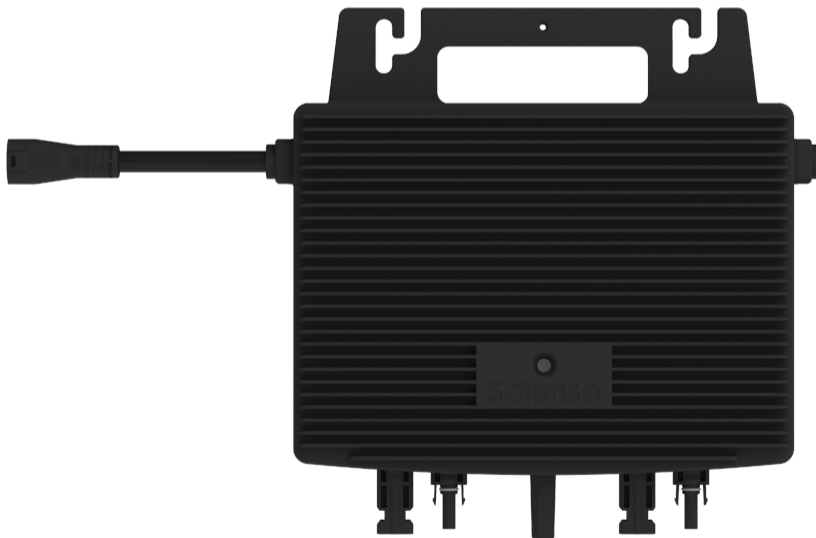




# User Manual

**Sol-H900 / Sol-H1000**



**AC Version**

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## About Microinverter

This system is composed of a group of Microinverters that convert direct current (DC) into alternating current (AC) and feeds it into the public grid. The system is designed for the incorporation of one Microinverter for four photovoltaic modules. Each Microinverter works independently that guarantees the maximum power generation of each photovoltaic module. This setup enables user to control the production of a single photovoltaic module directly, consequently improving the flexibility and reliability of the system.

## About the Manual

This manual contains important instructions for the Sol-H900 / Sol-H1000 Microinverter and must be read in its entirety before installing or commissioning the equipment. For safety, only qualified technician, who has received training or has demonstrated skills can install and maintain this Microinverter under the guide of this document.

## Other Information

Product information is subject to change without notice. User manual will be updated frequently, please refer to Solenso official website at <https://www.solenso-global.com/> for the latest version.

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# 1 Important Safety Instructions

This manual contains important instructions to follow during installation and of the Photovoltaic Grid-connected Inverter (Microinverter). To reduce the risk of electrical shock and ensure the safe installation and operation of the Microinverter, the following symbols appear throughout this document to indicate dangerous conditions and important safety instructions. Specifications subject to change without notice - please ensure you are using the latest manual found at the manufacturer website.

**WARNING:** This indicates a situation where failure to follow instructions may cause a serious hardware failure or personnel danger if not applied appropriately. Use extreme caution when performing this task.

***\*Note: This indicates information that is important for optimized Microinverter operation. Follow these instructions strictly.***

## 1.1 Safety Instructions

- ✓ DO NOT disconnect the PV module from the Microinverter without disconnecting the AC power.
- ✓ Only qualified professionals should install and/or replace the Microinverters.
- ✓ Perform all electrical installations in accordance with local electrical codes.
- ✓ Before installing or using the Microinverter, please read all instructions and cautionary markings in the technical documents and on the Microinverter system and the Microinverter Solar- array.
- ✓ Be aware that the body of the Microinverter is the heat sink and can reach a temperature of 80°C. To reduce risk of burns, do not touch the body of the Microinverter.
- ✓ DO NOT attempt to repair the Microinverter. If it fails, contact technical support to obtain an RMA number and start the replacement process. Damaging or opening the Microinverter will void the warranty caution!

The external protective earthing conductor is connected to the inverter protective earthing terminal through AC connector.

When connecting, connect the AC connector first to ensure the inverter earthing then do the DC connections.

When disconnecting, disconnect the AC by opening the branch circuit breaker first but maintain the protective earthing conductor in the branch circuit breaker connect to the inverter, then disconnect the DC inputs.







- ✓ In any circumstance, do not connect DC input when AC connector is unplugged.
- ✓ Please install isolation switching devices on the AC side of the inverter.

## 1.2 Radio Interference Statement

CE EMC Compliance: The equipment can comply with CE EMC, which are designed to protect against harmful interference in a residential installation. The equipment could radiate radio frequency energy, and this might cause harmful interference to radio communications if not following the instructions when installing and using the equipment. But there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, the following measures might resolve the issues:

- A) Relocate the receiving antenna and keep it well away from the equipment.
- B) Consult the dealer or an experienced radio / TV technical for help. Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

## 1.3 The Meaning of Symbols

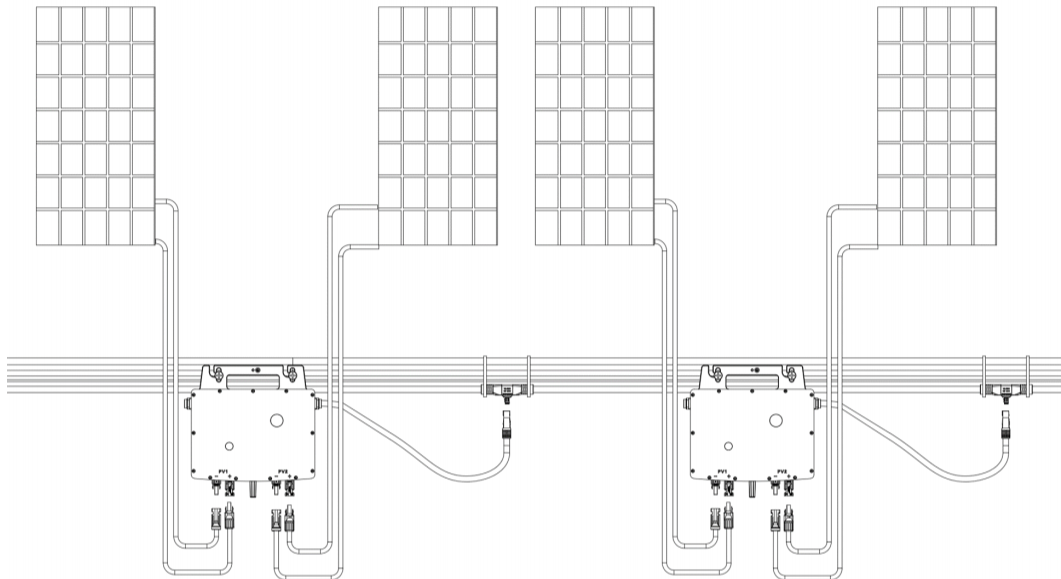
Symbol	Usage
	<p><b>Treatment</b></p> <p>To comply with European Directive 2002/96/EC on waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device no longer required must be returned to an authorized dealer or approved collection and recycling facility.</p>
	<p><b>Caution</b></p> <p>Do not come within 8 inches (20cm) of the microinverter for any length of time while it is in operation.</p>
	<p><b>Danger of high voltages</b></p> <p>Danger to life due to high voltage in the microinverter.</p>
	<p><b>Beware of hot surface</b></p> <p>The inverter can become hot during operation. Avoid contact with metal surfaces during operation.</p>
	<p><b>CE mark</b></p> <p>The inverter complies with the requirements of the Low Voltage Directive for the European Union.</p>
	<p><b>Read manual first.</b></p> <p>Please read the installation manual first before installation, operation, and maintenance.</p>

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## 2 Microinverter System Introduction

### 2.1 About 2 in 1 Unit

“2-in- 1 Unit Microinverter” with ultra-wide DC input operating voltage range (16 V–60 V) and low start-up voltage (22 V only).

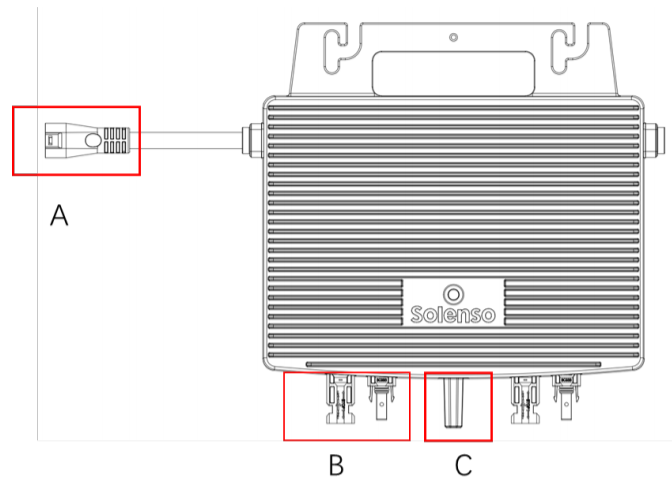


### 2.2 Microinverter Highlights

- Maximum output power up to 900W/980W; Adapted to 60 & 72 cells PV panels.
- CEC weighted efficiency 96.50%.
- MPPT efficiency 99.5%.
- High reliability: NEMA6 (IP67) enclosure, 6000V surge protection.

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## 2.3 Terminals Introduction



Object	Description
A	AC Connector
B	DC Connectors
C	2.4G Wireless Terminal

## 2.4 Operation Mode

**Normal:** Under this mode, Microinverter is operating normally and convert DC power into AC power to support the house loads and feed into Public Grid.

**Zero Export Control:** Under this mode Microinverter's generation is limited based on the current house loads, there will be no extra power feed into the Public Grid.

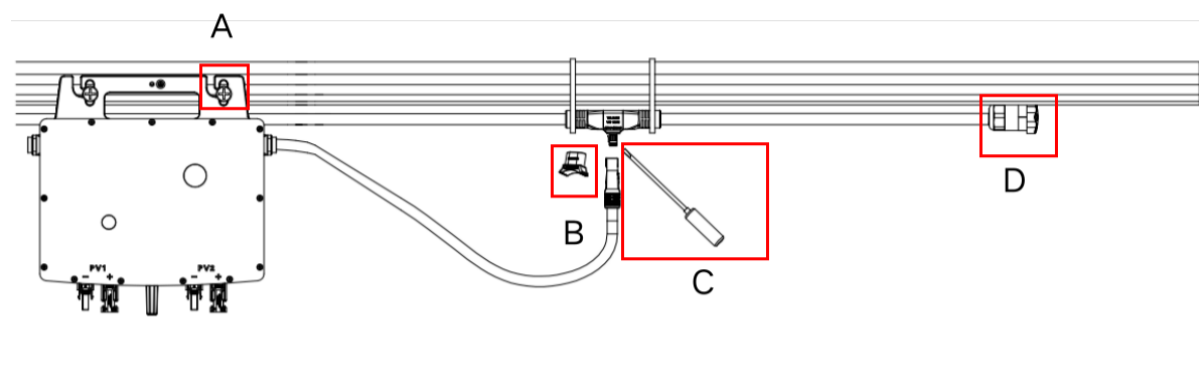
**Stand by:** There are several circumstances that Microinverter will stay in Standby mode:

- The current condition is contradicted with Microinverter operating requirement.
- No house loads or the Export control value has been set as '0' on the SLT under the Zero Export Control mode.

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## 3 About Installation

### 3.1 Accessories



Object	Description
A	M8*25 screws
B	AC T trunk waterproof cap
C	Slotted screwdriver
D	AC cable End Cap, IP65

***\*Note: All accessories above are not included in the package and need to be purchased separately.***

### 3.2 Preparation

- Installation of the equipment is carried out based on the system design and the place in which the equipment is installed.
- The installation must be carried out with the equipment disconnected from the grid (power disconnect switch open) and with the photovoltaic modules shaded or isolated.
- Referring to the Technical Data to make sure the environmental conditions fit the microinverter's requirement (degree of protection, temperature, humidity, altitude, etc.)
- To avoid power de-rating due to an increase in the microinverter internal temperature, do not expose it to direct sunlight.
- To avoid overheating, always make sure the air flow around the inverter is not blocked.
- Do not install in places where gasses or flammable substances may be present.
- Avoid electromagnetic interference that can compromise the correct operation of electronic equipment.

When choosing the position of installation, comply with the following conditions:



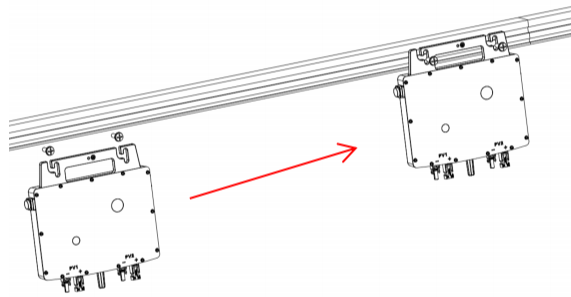
- 
- Install only on structures specifically conceived for photovoltaic modules (supplied by installation technicians).
  - Install Microinverter underneath of the photovoltaic modules to make sure it works in the shadow. If this condition cannot be met, might trigger the inverter production de-rating.

### 3.3 Installation Steps

Note : The order of Step 1 and Step 2 can be reversed according to your planned needs

#### Step 1. Attach Microinverter on Rail

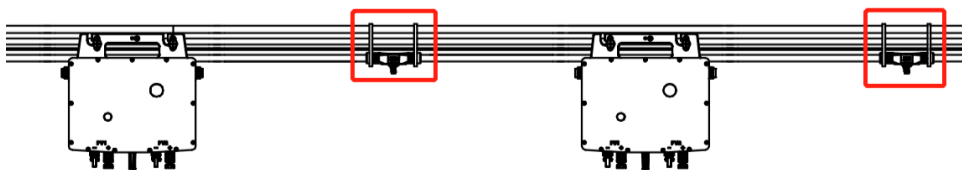
- A ) Mark the position of each microinverter on the rail according to the PV module layout.
- B ) Fix the screws on the rail.
- C ) Hang the microinverter on the screws and tighten the screws. The silver cover side of the microinverter should be facing the panel.



#### Step 2. Plan and Build the AC Trunk Cable

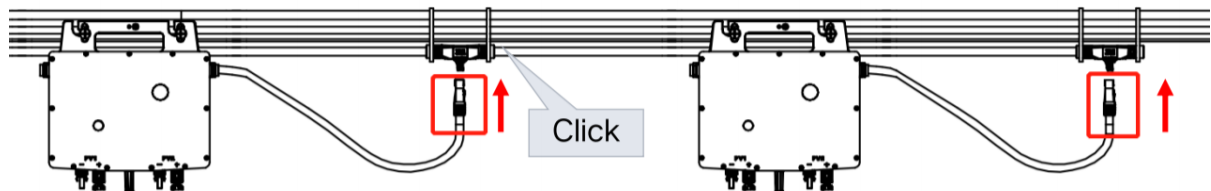
AC Trunk Cable is used to connect the microinverter to the power distribution box.

- A ) Select the appropriate AC Trunk Cable according to the spacing between microinverters.  
The connectors of the AC Trunk Cable should be spaced based on the spacing between microinverters to ensure that they can properly matched. (S provides AC Trunk Cable with different AC Trunk Connector spacing.)
- B ) Determine how many microinverters you plan to install on each AC branch and prepare AC Trunk Connectors accordingly.
- C ) Attach the AC Trunk Cable to the mounting rail and fix the cable with tie wraps.



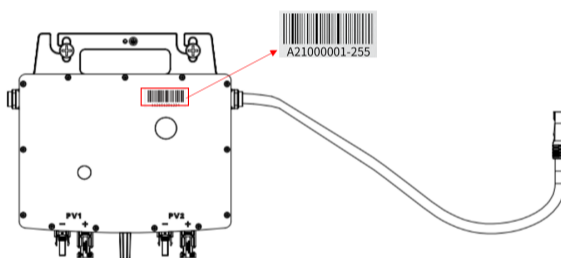
### Step 3. Connect AC Cables of Microinverter

- A ) Attach the AC Trunk Cable to the mounting rail and fix the cable with tie wraps.
- B ) Plug the AC Sub Connector of the microinverter into the AC Trunk Connector until you hear the click.



### Step 4. Create an Installation Map

- A ) Peel the removable serial number label from each microinverter.
- B ) Affix the serial number label to the respective location on the installation map (please refer to the appendix).

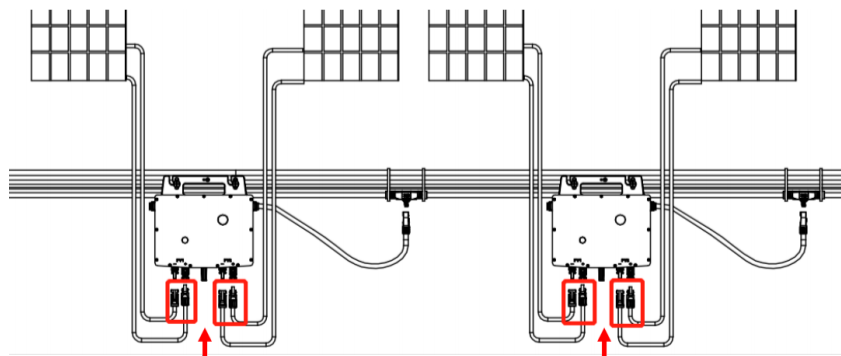


Solenso		Solenso Microinverter Installation Map															Date: 10/11				
Product No. 1000		Installation		Address		Site		Start		End		End		End		End		End		End	
Row	Col	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A																					
B																					
C																					
D																					

### Step 5. Connect PV Modules

- A ) Mount the PV modules above the microinverter.
- B ) Connect the PV modules' DC cables to the DC input side of the microinverter.

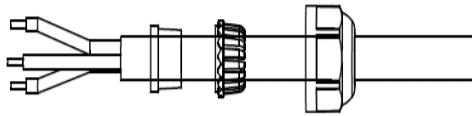
**Note: Make sure that the AC Trunk Connectors are kept away from any drainage channels.**



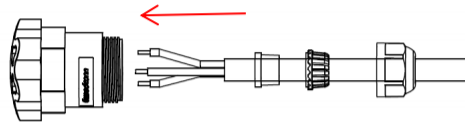
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## Step 6. Connect AC End Cable Cap

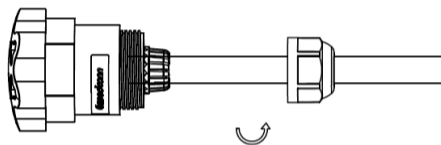
A ) Strip cable jacket.



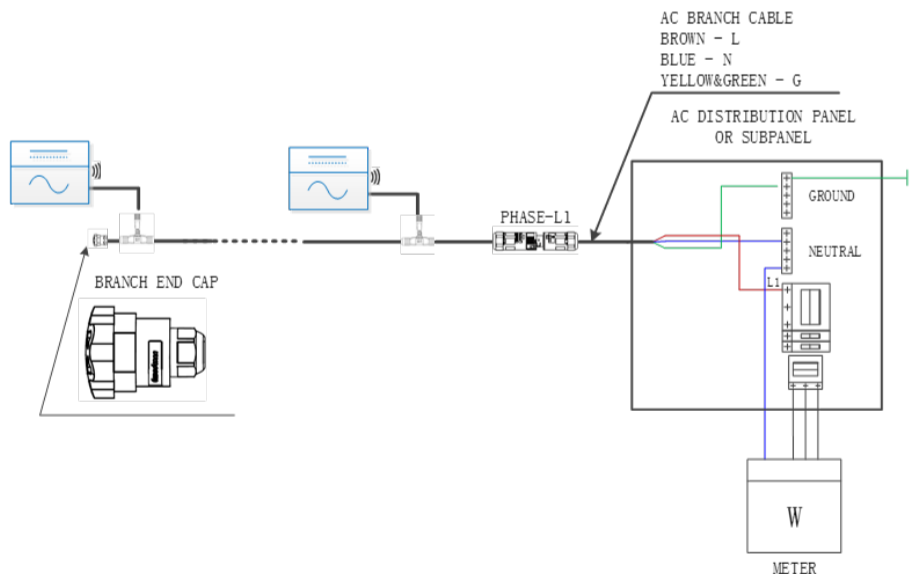
B ) Insert the cable end into the seal.



C ) Rotate the nut with 3.3N·m until the latching mechanism meets the base.



## Step 7. Connect AC End Cable to Distribution Box



## Step 8. Energize the System

A ) Turn on the AC breaker of the branch circuit.

B ) Turn on the main AC breaker of the house. Your system will start to generate power after about two minutes of waiting time.

## Step 9. Set Up the Monitoring System

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Refer to the SLT User Manual or SLT Quick Installation Guide, and Quick Installation Guide for Solenso Monitoring Platform Online Registration to install the SLT and set up your monitoring system.

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## 4 Troubleshooting

### 4.1 Status LED Indicator

The LED flashes five times at start up. All green flashes (1s gap) indicate normal start up.

1. Start-up Process
  - Flashing green five times (0.3s gap): Start-up success
  - Flashing Red five times (0.3s gap): Start-up failure
2. Run Process
  - Flashing Fast Green (1s gap): Producing power.
  - Flashing Slow Green (2s gap): Producing power but one input is abnormal.
  - Flashing Red (0.5s gap): There is a fault that are not invalid AC grid or hardware failure, refer to Solenso Monitoring Platform for more details.
  - Flashing Red (1s gap): Not producing power due to invalid AC grid.
  - Solid Red: Hardware failure, refer to Solenso Monitoring Platform for more details.
3. Other Status
  - Flashing Red and Green alternately: Firmware is corrupted.

***\*Note: All the faults are reported to the SLT, refer to the local APP of the SLT or Solenso Monitoring Platform for more information.***

### 4.2 On-site Inspection (For qualified installer only)

To troubleshoot an inoperable microinverter, follow the steps in the order shown.

1. Verify the utility voltage and frequency are within ranges shown in the in appendix Technical Data of this microinverter.
2. Check the connection to the utility grid. Verify utility power is present at the inverter in question by removing AC, then DC power. Never disconnect the DC wires while the microinverter is producing power. Re-connect the DC module connectors and watch for five short LED flashes.
3. Check the AC branch circuit interconnection between all the microinverters. Verify each inverter is energized by the utility grid as described in the previous step.
4. Make sure that any AC breaker are functioning properly and are closed.
5. Check the DC connections between the microinverter and the PV module.
6. Verify the PV module DC voltage is within the allowable range shown in appendix Technical Data of this manual.

- 
7. If the problem persists, please call Solenso customer support.

***\*Note: Do not try to repair the microinverter. If the troubleshooting fails, please return it to the factory for replacement.***

### **4.3 Routine Maintenance**

1. Only authorized personnel are allowed to carry out the maintenance operations and are responsible to report any anomalies.
2. Always use the personal protective equipment provided by the employer when carry out the maintenance operation.
3. During normal operation, check that the environmental and logistic conditions are correct. Make sure that the conditions have not changed over time and that the equipment is not exposed to adverse weather conditions and has not been covered with foreign bodies.
4. DO NOT use the equipment if any problems are found and restore the normal conditions after the fault removed.
5. Conduct an annual inspection on various components and clean the equipment with a vacuum cleaner or special brushes.

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## **5.Decommissions**

### **5.1 Decommissions**

Disconnect the inverter from DC input and AC output; remove all connection cable from the Microinverter; remove the Microinverter from the frame.

Please pack the Microinverter with the original packaging or use the carton box that can afford 5kg weight and can be fully closed if the original packaging is no longer available.

### **5.2 Storage and Transportation**

Solenso packages and protects individual components using suitable means to make the transport and subsequent handling easier. Transportation of the equipment, especially by road, must be carried out by suitable ways for protecting the components (in particular, the electronic components) from violent, shocks, humidity, vibration, etc. Please dispose the packaging elements in appropriate ways to avoid unforeseen injury.

It is the customer's responsibility to examine the condition of the components transported. Once receiving the Microinverter, it is necessary to check the container for any external damage and verify receipt of all items. Call the delivering carrier immediately if damage or shortage is detected. If inspection reveals damage to the inverter, contact the supplier, or authorized distributor for a repair/return determination and instructions regarding the process. The microinverter storage temperature is -40-85°C.

### **5.3 Disposal**

If the equipment is not used immediately or is stored for long periods, check that it is correctly packed. The equipment must be stored in well-ventilated indoor areas that do not have characteristics that might damage the components of the equipment.

Take a complete inspection when restarting after a long time or prolonged stop.

Please dispose the equipment properly after scrapping, which are potentially harmful to the environment, in accordance with the regulations in force in the country of installation.

## 6. Technical Data

Model	Sol-H900	Sol-H1000
<b>Input Data (DC)</b>		
Recommended module power (W)	330~600+	370~670+
MPPT voltage range (V)	16~48	
Start-up voltage (V)	22	
Operating voltage range (V)	16~60	
Maximum input voltage (V)	60	
Maximum input current (A)	2*14	2*14.5
No. of MPPTs	2	
No. of Inputs per MPPT	1	
<b>Output Data (AC)</b>		
Rated output power (VA)	900	980
Rated output current (A)	3.91	4.26
Nominal output voltage/range (V)	230/180-270	
Nominal frequency/range (V)	50/45-55	
Power factor (adjustable)	0.8 leading...0.8 lagging	
Total harmonic distortion	<3%	
Maximum units per branch	8	7
<b>Efficiency</b>		
CEC peak efficiency	96.50%	
Nominal MPPT efficiency	99.50%	
Night power consumption (mW)	< 50	
<b>Mechanical Data</b>		
Ambient temperature range (°C)	-40 ~ +65	
Dimensions (W×H×D mm)	260×193×36	
Weight (kg)	3.1	
Enclosure rating	IP67	
Cooling	Natural convection	
<b>Features</b>		
Communication	Wireless_2.4G	
Isolation Type	High Frequency Transformers (Galvanically Isolated)	
Monitoring	Solenso Monitoring System (Solenso DTU is required)	
Compliance	EN 50549-1: 2019, VDE-R-N 4105: 2018	



# Appendix 1:

## Installation Map

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Solenso Microinverter Installation Map <span style="float: right;">AP040228 V1.2</span>																
Please Make N for North 	Panel type: Azimuth: Tilt: Sheet of _	Customer Information:	DTU Serial Number:													
COLUMN ROW	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A																
B																
C																
D																

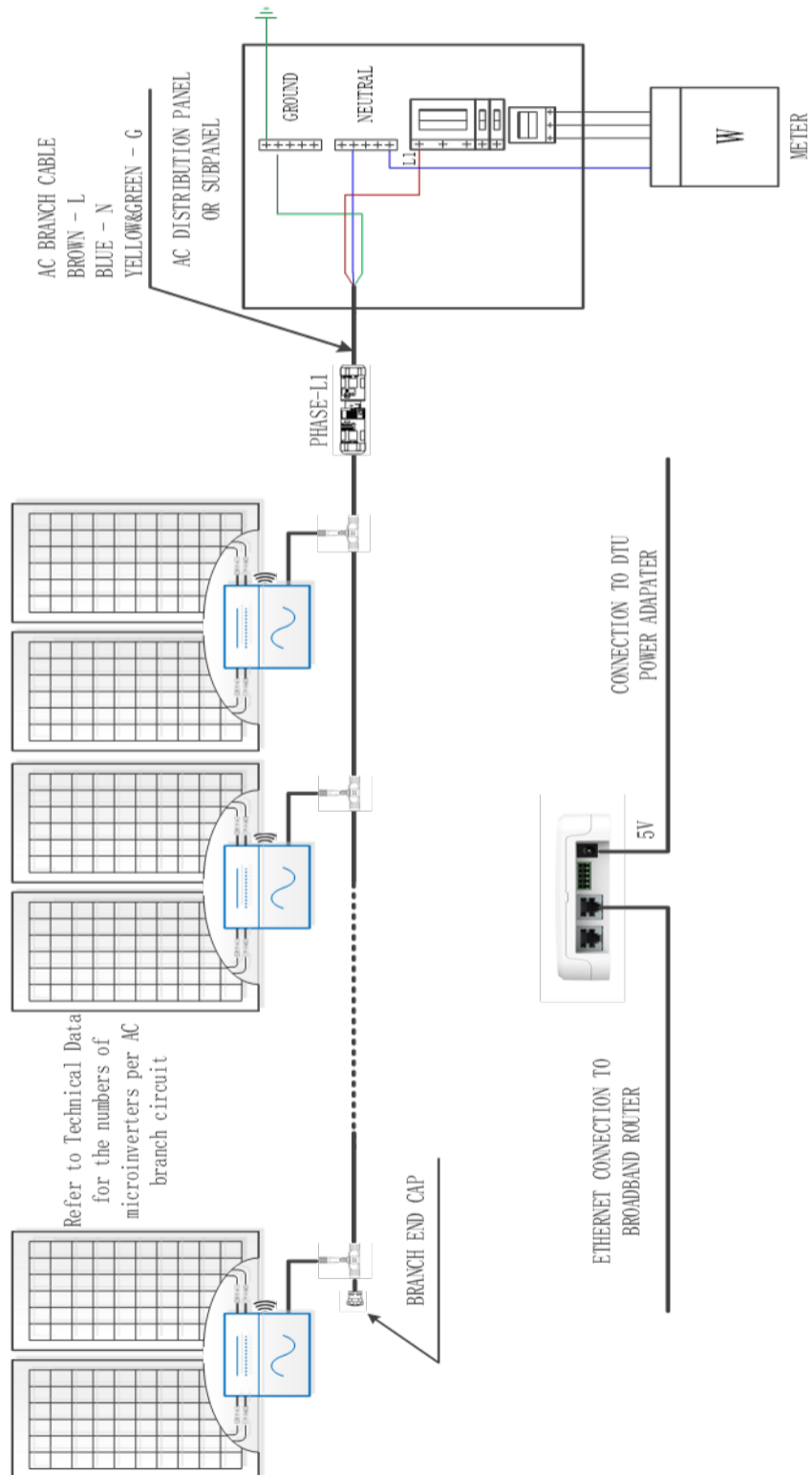
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## Appendix 2:

### WIRING DIAGRAM – 230VAC SINGLE PHASE:



# WIRING DIAGRAM – 230VAC / 400VAC THREE PHASE:

