

SolarEdge efficiency of S-Series and P-Series Power Optimizers - Application note

Version History

- Version 6.3, November 2024 – Added R500 and R600 Power Optimizers
- Version 6.2, September 2024 – Added S650C and U650 Power Optimizers
- Version 6.1, May 2024 – Added S1400 Power Optimizer efficiency graph

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Introduction

Power Optimizer efficiency is the ratio between the output power and the input power of the Power Optimizer. It is also known as DC/DC conversion efficiency. Efficiency is defined using the following parameters:

- Maximum (Peak) efficiency - the highest DC/DC conversion efficiency of the Power Optimizer.

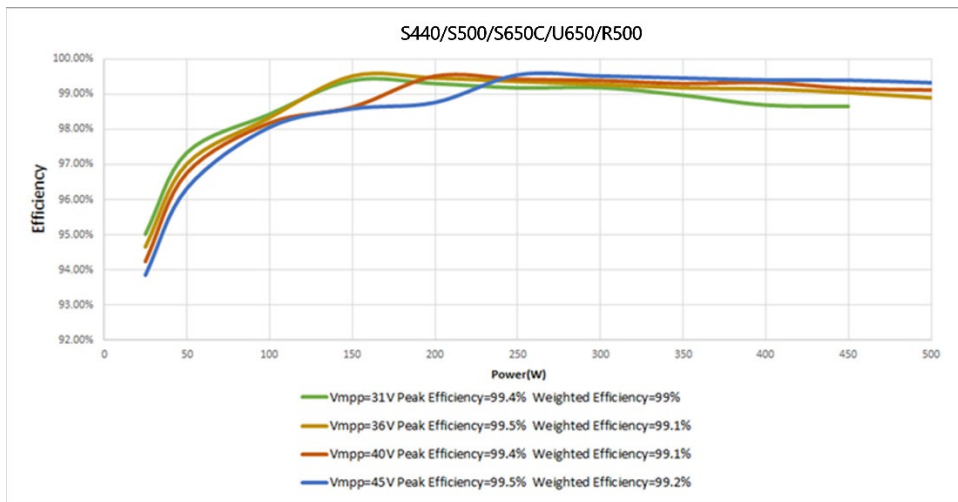
- **Weighted efficiency.** This value is the weighted average DC/DC conversion efficiency. It provides a more accurate representation of the Power Optimizers' operating profile. The weighting formula takes into account daily and yearly changes in environmental conditions and is calculated by measuring the efficiency for different loads, input voltages and string conditions. Weighted efficiency of Power Optimizers is calculated using the same formula as that used for inverters.

The efficiency specifications of S-Series and P-Series power optimizers are:

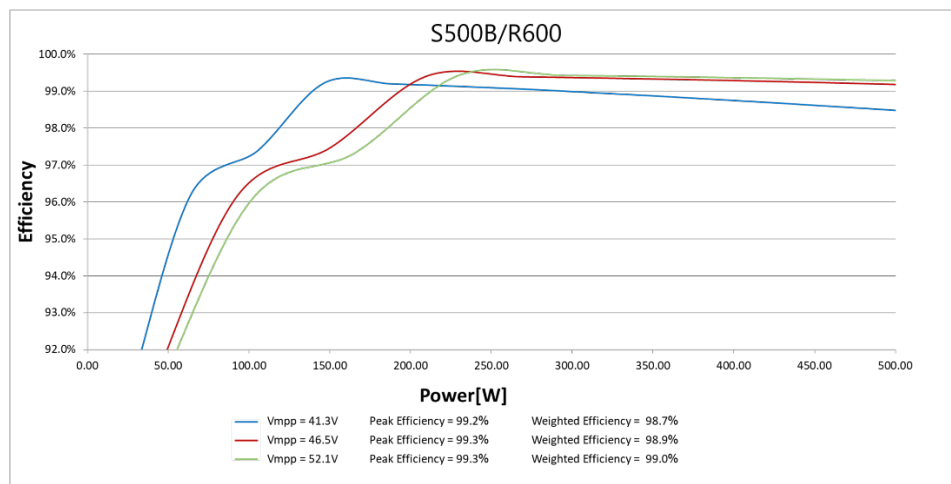
- **Maximum Efficiency:** 99.5%
- **Weighted Efficiency:** 98.8%

The graphs below represent S-Series and P-Series Power Optimizer efficiency under typical operating conditions.

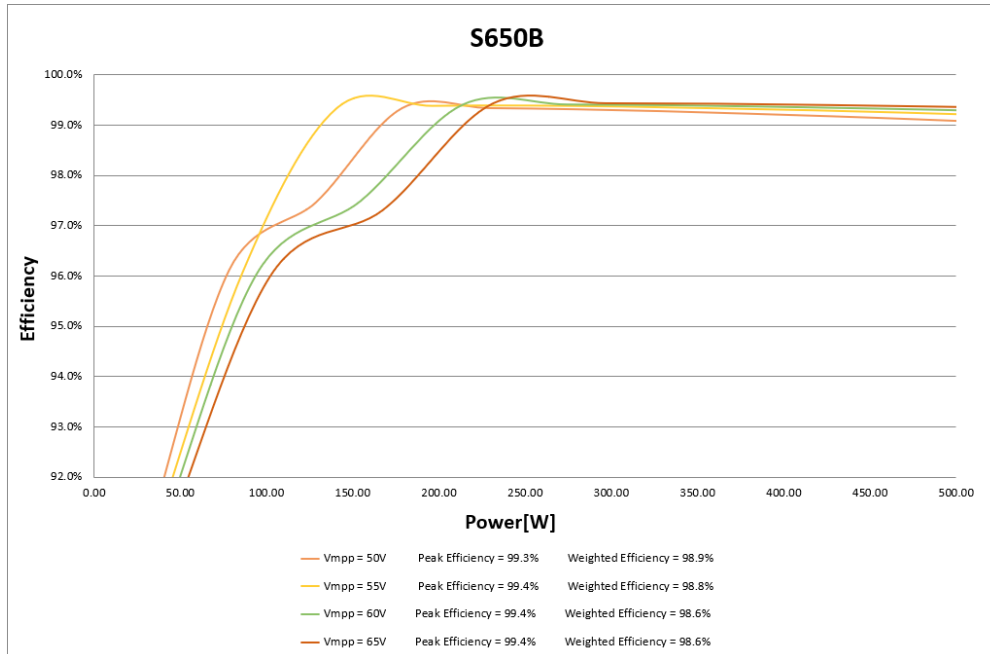
S440/S500/S650C/U650/R500



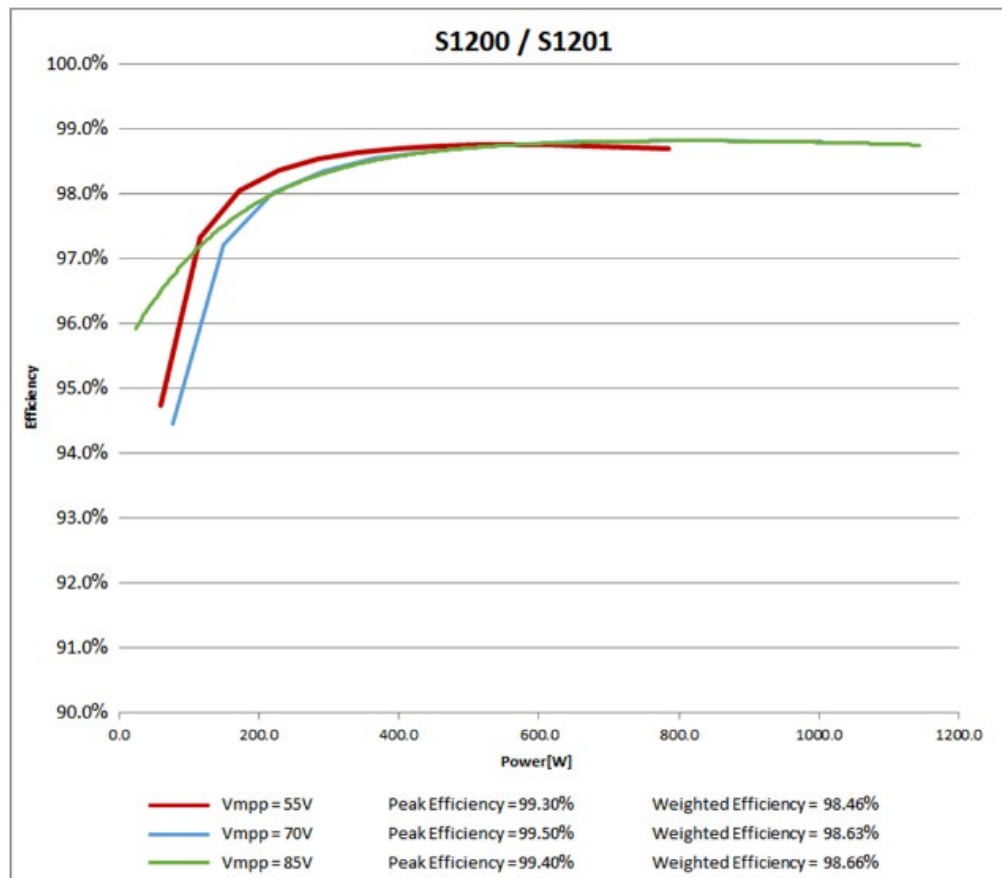
S500B/R600



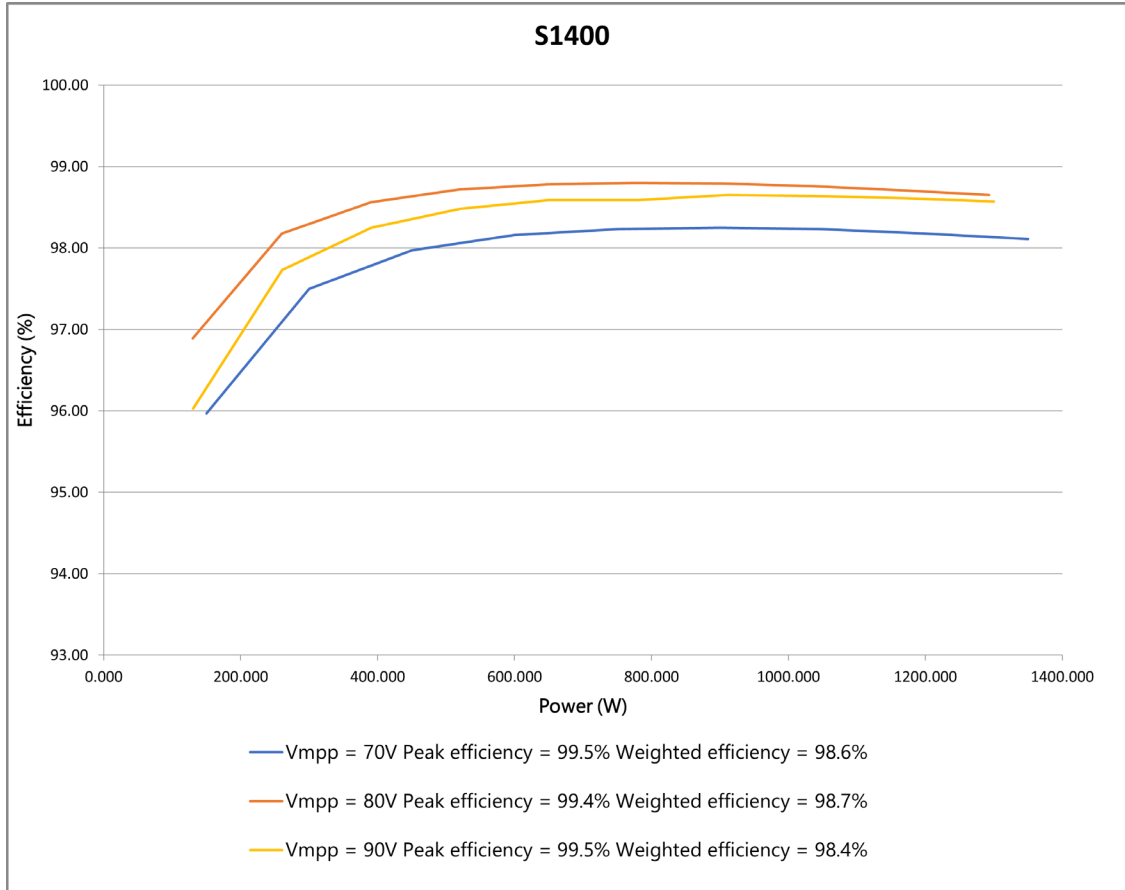
S650B



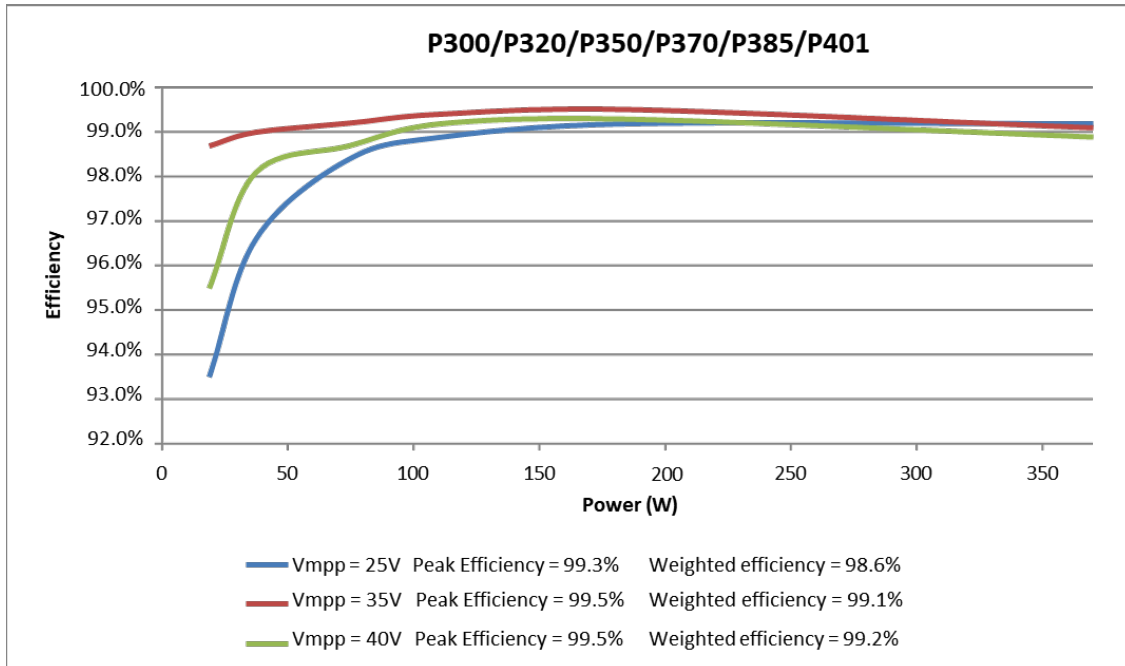
S1200/S1201



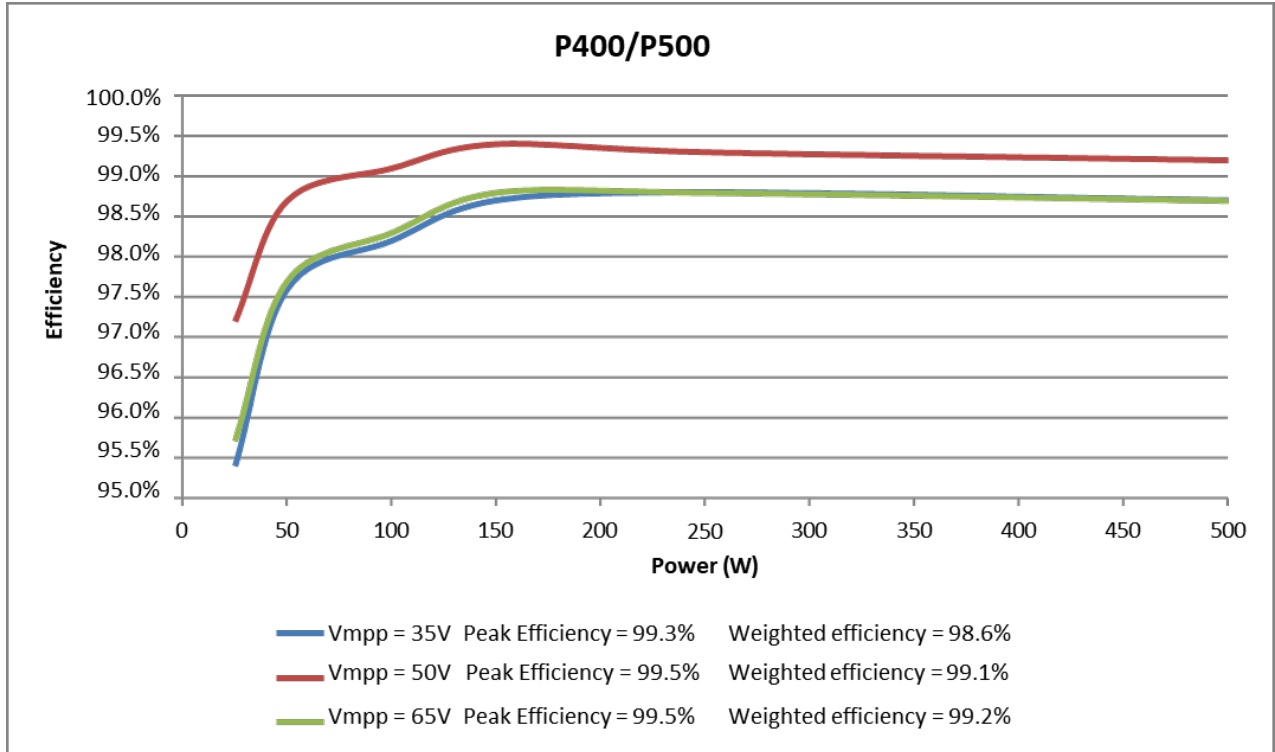
S1400



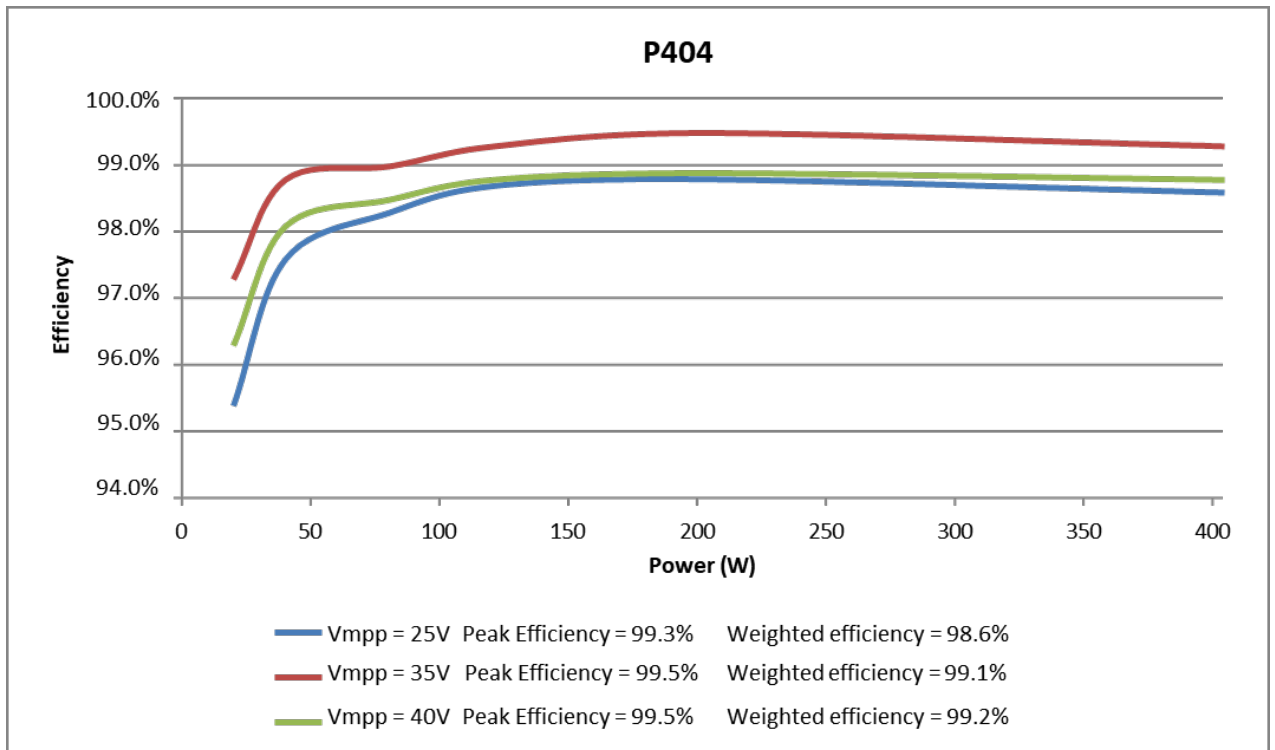
P300/P320/P350/P370/P385/P401



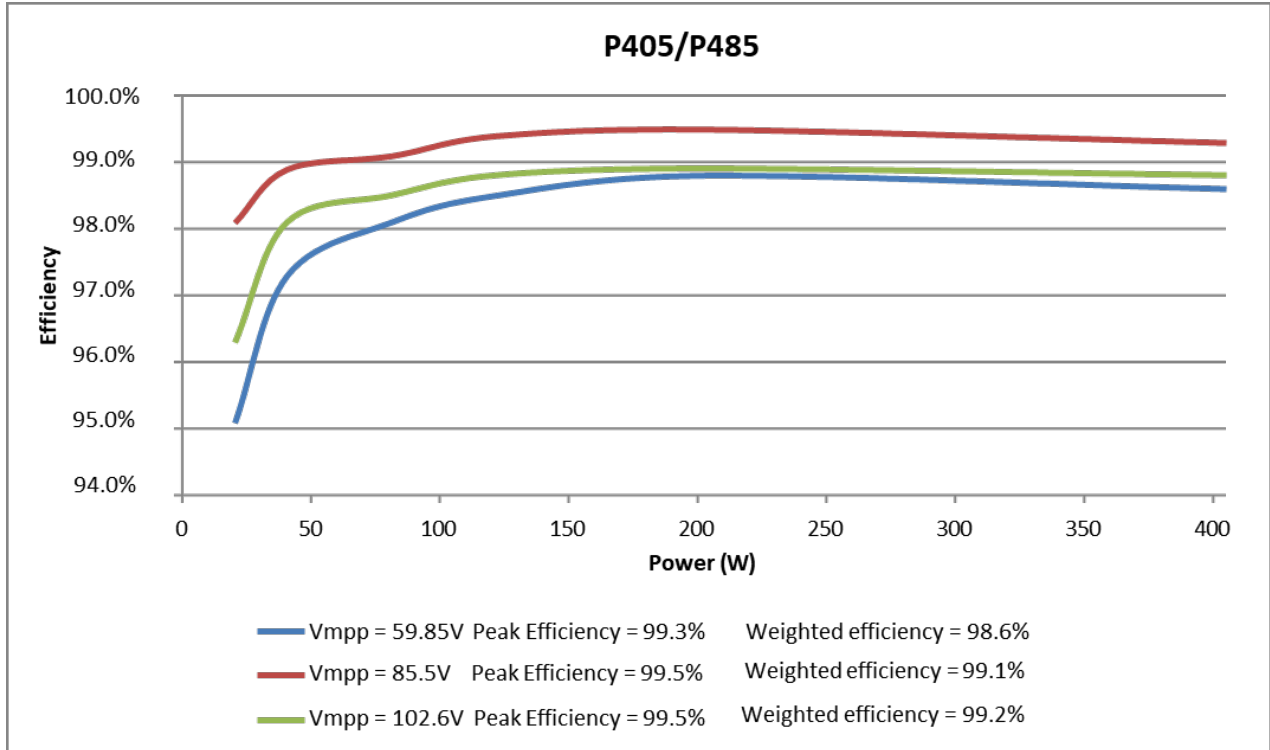
P400/P500



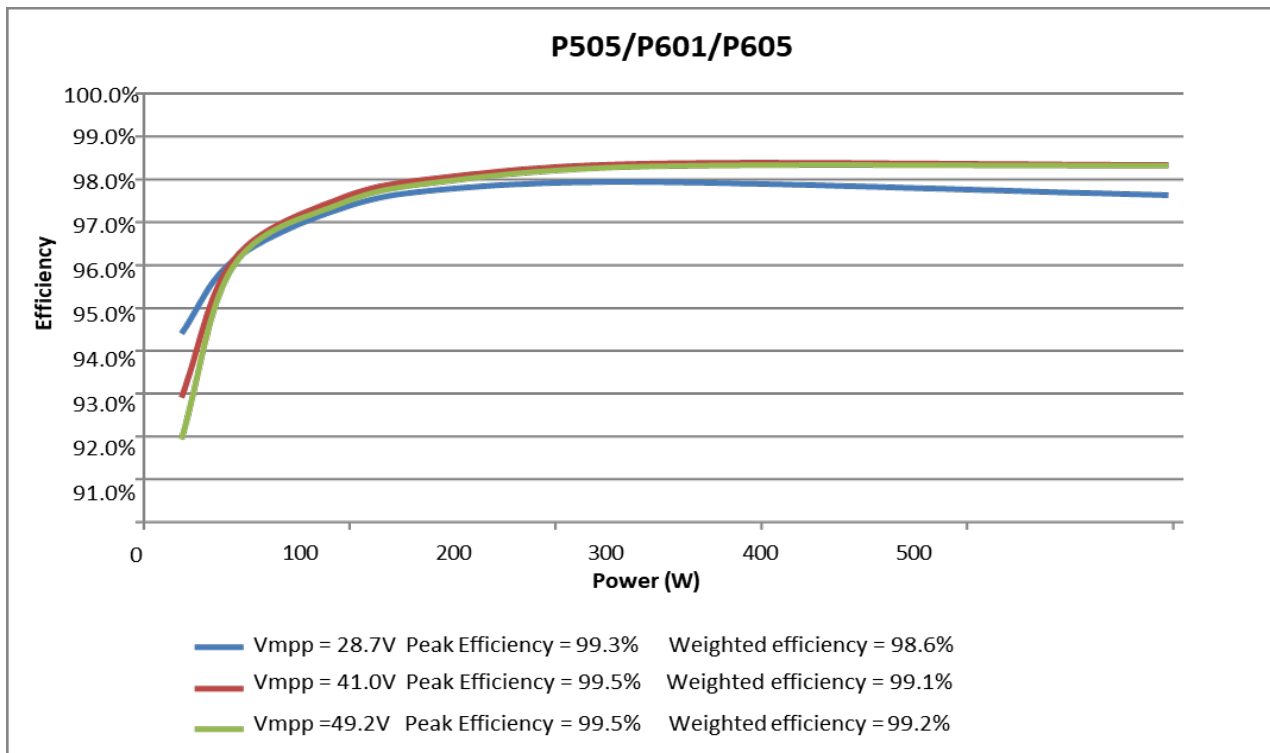
P404



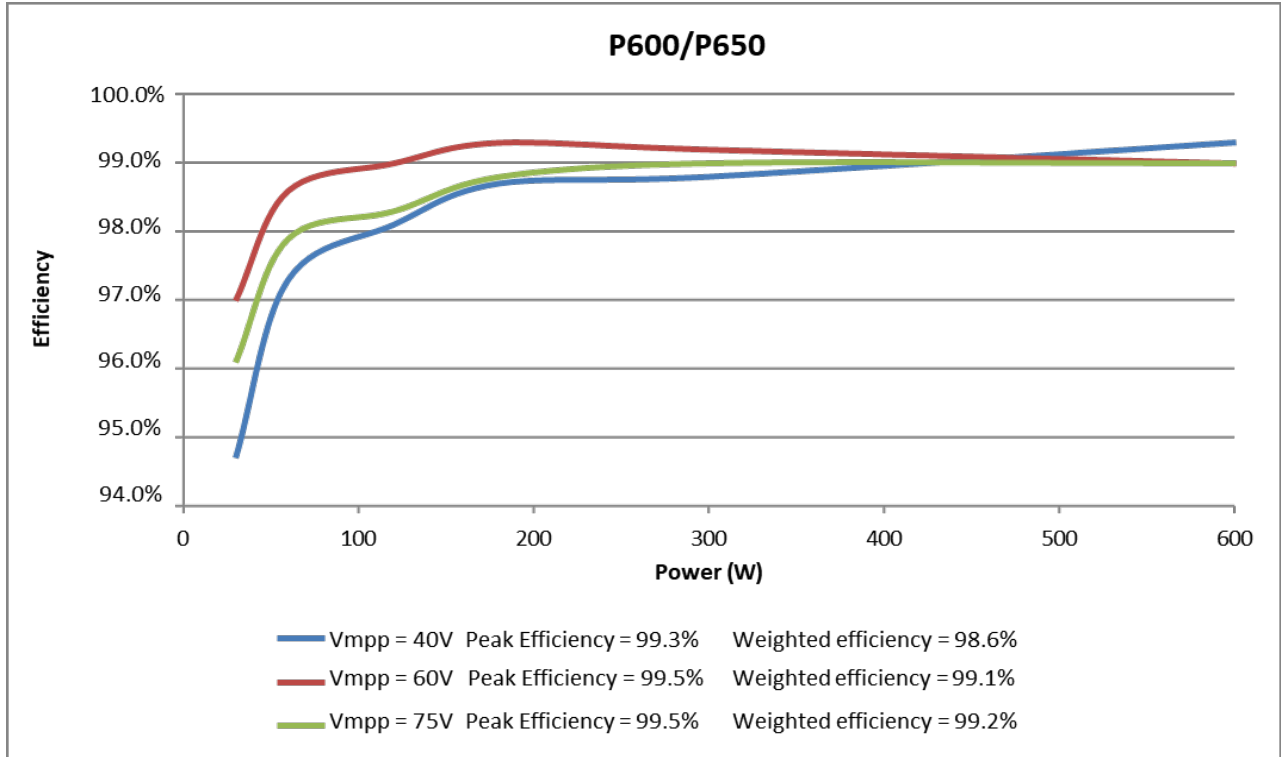
P405/P485



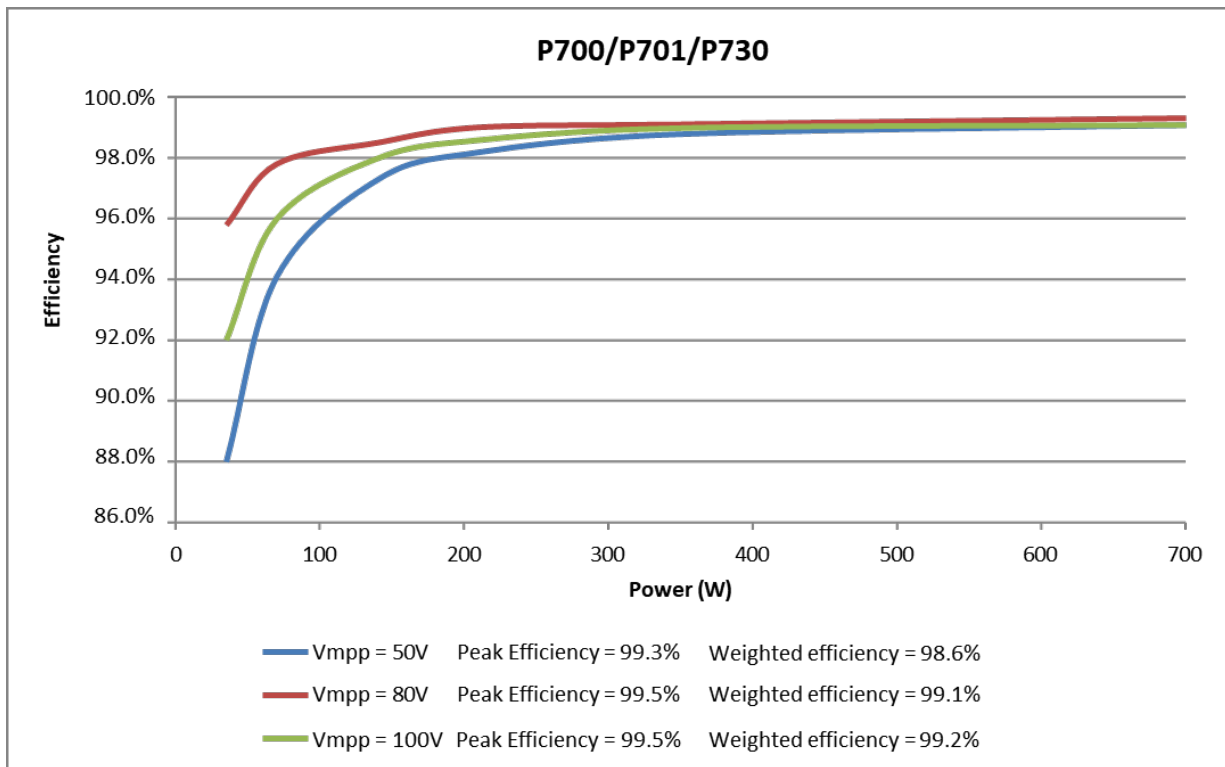
P505/P601/P605



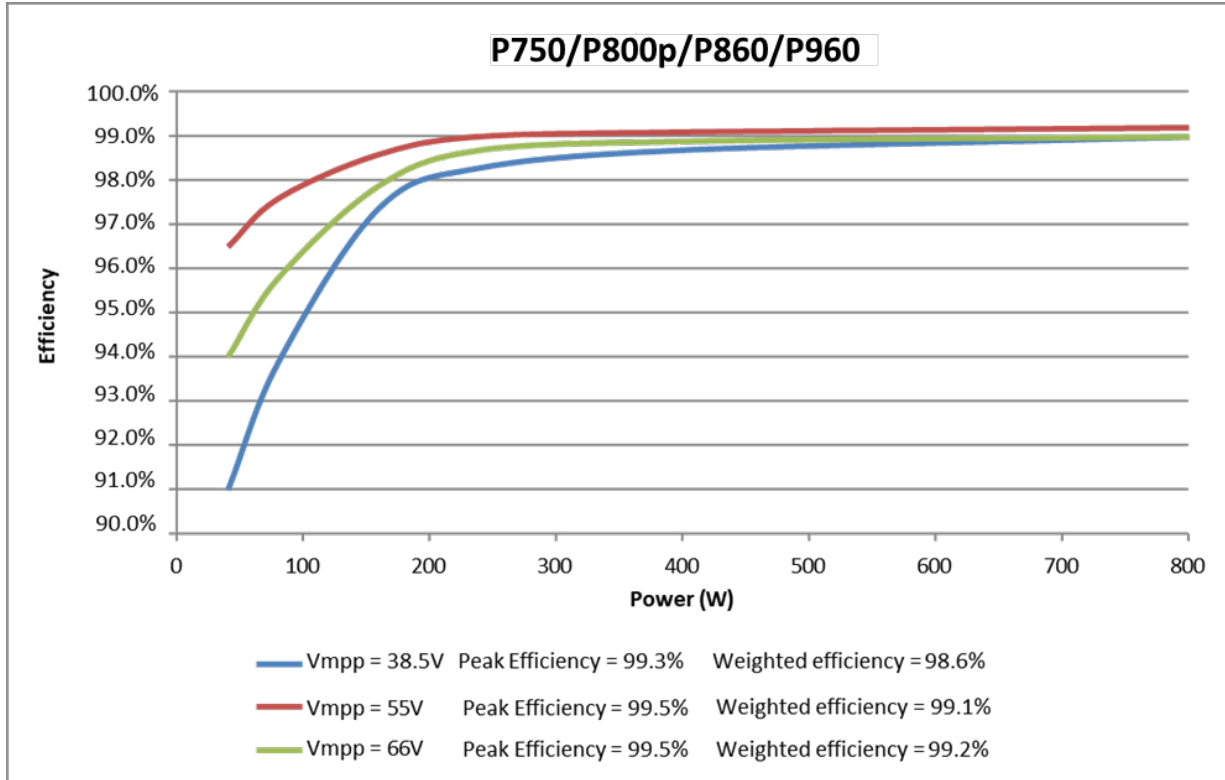
P600/P650



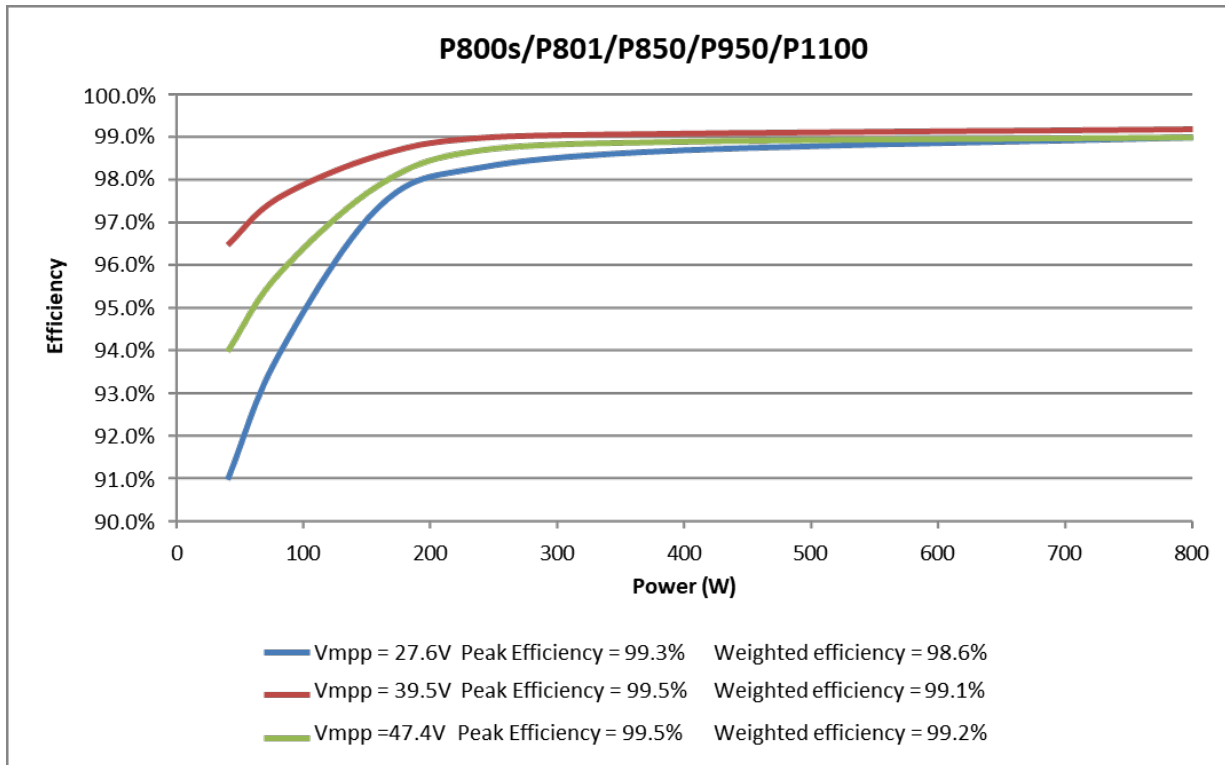
P700/P701/P730



P750/P800p/P860/P960



P800s/P801/P850/P950/P1100



Safety Symbols Information

The following safety symbols are used in this document. Familiarize yourself with the symbols and their meaning before installing or operating the system.



WARNING

Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.



CAUTION!

Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage or destruction of the product. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.



NOTE

Denotes additional information about the current subject.



IMPORTANT SAFETY FEATURE

Denotes information about safety issues.

Disposal requirements under the Waste Electrical and Electronic Equipment (WEEE) regulations:



NOTE

Discard this product according to local regulations or send it back to SolarEdge.

Support Contact Information

If you have technical problems concerning SolarEdge products, please contact us:



<https://www.solaredge.com/service/support>

Before contact, make sure to have the following information at hand:

- Model and serial number of the product in question.
- The error indicated in the SetApp application, LCD screen, monitoring platform or by the LEDs.
- System configuration information, including the type and number of modules connected and the number and length of strings.
- The communication method to the SolarEdge server if the site is connected.
- The product's software version as it appears in the ID status screen.