INSTRUCTION MANUAL

PHOTOVOLTAIC SMART OPTIMIZER

TECHNICAL DATA

MODEL	SUN-XL02-B
SKU	12746
MAX. INPUT/OUTPUT POWER(DC)	700W
MAX. INPUT/OUTPUT VOLTAGE(DC)	80V
MPPT VOLTAGE RANGE(DC)	12-80V
MAX. INPUT/OUTPUT CURRENT(DC)	15A
PEAK CONVERSION EFFICIENCY	99.5%
OPERATING TEMPERATURE	-40°C to +85°C



IP68 RATING

10 YEAR WARRANTY*

INTRODUCTION & WARRANTY

Thank you for selecting and buying V-TAC product. V-TAC will serve you the best. Please read these instructions carefully before starting the installation and keep this manual handy for future reference. If you have any another query, please contact our dealer or local vendor from whom you have purchased the product. They are trained and ready to serve you at the best. The warranty is valid for 10 years from the date of purchase. The warranty does not apply to damage caused by incorrect installation or abnormal wear and tear. The company gives no warranty against damage to any surface due to incorrect removal and installation of the product. This product is warranted for manufacturing defects only.

This marking indicates that this product should not be disposed of with other household wastes.

Caution, Risk of electric shock

MULTI-LANGUAGE MANUAL QR CODE
Please scan the QR code to access the manual in multiple languages.

FR Cet appareil, ses accessoires et cordons se recyclent — À DÉPOSER EN MAGASIN ou À DÉPOSER EN DÉCHETERIE

Points de collecte sur www.quefaire dem esdechets.fr
Privilégiez la réparation ou le don de votre appareil !

In case of any query/issue with the product, please reach out to us at: support@v-tac.eu
For More products range, inquiry please contact our distributor or nearest dealers.
V-TAC EUROPE LTD. Bulgaria, Plovdiv 4000, bul.L.Karavelow 9B

WARNING

1. Please make sure to turn off the power before starting the installation.
2. Installation must be performed by a qualified electrician.

DANGER

"Danger" indicates a situation that has a high potential risk and will result in death or serious injury if not avoided.

WARNING

"Warning" indicates a situation that has a moderate potential risk and may result in death or serious injury if not avoided.

CAUTION

"Caution" indicates a situation that has a low potential risk and may result in moderate or minor injury if not avoided.

ATTENTION

"Attention" indicates a situation that has a potential risk and may result in equipment failure or property loss if not avoided.

1. SAFETY INSTRUCTIONS

To ensure the safe installation and operation of optimizer and reduce the risk of electric shock and equipment damage, the following safety precautions shall be strictly followed during operation and maintenance.

WARNING

All installation operations must be completed by professional technicians. The professional technicians must:
1 Undergo specialized training;
2 Read this Manual completely and master the operation-related safety matters;
3 Be familiar with relevant safety specifications of the electrical system.

2. PRODUCT DESCRIPTION

2.1 EXTERNAL OPTIMIZER

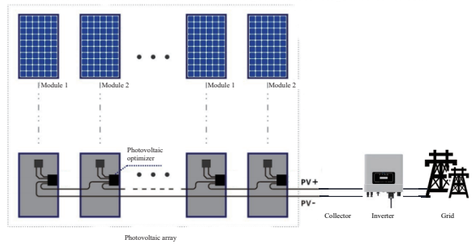
The optimizer product features are as follows:

- The component-level maximum power point tracking can increase the power generation by 5% - 25%.
- Monitor the operation of each photovoltaic module in real time. Find problems in time and make accurate positioning.
- Use photovoltaic cable power line carrier communication, without additional communication cable.



2.2 COMPOSITION OF PHOTOVOLTAIC SYSTEM

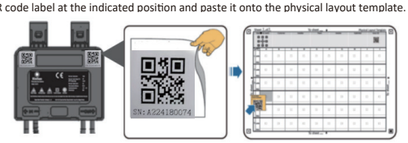
photovoltaic system is that each photovoltaic module is installed with an external optimizer to achieve module-level MPPT. The input of external optimizer is connected to output of module. The output of optimizer are connected to each other, which is merged into later stage inverter or combiner box.



3. System Installation Instructions

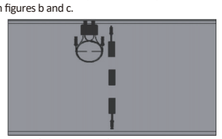
3.1 Optimizer installation

·Step1.
Tear off the QR code, and after determining the installation position of the optimizer, as shown in Figure A, remove the QR code label at the indicated position and paste it onto the physical layout template.



a. Tear off and paste the QR code label diagram

·Step2.
Fixed optimizer, insert the two metal clips at the top of the optimizer into the metal slots on the side of the component frame, as close as possible to the positive and negative terminals of the component power supply, as shown in figures b and c.



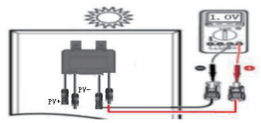
b. Diagram of the location of the optimizer component



c. Optimizer fixed diagram

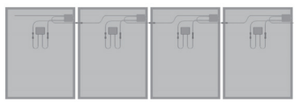
·Step3. Connection of optimizer

(1) Connect the optimizer input IN+and IN - to the PV+and PV - of the photovoltaic module junction box.
(2) Connect the positive probe of the multimeter to the positive output of the optimizer and the negative probe to the negative output. Check the voltage output of the optimizer (0.9V-1.1V), as shown in Figure d.



d. Optimizer output detection

(3) After installing a single optimizer, concatenate the outputs of the optimizer in sequence to form a string, as shown in Figure e.



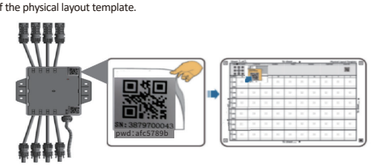
e. Optimizer string connection diagram

WARNING

Before connecting the string to the inverter, use a multimeter to measure the voltage at both ends of the string in the DC voltage range to see if it is normal N * (0.9V-1.1V).

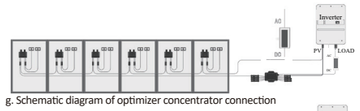
3.2 Installation of optimizer concentrator

The optimizer concentrator supports up to 4 strings, and a single string can support up to 25 components (depending on the capacity of the inverter). For example, if the on-site inverter supports two string inputs, the optimizer concentrator only needs two strings connected to the PV inputs of the string and the inverter. The communication distance between the optimizer concentrator and the strings should not exceed 350m.
1. Tear off the QR code and remove the QR code label at the indicated position as shown in Figure f, and paste it in the designated area of the physical layout template.

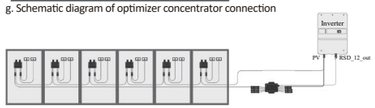


f. Schematic diagram of optimizer concentrator QR code tearing and pasting

2. Optimizer concentrator fixed
The optimizer concentrator is equipped with built-in WIFI and powered by an adapter. It is necessary to consider the coverage of WIFI signals and the connection of AC power to the adapter.
3. Optimizer Concentrator Connection
Connect the PV+or PV - in the connected string sequentially through the string end of the optimizer concentrator and then connect it to the inverter, as shown in Figure g.
If the machine has a rapid shutdown function, you can connect the inverter directly without using a power module,as shown in Figure h. If there is no shutdown function, follow the previous operation.



g. Schematic diagram of optimizer concentrator connection



h. Use the RSD port of inverter to supply the concentertor

Note:
1.To minimize electromagnetic interference, it is recommended to shorten the length of the cables from the optimizer to the inverter and optimizer concentrator as much as possible.
2.To ensure the communication stable, it's recommended to dividually layout the PV cable and AC cable of this solar system, make sure the distance between them is more than 10cm.

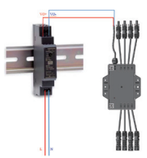
3.3 Installation of rail type power supply

1. Fixed power supply
The rail power supply (is included as standard) must be installed in a distribution cabinet or waterproof box and fixed as shown in the diagram.



i. Schematic diagram of fixed rail power supply

2. Power connection



After confirming the correct connection, turn on the power and the working indicator light will turn on, indicating that the optimizer concentrator is working properly and system parameter configuration can be performed. Please refer to the system software operation instructions for details.

4. CHECK AND REPLACEMENT

WARNING

The following operations must be completed by trained professional technicians to avoid the risk of electric shock.

4.1 CHECK

Check whether the optimizer is abnormal by following the steps below:

- 1. To check whether the external optimizer is operated normally, measure the input current of optimizer with clip-on ammeter. If there is input current, the optimizer is operated normally; if the input current is 0, the optimizer or module is abnormal.
- 2. If the input current is 0, check whether the module is obviously damaged or seriously blocked. If it is obviously damaged, replace the module; if it is seriously blocked, remove the block.
- 3. If module is normal, check the connected cables for disconnection. After disconnecting the input line of optimizer (the output line is disconnected first), measure the voltage of positive and negative connectors of module output line with a multimeter. If the voltage is normal, the line connection is normal; if there is no voltage, check the line connection further to confirm the open-circuit contact.
- 4. If the module and line connection are normal, the replacement of optimizer shall be considered.

4.2 REPLACEMENT

Replace the optimizer by following the steps below:

- 1. Shut down the inverter and disconnect it from corresponding string;
- 2. Disconnect the output line of optimizer;
- 3. Disconnect the input line of optimizer;
- 4. Remove the original optimizer and install the new one;
- 5. Connect the input line;
- 6. Connect the output line;
- 7. Connect the corresponding string to the later stage inverter;
- 8. Restart the inverter;
- 9. Test the input current of replaced optimizer with a clip-on ammeter to confirm repair.

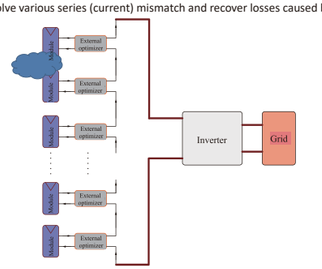
5. INSTRUCTIONS TO APPLICABLE SCENE

The external optimizer is suitable for various types of power stations, distributed and large-scale surface power stations; new power stations, reconstructive old power stations. In consideration of various mismatch situations, the installation methods are as follows.

5.1 ONE MPPT PORT WITH ONE STRING

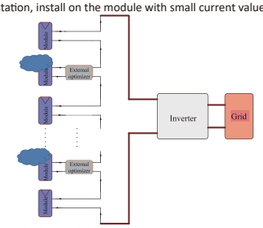
5.1.1 FULL INSTALLATION

The photovoltaic system has various mismatches, such as shadow shading, inconsistent orientation, inconsistent aging, stain, glass fragments, ash accumulation, snow accumulation. It can be said that there is no system without mismatch. The difference lies in the mismatch.
The full installation can solve various series (current) mismatch and recover losses caused by mismatch to the full extent.



5.1.2 INSTALLATION OF MISMATCHED MODULES

If the mismatched modules of system are clear, it can be considered to install only on mismatched modules or solve series mismatch to save costs.
Instructions for installing mismatched modules:
If module has the clear mismatch, such as shading, low effective illumination caused by orientation deviation, install on the module with clear mismatch;
If the current value of module with low current in string is different due to the reconstruction and replacement of the old power station, install on the module with small current values.

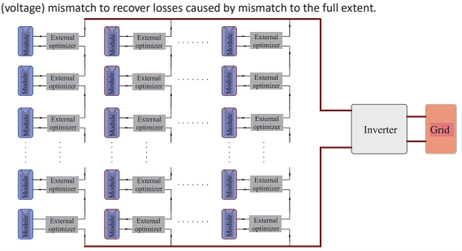


Risk of installation on mismatched module only:
The mismatch of other modules cannot be solved. When the judgment of system mismatch is not accurate, for example,some modules are seriously mismatched due to damage while there is no obvious mismatch on the surface, because the optimizer is not installed, this module will cause great loss to the power generation of system.
The mismatch is not fixed and will change with time, environment and conditions. If the installation is based on current mismatch, the mismatch changes after a period of time, the mismatch cannot be solved effectively.

5.2 ONE MPPT PORT WITH MULTIPLE STRINGS

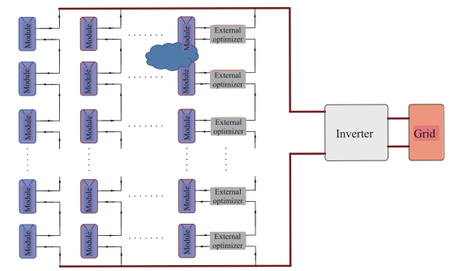
5.2.1 FULL INSTALLATION

If one MPPT port of the photovoltaic system has multiple strings, there will be series mismatch and parallel mismatch in the system. The most effective method is full installation.
The full installation in array corresponding to one MPPT port can solve series (current) mismatch and parallel (voltage) mismatch to recover losses caused by mismatch to the full extent.



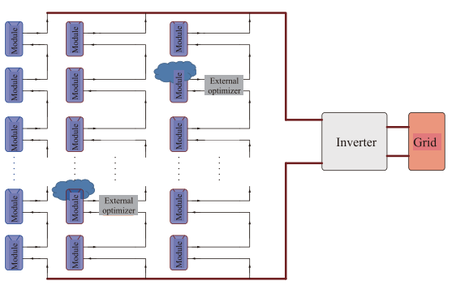
5.2.2 INSTALLATION OF MISMATCHED STRING

When only part of strings in one MPPT port array has clear mismatch and other strings have no obvious mismatch, it is allowed to install the mismatched strings only. In this way, the series mismatch in this string can be solved and the losses of power generation can be recovered to a certain extent, but the parallel mismatch cannot be solved.



5.2.3 INSTALLATION OF MISMATCHED MODULE

When only part of modules in an array has clear mismatch, it is allowed to only install the modules with clear mismatch. In this way, the mismatch can be solved to a large extent at the lowest cost, so as to recover losses of power generation.



PRODUCT SPECIFICATION

MODEL	SUN-XL02-B
PROJECT	PARAMETER
MAX. INPUT/OUTPUT POWER(DC)	700W
MAX. INPUT/OUTPUT VOLTAGE(DC)	80V
MPPT VOLTAGE RANGE(DC)	12-80V
MAX. INPUT/OUTPUT CURRENT(DC)	15A
PEAK CONVERSION EFFICIENCY	99.5%
INSTALLATION SPECIFICATIONS DIMENSIONS(MM)	105x105x22mm
WEIGHT (G)	600g
CABLE	4.0mm² input 70cm output 100cm customizable
CONNECTOR	MC4 Or Compatible with MC4
OPERATING TEMPERATURE	-40°C to +85 °C
INGRESS PROTECTION (IP) RATING	IP68
PRODUCT CERTIFICATION	CE

EU DECLARATION OF CONFORMITY

within the scope of the EU directives
· Radio Equipment Directive 2014/53/EU (RED)
· Restriction of the use of certain hazardous substances 2011/65/EU)(RoHS)

NINGBO DEYE INVERTER TECHNOLOGY CO., LTD. confirms herewith that the products described in this document are in compliance with the fundamental requirements and other relevant provisions of the above mentioned directives. The entire EU Declaration of Conformity and certificate can be found at https://www.deyeinverter.com/download/#pv-optimizer.

Deye

2506090001-R1
www.deyeinverter.com

EU Declaration of Conformity

Product: Photovoltaic Smart Optimize
Models: SUN-XL02-A;SUN-XL02-B;SUN-XL02-C
Name and address of the manufacturer: Ningbo Deye Inverter Technology Co., Ltd.
No. 26 South YongJiang Road, Daqi, Beilun, NingBo, China
Name and address of authorized EU/EEA importer: Tuta Blu d.o.o. HR-10 000 Zagreb, Ulica grada Vukovara 226G

This declaration of conformity is issued under the sole responsibility of the manufacturer. Also this product is under manufacturer's warranty.
This declaration of conformity is not valid any longer: if the product is modified, supplemented or changed in any other way, as well as in case the product is used or installed improperly.

Object of the declaration:Photovoltaic Smart Optimize
Model reference:SUN-XL02-A;SUN-XL02-B;SUN-XL02-C



The object of the declaration described above is in conformity with the relevant Union harmonization legislation: The Low Voltage Directive (LVD) 2014/35/EU;the Electromagnetic Compatibility (EMC) Directive 2014/30/EU;the restriction of the use of certain hazardous substances (RoHS) Directive 2011/65/EU.

References to the relevant harmonized standards used or references to the other technical specifications in relation to which conformity is declared:

LVD:	
EN 62109-1:2010	●
EMC:	
EN IEC 61000-6-2:2019	●
EN IEC 61000-6-3:2021	●
RoHS:	
EN IEC 63000:2018	●

Additional information: CE mark was affixed on the product since 2023.
SGS tested the sample in accordance with the standards and issued the certificate, certificate number:GZES2506010749PV;GZES2506010749PV

Please note that the test was performed on the sample, as each device has a separate serial number. Please refer to the models name.The manufacturer's declaration applies to all devices serial number.

EU DoC – *v3*

Ningbo Deye Inverter Technology Co., Ltd.
No. 26 South YongJiang Road, Daqi, Beilun, NingBo, China

RoHS 20 PAP