222.95kWp Solar PV Installation

Unit 1, 18 West Road, London, N17 0RP

Operations and Maintenance Manual

December 2025

Envirolec Smart Energy Solutions (London) Ltd
Unit 6, Murray Business Centre, Murray Road,
Orpington, BR5 3RE
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Introduction to Solar PV

Solar photovoltaic systems simply convert energy from sunlight into electricity. An array of solar panels installed upon a roof, or upon the ground, passively absorbs large amounts of sunlight and generates large quantities of electricity in a clean, and free manner. The light absorbed by the panels can be direct, diffuse and reflected light. As a consequence, solar panels work in nearly all climatic conditions and during nearly all daylight hours.

With no moving parts, technology that has been tried, tested and refined over 50 years, and manufacturers' performance warranties of up to 25 years, Solar PV represents a very safe and robust technology.

Benefits of a Solar PV System

- Once installed, it generates "free electricity" from the sun
- Electricity is created without producing greenhouse gases i.e. CO^2
- It is silent and has no moving parts
- Unobtrusively mounted on existing roof
- Seamlessly integrates with your electrical system
- Can supplement or provide all electrical consumption
- Can feed electricity back into the grid
- Additional capacity can be added at a later date
- 25 yrs. + life expectancy

Government Incentives

The Smart Export Guarantee (SEG) is the new support mechanism designed to ensure small-scale generators are paid for the renewable electricity they export to the national grid. It has been in place since 1 January 2020. You may be eligible to apply.

Following the closure of the Feed-in Tariff (FIT) scheme to new applicants in March 2019, the government recognised the need to pay small-scale renewable energy generators for the electricity they export to the grid. Consequently, the Department for Business, Energy and Industrial Strategy (BEIS) introduced the Smart Export Guarantee (SEG).

Under the scheme, all licenced energy suppliers with 150,000 or more customers must provide at least one SEG tariff. Smaller suppliers can offer a tariff if they want to on a voluntary basis. All suppliers can also choose to offer other means of making payments for exported electricity, separate to the SEG arrangements.

If you already receive a FIT on your installation, this is unaffected by the introduction of the SEG.

Government Incentives (cont'd)

The technology and installer used by householders must be certified under the Microgeneration Certification Scheme (MCS) or equivalent. Energy suppliers may ask you to provide a MCS certificate to prove your installation meets this standard.

Exported power must be metered using a meter capable of reading exports on a half hourly basis, even if half hourly readings are not required for the tariff. Meters must also be registered for settlement.

There are no set or minimum tariffs for the SEG – the only requirement is that the tariff must be greater than zero at all times. In practice, this means that it is up to energy suppliers to decide what tariffs to offer their customers. They may choose to offer multiple tariffs or just one.

SEG tariffs can be fixed or variable. A fixed SEG tariff will pay a determined rate per kWh of electricity exported over the length of the contract. A variable SEG tariff will vary the price based on market demand, with the only requisite that prices never fall below zero. Ofgem will report on the tariffs available, as well as how many people are on them, each year.

In addition to SEG, energy suppliers are offering similar deals by paying customers set tariffs for electricity they export to the grid. Deals are specific to each household and could involve your generation and supply being metered. Deals may also be time limited and have other conditions, such as requiring you to purchase your supplied electricity from the same supplier. You should consider all terms and conditions carefully in order to make the best choice.

The Solar Trade Association website lists the current deals available.

SECTION 2

SYSTEM DESIGN & OUTPUT

"The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. This estimate is based upon the standard MCS procedure is given as guidance only. It should not be considered as a guarantee of performance."

Additionally where data has been estimated or taken remotely:

"This system performance calculation has been undertaken using estimated values for array orientation, inclination or shading. Actual performance may be significantly lower or higher if the characteristics of the installed system vary from the estimated values."

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VALOR TOTTENHAM UNIT1 OL

West Road 18, London, N17 0RP, United Kingdom | Nov 7, 2025

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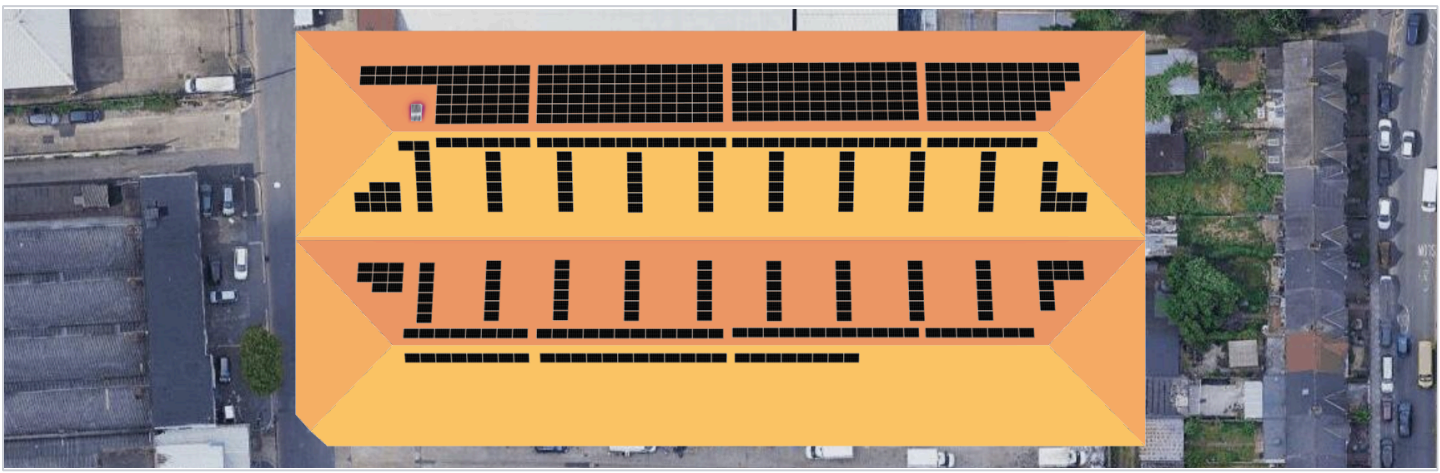

SYSTEM OVERVIEW

490 PV modules | 2 Inverters | 245 Optimizers

SIMULATION RESULTS

Installed DC Power	Max Achieved AC Power	Annual Usable Solar Production	Annual CO_2 Emission Saved	Annual Equivalent Trees Planted
222.95 kWp	180.00 kW	182.04 MWh	35.2 t	1,617

Max Achieved DC Power	DC/AC Oversizing	Max Active AC Power	Performance Ratio	Annual Specific Production
192.30 kW	107 %	180.00 kW	85 %	816 kWh/kWp

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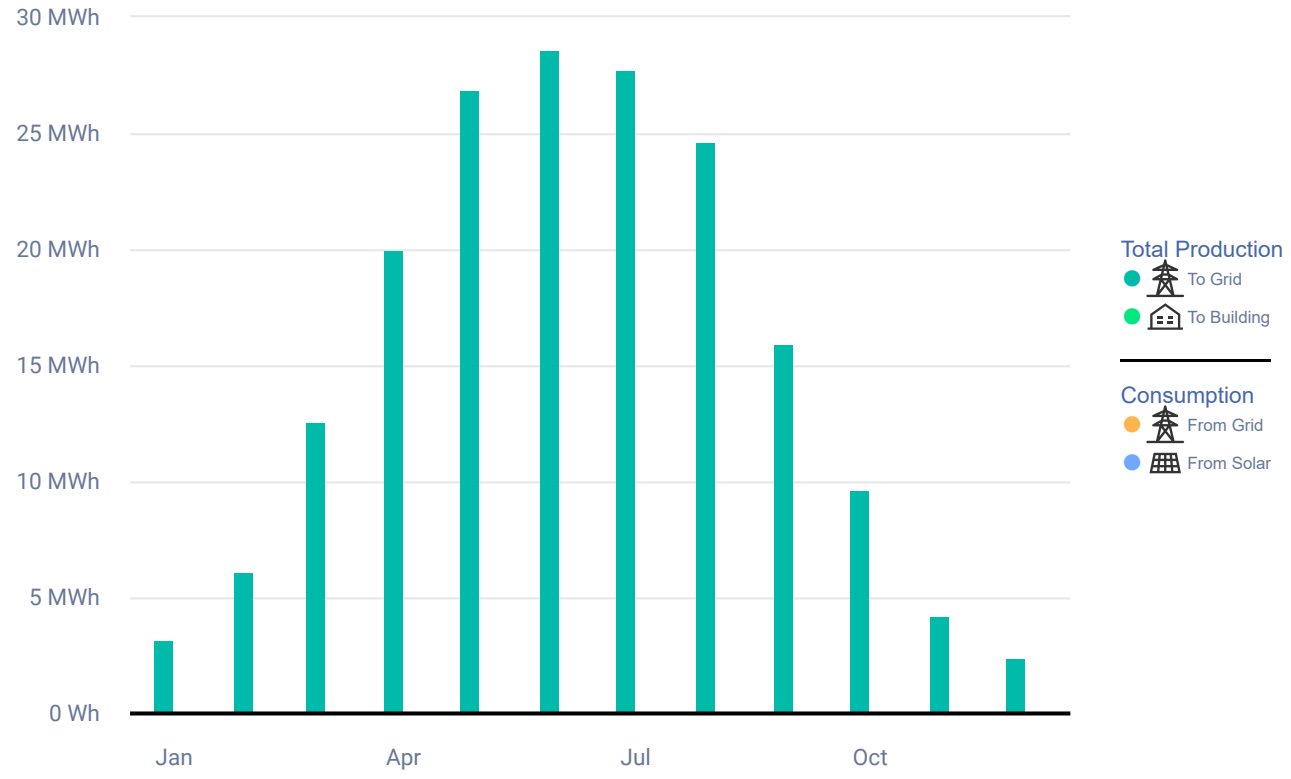
ESTIMATED MONTHLY ENERGY



Total clipped energy: 0%

PV MODULES

# Module	Model	Peak power	Racking type	Orientation	Azimuth	Tilt
138	SOLARWATT, 455W Panel vision M 5.0 (user-defined)	62.8 kWp			180°	6°
352	SOLARWATT, 455W Panel vision M 5.0 (user-defined)	160.2 kWp			0°	6°
Total: 490		223 kWp				

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BILL OF MATERIALS (BOM)

Items	Part Number	Quantity	Price (£)	Total (£)
SE90K Synergy Manager		2		
S1000		245		
455W Panel vision M 5.0		490		

ELECTRICAL DESIGN

Inverters & Storage	Strings per inverter	Optimizers per string	PV modules per string
1 xSE90K Synergy Manager 100.04kW | 111% Oversizing	**Center Unit**		
	1 x string	21 x S1000 (2:1)	42
	1 x string	20 x S1000 (2:1)	40
	Left Unit		
	2 x strings	21 x S1000 (2:1)	42
	Right Unit		
	1 x string	21 x S1000 (2:1)	42
	1 x string	20 x S1000 (2:1)	40

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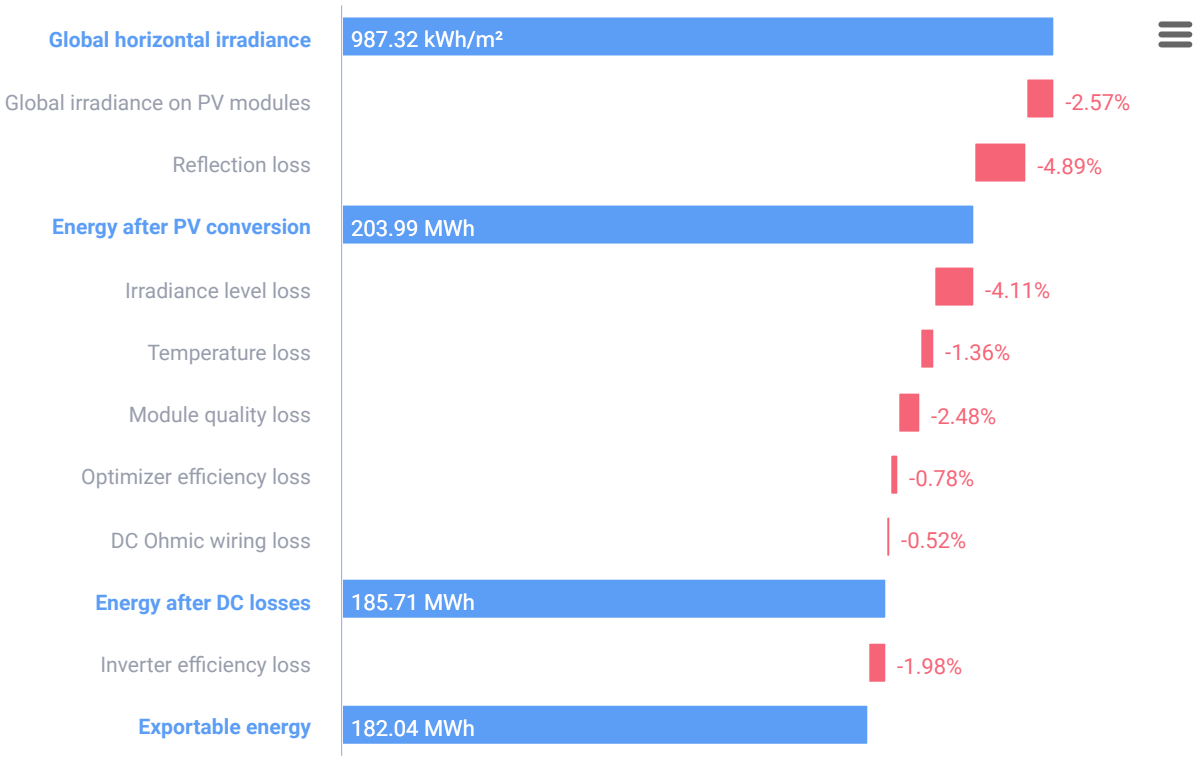
ELECTRICAL DESIGN (CONTINUED)

Inverters & Storage	Strings per inverter	Optimizers per string	PV modules per string
1 xSE90K Synergy ManagerCenter Unit 92.26kW | 103% Oversizing			
	2 x strings	20 x S1000 (2:1)	40
Left Unit			
	1 x string	21 x S1000 (2:1)	42
	1 x string	20 x S1000 (2:1)	40
Right Unit			
	2 x strings	20 x S1000 (2:1)	40

SYSTEM LOSS DIAGRAM



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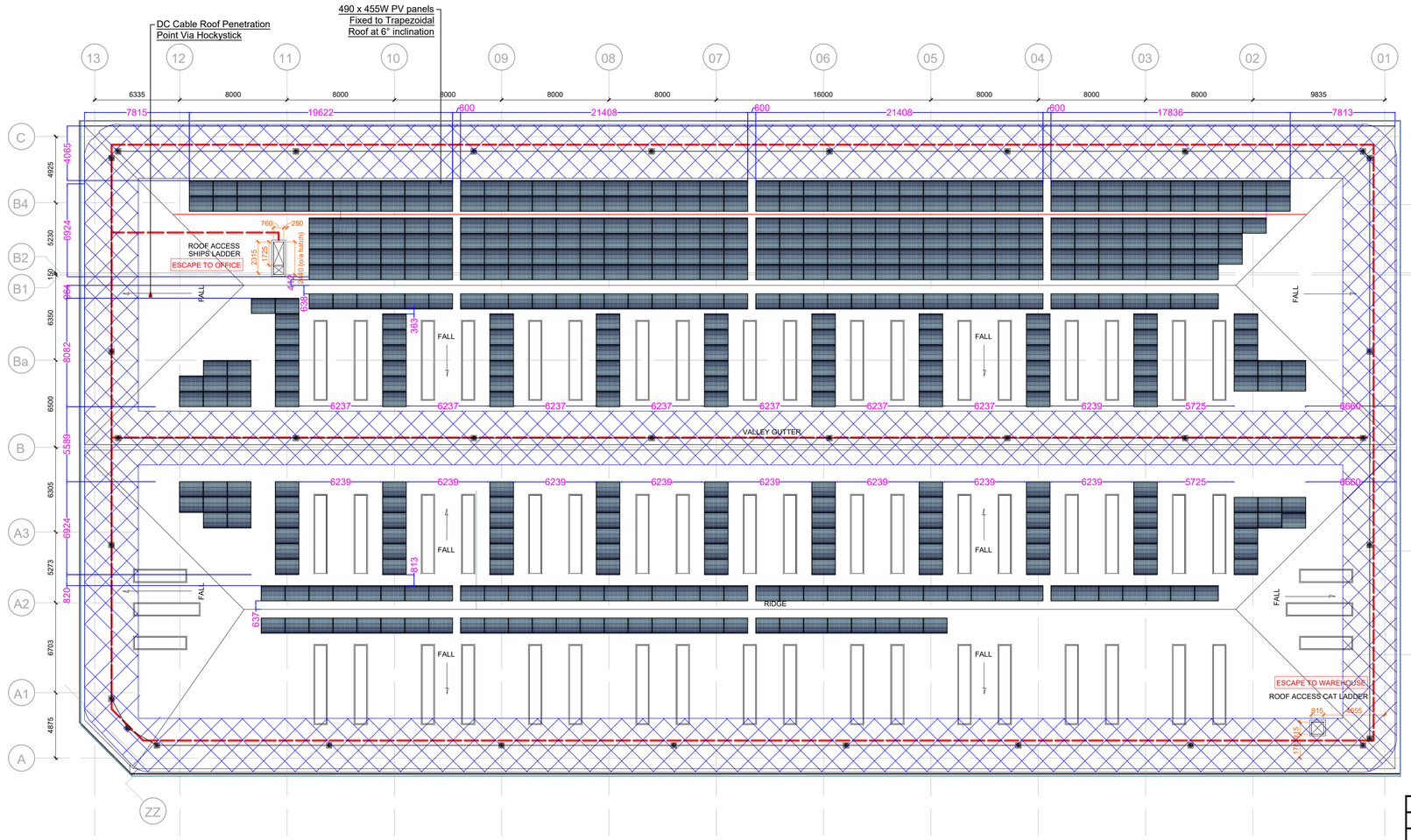
SIMULATION PARAMETERS

LOCATION & GRID

Time zone	GMT (London)
Weather station	London Weather c. (10 km away)
Station altitude	77 m
Station data source	Meteonorm 8.2
Grid	400V L-L, 230V L-N

LOSS FACTORS

Near shading	Enabled
Albedo	0.20
Bi-Facial Albedo	0.30
Soiling/Snow	0%
Incidence angle modifier (IAM), ASHRAE b0 param.	0.05
Thermal loss factor Uc (const) Flush mount	20
Thermal loss factor Uc (const) Tilted	29
LID loss factor	0%
System unavailability	0%



AB - updated as built
C04 - adjusted cable entry location
C03 - panel quantity increase to meet 260kWp total target
C02 - panel model updated to 455W and qty reduced
C01 - no changes - issued for construction
P02 - revised drawing based on new access hatches

REV	DATE	DRAWN BY	DESCRIPTION
AB	27/11/25	OL	AS BUILT
C04	23/10/25	OL	CONSTRUCTION ISSUE
C03	01/10/25	VD	CONSTRUCTION ISSUE
C02	22/09/25	OL	CONSTRUCTION ISSUE
C01	17/09/25	OL	CONSTRUCTION ISSUE
P02	12/09/25	OL	CONSTRUCTION ISSUE
P01	03/09/25	OL	CONSTRUCTION ISSUE

Project
UNIT 1
VALOR PARK TOTTENHAM

Title
G1222-ESE-U1-RF-DR-X-00001

Description
SOLAR PV ROOF LAYOUT

Scale	Designed By	Checked By	DATE
A1 - 1:200	OL	VD	07/08/25

Glencar
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VALOR REAL ESTATE PARTNERS

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VPT	A	Unit 1	AB

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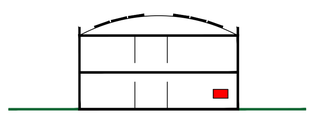
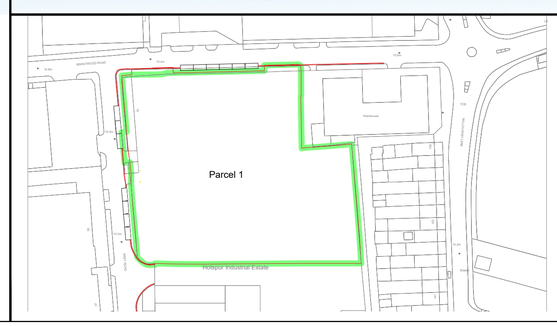
INVERTER POSITION



GROUND FLOOR PLANT

SITE PLAN - NTS



ROOF TYPE & HEIGHT

HEIGHT FFL: 13.5m

ROOF TYPE: TRAPEZOIDAL

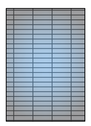
THREE PHASE - PV INVERTERS

1 x SolarEdge SE100K
1 x SolarEdge SE50K
247 x P850 (2:1)

Inverter Installed : In Plant room on Ground floor

PV MODULES & MOUNTING TYPE

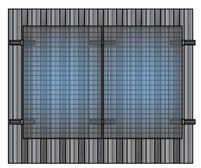
490 PV PANELS



SOLARWATT
(1762 X 1134 X 35)
24.8KG
455W

30 ARCBOXES

MOUNTING SYSTEM
RENUSOL TRAPEZOIDAL



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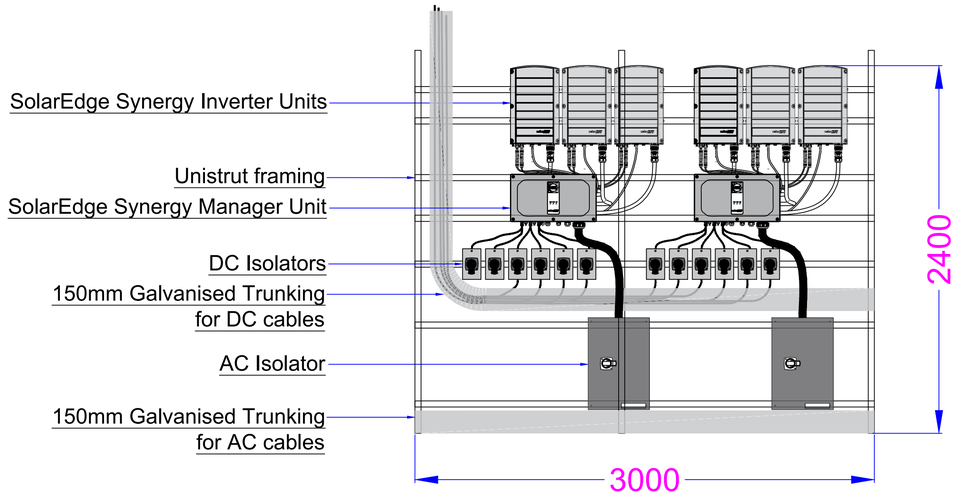
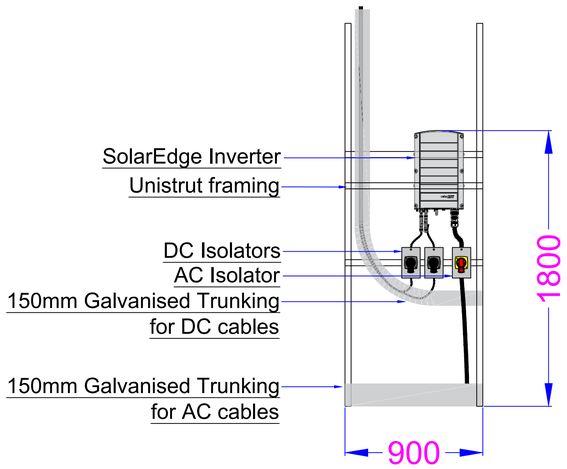
UNIT 1:
2 x SolarEdge SE90K



UNIT 2:
1 x SolarEdge SE30K



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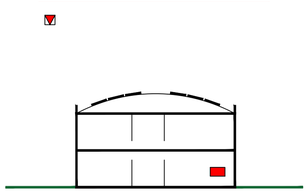
REV	DATE	DRAWN BY	DESCRIPTION
C1	24/10/25	OL	CONSTRUCTION ISSUE

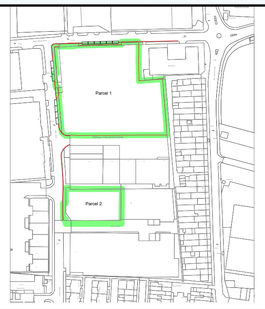
Issue Status: CONSTRUCTION ISSUE

INVERTER POSITION



GROUND FLOOR PLANT

SITE PLAN - NTS



ROOF TYPE & HEIGHT

HEIGHT FFL: 11.5m / 13.5m

ROOF TYPE: TRAPEZOIDAL

THREE PHASE - PV INVERTERS

2 x SolarEdge SE90K

1 x SolarEdge SE30K

Inverter Installed : In Plant room on Ground floor

Project: VALOR TOTTENHAM UNIT 1 & UNIT 2

Title: INVERTER LAYOUT ELEVATIONS

Scale	Designed By	Checked By	DATE
A1 - 1:120	OL	VD	24/10/25

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VPT	PV	003	C1

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SECTION 3

O&M PROCEDURE

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Normal Operating Procedures

Under normal operating conditions there is no user involvement in the running of a Solar PV system. For specific inverter controls please refer to the User Manual given to you by the installer.

At the beginning of the day, the system will automatically turn on once the light has risen to a sufficient level, consequently generating the required minimum voltage for the inverter. After around 4 minutes, the inverter enables the grid-feeding process and the system will then continue to generate electricity throughout the day. When the light levels drop at the end of the day, the generated voltage will fall below the required level and the inverter will turn off until the following morning / rise in light level.

On low light days, such as during the winter, the system may turn itself on and off again a number of times during the morning and evening, when the level of voltage being generated rises and falls below the required minimum. This is not a sign of a fault but perfectly normal as the light levels fluctuate.

When the system in turned off, there will be a constant **RED** LED showing on the meter. This indicates that no current is moving through the meter. Once the system has turned on, this LED will pulse relative to the amount of electricity being generated – the more electricity being generated the quicker it will pulse and visa versa.

Start-up / Shut-down Procedure

Start-up:

1. Ensure the circuit breaker is turned on at the distribution board
2. Place the DC disconnecting switch into the inverter through the bottom left hand side
3. Switch the AC isolator next to the generation meter to the ‘On’ Position
4. Switch the AC isolator next to the inverter to the ‘On’ position
5. Allow up to four minutes for the inverter to start ‘generating’

Shut-down:

1. Switch the AC isolator next to the inverter to the ‘Off’ position
2. Switch the AC isolator next to the generation meter to the ‘Off’ position
3. Remove the DC disconnecting switch from the inverter on the bottom left hand side
4. Allow 30 minutes for the capacitors to discharge before removing the inverter cover

How to tell if the Solar PV System is working properly?

Monitor the generation meter – if the system is generating electricity the meter should be representing this through a pulsing LED and the counter should be counting the number of kilowatt-hours you are generating.
Monitor the inverter display – all inverters have a display screen that will tell you when the system is generating electricity and how much electricity at one point is being generated. Refer to the User Manual for further information regarding the inverter operating functions.

What do I do if my system stops working?

Ensure your electricity supply from the national grid has not cut out. If it has your Solar PV system will not operate until the supply is restored.
Look at the inverter display screen to see if it has registered an error code. If so, refer to the trouble-shooting section in the User Manual, follow the guidance given and if necessary contact Envirolec for further advice.

If contacting Envirolec for further advice please ensure you have the following information;

· Inverter make, model and serial number
· PV module make and model
· A description of the error / any error message that is displayed on the inverter

What happens during a power-cut?

Due to necessary safety regulations, you are unable to continue generating your own electricity during a power cut. This is to protect anyone working to repair the national grid from receiving an electric shock, which may be caused if you are exporting electricity whilst the grid is being worked on.

If you do experience a power cut, the inverter will shut down immediately and only begin to generate electricity again once it receives the appropriate electrical signal from the grid. You do not need to touch any part of the installation for this to happen, it operates completely independently and safely.

Servicing and Maintenance

Do I need to service my Solar PV System?

As there are no moving parts in both the solar PV modules and the inverter there is very little maintenance necessary for the system and there are no components to wear out.

The modules are constructed using self-cleaning glass meaning that rainfall will remove the majority of dirt that may land on them. However if a module does suffer from a large build-up of dirt or leaves, it should be cleaned as soon as possible with measures taken to avoid a re-occurrence if at all possible.

A solar PV module needs to be clean in order for it to operate at its rated capacity. If there is dirt on a module, this blocks light from hitting the silicon crystals and reduces the power output. A layer of dust or grime can reduce power output by 15-25%.

The inverter has been designed and built for low maintenance, however it is advisable to check the device visually approximately every few months. Cleaning the inverter is only necessary if a build-up of dirt has blocked the heat dissipation mechanism. If this has occurred, carefully remove the dirt with an appropriate soft brush or paintbrush.

· Inspect the solar panels on a regular basic, more so if located in a dusty area or prone to a lot of bird mess.
· Remove any debris or dirt you can see that is stuck onto the modules.
· Clean the glass of the solar modules with warm, soapy water.
· Do not use an abrasive cleaning pad.
· Do not stand on the panels or the mounting system.
· If the array is integrated into the roof, do not stand on any of the surrounding roof tiles.
· Check the airflow around the inverter has not been restricted.
· Check the inverter functions and LED indicators are correct for the system conditions at that time.
· Have the electrical wiring and system components checked by a fully qualified electrician periodically.

Refer to the manufacturer's instructions for further advice and best results.

Consideration of Future Potential Shading

It is very important to avoid shading of the array as much as possible. This can be avoided by considering potential new building works and monitoring nearby tree and hedge growth.

Complaints Procedure

Envirolec Smart Energy Solutions Ltd is a member of 'Renewable Energy Assurance Limited' and therefore subscribes to the REAL Assurance Scheme Consumer Code, incorporating the following complaints procedure;

This scheme has been set up with the intention of providing a means of complaint resolution that should be cheaper, faster and more effective than court action. Nothing in this Code prevents the consumer from seeking a legal remedy to their complaint, if they consider this to be the more appropriate action.

If a consumer wants to complain about the standard of service they have received, or about any other aspect of the contract, they should use the following procedure:

· The consumer must tell the member company he or she agreed the contract with about any complaint they have as soon as possible, and no later than three months, after they have first noticed the problem;

· As soon as reasonably possible after receiving the complaint, and at most within 20 working days from receiving the complaint, the member will arrange to inspect the system.

· Where a consumer is without heating or hot water as a result of the situation that has led to the complaint, the member will arrange to inspect the system within 24 hours of receiving the complaint;

· The member will consider the details of the complaint and report the findings clearly to the consumer within seven working days from this inspection (if there is a possible safety issue arising from the complaint, the member will report back as a matter of urgency);

· The member will try to find an agreed course of action to resolve the complaint speedily and effectively to the consumer's satisfaction;

· If the consumer is not satisfied with the remedy offered by the member, they may notify the scheme administrator using this complaint form;

· The scheme administrator will log the complaint and acknowledge receipt of the notification within three days;

· The scheme administrator will contact the member to request a report on the situation;

· The scheme administrator will request the member to explain how they intend to resolve the complaint speedily and effectively;

· If a complaint cannot be sorted out through the above procedure, the member or consumer can use the conciliation service set out in section 9.2, below;

· Members will not take action through the courts without first trying to solve the problem through the conciliation service, except in the way expressly set out in this section.

The consumer may use a consumer representative or observer to help deal with a complaint. In this case, members must co-operate fully with this person. In the event that the complaint is of a technical nature the scheme administrator will seek the consumer's consent for the details to be shared with the relevant MCS certification body and the relevant trading standards department.

9.2 **Conciliation service**

The scheme offers a conciliation service that can be used in the unlikely event of complaints not being sorted out amicably between the two sides. This service aims to reach a non-legal solution to the dispute in a reasonable timescale. It is also available to trading standards departments, consumer advice centres, citizens' advice bureau and similar organisations to help them sort out any complaints involving a member. There is no extra charge for using this service. Members will always agree to use it if a consumer wants to do so. The conciliation process will work as follows:

· Anyone wanting to use the service will enter the details of the matter on the conciliation form (they should then send the form to the scheme administrator;

· Members should arrange for someone to help vulnerable consumers to fill in the form);

· Within seven working days the scheme administrator will inform the other people identified in the form as being involved in the dispute;

· Those people will send any relevant information to the scheme administrator as soon as possible, but in any event within 10 working days;

· The scheme administrator will appoint a suitably-qualified independent expert (or experts) to consider the matter (this person may or may not be linked to the panel);

· The independent expert will review the written evidence in the light of the consumer protection legislation in force, and may discuss the details and possible solutions with the people involved;

· If convenient for both parties, a face-to-face or 'proximity' mediation process will be arranged;

· After considering all the evidence, either written or from the mediation session, the expert will recommend what he or she believes to be a fair and workable resolution of the complaint;

· Both sides will do their best to comply with the conciliator's recommendations, which will be put into practice and the complaint closed without recourse to any further action;

· If the conciliator's advice is not acceptable to either side, they must explain why to the scheme administrator.

9.3 **Independent arbitration**

In exceptional cases in which the conciliator's advice is not acceptable, either side has the right to ask for the matter to be referred to the independent arbitration service. Neither side is required to refer the dispute to independent arbitration, and may choose to deal with the matter in other ways, including taking legal action. However, if the consumer requests that the matter be referred for arbitration, the member must accede to the request.
The scheme administrator will appoint a suitably-trained independent expert (the 'independent arbitrator') to carry out the arbitration process. The arbitration process will work as follows:

· If possible, both sides should first have gone through the conciliation service (as described in section 9.2, above), though this is not an absolute requirement of the arbitration scheme;

· If a dispute is referred to the independent arbitrator, both will pay an initial fee equivalent to the County Court Fee (this fee will be refunded to the consumer if the independent arbitrator finds in his or her favor, or recommends it);

· The forms and other documents, including a summary report, from the conciliation process will be sent to the independent arbitrator;

· The independent arbitrator will give both sides the opportunity to provide evidence to back up their case and decide whether a site visit or product tests are required, and how they will be funded;

· Any further costs will be explained to both sides and divided between them, as the independent arbitrator may decide;

· After considering all the evidence, the independent arbitrator will send the decision to both sides and the scheme administrator.

An award made under the independent arbitration service shall be final and binding on both the consumer and the member. They may only challenge it only on certain limited grounds under the Arbitration Act 1996. If the arbitrator makes a decision in favor of the consumer, the member must refund the fee in addition to any award that may be made.

[*Taken from The REAL Assurance Scheme Consumer Code, July 2010]*

SECTION 4

WARRANTIES

Envirolec Smart Energy Solutions (London) Ltd
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Orpington, BR5 3RE
0208 090 0270 - info@envirolec-ses.co.uk

1-Year Installation Warranty

The Warranty sets out the terms upon which Envirolec Smart Energy Solutions Ltd offers warranty cover for the Products supplied by it to its Customers, and for the installation services provided by Envirolec Smart Energy Solutions Ltd.

Unless otherwise specified the extent of the materials covered by the standard installers warranty will be the 25A AC Isolator, the 16A DC Isolator and the Generation meter.

Terms defined in Envirolec Smart Energy Solutions Ltd.'s Terms and Conditions bear the same meaning when used in this warranty. Your attention is drawn to Envirolec Smart Energy Solutions Ltd.'s Terms and Conditions, which includes provisions relevant to the warranty set out below.

1. Installation services

1.1. Envirolec Smart Energy Solutions Ltd warrants to you that the Installation Services will be performed by the appropriately qualified and trained Envirolec Smart Energy Solutions Ltd Registered Installers using reasonable care and skill, to such high standard of quality as it is reasonable for you to expect.

1.2. The Warranty Period for the Installation Services shall be 1 year from completion of the Installation Services

2. Remedial Action

2.1. If you make a valid claim about our service in accordance with Envirolec Smart Energy Solutions Ltd.'s Terms and Conditions, Envirolec Smart Energy Solutions Ltd. may arrange for the relevant Products to be reinstalled by any of Envirolec Smart Energy Solutions Ltd.'s Registered or approved Installers or refund to the Customer the charge for the relevant part of the Installation Service (or a proportionate part of such charge)

3. Exceptions

This Warranty will only apply:

3.1. If the Product has been installed by an Envirolec Smart Energy Solutions Ltd Registered Installer and has been properly used and maintained throughout the Warranty Period.

3.1 If you have informed Envirolec Smart Energy Solutions Ltd of the alleged defect within the Warranty Period and within a reasonable period of discovery.

4. General Conditions

4.1. You will promptly provide all information and support* reasonably necessary to enable Envirolec Smart Energy Solutions Ltd to evaluate any replacement of the allegedly defected product** or a refund of the price of the product*** and to perform its obligations under this Warranty.

* Including access to site and services
** Or the part in question
*** Or a proportionate part of the price

4.2. You agree that all premises, plant, power, fuel support services and other inputs that you provide for the installation and use of the Products are reasonable, are fit for purpose and will be properly used.

5. Expertise

5.1. Any dispute as to whether a defect is covered by this warranty shall be immediately referred at the request of either party to the REAL Assurance Scheme (REAL) Conciliation Service as detailed in 9.2 of the REAL Consumer Code.

6. Third Party Rights

6.1. When Envirolec Smart Energy Solutions Ltd.'s has installed a system in a property that is sold within the Warranty Period the warranty will pass to the new legal owner of the property. It may not be transferred to or exercised by any third party.

7. Law

7.1. This warranty is governed by English law and the English courts or by the law and the courts governing where your property is if this is outside England or Wales.

8. Manufacturers Product Warranty

8.1. Most Products supplied by Envirolec Smart Energy Solutions Ltd come with the benefit of a manufacturer's product guarantee.

Where a claim in respect of any of the Products is notified to Envirolec Smart Energy Solutions Ltd by you in accordance with Envirolec Smart Energy Solutions Ltd.'s Terms and Conditions, Envirolec Smart Energy Solutions Ltd will liaise with the manufacturer and use all reasonable endeavors to secure a replacement of the Product or the part in question) or a refund of the price of the Product (or a proportionate part of the price).

9. Insurance Backed Warranty

9.1. When Envirolec Smart Energy Solutions Ltd register your contract under the REAL Deposit and Advanced Payment Insurance Scheme the insurance provider will give you the opportunity to purchase an insurance policy to cover the workmanship warranty provided by Envirolec Smart Energy Solutions Ltd. In the event that Envirolec Smart Energy Solutions Ltd falls into receivership, administration, or bankruptcy during the term of the guarantee the insurance policy will ensure that the guarantee will be honored for the same period as described in 1.2 above.

9.2. In the event that a claim is necessary the policy holder should contact the policy provider directly either by post at Quality Assurance National Warranties, 37 Carrick Street, Ayr, KA7 1NS, or by telephone 01292 268020.

For more information about the Insurance Backed Warranty see here:
https://www.real.qanw.co.uk/consumer- IBG-faqs.php

Warranty Conditions for Solarwatt Panel vision 5.0

A Scope

1. The Warranty for Solarwatt Solar Modules of the glass-glass generation pursuant to these Warranty Conditions (hereinafter „Warranty Conditions") of Solarwatt GmbH (hereinafter „Solarwatt") applies in addition to any of the End Customer's statutory rights arising from product defects. In addition to the Warranty, the End Customer also has statutory rights arising from product defects against their contractual partner from whom the End Customer purchased the Solarwatt Solar Module of the glass-glass generation. Asserting any statutory rights arising from product defects is free of charge. These Warranty Conditions do not affect any of the End Customer's statutory rights arising from product defects. Such rights continue to exist regardless of whether a Warranty Claim is given or asserted.
2. These Warranty Conditions apply to the following Solar Modules of the glass-glass generation:

   SOLARWATT Panel vision XS 5.0
   SOLARWATT Panel vision M 5.0

   (hereinafter jointly referred to as „**Solar Modules**" or individually as „**Solar Module**").
3. Solarwatt provides the Warranty pursuant to these Warranty Conditions exclusively to End Customers who have acquired Solar Modules for their own use and not for the purpose of further sale or any other type of commercial exploitation (**„End Customer"**).

B Product Warranty

Solarwatt guarantees the End Customer pursuant to these Warranty Conditions that the Solar Modules supplied by Solarwatt are free from material and manufacturing defects which influence the functionality of the Solar Modules (**„Product Defects"**) for a period of thirty (30) years as from the date of the invoice to the End Customer for the purchase of the solar modules („**Warranty Term**") (together „**Product Warranty**"), and no later than six (6) months from the shipping date from the Solarwatt warehouse. Solarwatt shall provide the End Customer with proof of the despatch date of the Solar Modules from the Solarwatt warehouse in a suitable form at any time on request.

C Performance Warranty

Solarwatt guarantees the End Customer pursuant to these Warranty Conditions, from the date of the invoice to the End Customer for the purchase of the solar modules, and no later than six (6) months from the shipping date from the Solarwatt warehouse, that

- During the first (1st) year, the output of the Solar Modules shall not decrease to less than 99 % of the nominal output of the Solar Module as indicated by Solarwatt minus a tolerance range of 5 % under Standard Test Conditions (irradiance 1,000 W/m², spectral distribution AM 1.5, temperature 25 ±2 °C, hereinafter „**STC**");
- From the beginning of the second (2nd) year until the end of the twenty-ninth (29th) year, the output of the Solar Modules shall not decrease by more than 0,31 %, per year of the indicated nominal output of the Solar Module minus a tolerance range of 5 % under STC;
- During the thirtieth (30th) year, the guaranteed output of the Solar Modules is at least 90 % of the nominal output on the Solar Module as indicated by Solarwatt minus a tolerance range of 5% under STC

(jointly **„Performance Warranty",** Product Warranty and Performance Warranty jointly „**Warranty**"). Solarwatt shall provide the End Customer with proof of the despatch date of the Solar Modules from the Solarwatt warehouse in a suitable form at any time on request.

D Solarwatt Warranty Services

1. If one of the Warranty claims indicated in Section B or C arises during the respective Warranty Term, Solarwatt shall – at its own discretion and cost –,
   - repair the Solar Module on site at the End Customer's location,
   - repair the Solar Module at Solarwatt's facility or that of a third party,
   - supply an additional Solar Module to the End Customer or
   - exchange the Solar Module with a replacement module. On receipt of a replacement module by the End Customer, the ownership of the original Solar Module is transferred to Solarwatt. For replacement modules, the remaining Warranty Term of the original Solar Module applies exclusively.
     If the Solar Module originally supplied by Solarwatt was not or is no longer manufactured in serial production, an equivalent module shall be supplied as replacement or additional module
2. In accordance with the Solarwatt Warranty Conditions pursuant to Section D.1
   - Solarwatt will engage a carrier who will collectthe Solar Module subject to the complaint from the End Customer's location.
   - Solarwatt shall cover the transport costs for the collection of the Solar Module subject to the complaint and for shipping a replacement or additional module.
   - Solarwatt shall cover the necessary expenses for the removal of the Solar Module subject to the complaint and the installation of a replacement module or additional module.
3. Costs for measurements and for assessments by qualified experts (e.g. if Solarwatt rejects a Warranty Claim or if the End Customer cannot conduct such measure-

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ments/tests personally) must be coordinated and aligned with Solarwatt before such costs are incurred. Only in that case will these costs be covered by Solarwatt.

4. If pursuant to these Warranty Conditions, the warranty claim proves to be invalid, Solarwatt reserves the right to invoice the End Customer for any costs incurred if the End Customer knew or should have known that the Warranty Claim was invalid.

5. In the event of an unsuccessful warranty performance by Solarwatt, Solarwatt is entitled to repeat the same form of Warranty performance or to provide a different service, unless this is unreasonable for the End Customer.

E Exclusion of Warranties

1. The Warranty does not extend to Solar Modules that are impaired, damaged or destroyed as a result of
   - being improperly stored or transported by the End Customer or a third party.
   - not being installed, uninstalled or reinstalled as applicable, in accordance with the Solarwatt installation instructions and recognized good engineering practices.
   - being operated in a manner inconsistent with the intended purpose and especially contrary to the instructions for operation in the installation instructions.
   - not being maintained properly, in particular not in accordance with the maintenance instructions in the installation instructions.
   - being improperly modified by the End Customer or a third party or being otherwise improperly manipulated.
   - being exposed to force majeure (in particular lightning, fire or natural disaster). The insurance performance pursuant to the Solarwatt Full Coverage remains unaffected in this respect.

2. Insignificant changes or changes in appearance, in particular bleaching and discolouration of cells shall not constitute a Warranty Claim pursuant to Section B. The Performance Warranty pursuant to Section C also remains unaffected.

3. Warranty is also excluded if the End Customer manipulates or removes the serial number or type plate of the Solar Module.

4. The End Customer's Warranty claim is not valid if the notification period set forth in Section G.3 is exceeded unless the End Customer has not culpably exceeded this notification period.

F Transfer of warranties

Warranties are attached to the modules. If the End Customer sells and therefore transfers the title to the Solar Modules , this Warranty is transferred to the new owner of the Solar Module for the remainder of the Warranty Term. The respective new owner is then considered the End Customer for the purposes of these Warranty Conditions. With the transfer of title of the Solar Modules to the new owner, the Warranty of the original customer shall then expire for the original at the time of their transfer.

G Provisions on the assertion of warranty claims

1. Warranty claims can only be asserted to Solarwatt in writing and by submitting a copy of the original invoice of the dealer/installer from which the Solar Module was purchased (regardless of whether they are part of the Solarwatt distribution network). The complaint form for End Customers available online at Solarwatt.com should be used for this purpose.
   Further documents (e.g. photos, records, etc.) must be provided at Solarwatt's request.

2. The existence of a Warranty claim due to the spontaneous breakage of the glass without any external influences or due to a reduced output of a Solar Module (according to the guaranteed performance specified in Section C) must be verified by an expert appraisal performed by Solarwatt, a third party commissioned by Solarwatt or an independent testing institute approved for module certifications in accordance with IEC 61215. An assessment by an independent testing institute should be obtained in particular if Solarwatt rejects the Warranty claim and the End Customer requests such an assessment. The costs for obtaining an assessment from an independent testing institute must be agreed with Solarwatt before such costs are incurred and shall be borne by Solarwatt if agreed accordingly

3. In the event of an obvious Warranty claim (i.e. a Warranty claim that is so obvious that it is noticeable to the End Customer with no special effort and without an expert appraisal), the End Customer must submit a Warranty claim in writing as soon as possible and in all cases no more than three (3) months after discovery of the Warranty claim.
   Recognizable transport damages should be reported using the claim form for transport damages, available from Solarwatt.com.

H Notice for EasyIn 60M style solar modules

Solarwatt advises that EasyIn 60M style Solar Modules for which additional or optional Solarwatt installation components (seals, roof integration, enclosure frame) can be purchased must be installed correctly and properly by an installer and in accordance with the installation instructions in order to guarantee protection from rain.

I Limitation of liability

1. Any claims for damages or expenses against Solarwatt arising from these Warranty conditions or the provision of Warranty performance irrespective of the legal basis, are excluded. Solarwatt shall in no event be liable for loss of profit or revenue, loss of use and production downtime, damages resulting from downtime, loss of data, financing costs or any indirect or consequential

damages. This also applies if such damages occur at a third party's premises. The insurance performance pursuant to the Solarwatt Full Coverage remains unaffected in this respect.

2. The preceding limitations of liability do not apply if Solarwatt is liable pursuant to the Product Liability Act, in cases of wilful intent, gross negligence, injury to life, body or health. They also do not apply to the breach of a material warranty obligation. Material warranty obligations are those obligations that actually enable the proper granting of the Warranty in the first place and which the End Customer can regularly and fully expect to be met. However, liability for breach of material warranty obligations is restricted to compensation for foreseeable damages arising from the type of contract, provided no wilful intent or gross negligence is involved, there is no injury to life, body or health, and there is no liability for Solarwatt under the Product Liability Act.

J Final provisions

1. These Warranty Conditions are subject to German law. The application of mandatory statutory provisions which may not be deviated from by agreement to the detriment of the End Customer under the legal system of the country in which the End Customer has his habitual residence shall remain unaffected by this choice of law. (Art. 6 (2) ROM I-VO).

   The United Nations Convention on Contracts for the International Sale of Goods (CISG) is excluded.

2. If any individual provisions of these Warranty Conditions are or become invalid, the validity of the remaining provisions remains unaffected.

Warrantor:
Solarwatt GmbH
Maria-Reiche-Str. 2a
01109 Dresden

T +49-351-8895-0
F +49-351-8895-100
info@Solarwatt.com

Peter Bachmann
CPO

28th March 2025

LIMITED PRODUCT WARRANTY

This SolarEdge Technologies Ltd. limited warranty (the "Limited Warranty") covers defects in workmanship and materials of the below-listed products ("Products") for the applicable warranty period set out below ("Warranty Period"). See Products Covered and Warranty Period.

The Limited Warranty only applies to the buyer who purchased the Products from an authorized seller of SolarEdge for use within the continent where SolarEdge originally sold the Products and in accordance with their intended purpose. The Limited Warranty may be transferred from the buyer to any assignee and will remain in effect for the time period remaining under the foregoing warranties, provided that the Products are not moved outside their original country of installation. Also, any reinstallation must follow the installation procedures and guidelines accompanying the Products (collectively the "Documentation").

Warranty Activation

If the buyer discovers any defect in workmanship and materials within the applicable Warranty Period and wants to activate the Limited Warranty, then the buyer must promptly after such discovery report the defect to SolarEdge by sending an email to support@solaredge.com. The email must include this information: (i) a short description of the defect, (ii) the Product's serial number, and (iii) a scanned copy of the purchase receipt or warranty certificate of the applicable Product. Note that the Product's serial number must be legible and properly attached to the Product in order to be eligible for coverage.

After receiving notification from the buyer, SolarEdge will determine whether or not the reported defect is eligible for coverage under the Limited Warranty. If SolarEdge determines that the reported defect is not eligible for coverage under the Limited Warranty, SolarEdge will notify the buyer accordingly and will explain the reason why such coverage is not available. See Warranty Exclusions.

If SolarEdge determines that the reported defect is eligible for coverage under the Limited Warranty, SolarEdge will notify the buyer accordingly, and SolarEdge may, at its sole discretion, take any of the following actions:

- Repair the Product at SolarEdge's facilities or on-site.; or
- Issue a credit note for the defective Product in an amount up to its actual value at the time the buyer notifies SolarEdge of the defect, as determined by SolarEdge, for use toward the purchase of a new Product; or
- Provide the buyer with replacement units for the Product. When replacement Products are sent, SolarEdge generally sends them within 48 hours. SolarEdge may use new, used or refurbished parts that are at least functionally equivalent to the original part when making warranty repairs. The repaired Product or replacement parts or Product, as applicable, will continue to be covered under the Limited Warranty for the remainder of the then-current Warranty Period for the Product.

In any of the above, SolarEdge will determine if the Product should be returned to SolarEdge and, if SolarEdge so determines, the Return Merchandise Authorization ("*RMA*") Procedure will be invoked. When the RMA Procedure is invoked by SolarEdge, SolarEdge will instruct the buyer how to package and ship the Product or part(s) to the designated location. SolarEdge will bear the cost of such shipment, upon receipt of the Product or part(s), SolarEdge will, at its expense and sole discretion, either repair or replace the Product or part(s)

SolarEdge will deliver the repaired or replaced Product or part(s) to the buyer at the buyer's designated location in countries where SolarEdge has an office and/or there is a significant PV market. For the specific

list of countries to which such service is provided, see http://www.solaredge.com/articles/shipping_cost_coverage_warranty.

SolarEdge will bear the cost of such shipment, including shipping and customs (where applicable), and the buyer will bear any applicable value added tax. SolarEdge may elect to ship replacement Product(s) and/or part(s) prior to receipt of the Product and/or part(s) to be returned to SolarEdge as per the above.

All costs, including, without limitation, labor, travel, and boarding costs of SolarEdge service personnel or others that are incurred for labor relating to repairs, uninstalling, and reinstalling of Products on-site, as well as costs related to the buyer's employees and contractors repair or replacement activities, are not covered by the Limited Warranty and, unless otherwise agreed in writing in advance by SolarEdge, will be borne by the buyer.

Warranty Exclusions

The Limited Warranty does not apply to components that are separate from the Products, ancillary equipment, and consumables, such as, for example, cables, cable holders, fuses, wires, and connectors, whether supplied by SolarEdge or others. Some components may carry their own manufacturer warranty. See the product datasheet for more details.

This Limited Warranty will not apply if (a) the buyer is in default under the General Terms and Conditions of sale or any other Agreement governing the purchase of the Product, or (b) the Product or any part thereof is:

- Damaged as a result of misuse, abuse, accident, negligence or failure to maintain the Product;
- Damaged as a result of modifications, alterations or attachments thereto which were not pre-authorized in writing by SolarEdge;
- Damaged due to the failure to observe the applicable safety regulations governing the proper use of the Product;
- Installed or operated not in strict conformance with the Documentation, including without limitation, not ensuring sufficient ventilation for the Product as described in the SolarEdge Documentation;
- Opened, modified or disassembled in any way without SolarEdge's prior written consent;
- Used in combination with equipment, items or materials not permitted by the Documentation or in violation of local codes and standards;
- Damaged by software, interfacing, parts, supplies or other products not supplied by SolarEdge;
- Damaged as a result of improper site preparation or maintenance or improper installation;
- Damaged or rendered non-functional as a result of power surges, lightning, fire, flood, pest damage, accident, action of third parties, direct exposure to sea water or other events beyond SolarEdge's reasonable control or not arising from normal operating conditions; or
- Damaged during or in connection with shipping or transport to or from the buyer where the buyer arranges such shipping or transport.

Additionally, the Limited Warranty does not apply to:

- The input connector for all power optimizers with a part number ending in C.
- Any EV charger cable that is damaged due to: physical abuse and damage, commercial use, rust, water damage, domestic wear and tear, use of car inlets which are incompatible with the Smart EV Charger connector;
- Cellular Wireless Communication plans which are governed under the SolarEdge Communication Plan Terms and Conditions available on the SolarEdge website; or
- The SolarEdge Home Battery. See a dedicated warranty document for the SolarEdge Home Battery 48V and the SolarEdge Home Battery 400V available on the SolarEdge website.

- Cosmetic or superficial defects, dents, marks or scratches, which do not influence the proper functioning of the Product.

THE LIMITED WARRANTIES SET OUT HEREIN ARE THE ONLY EXPRESS WARRANTIES MADE IN CONNECTION WITH THE PRODUCTS AND ARE IN LIEU OF ANY OTHER WARRANTIES WITH RESPECT TO THE PRODUCTS PURCHASED BY BUYER FROM SOLAREDGE, WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL (INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), ALL OF WHICH ARE EXPRESSLY EXCLUDED TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW.

Claims by the buyer that go beyond the warranty terms set out herein, including claims for compensation or damages, are not covered by the Limited Warranty, insofar as SolarEdge is not subject to statutory liability. In such cases, please contact the company that sold you the Product. Eventual claims in accordance with the law on product liability remain unaffected.

Coverage under the Limited Warranty is subject to the buyer complying with the foregoing notification requirements and cooperating with SolarEdge's directions. SolarEdge's sole obligation and the buyer's exclusive remedy for any defect warranted hereunder is limited to those actions expressly stated above. Such actions are final and do not grant any further rights, in particular with respect to any claims for compensation.

Unless otherwise specified in an executed Agreement with SolarEdge, the Limited Warranty and related provisions set out herein are subject to SolarEdge's General Terms and Conditions, including, without limitation, the provisions thereof, which relate to disclaimer of warranties, limitation of liability and governing law and jurisdiction.

Products Covered and Warranty Period

Power Optimizers

25 years commencing on the earlier of: (i) 4 months from the date the power optimizers are shipped from SolarEdge; and (ii) the installation of the power optimizers

Module Embedded Power Optimizers (CSI and OPJ models)

25 years commencing on the earlier of: (i) 4 months from the date the power optimizers are shipped from SolarEdge; and (ii) the installation of the power optimizers, *provided, however*, that the Warranty Period shall not exceed the maximum of (1) the module product warranty and (2) the module power warranty periods provided by the applicable module manufacturer.

Inverters

12* years commencing on the earlier of: (i) 4 months from the date the products are shipped from SolarEdge; and (ii) the installation of the products.

Safety & Monitoring Interface (SMI), Auto-transformer, Home Backup Interface

12* years commencing on the earlier of: (i) 4 months from the date the products are shipped from SolarEdge; and (ii) the installation of the products.

* In some countries the inverter warranty is limited to 7 years. For a list of these countries, see http://www.solaredge.com/articles/warranty_exceptions. In addition, the SolarEdge 330kW Inverter warranty is limited to 5 years.

StorEdge Interface

10 years commencing on the earlier of: (i) 4 months from the date the Interfaces are shipped from SolarEdge; and (ii) the installation of the Interfaces.

ZigBee Gateway, Commercial Gateway, Firefighter Gateway, Smart Energy products, Cellular Communication Products, RS485 Plug-in, Energy Meter, Home EV Charger (North America region only)
5 years commencing on the earlier of: (i) 4 months from the date the product is shipped from SolarEdge; and (ii) the installation of the product. Warranty duration of Cellular Communication Products is the same whether or not the product is pre-installed in the inverter.

SolarEdge EV Charger (Europe)
3 years commencing on the earlier of: (i) 6 months from the date the product is shipped from SolarEdge; and (ii) the installation of the product.

Revised: December 2023

Renusol Europe GmbH

Warranty Conditions of Renusol Europe GmbH
(Date of issue: 10/09/2024)

The Renusol Europe GmbH, Piccoloministraße 2, 51063 Köln, Germany („**Renusol**“) sells its products („**Goods**“) as listed in **Annex A**. *Renusol* provides a warranty (**„Warranty“**) to the purchaser (**„Customer“**) in accordance with the provisions of these warranty conditions.

1. Scope of warranty

1.1 These terms of *Warranty* shall exclusively apply to the *Goods* that the *Customer* has bought directly from Renusol. If the *Customer* has purchased the *Goods* from a third party, any claims shall be asserted only against such third party.

1.2 The *Warranty* only applies if *Renusol* has declared to the customer in text format (esp. letter, e-mail, fax) that this warranty is applicable. A verbal agreement is not enough.

1.3 The *Customer's* claims for defects in accordance with clauses 7 and 8 of Renusol's General Terms and Conditions of Business (“**T&Cs**”) in the version applicable to the *Customer* and the respective purchase shall apply in addition to the *Customer's* rights under this *Warranty* and shall not be affected by the rights granted to the *Customer* under this *Warranty*.

2. Warranty period

2.1 The *Warranty* shall commence at the time at which the risk passes to the *Customer* pursuant to clause 6 of the *T&Cs*.

2.2 The warranty period applying to the *Goods* is set out in **Annex A**. Furthermore, *Renusol* ensures an extended warranty period longer than guaranteed in **Annex A**, if the following condition are met: (a) The *Customer* has registered itself in the PV-Configurator of *Renusol* via the Internet, <u>and</u> (b) The *Customer* has created the design for the *Goods* by means of the PV-Configurator and proved this by the number of the project report by registration. *Renusol* issues a certificate on the extended warranty period for the *Customer*.

2.3 If *Renusol* provides services to the customer under this *warranty* (repair or replacement of goods pursuant to clause 4.3), the *Warranty* period will not be prolonged through these services.

3. Making claims under the warranty

3.1 If the *Goods* are damaged, the *Customer* shall immediately, however within two weeks after the detection of the damage at the latest, notify *Renusol* about the damage in text format (esp. by letter, fax, e-mail) and enclose a copy of the warranty certificate. For keeping of term, it is enough to post the damage report on time. If the *Customer* fails to give notice of the damage in due time, the claims against *Renusol* under the *Warranty* will be excluded.

3.2 The damage report must include a description of all the circumstances of which the *Customer* is aware, and which are relevant in order to determine the cause of defect by *Renusol* and must be written in a way that is understandable for a *Renusol* technician. This especially includes type and location of the installation of the *Goods* as well as the modifications made by the *Customer* or third parties, repairs or other alterations and works done to the *Goods* as well as a description of the cause of damage and the consequential damages. If the above details are not included, claims against *Renusol* under the *Warranty* are excluded. This does not apply if the *Customer* cannot be reasonably expected or is unable to provide these details as part of the damage report. In this case the *Customer* must provide the details without delay as soon as this is possible or can be reasonably be expected.

3.3 At *Renusol's* request, the customer shall send the goods at the *Customer's* cost and risk to an address in Germany specified by Renusol, if this is reasonable for the *Customer*. *Renusol* will reimburse the *Customer* for the costs incurred in this regard if the defect is covered by the *Warranty* or if the *Customer* guiltlessly did not realise that the defect is not covered by the *Warranty*. The costs for returning goods that have been repaired or replaced under the Warranty are borne by *Renusol* “ex works”.

3.4 In derogation from clause 3.3, the assertion of claims for defects within the statutory warranty period does not entail any costs for the *Customer*; any costs incurred by the *Customer* are borne by *Renusol* (clause 439, subclause

2, German Civil Code.) As a consequence, within the warranty period the *Customer* has to bear return and/or shipment costs under the warranty only if, following a check of the notice of damage, it emerges that *Renusol* is not responsible for the defect asserted by the *Customer* and the *Customer* is responsible for the unjustified notice of defect, and, in particular, the Customer could have realised that *Renusol* was not responsible for the defect claimed.

3.5 *Renusol* shall acquire ownership in the *Goods* returned by the *Customer* provided they are not repaired and returned to the Customer.

3.6 For any items that the *Customer* additionally sends to *Renusol* and that are not part of the *Goods*, *Renusol* shall be liable in accordance with clauses 7 and 8 of the *T&Cs* and the statutory provisions.

3.7 If, at the *customer's* site, the goods have been permanently connected with a facility, especially a building, so that the goods are an essential part of the facility according to §§ 93, 94 of the German Civil Code, the *Goods* shall be checked by inspection on site on the *Customer's* request; due to the costs incurring, item 3.3.and 3.4 shall apply accordingly.

4. Scope of the warranty

4.1 A damage within the meaning of this *Warranty* shall only include material defects of *Goods*, which limit their suitability for normal or intended use in accordance with the contract concluded with the *Customer*.

4.2 If the defect reported by the *Customer* is covered by the warranty, *Renusol* will repair the *Goods* affected by the defect or replace them by supplying new *Goods*. *Renusol* shall bear the costs thereof, except for the costs for installing or removing the *Goods* at the *Customer's* premises; They shall be borne by the *Customer* itself. Renusol decide at its reasonable discretion whether the *Goods* will be repaired or replaced (section 315 German Civil Code). *Renusol* is also free to replace the affected *Goods*, also by completely overhauled *Goods*, if necessary.

4.3 *Renusol* is entitled to get the warranty services done by third parties authorized by *Renusol.* The *Customer* is not legally entitled to receive these services directly from *Renusol*.

4.4 If it turns out that the damage reported by the *Customer* is not covered by the terms of this *Warranty*, *Renusol* reserves the right to charge the expenses incurred from the test and, if applicable, the transport of the *Goods* to the customer's account. This does not apply if the *Customer* guiltlessly did not recognise the warranty case. *Renusol* is entitled to consolidate the costs for the warranty services, which have not been caused by their own fault, into a lump sum of 20 % of the selling price of the *Goods* reported by the *Customer* to be damaged. The Customer shall be entitled to prove that *Renusol* has, in fact, did not have to bear any costs or significantly paid for lower costs.

4.5 Claims other than those according to item 4.2, especially claims on reduction, withdraw or compensation of damage are not justified through the *Warranty*.

5. Exclusion of the warranty

5.1 Excluded from this *Warranty* are:

- All damages that cannot be attributed to a material defect of the *Goods* (item 4.1).
- All damages on the *Goods* where a manufacturing or serial number, possibly attached by *Renusol*, was removed, or was obliterated,
- All damages which were caused because the customer or a third party did not use the *Goods* as intended, i.e., the customer or the third party did not use the Goods for the contractually intended or the ordinary purpose.
- All damages which resulted from non-observance or breach of the applying assembly instructions, operating instructions, maintenance instructions or other instructions for use provided by *Renusol* for the *Goods*.
- All damages resulting from assembly or maintenance of the *Goods*, in case the assembly or maintenance was not performed by an appropriate and specialized company,
- all damages caused by external influences on the *Goods* at the *customer's* site after they have been delivered, especially due to changes, modifications, extensions, repairs, service works done by the *Customer* or third parties, the use of the *Goods* with foreign parts provided by the *Customer* or third parties, improper transport or packaging of the goods, vandalism, damages caused by animal, rebellion, turmoil (e.g. civil war, demonstrations), war, earthquakes, floods, overvoltage, fire, explosion, or lightning strike, and
- • All defects caused to *Goods* delivered by *Renusol* that are not included in any of the class of goods listed in **Annex A**.

5.2 Excluded from the warranty are, in addition to item 5.1, for the respective *Goods*, those damages that have been caused by not observing the standard terms of use for the *Goods* stated in **Annex B**.

6. Final Provisions

6.1 The *Warranty* and all claims related hereto shall be subject to the substantive German law only, to the exclusion of the UN Convention on Contracts for the International Sale of Goods and the International Private Law; this shall not affect article 3 (3) and (4) Rome I Convention.

6.2 Insofar as translations of these warranty conditions into languages other than German are produced, only the German version shall be legally binding.

6.3 If the *Customer* is a merchant, a legal person under public law, or a special fund under public law, the exclusive place of jurisdiction for all disputes arising directly or indirectly under this contractual relationship anywhere in the world shall be Cologne. The same applies even if the *Customer* does not have any general place of jurisdiction in Germany or if its place of residence or habitual abode is not known at the time of this commencement of proceedings. *Renusol* is entitled to enforce a claim against the *Customer* at its general place of jurisdiction.

6.4 Any amendments or supplements to the Warranty as well as all declarations and notifications related to the Warranty must be made in text format (esp. by letter, fax, e-mail). This shall also apply to the repeal of this formal requirement.

6.5 If any provision of this Warranty is or becomes invalid or unenforceable, in whole or in part, this shall not affect the remainder of the provisions. Statutory requirements shall apply in place of the invalid provision. This shall apply accordingly in relation to any loopholes in these provisions that the parties could not foresee.

A n n e x A

These warranty conditions apply to the following *Goods* with the corresponding warranty period according to item 2.2.

- FS10-S – Warranty period: ten years
- FS 18 S – Warranty period: ten years
- FS10-EW – Warranty period: ten years
- FS Pro 10 – Warranty period: ten years
- FS Pro 18 – Warranty period: ten years
- ConSole/CS – Warranty period: ten years
- InterSole – Warranty period: ten years
- VarioSole – Warranty period: ten years
- MetaSole/MS+/MS+P – Warranty period: ten years
- IntraSole – Warranty period: ten years
- TS – Warranty period: ten years

Extended warranty period for all above mentioned *Goods*: twenty years

A n n e x B

In accordance with clause 5.2, for the *Goods* in the ConSole and CS+ product group the following standard terms and conditions of use shall apply:

- The *Goods* are only to be used on structures with sufficient structural stability, especially if they are installed on a bearing structure that must be strong enough to carry the weight of the *Goods* as well as the possible additional weather-dependent loads, e.g., water, wind, leaves, or snow,
- Surface friction coefficient no less than 0.6
- Wind speeds of maximum 130 km/h, and
- Ambient temperatures not below -30°C and not higher than 50°C.

In accordance with clause 5.2, for the *Goods* of the product groups InterSole, VarioSole, Metasole and IntraSole the following standard terms of use shall apply:

- The *Goods* are only to be used on structures with sufficient structural stability, especially if they are installed on a bearing structure that must be strong enough to carry the weight of the *Goods* as well as the possible additional weather-dependent loads, e.g. water, wind, leaves, or snow,
- Wind speeds of maximum 115 km/h, and
- Ambient temperatures not below -30°C and not higher than 50°C.

In accordance with clause 5.2, for the *Goods* of the product group FS Pro 10, FS10-S and FS10-EW, the following standard terms of use shall apply:

- The *Goods* are only to be used on structures with sufficient structural stability, especially if they are installed on a bearing structure that must be strong enough to carry the weight of the *Goods* as well as the possible additional weather-dependent loads, e.g. water, wind, leaves, or snow,
- Surface friction coefficient no less than 0.5
- Wind surge pressure of maximum q_p=1.5 kN/m² (for snow load $s_k \leq$1.5 kN/m²) or q_p=1.0 kN/m² (for snow load $s_k \leq$2.5 kN/m²), and
- Ambient temperatures not below -30°C and not higher than 50°C.

In accordance with clause 5.2, for the *Goods* of the product group FS Pro 18 and FS18-S, the following standard terms of use shall apply:

- The *Goods* are only to be used on structures with sufficient structural stability, especially if they are installed on a bearing structure that must be strong enough to carry the weight of the *Goods* as well as the possible additional weather-dependent loads, e.g. water, wind, leaves, or snow,
- Surface friction coefficient no less than 0.5
- Wind surge pressure of maximum q_p=1,0 kN/m² (for snow load $s_k \leq$2.37 kN/m²), and
- Ambient temperatures not below -30°C and not higher than 50°C.

SECTION 5

SYSTEM COMMISSIONING DOCUMENTS

Envirolec Smart Energy Solutions (London) Ltd
Unit 6, Murray Business Centre, Murray Road,
Orpington, BR5 3RE
0208 090 0270 - info@envirolec-ses.co.uk

Status

Inverter

SN 7B0C1B70-12

Summary

Active Power	Apparent Power	Reactive Power
8.34 kW	8.54 kVA	-1.86 kVAR

I1	I2	I3
11.47 Aac	11.16 Aac	11.25 Aac

V12	V23	V31
436 Vac	435 Vac	436 Vac

P_OK: 120 of 120	Server Comm.
Optimizers Communicating	Failed Wi-Fi

Status	Power Limit	Switch is
Production	90 kW	On

Cos Phi	Frequency	Country
-0.98	50 Hz	UK 230/400V

AFCI	Sense Connect
Manual Reconnect	Enabled

Inverter Units

Left SN 7B05DD12-6F	Center SN 7B15A13F-70	Right SN 7B15A129-5A
AC Power 2.75 kW	AC Power 2.86 kW	AC Power 2.72 kW
P_OK 41 of 41	P_OK 38 of 38	P_OK 41 of 41
DC Power 2.79 kW	DC Power 2.9 kW	DC Power 2.76 kW
DC Voltage 766 Vdc	DC Voltage 767 Vdc	DC Voltage 765 Vdc
DC Current 3.65 Adc	DC Current 3.79 Adc	DC Current 3.61 Adc
Isolation 4770.79 kOhm	Isolation 4914.18 kOhm	Isolation 4865.12 kOhm
Temp. 29° C	Temp. 29° C	Temp. 28° C
Fan OK	Fan OK	Fan OK

Communication

Ethernet	RS485-1	RS485-2
No Cable	SE Follower	SE Follower
Cellular	Wi-Fi	Socket 2
NA	NC	NA

Inverter Energy

Today	This Month	This Year
38.37 kWh	38.37 kWh	38.37 kWh

Total
38.37 kWh

Commissioning

SN 7B0EB925-67

Grid Monitoring Completed.

Pairing Completed: 42 optimizers detected

G.100 restricted operation mode
DATE: 03/12/2025

Status

Inverter

SN 7B0EB925-67

Summary

Active Power **50 W**	Apparent Power **539 VA**	Reactive Power **-536 VAR**
I1 **0.72 Aac**	I2 **0.7 Aac**	I3 **0.74 Aac**
V12 **431 Vac**	V23 **431 Vac**	V31 **432 Vac**
P_OK: 42 of 42 **Optimizers Communicating**	Server Comm. **No cable Ethernet**	
Status **Production**	Power Limit **29.99 kW**	Switch is **On**
Cos Phi **-0.16**	Frequency **50 Hz**	Country **UK 230/400V**
DC Power **51 W**	DC Voltage **758 Vdc**	DC Current **0.07 Adc**
Isolation **10923.14 kOhm**	Temp. **19° C**	Fan **OK**
AFCI **Manual Reconnect**	Sense Connect **Enabled**	

Communication

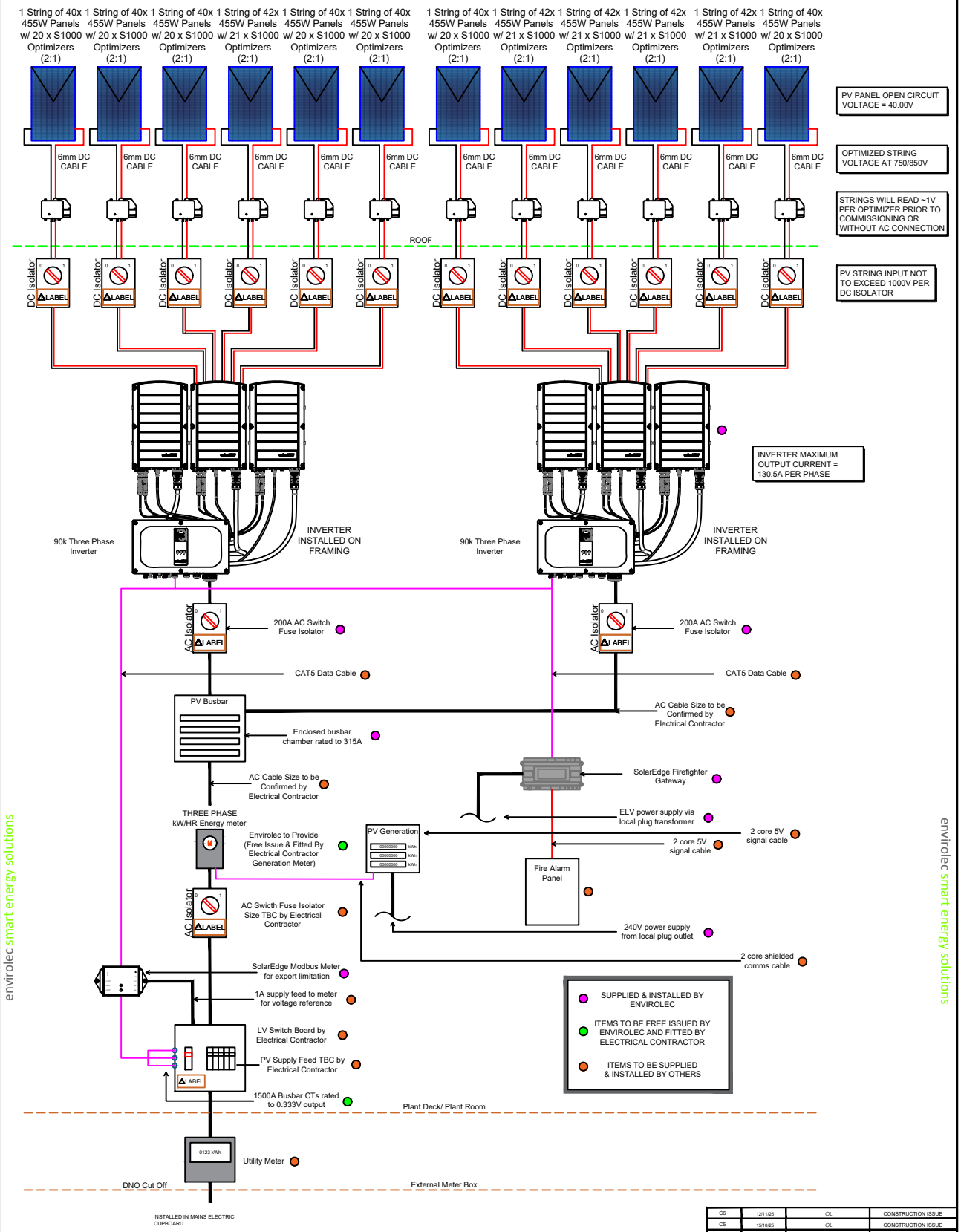
Ethernet **No Cable**	RS485-1 **SE Follower**	RS485-2 **SE Follower**
Cellular **NA**	Wi-Fi **NC**	Socket 2 **NA**

Inverter Energy

Today **1 Wh**	This Month **1 Wh**	This Year **1 Wh**
Total **0 Wh**		

Commissioning

envirolec smart energy solutions



REV	DATE	DRAWN BY	DESCRIPTION
C6	12/11/25	OL	CONSTRUCTION ISSUE
C5	15/10/25	OL	CONSTRUCTION ISSUE
C4	01/10/25	VD	CONSTRUCTION ISSUE
C3	22/09/25	OL	CONSTRUCTION ISSUE
C2	01/09/25	OL	CONSTRUCTION ISSUE
C1	11/08/25	OL	CONSTRUCTION ISSUE

Issue Status

CONSTRUCTION

Project

UNIT 1 VALOR PARK TOTTENHAM

Title

SOLAR PV WIRING SCHEMATIC

Scale	Designed By	Checked By	DATE
A4 - NTS	OL	VD	11/08/25

envirolec smart energy solutions

Envirolec Smart Energy Solutions
Unit 6,
Murray Business Centre,
Murray Road, Orpington
BR5 3RE
@envirolec-ses.co.uk

VPT	PV	501	C6

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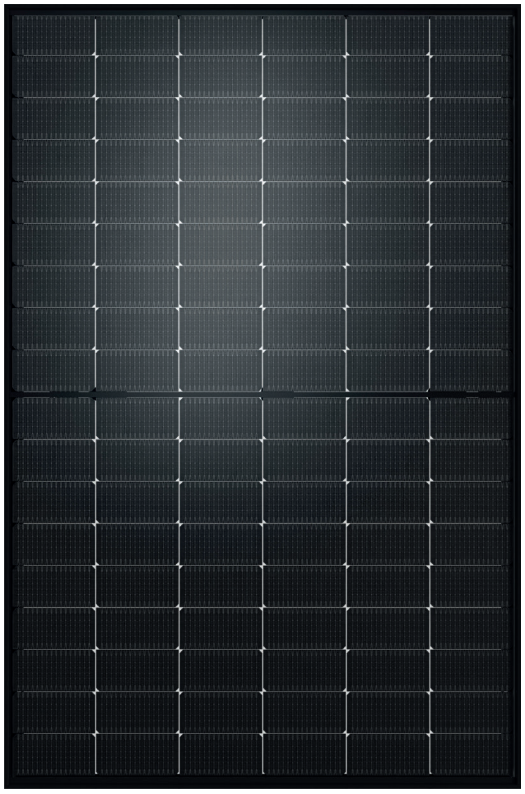
PRODUCT



SOLARWATT Panel
vision M 5.0 style

Glass-Glass-Module

Solid quality with high performance

Thanks to their design Solarwatt glass-glass modules deliver the highest long-term yields. They are robust and resilient. Bifacial TOPCon half-cut-cells enable modules that are optimized for maximum performance.

The solar cells are embedded almost indestructibly in the glass-glass composite and thus optimally protected against all weather effects and mechanical stress. Solarwatt can therefore offer a 30-year warranty on performance and product quality.

SUSTAINABILITY

CERTIFIED ACCORDING TO PPE2
50% LESS CO_2

low CO_2 footprint
< 220 kg eq CO_2 / Modul*, 50 % less CO_2 than standard modules and certified according to PPE2 criteria

ACCORDING TO UNO STANDARD
FAIR LABOUR

fair production conditions
no forced or child labour, fair pay and regular audits by independent auditors

HIGH RECYCLING RATE
CIRCULAR ECONOMY

high recycling rate in raw materials
aluminum: 75 %, cell silicium: 45 %
sustainable use through maximum durability and recycling at the end of the product life cycle

* Specification without frame, with frame: < 240 kg eq CO_2/module

PRODUCT QUALITY

- performance: 440 Wp to 455 Wp
- 100 % plus-sorting
- bifacial TOPCon half-cut-cells
- LeTID tested and PID protected
- ammonia resistant
- salt mist resistant
- intensive hailstorm resistant

SERVICE

30 year product warranty
as per „Warranty conditions for SOLARWATT Panel vision"

30 year performance warranty
on 90 % of nominal power as per „Warranty conditions for SOLARWATT Panel vision"

simple returns policy
as per „Delivery terms for Solarwatt solar modules"

Subject to change | Errors excepted.
This datasheet fullfills the requirements listed in IEC 61215-1-1 | EN

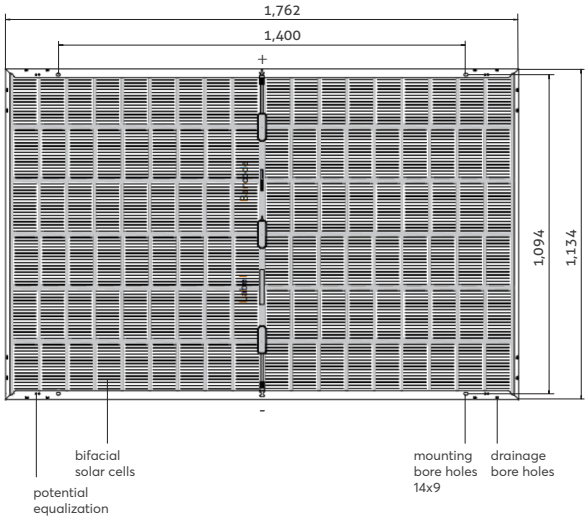
Solarwatt GmbH | Maria-Reiche-Str. 2a | 01109 Dresden | Germany
T +49-351-8895-555 | F +49-351-8895-100 | solarwatt.com
Certified acc. to DIN EN ISO 9001, 14001, 45001, 50001

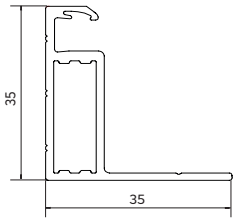
#06004 | Rev 11 | 13.06.2025

Technical datasheet
SOLARWATT Panel vision M 5.0

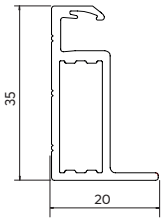
FOR OVER 30 YEARS SINCE 1993

DIMENSIONS





long frame side



short frame side

GENERAL DATA

Module technology	Glass-glass laminate; aluminum frame, black
Covering material **Encapsulation** **Backing material**	Tempered solar glass with anti-reflective finish, 2 mm Solar cells in POE encapsulation Tempered glass, 2 mm
Solar cells	108 monocrystalline, bifacial, high power TOPCon-solar cells
Cell dimensions	182 x 94 mm
L x W x H / Weight	$1{,}762^{\pm 2}$ x $1{,}134^{\pm 2}$ x $35^{\pm 0{,}3}$ mm / 24.8 kg
Connection technology	Cables 2x 1.2 m / 4 mm² Stäubli Electrical MC4-Evo 2 connectors
Bypass diodes	3
Max. system voltage	1,500 V
IP rating	IP68
Protection class	II (acc. to IEC 61140)
Fire class	A (acc. to IEC 61730/UL 790) B_{ROOF} (t1) (acc. to EN13501-5)
Certified mechanical ratings as per IEC 61215	Pressure load up to 8,100 Pa (test load 12,150 Pa) Suction load up to 2,800 Pa (test load 4,200 Pa)
Qualifications	IEC 61215 (incl. LeTID) | IEC 61730 PID IEC TS 62804 | IEC 61701 | IEC 62716 hail resistance class HW 3

THERMAL FEATURES

Operating temperature range	-40 … +85 °C
Ambient temperature range	-40 … +45 °C
Temperature coefficient P_{max}	-0.29 %/K
Temperature coefficient V_{oc}	-0.25 %/K
Temperature coefficient I_{sc}	0.05 %/K
NMOT	42 °C

TRANSPORT AND PACKAGING

Modules per pallet	31
Pallets per container	26
Stacked pallets/pallets per truck	14 / 28
Gross weight per pallet	809 kg
Gross weight per stacked pallet (max. 2)	1,618 kg
Pallet dimensions (packing size)	1,800 x 1,140 x 1,250

ELECTRICAL DATA (STC)

STC (Standard Test Conditions): Irradiation intensity 1,000 W/m², spectral distribution AM 1.5 | Temperature 25 ±2 °C, in accordance to EN 60904-3

Please check the performance class availability!

Nominal power P_{max}	445 Wp	450 Wp	455 Wp
Nominal voltage V_{mp}	33.0 V	33.2 V	33.4 V
Nominal current I_{mp}	13.5 A	13.5 A	13.6 A
Open circuit voltage V_{oc}	39.6 V	39.8 V	40.0 V
Short circuit current I_{sc}	14.0 A	14.0 A	14.1 A
Module efficiency	22.3 %	22.5 %	22.8 %

ELECTRICAL DATA (WEAK LIGHT AND BNPI)

Weak light conditions: Irradiation intensity 200 W/m², Temperature 25 °C, Wind speed 1 m/s, load operation

BNPI: Bifacial Nameplate Irradiance G = 1000 W/m² + φ * 135 W/m²
φ = MIN (φ_{ISC}, φ_{Pmax}), φ_{ISC} = 80 %, φ_{VOC} = 100 %, φ_{Pmax} = 80 %

Nominal power $P_{max@STC}$	445 W	450 W	455 W
Nominal power $P_{max\ @200\ W/m^2}$	87.2 W	88.2 W	89.2 W
Nominal power $P_{max@BNPI}$	490 W	496 W	501 W
Open circuit voltage $V_{OC@BNPI}$	39.7 V	39.9 V	40.1 V
Short circuit current $I_{SC@BNPI}$	15.4 A	15.4 A	15.5 A

P_{max} Nominal power: -0/+3%
All measured values are within the normal measurement tolerances of P_{max} ±5 %; V_{OC} ±3 %; I_{SC} ±3 %, I_{MP} ±10 %.
Reverse-current power rating IR: 30 A, operating modules with an external power source is only permissible if using a phase fuse with a tripping current of ≤ 30 A.

#06004 | Rev 11 | 13.06.2025

Three Phase Inverter with Synergy Technology

For Europe

SE50K / SE66.6K / SE90K / SE100K

INVERTERS

Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated system validation and wiring during site installation and prior to grid connection
- Easy two-person installation with lightweight, modular design (each inverter consists of two or three Synergy Units and one Synergy Manager)
- Independent operation of each Synergy Unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Designed to automatically reduce high DC voltage to touch-safe levels upon grid/inverter shutdown, with SafeDC™ and optional rapid shutdown
- Built-in arc fault protection
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices to better withstand surges caused by lightning or other events
- Streamlined cabling and lower BoS costs with single DC connection option
- Optional integrated DC safety switch eliminates the need for external DC isolators
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

/ Three Phase Inverter with Synergy Technology

For Europe

SE50K / SE66.6K / SE90K / SE100K

Applicable to inverter with part number	SExxK-xxx0Ixxxx				Units
	SE50K[1] For 400V Grid	SE66.6K For 400V Grid	SE90K For 400V Grid	SE100K For 400V Grid	
OUTPUT					
Rated AC Active Output Power	50,000[2]	66,600	90,000	100,000	W
Maximum AC Apparent Output Power	50,000[2]	66,600	90,000[3]	100,000	VA
AC Output Voltage – Line to Line / Line to Neutral (Nominal)	380 / 220; 400 / 230				Vac
AC Output Voltage – Line to Line Range / Line to Neutral Range	304 – 437 / 176 – 253; 320 – 460 / 184 – 264.5				Vac
AC Frequency	50/60 ± 5%				Hz
Maximum Continuous Output Current (per Phase)	72.5	96.5[4]	130.5[5]	145[6]	Aac
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
Maximum Residual Current Injection[7]	200		300		mA
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	± 0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	87,500 / 43,750	116,550 / 58,275	157,500 / 52,500	175,000 / 58,300	W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	680 – 1000				Vdc
Maximum Input Current	2 x 36.25	2 x 48.25	3 x 43.5	3 x 48.25	Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167 kΩ sensitivity per Synergy Unit[8]				
Maximum Inverter Efficiency	98.3				%
European Weighted Efficiency	98				%
Nighttime Power Consumption	< 8		< 12		W
ADDITIONAL FEATURES					
Supported Communication Interfaces[9]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, user configurable (according to UL 1699B)				
Rapid Shutdown	Optional (automatic upon AC Grid Disconnect)				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1 + 2)	Type II, field replaceable, integrated				
DC Surge Protection	Type II, field replaceable, integrated				
AC Surge Protection	Type II, field replaceable, optional				
DC Fuses (Single Pole)	Optional, 25 A / 30 A				
DC Disconnect Switch	Optional				
Pre-Commissioning	Built-in[10]				
VAR at Night[11]	Yes				
Safety	IEC 63027; IEC 62109-1; IEC 62109-2; AS3100				
Grid Connection Standards[12]	EN 50549-1; EN 50549-2; VDE-AR-N 4105; VDE-AR-N 4110; VDE V 0126-1-1; CEI 0-21, CEI 0-16; TOR Erzeuger Typ A+B; G99 Type A+B; G99 (NI) Type A+B; VFR 2019				
Emissions	IEC 61000-6-2; IEC 61000-6-3 Class A; IEC 61000-3-11; IEC 61000-3-12				
RoHS	Yes				

(1) Not available in all countries. For details about the supported inverters in your country, see Countries Supported by the SolarEdge Inverters.
(2) 49,990 in the UK.
(3) When using country settings that follow VDE-AR-N 4110, the Maximum AC Apparent Output Power is 100,000 VA.
(4) When using country settings that follow VDE-AR-N 4110, the Maximum Continuous Output Current per Phase is 107.4 A.
(5) When using country settings that follow VDE-AR-N 4110, the Maximum Continuous Output Current per Phase is 145 A.
(6) When using country settings that follow VDE-AR-N 4110, the Maximum Continuous Output Current per Phase is 161.1 A.
(7) If an external RCD is required, its trip value must be ≥ 200 mA for SE50K and SE66.6K; ≥ 300 mA for SE90K and SE100K.
(8) Where permitted by local regulations.
(9) For specifications of the optional communication options, visit the Communication page on the SolarEdge website or download the relevant product datasheet from the Knowledge Center.
(10) Not available for P/Ns SExxK-xxxxxBPxx.
(11) For details, see Set Volt Ampere Reactive at Night.
(12) For all standards and certificates download, refer to the Certificates category in the Knowledge Center.

/ Three Phase Inverter with Synergy Technology

For Europe

SE50K / SE66.6K / SE90K / SE100K

Applicable to inverter with part number	SExxK-xxx0Ixxxx				
	SE50K For 400V Grid	SE66.6K For 400V Grid	SE90K For 400V Grid	SE100K For 400V Grid	Units
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2		3		
AC Wire Cross Section and Outer Diameter: Line/PE (Aluminum or Copper)	Cross section up to 120 / 70 mm^2; outer diameter 30-50 / 12-20 mm				
DC Input: Inverter / Synergy Unit(12)(13)	8 / 4 MC4 pairs		12 / 4 MC4 pairs		
	Gland, 2 pairs / 1 pair, cross section 25 – 70 mm^2, aluminum or copper Cable outer diameter 12 – 20 mm		Gland, 3 pairs / 1 pair, cross section 25 – 70 mm^2, aluminum or copper Cable outer diameter 12 – 20 mm		
Dimensions (H x W x D)	Synergy Unit: 558 x 328 x 273 Synergy Manager: 360 x 560 x 295				mm
Weight	Synergy Unit: 32 Synergy Manager: 18				kg
Operating Temperature Range	-40 to +60(14)				˚C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	IP65 – outdoor and indoor				
Mounting	Brackets provided				

(13) DC input is available with MC4 or Gland connection under the inverter part number. For more information, contact SolarEdge.
(14) Only MC4 connectors manufactured by Staubli are approved for use.
(15) For power de-rating information refer to the Temperature Derating technical note.

Accessories - SPDs (purchased separately)	
Accessory	**P/N**
AC SPD kit for Synergy Manager (5 units per box)	SE-AC-SPD-SM

SolarEdge is a global leader in smart energy technology. By leveraging world-class engineering capabilities and with a relentless focus on innovation, SolarEdge creates smart energy solutions that power our lives and drive future progress.

SolarEdge developed an intelligent inverter solution that changed the way power is harvested and managed in photovoltaic (PV) systems. The SolarEdge DC optimized inverter maximizes power generation while lowering the cost of energy produced by the PV system.

Continuing to advance smart energy, SolarEdge addresses a broad range of energy market segments through its PV, storage, EV charging, UPS, and grid services solutions.

SolarEdge
@SolarEdgePV
@SolarEdgePV
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solaredge.com

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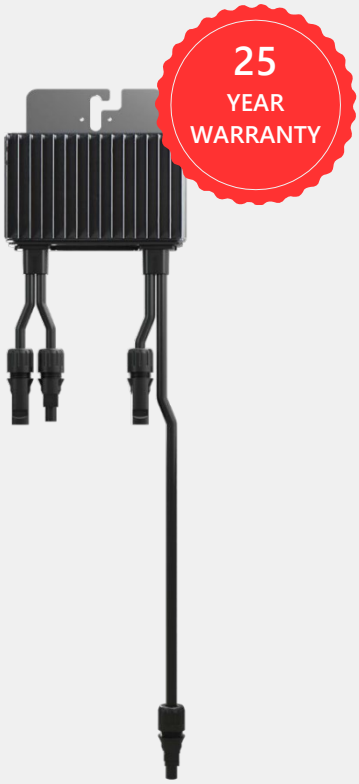
Cautionary Note Regarding Market Data and Industry Forecasts: This brochure may contain market data and industry forecasts from certain third-party sources. This information is based on industry surveys and the preparer's expertise in the industry and there can be no assurance that any such market data is accurate or that any such industry forecasts will be achieved. Although we have not independently verified the accuracy of such market data and industry forecasts, we believe that the market data is reliable and that the industry forecasts are reasonable.

CE RoHS

solaredge

Power Optimizer

S1000 / S1200



POWER OPTIMIZERS

SolarEdge's most advanced, cost-effective Power Optimizer for commercial and large field installations

- **Greater Energy Yields**
  - High efficiency (99.5%) with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
  - Supports high power and bifacial PV modules, and high string current for more power per string
- **Maximum Protection with Built-In Safety**
  - Designed to automatically reduce high DC voltage to touch-safe levels, upon grid/inverter shutdown, with SafeDC™
  - Includes SolarEdge Sense Connect, allowing continuous monitoring to detect overheating due to installation issues or connector-level wear and tear
- **Lower BoS Costs**
  - Flexible system design enables maximum space utilization and up to 2x longer string lengths, 50% less cables, fuses and combiner boxes
  - Supports connection of two PV modules in series with easy cable management and fast installation times
- **Simpler O&M**
  - Module-level system monitoring enabling pinpointed fault detection and remote, time-saving troubleshooting

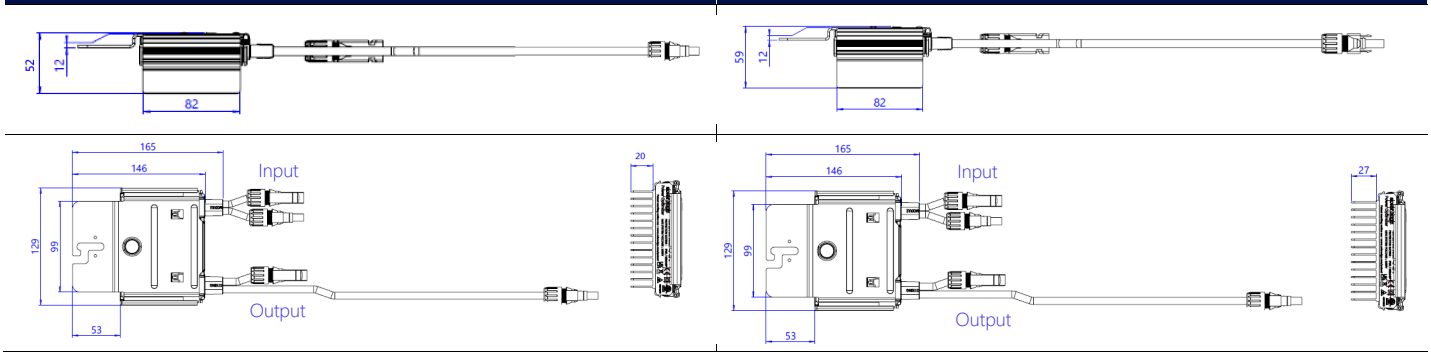
/ Power Optimizer

S1000 / S1200

Power Optimizer Model (Typical Module Compatibility)	S1000 (for up to 2 x high power or bifacial modules)	S1200 (for up to 2 x high power or bifacial modules)	Units
INPUT[1]			
Rated Input DC Power[2]	1100	1300	W
Absolute Maximum Input Voltage (Voc)	125		Vdc
MPPT Operating Range	12.5 – 105		Vdc
Maximum Continuous Input Current	15		Adc
Maximum Short Circuit Current (Isc) of Connected PV Module	20		Adc
Maximum Efficiency	99.5		%
Weighted Efficiency	98.8		%
Overvoltage Category	II		
OUTPUT DURING OPERATION			
Maximum Output Current	18	20	Adc
Maximum Output Voltage	80		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer	1±0.1		Vdc
STANDARD COMPLIANCE			
EMC	FCC Part 15, IEC 61000-6-2, and IEC 61000-6-3 – Class B, EN 55011		
Safety	IEC 62109-1 (class II safety), UL 3741		
Material	UL 94 V-0, UV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-712:2013-05		
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters	All commercial three phase inverters		
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	129 x 165 x 52 / 5.08 x 6.49 x 2.047	129 x 165 x 59 / 5.08 x 6.49 x 2.32	mm / in
Weight (including cables)	1064 / 2.3	1106 / 2.4	gr / lb
Input Connector	MC4[3]		
Input Wire Length	Short Input: 0.1 / 0.32 Long Input: 1.3 / 4.26[4]	Short Input: 0.1 / 0.32 Long Input: 1.6 / 5.24[4]	m / ft
Output Connector	MC4		
Output Wire Length	(+) 4.7 (-) 0.10 / (+) 15.41 (-) 0.32	(+) 5.3 (-) 0.10 / (+) 17.38 (-) 0.32	m / ft
Operating Temperature Range[5]	-40 to +85 / -40 to +185		˚C / ˚F
Protection Rating	IP68 / NEMA6P		
Relative Humidity	0 – 100		%
Maximum Operating Altitude	2000		m

(1) For detailed Power Optimizer/PV module compatibility guidelines, refer to the Application Note – Power Optimizer Compatibility with PV Modules.
(2) Rated power of the module at STC will not exceed the power optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.
(3) For other connector types please contact SolarEdge.
(4) For S-Series models with long input cables (1.3m / 4.26ft or 1.6m / 5.24ft), the Sense Connect feature is only enabled on the output cable connectors.
(5) For ambient temperatures above +65°C / +149°F power derating is applied. Refer to the Temperature Derating Technical Note for details.

S1000 Mechanical Drawing	S1200 Mechanical Drawing



* When installing SolarEdge power optimizers, maintaining clearance is required. Refer to the Power Optimizer Clearance Application Note for more details.

/ PV System Design

S1000

PV System Design Using a SolarEdge Inverter[1][2][3]		230/400V Grid SE15K[4]	230/400V Grid SE25K*	230/400V Grid SE27.6K*	230/400V Grid SE30K*	230/400V Grid SE33.3K*	277/480V Grid SE40K*	Units
Compatible Power Optimizers		S1000						
Minimum String Length	Power Optimizers	14	14	14	15	14	15	
	PV Modules	27	27	27	29	27	29	
Maximum String Length	Power Optimizers[5]	30	30	30	30	30	30	
	PV Modules	60	60	60	60	60	60	
Maximum Continuous Power per String [W]		13,950	13,500	13,950	15,300	13,500	15,300	W
Maximum Allowed Connected Power per String[6]		1 string: 16,200	1 string: 15,750	1 string: 16,200	1 string: 17,550	2 strings: 15,750	1 – 2 strings: 17,550	
		2 strings or more: 18,950	2 strings or more: 18,500	2 strings or more: 18,950	2 strings or more: 20,300	3 strings or more: 18,500	3 strings or more: 20,300	
Parallel Strings of Different Lengths or Orientations		Yes						
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers						

*The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(1) S1000 cannot be mixed with S1200 in the same string. For P-series compatibility please refer to the SolarEdge Power Optimizer Inter-Compatibility Technical Note.
(2) For each string, a Power Optimizer may be connected to a single PV module if:
1) Each Power Optimizer is connected to a single PV module (the entire string has a 1:1 configuration).
2) It is the only Power Optimizer connected to a single PV module.
(3) For SE15K and above, the minimum STC DC connected power should be 11KW.
(4) SE15K is compatible with S1000 only in India.
(5) When connecting to inverters that support Rapid Shutdown, each string must contain fewer than 28 power optimizers to meet NEC Rapid Shutdown requirements.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

S1200

PV System Design Using a SolarEdge Inverter[7][8][9]		230/400V Grid SE15K[10]*	230/400V Grid SE25K*	230/400V Grid SE27.6K*	230/400V Grid SE30K, SE33.3K[11]	277/480V Grid SE40K*	Units
Compatible Power Optimizers		S1200					
Minimum String Length	Power Optimizers	14	14	14	15	15	
	PV Modules	27	27	27	29	29	
Maximum String Length	Power Optimizers[12]	30	30	30	30	30	
	PV Modules	60	60	60	60	60	
Maximum Continuous Power per String [W]		15,500	15,000	15,500	17,000	17,000	W
Maximum Allowed Connected Power per String[13]		1 string or more: 20,500	1 string: 17,250	1 string: 17,750	1 string: 19,250	1 – 2 strings: 19,250	
			2 strings or more: 20,000	2 strings or more: 20,500	2 strings or more: 23,000	3 strings or more: 23,000	
Parallel Strings of Different Lengths or Orientations		Yes					
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers					

*The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(7) S1200 cannot be mixed with any other power optimizer in the same string.
(8) For each string, a Power Optimizer may be connected to a single PV module if:
1) Each Power Optimizer is connected to a single PV module (the entire string has a 1:1 configuration).
2) It is the only Power Optimizer connected to a single PV module.
(9) For SE15K and above, the minimum STC DC connected power should be 11KW.
(10) SE15K is compatible with S1200 only in India.
(11) To connect an S1200 power optimizer with an SE33.3K inverter, you must toggle the Fixed String Voltage from 750Vdc to 850Vdc via SolarEdge SetApp. For details, see this application note.
(12) When connecting to inverters that support Rapid Shutdown, each string must contain fewer than 28 power optimizers to meet NEC Rapid Shutdown requirements.
(13) To connect more STC power per string, design your project using SolarEdge Designer.

SolarEdge is a global leader in smart energy technology. By leveraging world-class engineering capabilities and with a relentless focus on innovation, SolarEdge creates smart energy solutions that power our lives and drive future progress.

SolarEdge developed an intelligent inverter solution that changed the way power is harvested and managed in photovoltaic (PV) systems. The SolarEdge DC optimized inverter maximizes power generation while lowering the cost of energy produced by the PV system.

Continuing to advance smart energy, SolarEdge addresses a broad range of energy market segments through its PV, storage, EV charging, UPS, and grid services solutions.

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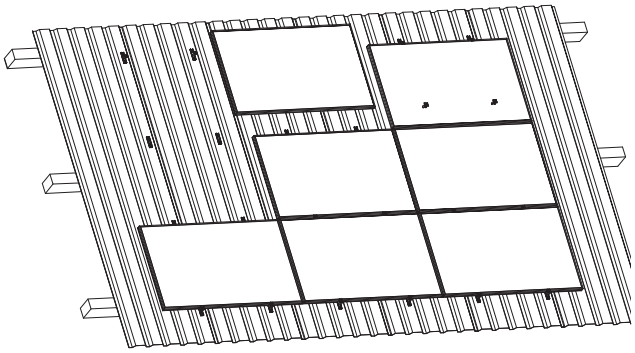

System Datasheet

MS+

General

System	PV-Mounting system for metal sheet roofs
Content	Mounting bracket, fastening elements, module clamps
System warranty	10 years
Application area	Pitched metal sheet roofing (except hydrogen sulfide exposition)
Roof covering	Trapezoidal metal sheet made of steel and aluminum Sandwich trapezoidal sheet according to manufacturer released
Roof types	Trapezoidal sheet metal roof and corrugated sheet metal roof made of steel and aluminium Sandwich plate according to manufacturer's approval
Metal sheet thickness	Steel: 0.4-1.25mm / Aluminum: 0.5-2 mm
Roof slope	min. 3°/max. 75°

System properties

Module tilt	Roof paralell
Material	Stainless steel, aluminum and EPDM

Modules

Type	PV-modules with frame height between 30-50 mm
Module size (max)	Length: unlimited; Width: unlimited
Module guidance	Vertical/Portrait

Certifications

TÜV	ID1111212485 according to 2PfG
Building authority approval	Z-14.1-4, Z-14.1-537 (Fastening material)
Water thightness	MFPA 5.1/10-535
MCS012	IK0197/02 Issue: 04
ETN	BT120019

Services

PV layout	Provided by Renusol

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