

# Development of Power Manager "SANUPS T"

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## 1. Introduction

Since the development of our power supply management unit "Network Power Manager" in 1999, Sanyo Denki has continued to provide systems that fully meet a wide range of requirements, including the (1) building of computer systems with no wasted power consumption, (2) automation of startup and shutdown procedures for computer systems, and (3) restoration by power supply reset from remote backup equipment.

In recent years, however, higher speed networks are being developed and greater numbers and more complex computers are being incorporated into corporate network systems at a rapid pace. In addition, the leaking of corporate data due to unauthorized access from external networks has become a social issue, and stronger security is now a major concern.

To respond to these changes, Sanyo Denki has developed a more advanced version of the Network Power Manager. This is the new power supply management unit "SANUPS T". This report presents the features of the new power supply management unit "SANUPS T".

## 2. Overview

Fig. 1 shows the exterior of "SANUPS T". This unit connects network devices such as computers, hubs, and routers to an output outlet and uses control from a remote terminal or based on a scheduled operation to reduce power consumption and perform automatic operation. This unit is available in type A and type B. Type A has four output outlets and four corresponding serial ports. Type B has eight output outlets without any serial ports.

Type A can perform shutdown control of a computer over a serial port connection. Both type A and type B can log into a

computer over a LAN connection using Telnet protocol for performing shutdown control of a computer. The maximum operating power load is 1500 W for both type A and type B.

Most settings, control, and other operations for "SANUPS T"



Fig. 1 "SANUPS T" (Type A)

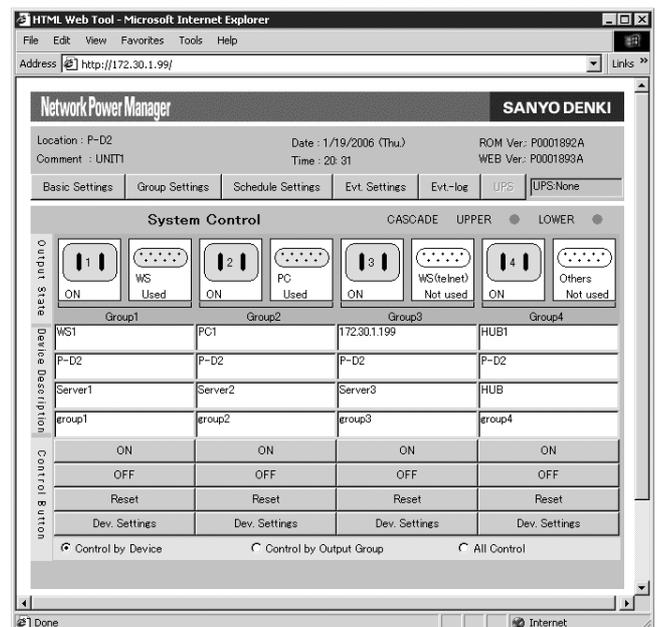


Fig. 2 Example of web browser screen (Example of Internet Explorer\*(1) screen)

\*(1) Internet Explorer is a registered trademark or trademark of Microsoft Corporation (USA) in the United States and other countries.



### 3.2 Alive monitoring

Connected devices can be monitored for proper operation over a LAN connection (ping monitoring) or over a serial port connection (control signal monitoring). If alive monitoring finds an abnormality, the administrator is notified by e-mail, SNMP trap, or other means, and for certain settings, reset control of the output outlet can be performed automatically for automatic recovery of the device where the error has occurred.

### 3.3 Shutdown Using LAN Connection

In addition to devices connected by contact signals and serial login, shutdown can also be performed for connected devices by Telnet login over a LAN connection.

Wake on LAN\*(2) can also be used to start up devices over the LAN connection.

\*(2) Wake on LAN: This is a technology where a special packet called a "Magic Packet" can be sent to start up a computer in sleep mode over a LAN connection.

### 3.4 Enhanced Link with UPS

A web browser can be used to display the status and measurement values of the linked UPS and perform stop control of the UPS. Also, when linked to a UPS, the shutdown operation can be performed not only for conditions such as

"power failure" or "low battery voltage", but also "major breakdown", "overload" and "serial communication error". In addition, when contacts are linked with the UPS, the polarity and availability of contact signals can be set so that linkups with not only Sanyo Denki UPS units, but any type of UPS from other companies can also be connected.

### 3.5 Improved Cascade function

With this unit, a cascade connection can be made for an unlimited number of units. If the highest-level unit in a cascade connection is linked to a UPS, when the highest-level unit recognizes a power failure or other shutdown cause, the units connected in a cascade issue shutdown requests to the lower units so that all units perform the shutdown process at the same time all the way down to lowest-level unit. During the shutdown process, information is exchanged between units so that the UPS output can be stopped safely once all units have completed their shutdown operations.

### 3.6 Stronger Security

Disabling of web, FTP, Telnet, and SNMP functions also stops functions that are not in use. The port number can be changed and accessible terminals can be designated for protecting the unit from unauthorized access. Connected units

**Table 1 "SANUPS T" Specifications**

Item	Type A	Type B
Input voltage	100V	
Allowance input voltage	85V to 115V	
Input frequency	50/60 Hz	
Operating environment	Ambient environment: 0 to 40°C, relative temperature: 20 to 90% (no condensation)	
Maximum total current capacity	15A	
External dimensions	H 43mm × W 430mm × D 205mm	
Mass	3.0 kg	
LAN interface	10Base-T/100Base-Tx × 1 (RJ45)	
Maximum power consumption	10W or less	
Number of output lines	4 outputs 4 lines	8 outputs 8 lines
Output control switch	Outlet for each output	-
PC/WS connection interface	4 ports (RS232C Dsub 9-pin)	
Shutdown interface serial	Serial	Windows systems: Windows standard UPS service "SANUPS SOFTWARE" Unix, Linux systems: Script startup using login "SANUPS SOFTWARE" Netware, AS400: OS standard software
	LAN	Script startup using Telnet login
Interface with UPS	Contact signal (polarity can be changed)/Serial communication	
Number of cascade units	Unlimited (dedicated cascade port)	
Control by external contact signal	1 point	

can also be shut down over a LAN connection. In addition, Wake on LAN can be used to start up devices over the LAN connection.

### 3.7 Time Adjustment by NTP

Network Time Protocol (NTP) used to synchronize times between designated NTP servers at fixed cycles for eliminating the troublesome task of time adjustment.

### 3.8 Monitoring by E-mail

Notifications of events that occur within this unit and status changes in the linked UPS can be sent to the administrator by e-mail. Also, when a status request e-mail is set to the e-mail address assigned to this unit, a reply e-mail can be sent containing device information and status and measurement information about the linked UPS.

### 3.9 Improved Setting Operations

Download/Upload function for setting values\*(3) can be used to easily copy the same settings to multiple units or restore settings when replacing hardware.

WS script, e-mail, and SNMP trap test transmission functions are provided to enable easy and safe operation verification testing during unit installation. Serial communication between this unit and the WS script can be monitored at the terminal for enabling easy analysis of errors contained in the WS script. Also, if necessary, the COM redirection function can be used to perform a serial login to WS remotely via this unit and issue WS commands.

\* (3) Download/upload function for setting values: Download of setting values is a function that backs up the information set for this unit to another medium over a network (FTP) or serial connection. Upload of setting values is a function that sets information backed up on another medium to this unit over a network (FTP) or serial connection.

## 4. "SANUPS T" Specifications

The specifications for "SANUPS T" type A and type B are shown in Table 1.

## 5. Conclusion

In this development, the white color of the conventional unit was changed to black for a sharp-looking appearance, and the interior was remade into a unit with advanced functions worthy

of this impressive appearance. This is why we firmly believe that this product can fully meet the requirements of a wide range of users.

In the future, we intend to continue to contribute to society by carefully assessing market needs and developing even more attractive products in a timely manner.



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