FIMER

Product Manual

VSN300 Wifi Logger card

IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety instructions that must be followed during the installation and maintenance of the equipment.

Operators are required to read this manual and scrupulously follow the instructions given in it, since FIMER cannot be held responsible for damage caused to people and/or things, or the equipment, if the conditions described below are not observed.

Product Manual

VSN300 Wifi Logger Card

1 - Introduction and general information

2 - Characteristics

3 - Safety and accident prevention

4 - Lifting and transport

5 - Installation

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Warranty and Supply Conditions

The warranty conditions are considered to be valid if the customer adheres to the indications in this manual; any conditions deviating from those described herein must be expressly agreed in the purchase order.

The equipment complies with the pertinent legislation currently in force in the country of installation and it has issued the corresponding declaration of conformity.

Not included in the supply

FIMER accepts no liability for failure to comply with the instructions for correct installation and will not be held responsible for systems upstream or downstream the equipment it has supplied. It is absolutely forbidden to modify the equipment. Any modification, manipulation, or alteration not expressly agreed with the manufacturer, concerning either hardware or software, shall result in the immediate cancellation of the warranty.
The Customer is fully liable for any modifications made to the system.

Given the countless array of system configurations and installation environments possible, it is essential to check the following: sufficient space suitable for housing the equipment; airborne noise produced depending on the environment; potential flammability hazards.

FIMER will NOT be held liable for defects or malfunctions arising from: improper use of the equipment; deterioration resulting from transportation or particular environmental conditions; performing maintenance incorrectly or not at all; tampering or unsafe repairs; use or installation by unqualified persons.

FIMER will NOT be held responsible for the disposal of: displays, cables, batteries, accumulators etc. The Customer shall therefore arrange for the disposal of substances potentially harmful to the environment in accordance with the legislation in force in the country of installation.
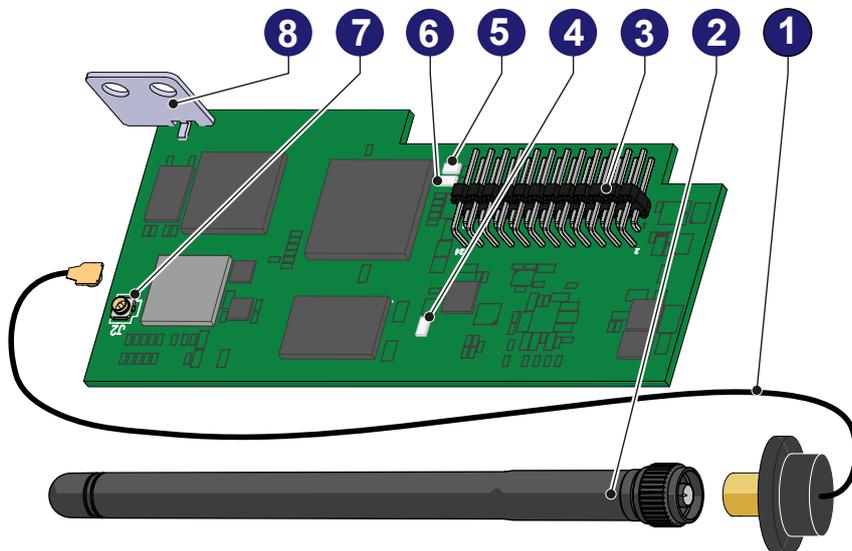
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2, Antenna (RF Technology Corp. Model EA-79 F RP SMA)
3, Connection terminals
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Graphical representation of references

Scope and target audience

Purpose and document structure

This operating and maintenance manual is a useful guide that will enable you to work safely and carry out the operations necessary for keeping the equipment in good working order.

If the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.

The language in which the document was originally written is ITALIAN; therefore, in the event of inconsistencies or doubts please ask the manufacturer for the original document.

List of appendix documents

In addition to this operating and maintenance manual (if applicable or on request), the following documentation is supplied:
- EC declaration of conformity
- Quick installation guide (QIG)

Part of the information given in this document is taken from the original supplier documents. This document contains only the information considered necessary for the use and routine maintenance of the equipment.

Operator and maintenance personnel skills/prerequisites

Personnel in charge of using and maintaining the equipment must be skilled for the described tasks and must reliably demonstrate their capacity to correctly interpret what is described in the manual.

For safety reasons, only a qualified electrician who has received training and/or demonstrated skills and knowledge of the inverter's structure and operation may install the inverter.

The installation must be performed by qualified installers and/or licensed electricians in accordance with the existing regulations in the country of installation.

Inverter operation and maintenance by a person who is NOT qualified, is intoxicated, or on narcotics, is strictly forbidden.

The customer has civil liability for the qualification and mental or physical state of the personnel who interact with the equipment. They must always use the personal protective equipment (PPE) required by the laws of the country of destination and whatever is provided by their employer.

Symbols ad signs

In the manual and/or in some cases on the equipment, the danger or hazard zones are indicated with signs, labels, symbols or icons.

Table: Symbols	
	This points out that it is mandatory to consult the manual or original document, which must be available for future use and must not be damaged in any way.
	Generic hazard - Important safety information. This points out operations or situations in which staff must be very careful.
	Hazardous voltage - This points out operations or situations in which staff must be very careful due to hazardous voltage.
	Hot parts - This points out a hazard due to the presence of heated areas or in any case areas that have hot parts (danger of burns).
	This points out that the examined area must not be entered or that the described operation must not be carried out.
	This points out that it is mandatory to carry out the described operations using the clothing and/or personal protective equipment provided by the employer.
IP20 IP65	This indicates the degree of protection of the equipment according to IEC standard 70-1 (EN 60529 June 1997).
	Point of connection for grounding protection.
	This indicates the allowed temperature range
	Risk of electric shock.The discharge time (quantified in the figure by the number XX) of the stored energy after de-energizing of the Inverter from both DC side and AC side. Warning! Refer to the dedicated procedures in the Instruction Manual before accessing to active parts inside the Inverter.
	Respectively direct current and alternating current
	Isolating transformer present or not present
+ −	Positive pole and negative pole of the input voltage (DC)
	This indicates the centre of gravity of the equipment.

Field of use, general conditions

FIMER accepts no liability for damage of any kind that may arise from incorrect or careless operations.

You may not use the equipment for a use that does not conform to that provided for in the field of use. The equipment MUST NOT be used by inexperienced staff, or even experienced staff if carrying out operations on the equipment that fail to comply with the indications in this manual and enclosed documentation.

Intended or allowed use

This equipment is an expansion board
for FIMER inverters designed to:
allow the inverter to connect to a local LAN network
via a wireless connection.
Through internet access, the data is
transferred to the Aurora Vision® Plant Management Platform
to remotely access and monitor the plant.

Limits in field of use

The device cannot be used in environments where there are particular restrictions on the use of radio waves.

The device used to transmit data to the Aurora Vision® Plant Management Platform requires a router connected to Internet (the cost of connection is to be paid by the end user).

The device can be installed in inverters produced by other manufacturers or in FIMER models which can accommodate this type of expansion.

The device can be used only if all the technical characteristics are observed.

The device is only designed for residential use.

Improper or prohibited use

IT IS STRICTLY FORBIDDEN TO:
• Installing the equipment in environments with particular flammability conditions or in adverse or disallowed environmental conditions (temperature and humidity).
• Use the equipment with safety devices which are faulty or disabled.
• Use the equipment or parts of the equipment by linking it to other machines or equipment, unless expressly provided for.
• Modify operating parameters that are not accessible to the operator and/or parts of the equipment to vary its performance or change its insulation.
• Clean the equipment with corrosive products that may corrode parts or generate electrostatic charges.
• Use or install the appliance or parts of it without having read and understood the contents of the user and maintenance manual.

FCC Warning (Federal Communications Commission)

This devices complies with Part 15 of the FCC standard Operation is subject to the following conditions:

1. This device cannot cause harmful disturbances.
2. The device has to accept any disturbance it receives, including disturbance which could compromise correct device operation.

This equipment has been tested and is compliant with the limits for digital devices of Class B, pursuant to Part 15 of the FCC standard. These limits are designed to provide a protection against harmful disturbances in residential installations. This equipment generates, uses and emits radio-frequency energy and, if not installed and used in accordance with the instructions, can cause harmful damage to radio communication. However, the is no guarantee that disturbances in a particular installation may occur. If this equipment causes harmful disturbances to radio or television reception which could be determined when the equipment is switched on and off, the user is invited to attempt to correct the disturbance with one of the following measures:

- Reposition or change the direction of the reception antenna.
- Increase the distance between the equipment and the receiver.
- Connect the device to a different circuit socket to that one used for the receiver.
- Contact the dealer or a radio / television technician for assistance.

RF exposure. This devices complies with Part 2,1091 of the FCC standard for uncontrolled environments. This equipment must be installed and used with a minimum distance between the antenna and the user of at least 20 cm.
Refer to the specific section which describes the procedures for integrating and using this device inside a fixed inverter.
Any modifications made to this equipment, unless expressly authorized by the manufacturer, may invalidate FCC authorization for using the equipment.

2

Characteristics

General conditions

A description of the equipment characteristics is provided to identify its main components and specify the technical terminology used in the manual.

This chapter contains information about the models, details of the equipment, characteristics and technical data, overall dimensions and equipment identification.

The customer/Installer takes full responsibility if, when reading this manual, the chronological order of its presentation provided is not observed. All information is provided considering occasional inclusion of information in previous chapters.

In certain cases, there may be a need to separately document software functionality or attach supplementary documentation to this manual which is intended for more qualified professionals.

Models and range of equipment

The device dealt with in this manual is available in a single version suitable for all countries of installation.

The list of compatible converters and the functions released for each inverter model is indicated in a separate document "Inverter Compatibility Matrix" which is available from the official FIMER website (http://www.fimer.com) in the Monitoring and Communication section

Identification of the equipment and manufacturer

The technical data provided in this manual does not substitute the data supplied on the labels affixed to the equipment.

The labels affixed to the equipment must NOT be removed, damaged, stained, hidden, etc., for any reason whatsoever.

The following information which is useful in identifying the product, is printed on the printed circuit of the VSN300 Wifi Logger Card:

- Manufacturer's Trade Mark
- CE Marking (European Union)
- RCM Marking (Australia)
- FCC ID

Contains FCC ID: X6W-3N16E

The FCC ID is: X6W-3N16E when the device is assembled with the Wi-Fi radio module supplied by Epcos
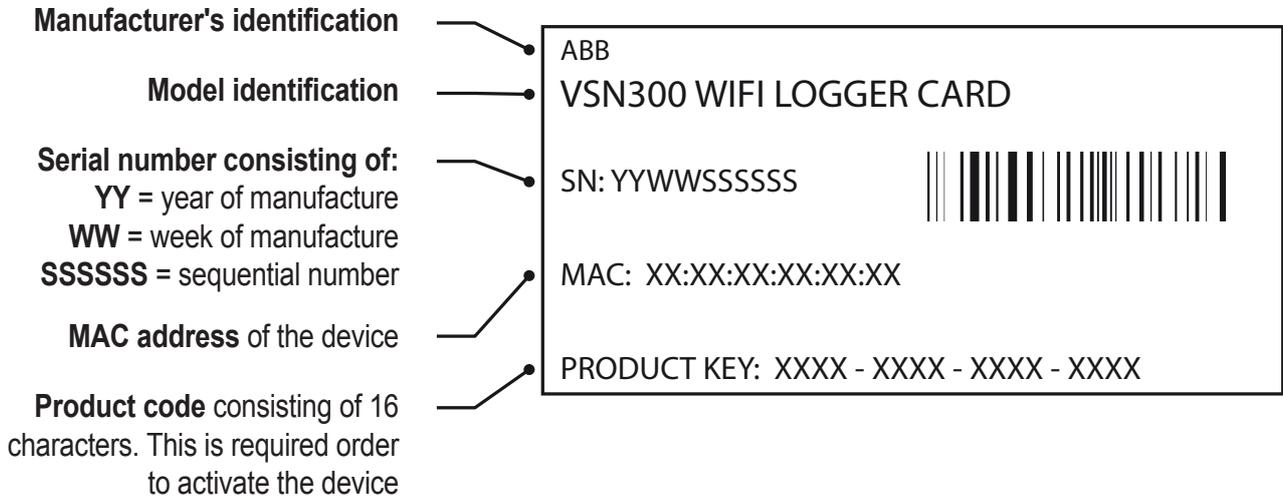
Contains FCC ID: X6W-3N16M

The FCC ID is: X6W-3N16M when the device is assembled with the Wi-Fi radio module supplied by Murata

An FCC ID label is supplied and must be positioned where it is clearly visible on the outside of the inverter in which the board is installed.

In addition to the information printed on the printed circuit, there is also a label on the packaging which can be removed and has other important information:

Manufacturer's identification

Model identification

Serial number consisting of:
YY = year of manufacture
WW = week of manufacture
SSSSSS = sequential number

MAC address of the device

Product code consisting of 16 characters. This is required order to activate the device

```
ABB
VSN300 WIFI LOGGER CARD

SN: YYWWSSSSSS

MAC:  XX:XX:XX:XX:XX:XX

PRODUCT KEY:  XXXX - XXXX - XXXX - XXXX
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⚠ *The identification label must be kept and should be placed in a dedicated area inside the quick installation guide supplied with the product.*

Characteristics and technical data

Table: Technical Data	VSN300 Wifi Logger Card
Communication	
Inverter Interface	Hyperlink (CAN@1 Mbps + RS485@115 kBaud) / Legacy (RS232 TTL @ 19.2 KBaud)
User Interface	Wi-Fi Certified™ IEEE 802.11 b/g/n (2,4 GHz)
Communication protocols	
LAN/WAN Protocols	HTTPS, DHCP, NTP, SSL, SSH, XML, Modbus TCP (Sunspec)
Data Registration	
Web user interface	Integrated
Browsers supported by the Web Interface	Internet Explorer ver. 10 or subsequent, Mozilla Firefox ver. 37.x or subsequent, Google Chrome ver. 39.x or subsequent
Local monitoring	Permitted remotely with any Wi-Fi® device connected to the integrated WUI or starting Plant Viewer for Mobile
Remote monitoring	Plant Portfolio Manager® / Plant Viewer™ / Plant Viewer for Mobile
Data Registration Specifications	
Frequency of Data sampling	High frequency data sampling (an average of less than 1 minute)
Local filing	30-day data log based on 15 minute intervals
Updatability	Remote via Aurora Vision® Plant Management Platform / local via Web user Interface [1]
Advanced functions	
O & M remote operations	Changing inverter parameters [2] / Updating inverter firmware [2]
Smart Grid Function	Grid control power-management enabled [2]
Power	
DC Direct current draw	~ 2W
Environmental parameters	
Ambient temperature	-20°C...+85°C
Environmental protection	IP 20
Relative Humidity	< 85% w/o condensation
Mechanical parameters (per unit)	
Dimensions (H x W x D)	97mm x 46mm x 16mm (3.81' x 1.81' x 0.63')
Weight	0.06 lbs (26g)
Assembly system	Inverter expansion slot
Conformity	
Marking	CE [2] / RCM / Wi-Fi Certified™
Emissions	47 CFR FCC Part 15 Subpart C, EN 55022 Conducted and radiated emissions
Immunity	EN55024

1. Available from Firmware version FW 1.8.x
2. Check availability
3. Hereby, Power-One Italy S.p.A. (A Member of the FIMER Group) declares that the radio equipments (radio module combined with the inverter), to which this user manual refers, are in compliance with the Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available at the following internet address: www.fimer.com

⚠ *The technical data refers to the product with the Firmware version as identified on the cover of the manual.*
Any subsequent firmware updates can change the product characteristics and operation.

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Operating diagram

The plant diagram shows how the VSN300 Wifi Logger Card allows the inverter to connect to a LAN local network using a Wi-Fi wireless connection.

The VSN300 Wifi Logger Card features an integrated webserver that enables to establish a direct connection to a PC, smartphone or tablet, allowing for board setup and local monitoring of the inverter.

The setup of the board can also be carried out using a smartphone or tablet on which the Plant Viewer for Mobile App has been installed (therefore, avoiding the need for accessing the Web interface).

When the inverter is connected to the WLAN network with access to the Internet, the device allows data to be transferred to the Aurora Vision® CLOUD platform for Internet monitoring using the Plant Portfolio Manager / Plant Viewer / Plant viewer for Mobile.

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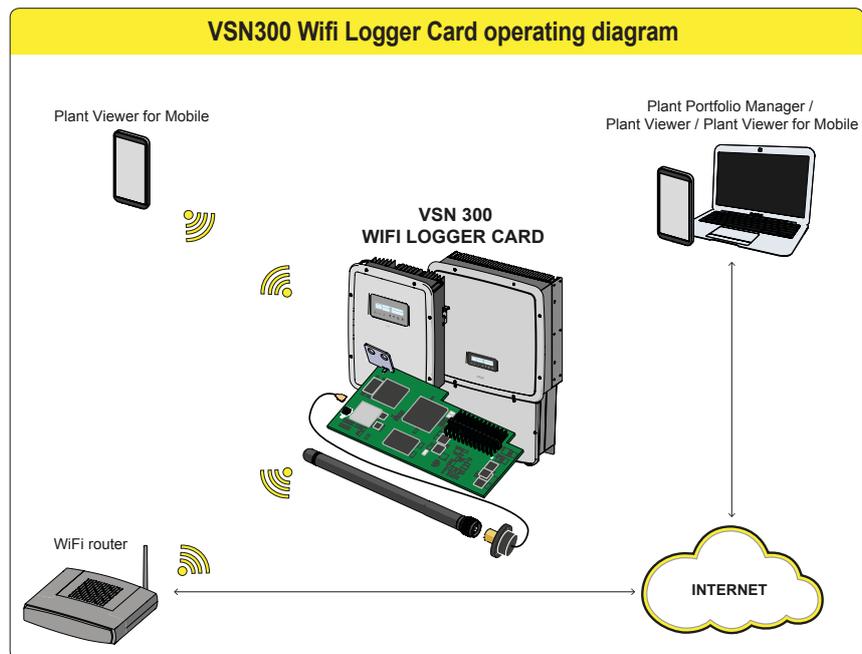
Safety information and instructions

The equipment has been manufactured in accordance with the strictest accident-prevention regulations and supplied with safety devices suitable for the protection of components and operators.

For obvious reasons, it is not possible to anticipate the great number of installations and environments in which the equipment will be installed. It is therefore necessary for the customer to appropriately inform the manufacturer about particular installation conditions.

FIMER accepts no liability for failure to comply with the instructions for correct installation and cannot be held responsible for the upstream or downstream equipment.

It is essential to provide operators with correct information. They must therefore read and comply with the technical information provided in the manual and in the attached documentation.
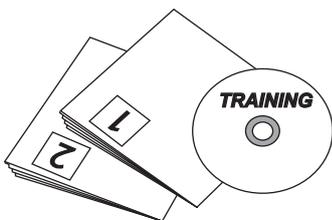
The instructions provided in the manual do not replace the safety devices and technical data for installation and operation labels on the product, and they do not replace the safety regulations in force in the country of installation.

The manufacturer is willing to train staff, at its premises or on site, in accordance with conditions agreed to in the contract.

Do not use the equipment if you find any operating anomalies.

Avoid temporary repairs. All repairs should be carried out using only genuine spare parts, which must be installed in accordance with their intended use.

Liabilities arising from commercial components are delegated to the respective manufacturers.

General conditions

Some recommendation apply only to large size product or multiple small size product packaging.
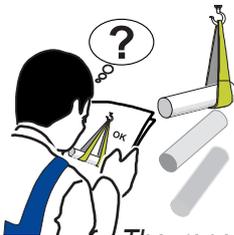
Transport and handling

Transport of the equipment, especially by road, must be carried out with means for protecting the components (in particular, the electronic components) from violent shocks, humidity, vibration, etc.
During handling, do not make any sudden or fast movements that can create dangerous swinging.

Lifting

FIMER usually stores and protects individual components by suitable means to make their transport and subsequent handling easier, but as a rule, it is necessary to utilize the experience of specialized staff in change of loading and unloading the components.

The ropes and equipment used for lifting must be suitable for bearing the weight of the equipment.

Do not lift several units or parts of the equipment at the same time, unless otherwise indicated.

Unpacking and checking

Packaging elements (cardboard, cellophane, staples, adhesive tape, straps, etc.) may cause cuts and/or injuries if not handled with care. They should be removed with the proper equipment.

The components of the packaging must be disposed on in accordance with the regulations in force in the country of installation.

When you open an equipment package, check that the equipment is undamaged and make sure all the components are present.
If you find any defects or damage, stop unpacking and consult the carrier, and also promptly inform FIMER Service.

4 - Lifting and transport

List of components supplied

The following components are supplied with the device and are required to correctly install and connect the inverter

Main components		Quantity
	Locking screw	1
	Plastic locking nut	1
	Adapter kit (gasket and adapter)	1 + 1
	Spacer for installation on inverters equipped with Arc Fault device	1
	Antenna connection cable	1
	Wi-Fi Antenna	1
	Cable clamp	1
Contains FCC ID: X6W-3N16E / Contains FCC ID: X6W-3N16M	FCC ID label	1
ABB VSN300 WIFI LOGGER CARD SN: YYWWSSSSSS MAC: XX:XX:XX:XX:XX:XX PRODUCT KEY: XXXX - XXXX - XXXX - XXXX	Identification label	1
	Technical documentation	

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Installation

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General conditions

Equipment performance will be enhanced by proper equipment installation.
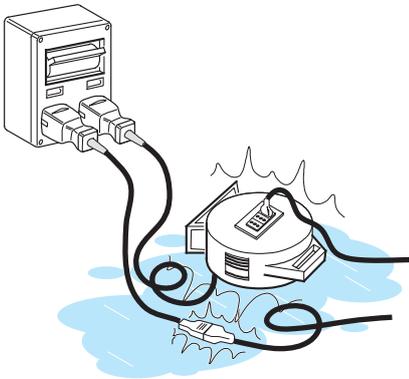
Staff authorized to carry out the installation must have received suitable training on this type of equipment.

Equipment operation must be carried out by staff who comply with instructions in this manual.

For safety reasons only a qualified electrician, who has received training or/and has demostrated skills and knowledge in operation of this unit, can install this inverter.

The installation is done by qualified installers and/or licensed electricians according to applicable local regulations.

The connection of an inverter energy system to an electrical installation connected to the grid shall be approved by the appropriate electrical distributor.

The installation must be carried out with the equipment disconnected from the grid and from the photovoltaic generator.

When the photovoltaic panels are exposed to light, these supplies a direct current voltage to the inverter.

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Environmental checks

The device uses radio waves to transmit and receive data, it is therefore important to assess this factor in order to have optimal installation.
Walls in reinforced cement and surfaces covered in metal (doors, shutters, etc.) can markedly reduce the reach of the device which even in optimal conditions, should be of approximately 50 metres in free space.
It is therefore recommended that before installing the inverter, the strength of the Wi-Fi signal is checked, using a mobile device (smartphone, tablet or notebook) and connecting to the Wi-Fi router from a position which is close to the installation site of the inverter.

⚠️ *Final installation of the device must not compromise access to any disconnection devices that may be located externally.*

⚠️ *Please refer to the warranty terms and conditions to evaluate any possible warranty exclusions due to improper installation.*

Some installation examples are provided below in different conditions and with the maximum recommended distances between the Inverter and the Wi-Fi Router.
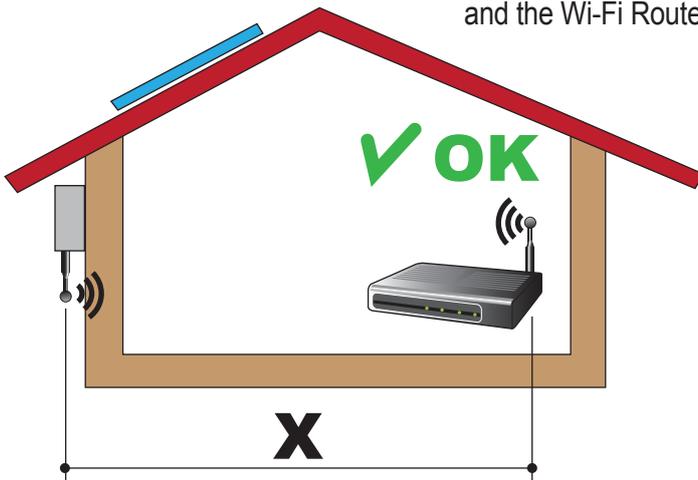
Material of the structure: Wood

Distance X between the Inverter and the Wi-Fi Router: less than 10m/33ft
Installation: permitted
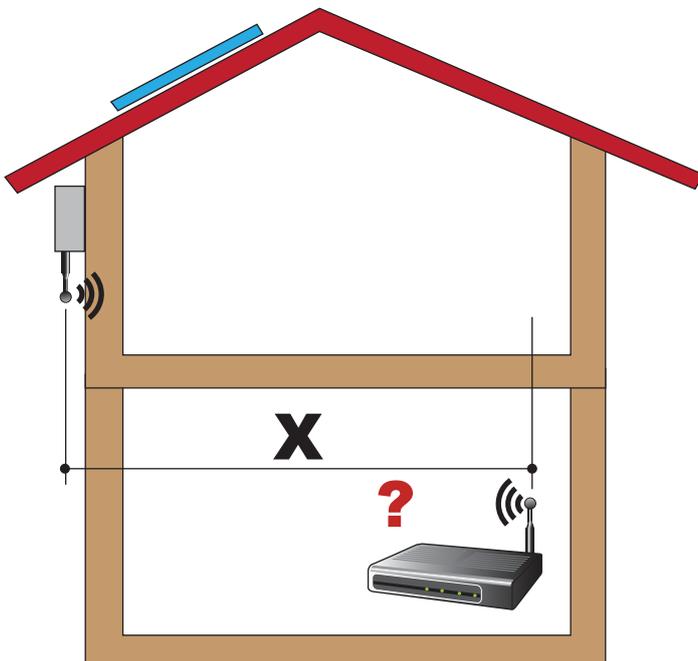
Distance X between the Inverter and the Wi-Fi Router: greater than 10m/33ft and/or with obstacles or floors to pass through.
Installation: to be evaluated. Assess the quality of the RF signal and the possibility of extending the signal with a repeater or transferring the Wi-Fi router to the floor above.
Material of the structure: Concrete
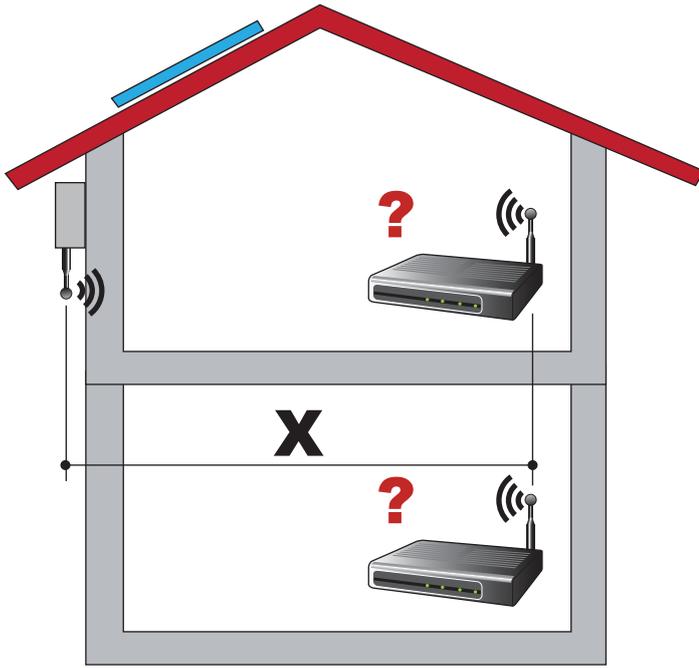
Distance X between the Inverter and the Wi-Fi Router: any distance
Installation: to be evaluated. Assess the quality of the RF signal and the possibility of extending the signal with a repeater.
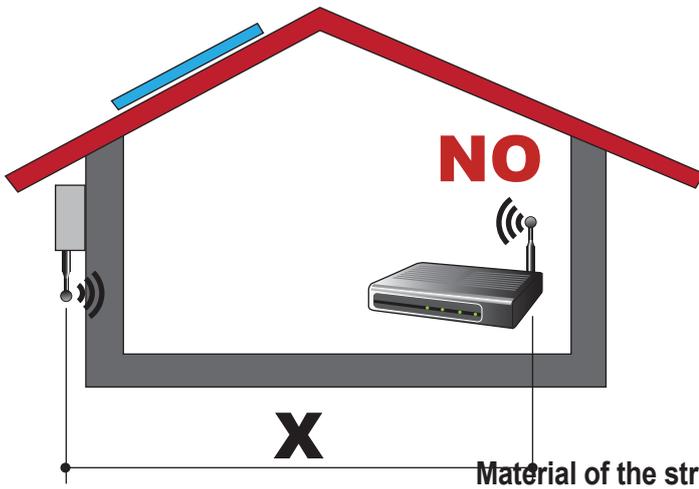
Material of the structure: Metal or reinforced concrete

Distance X between the Inverter and the Wi-Fi Router: any distance
Installation: not permitted. Assess the possibility of externally positioning the Wi-Fi router antenna (extension) or position the Wi-Fi router near a window (in the line of sight of the inverter)

Material of the structure: any material

Distance X between the Inverter and the Wi-Fi Router: less than 30m/100ft
Installation: permitted provided that the router is in the line of sight of the inverter (through a window)
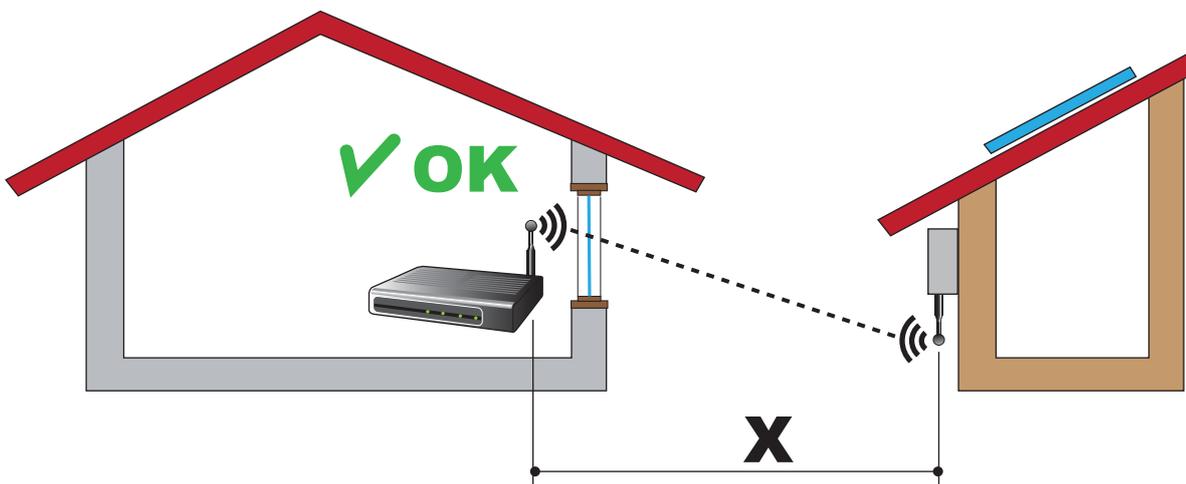
Recommendations for the Wi-Fi signal power
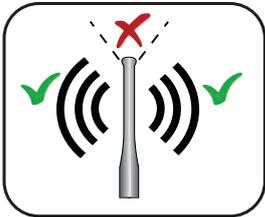
The radio signal level between the inverter and the Wi-Fi router can be improved in a number of ways:

1. Change the direction of the antenna.
The antenna has a dead zone at its tip, which should not be positioned facing the Wi-Fi router, as shown in the figure.

2. Find a new position for the router considering the different types of materials which the radio signal will have to pass through:

Material	Relative signal reduction
Open field	0% (strength of approximately 50 metres)
Wood / Glass	From 0 to 10%
Stone / Plywood	From 10 to 40%
Reinforced concrete	From 60 to 90%
Metal	Up to 100 %

The quality of the RF signal can be assessed during the installation stage where the signal is displayed in dBm.

3. Install a Wi-Fi signal repeater and place it in an area between the inverter and the router, trying to make sure that the most critical obstacles are avoided.

4. Use an antenna extension cable to connect to the inverter (supplied by FIMER). If the inverter is installed in a position which is covered by obstacles, the cable will allow the antenna to be moved to a better position.

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Preliminary operations

Installation of the VSN300 Wifi Logger Card must be carried out inside the inverter and therefore the inverter must be completely disengaged. **For the correct disengagement procedure and the subsequent opening of the cover, refer to the manual of the specific inverter.**

Some parts may be very hot and could cause burns.

Some inverter parts may be subject to voltages that could be hazardous for the operator. Before performing any work on the inverter, follow the procedure for turning off the inverter.

Before attempting any work on the inverter, wait enough time for the stored energy to be discharged.

By way of example, the figures to the side show the areas subject to voltage inside the FIMER TRIO inverter:
- **Red**: areas subject to input voltage (DC)
- **Orange**: areas subject to output voltage (AC)
- **Green**: areas subject to low voltage (selv)

• Disconnect any power supplies that may be connected to the configurable relay.
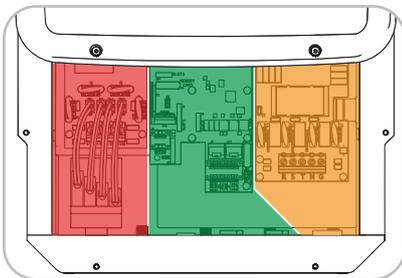
• The figure on the left shows the areas subject to voltage in the inverter under normal operating conditions.
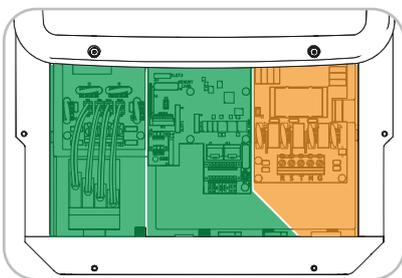
• Open the DC disconnect switch on the outside of the inverter.
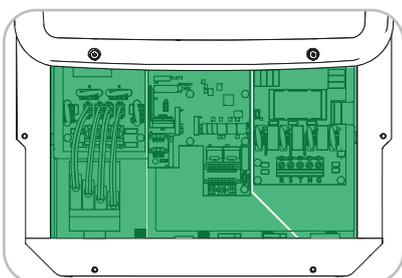
• Disconnect the grid voltage (by switching off the protective device upstream of the inverter).

Under these conditions the inverter does not have any hazardous voltages and all areas may be freely accessed.

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Mechanical installation

The mechanical installation of the device inside the inverter is a simple operation which does not require any particular tools.

⚠ *However, due to the thickness of the casing, a specific adapter, which is supplied with the device, is required when installing on inverter models* **UNO-2.0/2.5-I-OUTD** *and* **TRIO-5.8/7.5/8.5-TL-OUTD**.

Refer to the inverter documentation to identify the position and shape of the expansion slot to be used (single or double connector).

Installation of the antenna

The antenna must be installed on the outside of the inverter in the place of one of the service cable glands (size M20).

Installation without adapter
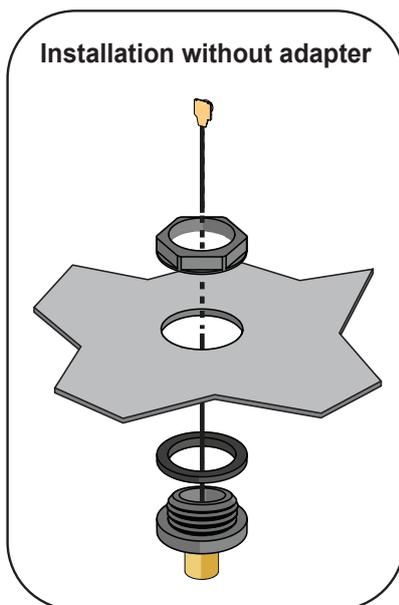
For installations on inverters for which **an adapter is not required**, proceed as follows:

• Remove one of the M20 service cable glands from the inverter (using a 25mm wrench).

• Pass the antenna connection cable into the inverter through the M20 cable gland opening, the gasket, the plastic locking nut.

• Secure the antenna connector (RP-SMA female) to the inverter using the plastic locking nut supplied (tightening torque 5 Nm).

• Screw in the Wi-Fi antenna to the connector (RP-SMA female)

Installation with adapter
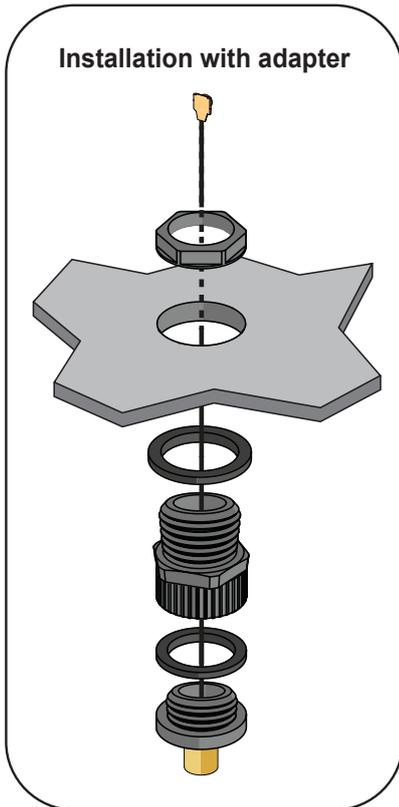
For installations in inverters for which **the adapter is required**, proceed as follows:

• Install the gasket on the adapter

• Secure the adapter to the inverter using the plastic locking nut supplied (tightening torque 5 Nm).

• Pass the antenna connection cable into the inverter through the gasket and the adapter (previously secured to the inverter).

• Tighten the antenna connector (RP-SMA female) and the gasket onto the adapter (tightening torque 5 Nm).

• Screw in the Wi-Fi antenna to the connector (RP-SMA female)

⚠️ *The antenna connector is the most commonly used for these types of applications (RP-SMA). In any case, only use antennas which are RF Technology Corp. Modell EA-79 F RP SMA, or similar (equal yield or less).*

Installation of the board
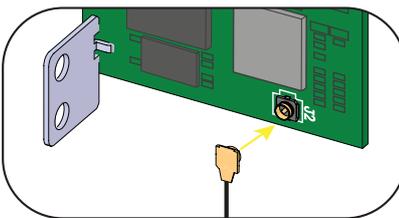
Before installing the board inside the inverter, connect the antenna cable to the coaxial connector on the board.
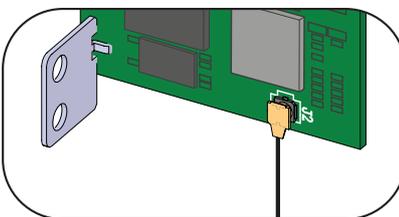
During this stage, make sure that the antenna cable terminal is correctly aligned with the connector.

⚠️ *As both are small, they are particularly fragile, **do not apply pressure to the terminal unless it is correctly aligned!***

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Install the board by fitting the connection terminals of the specific connector into the inverter board. The inverter board connection, depending on the model, can have a single connector or two separate connectors (see the table at the beginning of the chapter).

Installation with dual connector	Installation with single connector
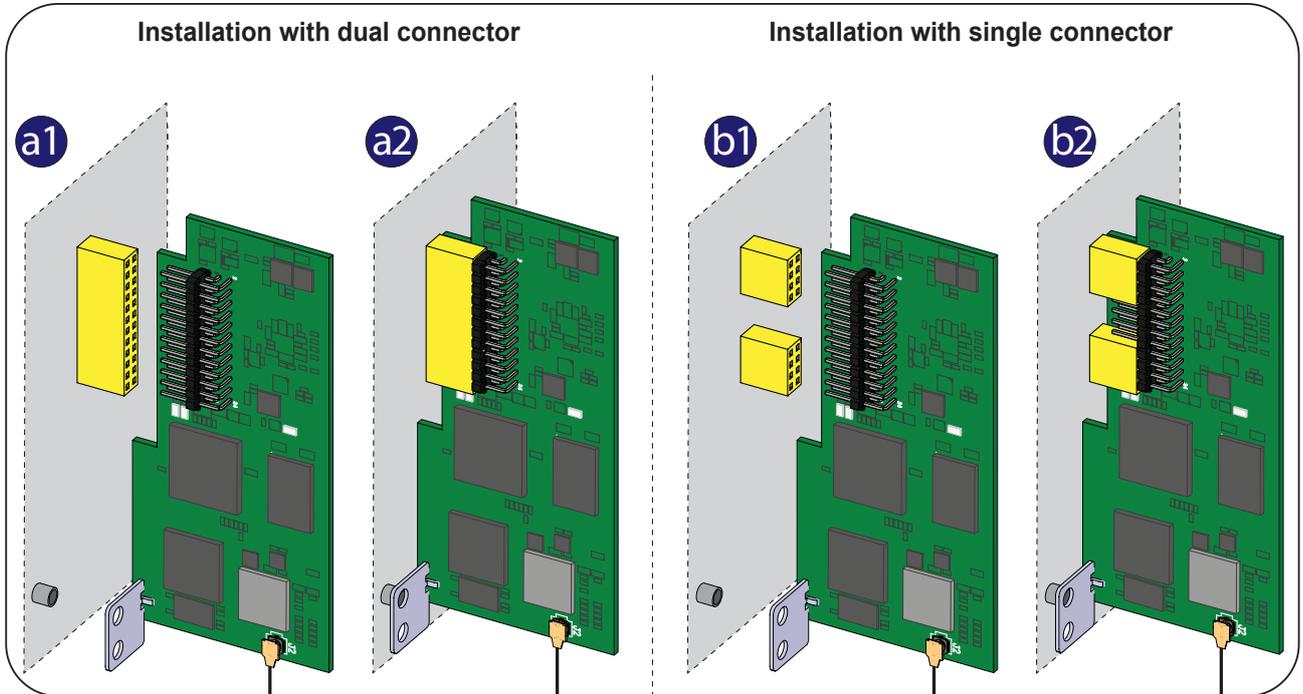
⚠️ *During this stage,* **carefully** *check that all the terminals are correctly aligned. Any misalignment of the terminals may result in irreversible damage to the board and/or inverter!*
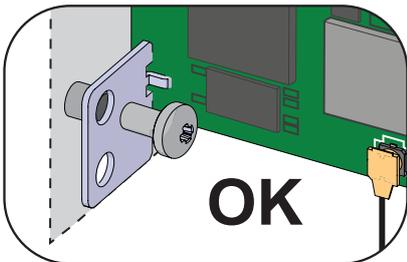
Tighten the locking screw to secure the board to the inverter. This screw secures the mounting bracket to a specific anchor point on the inverter and prevents any unintentional disconnection of the board.
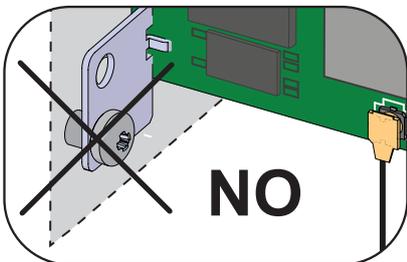
The second hole on the bracket must not be used for securing!

Note for installation on inverters equipped with Arc Fault device

In inverters with the ARC FAULT device installed, an additional board is already connected to the expansion slot to which the VSN300 board is to be connected.
In this case, use the spacer supplied with the assembly kit to allow mechanical fastening using the screw of the inverter board.
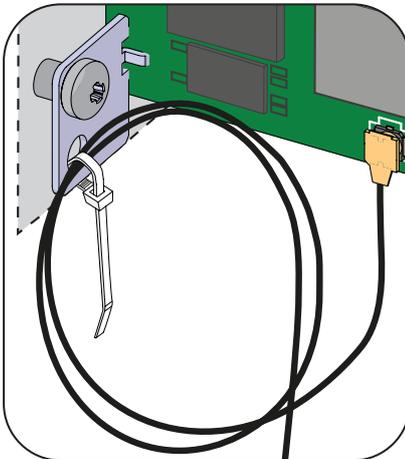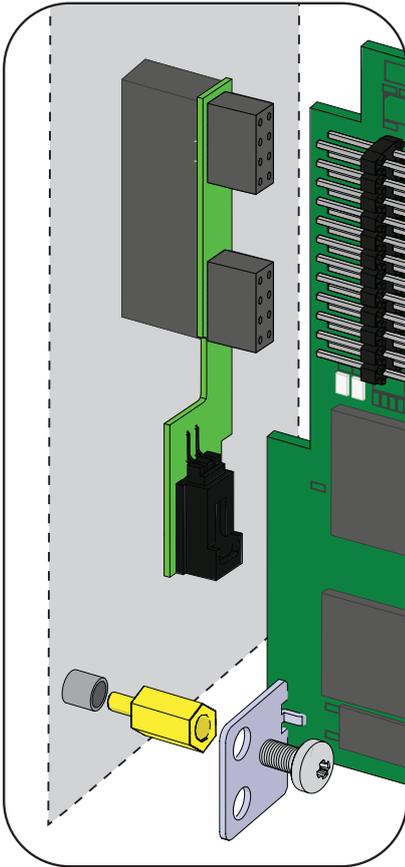
The second hole on the bracket can be used to secure any excess antenna connection cable, using the strap supplied.
Make sure that the antenna cable does not touch live parts during operation

Once installation has been completed, close the inverter cover and apply the following labels:

FCC label: This label is supplied with the VSN300 Wifi Logger Card and must be positioned where it is clearly visible on the outside of the inverter in which the board is installed. The FCC label contains the FCC ID of the VSN300 Wifi Logger Card.

Identification label: This adhesive label is necessary so that all the identification data of the board is available and should be placed in a dedicated area inside the quick installation guide supplied with the product.

Contains FCC ID: X6W-3N16E

FIMER
VSN300 WIFI LOGGER CARD
SN: YYWWSSSSSS
MAC: XX:XX:XX:XX:XX:XX
PRODUCT KEY: XXXX - XXXX - XXXX - XXXX

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Software setup

Different devices can be used to start the setup procedure for the boards, provided they have a Wi-Fi connection.
Switch on the inverter and physically connect the AC and DC grid. The VSN300 Wifi Logger Card switches on automatically and after 60 seconds its own Access Point will be activated. This Access Point is identified by the device selected for the setup (tablet, smartphone or PC).

⚠ *The screens shown below refer to a tablet with an Android operating system. Screens on other devices or operating systems may differ.*

The first setup of the screen can also be carried out using a smartphone or tablet on which the Plant Viewer for Mobile App has been installed. For further information, refer to the documentation available on http://www. fimer.com.

Connection to the home Wi-Fi network

Enable Wi-Fi on the device which is being used for the board setup (tablet, smartphone or PC) and connect it to the Access Point created by the board.
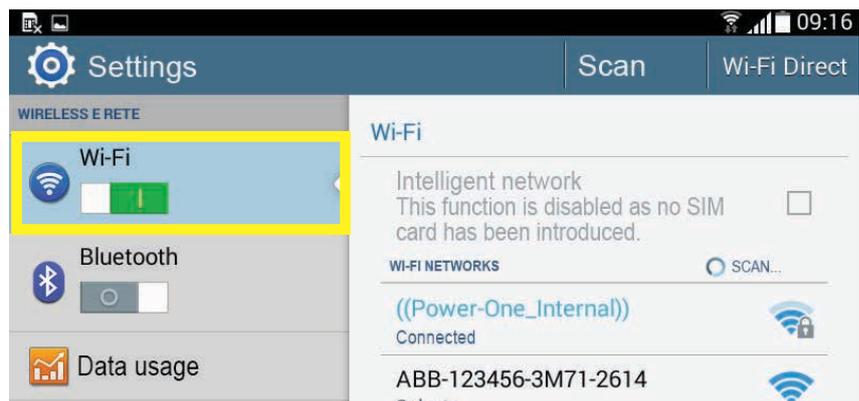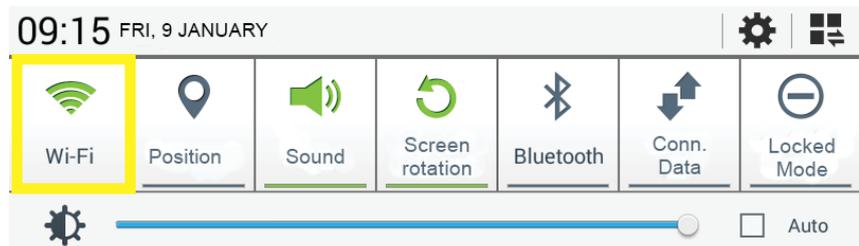
A network with the name ABB-SSSSSS-PPPP-WWYY should appear in the list of networks, where:
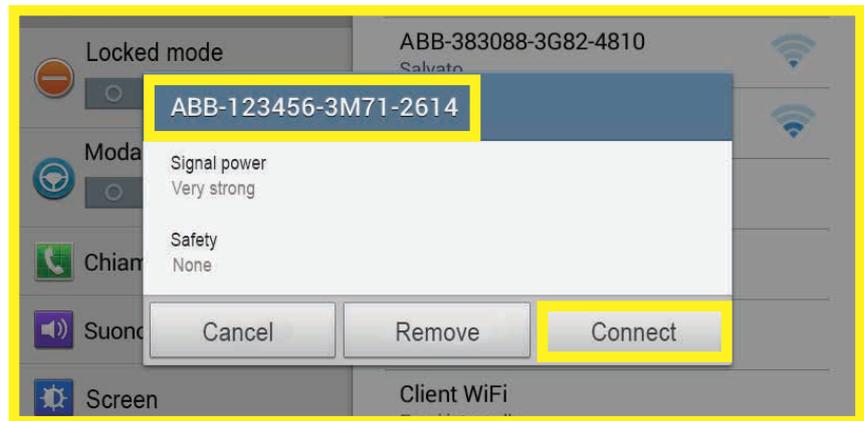
SSSSSS = Inverter serial number
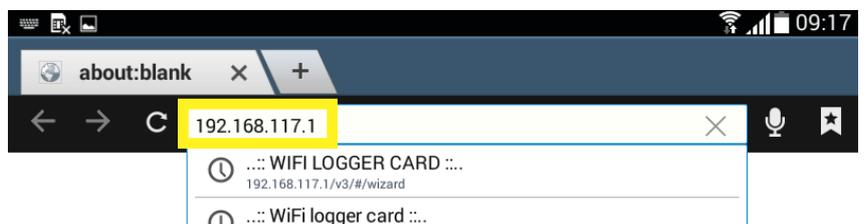**PPPP** = Inverter part number
WW= Inverter week of production
YY= Inverter year of production
Once the network has been created by the inverter, start the connection and wait for the device to complete the procedure (a password is not

required for the Wi-Fi network).

Open the internet browser and enter the pre-set IP address to access the setup page: **192.168.117.1**

A guided setup procedure will open, consisting of a sequence of screens in which all the required fields must be completed correctly.
In the first screen, select the required language and click on Next to continue.

000465BG-F

In the second screen, select the time zone of the area where the board is installed
Click on Next to continue.
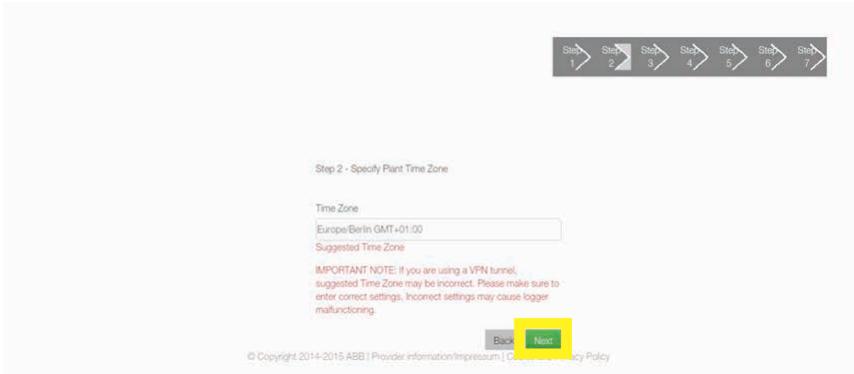
VSN300 boards with a Firmware version prior to 1.8.x must be connected to a Wi-Fi router.
The boards with Firmware versions after 1.1.8.x can also be configured in «AP Mode» without connection to a Wi-Fi router (only local monitoring).
Where possible, «Station Mode» is always preferable. Thanks to the internet connection, this mode ensures better operation. .

The board can operate in two different operating modes: «Station Mode» and «Access Point Mode» (also known as «AP Mode»)

• «AP mode»: Only local monitoring is enabled in this mode; In particular, the board acts like an «access point» generating a wireless network to which the user can connect locally, to monitor the inverter /photovoltaic system, using the Plant Viewer for Mobile App or direct access to the Web user Interface (WUI) integrated in the board;

• «Station Mode»: In this operating mode, not only local but also remote monitoring is enabled through access to the Aurora Vision® CLOUD platform;

Click on "SCAN" and, from the drop-down menu, select the Wi-Fi network to which the VSN300 board is to be connected (if it is to operate in «Station Mode»); or click on "Skip this step" (if the board is to operate in «AP mode»)
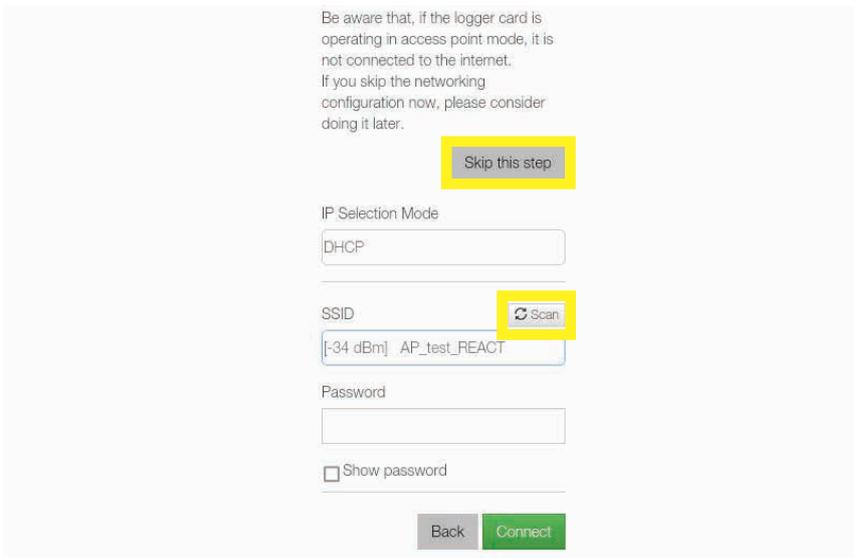
Identify and select the appropriate Wi-Fi network from the drop-down menu selecting from amongst the networks detected by the board. A new network search can be carried out by using the Scan button.

The networks are ordered on the basis of the power of the signal received in dBm (from the strongest to the weakest).

Once the network has been selected, confirm.

In the case of installations where more than one router is available (for example, with repeater functions), the indication of the signal in dBm is useful for selecting the network with the largest signal.

Prev.	Next		Done
[-34 dBm]	AP_test_REACT		●
[-64 dBm]	((Power-One_Internal))		○
[-91 dBm]	TEST@POWERONE		○
[-92 dBm]	hot		○

Select the mode for assigning the IP addresses configured on the destination network, selecting from DHCP (default) and Static (manual setup).

In most setups, the correct mode is DHCP, and therefore the IP address does not need to be entered manually. Only access the static setup mode if necessary and if all the network parameters are known.

Be aware that, if the logger card is operating in access point mode, it is not connected to the internet.
If you skip the networking configuration now, please consider doing it later.

Skip this step

IP Selection Mode

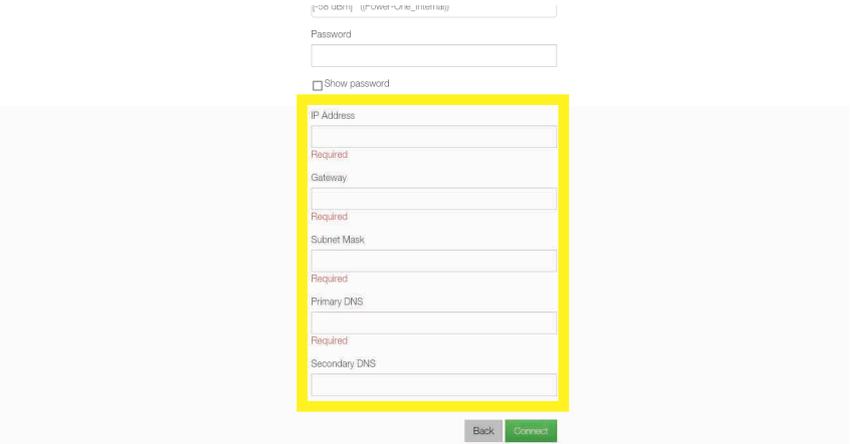DHCP

SSID   ⟳ Scan

[-34 dBm]   AP_test_REACT

Password

☐ Show password

Back   Connect

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If Static is selected, the data will appear which has to be entered in order to carry out the IP static address assigning.

Complete the additional fields at the bottom of the screen, all the fields are mandatory with the exception of the secondary DNS server.

Enter the password for the destination network (if necessary) and start the connection attempt (it will take a few seconds).
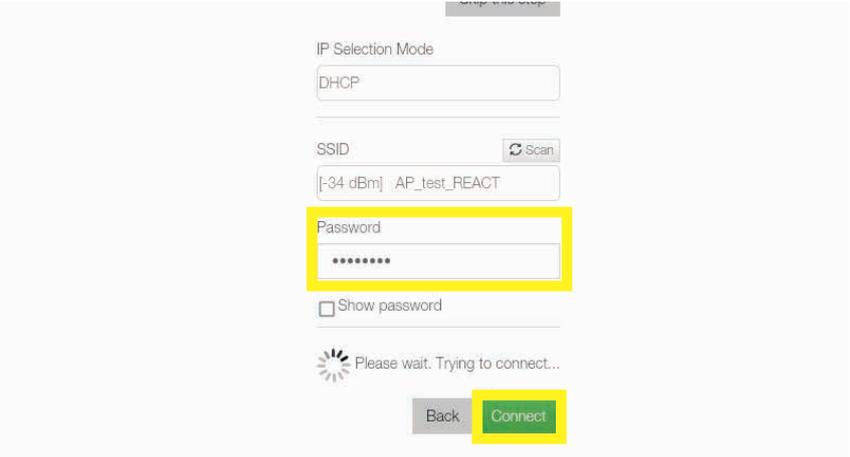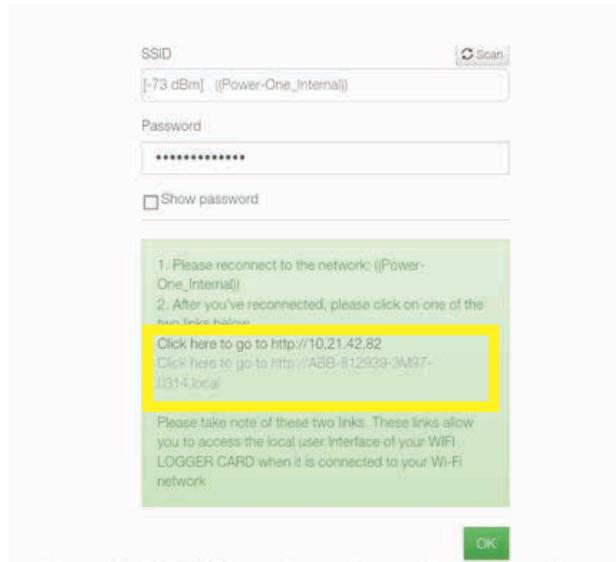
If the connection is completed successfully, the screen updates and displays a message and a green box.

The message provides the link required for the second stage of the installation procedure (corresponding to the IP address assigned by the router of the home Wi-Fi network of the board).

This IP address can be used each time you want to access the integrated web server, with the board connected to the home network.

⚠

The IP address assigned may vary for reasons connected to the Wi-Fi home router setup (for example, a very brief DHCP lease time). If verification of the address is required, it is usually possible to obtain the client list (and the corresponding IP addresses) from the administrative panel of the Wi-Fi router.

⚠

Contact the network administrator for further information regarding the presence or absence of the DNS service in the Wi-Fi router or how to enable it.

As well as the IP address, the «Host Name» (identified in the green box) can also be used to connect to the board.

In order to use the «Host Name» as an alternative to the dynamic IP address, the Wi-Fi router to which the board is connected (when operating in "Station Mode") must provide the Domain Name System (DNS) service.

In this way, even if the IP address assigned to the VSN300 board should change over time, (dynamic IP), it will always be possible to use the same «Host Name» which will remain unchanged over time.

The Host Name can always be received but taking into consideration that it is structured in the following way:

ABB-SSSSSS-PPPP-WWYY.LOCAL

where:
SSSSSS = Inverter serial number
PPPP = Inverter part number
WW= Inverter week of production
YY= Inverter year of production

First system and user setup

The VSN300 board is now connected to the home Wi-Fi network, becoming a normal host on a par with any other Wi-Fi device (for example the user's tablet or PC).

The Wi-Fi board automatically disables its access point with the name ABB-SSSSSS-PPPP-WWYY (no longer necessary). If the W-Fi board loses the connection with the home Wi-Fi network (and therefore, loses the internet connection), it will once again enable the access point necessary for repeating the first setup stage.

⚠️ *The most common causes of connection loss can be: different Wi-Fi network password, faulty or unreachable router, replacing the router (different SSID) without the necessary setting updates.*

Before proceeding with setup, check that the device being used is connected to the same home Wi-Fi network to which the VSN300 board has just been connected.

If the device is not connected, select the Wi-Fi network from those shown in the list and connect the device to the network, entering the network protection password if requested to.
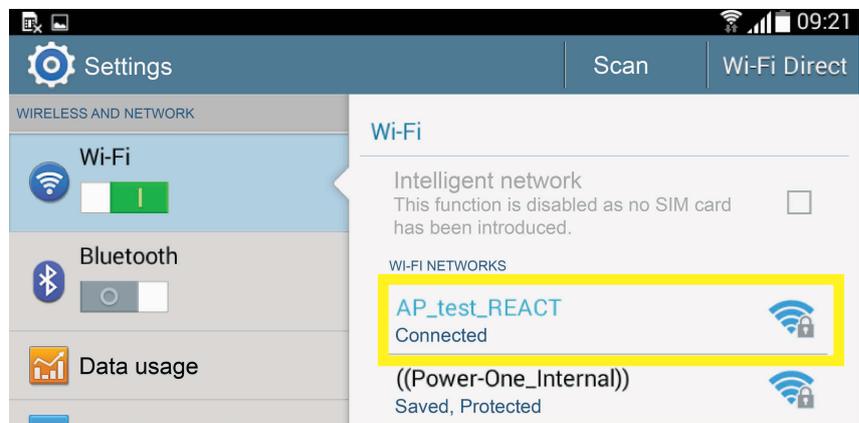
⚠️ *If the procedure is carried out immediately after the previous stage (without closing the browser), the assigned IP address can be reached by using the link in the green box.*

Make sure that the connection has been completed successfully, open the internet browser and enter the IP address assigned by the router at the board identified previously.
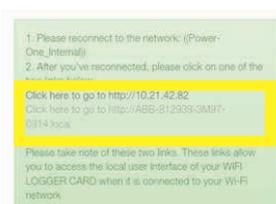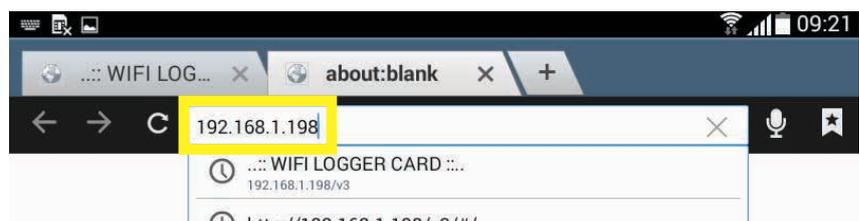
The next stage of the guided setup procedure will open.

In the first screen, enter all the data of the plant to be monitored (mandatory) and click on Next to continue.

Check that the longitude and latitude of the installation place are both correct and enter if missing.

These values are the same for all the boards installed in the installation place and are shared with Aurora Vision. These values can be updated from Aurora Vision even at a later date.

Latitude and Longitude are essential parameters:
Incorrect values could affect the correct operation of the board!

If the Internet connection is made using a server proxy or a VPN tunnel, it is quite likely that the suggested coordinates will be incorrect. Correct them manually to prevent malfunctions.

If the Latitude or Longitude is entered in an incorrect format, an error message will suggest the correct form of the data to be entered.

As in the example shown, one of the most common cases is the incorrect use of the "," as a separator for the decimal point rather than the "."

After this, the password for the User account is then set. This account is a read only account of the data contained in the integrated Web Server page. Entering this password is not mandatory

To set a password, enter it twice and confirm by clicking Next.

The password must contain at least 5 alphanumeric characters (UTF-8 code)

To disable the password request for the User account, tick the "No Password" box and confirm by clicking on Next.

Set the password for the Admin account (mandatory in this case) by entering it twice and confirming by clicking Next.

As the plant administrator, the Admin account will be able to read and write data contained in the integrated Web Server page and will therefore be the only one able to modify the plant setting parameters.

The Admin account password must be kept safe and must not be divulged to novice users.
Incorrect parameter setup will compromise data transmission and correct plant operation.

The password must contain at least 5 alphanumeric characters (UTF-8 code)
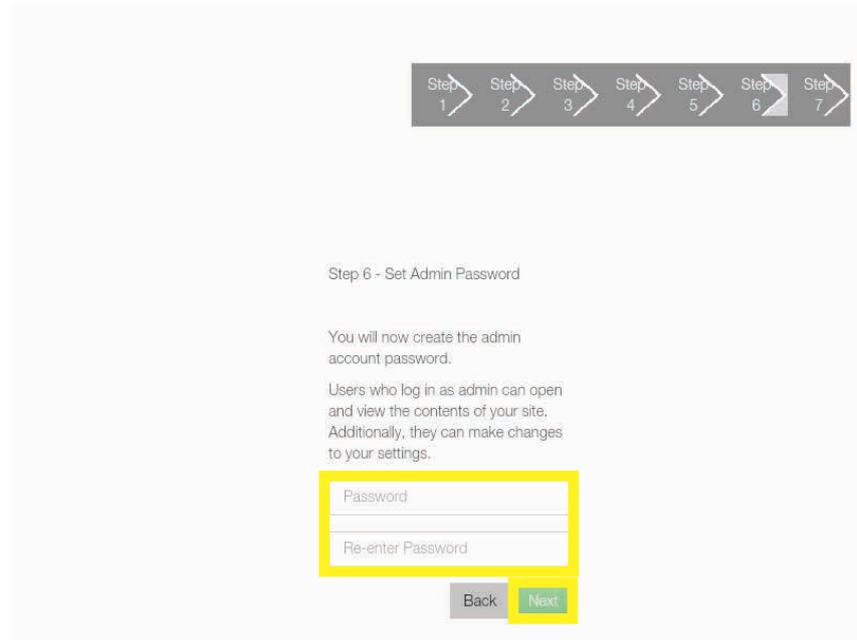
The guided setup procedure is now complete, a final message invites the user to activate an account on the Aurora Vision® platform in order to allow access and plant registration on the Plant Viewer portal.
The account on the Aurora Vision® platform will allow the plant owner to use the Plant Viewer portal and the Plant Viewer for Mobile App for remote monitoring.
If an account is required, tick the box and confirm by clicking on Next to be redirected to the Web registration page.

The account is obtained by the installation wizard and is only valid for connection to the Aurora Vision® platform through the Plant Viewer and Plant Viewer for Mobile, therefore, it does not enable use of the Plant

Portfolio Manager portal.

Creation of the account **is NOT required** in the following cases:

- the account on Plant Viewer / Plant Viewer for Mobile has already been created;
- the VSN300 board is to be used in «AP Mode» and therefore as a local monitoring instrument with direct Wi-Fi access and not through an Internet connection.
- The plant owner or manager (installer or maintenance technician) intends to use the Plant Portfolio Manager portal
To obtain an account enabled for Plant Portfolio Manager use, go to www.auroravision.net and click on "Register new user".

Further information on the Aurora Vision® platform is available from the Monitoring and Communication section found on the website www.fimer.com or by contacting the FIMER technical department.

General conditions

One of the first rules for preventing damage to the equipment and to the operator is to have a thorough knowledge of the instruments. We, therefore, advise that you carefully read this manual. If you are not sure about any information in this manual, please ask FIMER Service for more detailed information.

Do not use the equipment if:
- you do not have suitable qualifications to work on this equipment or similar products;
- you are unable to understand how it works;
- you are not sure what will happen when the buttons or switches are operated;
- you notice any operating anomalies;
- there are doubts or contradictions between your experience, the manual and/or other operators.

FIMER cannot be held responsible for damage to the equipment or the operator if it is the result of lack of knowledge, insufficient qualifications or lack of training.

LED behaviour

As soon as the inverter is switched on, the VSN300 board is also automatically powered, in this condition the led **4** emits a red intermittent light.

The first time the board is switched on, it acts like an access point («AP Mode»). After a few seconds both led **5** and **6** flash alternately emitting a green and yellow light and then stabilise in the following condition where:
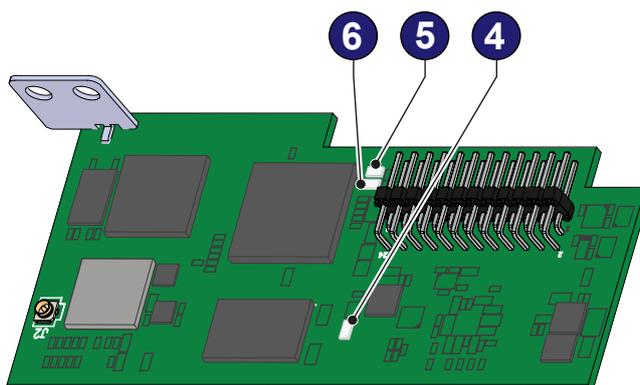Led **4**: flashing red
Led **5**: off
Led **6**: yellow (steady)

After having connected the VSN300 board to the Wi-Fi router, it stops operating in «AP Mode» and begins to operate in «Station Mode».
In «Station Mode», the leds of the board modify and behave as follows:
Led **4**: flashing red
Led **5**: green (steady)
Led **6**: off

LED	Led behaviour	Description
4	Flashing	Board powered
5 6	Green and Yellow flashing	Start phase
5	Green (steady)	Connected to a local Wi-Fi network
6	Yellow (steady)	«Access Point Mode» enabled
5 6	Green and Yellow flashing 3 times together	Inverter Serial Number acquired

General conditions

Before checking the operation of the equipment, it is necessary to have a thorough knowledge of the Instruments chapter 6 and the functions that have been enabled in the installation process.
The equipment operates automatically without the aid of an operator; the operating state should be controlled through the equipment's instrumentation.

The interpretation or variation of some data is reserved exclusively for specialized and qualified staff.

The incoming voltage must not exceed the maximum values shown in the technical data, section 2 in order to avoid damaging the equipment.
Consult the technical data for further details.

During operation, check that the environmental and logistical conditions are correct (see installation chapter 5).
Make sure that enviromental and logistical conditions have not changed over time and that the equipment is not exposed to adverse weather conditions.

Internal Web Server

The IP address assigned to the board during the guided setup procedure (or the Host Name), can be used at any time for the User or Admin to access the internal Web Server.

⚠️ *The IP address assigned may vary for reasons connected to the Wi-Fi home router setup (for example, a very brief DHCP lease time). If verification of the address is required, it is usually possible to obtain the client list (and the corresponding IP addresses) from the administrative panel of the Wi-Fi router.*

Connection with User account

Open the internet browser and enter the IP address assigned by the router at the board identified during the guided procedure.
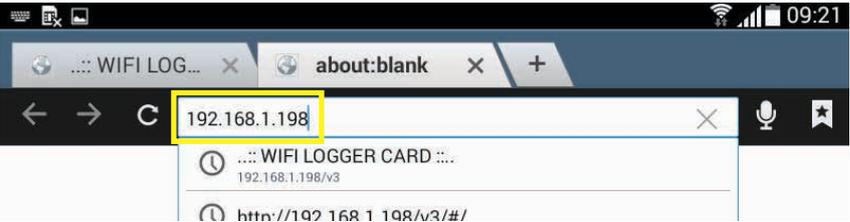
The login page will open where the user has to select the type of account with which the connection is to be made.
Select User from the possible options.
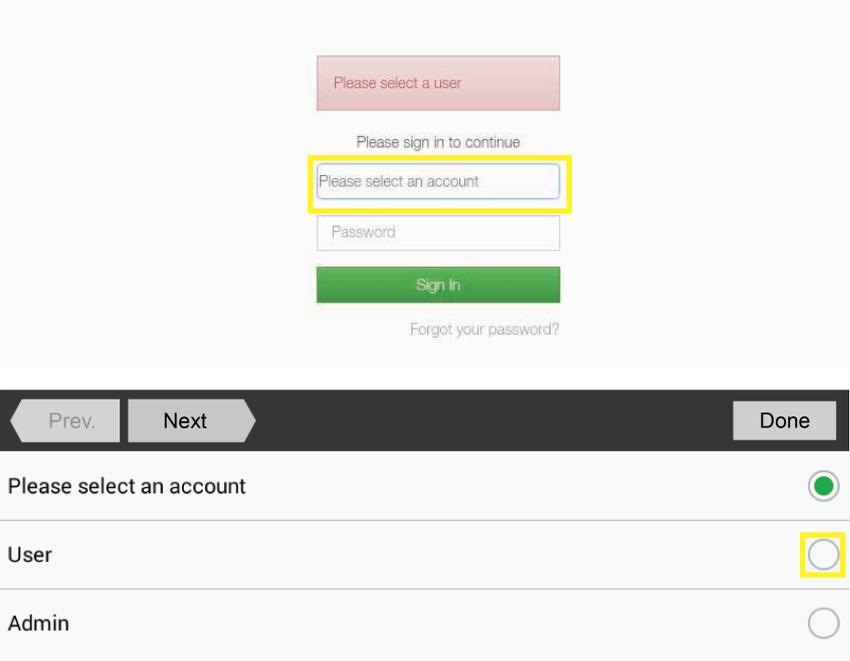
If User access has been set without a password, the password field will be removed from the screen and the user will be able to access by simply clicking on Sign In.

In the event of User protected access, enter the password and click on Sign In.

After access, the user is directed to the HOME page where there is a summary of the data relating to the system power identified by the board. The user can access the various Web Server pages from the navigation menu and can logout or change the password from the menu in the top left corner.

Logout and password management

Select the language

Navigation menu

Instantaneous power

Total energy of the day

Indication of the operating status of the inverter or board:
Green: no anomaly
Yellow: warning signal (Wxxx)
Red: error signal (Exxxx)
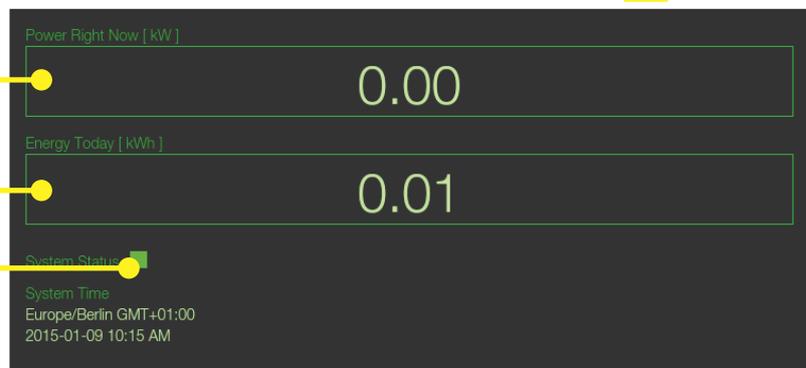
Graph of the day

The DATA page displays a summary of the most significant technical data for the Wi-Fi board and the inverter. The real-time data is updated every minute, while the system information gathers the main characteristics of the installed devices in a table.

Instantaneous power

Total energy of the day

Selection of the Data board in real time and System information

Summary of technical data of the Wi-Fi board and inverter or real-time operating data.

The VSN300 board can be configured in such a way that it transmits or does not transmit the data relating to the **Aurora Vision ®** platform.

The EVENTS page displays a table with the events Log recorded by the board.

Instantaneous power

Total energy of the day

Log of events recorded by the
Wi-Fi board

| HOME | DATA | EVENTS | SETTINGS | ABOUT | | ENGLISH (US) ▾ | USER ▾ | |

Power Right Now [kW]

0.00

Energy Today [kWh]

0.01

System Status ■

System Time
Europe/Berlin GMT+01:00
2015-01-09 10:15 AM

SN	Device	Event Time	Code	Description	Duration	Status
574350-3N16-3814	Logger	01-09-2015 09:15:02	W031	Data portal communication issue	1h, 52s	Open
	Inverter	01-09-2015 09:13:10	W023	Date Time Changed	1h, 2m, 44s	Open

The VSN300 board can be configured in such a way that it transmits or does not transmit the events log relating to the **Aurora Vision ®** platform.

The following is provided for each event:

SN: Serial number of the device affected by the event;

Device: Type of device affected by the event, inverter or logger (VSN300);

Event Time: event start and end time;

Code: Event code (for inverter error codes, refer to the documentation of the inverter itself)

Description: Brief description of the recorded event

Duration: Duration of the event (data available once the recorded event is closed):

Status: Indicates whether the condition which led to the event has been resolved («CLOSED») or if it is still present («OPEN»)

The SETTINGS page displays the settings of the board configured during installation or by an Admin account.
With User access, the settings are read-only.

Displays the network, data logging or plant settings

Summary of the settings displayed in read only mode

The ABOUT page displays the release notes of the various Firmware versions of the Wi-Fi board.

Connection with Admin account

The Admin account password must be kept safe and must not be divulged to novice users.
Incorrect parameter setup will compromise data transmission and correct plant operation.

Open the internet browser and enter the IP address assigned by the router at the board identified during the guided procedure.
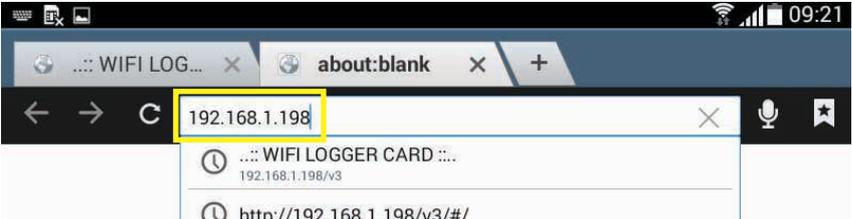
The login page will open where the user has to select the type of account with which the connection is to be made.
Select Admin from the options available.
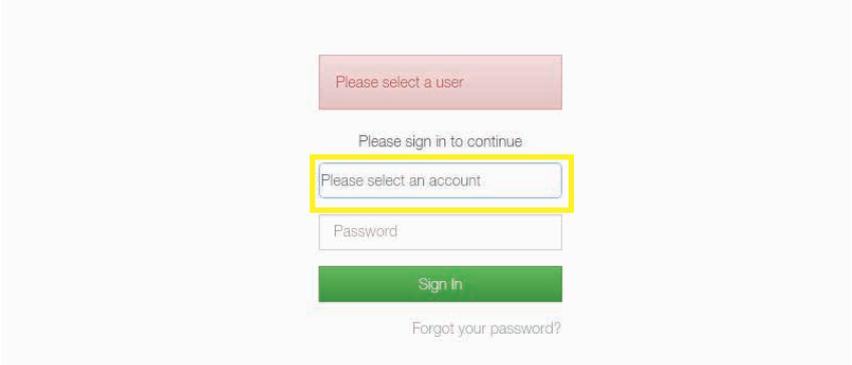
Admin access requires a password, enter this password and click on Sign In in order to login.

After access, the user is directed to the HOME page where there is a summary of the data relating to the system power identified by the board. The user can access the various Web Server pages from the navigation menu and can logout or change the password from the menu in the top left corner.

Logout and password management

Select the language

Navigation menu

HOME | DATA | EVENTS | SETTINGS | ABOUT | ENGLISH (US) ▾ | ADMIN ▾ |

Instantaneous power

Power Right Now [kW]

0.00

Total energy of the day

Energy Today [kWh]

0.01

Indication of the operating status of the inverter or board:
Green: no anomaly
Yellow: warning signal (Wxxx)
Red: error signal (Exxxx)

System Status
System Time
Europe/Berlin GMT+01:00
2015-01-09 10:22 AM

Graph of the day

Jan 9, 2015   1D 7D

The DATA page displays a summary of the most significant technical data for the Wi-Fi board and the inverter. The real-time data is updated every minute, while the system information gathers the main characteristics of the installed devices in a table.

Instantaneous power

Total energy of the day

Selection of the Data board in real time and System information

Summary of technical data of the Wi-Fi board and inverter or real-time operating data.

The EVENTS page displays a table with the events log recorded by the board.

Instantaneous power

Power Right Now [kW]

0.00

Total energy of the day

Energy Today [kWh]

0.01

System Status ▪

System Time
Europe/Berlin GMT+01:00
2015-01-09 10:15 AM

Log of events recorded by the Wi-Fi board

SN	Device	Event Time	Code	Description	Duration	Status
574350-3N16-3814	Logger	01-09-2015 09:15:02	W031	Data portal communication issue	1h, 52s	Open
	Inverter	01-09-2015 09:13:10	W023	Date Time Changed	1h, 2m, 44s	Open

The VSN300 board can be configured in such a way that it transmits or does not transmit the events log relating to the **Aurora Vision ®** platform.

The following is provided for each event:
SN: Serial number of the device affected by the event;
Device: Type of device affected by the event, inverter or logger (VSN300);
Event Time: event start and end time;
Code: Event code (for inverter error codes, refer to the documentation of the inverter itself)
Description: Brief description of the recorded event
Duration: Duration of the event (data available once the recorded event is closed):
Status: Indicates whether the condition which led to the event has been resolved («CLOSED») or if it is still present («OPEN»)

The SETTINGS page displays the settings of the board divided into four sections: Network (network settings), Logger (log-in settings), Plant Details (plant data) and Inverter Parameters Setting.
Unlike the User access (read only), Admin login allows the settings present to be modified.

As described in the Installation chapter, the VSN300 board can operate in two different operating modes: «Station Mode», with the IP address assigned in static or dynamic mode, and «AP Mode».
In the Network board, the current operating mode can be modified and therefore manage the change from «Station Mode» to «AP Mode» and vice versa.

Selection of the network, logger, plant data settings or the inverter parameter settings

«Host Name» of the board to be used as an alternative to the IP address

Selection of «Station Mode» or «AP Mode»

Table which displays the network settings (modifiable) in «Station Mode» or the Access point data generated by the board in «AP Mode».

Saves the modifications made

Once the required values have been modified, confirm the setting by clicking on Save.

If the board is operating in «Station Mode», before carrying out any modification of the network parameters and in particular if the user wishes to change the Wi-Fi network to which the board is connected, it is recommended to:
- enable the «AP Mode» beforehand;
- access to the WUI by using the static IP address 192.168.117.1;
- move to "Station Mode" operation mode by setting new network parameters.
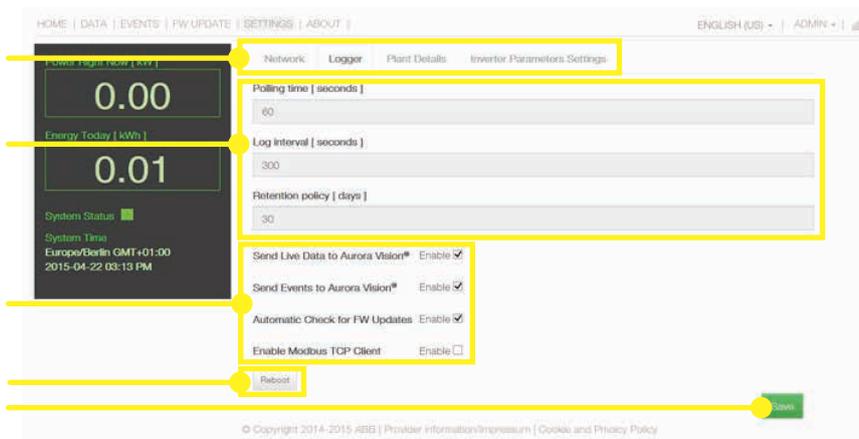
In the Logger board, the settings relating to data collection, storage and transmission can be viewed and modified.

Selection of the network, logger, plant data settings or the inverter parameter settings

Parameters which cannot be modified

Parameters which can be modified

Restores the board
Saves the modifications made

The first group of parameters cannot be modified:

Polling time: Inverter data sample period (more specifically, the VSN300 board reads the inverter parameters every 60 seconds)

Log Interval: Transfer interval of the data read by the VSN300 board to the Aurora Vision® internet cloud platform (more specifically, the VSN300 board collects and sends the data every 300 seconds = 5 minutes)

Retention policy: Storage period of the data obtained from the inverter in the internal memory of the VSN300 board In this specific case, 30 days worth of data is archived with a "sliding window" type storage management, i.e. the oldest data is deleted in favour of new data.

A specific message appears in the notifications if the following selections are made:

- Logger operation in «AP Mode»
- Automatic verification function of the availability of a new Firmware disabled
- Transmission of data to the Aurora Vision® cloud platform disabled (function
- Transmission of events (anomalies and errors) to the Aurora Vision® cloud platform disabled

The second group of parameters can be customised:

Send Live Data to Aurora Vision: Enable/Disable the sending of data to the Aurora Vision® cloud platform

Send Events to Aurora Vision: Enable/Disable the sending of errors to the Aurora Vision® cloud platform

Automatic Check for FW Updates: Enable/Disable the automatic verification of the availability of a new Firmware for the VSN300 board or for the inverter (internet connection is required).
If this function is enabled, automatic verification takes place every hour.

Enable Modbus TCP Client: Enable/Disable the «Modbus TCP Client» function (refer to the specific section in the manual).

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In the Plant Details board, the plant data which was entered previously during the installation phase can be viewed and modified.

Selection of the network, logger, plant data settings or the inverter parameter settings

Inverter settings (modifiable fields)

⚠️

The function is not available for all FIMER inverter models. For further information, refer to the documentation available on the official FIMER website

The main parameters of the inverter can be modified using the Inverter Parameters setting board and since the VSN300 board is installed in the Inverter Parameters setting board, this means that it is not necessary to operate directly on the board itself. Modifying a parameter is obviously allowed within the range of permitted values. Outside of this range, it is not possible to confirm the modification (by clicking on «SAVE» as with the other boards).

Selection of the network, logger, plant data settings or the inverter parameter settings

Plant data (modifiable fields)
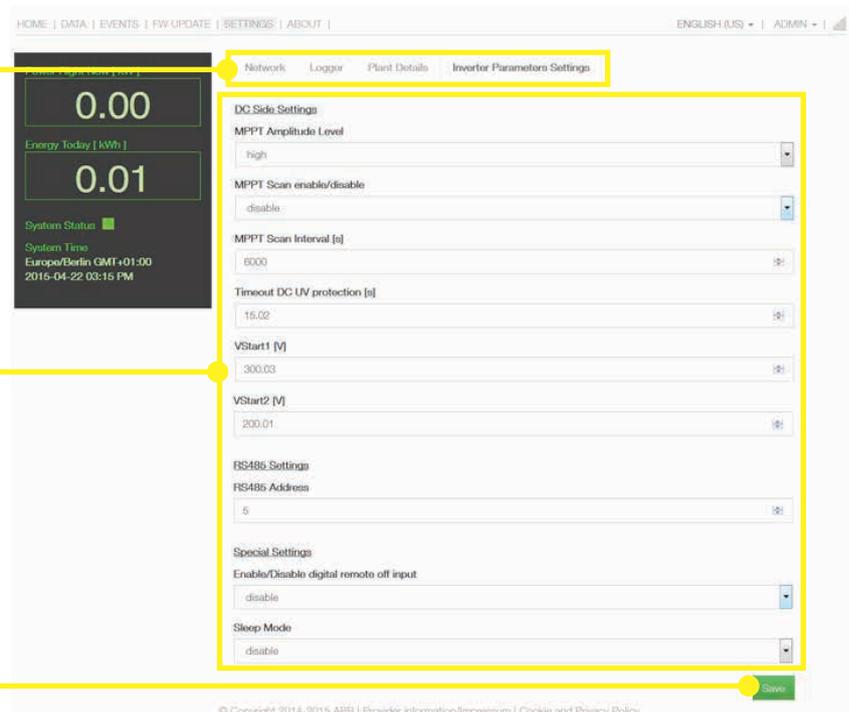
Saves the modifications made

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The ABOUT page displays the release notes of the various Firmware versions of the Wi-Fi board and allows access to the registration page of the Aurora Vision® portal where a new account can be registered.

Selection of the release notes or the registration page
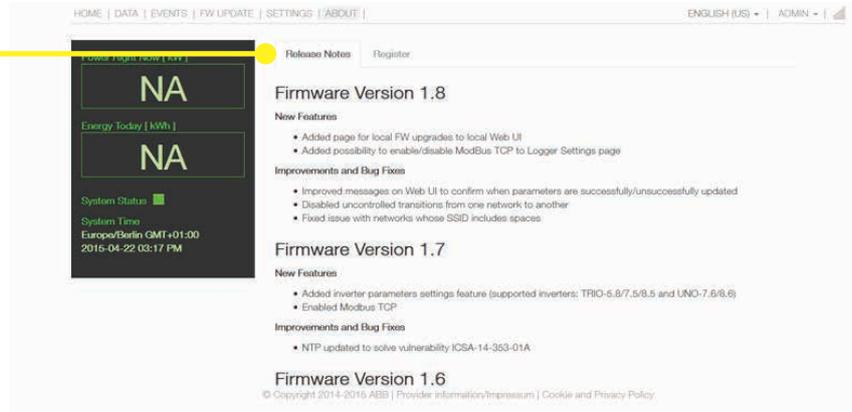
Resetting passwords

If the access password (user or administrator) has been lost, it can be reset and a new one can be created by using the «Forgot your password» control

When the operator clicks on «Forgot your password», he will then be required to enter the identification code of the «Product Key» board.

The «Product Key» is a unique code which can be found on the identification label supplied with the board.

Once the «Product Key» has been entered, click on «Reset» to start the reset procedure and create a new password.

The procedure for creating a new password is the same as that already carried out during installation. Just as in the installation phase, the USER password is created (optional) and enabled to only read the web interface parameters.

⚠️

The password must contain at least 5 alphanumeric characters (UTF-8 code)

Just as in the installation phase, a password does not have to be assigned/created for the USER.

However, a password must be entered for the ADMIN user. This will allow the user interface parameters to be both read and modified.

⚠️

The Admin account password must be kept safe and must not be divulged to novice users.
Incorrect parameter setup will compromise data transmission and correct plant operation.

Modbus TCP Gateway Functionality

The **Modbus TCP Gateway** functionality allows an external monitoring or a **SCADA** system to exchange data with the inverter without being directly connected.

Communication with the **SCADA** or external monitoring system must take place through the Modbus TCP protocol. The VSN300 board server / gateway converts the Modbus commands which arrive and sends them to the inverter (or to any device within which the board is installed). In turn, the responses generated by the inverter will be converted and sent to the Modbus client which has sent the commands.

Copper Ethernet: Max distance 100m
RS485 Modbus RTU / Aurora Protocol: Max distance 1200 m
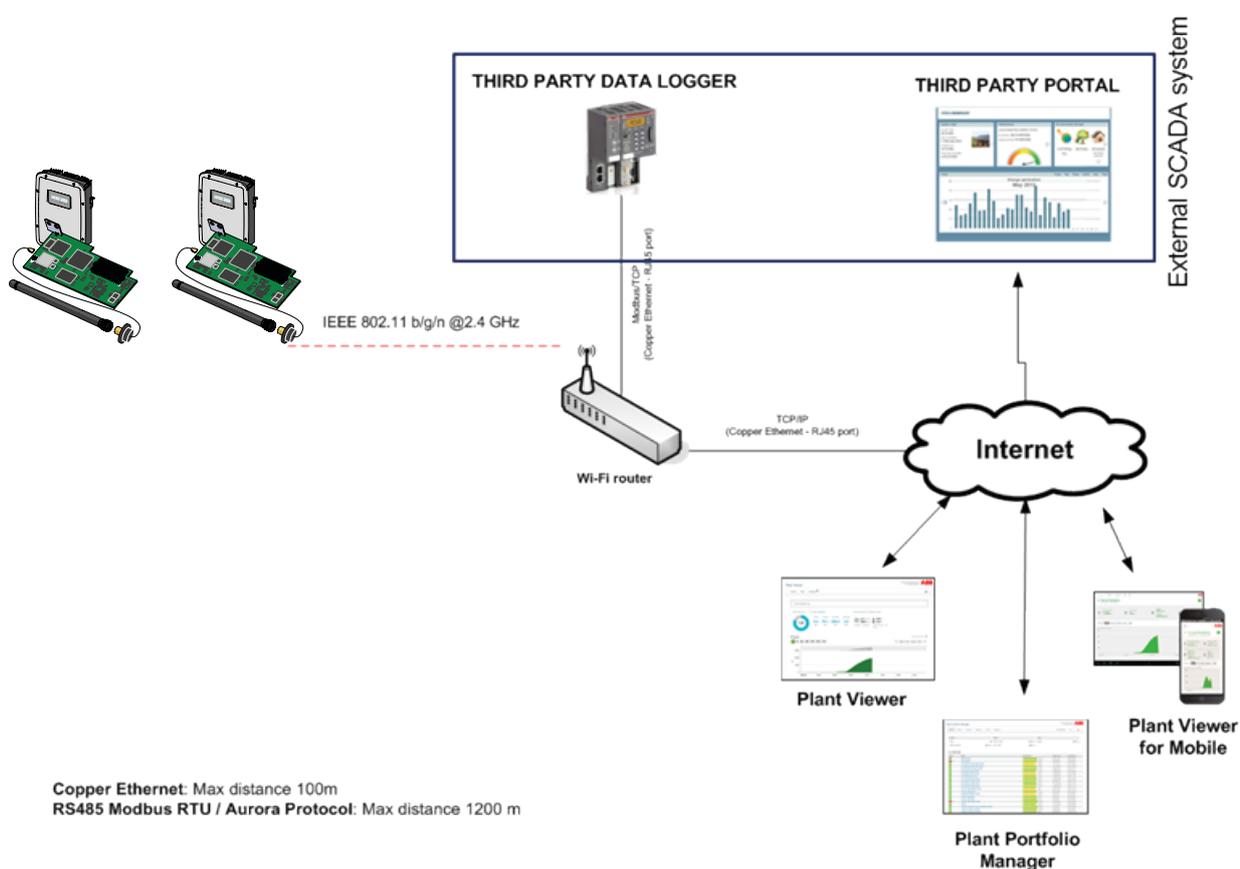
Role of the Sunspec Adapter software

Integration of the VSN300 in a **SCADA** system is made possible mainly thanks to the **Modbus TCP** communication protocol and the presence of the **SunSpec Adapter** software.

The **SunSpec Adapter** is a software adapter that has two main functions: it continuously polls **legacy FIMER** inverters as fast as it can using the **Aurora Protocol** and caches data polled from these inverters in Sun-Spec compliant Modbus data maps.

Sunspec Alliance has standardised the Modbus register map in which

the inverter data is stored. This allows **SCADA** systems to use standard Modbus read commands to gather information from **legacy FIMER** inverters, stored previously in these **Modbus Sunspec** registers. In the same way, a **SCADA** system can send a supported Modbus write command to a SunSpec inverter control register.

The VSN300 board will transcode the standard Modbus commands into **Aurora Protocol** command sequences to be sent to the **legacy FIMER** inverter which will then execute the requested actions, such as grid disconnection or output power reduction.

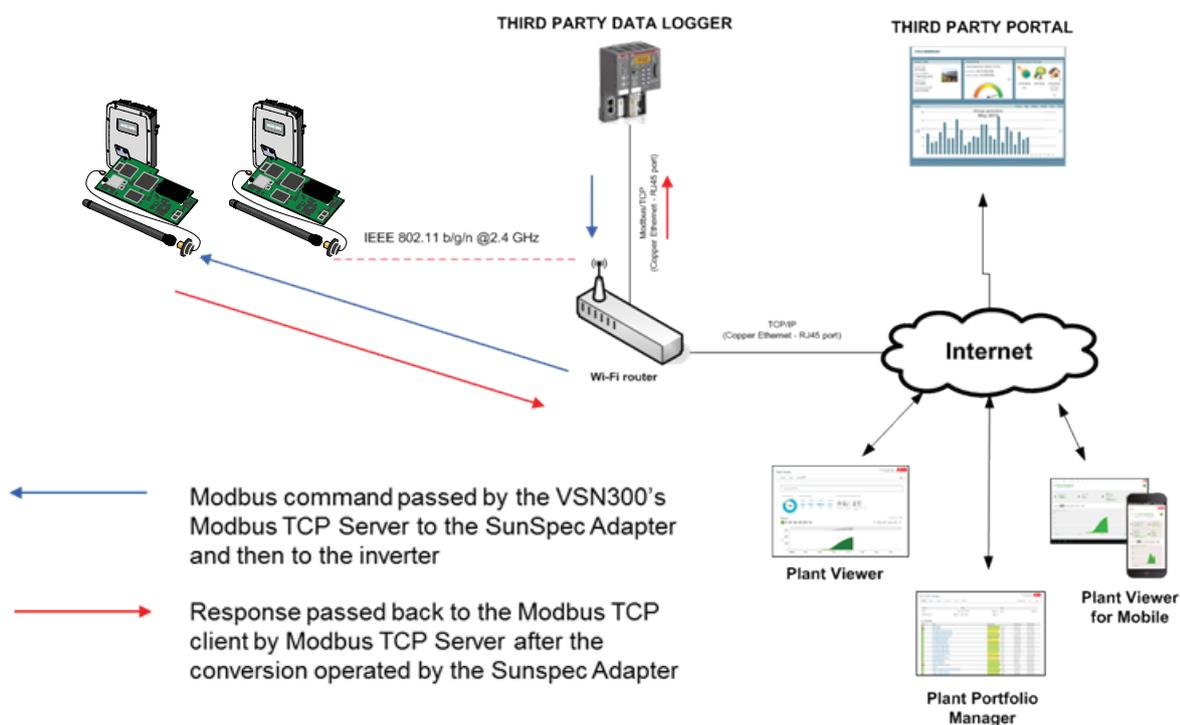The Modbus commands sent by a Modbus TCP client cannot be passed directly to **legacy FIMER** inverters which communicates via the proprietary **Aurora Protocol**. So the VSN300's Modbus TCP server/gateway passes an incoming Modbus command to the SunSpec Adapter first. When a Modbus TCP client sends read commands to a legacy FIMER inverter, the VSN300's Modbus TCP server will respond based on data that has been cached for that inverter by the **SunSpec adapter**; when a Modbus TCP client sends a supported write command to a **legacy FIMER** inverter using the inverter's SunSpec Modbus data map, the SunSpec adapter will convert this command to Aurora Protocol for communication to the inverter. If there are any problems with the command, an exception response will be sent back to the Modbus TCP client. There is no confirmation that a command is successful and that the inverter has performed the control action; For this reason, write commands should always be followed up shortly after with read commands to confirm the change (s).

← (blue arrow)	Modbus command passed by the VSN300's Modbus TCP Server to the SunSpec Adapter and then to the inverter
→ (red arrow)	Response passed back to the Modbus TCP client by Modbus TCP Server after the conversion operated by the Sunspec Adapter

Modbus TCP Commands

In order to implement communication between the VSN300/inverter (Modbus TCP server) and an external monitoring or **SCADA** system (Modbus TCP client), the VSN300 and the external system must be on the same network subnet or have a route set up in order to communicate each other.

The VSN300 is able to forward Modbus TCP traffic on port 502. An example of Modbus TCP command sent by the Modbus TCP client to the VSN300 follows:

<IP_address>:502:<protocol_address>.

Where:

- **IP_address**: IP address assigned to the VSN300 board
- **502**: port used for enabling the communication between the Modbus TCP client (external monitoring or SCADA system) and server (VSN300)
- **Protocol_address**: 247 in case of communication between VSN300 board and inverter via INTERCOM bus; AURORA PROTOCOL address in case communication between VSN300 board and inverter via legacy bus.

Modbus TCP register map

The Modbus TCP register map the Modbus TCP client has to refer to is Sunspec compliant. The specific map to be referred to depends on the specific inverter type monitored as indicated below:

- **SunSpec M101**: with single MPPT - single phase FIMER inverter
- **SunSpec M103**: with single MPPT - three phase FIMER inverter
- **SunSpec M106**: with dual MPPT FIMER inverter

Firmware Update Function

![warning triangle]

An incorrect Firmware updating procedure can cause irreversible damage to the VSN300 board or the inverter.

Do not use unofficial or modified Firmware for the updates. Only use files supplied by FIMER and follow the procedure carefully.

This function allows the user to update the Firmware of both the VSN300 board and the inverter within which the board is installed (if anticipated by the inverter model).

In order to update the Firmware, a new Firmware must have been officially released by FIMER for the product which is to be updated. If the VSN300 board is connected to a Wi-Fi router, and therefore to the Internet («Station Mode» operating mode), it is possible to enable the function which automatically allows the user to receive notification from FIMER regarding the availability of a new update for the Firmware of the board or the inverter. The board checks the availability of updates every hour. It is also always possible to manually check for updates by clicking on "Check for FW Update".

The update can be carried out in one of two ways:

- Enabling the download from the FIMER remote servers and therefore the installation of new Firmware (this function is only available in «Station Mode» and therefore when there is an internet connection)

- Transferring the new Firmware to be installed (file with .tib or .ben extensions) from a local folder on the Wi-Fi device using the internal memory of the VSN300 logger (UPLOAD), then manually installing the Firmware once it has been transferred (UPDATE). An Internet connection is not required this way (this is the only possibility with the board operating in «AP Mode»).

Updates from the Internet

Button for the manual verification of the availability of a new Firmware. If available, a message appears below the button.
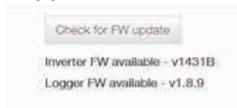
Check for FW update

Inverter FW available - v1431B
Logger FW available - v1.8.9

Choose from Firmware update via access to the FIMER remote servers or by loading into the internal memory of the local device

Download and update the Firmware of the VSN300 board

Download and update the Firmware of the inverter
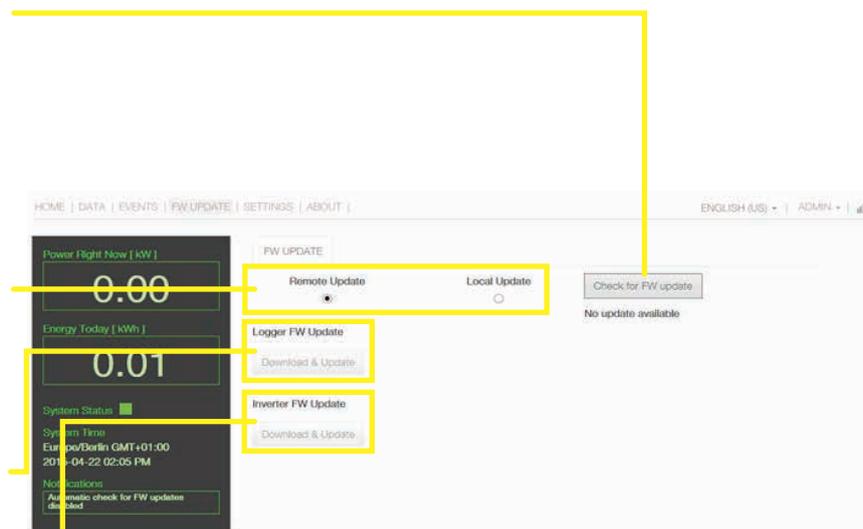
During the Firmware updating process, a progress bar allows the user to see a percentage of the process completion. At the end of the update, the updated device will automatically restart.

Firmware update progress bar
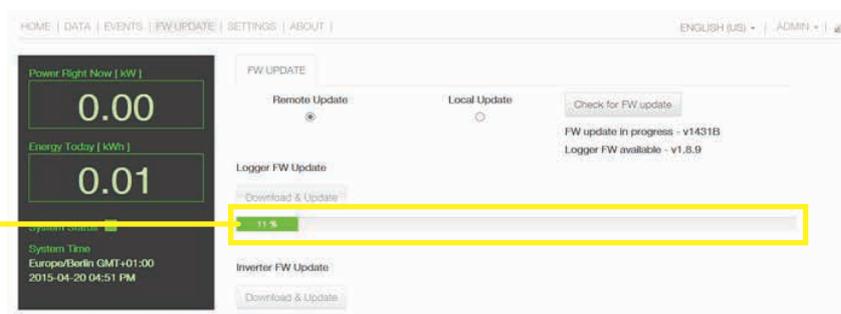
⚠ *The Firmware updating operation (particularly regarding the inverter), can require a considerable amount of time. This can range from a few minutes up to an hour. Always wait for the procedure to finish completely and do not disconnect the inverter from the power source until the procedure has been completed successfully!*

Local update

Files with the .tib or .ben extension must be loaded into a local folder on the Wi-Fi device which the user is using to navigate the user interface pages of the VSN300 board

As an alternative to the procedure using the Internet, or for boards configured in «AP Mode», the board or the inverter can be updated via an upload from a local device.

To upload the .tib or .ben file of the Firmware click on «Upload FW file». Once the user has reached the local folder containing the .tib or .ben file, select this file and start transferring it into the memory of the VSN300 board by clicking on «OPEN».

If the transfer fails, the message «File Upload failed» will appear below «Upload FW file».

The file upload can fail for a number of different reasons, usually due to the Wi-Fi network connection. Make sure that the device used for the upload is quite close to the router or the inverter and that the Wi-Fi signal is not too weak. Also ensure that the file you are attempting to transfer is the file which has been officially released by FIMER and that it is not corrupted. The «UPDATE» key is disabled until the file has been transferred completely. If an error continues to appear, contact FIMER technical department for further information.

Once the upload has been completed successfully, the update stage can be launched, i.e. the new FW can be installed by clicking on «UPDATE».

Choose from Firmware update via access to the FIMER remote servers or by loading into the internal memory of the local device

Upload from the local device and update the Firmware of the VSN300 board

Upload from the local device and update the Firmware of the inverter

Upload the file containing the updated Firmware from the local device and start the transfer
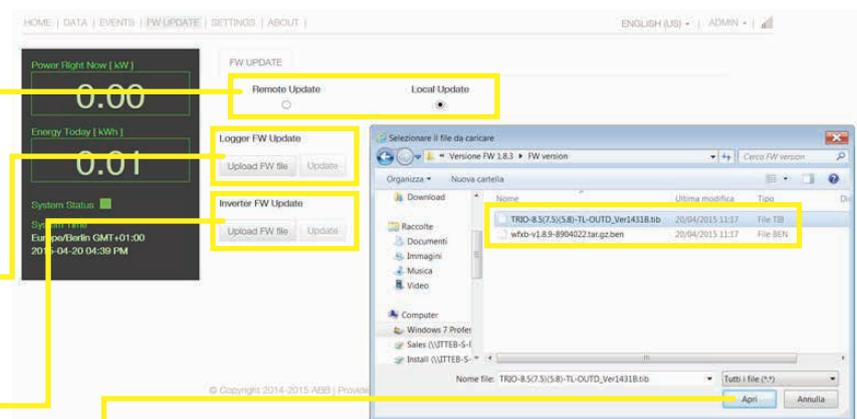
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During the Firmware updating process, a progress bar allows the user to see a percentage of the process completion. At the end of the update, the updated device will automatically restart.

Firmware update progress bar
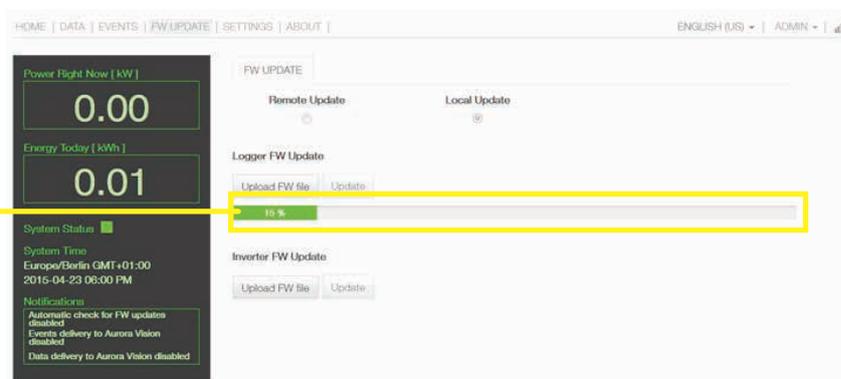
⚠ *The Firmware updating operation (particularly regarding the inverter), can require a considerable amount of time. This can range from a few minutes up to an hour. Always wait for the procedure to finish completely and do not disconnect the inverter from the power source until the procedure has been completed successfully!*

General conditions

Routine and periodic maintenance operations must only be carried out by specialized staff with knowledge of how to perform these tasks.

Maintenance operations must be performed with the apparatus disconnected from the grid (power switch open) and the photovoltaic panels obscured or isolated, unless otherwise indicated.

For cleaning, DO NOT use rags made of filamentary material or corrosive products that may corrode the equipment or generate electrostatic charges.
Avoid temporary repairs. All repairs should be carried out using only genuine spare parts.
The maintenance technician is to promptly report any anomalies.

DO NOT allow the equipment to be used if problems of any kind are found.

Always use personal protective equipment (PPE) provided by the employer and comply with local safety regulations.

Troubleshooting

Problem	Possible causes	Solution
The integrated WUI cannot be accessed	ADMIN or USER password forgotten	Reset the passwords by clicking on "Forgot your password"; The passwords can be reset after having entered the board "Product Key"
The VSN300 card is able to identify a Wi-Fi network but is unable to connect to it	The signal between the VSN300 board and the Wi-Fi router to which the board wants to connect is too weak	Modify the position of the antennas, the boards or the router
		Make sure that the board has not been installed near obstacles which could affect the communication with the Wi-Fi router (for example: metal cages or walls, walls in reinforced concrete, electromagnetic fields)
		Move the VSN300 board as close as possible to the router
		Install a Wi-Fi signal repeater in order to extend the network to which the board is to be connected; then connect the VSN300 board to the repeater
	The Wi-Fi network to which the VSN300 board is to be connected, could require the user to enter a username and password to allow navigation (for example, with a public Wi-Fi network or a hotel).	Unfortunately the VSN300 board cannot be connected to these types of Wi-Fi networks. Connect the VSN300 board to an alternative Wi-Fi network
The VSN300 board has not identified the Wi-Fi network to which connection is required	Some initial FW versions (prior to 1.7.7) could find it difficult to identify or access Wi-Fi networks whose SSID have spaces in the name	Update the VSN300 board FW or attempt to modify the SSID of the WI-Fi network to which the board is to be connected (for example, replacing the spaces with "_")
	The Wi-Fi network to which the VSN300 board is to be connected, is set so as not to be identified (hidden network)	The VSN300 board is not able to connect to a hidden network. Set the Wi-Fi network to which the board is to be connected (visible network), then identify and connect the VSN300 board to the Wi-Fi network as normal.
The VSN300 board does not communicate correctly with the inverter inside of which it is installed (inconsistency in the detected data read by the board), or when working in "Access Point Mode", connection to its internal WUI is not in any way possible	The Inverter Firmware version is not amongst those which have been identified as compatible with the VSN300 board	Update the inverter FW;
	The Communication Board of the inverter could be damaged	Request a service intervention to check that the inverter Communication Board is working correctly
Alternating difficulties in the local connection to the WUI of the VSN300 board	The inverter, and therefore the VSN300 board, might not be correctly powered (for example, if the inverter is switched off at night, the WUI of the board cannot be accessed)	Access to the WUI of the board only when powered correctly
	The Wi-Fi connection signal between the device in use and the router or the VSN300 board, may not have sufficient power or it may be disturbed by obstacles which affect the communication	Make sure that the signal between the Wi-Fi devices which interact with the board are sufficiently high and that any obstacles such as metal cages or walls, walls in reinforced concrete or strong electromagnetic fields do not affect communication

Problem	Possible causes	Solution
Although the VSN300 board has been installed correctly in "Station Mode" and works correctly on the local network, no data has been transmitted to the Aurora Vision®	The MAC address used to register the logger on the Aurora Vision® platform is not the same as the actual address associated with the VSN300 board which is installed	Make sure that the MAC address registered on the Aurora Vision® platform is actually the one associated with the VSN300 board installed. If it is not, modify the registered MAC address
	The Wi-Fi network to which the VSN300 board is connected, could be protected by a Firewall which prevents the remote exchange of data with the Aurora Vision® platform	Contact the network administrator in order to have the Firewall configured so that the remote exchange of data between the VSN300 board and the Aurora Vision® platform is allowed
It is not possible to access the WUI of the board when the board is operating in "Station Mode – DHCP"	An incorrect dynamic IP address is being used to access the WUI or the IP address could have been modified by the Wi-Fi router to which the bard is connected	Access the WUI of the VSN300 board using its "Host Name" (the DNS service must be enabled);
		If possible, access the pages of the Wi-Fi router web server to which the board is connected and read the new dynamic IP address assigned to the VSN300 board
		Switch off the Wi-Fi router to which the board is connected so as to force the board to operate in "AP mode". It will then be possible to access the internal WUI via the static IP address 192.168.117.1 and, once inside, configure the board in "Station Mode – DHCP" taking note of the newly assigned dynamic IP address

Event codes

Wi-Fi board events

Event code	Event
I003	New inverter identified
I005	Start
W017	Incorrect logger credentials
W018	Incompatible access point
W019	Wi-Fi not in the list
W020	Wi-Fi not permitted
W021	Problem with communication with the gateway
W022	No internet connection
W023	Wi-Fi network scan timed-out
W024	Communication problems with the portal for the update
W026	Clock not synchronised
W030	Incorrect Wi-Fi password
W031	Communication problems with the portal for data transmission
E030	Poor Wi-Fi connection

Inverter events

Event code	Event
W502	Production warning zero
E501	Inverter communication error

Storage and dismantling

Storage of the equipment or long period of non-use

If the equipment is not being currently used or is to be stored for a long period of time, check that it is correctly packed and contact FIMER for storage instructions.
The equipment must be stored in well-ventilated indoor areas and in an enviroment that doesn't damage the components of the equipment.

Restarting after a long period of non-use requires the equipment be inspected and, in some cases, the removal of oxidation and dust will be required that has settled inside the equipment.

Dismantling, decommissioning and disposal

FIMER CANNOT be held responsible for disposal of the equipment (displays, cables, batteries, accumulators, etc.). The customer must dispose of these substances, which are potentially harmful to the environment, in accordance with the regulations in force in the country of installation.

If the equipment is dismantled, in order to dispose of the products that it is composed of, you must adhere to the regulations in force in the country of destination to avoid a hazardous disposal situation.

Dispose of the various types of materials that are part of the equipment at facilities that are suitable for the purpose.

Table: disposal of components

COMPONENT	CONSTRUCTION MATERIAL
Frame, brackets, supports	Arc-welded steel FE37
Casing or covers	ABS, plastic
Paint and	RAL
Gaskets and seals	Rubber / Teflon / Viton
Electrical cables	Copper / Rubber
Conduits	Polyethylene / Nylon
Back-up battery	Nickel / Lead/ Lithium

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