Chroma Systems Solutions, Inc.

61512 Low Voltage Ride Through Test For PV Inverters

61500 AC Power Sources

Keywords: Low voltage, PV inverter, solar energy, abnormal voltage, LVRT

Title:

61512 Low Voltage Ride Through Test For PV Inverters

Product Family: **61500 AC Power Sources**

Abstract

The use of renewable energy is increasing every year to alleviate over dependency of fossil fuel. People have spent tremendous effort in research and development on new technology in taming natural resource for renewable energy. Since 2004, photovoltaic passed wind as the fastest growing energy source. In order to fully utilize energy generated from the solar panel, distributed generator (DR) equipment such as PV inverter is implemented for converting DC voltage generated from solar panel into AC voltage which is further parallel connected to the grid line. To ensure the overall grid line power quality and to minimize unwanted effect which might contribute by grid tied DR, rigorous regulations and test standards such as IEEE 1547, IEC 61000-3-15 and IEC 62116 have been developed.

Solution

Chroma 61512 Programmable AC Source is capable of meeting the aforementioned standard's requirements for simulated power source. The 61512 Programmable AC Source could easily simulate various test conditions required for PV inverter testing, such as abnormal voltage test and abnormal frequency test. Users could simply use the PLD function such as LIST mode to create test conditions required for LVRT (Low Voltage Ride Through) Test, as 61512 output voltage transient response performance had been validated by PV inverter manufacturer and laboratory and is highly recommended for LVRT testing. Users could also understand about the impact on TRD (Total Rated Distortion) of PV inverter output current under the influence of different severity level of harmonic voltage, and this can be accomplished by using the harmonic synthesis function with 61512 AC Source.

Figure 1 shows the limits of a typical low voltage ride through test. Figure 2 is the oscilloscope screen shot of 61512 output. We conclude that low voltage ride through test can be programed in LIST mode. An example of low voltage ride through testing profile is list below.

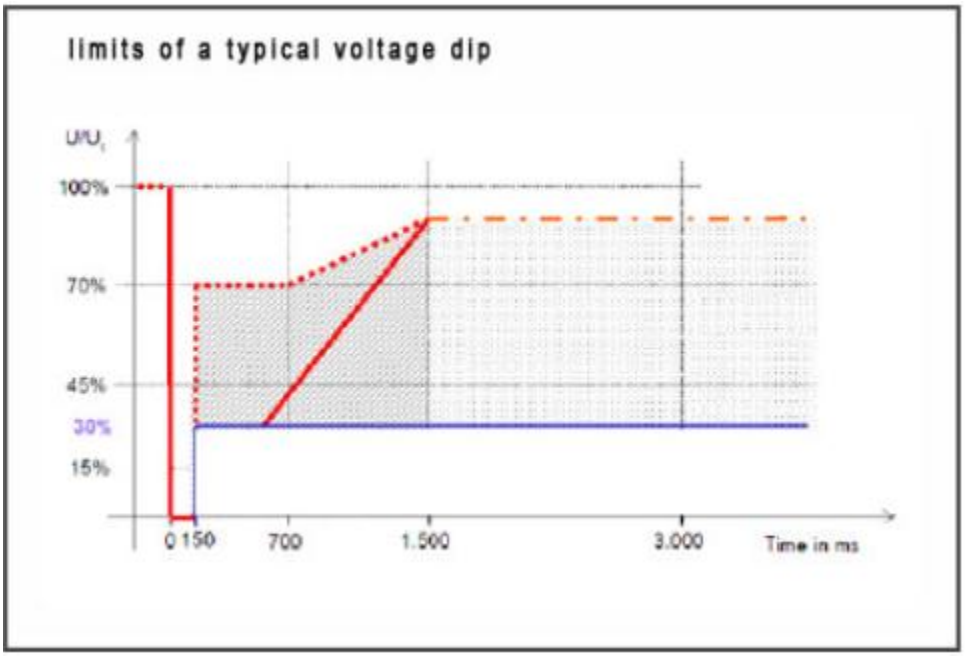

Figure 1 low voltage ride through

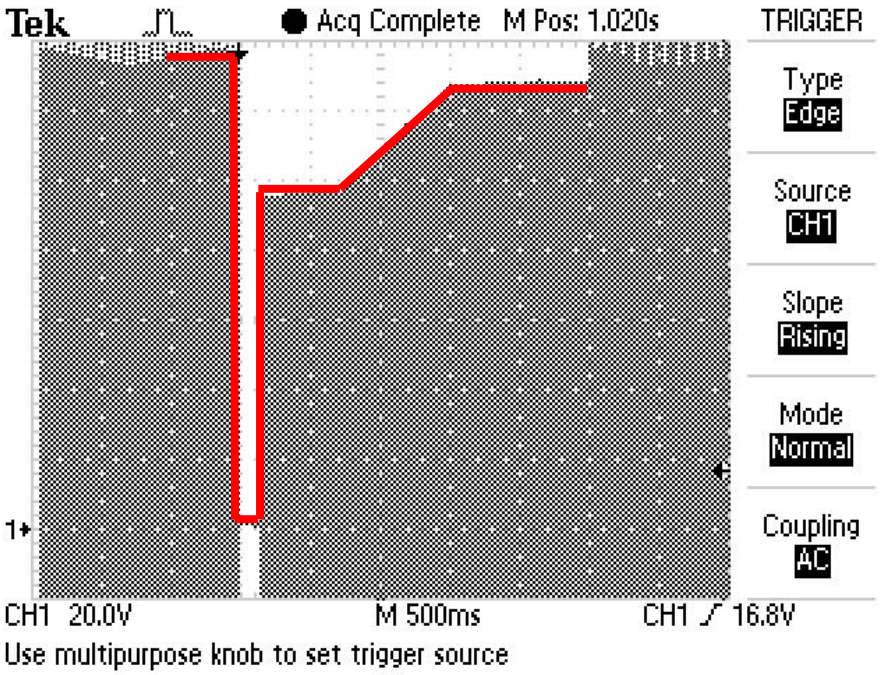

Figure 2 screen shot of oscilloscope

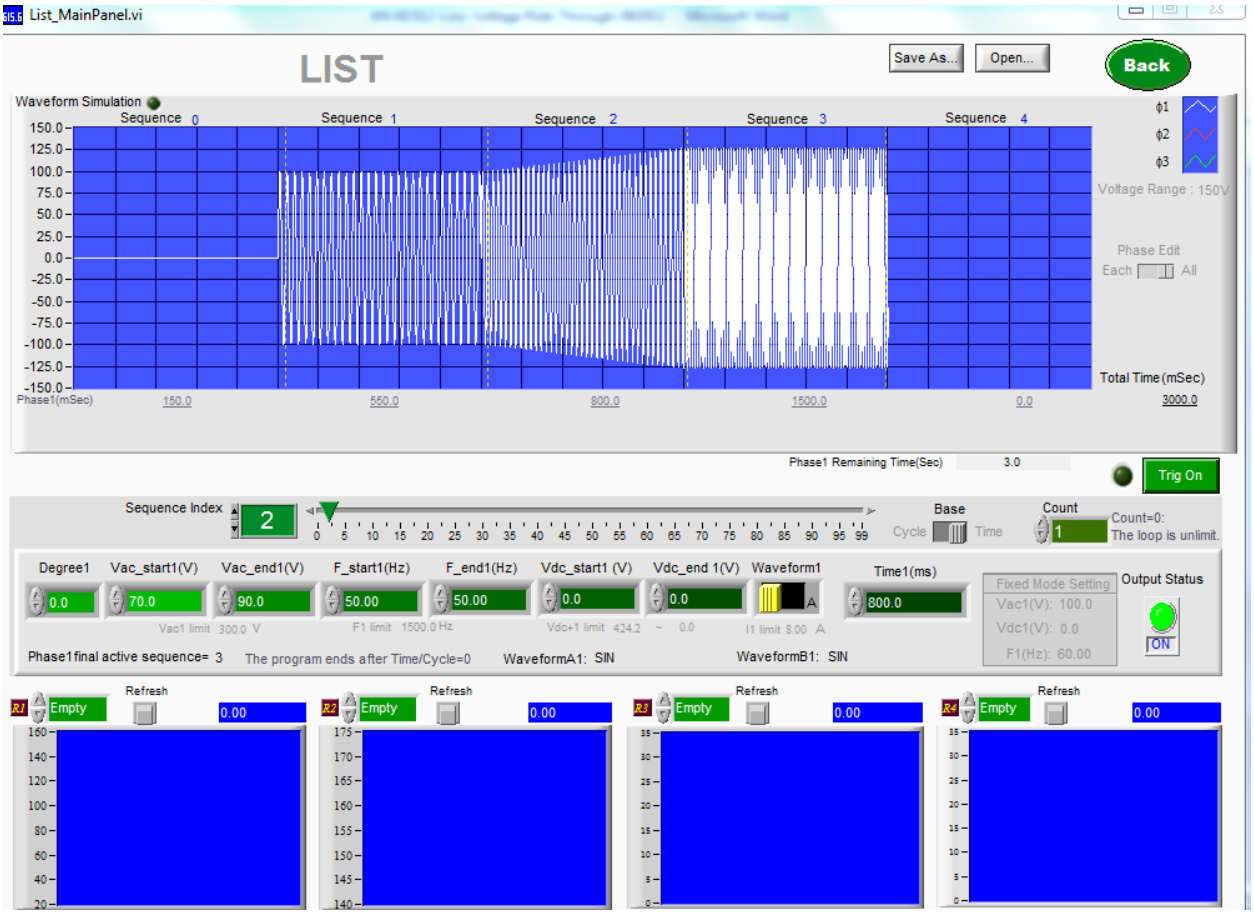

Figure 3 screen shot of 61512 softpanel

An example of low voltage ride through testing profile (V(v), Time(ms))

Sequence 0: Vac_start=0, Vac_end=0, F_start=50, Time=150

Sequence 1: Vac_start=70, Vac_end=70, F_start=50, Time=550

Sequence 2: Vac_start=70, Vac_end=90, F_start=50, Time=800

Sequence 3: Vac_start=90, Vac_end=90, F_start=50, Time=1500