DATA SHEET

IEEE 1547.1 Test Tools for DER Systems including V2G

IEEE 1547.1–2020 and UL 1741 SB have driven the DER industry to formally standardize its communications interactions with grid operators. This includes EVs when combined with a UL 1741 SB certified EVSE.

A COMPLETE SOLUTION

QualityLogic's complete IEEE 1547.1 Test Tool solution includes interoperability and type testing for grid connected DER systems including pv, battery, storage, and V2G type of systems.

The most important value of the toolset is the automation of the IEEE 1547.1/ UL 1741 testing process. According to the IREQ study, current UL 1741 SB testing can take 6-8 weeks of time to complete all the set-up, testing, and analysis required. By automating much of the process using QualityLogic's 1547.1 test tools, significant time savings can be realized and your product can get to market faster.

With QualityLogic's full automation, users can more efficiently execute all the supported grid support Type tests. In our testing, we executed these in just 32 hours, including automatic data analysis of a DER's measured performance.

1547.1 COMPLIANCE TESTING SOLUTION COMPONENTS

Interoperability (Section 6 of IEEE 1547.1–2020)
IEEE 1547-2018 designates three acceptable protocols that can be used to validate the DER system for interoperability: IEEE 2030.5, IEEE 1815 (DNP3), or SunSpec Modbus.

There are several categories of interoperability tests, including Nameplate Data Tests, Configuration Information Tests, Monitoring Information Tests, and Management Information Tests. QualityLogic's 1547.1 Test Tools automate all of the interoperability testing for all three protocols.

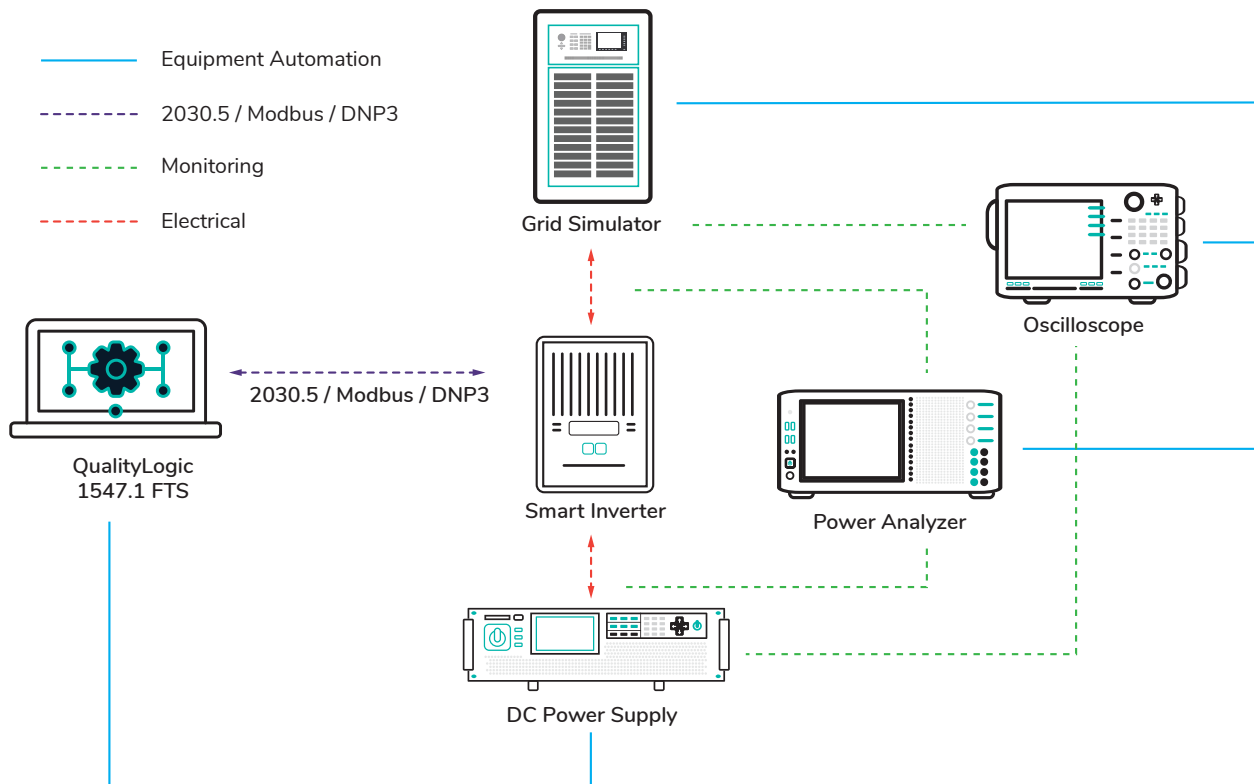### Type Tests (Section 5 of the IEEE 1547.1–2020)
The 1547.1 Type tests are defined for the required grid support functions: Constant Power Factor Mode, Voltage-Reactive Power Mode, Active Power-Reactive Power Mode, Constant Reactive Power Mode, Voltage-Active Power Mode, Voltage Trip Test, Frequency Trip Test, Frequency Droop Test, Enter Service and Cease to Energize and Trip Tests, Limit Maximum Active Power Test. QualityLogic's 1547.1 Test Tools automate all of the Type tests required for Interoperability testing as well as additional Type tests such as the Ride-Through tests. The automation is designed to support different sets of jurisdiction-specific test parameters.

Equipment Management Module
QualityLogic 1547.1 FTS automates the DER protocol messaging to the smart inverters and remotely manages the various test equipment required to perform fully automated 1547.1 based tests.

KEY FEATURES

Automatic Data Analysis – Measurements of the DER's 1547 based behaviors will be automatically analyzed against the IEEE 1547 required accuracies so that the user can quickly determine whether their DER device is in compliance or not – saving hours of time over users manually analyzing the collected data.
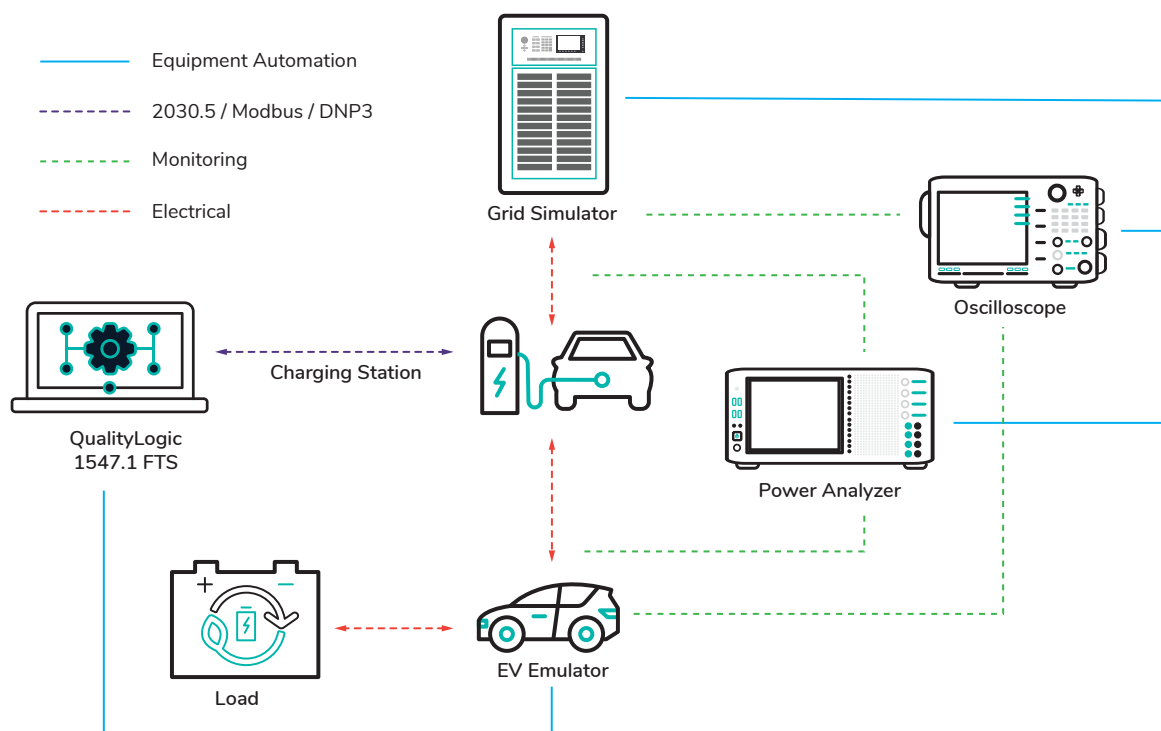

DER Protocols – Supports the 2030.5, SunSpec Modbus, and DNP3 communications required by each of the IEEE 1547.1 Interoperability tests with the target DER.

Test Equipment Automation – Each 1547.1 FTS test case remotely controls and monitors the required Test Equipment. The Test Tools support a growing list of AC and DC simulators and data capture equipment. New simulation or data capture equipment that support the standard SCPI interface can be easily added.

End to End Testing – 1547.1 FTS performs end to end testing where the DER is configured and managed through the selected DER Protocol while the power-based testing and verification is performed in an automated fashion.

Data Collection – Precise data collection from the data analyzer/collector is key to measuring and analyzing the DER device's behavior based on the IEEE 1547.1 tests.

Customizable 1547.1 Test Values – Enables the user to modify the test values that are used during testing, such as the values that are used during each grid code test.

V2G Testing – Provides 1547 testing coverage for V2G capable EVSE/EV systems that implement the required 1547 grid support functions and interoperability requirements

Legend:
- Equipment Automation
- 2030.5 / Modbus / DNP3
- Monitoring
- Electrical

Grid Simulator · Oscilloscope · Charging Station · QualityLogic 1547.1 FTS · Power Analyzer · Load · EV Emulator

TRAINING & SUPPORT

Protocol and Certification Training
Our IEEE 1547.1 training workshop provides attendees with a deeper understanding of the standard, especially the new Interoperability requirements. Students will learn the technical skills needed to conduct both interoperability and type testing as defined in UL 1741 SB. And students will learn how to automate UL 1741 SB testing with QualityLogic's IEEE 1547.1 Test Tools.

Technical and Integration Support.

- Technical support provided by trusted technical experts in a timely and comprehensive manner.
- Rest API integration enables integration with existing continuous integration testing pipelines.

Discover why so many companies and labs rely on QualityLogic's V2G and DER protocol expertise. Contact us today.