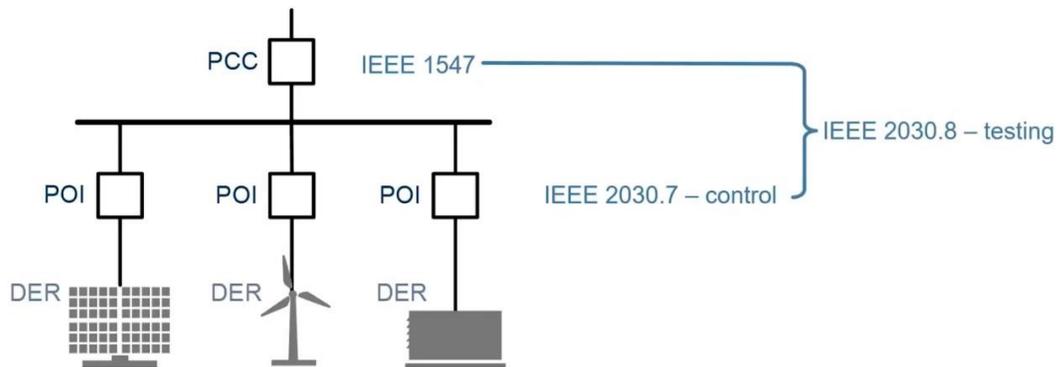


IEEE guidelines



IEEE 1547-2018 - IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

Standard Details

The technical specifications for, and testing of, the interconnection and interoperability between utility electric power systems (EPSs) and distributed energy resources (DERs) are the focus of this standard. It provides requirements relevant to the performance, operation, testing, safety considerations, and maintenance of the interconnection. It also includes general requirements, response to abnormal conditions, power quality, islanding, and test specifications and requirements for design, production, installation evaluation, commissioning, and periodic tests. The stated requirements are universally needed for interconnection of DER, including synchronous machines, induction machines, or power

inverters/converters and will be sufficient for most installations. The criteria and requirements are applicable to all DER technologies interconnected to EPSs at typical primary and/or secondary distribution voltages. Installation of DER on radial primary and secondary distribution systems is the main emphasis of this document, although installation of DERs on primary and secondary network distribution systems is considered. This standard is written considering that the DER is a 60 Hz source.

2030.7-2017 - IEEE Standard for the Specification of Microgrid Controllers

Abstract:

A key element of microgrid operation is the microgrid energy management system (MEMS). It includes the control functions that define the microgrid as a system that can manage itself, operate autonomously or grid connected, and seamlessly connect to and disconnect from the main distribution grid for the exchange of power and the supply of ancillary services. The scope of this standard is to address the functions above the component control level associated with the proper operation of the MEMS that are common to all microgrids, regardless of topology, configuration, or jurisdiction. Testing procedures are addressed.

Scope:

This standard provides technical specifications and requirements for microgrid controllers. Additionally, there are informative annexes covering the description of the microgrid, the establishment of the functional specification, the structure of the microgrid control functions, and a bibliography. These are for informative purposes only, and can be referred to, but they are not required to be used in conjunction with this standard. A key element of microgrid operation is the microgrid energy management system (MEMS). It includes the control functions that define the microgrid as a system that can manage itself, operate autonomously or grid connected, and seamlessly connect to and disconnect from the main distribution grid for the exchange of power and the supply of ancillary services. The scope of this standard is to address the technical issues and challenges associated with the proper operation of the MEMS that are common to all microgrids, regardless of topology, configuration, or jurisdiction, and to present the control approaches required from the distribution system operator and the microgrid operator. Testing procedures are addressed. Scenarios and/or use cases for testing are identified in this standard for dispatch function and transition function respectively. These cases shall be tested according to IEEE P2030.8.1

Purpose:

The reason for establishing a standard for the microgrid energy management system (MEMS) is to enable interoperability of the different controllers and components needed to operate the MEMS through cohesive and platform-independent interfaces. This approach will allow for flexibility and customization of components and control algorithms to be deployed without limiting potential functionality. Microgrid components and operational solutions exist in different configurations with different implementations. Regardless of whether equipment and software are commercial or custom, components should be interoperable and have interfaces that comply with functional standards defined by the MEMS. The standardization focuses on defining functions and interface configurations that allow modularity and interoperability. It deals with the microgrid controller operation, and defines those aspects that need to be standardized and those that can remain proprietary, while enabling the interoperability with various distributed energy resources (DER) interfaces and facilitating the wide adoption by vendors and utilities. The standard is functionality driven and focuses on a modular approach that enables potential future expansion and features.