCRYSTALLINE SOLAR MODULE
 - INVERTER
 - MAIN METER

Rev	Description	Date	Checked	Authorised
D	RE-ISSUED FOR APPROVAL	14.10.15		
C	MC4 BRANCH CONNECTOR ADDED	12.10.15		
B	CABLE SCHEDULE NUMBER ADDED	01.10.15		
A	PRELIMINARY DESIGN	10.09.15		

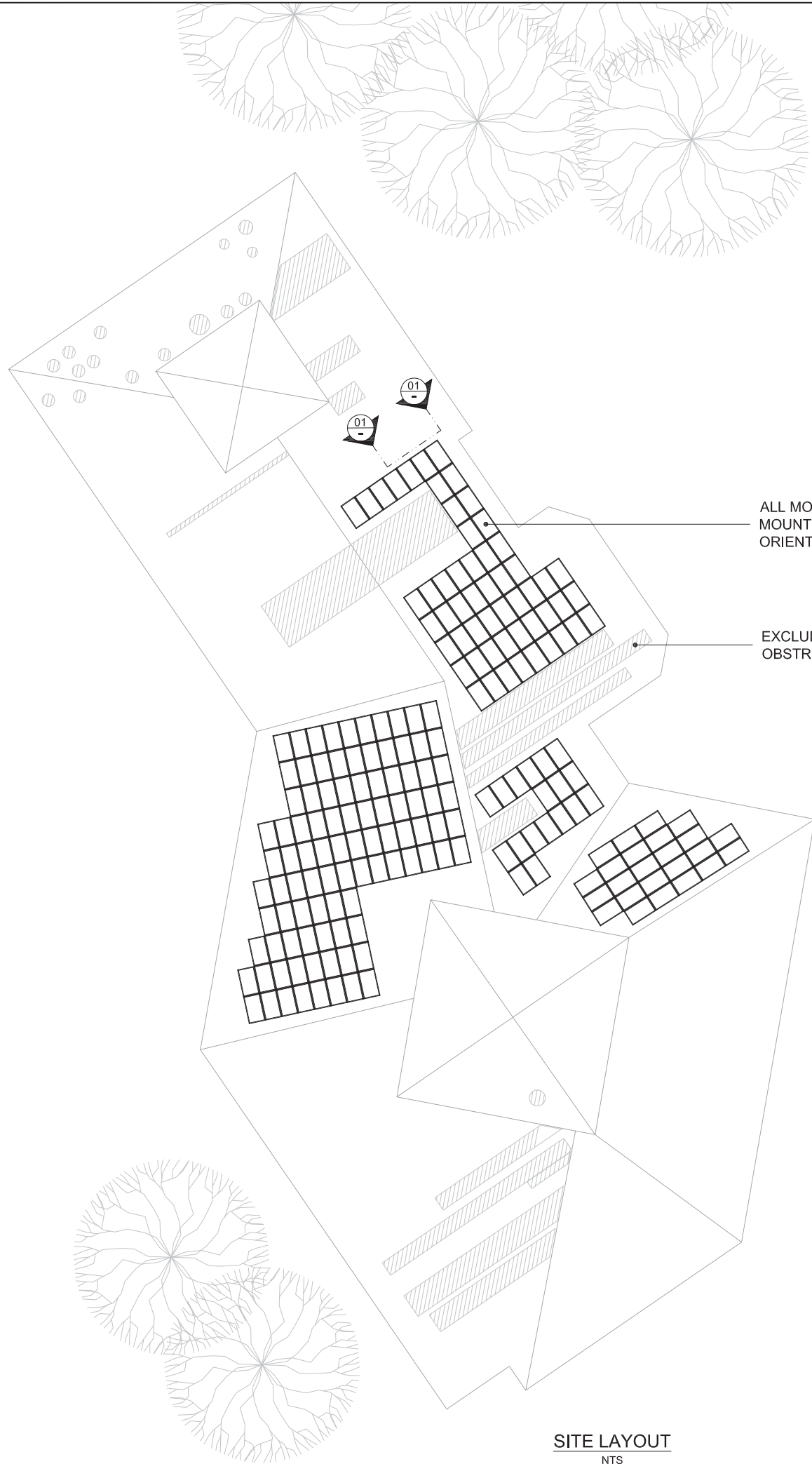
PROJECT:
[Redacted]

CLIENT:
[Redacted]

SOLGEN ENERGY PTY LTD

DRAWING TITLE:
49.92kWp PHOTOVOLTAIC SYSTEM SCHEMATIC

SCALE	DRAWN	CHECKED	AUTHORISED	SIZE
AS SHOWN	Date: 10.09.2015	Date: 10.09.2015	Date: 10.09.2015	A3
DRAWING No.	D-EL-12628P8-201			Rev D

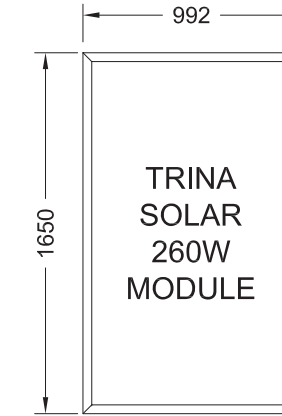


ALL MODULES TO BE INSTALLED FLUSH MOUNTED TO THE ROOF IN LANDSCAPE ORIENTATION

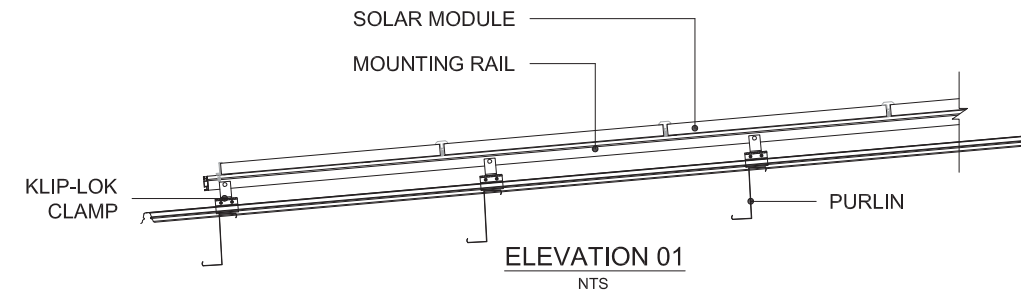
EXCLUDED AREA / ROOF OBSTRUCTIONS

SITE LAYOUT
NTS

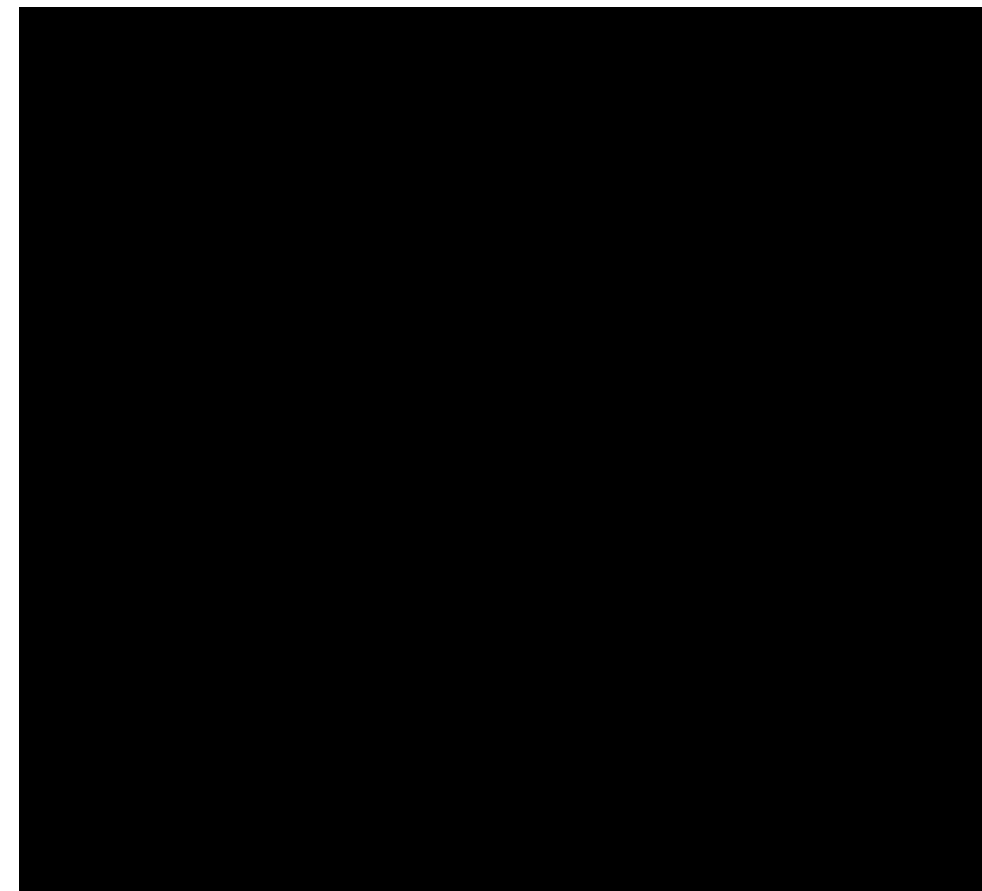
ITEM	SPECIFICATION	QTY
MODULE	TRINA SOLAR 260W	192
INVERTER	SMA STP 25000TL	1
	SMA STP 20000TL	1
	SMA STP 6000TL	1
TOTAL		49.92kWp



MODULE
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ELEVATION 01
NTS



SATELLITE VIEW
NTS



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4. EXACT LOCATION OF ALL PARTS OF THE INSTALLATION TO BE DETERMINED ON SITE.
5. DETAILED SHADING ANALYSIS TO BE CONDUCTED ON SITE.
6. ALL CLAMPED ROOF FIXINGS MUST BE INSTALLED DIRECTLY ABOVE ROOF PURLINS.
7. SCREWED ROOF FIXINGS TO REPLACED EXISTING ROOF SCREWS.

Rev	Description	Date	Checked	Authorised
A	PRELIMINARY DESIGN	18.05.15		

PROJECT:
[REDACTED]

CLIENT:
[REDACTED]

SOLGEN ENERGY PTY LTD
[REDACTED]

DRAWING TITLE:
49.92kWp PHOTOVOLTAIC SYSTEM LAYOUT

SCALE	DRAWN	CHECKED	AUTHORISED	SIZE
AS SHOWN				A3

DRAWING No. **D-GE-12628P8-101** Rev **A**

SOLAR DB COMPONENT SCHEDULE			
PART NR.	ID	MANUFACTURER	DESCRIPTION
1	MCB 1	GE	40A 3P MCB (INV 1 CONNECTION)
2	MCB 2	GE	32A 3P MCB (INV 2 CONNECTION)
3	MCB 3	GE	10A 3P MCB (INV 3 CONNECTION)
4	MCB 4	GE	6A 1P MCB (CONTROL SUPPLY)
5	MCB 5	GE	6A 1P MCB (RELAY POWER SUPPLY)
6	MCB 6	GE	6A 3P MCB (RELAY VOLTAGE REFERENCE)
7	MAIN SWITCH	GE	250A 3P ISOLATOR
8	CONTACTOR 1	ELKO	63A 4P N/O CONTACTOR (INV 1 CONTROL)
9	CONTACTOR 2	ELKO	63A 4P N/O CONTACTOR (INV 2 CONTROL)
10	CONTACTOR 3	ELKO	63A 4P N/O CONTACTOR (INV 3 CONTROL)
11	MAINSPRO	ComAP	MAINSPRO MAINS DECOUPLING RELAY

MULTIFUNCTION RELAY TERMINAL SCHEDULE		
TERMINAL	FUNCTION	DEFAULT STATE
RE 1	SPARE	/
RE 2	SPARE	/
RE 3	SPARE	/
RE 4	!CommTrpPer	N/O
RE 5	!InternFail	N/O

CABLE SCHEDULE	
INVERTER 1 TO SOLAR DB	4C + E 10mm ² Cu
INVERTER 2 TO SOLAR DB	4C + E 10mm ² Cu
INVERTER 3 TO SOLAR DB	4C + E 6mm ² Cu
SOLAR DB TO DB-4	4C + E 50mm ² Cu
AC CONTROL CIRCUITS	1.5mm ² COPPER

O/U VOLTAGE SETTINGS

Protection Setting	Set Point	
	Value	Units
OV Pick Up	270	V
OV Timing	1.0	S
UV Pick Up	200	V
UV Timing	1.0	S

O/U FREQUENCY SETTINGS

Protection Setting	Set Point	
	Value	Units
OF Pick Up	52	Hz
OF Timing	2.0	S
UF Pick Up	48	Hz
UF Timing	2.0	S

ROCOF SETTINGS

Protection Setting	Set Point	
	Value	Units
+ve ROCOF Pick Up	0.7	Hz/S
+ve ROCOF Timing	1.0	S
-ve ROCOF Pick Up	0.7	Hz/S
-ve ROCOF Timing	1.0	S

VECTOR SHIFT SETTINGS

Protection Setting	Set Point	
	Value	Units
+ve Vector Shift Pick Up	8	Degrees
+ve Vector Shift Pick Up	8	Degrees

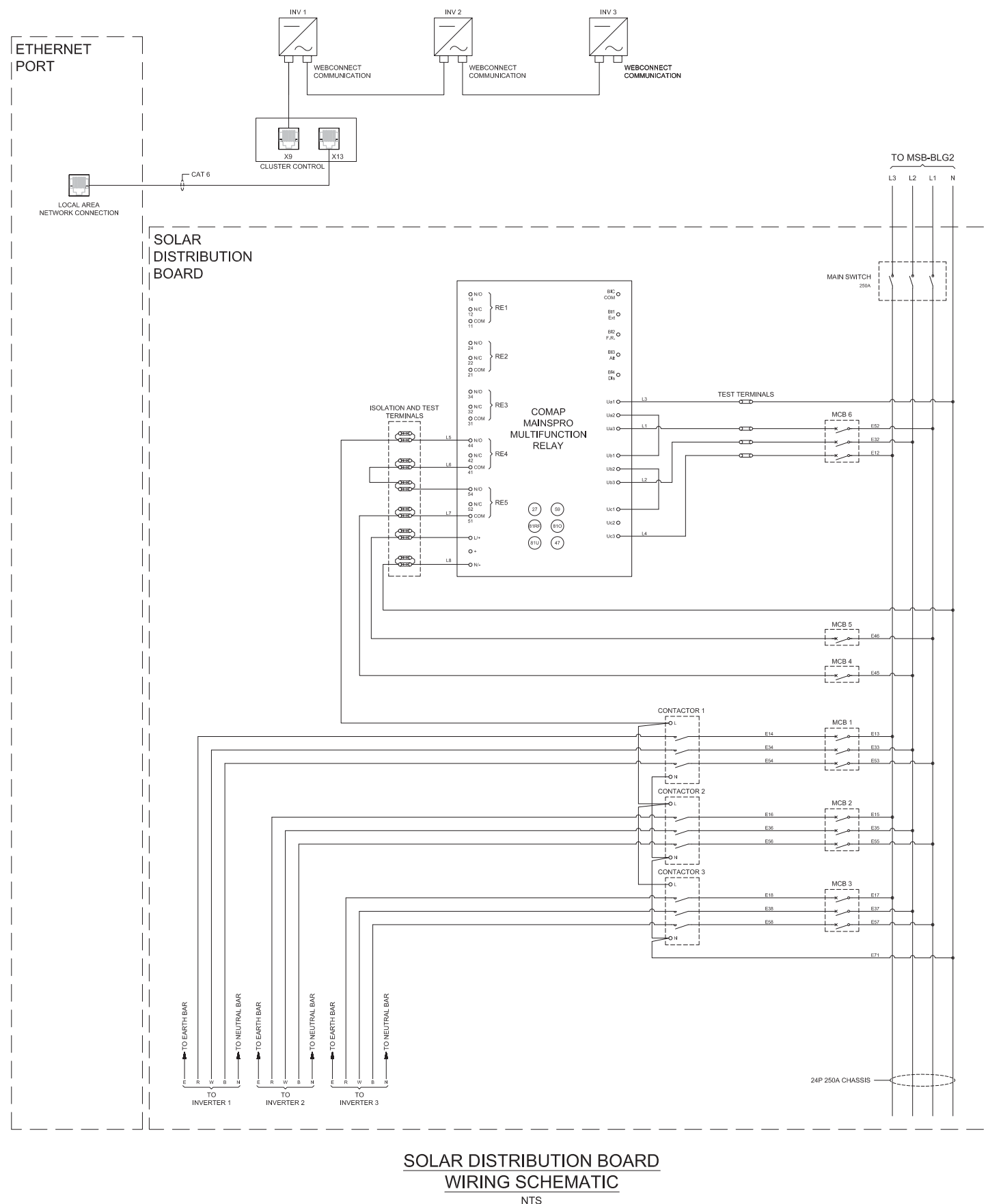
INVERTER O/U VOLTAGE SETTINGS

Protection Setting	Set Point	
	Value	Units
OV Pick Up	260	V
OV Timing	1.0	S
UV Pick Up	200	V
UV Timing	1.0	S

INVERTER O/U FREQUENCY SETTINGS

Protection Setting	Set Point	
	Value	Units
OF Pick Up	52	Hz
OF Timing	2	S
UF Pick Up	48	Hz
UF Timing	2	S

1. MAINSPRO DECOUPLING RELAY USES NORMALLY OPEN CONTACTS. WHEN A FAULT IS DETECTED A CIRCUIT IS BROKEN TO THE AC CONTROL CIRCUIT CAUSING IT TO TRIP THE CONTACTORS.
2. AUTO RECONNECT SETTING: 60 SECONDS AFTER FAULT IS CLEARED.
3. START TRIP ACTIVATED ON RELAY.



SOLAR DISTRIBUTION BOARD WIRING SCHEMATIC
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3. EARTH CABLE ROUTE NOT SHOWN FOR CLARITY
4. CABLE SIZED ACCORDINGLY FOR THE APPROPRIATE RATINGS.
5. SOLAR POWER SYSTEM COMPLIES WITH CLASS II INSTALLATION
6. INSTALLATION TO COMPLY WITH AS4777, AS5033, AS3000, AS3430, STATE SERVICE AND INSTALLATION RULES AND ENERGY AUTHORITY NETWORK RULES
7. SOLAR AC SWITCHGEAR SIZED FOR MAXIMUM INVERTER AC OUTPUT.

Rev	Description	Date	Checked	Authorised
A	PRELIMINARY DESIGN	10.09.15		

PROJECT:
[REDACTED]

CLIENT:
[REDACTED]

SOLGEN ENERGY PTY LTD
[REDACTED]

DRAWING TITLE:
SOLAR DB WIRING AND PROTECTION SETTINGS

SCALE	DRAWN	CHECKED	AUTHORISED	SIZE
AS SHOWN	Date: 10.09.2015	Date: 10.09.2015	Date: 10.09.2015	A3
DRAWING No.	D-EL-12628P8-203			Rev A