

## Kongres Container

# Power usage and inverter ratio



## Overview

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DC/AC ratio, also called inverter loading ratio (ILR), is the array's STC power divided by the inverter's AC nameplate power.  $ILR = P_{DC, STC} / P_{AC, rated}$ . A higher ILR feeds more energy during long shoulder hours and in winter, at the cost of some midday clipping on clear, cool days.

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DC/AC ratio and inverter loading shape real solar yield more than most design choices. Set them well and you gain energy all year, keep the inverter in its high-efficiency zone, and leave headroom for grid support and batteries. This piece focuses on practical math, climate effects, and sizing.

Think of your inverter like a translator—its job is to convert the DC (direct current) electricity from your solar panels or batteries into AC (alternating current) power that your appliances can use. And like any translator, it's not always perfect. Some energy gets lost in the process. This blog.

The DC-to-AC ratio — also known as Inverter Loading Ratio (ILR) — is defined as the ratio of installed DC capacity to the inverter's AC power rating. It often makes sense to oversize a solar array, such that the DC-to-AC ratio is greater than 1. This allows for a greater energy harvest when.

The DC to AC ratio, also known as the "inverter loading ratio" or "oversizing ratio," is a fundamental metric in solar design. It is simply the ratio of your solar panel array's total direct current (DC) wattage to your inverter's maximum alternating current (AC) output wattage. The "nameplate".

Since inverters convert DC power to AC power the output of the inverter is measured in either power (kW AC) or current (amps) and voltage (typically 240v AC). For example, the Tesla string inverter has a power output of 7.6 kW AC or 31.6 amps at 240v AC. An Enphase IQ-8+ microinverter has a power.

Because the PV array rarely produces power to its STC capacity, it is common practice and often economically advantageous to size the inverter to be less than the PV array. This ratio of PV to inverter power is measured as the DC/AC ratio. A healthy design will typically have a DC/AC ratio of 1.25.

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