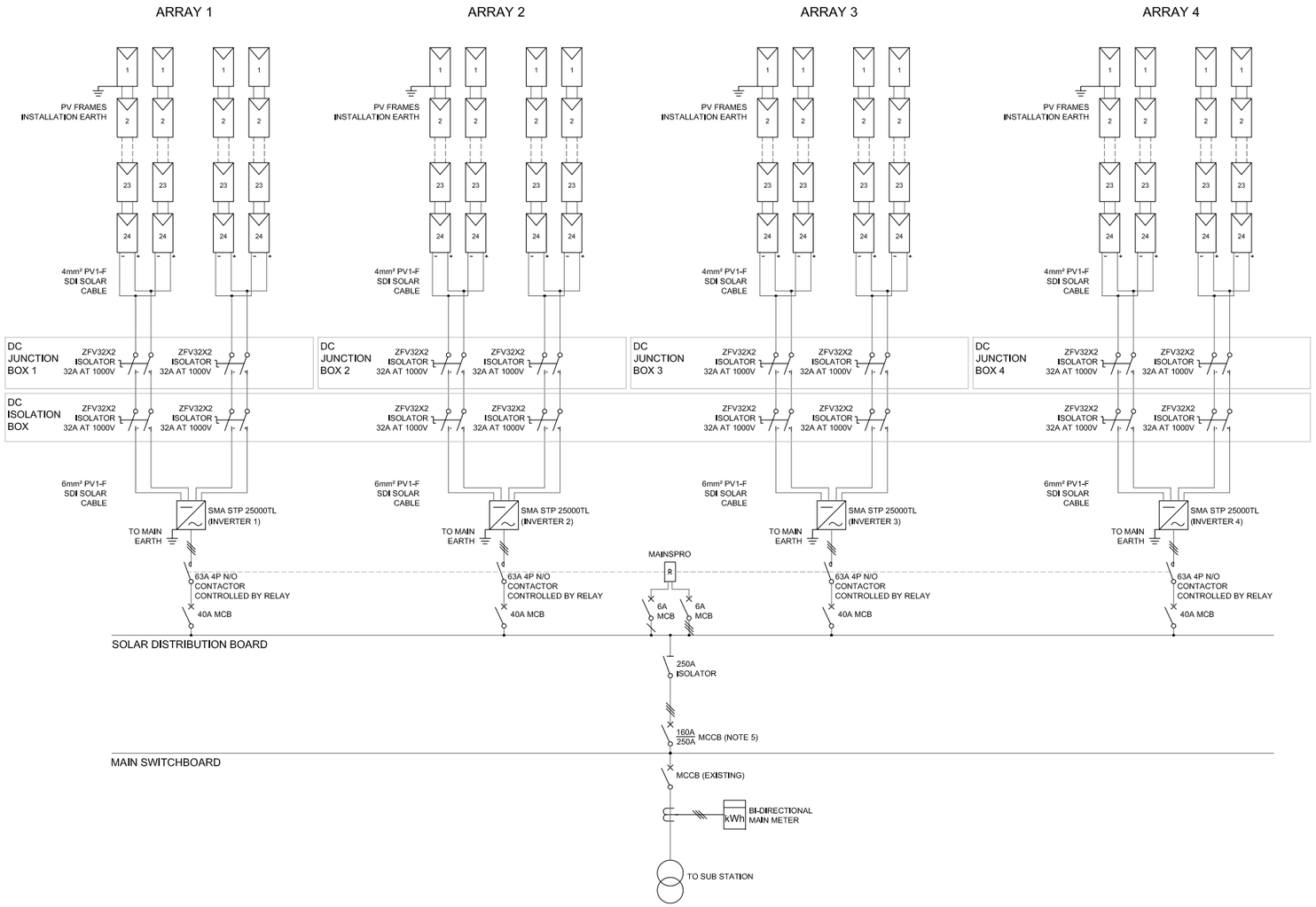
[redacted]

1. Technology: Solar PV
2. Maximum Power: 100 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	DUOMAX 260W	384
INVERTER	SMA STP 25000TL	4
TOTAL		99.84kWP



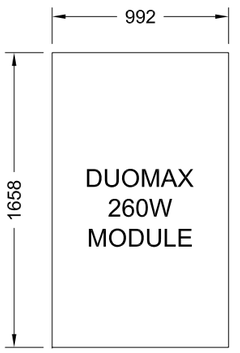
TYPICAL SYSTEM SCHEMATIC
NTS

LEGEND:

- ISOLATOR
- CIRCUIT BREAKER
- ROTARY SWITCH
- EARTH POTENTIAL
- SINGLE PHASE CIRCUIT
- THREE PHASE CIRCUIT
- NEUTRAL CONDUCTOR SYMBOL
- EARTH CONDUCTOR SYMBOL
- 100A / 200A — MOULDED CASE CIRCUIT BREAKER. 100A DENOTES 100AMPS RATING, 200A DENOTES MINIMUM FRAME SIZE
- R — MAINSPRO RELAY
- AC SUPPLY WIRING
- CONTROL WIRING
- 260W POLYCRYSTALLINE SOLAR MODULE
- INVERTER
- kWh — MAIN METER

ARRAY 1-4

	MPPT1	MPPT2
Panel Type	Trina Duomax 260P	Trina Duomax 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)	12474	12474
Total Rated Power (W)	24948	
Panel Voc (V)	37.6	37.6
Panel Isc (A)	9.1	9.1
Panel Vmp (V)	30.5	30.5
Panel Imp (A)	8.52	8.52
Fill Factor	0.759	0.759
Input Voc (V)	902.4	902.4
Input Isc (A)	18.2	18.2
PV Array Min Voltage	581.94	581.94
PV Array Max Voltage	976.04	976.04
Distance to Junction Box (m)	40	
DC Cable Resistance (Ohm*mm2/m)	0.0183	
Min cable size (mm2)	1.70	1.70
Cable Size selected (mm2)	4	4
Voltage drop (%)	0.43	0.43
String Protection Needed	NO	NO
Distance to Inverter (m)	180	
DC Cable Resistance (Ohm*mm2/m)	0.0183	
Min cable size (mm2)	5.96	5.96
Cable Size selected (mm2)	6	6
Voltage drop (%)	2.56	2.56
Total voltage drop (panel-inverter) (%)	2.98	2.98
DC Isolation min voltage [per pole rating] (V)	976.04	976.04
DC Isolation min Current (A)	22.75	22.75
Phases output	3	
Max AC current [per phase; line to neutral] (A)	36.15	
AC Breaker min Current (A)	39.82	
AC Breaker max Current (A)	72.31	
AC Breaker Chosen (A)	25	
Distance to POC (m)	10	
AC Cable size (mm2)	6	



MODULE
NTS

Solgen energy

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3. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN MILLIMETERS UNLESS NOTED OTHERWISE.
4. EXACT LOCATION OF ALL PARTS OF THE INSTALLATION TO BE DETERMINED ON SITE.
5. MCB TO MATCH MAKE, MODEL AND FAULT CURRENT OF EXISTING CIRCUIT BREAKERS.

Rev	Description	Date	Checked	Authorised
E	RE-ISSUED FOR APPROVAL	16.02.16	[redacted]	
D	TABLE UPDATED	08.02.16		
C	RE-ISSUED FOR APPROVAL	04.02.16		
B	ISOLATORS UPDATED	23.12.15		
A	PRELIMINARY DESIGN	22.07.15		

PROJECT: [redacted]

CLIENT: [redacted]

SOLGEN ENERGY PTY LTD [redacted]

DRAWING TITLE:
99.84kWP PHOTOVOLTAIC SYSTEM SCHEMATIC

SCALE	DRAWN	CHECKED	AUTHORISED	SIZE
AS SHOWN	[redacted] Date: 22.07.2015	Date: 22.07.2015	Date: 22.07.2015	A3

DRAWING No. D-EL-25123P10-201 Rev E

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SOLAR DB COMPONENT SCHEDULE			
PART NR.	ID	MANUFACTURER	DESCRIPTION
1	MCB 1	GE	40A 3P MCB (INV 1 CONNECTION)
2	MCB 2	GE	40A 3P MCB (INV 2 CONNECTION)
3	MCB 3	GE	40A 3P MCB (INV 3 CONNECTION)
4	MCB 4	GE	40A 3P MCB (INV 4 CONNECTION)
5	MCB 5	GE	6A 1P MCB (CONTROL SUPPLY)
6	MCB 6	GE	6A 1P MCB (RELAY POWER SUPPLY)
7	MCB 7	GE	6A 3P MCB (RELAY VOLTAGE REFERENCE)
8	MAIN SWITCH	GE	250A 3P ISOLATOR
9	CONTACTOR 1	ELKO	63A 4P N/O CONTACTOR (INV 1 CONTROL)
10	CONTACTOR 2	ELKO	63A 4P N/O CONTACTOR (INV 2 CONTROL)
11	CONTACTOR 3	ELKO	63A 4P N/O CONTACTOR (INV 3 CONTROL)
12	CONTACTOR 4	ELKO	63A 4P N/O CONTACTOR (INV 4 CONTROL)
13	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 TO SOLAR DB	4C + E 10mm² Cu
SOLAR DB TO MSB	4C + E 70mm² Cu
AC CONTROL CIRCUITS	1.5mm² COPPER

O/U VOLTAGE SETTINGS

Protection Setting	Set Point	
	Value	Units
OV Pick Up	270	V
OV Timing	2.0	S
UV Pick Up	200	V
UV Timing	2.0	S

O/U FREQUENCY SETTINGS

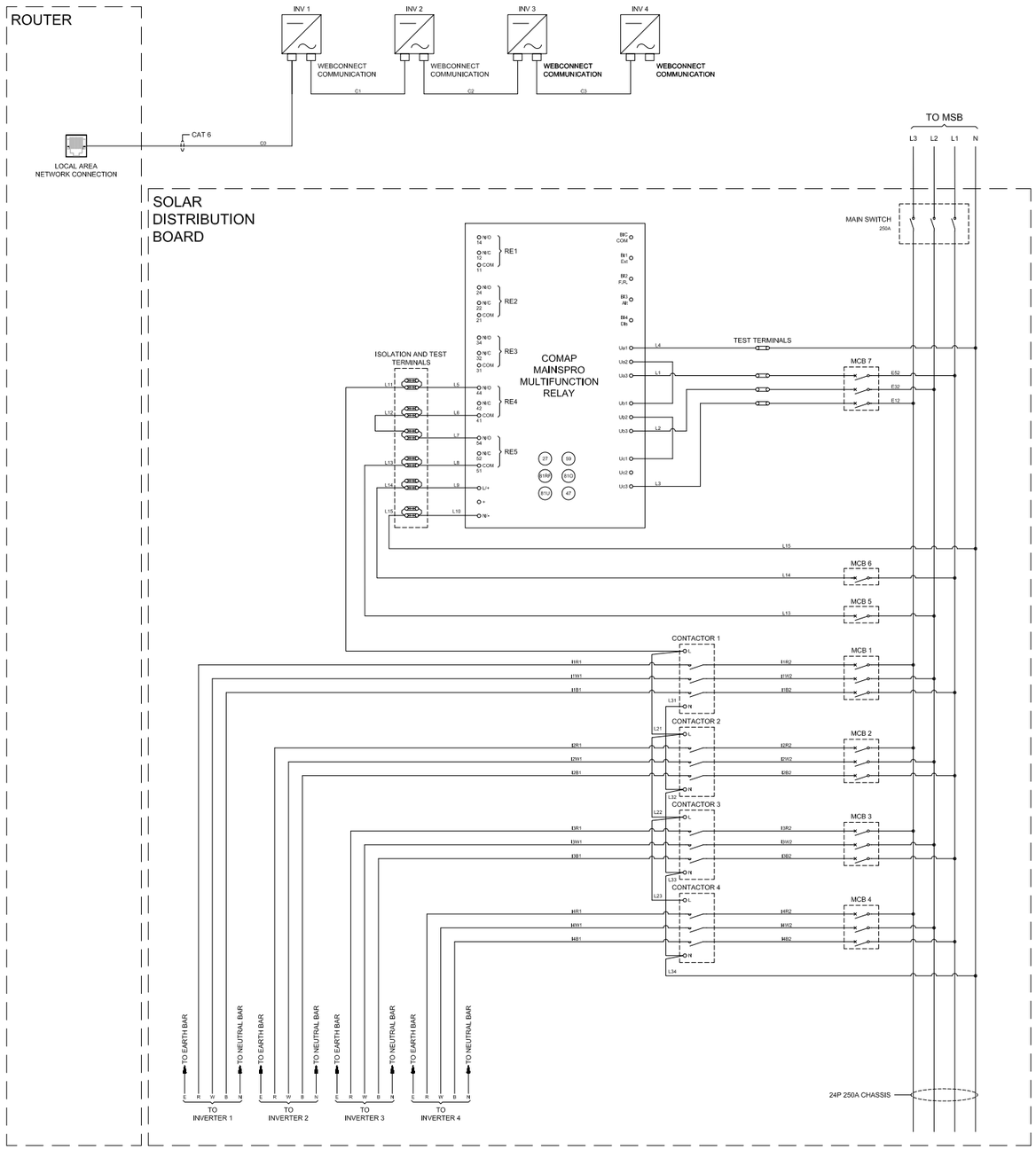
Protection Setting	Set Point	
	Value	Units
OF Pick Up	52	Hz
OF Timing	2.0	S
UF Pick Up	48	Hz
UF Timing	2.0	S

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



SOLAR DISTRIBUTION BOARD
WIRING SCHEMATIC
NTS

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	51.5	Hz
OF Timing	2.0	S
UF Pick Up	48.5	Hz
UF Timing	2.0	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.

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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
C	GENERATOR ATS REMOVED	29.02.16	[redacted]	
B	SETTINGS UPDATED	04.02.16		
A	PRELIMINARY DESIGN	23.12.15		

PROJECT: [redacted]

CLIENT: [redacted]

SOLGEN ENERGY PTY LTD [redacted]

DRAWING TITLE:

SOLAR DB WIRING AND PROTECTION SETTINGS

SCALE	DRAWN	CHECKED	AUTHORISED	SIZE
AS SHOWN	[redacted] Date: 23.12.2015	Date: 23.12.2015	Date: 23.12.2015	A3

DRAWING No. D-EL-25123P10-203 Rev C