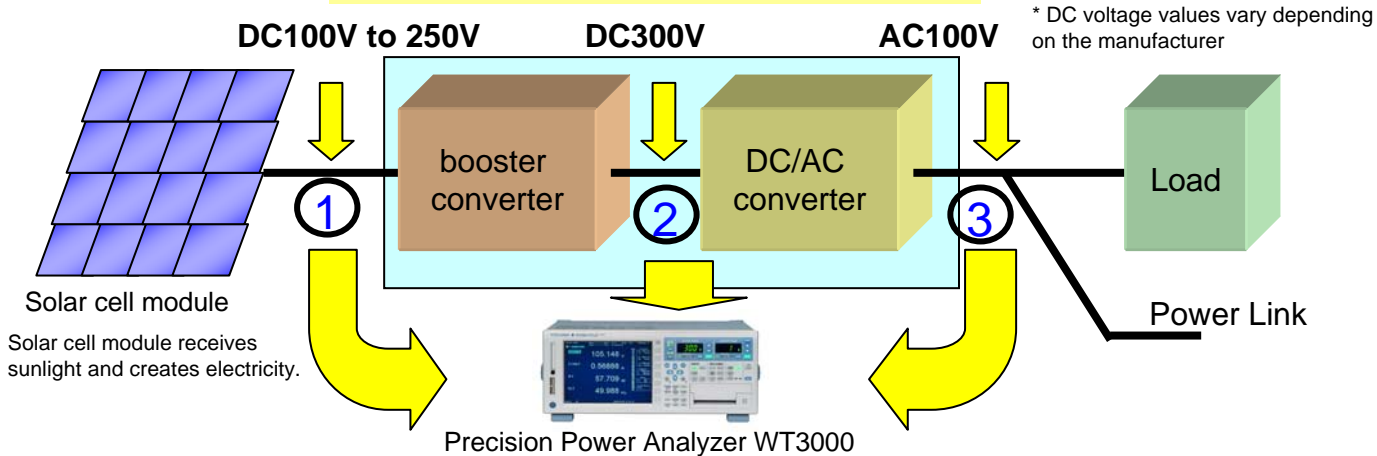


# Measuring Power Conversion Efficiency and Power Consumption in a Photovoltaic Generator with the WT3000 Precision Power Analyzer

Photovoltaic power generation has gained attention in recent years, largely due to a new sense of urgency regarding the prevention of global warming. Thermal power generation and other forms of power based on the limited resources of oil and coal release environmentally harmful CO<sub>2</sub>, the main cause of global warming. Photovoltaic power on the other hand, does not require these raw materials, does not release CO<sub>2</sub>, and is a clean, renewable energy source; therefore it is considered to be a major energy alternative for the future. For the evaluation of voltage, current, and power in photovoltaic power generators, the WT3000 Precision Power Analyzer provides measurement with world-class DC and AC signal accuracies.

## Overview of a Photovoltaic Power Conditioner

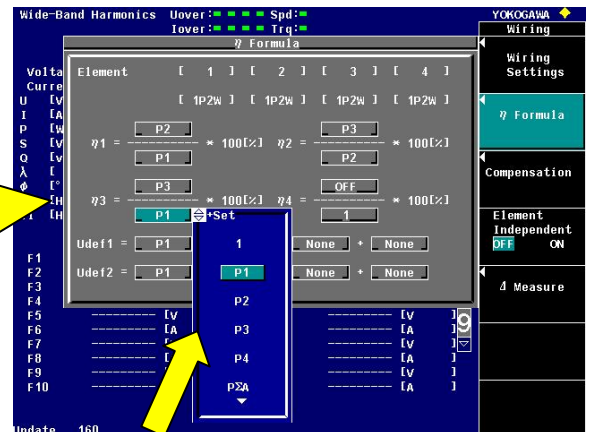
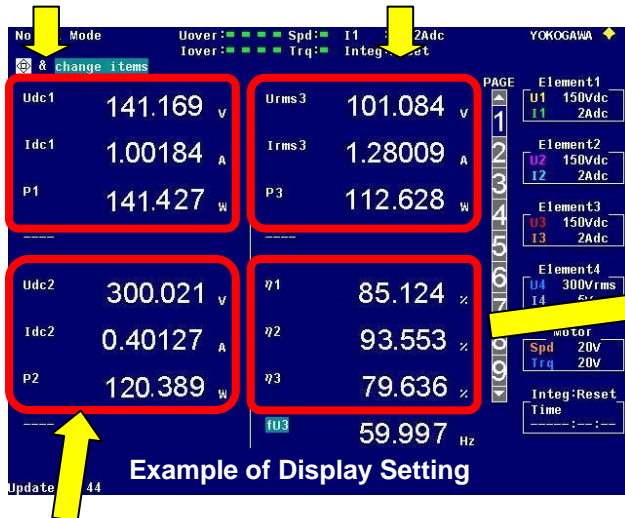


- (1) The voltage of the power (DC) generated by the solar cell module varies with the weather.
- (2) The voltage value is boosted to a certain level.
- (3) The signal is converted to a 100 V AC signal.

- 1 Measure the DC voltage, DC current, and DC power generated in the solar cell module.
- 3 Measure the commercial power supply signal (100 V, 50/60 Hz) output from the DC/AC converter.

## Efficiencies Setting of WT3000

Set efficiencies  $\eta_1$ ,  $\eta_2$ , and  $\eta_3$ , and set equations for the boost converter efficiency ( $\eta_1$ ), DC/AC conversion efficiency ( $\eta_2$ ), and the total conversion efficiency ( $\eta_3$ ).



- 2 Measure the DC voltage, DC current, and DC power boosted in the booster converter.

## Advantages of the WT3000

- Allows precision confirmation of voltage, current, power, and efficiency with the world's highest measuring accuracy.
- Enables settings for the required measurement parameters and efficiency calculations, and makes it easy to check measured values.