

Solar inverters
Quick installation guide
PVI-5000-6000-TL-OUTD-US (-A)

EN



In addition to what is explained in this guide, the safety and installation information provided in the technical manual must be read and followed. The technical documentation and the interface and management software for the product are available at the website.

Power and productivity for a better world™ **ABB**

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS-KEEP IN SAFE PLACE!

The installer must read this document in its entirety before installing or commissioning this equipment. The labels on the inverter carry the markings, main technical data and identification of the equipment and manufacturer. The technical data shown in this quick installation guide does not replace that shown on the labels attached to the equipment.

ABB

www.abb.com/solar
 SOLAR UTILITY INTERACTIVE
 TRANSFORMERLESS INVERTER
 MODEL: PVI-5000-OUTD-US

DC RATING (4)	
Nominal Input Operating Voltage	360 V \pm
Max. Input Voltage	600 V \pm
Range of Input Operating Voltage	90 - 580 V \pm
Range of Input Voltage @Full Power	200 - 530 V \pm
Max. Input Current	2 x 18 A
Max. Input Short Circuit Current (PV Panels)	2 x 22 A

AC RATING (5)	
Nominal Output Voltage	277 V~ / 240 V~ / 208 V~ - 1Ø
Operating Voltage Range	244-304 V~ / 211-264 V~ / 183-228 V~
Nominal Output Frequency	60 Hz (factory preset)
Operating Frequency Range	59.3 (1) - 60.5 (2) Hz
Output Power Factor	>0.995
Max. Output Current	20 A / 23 A / 27 A (rms)
Max. Continuous Output Power	5000 W @ 60°C amb.
Max. Output Overcurrent Protection	25 A / 30 A / 35 A

Operating Ambient Temperature: -25 to +60 °C (-13 to +140 °F), with Output Power Derating
 Type of Enclosure: NEMA 4X
 DC Ground Fault Detector/Interrupter is Provided
 (1) Adjustable from 57.0 Hz to 59.8 Hz
 (2) Adjustable from 60.2 Hz to 63.0 Hz
 For more details about product specifications refer to the Instruction Manual
 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.

Product nameplate labels and descriptions

1 Certification	5 AC output ratings
2 Product origin	6 Environmental data
3 Model type and number	7 Protection
4 DC input ratings	8 Adjustable parameters

Main symbols used in the guide and on the products

UL 1741; CSA-C22.2 No. 107.1-01	General warning - Important safety information
Hazardous voltage	Hot surfaces
System earth conductor (main grounding protective earth, PE)	Phase
Grounding (earth)	Direct and alternating currents, respectively

This inverter 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 a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: a) Reorient or relocate the receiving antenna; b) Increase the separation between the equipment and receiver; c) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected; d) Consult the dealer or an experienced radio/TV technician for help.

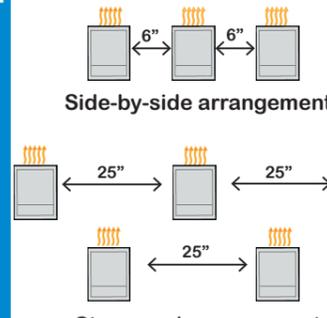
- The PV source conductors must be Listed PV wire per NEC 690.35. PV output conductors shall consist of sheathed (jacketed) multi-conductor cables or installed in an approved raceway and must be isolated from the enclosure and system grounding, as required by NEC 690.35 and is the responsibility of the installer.
- The inverter must be connected to a dedicated branch circuit provided with the maximum branch OCPD listed in the technical data table, section 13.
- To reduce the risk of fire, connect only to a circuit provided with 25A, 30A, 35A for PVI-5000 or 30A, 35A, 40A for PVI-6000, maximum branch circuit overcurrent protection in accordance with the NEC (ANSI/NFPA 70).
- All models listed have an integrated DC disconnect switch rated 600V/25A per contact.
- Maximum array DC voltage input to each MPPT circuit is 600 Vdc under any condition.

2. Installation location

- Environmental checks** - See technical data table, section 13, to check environmental parameters.
- Maximum operational ambient air temperature must be considered when choosing location. Installing the inverter where operating temperatures exceed specifications will result in power derating. It is recommended the inverter be installed within specified temperature range.
 - Exposure to direct sunlight will increase operational temperature of inverter and may cause output power limiting. It is recommended to use a sun shade to minimize direct sunlight when ambient air temperature around unit exceeds 104°F/40°C.
 - Due to acoustical noise (about 50dBA at 1 m) from inverter, do not install in rooms where prolonged presence of people or animals is expected.

Installation position

- Install on a wall or strong structure capable of bearing weight.



- Install vertically with a maximum incline of +/- 5°.
- Maintain minimum clearance measurements shown.
- Ensure sufficient working area in front of inverter for wiring box access.
- Choose a location that allows unobstructed airflow around inverter.
- Position multiple inverters side-by-side, maintaining minimum clearances.
- Multiple inverters can also be placed in staggered arrangement.
- Minimum clearances for staggered arrangements include width of inverter plus additional allowances for inverters arranged above or below.



3. Wall mounting

Components included in mounting kit

1 Wall bracket shown at right - 833F2525703-G

1 Hardware bag containing:
 4 - 6.3 x 70mm screws, washers, and S x 10 anchors
 1 - 6 x 10mm machine screw 1 - 6mm flat washer

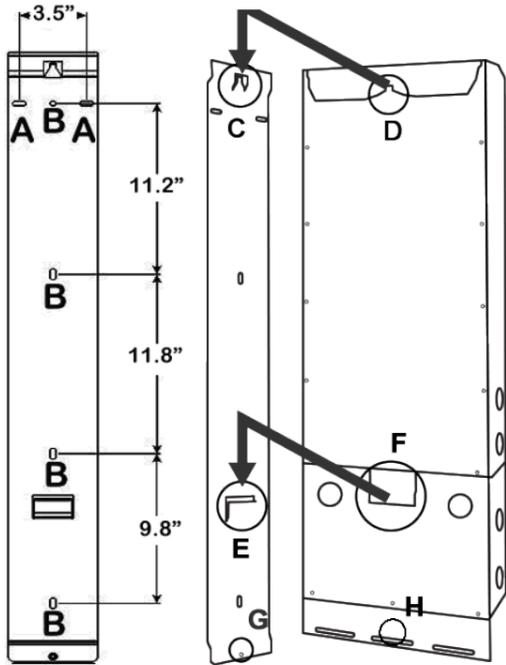
1 - Red cable AWG10 - 9153G038600

1 - Black cable AWG10 - 9153G038700

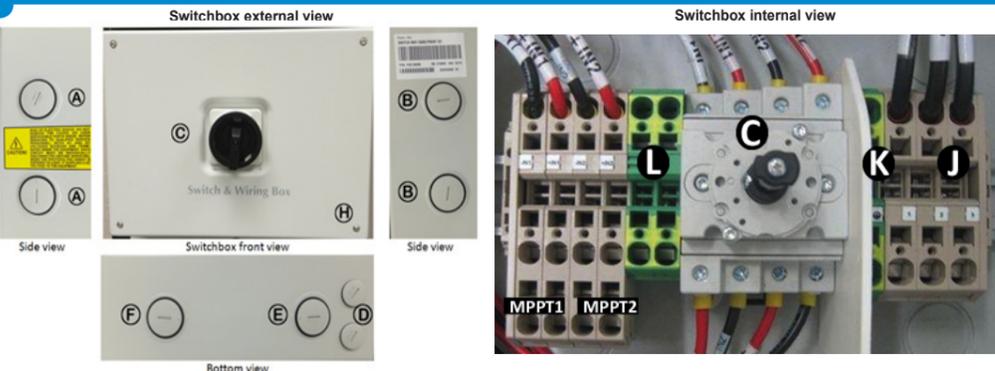
1 - Torx 20 wrench
 81510000077

2 - Terminal connectors
 82000006439-G

- Using the mounting bracket as a template, locate and mark the desired mounting location.
- Using the four screws provided, level and mount the bracket to the surface using mounting holes B.
- Two additional screws can be used in A if necessary.
- Orient the bracket such that the hooks in position C face outward and upward.
- Hang the inverter on the mounted bracket by lifting the unit up and over the mounting plate.
- Guide the inverter and switchbox brackets engaging the brackets C-D and E-F on the back of the inverter.
- Secure chassis bottom using the machine screw and washer provided through center hole H and engaging in the bracket G.
- Add additional screws as necessary through bottom flange securing to mounting surface.



4. Switchbox wiring



Switch and wiring box with AFD board mounted on din rail -A model only (label M)

A	DC conduit entry plastic threaded plugs size 1", 1-1/4"	H	Cover screws (4)
B	AC conduit entry plastic threaded plugs size 1", 1-1/4"	J	AC grid output terminals, NOTE 1
C	DC Disconnect Switch	K	AC main ground, NOTE 2
D	Signal cable opening with plastic threaded plug, 1/2" trade size	L	Array PE ground, NOTE 1
E	AC cable opening with plastic threaded plug; size 1", 1-1/4"	M	AFD board (-A only)
F	DC cable opening with plastic threaded plug; size 1", 1-1/4"		MPPT1 and MPPT2 DC array input, NOTE 1

NOTE 1: DC array wiring and ground terminals are spring pressure type and accommodate a wire size range of 16-6 AWG. AC output terminals are spring pressure type and accommodate a wire size range of 14-4 AWG. **NOTE 2:** AC ground terminals are spring pressure type and accept 16-4 AWG wire.

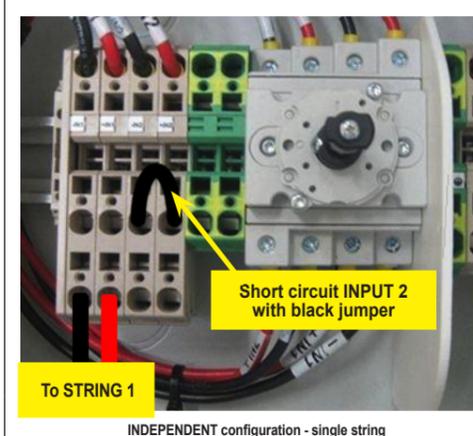
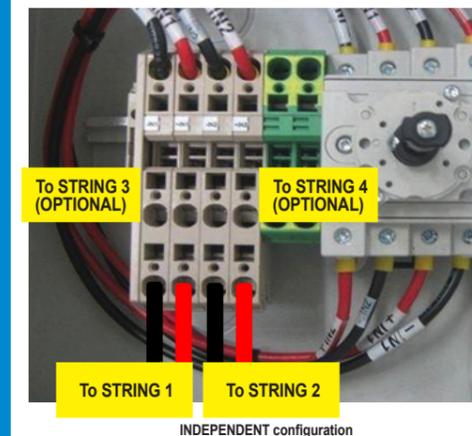
DC disconnect switch (C) disconnects the DC current from the PV panels in the "OFF" position. The inverter will stop producing power, but DOES NOT disconnect the AC from the grid. To prevent electrocution hazards, all the connection operations must be carried out with the external AC disconnect switch downstream of the inverter (grid side) open and locked out.

5. DC input connections

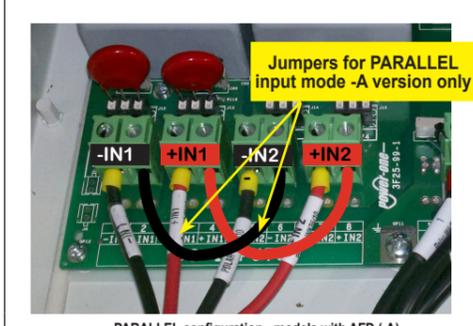
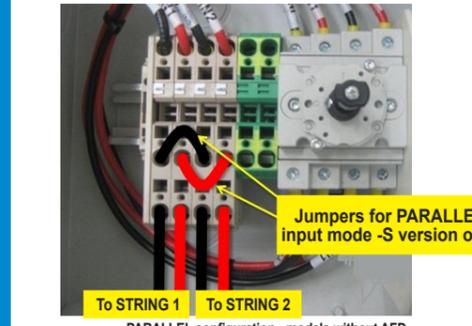
The maximum allowable input short circuit current limit of the PV array for each MPPT input channel is 22A dc. Array equipment grounding must be installed per the requirements of the NEC and is the responsibility of the installer.

- The transformerless design requires that the PV array to be floating with respect to ground per NEC 690.35.
- The inverter can be configured with two independent maximum power point tracking (MPPT) channels or as a single channel with one MPPT by paralleling the two channels.
 - Parallel two inputs when the current from PV array exceeds 22 A dc, or array power exceeds limit for single channel (section 13).
 - Switch S1, located on the inverter connection board, is used to select parallel (PAR) or independent (IND) input mode.
 - The default position of switch S1 is set in the IND mode (DOWN).
 - To access the switchbox wiring and Switch S1, loosen the four captive screws on the inverter cover and wiring box cover using the Torx wrench provided. **Before removing front covers, DC switch must be in the OFF position.**
 - When complete, re-install the front covers and tighten the cover screws with at least 1.5Nm (13.2 in-lbs) torque.
 - Use DC knockouts (section 4) to connect raceway from the PV array conduits to the DC array.

Independent mode configuration	Independent mode configuration - single string
<ul style="list-style-type: none"> Connect array to String 1 and String 2 input positions shown below, running separate wires for POS and NEG for each array. Up to four strings can be connected in the INDEPENDENT mode. To connect four strings, String 3 and String 4 are connected in addition to 1 and 2, running separate wires for POS and NEG for each array. Confirm switch S1 is set in the IND position (DOWN). 	<p>The inverter can be operated in the Independent mode from a single array by connecting to only one input channel.</p> <ul style="list-style-type: none"> Connect array to one input channel (String 1 input shown), running separate wires for POS and NEG. Short circuit the unused input not connected to a PV array (input 2 shown) using the black 10AWG jumper wire provided.



Parallel mode configuration -S version without AFD	Parallel mode configuration -S version with AFD (-A)
<ul style="list-style-type: none"> Connect array to String 1 and String 2 input positions shown below, running separate wires for POS and NEG for each array. For versions without AFD, parallel the two MPPT inputs of terminal -IN1/-IN2 and +IN1/+IN2 in the switchbox, using the two #10 AWG jumper wires provided, 1 black and 1 red. Connect the input as shown below. Confirm switch S1 is set in the PAR position (UP) 	<ul style="list-style-type: none"> When Arc Fault Detection (AFD) is installed, the paralleling must be done on the main board inside the inverter. Connect array to String 1 and String 2 input positions in the switchbox as shown at left, running separate wires for POS and NEG for each array. For -A versions only, parallel the two MPPT inputs of -IN1 and -IN2 and +IN1 and +IN2 in the inverter, using the two #10 AWG jumper wires provided, 1 black and 1 red. Connect the input as shown below and tighten with 13in-lbs torque. Confirm switch S1 is set in the PAR position (UP)



Jumpers for PARALLEL input mode -A version only

Jumpers for PARALLEL input mode -S version only

AC output overcurrent protection is not provided with the inverter; it is the responsibility of the end user to provide overcurrent protection for the AC output circuit. To prevent electrocution hazards, all the connection operations must be carried out with the external AC disconnect switch downstream of the inverter (grid side) open and locked out.

Size conductors per NEC Article 310; Use 90°C copper wire only; terminal block accommodates wire size range of 14-4 AWG. The AC grid wiring is connected through the inverter switchbox.

- Run an approved raceway between inverter and external AC disconnect switch.
- Make conduit entry through openings B or E shown in section 4.
- Connect AC wiring to switch box terminal block J and the main AC ground cable to switchbox terminal block K shown at left.
- Table at right shows AC wiring connections based on the AC grid type, (also found on a label in the switchbox).
- connect wiring to the numbered terminals based on selected grid type.

GRID STANDARD	L1			L1			L1							
	L3	L2	L1	L2	L1	L3	N	L2	L1	L3	N	L2	L1	
	208V~ 3PH - Δ - 3W			240V~ SPLIT-PHASE			277V~ 3PH - Y							
TERMINAL	1	2	3	1	2	3	1	2	3	1	2	3		
WIRE	L1*	L2*	-	L1	L2	N	N	L1*	-					
AWG #	4-8			4-10			4-10							

The default 240V-SPLIT-PHASE connection requires the grid Neutral to be connected for proper operation. Before connecting the inverter to the grid, the grid type must be selected if it differs from the default 240V-SPLIT-PHASE setting. See Section 10 for instructions to change the default. If several inverters are installed to a three-phase AC GRID, always distribute the inverters between the phases in order to reduce power imbalance between the phases.

Wiring for the RS-485 communication system and hardwired control options are routed through the switchbox (section 4) and into the main inverter chassis for termination. Alarm and monitoring connections are shown as items Q and R. Refer to the technical manual online for connections to ALARM (Q) and Rem (remote control).

The WIND terminals (±WT) are not isolated and can have hazardous voltages present. These terminals must not be utilized for any purpose in a PV installation (use with wind models only).

To connect the communication wiring, it is necessary to open the inverter cover and access the communication connections located on the main board.

- To remove the front cover of the inverter compartment, loosen the four captive screws indicated using the Torx screwdriver provided.
- When connection operations are complete, re-install the front covers and tighten the cover screws with at least 1.5Nm (13.2 in-lbs) torque to ensure proper waterproof sealing.

The RS-485 communication line connects the inverter to the monitoring devices and may be "daisy-chained" (in-out) among multiple inverters. The RS-485 connecting cables can use both the terminal connections R, as well as the RJ45 connectors S, to connect to the dedicated port.

If a daisy chain connection is required for AFD installed inverters (-A models) use standard multiconductor RS-485 cable and connect the three RS-485 leads (-RTN, +T/R, -T/R) USING ONLY THE MATING CONNECTORS.

Do not use RJ45 connectors with AFD installations.

RS-485 connectors (R)

- If terminal blocks are used, signals RTN, +T/R and -T/R have to be cabled.
- Use a cable designed for use with RS-485 communications.
- Locate mating connectors (provided in hardware bag) for the terminal block.
- Connect the three (-RTN, +T/R, -T/R) to the mating connector corresponding points.
- Attach mating connector to line up with correct signals on either upper or lower terminal rows (two parallel terminals rows are on the terminal block and two mating connectors are included).

RJ45 connectors (S)

- RJ45 connectors (1) and (2) available for the RS-485 communication are equivalent to each other and can be used interchangeably for input or output of the line to create the daisy chain connection of the inverters.
- Do not use RJ45 connectors with AFD installations.

Daisy chain connection

- Recommended length of total communication cable line for all inverters in the system is 1,000 meters (1094 yards) or less.
- Depending on type of computer used, cable line adaptor can be RS-485-RS232 or RS-485-USB.

Termination switch (S2)

- On the last inverter in a daisy chain, or on a single inverter, activate termination resistance by moving switch S2 down into the ON position.
- All other inverters in daisy chain will have the switch up in the OFF position.

Addressing each inverter

- Default setting for RS-485 address is 2 and termination switch in OFF position.
- When multiple inverters are connected in a daisy chain, it is necessary to assign a different RS-485 address to each unit. See section 10 for instruction on using the display to configure settings.

DAISY CHAIN CONNECTION

P	Input Mode Selector Switch S1
Q	External alarm Out Terminals
R	RS-485 Terminal Block*
S	RS-485 RJ45 Connector**
T	RS-485 Line Termination Resistor Switch S2

* REM-Remote control not available for -A model; terminal +R is not accessible with AFD
** DO NOT CONNECT pin #4 when cabling units with AFD installed.

Refer to the technical manual online for connections of alarm wiring (Q) and Rem (remote control).

When multiple units have been connected in a daisy chain, the individual address will need to be assigned prior to grid connection using the display menu. The grid default type, 240V Split Phase, can also be changed prior to grid connection using the display menu.

With only the array connected, set the inverter's DC disconnect switch to ON. GREEN POWER LED will flash and YELLOW ALARM LED will be steady. The LCD will read "Missing Grid". Press ESC to open the menus. Use the DOWN key to scroll to Settings, and press ENTER.

The Settings menu requires an access password.

Upon selecting SETTINGS the password screen will display; the default password is 0000. Pressing ENTER four times loads four zeroes on the display and opens the submenu.

The LCD has two visible text lines and the UP and DOWN control keys are used to scroll through the menu items. An arrow on the left side of the display highlights the current selection. Move the arrow UP or DOWN to the desired selection and press ENTER to access the associated submenu (section 8). To return to the preceding menu, press the ESC key.

Address and Set Vgrid are described below for use in installation. Complete descriptions of the submenus can be found in the full manual on the website.

Address: In the SETTINGS menu, scroll to Address and press ENTER to open the submenu. Address values are assigned manually using any value in the range 2 to 64. Press the UP and DOWN keys to scroll through numbers and ENTER to select. Auto address = 1 and can be used only once; default address is set at 2.

Set Vgrid: In the SETTINGS menu, scroll DOWN to Set Vgrid and press ENTER to open the submenu. To choose a grid connection different from the 240V Split-phase default, use the UP or DOWN key to move the arrow to the desired selection and press ENTER. A second display screen will open; press ENTER to confirm selection or ESC to cancel. Upon completion turn the DC Disconnect switch OFF to save changes.

The procedure for START-UP is as follows:

- Set the inverter's DC disconnect switch to ON.
- Set the external AC disconnect switch to the inverter to ON.

Once both disconnects are closed, the inverter starts the grid connection sequence.

While the system checks for grid connection (Missing Grid) to be established, the ALARM LED turns steady YELLOW and the POWER LED flashes GREEN.

When waiting for sunlight (Waiting Sun) the POWER LED turns steady GREEN. As soon as conditions are met, the inverter is connected to the grid.

For -A versions ONLY, the display shows the AFD board self-test running and results upon connection. If the self-test results are OK, the inverter will continue to Next connections.

If a potential problem on the AFD board is detected, the self-test will result in error. Refer to section 12 below to clear the error and restart the self-test.

All versions will display the following screens during connection:

Time (seconds) remaining to complete the output voltage and frequency values check, and whether the values are within range.

A final display screen confirms RISO measurement.

If all items described above test OK, the inverter is connected to the grid and displays the message, "Inverter OK", along with the date and time. If there is not sufficient sunlight to connect to the grid, the unit will repeat the connection procedure until all the parameters controlling connection to the grid (voltage and frequency, confirmation of no ground fault) are within range. During this procedure, the green LED flashes ON and OFF.

Clock malfunctioning, or other non-function related faults that do not interfere with operation, may also be shown instead of the date and time.

Next connections 2 secs

Vgrid In range 223.8V

Fgrid In range 50.17Hz

Meas. RISO... In range

Inverter OK Mon 03 Jan 11:00

An autotest circuit is included in the module design of the DC ARC FAULT CIRCUIT INTERRUPTER (AFCI) solution. The AFCI performs a self-test when the system is started, (ie every morning when sunlight is sufficient for connection). The inverter display area shows the results of the self-test:

- If the self-test results are OK, the inverter will continue to AC grid connection.
- If a potential problem on the AFD board is detected, the self-test will result in error.

Press and hold the ESC key for three seconds to clear the error and start the restart self-test. If self-test results are OK, the inverter will re-connect to the AC grid. If the DC arc fault is still present, the self test will result in error E053.

Refer to the technical manual online for possible solutions.

- During normal operation the input current is continually measured and analyzed.
- If a DC arc fault is detected, the inverter is disconnected from the AC grid and error E050 will be displayed.

Refer to the technical manual online for possible solutions.

The AF self-test can be manually started anytime using the following procedure:

- Turn off the inverter (switching off both DC and AC switches) and,
- Turn on both the DC and AC switches waiting for display communication of self-test result.

Test Arc Sensor OK

Arc Self Test E053

Arc Fault E050

LED INDICATORS

TWO LINE LCD DISPLAY

PROGRAMMING CONTROLS

POWER LED	GREEN: On if the inverter is working correctly. Flashes when checking the grid or if there is insufficient sunlight.
ALARM	YELLOW: The inverter has detected an anomaly. Anomaly is shown on the display
GFI	RED: Ground fault on the DC side of the PV array. Error is shown on the display.
ESC	Used to access the main menu, go back to the previous menu, or go back to the previous digit to be edited.
UP	Used to scroll up the menu options or shift the numerical scale in ascending order.
DOWN	Used to scroll down the menu options or shift the numerical scale in descending order.
ENTER	Used to confirm an action, access submenu for selected option (indicated by > arrow symbol) or switch to next digit to be edited.

- LEDs indicate operating state of the inverter.
- Operating parameters of the equipment are displayed in two line LCD.
- Controls on keypad are used to review data on the LCD and access data logged internally.

Text in LCD consists of 2 lines with 16 characters per line.

- Press the ENTER key to stop menu scrolling.
- Press the ESC key to access the three MAIN MENUS: **STATISTICS - SETTINGS - INFO**

The **Statistics, Settings and Info** menus can be accessed with just the array connected. Some parameters (e.g. current, voltage, power, partial energy, lifetime energy etc.) are available only after grid connection.

Based on individual installations, the following parameters may need to be configured prior to initial grid connection:

- The RS-485 bus address for daisy chain (section 10),
- AC grid type if different from default (section 10),
- Adjustments to default frequency and disconnection time (section 9).

Complete descriptions of the data available on the display menus can be found in the full manual on the website.

To adjust frequency and disconnect times to meet local utility requirements, modifications are made using the Aurora Manager-TL software. The software, with instructions to download and install on a PC, can be found on the website

Prior to connecting to the grid, with the inverter's DC disconnect switch set to ON, a computer, with Aurora Manager-TL software installed, should be connected to the inverter via an RS-485-USB adapter (not included). The USB driver files and instructions for installation can be found on the website. PC-inverter connection cable required is standard USB 2.0 cable, terminals type A and B.

After frequency and disconnect time values have been adjusted, turn DC power OFF and ON to save new data. Changes to parameters must be made to meet the requirements of the local utility. Entry of improper values could cause inverter to shut down.

Cond.	Simulated utility source		Max.time (sec) at 60Hz* before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	< 0.50 V _{nom} ^b	Rated (60Hz)	0.16 (Fixed)
B	0.50 V _{nom} ^b ≤ V < 0.88 V _{nom} (Adjustable)	Rated (60Hz)	2 (Fixed)
C	1.10 V _{nom} ^b < V < 1.20 V _{nom} (*) (Adjustable)	Rated (60Hz)	1 (Fixed)
D	1.20V _{nom} ≤ V (*)	Rated (60Hz)	0.16 (Fixed)
E	Rated	f > 60.5 Hz (Default) (Adj. 60.2 to 63.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
F	Rated	f < 59.3 Hz (Default) (Adj. 59.8 to 57.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
G	Rated	f < 57.0 Hz	0.16 (Fixed)
H	Rated	f > 63.0 Hz	0.16 (Fixed)

TECHNICAL DATA	VALUES	PVI-5000-OUTD-US			PVI-6000-OUTD-US		
		10/2W	Split-Ø/3W	10/2W	10/2W	Split-Ø/3W	10/2W
Nominal Output Power	W	5000			6000		
Maximum Output Power	W	5000			6000		
Rated Grid AC Voltage	V	208	240	277	208	240	277
Number of Independent MPPT Channels		2			2		
Maximum Usable Power for Each Channel	W	4000			4000		
Absolute Maximum Voltage (Vmax)	V	600			600		
Start-Up Voltage (Vstart)	V	200 (adj. 120-350)			200 (adj. 120-350)		
Full Power MPPT Voltage Range	V	200-530			200-530		
Operating MPPT Voltage Range	V	0.7xVstart-580			0.7xVstart-580		
Maximum Current (I _{dcmax}) for both MPPT in Parallel	A	36			36		
Maximum Usable Current per Channel	A	18			18		
Maximum Short Circuit Current Limit per Channel	A	22			22		
Number of Wire Landing Terminals Per Channel		2 Pairs			2 Pairs		
Array Wiring Termination		Terminal block, Pressure Clamp, AWG16-AWG6					
Grid Connection Type		10/2W	Split-Ø/3W	10/2W	10/2W	Split-Ø/3W	10/2W
Adjustable Voltage Range (V _{min} -V _{max})	V	183-228	211-264	244-304	183-228	211-264	244-304
Grid Frequency	Hz	60			60		
Adjustable Grid Frequency Range	Hz	57-63			57-63		
Maximum Current (I _{acmax})	A _{RMS}	27	23	20	30	28	24
Power Factor		> 0.995			> 0.995		
Total Harmonic Distortion At Rated Power	%	< 2			< 2		
Contributory Fault Current**	A _{ph} /A _{RMS}	36.25/25.63	36.5/25.81	31.75/22.45	36.25/25.63	36.5/25.81	31.75/22.45
Grid Wiring Termination Type		Terminal block, Pressure Clamp, AWG14-AWG4					
Reverse Polarity Protection		Yes					
Over-Voltage Protection Type		Varistor, 2 for each channel			Varistor, 2 for each channel		
PV Array Ground Fault Detection		Pre start-up Riso and dynamic GFDI (Requires Floating Arrays)					
Anti-Islanding Protection		Meets UL 1741/IEE1547 requirements			Meets UL 1741/IEE1547 requirements		
Over-Voltage Protection Type		Varistor, 2 (L ₁ - L ₂ / L ₁ - G)			Varistor, 2 (L ₁ - L ₂ / L ₁ - G)		
Maximum AC OCPD Rating	A	35	30	25	40	35	30
Maximum Efficiency	%	97.1			97.1		
CEC Efficiency	%	96	96.5	96.5	96	96.5	96.5
Stand-by Consumption	W _{RMS}	< 8			< 8		
Night time consumption	W _{RMS}	< 0.6			< 0.6		
User-Interface		16 characters x 2 lines LCD display					
Remote Monitoring (1xRS485 incl.)		AURORA-UNIVERSAL (opt.)					
Wired Local Monitoring (1xRS485 incl.)		PVI-USB-RS485_232 (opt.), PVI-DESKTOP (opt.)					
Wireless Local Monitoring		PVI-DESKTOP (opt.) with PVI-RADIOMODULE (opt.)					
Ambient Air Operating Temperature Range	°F (°C)	-13 to +140 (-25 to +60)			-13 to +140 (-25 to +60) with derating above 122 (50)		
Ambient Air Storage Temperature Range	°F (°C)	-40 to 176 (-40 to +80)			-40 to 176 (-40 to +80)		
Relative Humidity	% RH	0-100 condensing			0-100 condensing		
Acoustic Noise Emission Level @1m	db (A)	< 50			< 50		
Maximum Operating Altitude without Derating	ft(m)	6560 (2000)			6560 (2000)		
Enclosure Rating		NEMA 4X			NEMA 4X		
Cooling		Natural Convection			Natural Convection		
Dimensions (H x W x D)	in (mm)	41.4 x 12.8 x 8.6 (1052 x 325 x 218)			41.4 x 12.8 x 8.6 (1052 x 325 x 218)		
Weight	lb (kg)	< 59.5 (27.0)			< 59.5 (27.0)		
Shipping Weight	lb (kg)	< 78 (35.4)			< 78 (35.4)		
Mounting System		Wall bracket					
Conduit Connections		Trade Size Kos: (2ea x 1/2") and (2ea x 1-1/4", 3 places side, front, rear)					
DC Switch Rating (Per Contact)	A/V	25 / 600			25 / 600		
Isolation Level		Transformerless (Floating Array)			Transformerless (Floating Array)		
Safety and EMC Standard		UL 1741, IEE1547, IEE1547.1, CSA - C22.2 N. 107.1-01, UL1998 UL1699B, FCC Part 15 Class B					
Safety Approval		cCSA _{us}					
Standard Warranty	years	10			10		
Extended Warranty	years	15 & 20			15 & 20		
Standard - With DC Switch - Floating Array		PVI-5000-OUTD-US			PVI-6000-OUTD-US		
With DC Switch, Wiring box and Arc Fault Detector and Interrupter		PVI-5000-OUTD-US-A			PVI-6000-OUTD-US-A		

*All data is subject to change without notice
** Inverter can apply that much current - Breaker will open

Contact us
www.abb.com/solarinverters

PVI-5000-6000-TL Quick Installation Guide
BCM.00163.1_AA
© Copyright 2014 ABB. All Rights Reserved.
Specifications subject to change without notice.