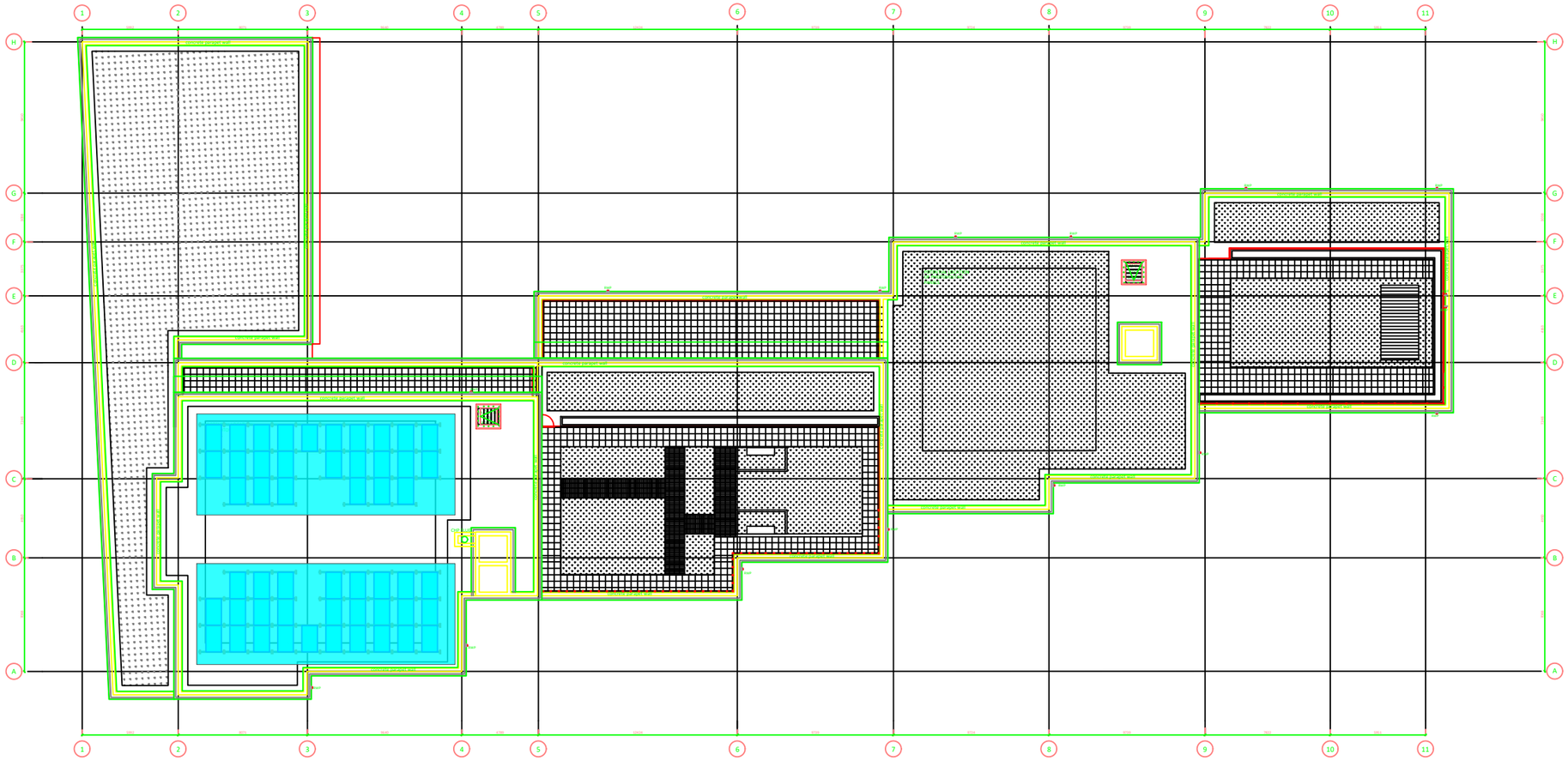


14kw PV system

| Status | Date: | Description: |
|---|---|---|
| A | 03/07/2017 | ISSUED FOR APPROVAL |
| A1 | 03/07/2017 | ISSUED FOR APPROVAL |
| A2 | 20/04/2017 | ISSUED FOR APPROVAL |

FOR APPROVAL

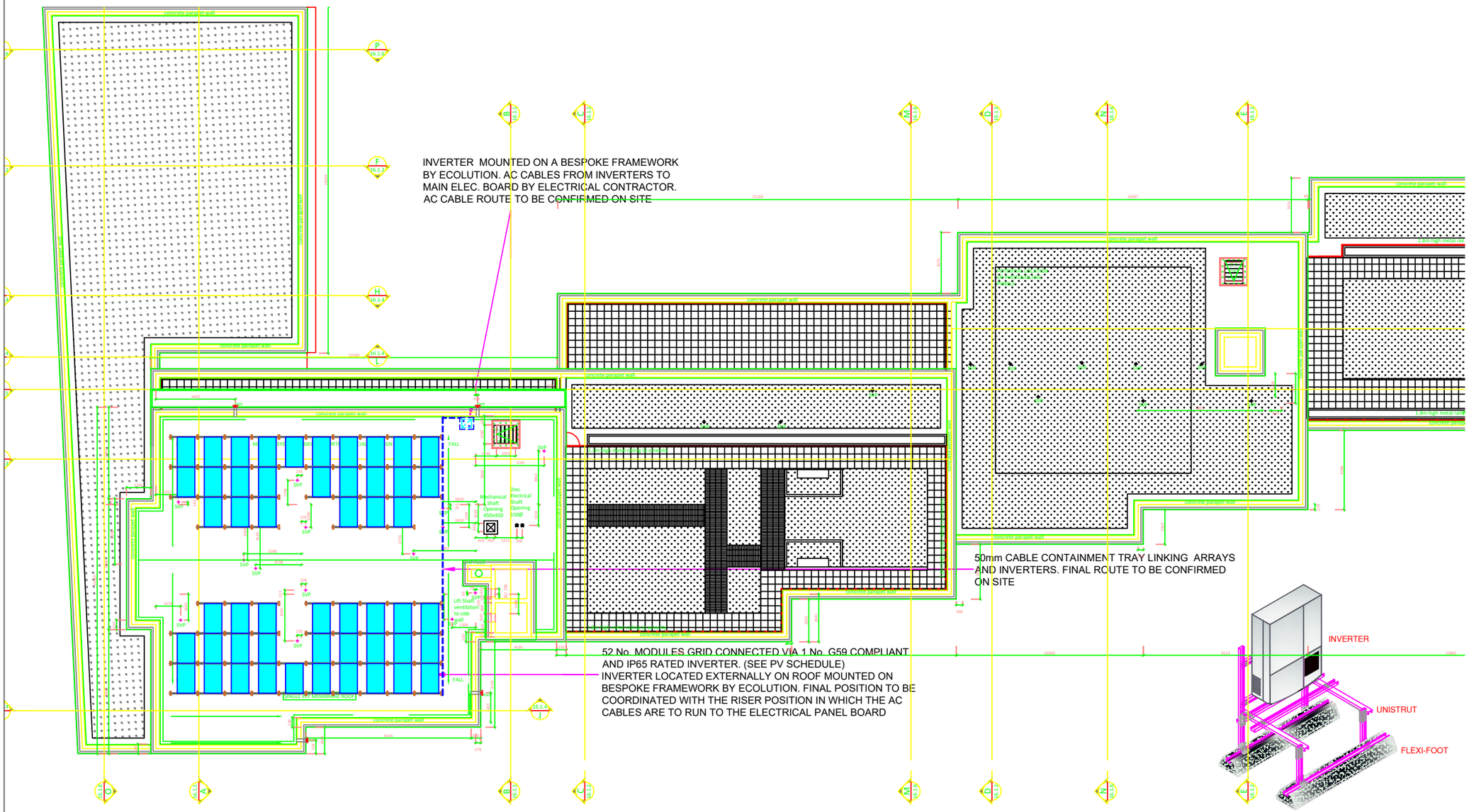
Project:
CENTRIC CLOSE

CAMDEN

Title:
SITE PLAN

ecolution™
INTEGRATED RENEWABLE TECHNOLOGIES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scale: | NTS @ A3 | DO NOT SCALE | Project No.: 17124 | Drawing Ref.: | 17124 PV-000 | Date Drawn: 03-07-2017 | Drawn by: JA/ GO |







EXTERNAL INVERTER MOUNTING DETAIL
SCALE N.T.S

SOUTH FACING SYSTEM

DC ISOLATOR

AC ISOLATOR

CABLE TRAY

250W POLY PANEL

15KW INVERTER

INVERTER DETAILS

Height = 650mm
Width = 516mm
Depth = 203mm
IP Rating = IP65

39kg

*6 - Complete protection against contact, Protection from infiltration of dust*

*5 - Protection from water projected from a nozzle*

NOTES:

1.0. FINAL LOCATION OF INVERTER TO BE CONFIRMED.

2.0. THE PV SYSTEM MAY REQUIRE A 3 PHASE SUPPLY, REFER TO ELECTRICAL SCHEMATIC FOR CONFIRMATION

3.0. CABLES TO RUN FROM ROOF SPACE AND PENETRATE ROOF AT POINT DETERMINED ON SITE. PENETRATION THROUGH ROOF BY OTHERS.

4.0. MAXIMUM DC CABLE LENGTH IS FROM FINAL MODULE IN STRING TO INVERTER.

5.0. ALL CABLE DISTANCES TO BE VERIFIED BY SITE VISIT PRIOR TO WORK ON SITE COMMENCING

6.0. THE POSITION OF PV MODULES SHOWN ON ROOF IS APPROXIMATE. THE EXACT LOCATION TO BE MEASURED & DETERMINED ON SITE ACCORDING TO THE MANUFACTURES RECOMMENDATIONS AND INSTALLATION INSTRUCTIONS.

7.0. ALL ROOF AND EXTERNAL WALL PENETRATIONS (e.g. FOR PV MODULES, CABLES OR BRACKETRY) WILL BE DURABLY SEALED USING PURPOSE-MADE PRODUCTS CAPABLE OF ACCOMMODATING THE MOVEMENT AND TEMPERATURES TO WHICH THEY MAY BE SUBJECTED.

8.0 ELECTRICAL CONTRACTOR TO CONFIRM ELECTRICAL INSTALLATION IS SUITABLE TO RECEIVE ELECTRICITY GENERATED BY THE PV INSTALLATION AS PER ECOLUTION DESIGN.

9.0. STRUCTURAL ENGINEER TO ENSURE ROOF STRUCTURE IS CAPABLE OF WITHSTANDING THE LOADS (STATIC & WIND) THAT WILL BE IMPOSED BY THE PV MODULES AND THEIR MOUNTING ARRANGEMENT AS PER OUR DESIGN.

10.0 THE FINAL POSITION OF THE PV MODULES MAY BE AFFECTED BY THE SVP & OTHER ROOF TOP TERMINATION POINTS. PLEASE CHECK THE LOCATION OF THE SVP's & OTHER ROOF TOP TERMINATIONS SHOWN ON THE LAYOUT DRAWINGS AND THEIR ACCURACY AS IT MAY AFFECT THE PV SYSTEM SIZE AND EFFICIENCY IF MODULES HAVE TO BE REMOVED OR RELOCATED.

11.0 THE FINAL POSITION OF THE PV MODULES MAY BE AFFECTED BY THE MAN SAFE SYSTEM IF ONE IS PRESENT. PLEASE CHECK THE LOCATION OF THE MAN SAFE IF ONE IS INDICATED ON THE LAYOUT DRAWINGS AND THE ACCURACY OF ITS POSITION AS IT MAY AFFECT THE PV SYSTEM SIZE AND EFFICIENCY IF MODULES HAVE TO BE REMOVED OR RELOCATED.

12.0.TO BE READ IN CONJUNCTION WITH ELECTRICAL SCHEMATIC.

13.0. SEE PV-000 FOR SITE PLAN

PV MODULE SCHEDULE ~ 14KW

| | |
|---|---|
| MOUNTING SYSTEM | FLAT ROOF |
| INVERTER ~ 15KW | 2 x 17 - MPPT 1<br>1 x 18 - MPPT 2 |
| MODULE TYPE & OUTPUT | POLYCRYSTALLINE (270W) |
| MODULE DIMENSIONS (mm) | 1649 x 991 x 40mm |
| MODULES TO DC ISOLATOR (MAX.) | 25m of 4mm² (MAX) |
| DC ISOLATOR TO INVERTER (MAX.) | 1m of 4mm² |
| INVERTER TO MCB BOARD (MAX.) | 25m of 4mm² |
| TOTAL No. OF MODULES | 52 |
| Max. Amps per AC Phase | 20.2A |
| SYSTEM SIZE | 14.04kWp |

| Status | Date: | Description: |
|---|---|---|
| A | 03/07/2017 | ISSUED FOR APPROVAL |
| A1 | 06/07/2017 | ISSUED FOR APPROVAL |
| A2 | 28/09/2017 | ISSUED FOR APPROVAL |
| A3 | 20/04/2018 | ISSUED FOR APPROVAL |

FOR APPROVAL

Project:
CENTRIC CLOSE
CAMDEN

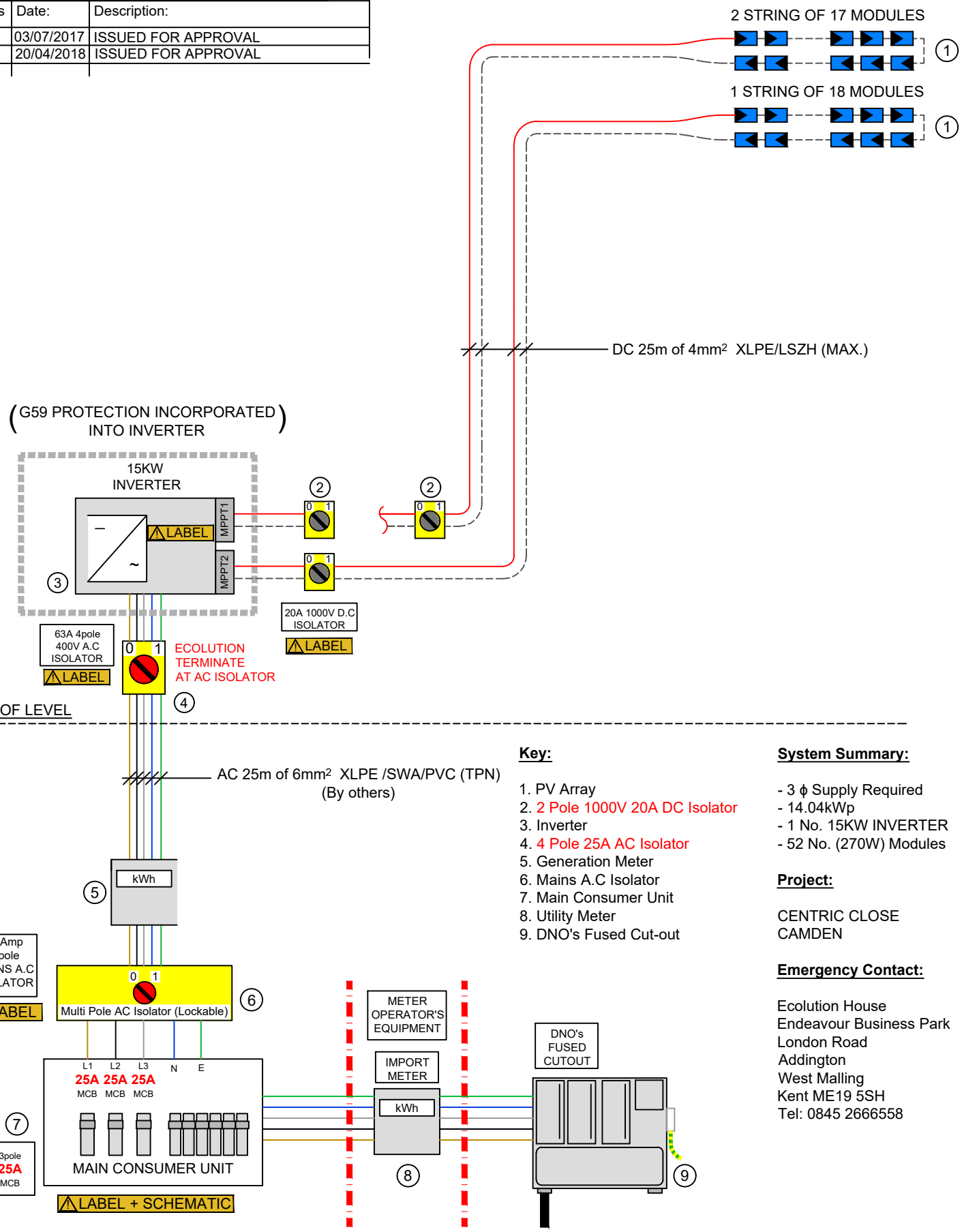
Title:
PHOTOVOLTAIC ROOF LAYOUT ~ 14kWp

ecolution™
INTEGRATED RENEWABLE TECHNOLOGIES

Scale: 1:250 @ A3 | DO NOT SCALE | Project No.: 17124 | Drawing Ref.: 17124 PV-001 | Date Drawn: 03-07-2017 | Drawn by: JA/GO

# FOR APPROVAL

| Status | Date: | Description: |
|---|---|---|
| A | 03/07/2017 | ISSUED FOR APPROVAL |
| A | 20/04/2018 | ISSUED FOR APPROVAL |




**Key:**

1. PV Array
2. 2 Pole 1000V 20A DC Isolator
3. Inverter
4. 4 Pole 25A AC Isolator
5. Generation Meter
6. Mains A.C Isolator
7. Main Consumer Unit
8. Utility Meter
9. DNO's Fused Cut-out

**System Summary:**

- 3 ϕ Supply Required
- 14.04kWp
- 1 No. 15KW INVERTER
- 52 No. (270W) Modules

**Project:**

CENTRIC CLOSE
CAMDEN

**Emergency Contact:**

Ecolution House
Endeavour Business Park
London Road
Addington
West Malling
Kent ME19 5SH
Tel: 0845 2666558

Title:
PV Electrical Schematic

Drawing Ref.:
17124 PVES-001

Date Drawn:
03/07/2017

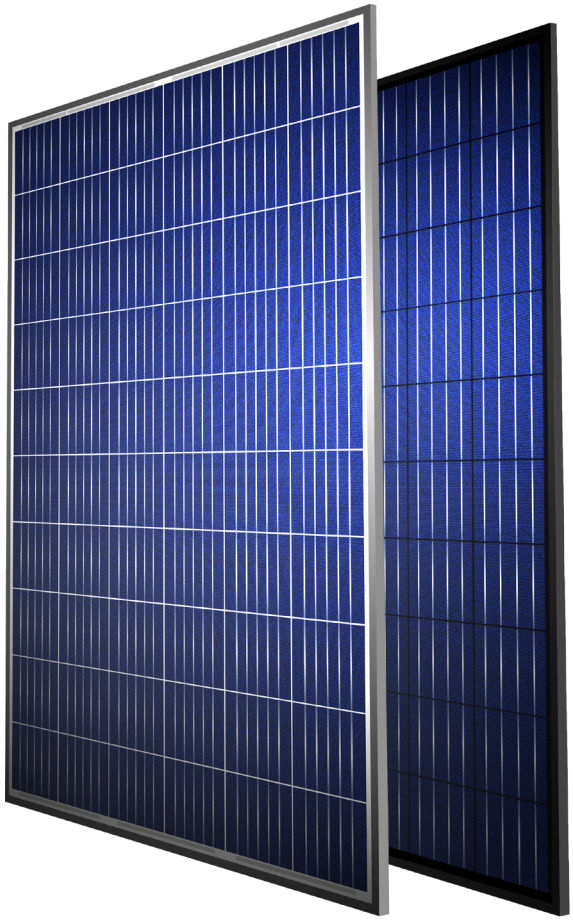
Drawn by:
JA/GO

ecolution™
INTEGRATED RENEWABLE TECHNOLOGIES

PEPV 270/285W----5 BUS BAR----6 DIODES

## PEPV 270 - 285W

Covered cell interconnections | 5 Busbar | 6 Diodes



### Quality

/ Subjected to test electroluminescence
/ IP67 + 1 m cable
/ High transmissivity glass and high resistance
/ Frame with higher mechanical strength and air chamber
/ Friendly environment & recyclable materials

### Certificates

/ IEC 61215:2005
/ IEC 61730-1:2004 / IEC 61730-2:2004
/ Frontal load (snow) 5.400 Pa
/ Back load (wind) 2.400 Pa
/ Fire Resistance Certificate / Class I (under standard UNI 9177)
/ MCS (UK)
/ EE016-20130528-001 (France)
/ WEEE compliance in Germany
/ ETL Listed Mark (USA-Canada)
/ PID resistant

**TOTAL 60**
**+ 15 YEARS WARRANTY**
**+ 20 YEARS EXPERIENCE**
**+ 25 YEARS PERFORMANCE**

PHOTON Laboratory talks about our modules:

*"Eurener is one of the oldest module manufacturers in Europe: the Spanish company was founded in 1997. [...] Is distinguished by having values that are over the average: the temperature coefficient is quite better than other modules that are in the test field. The curve behavior at different irradiance conditions shows a marked efficiency increase in radiations from medium to high, and a slight drop in efficiency at low irradiance conditions. These factors show that this module could reach higher performance than the average in long-term measurements".*

# SUPERIOR

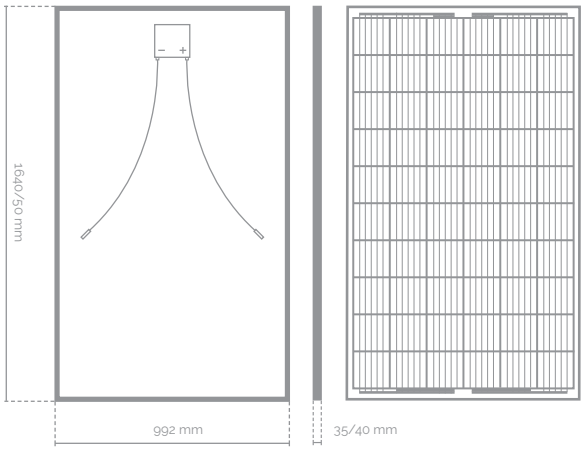
Polycrystalline Standard - All Black / 270 / 280 / 285 W

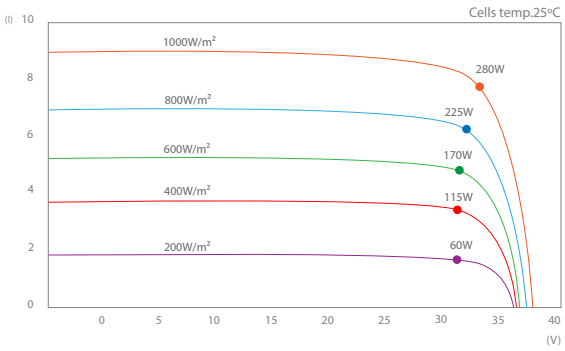
EUROPEAN QUALITY

eurener energía solar

## Technical features

| Frame |
|---|
| Black / Silver anodized aluminium 0,015 mm |
| Covered cell interconnections (Only in black) |
| Robust and resistant to corrosion |
| Built-in plug |
| **Connection box** |
| Sealed, robust and wide for heat dissipation |
| IP67 according to IEC 60529 |
| Diodes by-pass built-in (6)<br>for protection of the partial shading |
| Connector MC4 or compatible, easy and rapid connection |
| Cables 1 meter length and 4mm² section |
| Reaction to Fire Class I (conformity to UNI 9177 norm) |
| **Frontal** |
| 3,2 mm tempered glass |
| Textured, extra-clear with low iron content |
| **Solar cells** |
| 60 cells polycrystalline silicon / 156x156 mm |
| **Weight and dimensions (L x W) +/-1% mm** |
| 20 Kg \| 1640/50 x 992 x 35/40 mm |




## Electric data

| Standard - All Black | PEPV 270 | PEPV 280 | PEPV 285 |
|---|---|---|---|
| Nominal power, Pmpp | 270W | 280W | 285W |
| Tolerance, Pmpp | ± 1% | ± 1% | ± 1% |
| Area of the module | | 1,62 | |
| Module efficiency | 16,67% | 17,28% | 17,59% |
| Isc | 9,12 A | 9,25 A | 9,31 A |
| Uoc | 38,61 V | 39,10 V | 39,38 V |
| Impp | 8,61 A | 8,85 A | 8,97 A |
| Umpp | 31,36 V | 31,65 V | 31,77 V |
| Maximum voltage | | 1000 V | |
| Isc | | 0,039% / ºC | |
| Uoc | | - 0,29% / ºC | |
| g Pmax | | - 0,42% / ºC | |
| Temperature range | | - 40ºC to +85ºC | |
| NOCT | | 44ºC ± 2ºC | |

NOTE: Read the instruction manual of this product and follow the indications. Values are valid for: 1000W/m², AM 1.5 and cell's temperature of 25ºC.
All the information of this brochure may be amended without notice by Eurener.

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Kent ME19 5SH

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## GW15K-DT (Dual-MPPT Three-phase)

The GW15K-DT photovoltaic inverter is suitable for commercial and industrial roofs and constructions of small and medium-sized photovoltaic power stations. This model uses full-digital control technology, advanced topologies and leading inverter control technology to achieve a conversion efficiency of up to 98.2%. It is with lower loss compared to similar products, which is easier to maximize the overall efficiency of photovoltaic system. Intelligent thermal design ensures that the temperature rise is lower and the machine runs under more stable conditions. The dual-lines MPPT extra-wide voltage range ensures that the system is with more flexible configuration.

**High Performance**

- Maximum Efficiency up to 98.2%
- European Efficiency up to 97.4%
- MPPT Efficiency over 99.5%

**High Safety and Reliability**

- DC switch disconnector
- IP65 dust-proof and water-proof
- 45℃ full-load output

**Customer-oriented Design**

- Super large 5-inch LCD
- 30% lighter than similar products
- Multiple monitoring and communication
- up to 800 pieces can be integrated in one system

## Technical Data GW15K-DT

| | |
|---|---|
| **DC Input Data** | |
| Max. PV-generator power [W] | 15400 |
| Max. DC voltage [V] | 1000 |
| MPPT voltage range [V] | 260~850 |
| Turn on DC voltage [V] | 250 |
| Max. DC work current [A] | 22/22 |
| Number of inputs/MPP trackers | 6/2 (can parallel) |
| DC connector | MC IV Connector |
| Standby power consumption [W] | 10 |
| **AC Output Data** | |
| Nominal AC power [W] | 15000 |
| Max. AC power [W] | 15000 |
| Max. AC current [A] | 25 |
| Nominal output voltage range | According to VDE-AR-N 4105, VDE 0126-1-1/A1, RD1699, ENEL, G59/2, AS4777.2/.3 |
| AC grid frequency | According to VDE-AR-N 4105, VDE 0126-1-1/A1, RD1699, ENEL, G59/2, AS4777.2/.3 |
| THDi | <1.5% |
| Power factor | 0.95 leading…0.95 lagging |
| AC connector | 3W/N/PE, 230/400V |
| **Efficiency** | |
| Max. efficiency | 98.2% |
| European efficiency | >97.5% |
| MPPT adaptation efficiency | >99.5% |
| **Safety Equipment** | |
| Leakage current monitoring unit | Integrated |
| DC switch | Optional |
| Islanding protection | AFD |
| Grid monitoring | According to VDE-AR-N 4105, VDE 0126-1-1/A1, RD1699, CEI 0-21, G59/2, AS4777.2/.3 |
| Normative Reference | |
| EMC compliance | EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4 |
| Safety compliance | According to IEC 62109-1, As3100 |
| **General Data** | |
| Dimensions (W*H*D) [mm] | 516*650*203 |
| Net weight [kg] | 39 |
| Housing | For outdoor and indoor |
| Mounting information | Wall mounting |
| Operating temperature range | -20~60°C (up 45°C derating) |
| Relative humidity | 0~95% |
| Site altitude [m] | 2000 |
| IP protection class | IP65 |
| Topology | Transformerless |
| Cooling concept | Fan cooling |
| Noise level [dB] | <45 |
| Display | 5" LCD |
| Communication | USB2.0; RS485 [Wireless(ZigBee) optional] |
| Standard warranty [years] | 5/10/15/20/25(optional) |