

ENERGY STAR UPS Specification Draft 1

Comments from the European Commission

We provide in the following comments from the European Commission to the Product Specification for UPSs Draft 1 Version 1 document. We generally appreciate and support the contents of the document.

Relation to international standards

We agree that we should align as much as possible with IEC 62040-3. There are however areas less covered by IEC 62040-3 such as measurements and calculation of energy efficiency, where it is needed to supplement with more definitions. These definitions may additionally be based on the European Code of Conduct on Energy Efficiency and Quality of AC Uninterruptible Power Systems (UPS).

Definitions

Distributed UPS: We should follow possible future development on distributed UPS (like the type used by Google, where the UPS is part of the individual server power supply), which may need to be included in future revisions of the specification.

Multi-mode UPS: We would like to have more details on the necessity of creating this product type, which is not defined in the IEC standard. If a multi-mode is functioning perfectly as it should i.e. changing automatically from VFD and/or VI to VFI when necessary, it should be categorized as a VFI.

Redundancy: We believe that 2N systems do not need to be categorized separately because they could be considered as two standard UPS coupled together. N+1 is useful as a category, since the extra control electronics will consume extra power.

VFI...VFD categorization: We agree that it is important to have clear classifications of the UPS systems and to discuss the use of the classification with the manufacturers.

Scope

Refurbished equipment: Refurbished equipment should not have its own category because use of refurbished equipment can be considered as just another type of raw material for the production process, and the refurbished unit should be considered as new.

Qualification Criteria

Average efficiency: We are not fully convinced that average efficiency using a load profile is better qualification parameter compared to efficiency requirements for several load points as least for larger UPS systems where the purchaser typically will have more knowledge on the systems. In any case, it is important to ac-

company an average efficiency with data on efficiency over the several load points (25 %, 50 %, 75 % and 100 %). Small UPS systems may use an average efficiency parameter.

Minimum Average Efficiency Requirement: We have compared the requirements with the corresponding requirements in the EU Code of Conduct, see the table below:

EU CoC		DoubleConvert VFI-S				VI VFI (not VFI-S)				VFD				Isolation Transformer				Filter
%time	%load	10-20 kW	20-40 kW	40-200 kW	>200 kW	10-20 kW	20-40 kW	40-200 kW	>200 kW	10-20 kW	20-40 kW	40-200 kW	>200 kW	10-40 kW	40-200 kW	200-500 kW	>500 kW	all
25,0	25,0	83,0	84,0	86,5	89,0	88,0	88,5	89,0	91,5	93,0	93,5	94,0	95,0	1,5	1,0	0,7	0,5	0,6
50,0	50,0	89,0	89,5	90,5	92,0	92,0	92,5	93,0	94,5	95,0	95,5	96,0	97,0	1,9	1,5	1,1	0,7	1,0
25,0	75,0	90,5	91,0	92,0	93,0	92,5	93,0	93,5	94,5	95,7	96,3	96,7	97,7	2,6	2,0	1,7	1,3	1,6
0,0	100,0	91,0	91,5	92,0	93,0	92,5	93,0	93,5	94,5	96,0	96,5	97,0	98,0	3,6	3,2	2,7	2,0	2,5
Average		87,9	88,5	89,9	91,5	91,1	91,6	92,1	93,8	94,7	95,2	95,7	96,7	2,0	1,5	1,2	0,8	1,1

ENERGY STAR		-----VFI-----				-----VI-----				-----VFD-----			
kW		15,0	30,0	120,0	300,0	10-20 kW	20-40 kW	40-200 kW	>200 kW	10-20 kW	20-40 kW	40-200 kW	>200 kW
Average		90,5	91,2	92,6	93,5	97,0	97,0	97,0	97,0	98,0	98,0	98,0	98,0

Diff. ES-EU %-points	2,6	2,7	2,7	2,0	5,9	5,4	4,9	3,3	3,3	2,8	2,3	1,3
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The EU CoC requirements are from the most recent version, 1.0a. An average efficiency has been calculated using the suggested average efficiency calculation formula. It is not possible to do a one to one comparison due to different categories. If products under the EU CoC have isolation transformers and filters, the efficiency is allowed to be lower.

It was anticipated that the ENERGY STAR requirements were stricter than the CoC requirements, because the latter were set more than three years ago. This is seems to be the situation as a whole for the product types and sizes.

Please notice that there is an error in Table 1: P should be in VA and not kVA.

DC-Output UPSs: These might come into the marked in the future and we should at least follow the market development.

Power Factor: For true VFI type UPS (usually double conversion) the input power factor should be filtered to 1.0 for all loads.

Standard Information Reporting Requirements: We support the use of a Power and Performance Data Sheet.

LCA as part of requirements: EU considers that in the context of ENERGY STAR, preparatory work should remain focused on energy consumption in the use phase. Other environmental aspects throughout the life-cycle of products are considered in different EU programmes such as the Ecolabel, the Green Public Procurement and Ecodesign ErP. There is an ErP preparatory study on UPS system underway.

Separate Batteries: Placing batteries in the cooled area and the UPS-electronics in not cooled areas is common practice for savings on HVAC energy consumption in server rooms. This practice should be promoted.

Data Measurement and Output Requirements: Online real time indication of total energy efficiency for the complete UPS should always be available. Presentation and protocol should be based on TCP/IP-browser solution.

Testing

Testing of Smaller UPSs: We believe that they should not be categorized as battery chargers even though the test methodology might be harmonized, where relevant. One reason would be that many small units could be combined into one big modular unit.