

# Power Systems Division

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The main product development of the power system division in 2003 fiscal year is as follows:

For the power conditioner for photovoltaic generation system, in addition to miniaturization and lightweighting, we have commercialized an all-in-one type wall-hanging model with limited functions.

For mid-capacity power supply, we

have down-sized, light weighted, and improved the efficiency of the continuous inverter power supply system uninterruptive power supply (hereafter, UPS) and completed the "SANUPS" A23C series.

For small capacity power supply, the functions of parallel redundant system UPS, the "SANUPS" ASD series was enhanced for the im-

provement of reliability on maintenance.

For the accessory of UPS, the functions of the LAN interface card for the network were enhanced for the improvement of performance and the expansion of the range of compliance.

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## Development of the Power Conditioner "SANUPS" P73D103 for Photovoltaic Generation System

Standardization, miniaturization, and integration of the surrounding circuits of the power conditioner are in great demand as the standardization and packaging of photovoltaic generation system products have accelerated.

In the power conditioner, the "SANUPS" P73D103 developed this time, we made use of the coordinated system drive only function instead of the conventional, multi-functional type with independent, charging functions, and also adopted the wall-hanging type for easier standardization and packaging of a system.

In addition, we succeeded in miniaturizing and light weighting it by reorganizing the main circuit method and the control circuit method to greatly reduce the number of parts.

In the surrounding circuit, a connecting box to consolidate solar cell array and a transformer juicer to take heating and temperature in were built into the device.

We commercialized the device capacity of 10kW, and reduced 77% in size and 65% in mass compared to the conventional model, which includes the surrounding circuit. The efficiency improved by 92%, including the connecting box.

With these improvements, the developed product was completed as a device that is able to contribute to the cost reduction of the entire system.

Details are introduced in the new products introduction article in this Technical Report.



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## Development of the Mid-Capacity UPS "SANUPS" A23C

The power supply supplied to tools like data center, etc. has to be a continuous inverter power supply system UPS since there is a firm demand for stable voltage and frequency. On the other hand, high efficiency of UPS is also in demand from the environment protection point of view.

The "SANUPS" A23C was developed as a continuous inverter power supply system UPS for such a background.

We have produced a miniaturized, light weighted, and highly efficient "SANUPS" A23C by deleting the conventional inverter output transformer as well as the chopper circuit,

which rises direct current by raising the voltage of a battery as much as possible, and connecting directly with the INV input.

We commercialized the capacity series of 50kVA, 100kVA, and 200kVA, and were able to reduce 30% in size and 50% in mass compared to the conventional models. As for the efficiency, an AC/AC efficiency of 92% was achieved, which is first-rate in this class.

Details are introduced in the new products introduction article in this Technical Report.



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## Enhancement of the Small Capacity UPS “SANUPS” MODEL ASD Series

The “SANUPS” MODEL ASD series has the lineup of 3.5-14kVA as a highly reliable UPS which is able to operate units of 3.5kVA in parallel up to four, and also able to increase units and operate in parallel redundant.

This UPS is able to continue the inverter power supply even when an emergency unit breaks down due to the parallel redundant operation method though it was necessary to use the maintenance by-pass circuit together temporarily at the time of maintenance such as unit exchange in the conventional models.

We added the hot swap function on the inverter this time to improve power supply reliability at the maintenance of inverter maintenance.

Until now, the start/stop of the inverter has been done by batch operation with the device; however, the new product can be operated by a unit.

As a result, this developed product became a highly reliable UPS system of which inverter supply power is steadily possible, including maintenance maintaining.



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## Enhancement of the LAN Interface Card

We have been selling the LAN interface card in advance of other companies to support the network of UPS. Recently, we sometimes see cases in which the conventional LAN interface card cannot support the network because of the number of computers that must be shut down, or the speed of the network.

To solve this problem, the LAN interface card was enhanced. The main enhancements are as follows:

1. Not only 10Base-T, but 100Base-Tx is supported.
2. The number of computers that can be shut down has been enhanced from 10 to 50.
3. The setup time at introduction was shortened by the setup value downloading/uploading function.
4. Monitoring with devices like cellular phones became possible even without being at the monitoring terminal by adding an e-mail receiving function to a sending function.
5. The range of the UPS in which the LAN interface card can be used was expanded by communicating not only with UPS and serial signal but also with contact signal. Moreover, the circuit structure is redesigned to reduce the material by approximately 35%.



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Joined company in 1977.  
Power System Division, 1st Design Dept.  
Worked on the development and design of the power system.