



Remote Power Switching

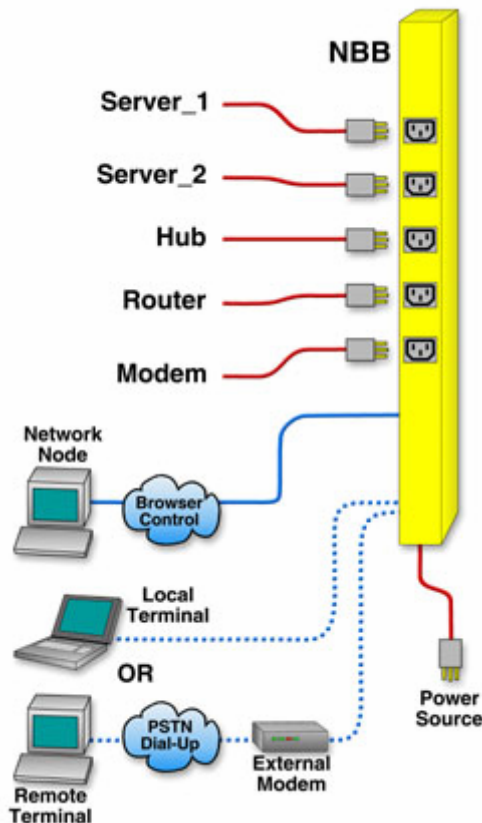
Product Overview

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1. Introduction

Network equipment sometimes "locks-up", requiring a service call just to flip the power switch to perform a simple reboot. The new Network Power Switch gives network administrators the ability to perform this function from anywhere on the LAN/WAN, or if the network is down, to simply dial-in from a modem for out-of-band power control.

1. 1. Overview



The Power Switches can communicate over any TCP/IP network using generic Telnet or any Web Browser, or out-of-band using an external modem and terminal emulation. Each outlet can be assigned an individual password, device name, reboot delay time and unique power-up default status.

Address specific IP security masks prevent unauthorized network access to the Power Switch command mode. The Power Switches provide several password security levels; System and Administrator level and User level. The System password allows access to all configuration and command functions. The User passwords allows access only to assigned plugs. User level security features are ideal for co-location applications, where multiple users may be allowed plug-specific access to the Power Switch unit.

Reboots and plug switching are controlled by simple ASCII commands when using Telnet or a serial connection, or use the graphical Web Browser Interface to the unit via the network. Set-up and configuration is also simple; easy-to-follow menus lead the user through the installation process.

1. 2. Special Features

MDD has several Power Switch Families, for AC or DC, with encryption of the transmitted data or without, or combined with a Terminal Server in the same unit. These units can be single or dual feed, the latter to increase the power available at the power outlets. One version is available as a combination of an encrypted Terminal Server with eight serial ports and 4 IEC320/C13 power outlets for switching equipment power on or off.

1. 3. Uninterruptible Power Distribution

But now the power outlets can even be made uninterruptible by the use of the ATPS, the Automatic Transfer Power Switch. This ATPS connects to 2 input power sources, either two separate AC feed circuits or one AC Mains Input and one AC UPS input. The output of the ATPS is normally the "Primary Input", but if this fails the output is switched internally within 30 ms to the "Secondary Input", providing power to all attached equipment. The 30 ms switching time is today acceptable to most equipment, like routers, switches or servers.



2. The Power Switch Families

2. 1. The MPC Family

The new MPC-Series Managed Power Controllers provide power distribution and delivery to rack mount equipment while managing critical elements via IP, external modem or local terminal. The MPC can monitor and distribute power to your equipment and automatically notify you when changes in current levels, temperature, circuit breaker status or other factors exceed user-defined threshold values.

Power at each outlet can be remotely switched On/Off individually, as a group for dual power supply servers, with a time delay or scheduled for On/Off shutdowns to conserve energy in the data center. Historical power usage on each circuit can be graphically displayed to report spikes or drops in amps, watts, volts and temperature. Total current, power and energy use is metered and reported in Amps, kW and kWh.

The MPC Family has units for horizontal Mount with 8 and 16 outlets, or for vertical mount with up to 20 IEC320/C13 outlets.



Summary:

- Up to 20 Outlets
- Single or dual 16 Amp Power Input Feed
- True RMS Current Metering & Reporting
- Local LED Displays Amps, Volts, Watts or Temperature
- Graph Daily, Weekly, Monthly & Yearly Power Consumption Data
- Current, Voltage & Temperature Threshold Sensing
- User Defined Alarm Thresholds
- Alarm Notification via Email, SNMP, Syslog, text message, LED or audible alarm
- Power Load Shedding w/ Auto Recovery
- Device Watchdog Monitoring/Reboot
- SSHv2 Encryption
- SNMP Control (v1,v2c,v3)
- 10/100Base-T Ethernet Port
- LDAP, Kerberos, RADIUS, TACACS+
- Command Logging with Audit Trail
- Individual & Group Outlet Power Switching
- Remote On/Off/Reboot/Default Power Switching
- Timed & Scheduled On/Off/Reboot Switching
- Easy-to-Use Menu/Commands
- User-Defined Power-Up Default Status
- Three AUX Ports - Allows Control of Up to 80 Outlets via One Interface
- SSL Web Browser (Https) for Set Up and Operation



2. 2. The IPS Family

The IPS Family is for Horizontal Rack Mount only and has 4 / 8 / 16 Outlet Models available.

The IPS-Family provides two convenient methods for accessing configuration and switching functions: The Web Browser Interface and the Command Line Interface. The Web Browser Interface consists of a series of simple, easy-to-use web page menus that allow you to select

configuration parameters or initiate switching operations using your TCP/IP network and a JavaScript enabled web browser.

The Command Line Interface is an ASCII menu system, which allows you to configure and operate the IPS-800-CE via telnet over TCP/IP network, via modem connection or via local PC using a terminal program such as Hyperterminal or TeraTerm.



Summary:

- Web Browser Access for Easy Setup and Operation
- Encrypted Password Security
- 4, 8 or 16 Individual Switched Outlets
- Dual 10 or 16-Amp Power Circuits; Total 20 or 32-Amps Maximum Load
- On / Off / Reboot Switching
- IP Addressed, 10Base-T Interface
- RS232 Modem / Console Port
- Network Security Features
- Power-Up Sequencing
- Manual Power Control Button

2. 3. The RSM-Power Switch Family

Ideal for branch office applications, the RSM-8R4 is designed for remote network management installations where rack space is precious and only a few network elements are managed.



The unit has combined RS232 console ports, remotely switched power outlets and an internal modem to provide secure console port access and power control of remote IT equipment over IP or Out-of-Band connections. The RSM-8R4 allows you to remotely access multiple console ports using a single secure IP, switch power on/off/reboot on specific outlets, receive temperature alarms when user defined thresholds are breached, change configuration parameters and assign user access to ports and plugs all in a single 1U device.



Applications:

- Local or Remote Console Port Switching
- Remote Power Management and Control
- UNIX Serial Console Management
- TCP/IP, Dial-Up, SSH or Telnet Access to Consoles at Remote Locations
- In-Band/Out-of-Band Network Management
- Reboot Servers, Routers, Web Cams, Firewalls and Other Remote Devices

Features:

- SSHv2 Encryption
- HTTPS/SSL Secure Web
- Temperature Threshold Alarms with Load Shedding
- Secure Authentication: LDAP/Kerberos/RADIUS/TACACS+
- SNMP Control
- (8) RS-232 RJ45 Serial Ports
- (4) Power Receptacles
- 10/100Base-T Ethernet Port
- Internal 56K v.92 Modem with Dial-Back Security
- Command Logging with Audit Trail
- Non-Connect Port Buffering
- Co-Location Features
- Any-to-Any Port Switching
- Port-Specific Password Protection
- Easy-to-Use Menu/Commands
- AC 120V and 230V Models
- NEMA 5-15 or IEC-C13 Outlet Receptacles
- Invalid Access Lockout Feature
- On / Off / Reboot / Default Switching
- Power-Up Sequencing

2. 4. The DC Power Switch Family

The DC Power Switch Family consists of several units capable to switch up to 8 outputs of 15 A maximum load, or 2 outputs with up to 100 A load, all of 48 V DC.



- Dual -48 VDC, 50 to 200 Amp Input Bus
- Web Browser Access for Easy Setup and Operation
- Encrypted Password Security
- (2) Individual Circuits
- Switch up to 8 outputs up to 15 Amp Loads or 2 outputs of up to 100 A load
- On / Off / Reboot Switching
- IP Addressed 10Base-T Interface
- RS232 Modem / Console Port
- Network Security Features
- Power-Up Sequencing



2. 5. Power Satellite Switches

These Power Satellites are built by Multi Data Digital in Germany to broaden the usage of Remote Power Switches, like the IPS-Family.



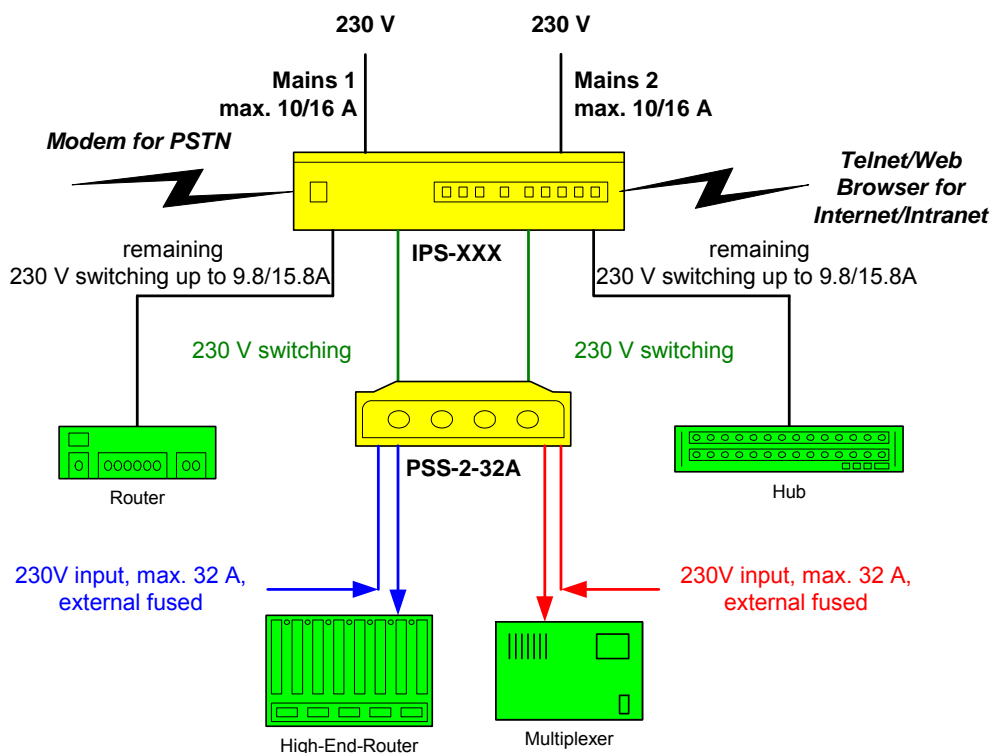
PSS-2-32A Rear View

All these satellite switches do not have any logic circuitry for control of the outputs inside, they depend on the functionality of the master switch used to drive these satellites. They use a fraction of the power available from one of the outputs of an IPS-XXX, but allow to switch 2 circuits of either 16 A or 32 A, using the plugs approved for general usage in the EU for these high currents at 230 V AC.

An additional advantage with these switches is the disconnection of both power leads, so no power can be at the output as the hot wire and the neutral wire are disconnected from the power input.

- Activating voltage 230 V AC, each approx. 0,2 A
- Activating Input: 2 IEC-320 connectors (male)
- Switching voltage: 230 V AC, up to 32 A
- Input: 2 IEC-309 connector, output: 2 IEC-309 sockets, the actual current is displayed
- To be used in 19"-racks, 2 units high (1 additional unit is needed for the connector locking mechanism)
- Each 230 V AC circuit is independent from the other. The current drawn from one circuit does not affect the other circuit.
- Both circuits must be fused externally with max. 32 A.

The current flow from input to output is only active if the switching voltage is applied, see schematic below.





3. The Automatic Power Transfer Switch

The ATPS is used to transfer AC power from one primary input to one output and switches the output to the secondary input when primary input power fails or goes below a certain limit. After the restoration of the primary input the output power is connected back to the primary input.



Firm drop out points allow a transfer before an under-voltage will affect equipment operation.

Transfer Ranges (Voltage):

Nominal	Drop Out	Pull In
120V	90V	103V
208V	182V	195V
240V	197V	210V

Explanation:

Nominal Voltage: Selected Operating Voltage from front switches
 Drop Out Voltage: At this voltage the unit will switch from primary to secondary input
 Pull In Voltage: At this voltage the unit switches back to the primary input

- Sources do NOT need to be phase synchronized
- Source transfer time of less than 30ms (clean sine wave to clean sine wave)
- Front panel LED's indicate which sources are available and selected at the output

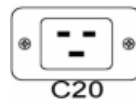
VOLTAGE RANGE SELECTION

- The International (IEC) version allows for all three voltage ranges 120V, 208V, or 240V
- Front panel switch to set the drop out and pull in range to the desired voltages, see chart above
- This allows this one version to be specified for worldwide usage

POWER CONNECTORS

The 2 input connectors are IEC320/20 and outputs are 1 IEC320/19 and 8 IEC320/13

Input sockets (two) IEC320/C20 (16 A)



Output Socket (one) IEC320/C19 (16 A)



Output Socket (eight) IEC320/C13 (10 A)



Remote Power Switching: Product Overview



The total sum of the output current must not exceed 16 A.



ATPS2235-9 (varies with Version of Switch)

The ATPS2235 comes with over voltages and surge protection with MOV devices between the input lines.

Power filtering will reduce the effects of electro magnetic or radio frequency interference. These types of "noise" can be introduced from many sources, inside or outside your facility. The filtering is bidirectional, so it helps prevent emissions from connected equipment.

4. Uninterruptible Power Distribution

The following schematics show the combination of the Automatic Transfer Power Switch with one of the Remote Power Switches to turn the power distribution and rebooting into an uninterruptible power source for one cabinet, for example.

