

Power Systems Division

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This document summarizes the main products that were developed by the Power Systems Division in 2011.

We developed the following four devices: the regenerative power compensation device “SANUPS K23A” (R type), enabling effective use of regenerative power in motor

drive systems; the peak-cut device for a large motor drive “SANUPS K33A” (P type) using an electric double layer capacitor for storage devices; the power conditioner for high efficiency photovoltaic power generation systems “SANUPS P73H” using a non-insulating method; and the independent

power supply for photovoltaic power generation systems “SANUPS P11A”, enabling power supply even during power failures.

The following information provides an overview and features for each product.

■ Development of the Regenerative Power Compensation Device “SANUPS K23A” (R Type)

In order to reduce CO₂ emission, efforts towards energy conservation are being made in recent years in various fields. Fields that use motors account for about 57% of the power consumption for all of Japan, which amounts to almost half, so saving the energy in those fields is much expected to yield CO₂ reduction. For this reason, we developed the regenerative power compensation device “SANUPS K23A” (R type), which realizes an effective use of regenerative power in motor drive systems.

This device is designed to be used

in industrial equipment or conveyance equipment to store the power generated upon motor deceleration in the electric double layer capacitor (EDLC), and use this stored energy for driving motors, thus reducing the amount of power used for motor drive systems.

It also has a peak-cut function that sets a limit for received commercial power, and discharges (assists) from the EDLC any insufficient power due to that limit.

The lineup includes output capacities of 20 kW and 40 kW.



■ Development of the Peak-cut Device “SANUPS K33A” (P Type)

At factories, a large electrical current flows instantaneously when starting up electrical equipment (such as motors). We developed the peak-cut device “SANUPS K33A” (P type), which can reduce the commercial power when such a large, instantaneous current is required by discharging (assisting) the power stored in an electric double layer capacitor (EDLC).

Conventional factories needed to prepare power-receiving equipment by taking into account a large current at startup. By using this device and assisting the power, the scale of such power-receiving equipment can be suppressed to a necessary minimum, and it can also be effective in reducing electricity costs.

In addition to charging the EDLC with commercial power, regenerative power that occurs at the time of motor deceleration can also be stored so that the regenerative power can be utilized effectively. Furthermore, adopting a long-life EDLC also realizes longer use and reduction in maintenance costs.

The first product comes with the device capacity of 1800 kW (input capacity: 800 kW, assistance capacity: 1000 kW).

Depending on the combination of the internal unit and the EDLC, the input capacity can be selected in the range between 200 and 1400 kW, and the assistance capacity between 1600 and 400 kW.



■ Development of the Power Conditioner for Photovoltaic Power Generation Systems “SANUPS P73H”

We developed the 10 kW power conditioner for photovoltaic power generation systems “SANUPS P73H” that achieved a conversion efficiency of 94.5%, which is top in the industry (as of March 2012, based on Sanyo Denki’s survey results).

This device adopts a non-insulating method, which does not use an isolating transformer in the main circuit, and the conversion circuit is composed of a soft-switch type chopper circuit and a 3-level type inverter circuit.

In order to address the diverse selection of photovoltaic battery modules of recent years as well as high conversion efficiency, the “SANUPS P73H” can handle an input voltage of 600 V DC. Also, it has an airtight housing with superior dustproof and splash-proof performance for use as an outdoor power conditioner, which protects the device from ingress of rain, dust, or small bugs to make a highly reliable product that customers can use with even greater security.



■ Development of the Independent Power Supply for Photovoltaic Power Generation Systems “SANUPS P11A”

We developed the independent power supply for photovoltaic power generation systems “SANUPS P11A”, which can supply power from photovoltaic power generation systems even during power failures.

Currently, most of the photovoltaic power generation systems for utility connected systems do not have a standalone function. In order to equip them with a standalone function, the power conditioner needs to be replaced or modified.

This power supply device can turn the existing systems into systems with a standalone function by implementing simple additional connection construction.

We have lined up the following two types.

(1) U type (standalone, storage type)

- UPS type that supplies stable power even during power failure
- Output capacity: 1.5 kVA
- Battery storage time: 180 minutes

(2) D type (standalone type)

- Inverter type that can be used only while the photovoltaic panel generates power
- Output capacity: 3 kVA and 5 kVA

Both the U type and the D type can be used in photovoltaic power generation systems with a photovoltaic panel output voltage up to 500 V DC. The operation range using the power from the photovoltaic power generation is 200 to 500 V DC, and the AC output is 100 V AC.

Installing this device realizes more effective use of existing photovoltaic power generation systems.



U type



D type



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Joined Sanyo Denki in 1977.

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Worked on the development and design of power systems.