

SmartSource Suite Web Browser Test Option Benefits:

- No special software Windows application software and instruments driver installations needed. *Tests are controlled and ran using a web browser.*
- Test sequences can be controlled using SCPI commands from an ATE test system. *Automated Compliance Testing supported.*
- Measurements such as voltage and current are recorded and included in test reports. *Documents EUT compliance after test completes.*
- User prompts guide an operator through the entire test procedure. *No detailed IEEE Standards knowledge required on the part of the operator, less chance of mistakes.*
- Test Reports are generated after each test. *Makes it easy to meet compliance documentation requirements.*
- Test sequences can be customized by end user if needed to create custom versions or special purpose test variations as desired. *Accommodate changing standards as needed.*

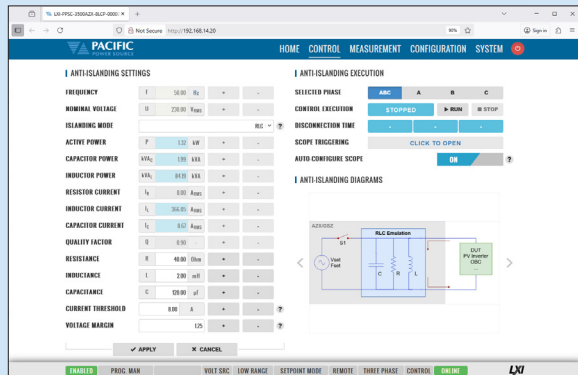
Option IEEE-1547.1-2020:

Test Sequences for the IEEE 1547.1 Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces

- IEEE 1547.1-2020

Option P - Anti-Islanding Test Web Interface:

Available on AZX & GSZ Models. Web browser based control of anti-islanding PV Inverter Test. Uses AZX or GSZ *internal RLC Load* to perform anti-islanding test of PV inverters or other DERs.



DER Anti-Islanding Compliance Testing

As the adoption of distributed energy resources (DERs) such as photovoltaic (PV) inverters grows, ensuring their compliance with international test standards is crucial for grid stability, safety, and interoperability. One of the key standards governing DER compliance is IEEE 1547.1-2020, which defines testing procedures for inverters and other grid-connected equipment to meet the requirements of IEEE 1547-2018. This ensures that DERs can operate safely and reliably within electrical grids while supporting advanced functionalities such as voltage regulation, ride-through capability, and anti-islanding protection.

Compliance with IEEE 1547.1-2020 is essential for manufacturers, utilities, and regulatory bodies to verify that PV inverters meet rigorous performance and safety benchmarks. Proper testing helps prevent grid disturbances, protects utility infrastructure, and ensures seamless integration of renewable energy sources. Key testing aspects include response to abnormal grid conditions, power quality performance, and interoperability with utility control systems. Without standardized testing, variations in inverter behavior could lead to reliability issues, power quality degradation, or even safety hazards in the broader electrical network.

Additionally, adherence to international test standards facilitates market acceptance and regulatory approval for PV inverters. Utilities and grid operators often require compliance before allowing interconnection, ensuring that all deployed systems contribute to a stable and efficient energy network. Standardized testing also fosters innovation by providing manufacturers with clear guidelines for product development, accelerating the deployment of next-generation DER technologies. In a rapidly evolving energy landscape, rigorous testing in accordance with IEEE 1547.1-2020 is fundamental to achieving a more resilient, sustainable, and intelligent power grid.



FREQUENCY CONVERSION



AEROSPACE



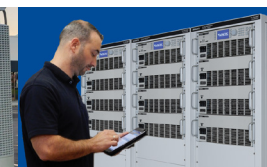
MILITARY



RENEWABLE ENERGY



EV CHARGING



PRODUCTION TEST

Standard and Editions Supported

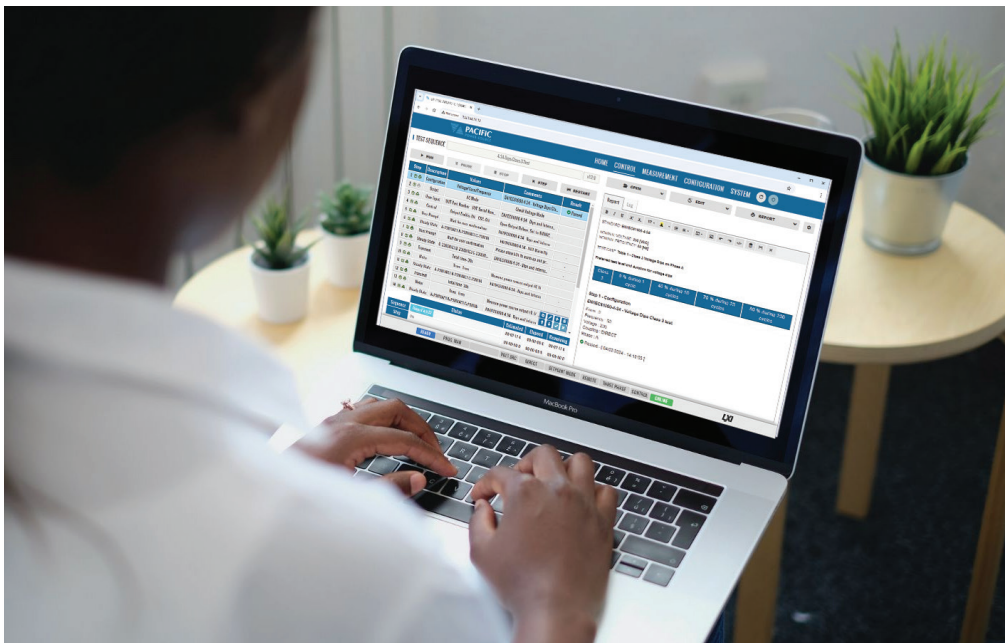
The Pacific Power Source IEEE 1547.1-2020 Test sequence option includes test sequences for DER anti-islanding testing. This option is intended for use with a regenerative

grid simulator or AC power source. Supported model series are AGX, AZX, RGS and GSZ, available in a wide range of power levels.

Common Features

All AC source embedded test sequences are accessed using the **SmartSource Suite** web browser interface, providing a common user interface. The web browser interface means no special software or instrument drivers need to be installed on a Mac or Windows PC. The power source has a built-in web server that serves up control, measurement and data screens to any device, PC, laptop, tablet or smartphone.

As such, any device capable of displaying a web page can be used to create, edit, execute and/or report on any test sequence. All tests sequences are controlled from the browser.



IEEE 1547.1-2020 Test Sequences included:

IEEE 1547.1 - 2020 - Tests	
Current Distortion	Open Phase
Enter Service	Persistence at DER Parameter Settings
Fault Current Tests	Prioritization of DER Responses
Frequency Disturbances	Synchronization
Frequency Support	Unintentional Islanding
Limit Active Power	Voltage Disturbances
Limitation of Overvoltage Contribution	Voltage Regulation
Limitation of dc Injection for Inverters	

Low Voltage Ride Through (LVRT) Test Sequence, Category 1

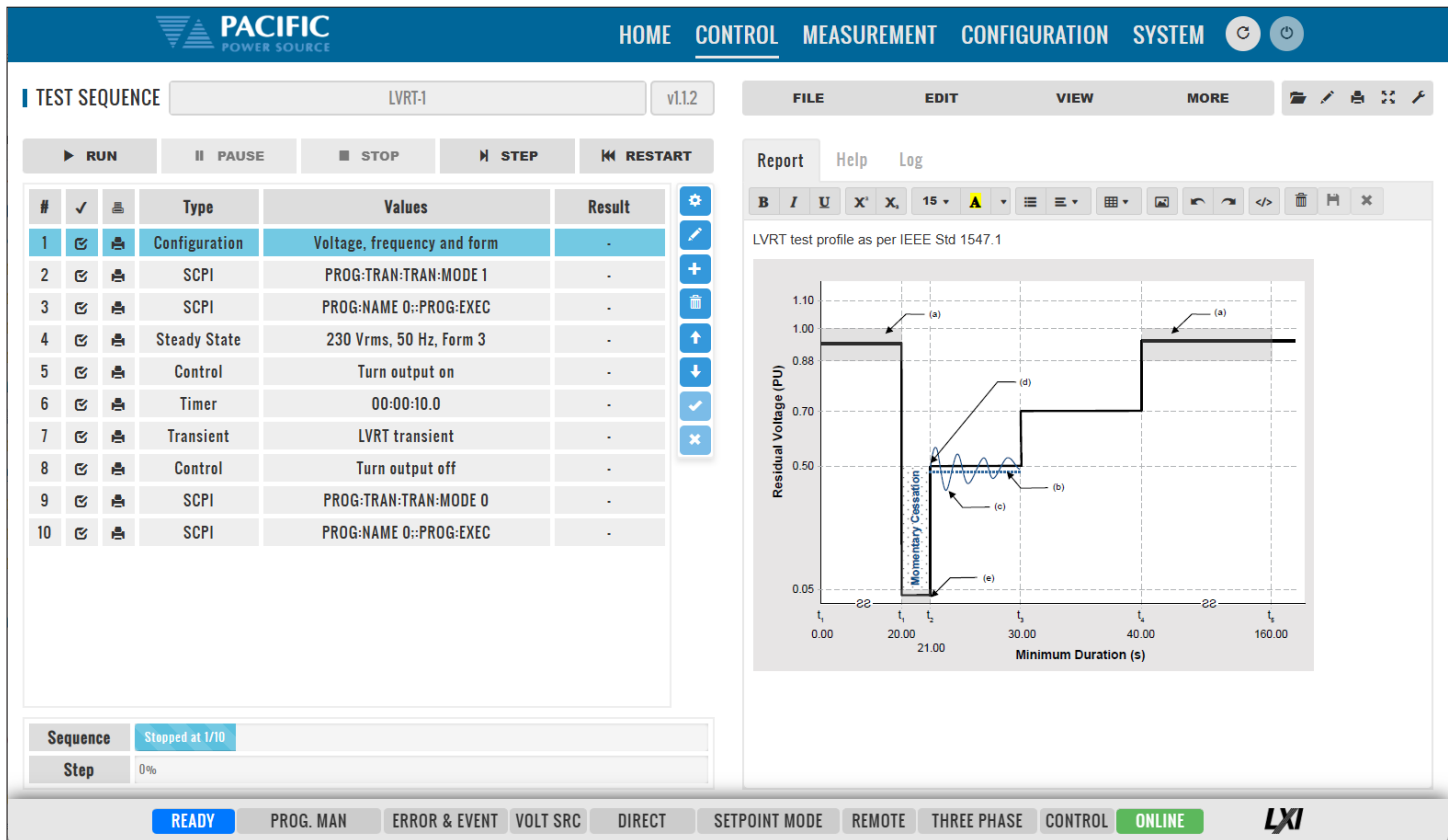


Figure 2: IEEE 1547.1-2020 LVRT1 Browser Window Test Control Screen

Test Parameter Configuration Control

These test sequences are designed to be parameter based to enable easy configuration of key settings like phase mode, required test voltage and or frequency. That means the same test sequence can easily be applied for different regional requirements such as the EU, Asia, US or Canada.

For the IEEE 1547.1 standard, the CONFIGURATION screen is shown to the right and allows the operator to easily select the correct grid configuration. If needed, the parameterized test sequence can be "simplified" using fixed settings to create a fixed test sequence for common use. Such a simplified sequence can be saved under a different name.

The CONFIGURATION screen displays the following parameters:

Parameter	Value	Unit
FORM	3	
VOLTAGE	230	V
FREQUENCY	50	Hz

A note states: "This sequence uses variables and expressions to allow easy parameter customizations like voltage, frequency, etc. If you desire to replace the variables and expressions with values please select the options and press 'configure & simplify'." Below the parameters, a message indicates: "The simplification will replace all expressions/variables with these configuration parameters and eliminate the configuration step." At the bottom, there are buttons for "Don't show again", "CANCEL", "CONFIGURE", and "SIMPLIFY".

Figure 3: IEEE 1547.1-2020 Test CONFIGURATION Screen

Execution and Test Reports

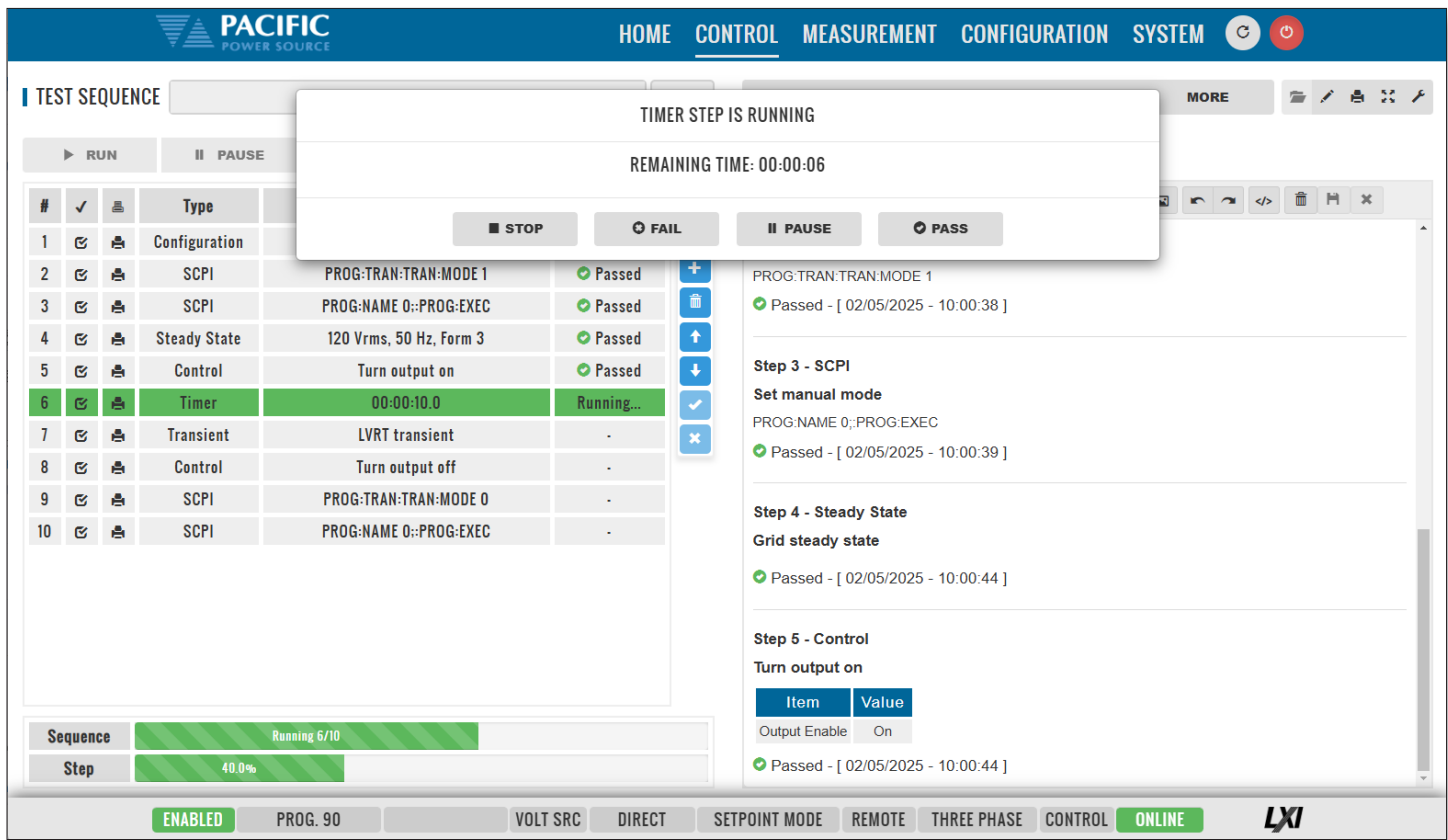


Figure 4: IEEE 1547.1-2020 LVRT1 Test in Progress

Execution Control

Tests can be run in continuous mode where each step is executed in sequence based on the programmed time settings. Alternatively, the operator can choose to single step or select/deselect individual test steps in the sequence to focus on specific areas of the test.

During the test, each step that is set to be included in the test report is added to the final report. The operator can select to exclude specific test step to customize and shorten the final test report as needed.

Reports are available at the end of the test for either printing or downloading. A test report preview screen is available as well as shown in Figure 5.

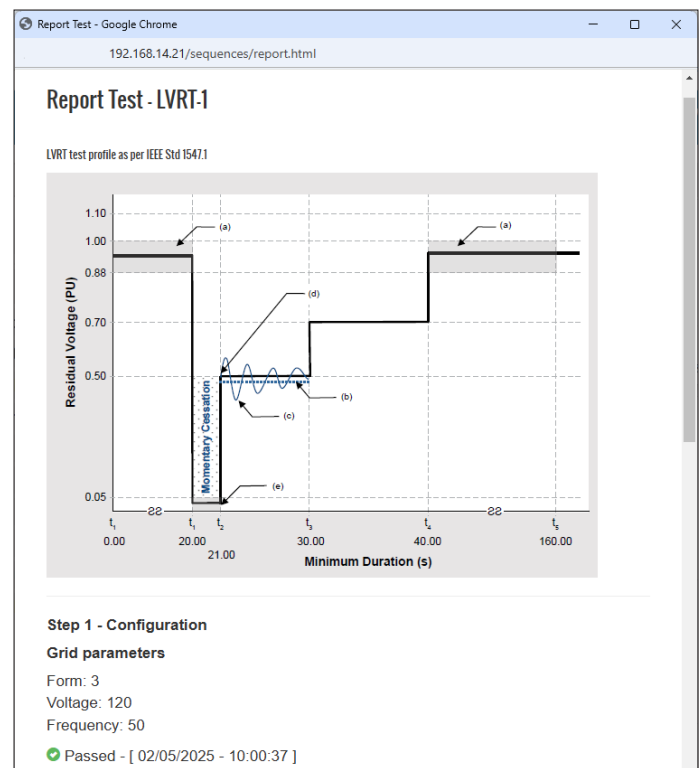


Figure 5: Test Report Preview Screen

Requirements

Web Browser based test sequences run on the power source controller and are operated through a web browser via the standard LAN or USB interface of the power source. Execution, Single Step, Control and Editing of test steps is supported as is printing test reports via common web browser functions.

Delivered test sequence compressed files can be loaded to the power source's memory. Once loaded, they are accessible using most web browsers - Chrome, Edge, Firefox, etc.

Ordering Information

Required options needed to support the following tests:

Test Standard	Test Sequence Part Number	Notes
IEEE 1547.1-2020	149310	Includes IEEE 1547.1-2020 Test Sequences

Order Example

IEEE Test Browser Based Test Sequences

- 149310 IEEE 1547.1-2020

Delivery Items

- Test Sequence Software License Certificate
- User Documentation in PDF format

Supported AC Source Model Series

Options	Modes	AGX	AZX	RGS	GSZ	ECTS2
IEEE 1547.1 - 2020	AC	👍	👍	👍	👍	👍
P Option	AC		👍		👍	



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