ABB solar inverters

# Quick Installation Guide
# PVI-USB-RS232_485

EN


In addition to what is explained below, the safety and installation information provided in the installation manual must be read and followed. The technical documentation and the interface and management software for the product are available at the website.
The device must be used in the manner described in the manual. If this is not the case the safety devices guaranteed by the inverter might be ineffective.

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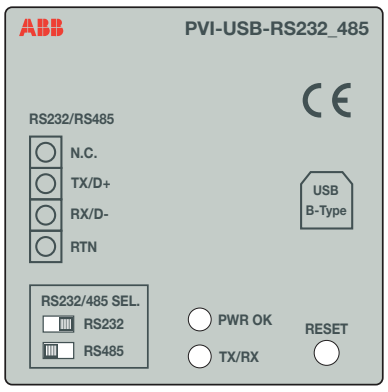
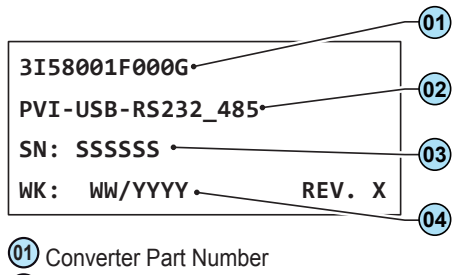
## 1. Labels and Symbols

The labels on the converter have the Agency marking, main information, identification of the equipment and manufacturer




01 Converter Part Number
02 Converter model
03 Converter Serial Number
04 Week/Year of manufacture

The labels attached to the equipment must NOT be removed, damaged, dirtied, hidden,etc...
In the manual and/or in some cases on the equipment, the danger or hazard zones are indicated with signs, labels, symbols or icons.

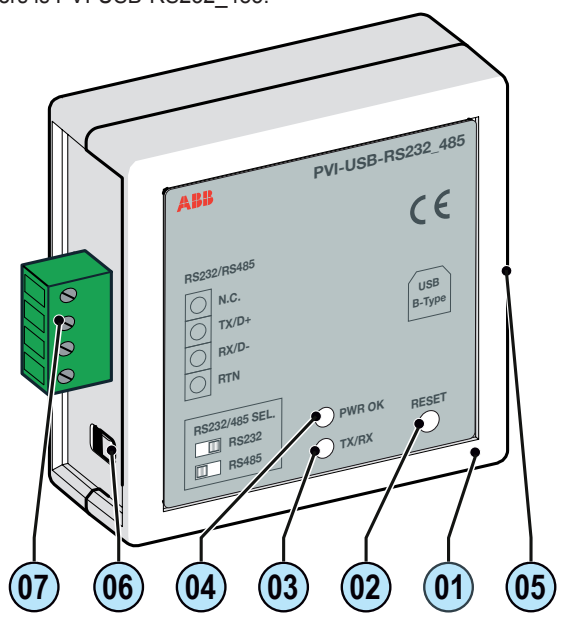
| | | | |
|---|---|---|---|
| Always refer to instruction manual | General warning - Important safety information | Hazardous voltage | Hot surfaces |
| IP20 Protection rating of equipment | Temperature range | Always use safety clothing and/or personal safety devices | Point of connection for grounding protection |

## 2. Converter Models and Components

The model of converter to which this guide refers is PVI-USB-RS232_485.

**Main components**

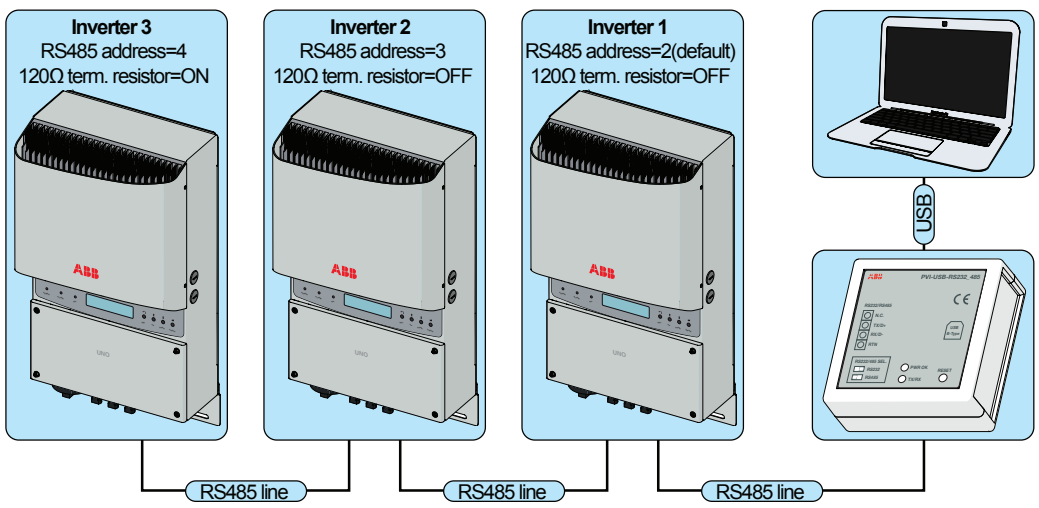
01 PVI-USB-RS232_485 converter
02 Reset button
03 "TX/RX" Led
04 "PWR OK" Led
05 USB port Type B (laterally)
06 Switch for the RS232 or RS485 serial line setting
07 Serial line connector




## 3. Rules for the creation of the RS485 communication line

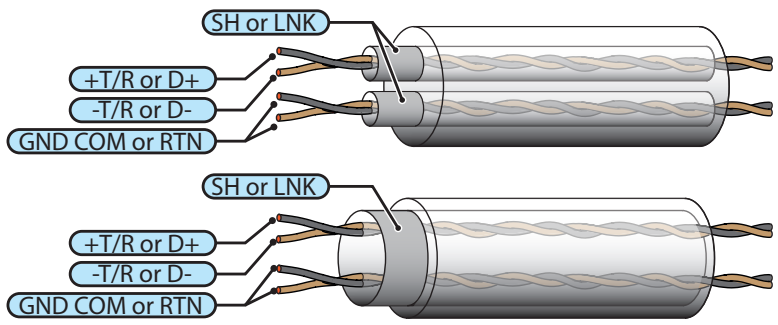
- Connect all the units to the RS485 chain according to the "daisy-chain" scheme observing the correspondence between signals (refer to inverter product manual)
- In the last unit of the chain, activate the ending resistance of the communication line through the switching of the dip-switch dedicated
- Set on each inverter of the chain an RS485 exclusive address (a different address for each inverter)
- The communication line must not exceed 1000m length

In case of communication lines are especially long, it is advisable to/ it could be necessary the use of signal amplifier which has to be installed along the communication line




**Characteristics of application cables for the creation of the RS485 communication line**
The cable which must be used to create the serial communication line RS485 must have the following characteristics:

| Section | Max. Length | Characteristic impedance | Specific capacity |
|---|---|---|---|
| Min. AWG24 / 0.25mm² | 1000mt | 120Ω | Included between 50 and 100pF/mt |

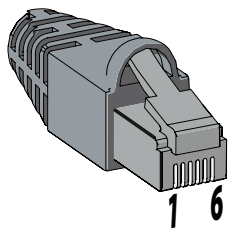



## 4. Connection to the RS485 line

Inside the inverters the connection to the RS485 line can be made indifferently through the couple of connector RJ12/RJ45 (one for the input and one for the output of the RS485 line) or through the terminal block.

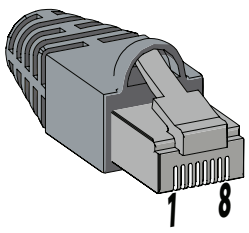
- In case of terminal block it must be used RTN(or GND COM), +T/R (or D+) and -T/R(or D-) terminals.
- In case of RJ12/RJ45 connector the plugs you have to use must be wired accroding to the scheme in following table:

**Crimping scheme of RJ12 connectors**



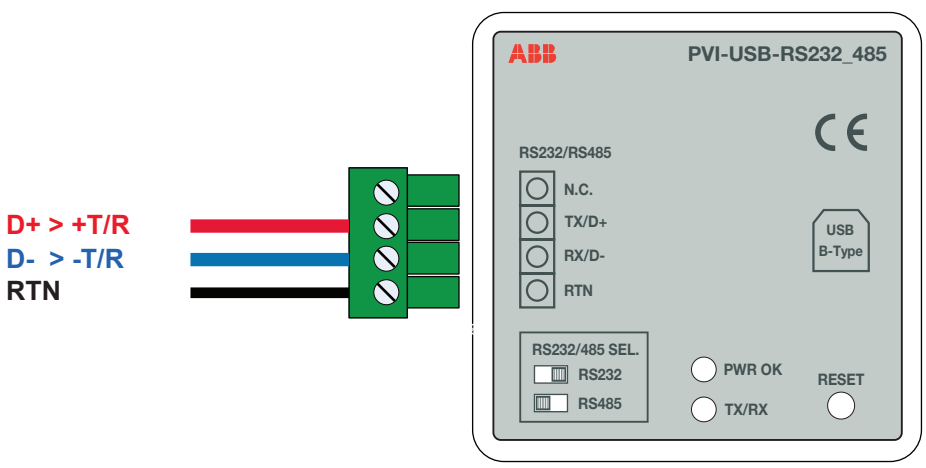

| Pin N° | Function |
|---|---|
| 2 | +T/R or D+ |
| 4 | -T/R or D- |
| 6 | RTN or GND COM |
| 1, 3, 5 | not used |

**Crimping scheme of RJ45 connectors**

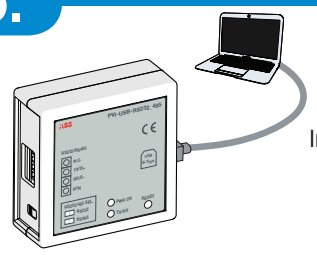



| Pin N° | Function |
|---|---|
| 3 | +T/R or D+ |
| 5 | -T/R or D- |
| 7 | RTN or GND COM |
| 1, 2, 4, 6, 8 | not used |

The connection of the RS485 serial line to the converter PVI-USB-RS232_485 is made on the terminal board with 4 poles:
To the terminal D- must be connected the terminal -T/R or D- coming from the inverter
To the termnial D+ must be connected the terminal +T/R or D+ coming from the inverter

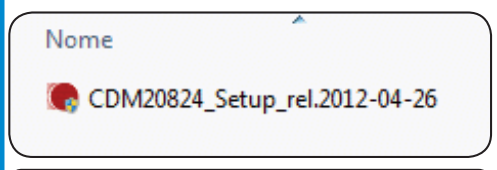


## 5. Connection to the PC

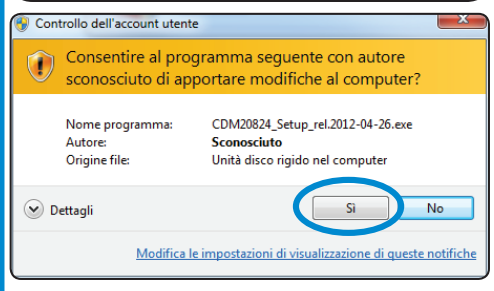


Insert the USB cable into the converter and in the PC

**Installation procedure of the USB driver for the PVI-USB-RS232_RS485 converter:**
In succession is illustrated the procedure of driver installation ver. 2.08.24 issued on the provider website the 26/04/2012. For the last version of the driver and for the compatibility with the most common operating systems, we refer to the table at the end of the procedure.

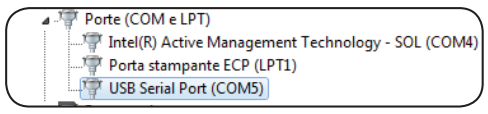



1. Launch the file CDM20824.exe

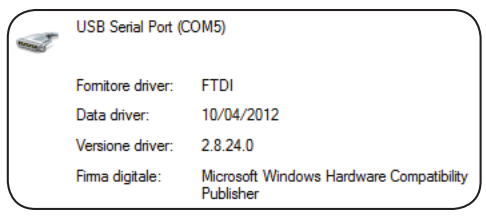



2. Click on "Yes"


3. Wait for the complete installation of the drivers




4. Connect the converter to an USB port of the PC. To verify which COM port has been assigned to the converter:
**Path for OS Windows XP**
Control panel ► System ► Hardware► Peripheral management► Port (COM e LPT).
**Path for OS Windows 7**
Control panel ► System ► Device management ► Port (COM e LPT).

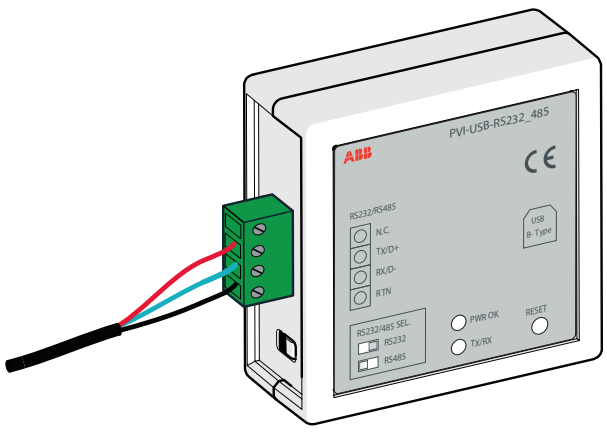



5. Making a double click on the USB port, the screen of the port properties turns on. Check on the tab "Driver" that the driver provider is FTDI and the dirver version is 2.8.24.0 of the 10/04/2012.

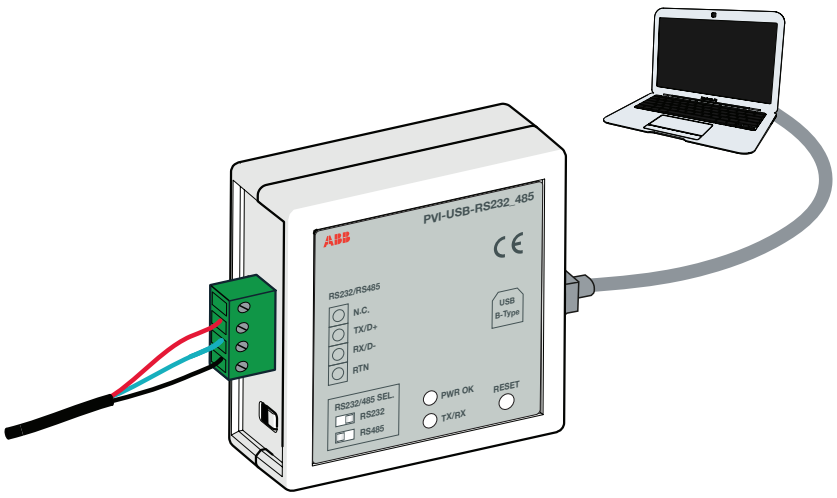
## 8. Commissioning

After connecting and laying the serial line RS485, the procedure of commissioning of the converter is the following:

- Connect the connector coming from the RS485 serial line linked to the inverters and/or stringcomb.




- Connect the USB cable to the PC and check that the green led PWR OK is on.




- Open the interface software ABB and perform the desired operations.

## Connection to the PC

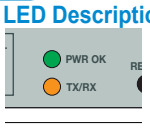
**Table of compatible drivers Ver. 2.8.24.0**

| Operative S | Device | Driver Ver. | Date |
|---|---|---|---|
| Windows Server 2008 R2<br>Windows 7<br>Windows 7 x64<br>Windows Server 2008<br>Windows Server 2008 x64<br>Windows Vista<br>Windows Vista x64<br>Windows XP<br>Windows XP x64<br>Windows 2000<br>Windows Server 2003<br>Windows Server 2003 x64 | FT2232H<br>FT4232H<br>**FT232R**<br>FT245R<br>FT2232<br>FT232B<br>FT245B<br>FT8U232AM<br>FT8U245AM | 2.8.24.0 | 10th April 2012 |

The PVI-USB-RS485_232 founds his functioning on the FTDI FT232R device.

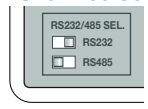
## 6. LEDs and switches

### LED Description




On the converter there are 2 LEDS:
- TX/RX : shows if the converter is communicating or not
- PWR OK : shows if the converter in supplied or not

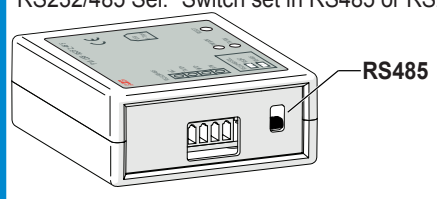
### RS232/485 Sel. Switch

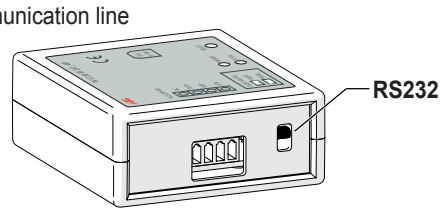



The "RS232/485 Sel." Switch allows to set the type of input signal (RS232 o RS485).

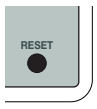
ABB inverters use the RS485 as serial communication line

"RS232/485 Sel." Switch set in RS485 or RS232 communication line




### Reset button




"Reset" button allows to restart the communication with the inverters in case of interruption

## 7. LED Behaviour

The following table shows all the possible combinations of activation of LED relating to the operation status of the converter.

| LED status | Operation status |
|---|---|
| PWR OK: ⊗<br>TX/RX: ⊗ | Converter not supplied or disconnected |
| PWR OK: ●<br>TX/RX: ⊗ | Converter supplied. Communication absent |
| PWR OK: ●<br>TX/RX: ⊠ | Converter supplied. Communication present |

● = LED on
⊠ = Flashing LED
⊗ = LED off

## 9. Characteristics and tachnical data

| | PVI-USB-RS232_485 |
|---|---|
| USB Section | |
| Standard | 2.0 |
| Connection | B-Type |
| RS485/232 Section | |
| RS485/232 Interface | can be selected by switch |
| RS485 | Half-Duplex |
| Status Led (Tx/Rx) | Yes |
| O.S. | Windows Xp, Windows 7, Linux and derived (1) |
| Power Supply | |
| Auto power supply | by USB |
| Maximum Current Absorbed | 150 mA |
| Status Led(Power On) | Yes |
| Environmental | |
| Room temperature | -25...+ 50°C / -13...122°F |
| Physical | |
| Level of environmental protection | IP 20 (Only for inside use) |
| Overall dimensions (H x L x P) | 66mm x 66mm x 28mm |
| Security | |
| Insulation | 2500 Vdc |
| Certification | CE |
| Attachments | |
| Connection cable B-type/A-type | Included |

1. For a complete list visit: http://www.ftdichip.com/Drivers/VCP.htm
**Remark. Features not specifically listed in the present data sheet are not included in the product**

**Contact us**

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