# Power Systems Division

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The main products of the power systems division in 2002 are as follows.

The mid-scale "SANUPS" TYPE E power supply system lineup has been expanded to include the new 50kVA and 100kVA models, in addition to the previously completed 20kVA model.

In the small capacity power supply system lineup, the "SANUPS" MODEL TYPE ASE-H was developed. The Type ASE-H is available in 100V and 200V systems, and couples a small, lightweight design with high efficiency and high relianablity. Using the parallel redundant operations of multiple machines, each with completely individual control, large-capacity and high-reliance operation performance can be acheived.

Additionally, the "SANUPS" MODEL TYPE ASE 1U was developed as a thin-type UPS for 19 inch racks. This uninterruptible power supply system (it being called UPS) measures 1 rack unit in height, and leads the industry in continuous inverter power supply systems.

The "SANUPS" MODEL TYPE ASE15S1 lead the expansion of the ASE series. Also, the DC/AC inverter, ASD, ASE, etc. have been lined up as UL-compatible .

In the UPS management software, in order to address overseas markets, an English version of "SAN GUARD Lite" and the "LAN interface card" was created.

In the power supply management equipment, the "IT Monitor", the "IT Monitor Manager", and the "SANUPS Controller" were developed. These new products address the needs of the power supply solution of the rack and have come to be able to make a new proposal such as the monitering of inside of the rack and the control of UPS etc.

## Expansion of the Mid-scale UPS "SANUPS" MODEL TYPE E Series

The 20kVA UPS "SANUPS" MODEL TYPE E, which uses the parallel processing method, has been completed.

The series has now been expanded with the completion of 50kVA and the 100kVA model.

When developing, a reduction in size was achieved by keeping the high frequency reactor for the forced air cooling within the wind tunnel. The reactor for the main conversion unit, the thyristor switch unit, and the smoothing circuit reactor use the 50kVA as a base. The 100kVA uses the unit and the reactor of the 50kVA parallelly, reducing the cost by sharing.

The Type E was reduced 53% (100kVA) and 46% (50kVA) in size and 43% (50kVA) and 25% (100kVA) in mass compared with the MODEL TYPE AMA-T3 series of the ON-LINE UPS of our company.

## Development of the Small Capacity UPS "SANUPS" MODEL TYPE ASE-H

As IT technology develops, the reliability of internet related communications equipment is highly demanded. Communications equipment and computers are sensitive to power supply changes. Therefore, high quality electric power supplies for these types of equipment are in demand. The reliability of the UPS which supplies the electric power is extremely important and is demanded by the market. Additionally, growing concern for environmental protection has increased the demand for a product which effectively suppresses power consumption .

In such a setting, the "SANUPS" MODEL TYPE ASE-H (1kVA, 100V faction, and 200V faction) was developed as the UPS which exeled in reliability, extendibility, and environmentalism.

The MODEL TYPE ASE-H is the UPS of the continuous inverter power supply system. It adopts completely individual control of its own and keeps a room for one unit to the feeding power capacity in preparation for an emergency trouble. Thus, it can supply steady and high quality electric power. Moreover, it has the flexibility to expand the output capacity up to 5kVA by linking up to 5 units. Additionally, a 91% power conversion efficiency has been achieved, contributing to environmental protection.

The details will be introduced in the feature article in this technical report.

## Development of the Small Capacity UPS "SANUPS" MODEL TYPE ASE 1U Type

As more and more devices are installed to meet the demand of advancing IT technology, installation space has become a growing concern. Therefore, there have been advances in the downsizing of equipment. Servers are now a higher density type, and the commercialization of 1U(43mm) products has been increasing. In such a background, the "SANUPS" MODEL TYPE ASE 1U type (1kVA and 100V faction) UPS was developed in order to address the demand for high density products.

Because of a problem with heat conversion efficiency, the Type ASE 1U UPS adopted a continuous inverter power supply system, which was sold from several companies. The continuous inverter power supply system also addressed reliablity and economic concerns.

The heat problem was solved by using the technology of continuous inverter power supply system that our company cultivated for many years, coupled with the highly effective technology of the "SANUPS" MODEL TYPE ASE10S1, which has been selling since last year. As a result, the 1kVA continuous inverter power supply system with 1U in height was achieved in advance of the industry.

It is expected that the"SANUPS" MODEL TYPE ASE 1U type UPS can not only be sold to existing customers, but it also can be expanded to the set sales with the server and the rack.

## Development of the Small Capacity UPS "SANUPS" MODEL TYPE ASE15S1

The demand of the internet related devices increases as IT technology develops, and UPS devices are required for reliablity.

There are many UPS in the 1kVA range, and the price competition is extreme. Therefore, the "SANUPS" MODEL TYPE ASE10S1 was developed and has been sold on the market since last year.

About the 1.5kVA range, to which the MODEL TYPE ASC series (ASC15S1) corresponds, the low price competition has been intensified further including an overseas maker. Therefore, the MODEL TYPE ASC 15S1 was judged to be a life cycle of the product than the cost side, and MODEL TYPE ASE15S1 was developed with high performance, highly effective, small size, light weight, and low price as the same concept as the MODEL TYPE ASE10S1. This UPS shares the same circuit method as the past MODEL TYPE ASE, and promotes low pricing by adopting the same parts as much as possible about parts.

## Expansion of the UL Safety Standard Compatible Product

The necessity of the safety standard for power supply systems has increased since various power supply systems are installed in semiconductor equipment designed for export. Therefore, the product which acquired the safety standard in the DC/AC inverter and UPS were lined up. The models and directives acquired are:

・MODEL TYPE DA10SAJE-100U
Directives: UL60950, CB report
・MODEL TYPE ASD**S2U and ASE10S1U001
Directives: UL1778

As a result, it is now possible to export the DC/AC inverter and UPS to the North American market when being installed on equipment. The DC/AC inverter and UPS can also be exported to North America as individual products, and market expansion can be expected.

The product development will aim for not only UL standards, but also for other standards in other markets, such as CE for Europe, and CCC for China.

## English Version of the UPS Management Software "SAN GUARD Ⅳ Lite" and the "LAN Interface Card"

To correspond to various operating systems, the Japanese version of the UPS management software "SAN GUARD Lite" is now available in a Windows version, a Linux version, and a UNIX version.

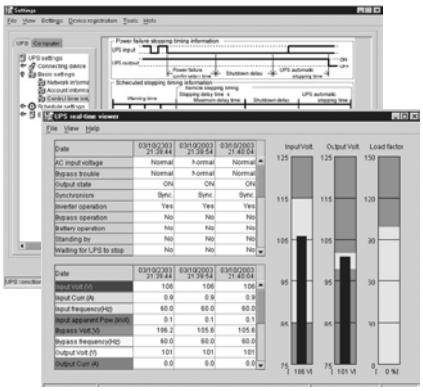
The English version of "SAN GUARD Lite" is available for the all the support operating systems, and is available for overseas sales of the UPS.

"SAN GUARD Lite" contains the following features which make it stand out from the convential software.

- It is possible to operate it on the same screen, regardless of the operating system.
- It operates under a multi OS environment.

Additionally, a flexible system configuration can be attained under an English environment by combining the "SAN GUARD Lite" and the "LAN interface card", which is also available in English.

It is expected that these will become strong arms to sell the UPS in foreign countries in the future.



## Development of the "SANUPS Controller"

In recent years the price of the UPS has tended to become lower. In addition, the situation of a single UPS backing up one server has increased, rather than one large capacity UPS to back up a number of servers.

However, when two or more servers and/or other devices are one single system, their seperate power supplies require coordinated on/off operation.

The "SANUPS Controller" is the best UPS to for this system. It uses the remote control terminal carried in our company's UPS devices to control a maximum of 5 UPS devices with a single button. Ordering can be setup by the user. Additional "SANUPS Controller" devices can be cascased, allowing any number of UPS to be controlled. Nine types of delay time can be set with a rotary switch on the front of the device. If the terminal is used, more fine control and the sequence control can be performed.

## The Development of the "IT Monitor" and the "IT Monitor Manager"

Inside of a typical rack used at a data center, servers, the network equipment, and other devices are mounted. All of these devices generate heat, and temperature may become very high. This may cause the server to fail, or the network equipment to hang up.

The "IT Monitor" can prevent the trouble beforehand by monitoring the temperature, humidity, the currents, analog signals, and the warning contact signal from the equipment, and informing IT administrators of any abnormality in the rack via e-mail.

Moreover, the monitoring by of serveral "IT Monitor" devices can be easily achieved by using the integrated monitoring software "IT Monitor Manager".

UPS monitoring is a planned addition for the "IT Monitor Manager". It would enable integrated monitoring of the power supply surroundings in the rack.

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Joined company in 1981
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Worked on the development and the design of the UPS