

The External Power Supply International Efficiency Marking Protocol

What is the international efficiency marking protocol?

The international efficiency marking protocol provides a system for power supply manufacturers to designate the minimum efficiency performance of an external power supply, so that finished product manufacturers and government representatives can easily determine a unit's efficiency. This mark does not serve as a consumer information label, but rather demonstrates the performance of the external power supply when tested to the internationally supported test method (this test method can be found at www.energystar.gov/powersuppliesdevelopment).

What does the international efficiency mark look like?

The international efficiency mark consists of a Roman numeral (I – VII) and is to be printed on the power supply nameplate, as shown below. The scale is designed with I being the least stringent (least efficient) level and VII being the highest (most efficient). To date, levels I – V have been set and levels VI and beyond have been reserved for future use as more stringent levels are established. The use of Roman numerals avoids any potential conflict with consumer efficiency labeling schemes. The text "EFFICIENCY LEVEL:" shown below may be omitted.

- Format: Roman numeral: I, II, III, IV, V, VI, or VII.
Font: Times Roman preferred (or other plain serif fonts).
Size: Legible and indelible.
Color: Text to contrast with the nameplate background.
Placement: On the power supply nameplate; however, exact location is at the discretion of the manufacturer. An example is provided below.



Who should adopt the international efficiency marking protocol?

The international efficiency marking protocol provides further opportunities for coordination between China, Australia, and the United States, which have worked over the past year to develop the external power supply energy-efficiency specification. Other countries are welcome to adopt the protocol and require manufacturers to mark products sold in their respective country, state, or region with the appropriate efficiency level.

ENERGY STAR will require manufacturers to follow the international efficiency marking protocol as of January 1, 2006. See External Power Supply Eligibility Criteria for details.

How will manufacturers benefit from using the international efficiency mark?

Over time, the marking system will be adopted and recognized around the world. As such, power supply manufacturers will not have to use different marks for each market into which they sell their products. The mark also will not require much space on the nameplate and was intentionally selected to avoid confusion with other non-energy related markings that already appear on external power supplies.

How should the international efficiency marking protocol be implemented?

The nameplate of single voltage external ac-dc and ac-ac power supplies must be clearly and permanently marked with a Roman numeral from the sequence I (least efficient) to VII (most efficient) that corresponds to specific minimum Active and No-Load efficiency levels. The performance requirements for each Roman numeral are shown in the table below.

To determine the appropriate Roman numeral, manufacturers: 1) compare the unit's Active and No-Load test data with the performance requirements at each level of the Roman numeral scale, and 2) choose the highest Roman numeral where the power supply meets BOTH the Active and No-Load requirements.

Roman Numeral	Description	Performance Requirements			
		Nameplate Power Output (P_{no})	No-Load Power	Nameplate Power Output (P_{no})	Average Active Efficiency
I	Used if none of the other criteria are met.				
II	No criteria established to date. Reserved for future use.				
III	US: EPA ENERGY STAR level Tier 1 (voluntary) China: CECP level Tier 1 (voluntary) California: CEC Tier 1 standard (mandatory) Australia: Mandatory Energy Performance Standard (MEPS)	0 to < 10 watts 10 to 250 watts	≤ 0.5 ≤ 0.75	0 to 1 watt > 1 to 49 watts > 49 to 250 watts	$\geq 0.49 \times P_{no}$ $\geq 0.09 \times \ln(P_{no}) + 0.49$ ≥ 0.84
IV	California: CEC Tier 2 standard (mandatory) Australia: Initial "High Efficiency" category (voluntary)	0 to < 10 watts 10 to 250 watts	≤ 0.5 ≤ 0.5	0 to 1 watt > 1 to 51 watts > 51 to 250 watts	$\geq 0.5 \times P_{no}$ $\geq 0.09 \times \ln(P_{no}) + 0.5$ ≥ 0.85
V	Reserved for future use.				
VI and higher	Reserved for future use.				
Where: P _{no} is the Nameplate Output Power of the unit under test. Ln refers to the natural logarithm.					