

ContainerPower Energy Solutions

Macedonia grid-connected inverter



Overview

What is the control design of a grid connected inverter?

The control design of this type of inverter may be challenging as several algorithms are required to run the inverter. This reference design uses the C2000 microcontroller (MCU) family of devices to implement control of a grid connected inverter with output current control.

What is a grid tie inverter?

The grid tie inverter (GTI) must match the phase of the grid and maintain the output voltage slightly higher than the grid voltage at any instant. A high-quality modern grid-tie inverter has a fixed unity power factor, which means its output voltage and current are perfectly lined up, and its phase angle is within 1° of the AC power grid.

Can a grid connected inverter be left unattended?

Do not leave the design powered when unattended. Grid connected inverters (GCI) are commonly used in applications such as photovoltaic inverters to generate a regulated AC current to feed into the grid. The control design of this type of inverter may be challenging as several algorithms are required to run the inverter.

Can grid-connected PV inverters improve utility grid stability?

Grid-connected PV inverters have traditionally been thought as active power sources with an emphasis on maximizing power extraction from the PV modules. While maximizing power transfer remains a top priority, utility grid stability is now widely acknowledged to benefit from several auxiliary services that grid-connected PV inverters may offer.

How to detect a grid connected inverter?

Every algorithm for grid-connected inverter operation is based on the estimation or direct measurement of grid voltage frequency and phase angle.

The detection method used in this implementation for a single-phase inverter is based on a synchronous reference frame PLL.

How is an inverter connected to a grid?

The inverter is interfaced to the grid via an LCL filter. A relay is used to connect and disconnect the inverter from the grid whenever required by the application. The schematic in Figure 11 shows the filtering and relay schematic section.

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