

ContainerPower Energy Solutions

Solar power station inverter derating operation



Outdoor Cabinet BESS
50 kWh/500 kWh Battery Storage System
Industrial and Commercial Energy Storage

Energy Storage System

Energy Storage System

-  **All In One**
Integrating battery packs
-  **Intelligent Integration**
integrated photovoltaic storage cabinet
-  **High-capacity**
50-500kWh
-  **Rated AC Power**
50-100kW
-  **Degree of Protection**
IP54
-  **Altitude**
3000m(>3000m derating)
-  **Operating Temperature Range**
-20~60°C(Derating above 50 °C)

Overview

What is derating a solar inverter?

Derating is the controlled reduction of the inverter power. In normal operation, inverters operate at their maximum power point. At this operating point, the ratio between PV voltage and PV current results in the maximum power. The maximum power point changes constantly depending on solar irradiation levels and PV module temperature.

How does thermal derating affect the power output of solar inverters?

Thermal derating directly impacts the power output of solar inverters. When the internal temperature of an inverter exceeds its safe operating limit, it reduces its output power to prevent overheating. This reduction can be as much as 3% for every degree Celsius above the optimal operating temperature (PV Magazine India).

Does temperature derating affect a PV inverter?

In this case, the maximum DC voltage of the inverter acts more as a technical boundary than a normal operating curve. There is no PV array operating point that requires the inverter to feed in at full power at temperatures above 31°C (at 800 V). On principle, temperature derating has no negative effects on the inverter.

What is a temperature derating inverter?

Temperature derating prevents the sensitive semiconductors in the inverter from overheating. Once the permissible temperature on the monitored components is reached, the inverter shifts its operating point to a reduced power level. The power is reduced in steps. In extreme cases, the inverter will shut down completely.

When do solar inverters start to derate?

Way back in the early days of grid connect solar power, in about 2002!, many

inverters started to derate when the ambient temperature got over 25°C. Thankfully for us Aussies, technology has improved some and most decent inverters in 2012 won't start to derate until the ambient temperature hits at least 40°C.

Why does the inverter switch to the electric current derating operating state?

The inverter switches to the electric current derating operating state to protect itself from an overload. If this display appears regularly, the system design and module circuitry should be checked by an installer. Further Information is available in the technical information on derating (Sunny Boy and Sunny Tripower).

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