ABB Solar inverters

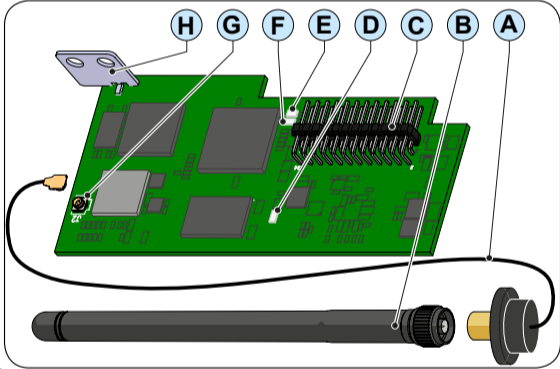# Quick installation guide
VSN300 WIFI LOGGER CARD

EN

In addition to the notes below, please read and follow the safety and installation information provided in the installation manual. The technical documentation for the product is available on the website www.abb.com/solarinverters
This equipment must be used following the guidelines provided in the manual.

ABB

1.

*Before installing the VSN300 Wifi Logger Card it is strongly recommended to previously read both the present Quick Installation Guide (QIG) and the product manual (available on ABB official web site www.abb.com/solarinverters.
The present QIG refers to VSN300 Wifi Logger Card in FW version 1.8.x on.

The VSN300 WIFI LOGGER CARD printed circuit board will be marked with the following information, identifying the product:
- Manufacturer Mark/Trade Mark
- CE (European Union) Marking
- RCM (Australia) Marking
- FCC ID
  The FCC ID is FCC ID: X6W-3N16E when the VSN300 WIFI LOGGER CARD is assembled with a Wi-Fi radio module supplied by Epcos
  The FCC ID is FCC ID: X6W-3N16M when the VSN300 WIFI LOGGER CARD is assembled with a Wi-Fi radio module supplied by Murata
  A dedicated label including the FCC ID must be placed in a visible position on the exterior of the Inverter host equipment

Contains FCC ID: X6W-3N16E	Contains FCC ID: X6W-3N16M

FCC (Federal Communications Commission) WARNING
1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation
2. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in any particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
3. RF Exposure. This device complies with Part 2.1091 of the FCC Rules for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the antenna and the user.
  Refer to the specific section describing procedures how to integrate and use this device into the host fixed mount inverter.
Changes or modifications made to this equipment not expressly approved by the Manufacturer may void the FCC authorization to operate this equipment.
The identification label contained on the VSN300 WIFI LOGGER CARD box has information regarding the device and manufacturer.

- Manufacturer name → **ABB**
- Model name → **VSN300 WIFI LOGGER CARD**
- Serial Number composed of:
  YY = Year of production
  WW = Week of production
  SSSSSS = progressive number → **SN: YYWWSSSSSS**
- VSN300 WIFI LOGGER CARD Mac address → **MAC: XX:XX:XX:XX:XX:XX**
- Product Key composed of 16 characters used to activate the VSN300 WIFI LOGGER CARD → **PRODUCT KEY: XXXX - XXXX - XXXX - XXXX**

In some cases on the equipment, dangerous or hazardous zones are indicated with signs, labels, symbols or icons.

Symbols and icons

Always refer to instruction manual	General warning - Important safety information	Hazardous voltage	Hot surfaces
IP65 Protection rating of equipment	Temperature range	Always use safety clothing and/or personal safety devices	Time needed to discharge stored energy

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2.

The VSN300 WIFI LOGGER CARD allows for connection of the inverter to a local LAN Wi-Fi network via a wireless connection.
The VSN300 WIFI LOGGER CARD features an integrated web server that enables establishment of a direct connection to a PC, smartphone or tablet, allowing for board configurations and local monitoring of the inverter.
When the inverter is connected to the WLAN network with Internet access, the VSN300 WIFI LOGGER CARD allows for transfer of data to the Aurora Vision® Plant Management Platform for remote monitoring purposes over an Internet browser or Mobile App (Plant Viewer for Mobile)

APPLICATION WITH VSN300 WIFI LOGGER CARD

Aurora Vision Plant Viewer for Mobile — VSN300 WIFI LOGGER CARD — Wi-Fi router — Aurora Vision® Plant Management Platform™ — INTERNET

⚠ In order to assure the correct operation of the card do not install other monitoring devices in addition to the VSN300 WIFI LOGGER CARD.
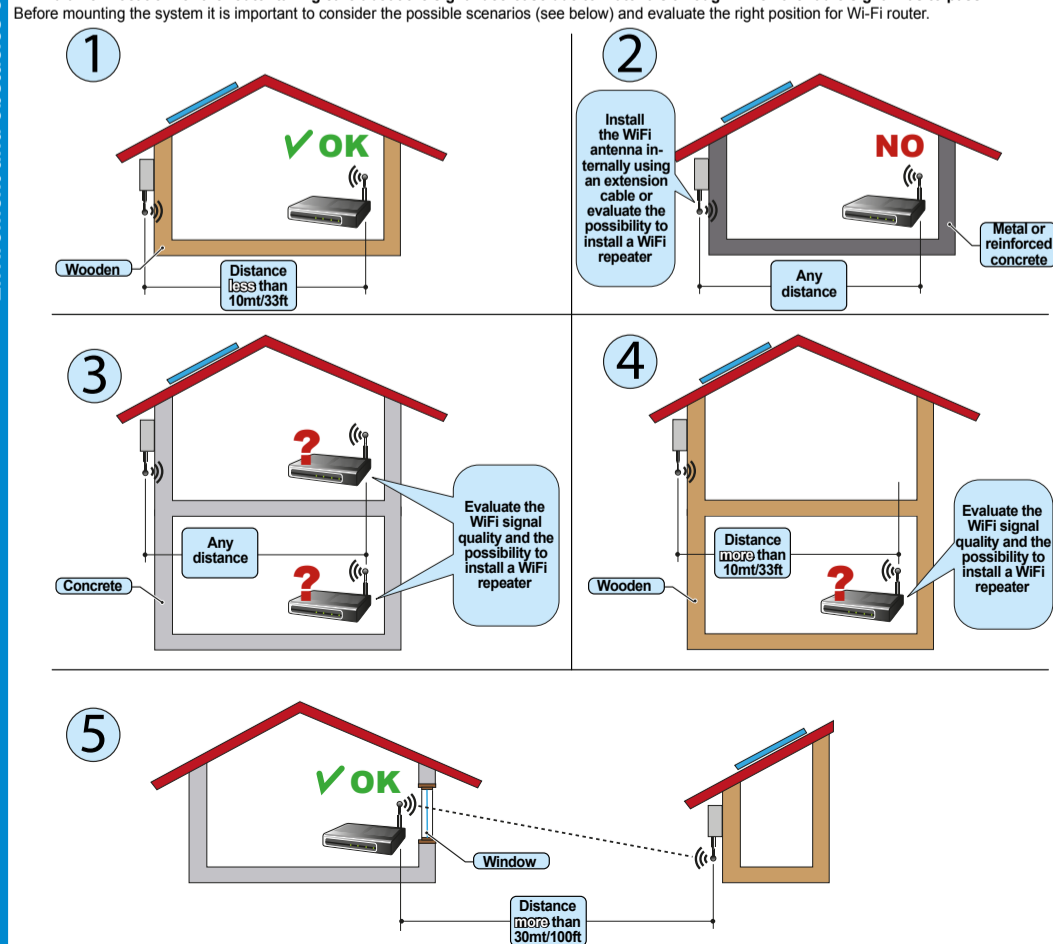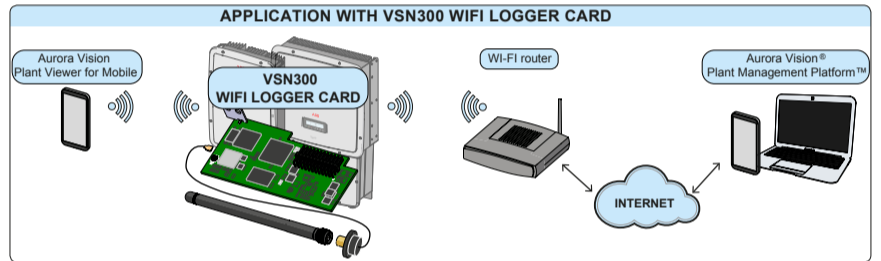

3.

The principal components of the VSN 300 WIFI LOGGER CARD are shown in the figure and described in the following table:

Main components	
Ⓐ	Antenna connection cable
Ⓑ	Antenna (RF Technology Corp. Model EA-79 F RP SMA)
Ⓒ	Connection terminals
Ⓓ	Power LED
Ⓔ	Status LED 2
Ⓕ	Status LED 1
Ⓖ	Coaxial connector
Ⓗ	Mechanical mounting bracket

4.

The communication among VSN300 WIFI LOGGER CARD and router is based on WiFi signal that could be limited by obstacles and distance.

⚠ The device must be kept away from large metal objects and electrical devices with strong magnetic field to ensure a good communication quality.

The radio signal level between WIFI LOGGER CARD and router can be increased in different ways:
1. Change the direction of the antenna.
2. Find a new location for the router taking care about the signal decrease due to materials through which the radio signal has to pass:
Before mounting the system it is important to consider the possible scenarios (see below) and evaluate the right position for Wi-Fi router.

① ✔OK — Wooden — Distance less than 10mt/33ft

② Install the WiFi antenna internally using an extension cable or evaluate the possibility to install a WiFi repeater — NO — Any distance — Metal or reinforced concrete

③ Any distance — Concrete — Evaluate the WiFi signal quality and the possibility to install a WiFi repeater

④ Distance more than 10mt/33ft — Wooden — Evaluate the WiFi signal quality and the possibility to install a WiFi repeater

⑤ ✔OK — Window — Distance more than 30mt/100ft

The distances indicated in the below examples are between WIFI LOGGER CARD and the router.

5.

The package contains all the components required to correctly install and connect the VSN300 WIFI LOGGER CARD:

| Main components	Quantity	Main components	Quantity
Locking screw	1	Contains FCC ID: X6W-3N16E / or / Contains FCC ID: X6W-3N16M — FCC ID label	1
Plastic lock nut	1	ABB VSN300 WIFI LOGGER CARD SN: YYWWSSSSSS MAC: XX:XX:XX:XX:XX:XX PRODUCT KEY: XXXX - XXXX - XXXX - XXXX — Identification label	1
Adapter kit (gasket and adapter)	1 + 1	Standoff for installation on inverters equipped with arc fault device	1
Antenna connection cable	1	Technical documentation	
WIFI antenna	1		
Cable Tie	1		

6.

Preliminary operation

⚠ The inside of the inverter may be accessed only after the inverter has been disconnected from the grid and from the photovoltaic generator.

⚠ The VSN300 WIFI LOGGER CARD must be installed only by trained professional installers

- Turn off the inverter by physically disconnecting the AC and DC voltages, as well as any voltage connected to the multifunction relay.

⚠ Wait for the amount of minutes according to the indication on the inverter's label in order to allow discharging any stored energy in the inverter and use safety clothing and/or personal protective equipment
- Open the inverter front cover.

Antenna installation

The antenna must be installed outside the inverter in place of a service cable gland (size M20)
- Remove one of the M20 service cable glands of the inverter (using a 25mm wrench).

- Pass the antenna connection cable into the inverter by passing it through the M20 cable gland opening, the gasket, the plastic lock nut and the adapter (If used).

- Attach the antenna bulk head connector to the inverter using the supplied plastic lock nut (torque 5N-m). For some inverter models (UNO-2.0/2.5-I-OUTD and TRIO-5.8/7.5/8.5-TL-OUTD) it will be necessary to use the adapter kit due to the greater thickness of the inverter enclosure. In this case, proceed as follows:
  - Install the gasket on the adapter
  - Attach the adapter to the inverter using the plastic lock nut (torque 5N-m).
  - Pass the antenna connection cable into the inverter by passing it through the M20 cable gland opening, the adapter, the gasket and the nut.
  - Attach the antenna bulk head connector to the adapter (torque 5N-m).

- Screw the antenna on the support
  ⚠ Use only antenna type RF Technology Corp. Model EA-79 F RP SMA, or a similar type having equal or lesser gain

Installation without adapter	Installation with adapter
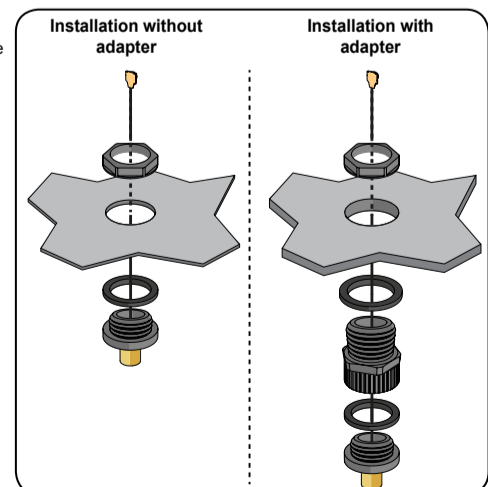
VSN300 WIFI LOGGER CARD Installation

- Connect the antenna cable to the coaxial mating connector present on the card.
  ⚠ During this step, pay special attention to aligning the terminal of the antenna cable with the mating connector.
 Do not apply pressure on the terminal if it is not aligned with the mating connector.
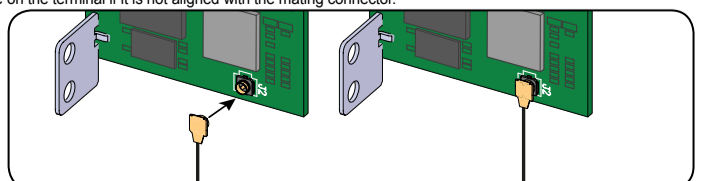
- Install the card by inserting the connection terminals in the dedicated connector on the inverter board. The connection on the inverter board can be composed of one (A) or two (B) different connectors depending on the inverter model.

⚠ During this step, confirm that all the terminals are correctly aligned. Any terminal misalignment may result in damage to the card and/or to the inverter.

A

B

Installation with single connector

Installation with double connector
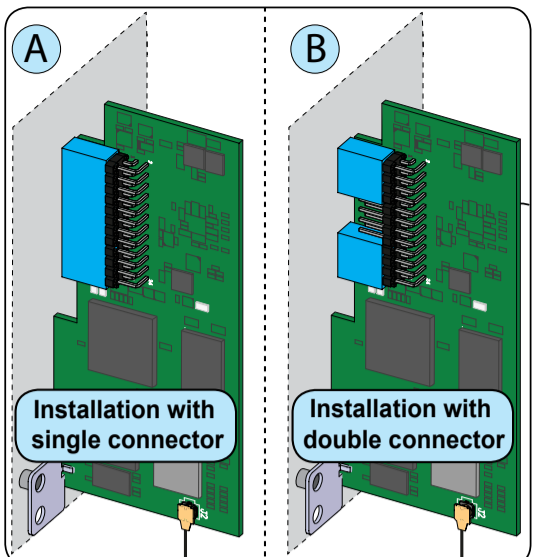
- Tighten the locking screw to attach the card to the inverter (this screw secures the mounting bracket to the anchor point on the inverter) and tie the antenna connection cable to the hole on the mounting bracket using the cable tie:

1   2   3
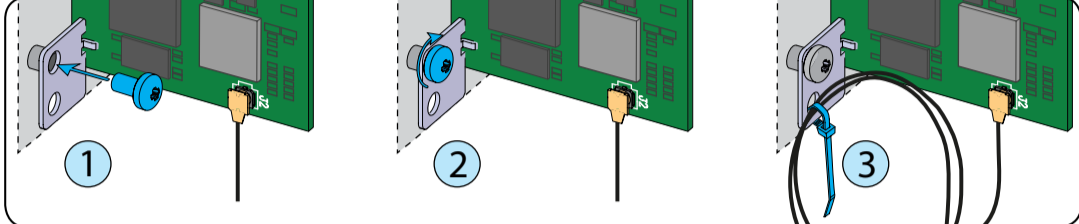
- Special note for installation on inverter equipped with arc fault device:
  In these type of inverter is necessary to install a standoff (supplied with the equipment) under the mechanical mounting bracket.

Installation with arc fault connection board
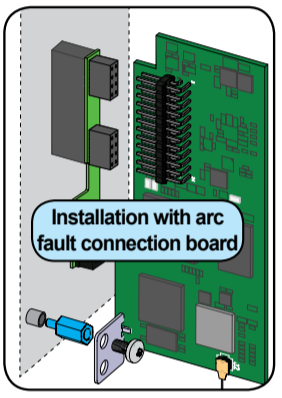
- At the end of installation phase, apply the following labels:
  - FCC Label. This label is supplied with the VSN300 WIFI LOGGER CARD and must be appiled near the Regulatory label of the inverter. The FCC label contains the FCC ID of the VSN300 WIFI LOGGER CARD.
  - Identification label. This label is necessary to remember all the identification data of VSN300 WIFI LOGGER CARD and it should be applied in the dedicated area (see paragraph 10).

5. Switch the Wi-Fi connection of the tablet/smartphone/PC to the "Home" WLAN network to which the VSN300 WIFI LOGGER CARD is connected.
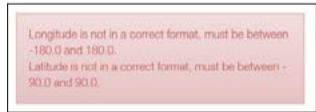

5

6. Type the IP address previously obtained in step 4d. of the configuration wizard (in this example 192.168.0.100) on an internet browser.

6

   If for any reason you lost the IP address assigned to the VSN300 (step 4d) you can continue the configuration wizard by executing one of the two following operations:
   -. Using VSN300's host name in place of just assigned IP address
   ⚠ Further information about host name associated to VSN300 are provided in the product manual available on ABB website (www.abb.com/solarinverters monitoring and communication section)

   -. Recovering the just assigned IP address by consulting the "Home" Wi-Fi router's internal configuration pages.
   Please consult the documentation related to the "Home" Wi-Fi router for further details on how to access its configuration pages.

7. Fill in the site information
These values are the same for all cards on the site and are shared with Aurora Vision® from which it is possible to update these values at a later time.
If the data are not in the correct format a warning message will be displayed

7

Longitude is not in a correct format, must be between -180.0 and 180.0.
Latitude is not in a correct format, must be between -90.0 and 90.0.

8. Create the credentials (the password is not mandatory) of the **guest** user
   Users who log in as a "guest" can open and view the contents of your site. However, they will not be able to make any changes

   ⚠ Take note of the credentials you decide to use for the guest user login.

8

9. Create the credential (User Name and Password) of the **admin** user
   Users who log in as an "admin" can open and view the contents of your site. Additionally, they can make changes to your settings.

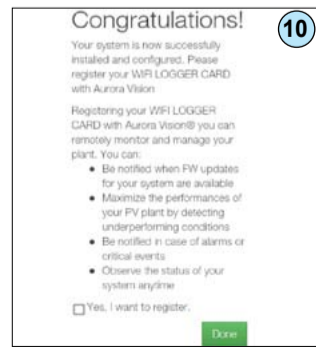   ⚠ Take note about the credentials you decide to use for the admin user login.

9

10. End of the procedure. The system is now setup.

   If you already have an Aurora Vision® account click "done" and go to next step.

   If you do not have an Aurora Vision® account, check the box "Yes, I want to register" and click on "done". You will be redirected to the Plant Viewer registration procedure


10

11. Insert the Aurora Vision® access credentials.

11

8.

The VSN300 WIFI LOGGER CARD is equipped with 3 status LEDs that can behaves as follows:

LED	LED Behavior	Description
D	Blinking	Card powered
E F	Flashing green and yellow, together	Initializing Data Partition
E F	Alternating green and yellow, flashing	Start-up phase
E	Solid green	Attached to WLAN
F	Solid yellow	Provisioning Access Point Enabled
E F	Both green and yellow flash together 3 times	Inverter Serial Number Acquired

F E D
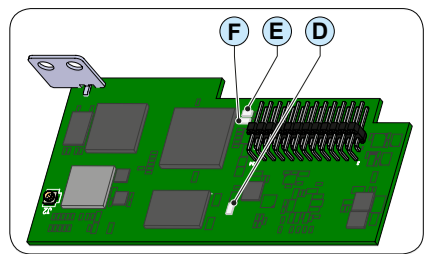
9.

Provisioning of the VSN300 WIFI LOGGER CARD via Web Browser

⚠ The first configuration of the VSN300 can also be performed using a smartphone or a tablet running the Mobile App Plant Viewer for Mobile.
The provisioning or local monitoring is only going to work during daylight hours when the inverter has DC power.

1. Turn on the inverter by physically connecting the AC and DC voltages. The VSN300 WIFI LOGGER CARD will automatically power up and after 60 seconds, acts as an access point, detectable by a tablet, smartphone or PC.

2. Activate the Wi-Fi connection on the tablet/smartphone/PC and connect it to the WLAN network established by the WIFI LOGGER CARD, ABB-SSSSSSS-PPPP-WWYY, where:
   SSSSSS = Inverter serial number
   PPPP = Inverter part number
   WW=Week of production of the inverter
   YY=Year of production of the inverter

2

3. Type the default IP address 192.168.117.1 in an internet browser

3

4. Insert all the information required by the configuration wizard:

   4a. Select the language

4a

   4b. Verify that the time zone of the installation site is correct or insert if it is missing.


4b

   4c. The VSN300 is able to operate in two different modes of operation:
   • "AP mode" (access point): in this mode is enabled local monitoring only. The card behaves like an "access point" generating a wireless network to which the user can connect to monitor its inverter / PV plant locally, through the Plant Viewer Mobile App for Mobile or through direct access to the Web User Interface (WUI) built-in card;
   • "Station Mode": this mode is used to send data to the cloud platform, Aurora Vision, allowing remote access. Select the "Home" WLAN network and connect the VSN300 and insert the password to enable this mode. In this operation mode two different methods of assigning an IP address can be selected: DHCP or static.

   "Station Mode" operation mode combined with DHCP IP address assigning method are strongly recommended in most installations.
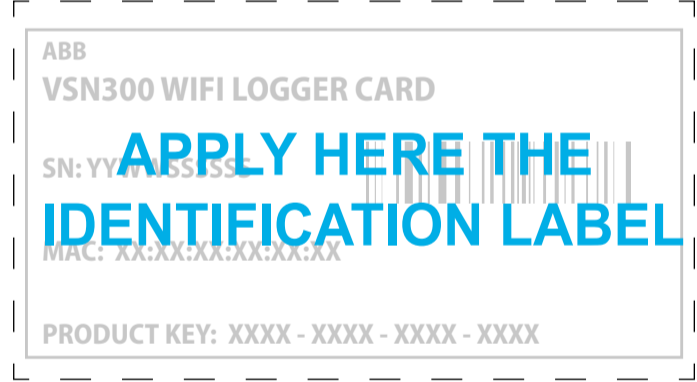

4c

   4d. When the VSN300 WIFI LOGGER CARD is connected to the "Home" network, the IP address assigned to the VSN300 will be displayed by the wizard. Take note of this IP address, as it will be used in the commissioning procedure below.

   ⚠ ATTENTION: be advised that the IP address just assigned to VSN300 is foundamental to continue the installation wizard. Please take note of it before continuing.

   ⚠ The device used to perform the commissioning of the VSN300 must be connected to the "Home" WLAN network before continuing the configuration process described in the next steps.
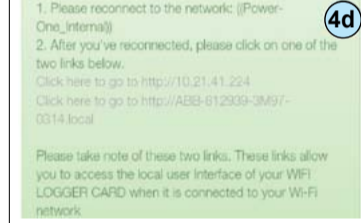
4d

10.

This label is necessary to remember all the identification data of VSN300 WIFI LOGGER CARD and it should be applied in the dedicated area shown below.

ABB
VSN300 WIFI LOGGER CARD
SN: YY~~WWSSP~~SS
APPLY HERE THE IDENTIFICATION LABEL
MAC: XX:XX:XX:XX:XX:XX
PRODUCT KEY: XXXX - XXXX - XXXX - XXXX

⚠ *Save these instructions! The information on the above label will be used by Technical Service in case of problems.*

11.

	VSN300 WIFI LOGGER CARD
Communication	
Inverter interface	Hyperlink (CAN@1 Mbps + RS485@115 kBaud) / Legacy (Serial link 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)
Monitoring	
Web user interface (WUI)	Integrated
Local monitoring	Wirelessly allowed via any Wi-Fi® device connecting the integrated WUI or running Plant Viewer for Mobile
Remote monitoring	Plant Portfolio Manager ® / Plant Viewer™ / Plant Viewer for mobile
Data Logging Specifications	
Data sampling rate	High frequency data sampling (less than 1 minute average)
Local data storage	Log data for 30 days based on 15-minute intervals
Upgradeability	Remotely via Aurora Vision® Plant Management Platform / locally via integrated Web User Interface [1]
Advanced functionalities	
Remote O&M operations	Inverter's parameter setting [2] / inverter's firmware upgrade [2]
Smart grid functionalities	Grid control power-management enabled [2]
Power Supply	
DC power consumption	~ 2W
Environmental Parameters	
Ambient temperature range	[-20; +85]°C
Environmental protection	IP 20
Relative humidity	<85% Non-condensing
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)
Mounting system	Inverter's expansion slot
Compliance	
Marking	CE / RCM / Wi-Fi Certified™
Emissions	47 CFR FCC Part 15 Subpart C, EN 55022 Conducted and radiated emission
Immunity	EN55024

1. Available from FW version FW 1.8.x
2. Check for availability
Remark. Features not specifically listed in the present datasheet are not included in the product

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Contact us

www.abb.com/solarinverters

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