



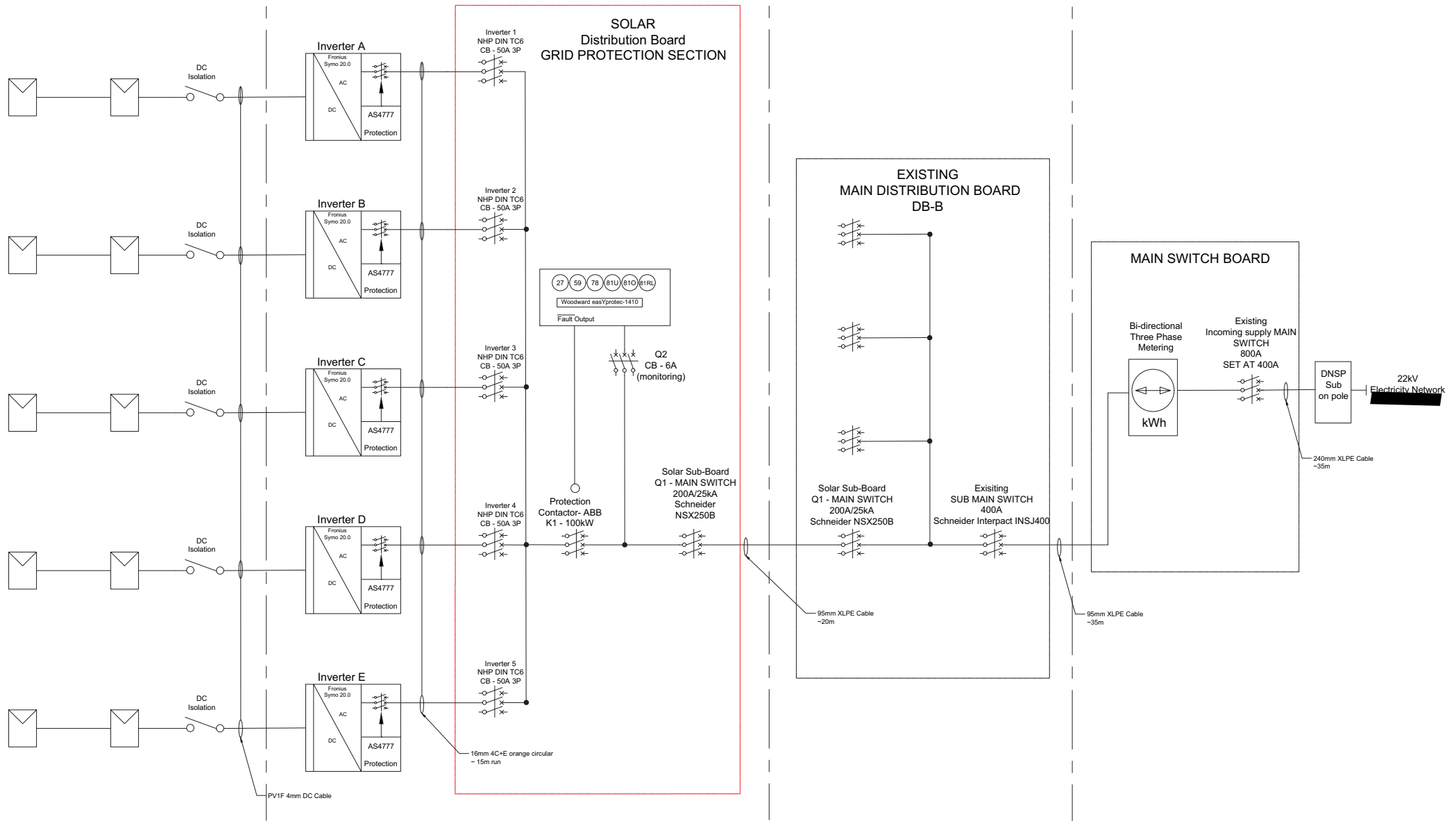
1. Technology: Solar PV
2. Maximum Power: 100 kW
3. Contribution to fault levels: N/A
4. Size & rating of the relevant Transformer: N/A
5. Single line diagram: refer to following page
6. Protection Systems & Communication Systems: refer to following page
7. Voltage Control and reactive power capability: N/A
8. Details specific to the location of facility: N/A

ROOF

INVERTER STATION

DISTRIBUTION BOARD

MAINS



REVISIONS

REV	STATUS	DESCRIPTION	DATE	DB	CB
1	FOR CONST	SINGLE LINE DIAGRAM	23/09/2015		

SINGLE LINE DIAGRAM



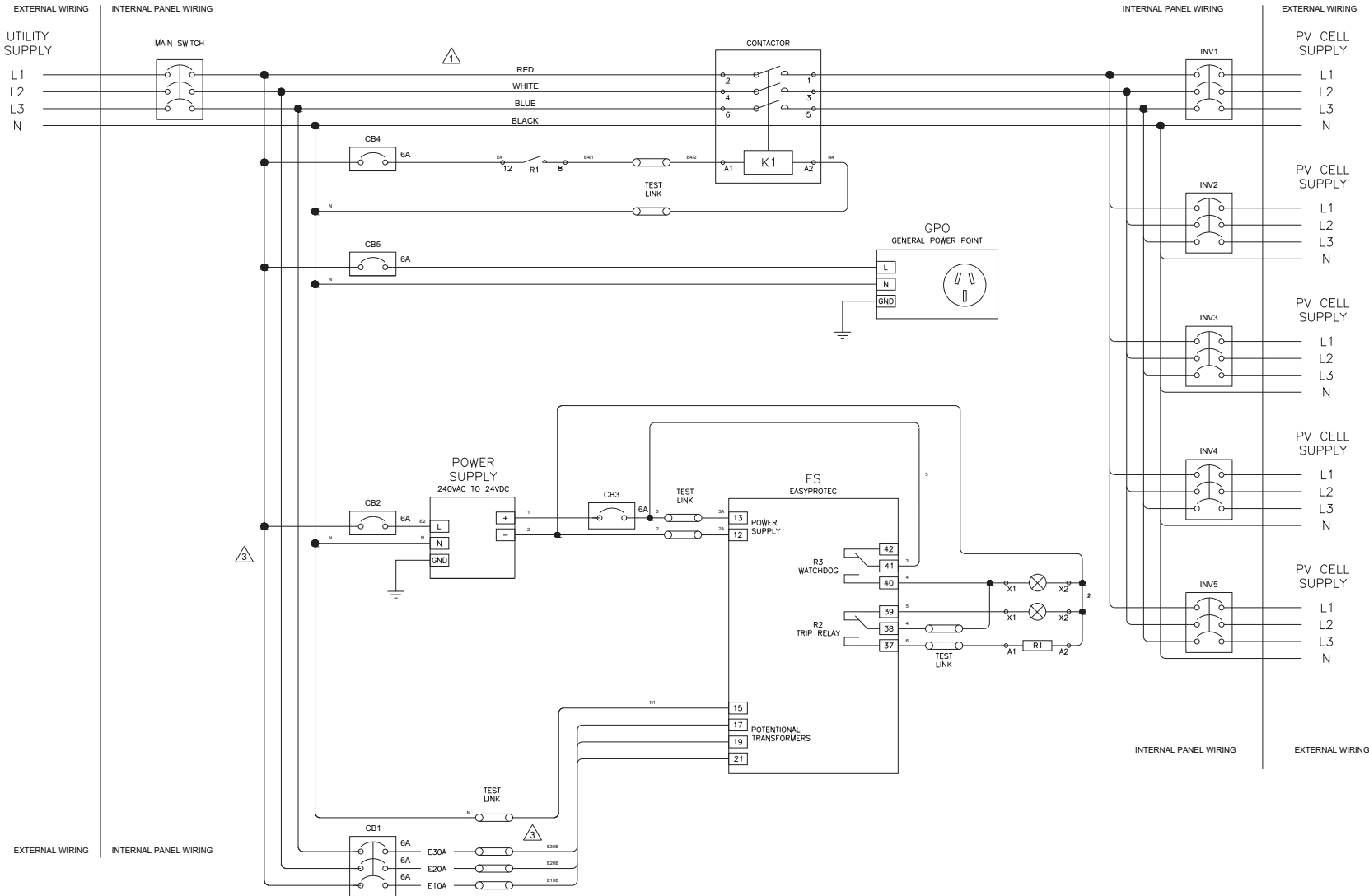
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- ALL DIMENSION ARE IN MILLIMETERS AND LEVELS IN MILLIMETERS UNLESS NOTED OTHERWISE. ALL DIMENSIONS TO BE VERIFIED ON SITE.
- EXACT LOCATION OF ALL PARTS OF THE INSTALLATION TO BE DETERMINE ON SITE.

DRAWING NUMBER:

2015_09_23_000086_E-1.1_1-D

DRAWN BY:	SCALE:	ITEM	SPECIFICATION	QTY
	NTS	MODULE	HSL60PC1 260	384
APPROVED BY:	SHEET SIZE:	INVERTER	FRONIUS SYMO	5
	A3	TOTAL		99.84 kWp



GRID PROTECTION STRATEGY

During normal operation with grid parameters within set limits, the easYprotec relay will hold the main contactor closed. In the event of grid instability (Over/Under Voltage or Frequency, excess ROCOF / VECTOR SHIFT or Voltage unbalance) the relay will trip and open the main contactor.

In addition, the easYprotec has an internal watchdog R3 that will trip the system in the instance of an internal fault in the relay and activate the alarm lamp.

PROTECTION SETTING

FUNCTION	INVERTER SETTING	PROPOSED RELAY SETTING	TRIP TIME
UNDER VOLTAGE (27)	200V	200V	2s
OVER VOLTAGE (59)	260V	265V	2s
UNDER FREQUENCY (81U)	48.5Hz	48.2Hz	2s
OVER FREQUENCY (81O)	51.5Hz	51.8Hz	2s
ROCOF (81R)	N/A	1Hz/S	1s
VECTOR SHIFT (78)	N/A	8°	INSTANTANEOUS
FREQ SHIFT-ACTIVE ISLANDING RE-CONNECTION DELAY TIME (S)	Cf = 2tz/Tv-utility	N/A	INSTANTANEOUS
		>60s	

SYSTEM DETAILS

PANELS	QUANTITY	CAPACITY
HANWHA HLS60PC1260W	384	99.84 kW
INVERTERS	QUANTITY	CAPACITY
FRONIUS SYMO 20.0	5	100 kVA

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PROTECTION SETTING

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