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Utility-interconnected photovoltaic inverters – Test procedure for under voltage ride-through measurements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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UTILITY-INTERCONNECTED PHOTOVOLTAIC INVERTERS – TEST PROCEDURE FOR UNDER VOLTAGE RIDE-THROUGH MEASUREMENTS

FOREWORD

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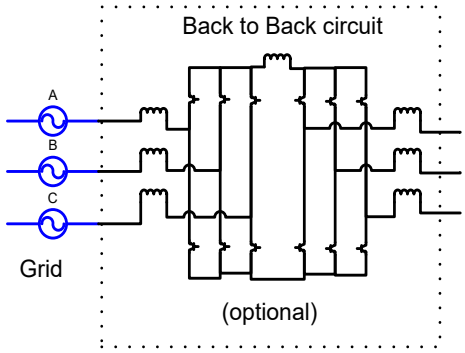
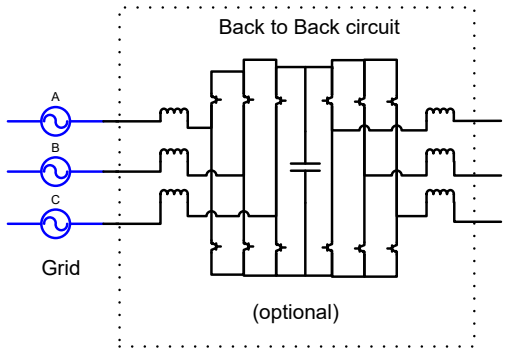
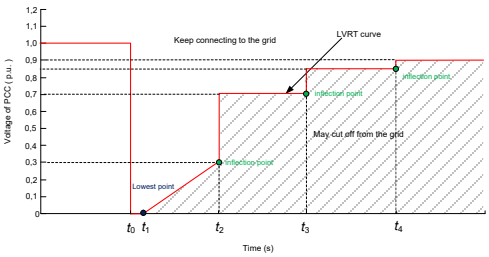
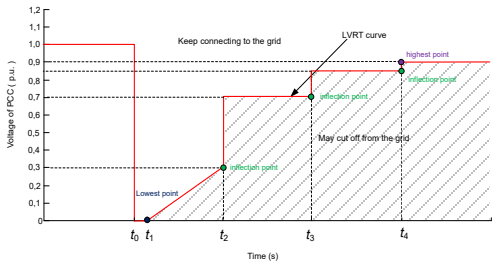
Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62910, which is a technical specification, has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first edition issued in 2015, and constitutes a technical revision.

It remains a TS because it is limited to providing recommended practices for UVRT testing in the context of non-uniform grid-codes lacking international consensus, and the rapid development of test technology in recent years.

The main technical changes with regard to the previous edition are as follows:

Clause	Previous edition	Present edition
3.1.12	the voltage support of EUT in accordance with the voltage drops. The K-factor is to be specified by the EUT manufacturer	the K-factor is to be supplied by the EUT manufacturer meeting additional requirements imposed by national standards and/or local codes
Figure 2		
4.3.4	The test circuit essentially comprises a voltage source with a low internal resistance combined with broadband amplifiers.....	The test circuit essentially comprises a voltage source with a low internal resistance combined optionally with broadband amplifiers.....
Table 3	d The test should be carried out under specified K-factor provided by local manufacture.	d The test should be carried out under specified K-factor provided by manufacture meeting additional requirements imposed by national standards and/or local codes.
Figure 4		
5.2	NOTE The example shows two types of points on the UVRT curve: the lowest point and the inflection point. Tests must be carried out at both types of points	The example shows three types of points on the UVRT curve: the highest point, the lowest point and the inflection point. Tests shall be carried out at above types of points.
5.3.1	Prior to the fault simulation tests, the EUT should run in normal operating mode. The selected UVRT curve should be used to identify voltage drop points, including the lowest point and the inflection point, ...	Prior to the fault simulation tests, the EUT should run in normal operating mode. The selected UVRT curve should be used to identify voltage drop points, including the highest point, the lowest point and the inflection point, ...

The text of this Technical Specificationis based on the following documents:

Draft TS	Report on voting
82/1607/DTS	82/1640A/RVDTS

Full information on the voting for the approval of this Technical Specification can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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UTILITY-INTERCONNECTED PHOTOVOLTAIC INVERTERS – TEST PROCEDURE FOR UNDER VOLTAGE RIDE-THROUGH MEASUREMENTS

1 Scope

This document provides a test procedure for evaluating the performance of Under Voltage Ride-Through (UVRT) functions in inverters used in utility-interconnected Photovoltaic (PV) systems.

This document is most applicable to large systems where PV inverters are connected to utility high voltage (HV) distribution systems. However, the applicable procedures may also be used for low voltage (LV) installations in locations where evolving UVRT requirements include such installations, e.g. single-phase or 3-phase systems.

The assessed UVRT performance is valid only for the specific configuration and operational mode of the inverter under test. Separate assessment is required for the inverter in other factory or user-settable configurations, as these may cause the inverter UVRT response to behave differently.

The measurement procedures are designed to be as non-site-specific as possible, so that UVRT characteristics measured at one test site, for example, can also be considered valid at other sites.

This document is for testing of PV inverters, though it contains information that may also be useful for testing of a complete PV power plant consisting of multiple inverters connected at a single point to the utility grid. It further provides a basis for utility-interconnected PV inverter numerical simulation and model validation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC TS 61836, *Solar photovoltaic energy systems – Terms, definitions and symbols*