

Installation instruction for PVI-3.0/3.6/3.8/4.2, PVI-5000/6000, UNO-7.6/8.6 Reprogramming for region-specific frequency and voltage ride-through (FVRT) compliance

<p>Overview</p>	<p>This instruction provides the method for setting inverter parameters for region-specific frequency and voltage ride-through (FVRT) mitigation requirements. This instruction applies only to the following ABB/Power-One inverter models:</p> <ul style="list-style-type: none"> • PVI-3.0/3.6/3.8/4.2 • PVI-5000/6000 • UNO-7.6/8.6
<p>Contact Information</p>	<p>This instruction requires the installer to contact ABB solar inverter technical support to obtain a service password in order to access the advanced Service menu to make inverter configuration changes. ABB solar inverter technical support can be reached at 1-877-261-1374, 6 a.m. – 6 p.m. MST.</p>
<p>Items Needed</p>	<ul style="list-style-type: none"> • Inverter model number (e.g., UNO-7.6-TL-OUTD-S-US-A). • Six (6) digit inverter serial number. • Four (4) digit manufacturing week code. • Telephone connection to call ABB solar inverter technical support to obtain the service password. • Nominal grid voltage setting for each inverter to be reprogrammed. • Digital camera to capture screenshots of various settings on the display.
<p>Expected Time</p>	<p>< 20 minutes</p>
<p>Note</p>	<p>It is recommended, but not required, that the service password be obtained by calling ABB solar inverter technical support <i>before</i> going into the field to reprogram an inverter. The service password is time-limited and expires within 14 days of being generated.</p>
<p>Disclaimer</p>	<p>As a convenience to the installer, this document provides the settings required by the respective regions/utilities. These requirements are subject to change without notice; therefore, it is the installers' responsibility to ensure the settings are compliant to the latest interconnection requirements for their regions/utilities.</p>

Verifying inverter firmware version

This procedure is applicable to inverter models with the firmware versions listed in Table 1 below.

Inverters with older firmware revisions cannot be updated as described in this instruction. Please call ABB solar inverter technical support at 1-877-261-1374 for available options.

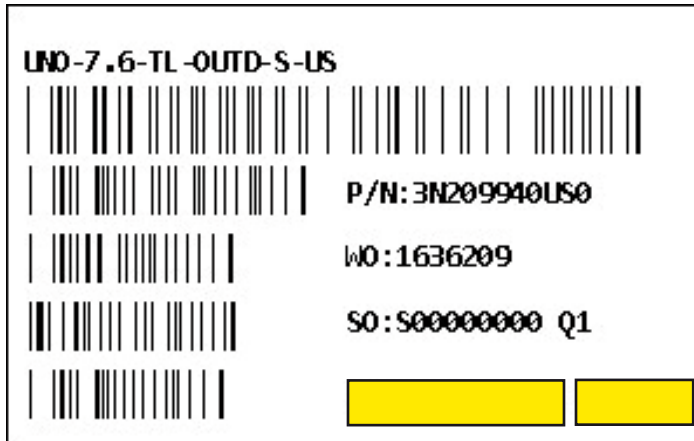
Product family	Firmware revision
PVI-3.0/3.6/3.8/4.2	C.2.0.0 or later
PVI-5000/6000	C.2.0.0 or later
UNO-7.6/8.6	Update release 1543E or later

Table 1

Obtaining the service password

A telephone connection, inverter model number, serial number and manufacturing week code are required.

1. Locate the product label for the inverter. This label is typically located on one of the sides of the inverter. An example of the regulatory label is shown below.



Serial number and manufacturing week code are located here

2. With the inverter model number, serial number and manufacturing week code obtained in steps 1 and 2 above, call ABB solar inverter technical support at 1-877-261-1374 and request the service password for each inverter needing reprogramming. Note that the service password expires after 14 days of being generated. Accurately record the service password provided by ABB solar inverter technical support, as this password will be required on-site to reprogram the inverter.

Reprogramming the inverter

Note — the service password and nominal grid voltage setting must be known to complete the inverter reprogramming.

3.	<p>The inverter must be connected to the PV array with sufficient DC voltage to operate the inverter and must be disconnected from the AC grid. If the inverter is already operational, various information and status messages appear on the screen.</p> <ul style="list-style-type: none">– Press the ESC button on the front panel to enter the system menu.– Using the UP/DOWN buttons, scroll to the “Settings” menu and press ENTER on the front panel. <p>For PVI-3.0/3.6/3.8/4.2 and PVI-5000/6000 families:</p> <ul style="list-style-type: none">– Scroll to the "Nation" menu using the UP/DOWN buttons and press ENTER.– Scroll to the "Nation Select" menu using the UP/DOWN buttons and press ENTER.– Select the R21 208si, R21 240sp or R21 277si grid standard selections. These grid standards provide the default settings for California Rule 21, and may be a useful starting point to modify parameters for region-specific requirements. <p>For UNO-7.6/8.6 family:</p> <ul style="list-style-type: none">– Using the UP/DOWN buttons, scroll to the "Info" menu and press ENTER on the front panel.– Scroll to the "Country Select" menu using the UP/DOWN buttons and press ENTER.– Select one of the R21 208si, R21 240sp, R21 277si, HAWAII208, HAWAII240 or HAWAII277 grid standard selections. These grid standards provide the default settings for California Rule 21 or Hawaiian Electric and may be a useful starting point to modify parameters for region-specific requirements.
4.	Using the UP/DOWN buttons, scroll to the "Settings" menu and press the ENTER button on the front panel.
5.	<p>When prompted for a password, enter the general password, which is 0000, for the inverter. If this password was previously changed, the correct password must be entered in order to proceed further.</p> <p>The digits are selected by pressing the UP/DOWN buttons on the front panel. The ENTER button is used to move to the next digit, and the ESC button is used to move to the previous digit. After all the password digits have been entered, press ENTER again to access the service menu.</p>
6.	Once in the "Settings" menu, press the UP/DOWN buttons to scroll to the "Service" menu and press ENTER.
7.	<p>When prompted for a password, enter the service password that was previously obtained from ABB solar inverter technical support (see steps 1 and 2).</p> <p>The digits are selected by pressing the UP/DOWN buttons. The ENTER button is used to move to the next digit, and the ESC button is used to move to the previous digit. After all the digits have been entered, press ENTER again to access the "Service" menu.</p>
8.	Using the UP/DOWN buttons, scroll through the menu to select each parameter that requires adjustment and press ENTER. Refer to the Appendices at the end of this document for specific settings for various regions.
9.	Using the UP/DOWN buttons, set the desired value for the selected parameter per the local interconnection requirements and press ENTER.
10.	After the specific parameter setting is entered, verify the setting by pressing ENTER again. If the specific jurisdiction requires screenshots of the parameter settings as proof of reprogramming, use a digital camera to take a picture showing the value setting for each selected parameter.
11.	Exit the setting menu by pressing the ESC button.
12.	Repeat steps 8-11 for all the parameters that require updates. For all the parameter changes to become effective, the inverter must be power-cycled by turning the DC disconnect switch to the OFF position for at least 30 seconds.
13.	As proof of reprogramming, attach screenshots of all parameter modifications captured in step 10 and submit them with the interconnection permit application. The appendices at the end of this document provide a form that may be used to attest to the setting changes made and may be filled out and printed for submission with the interconnection application.

Appendix A: Voltage and frequency ride-through settings for Oahu, Maui and Hawaii

Inverter family	Recommended starting country standard		
	208VAC	240VAC	277VAC
PVI-3.0/3.6/3.8/4.2	R21 208si	R21 208sp	Not compliant
PVI-5000/6000	R21 208si	R21 208sp	
UNO-7.6/8.6	HAWAII208	HAWAII240	

Voltage ride-through settings for Oahu, Maui, Hawaii					
Parameter	Units	Setting			Screenshot required?
		240VAC	208VAC	277VAC	
U<<<	V	120	104	Not compliant	Yes
U<<	V	168	146		Yes
U<	V	211	183		Yes
U>	V	264	229		Yes
U>>	V	288	250		Yes
Time U<<<	s	0.5	0.5		Yes
Time U<<	s	21	21		Yes
Time U<	s	21	21		Yes
Time U>	s	1	1		Yes
Time U>>	s	0.1667	0.1667		Yes

Frequency ride-through settings for Oahu, Maui, Hawaii			
Parameter	Units	Setting	Screenshot required?
F<<	Hz	56	Yes
F<	Hz	57	Yes
F>	Hz	63	Yes
F>>	Hz	64	Yes
Time F<<	s	0.1667	Yes
Time F<	s	21	Yes
Time F>	s	21	Yes
Time F>>	s	0.1667	Yes

Note: Hawaii Electric Company, Inc. (HECO) ultra-fast trip transient over-voltage requirements (TrOV-2) and frequency voltage ride through (FVRT) mitigation requirements are described in the document "Appendix IIA Full Ride Through Settings for O'ahu, Maui, Hawaii" dated February 2015, and are available on the HECO website at: http://www.hawaiielectric.com/vcmcontent/StaticFiles/pdf/TrOVandFVRT_Public_Feb2015.pdf and updated November 2015 at: http://www.hawaiielectric.com/vcmcontent/StaticFiles/pdf/attachment1_trovandfvrt_public_nov2015update2.pdf.

Attestation of reprogramming for frequency and voltage ride-through (FVRT) compliance	
Name	
Company	
Signature	
Date	
ABB inverter serial number	
ABB inverter model	
Other notes	

Appendix B: Voltage and Frequency ride-through settings for Molokai and Lanai

Inverter family	Recommended starting country standard		
	208VAC	240VAC	277VAC
PVI-3.0/3.6/3.8/4.2	R21 208si	R21 208sp	Not compliant
PVI-5000/6000	R21 208si	R21 208sp	
UNO-7.6/8.6	HAWAII208	HAWAII240	

Voltage ride-through settings for Molokai and Lanai					
Parameter	Units	Setting			
		240VAC	208VAC	277VAC	Screenshot required?
U<<<	V	120	104	Not compliant	Yes
U<<	V	168	146		Yes
U<	V	211	183		Yes
U>	V	264	229		Yes
U>>	V	288	250		Yes
Time U<<<	s	0.5	0.5		Yes
Time U<<	s	21	21		Yes
Time U<	s	21	21		Yes
Time U>	s	1	1		Yes
Time U>>	s	0.1667	0.1667		Yes

Frequency ride-through settings for Molokai and Lanai			
Parameter	Units	Setting	Screenshot required?
F<<	Hz	50	Yes
F<	Hz	57	Yes
F>	Hz	63	Yes
F>>	Hz	65	Yes
Time F<<	s	0.1667	Yes
Time F<	s	21	Yes
Time F>	s	21	Yes
Time F>>	s	0.1667	Yes

Note: Hawaii Electric Company, Inc. (HECO) ultra-fast trip transient over-voltage requirements (TrOV-2) and frequency voltage ride through (FVRT) mitigation requirements are described in the document “Appendix IIA Full Ride Through Settings for O’ahu, Maui, Hawaii” dated February 2015, and are available on the HECO website at: http://www.hawaiianelectric.com/vcmcontent/StaticFiles/pdf/TrOVandFVRT_Public_Feb2015.pdf and updated November 2015 at: http://www.hawaiianelectric.com/vcmcontent/StaticFiles/pdf/attachment1_trovandfvrt_public_nov2015update2.pdf.

Attestation of reprogramming for frequency and voltage ride-through (FVRT) compliance	
Name	
Company	
Signature	
Date	
ABB inverter serial number	
ABB inverter model	
Other notes	

For more information please contact:

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Specifications subject to change without notice.