BLACK BOX
NETWORK SERVICES

Power Switch

Maverick SW161A

Power Management and

Server Supervision

User Guide

SW161A Power Switch

User Guide

The SW161A Power Switch is a power control unit with a built-in Web server, an Ethernet and a serial RS232 connection. It enables to control the power supply of a power outlet either remotely through a network (Intranet or Internet) or locally through its serial RS232 connection.

Its special Pinging and Scanning functions also allow the SW161A to supervise IP devices (servers, routers...) and automatically reboot them in case of lock-up.

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1. Safety instructions: To be read before use!

▸ The Power Switch devices can only be installed by qualified people with the following installation and use instructions. The manufacturer disclaims all responsibility in case of a bad utilisation of the Power Switch devices and particularly any use with equipments that may cause personal injury or material damage.

▸ This equipment is designed to be installed on a dedicated circuit that must have a circuit breaker or fuse protection.

▸ The electrical power socket used to plug the power cord of the Power Switch devices must be close to the Power Switch devices and easily accessible.

▸ Check that the power cord, plug and socket are in good condition.

▸ The Power Switch devices can only be connected to three-wire 230 VAC (50-60Hz) sockets.

▸ Always plug the Power Switch devices into properly grounded power sockets (two poles plus ground).

▸ Never exceed 10 Amp total load.

▸ If you have to replace an external fuse of an Power Switch device, never use another type of fuse than 10A/250V T.

▸ The Power Switch devices are intended for indoor use only. Do NOT install them in an area where excessive moisture or heat is present.

▸ Always disconnect the power cord of the Power Switch device if you want to intervene on the Power Switch device or on the equipment powered from the Power Switch device.

▸ The power outlet of the Power Switch device is not a circuit breakers! If you want to intervene on equipment connected to an Power Switch device you must disconnect this equipment from the Power Switch device.

▸ The Power Switch devices contain potentially hazardous voltages. Do NOT attempt to disassemble them.

▸ The Power Switch devices contain no user serviceable parts and repairs are to be performed by factory trained service personnel only.

2. Configuration of the Power Switch

To use the Power Switch on your network you must first configure its network parameters. Ask your network administrator for the parameters to use.

There are three different methods to configure the Power Switch:

Method 1:
Through a network using the Power Switch Finder Program (on the delivered CD).
It is the simplest and fastest configuration method if you use Windows as operating system. We suggest that you use this program at least during the first configuration: it allows you to configure your Power Switch through your local network even if its network parameters (IP Address, Subnet mask and Port) are not compatible with those of your PC or your local network.
If you decide to use this method you can directly go to §3 "Configuration using the Power Switch Finder program".

Method 2:
Through a network using a Web browser (Internet Explorer > 6.0 and Netscape > 6.1).
This method can only be used if the network parameters of the Power Switch (IP Address, Subnet mask…) have already been configured using either the Power Switch Finder program (Method 1) or a Terminal program (Method 3).
For the first configuration you can also change the Network parameters of your PC according to the default settings of the Power Switch.
Default Network setting of the Power Switch:
IP Address: 192.168.100.100
Mask: 255.255.255.0
Port: 80
If you decide to use this method you can directly go to §4 "Configuration using a Web browser".

Method 3:
Through a RS232 serial connection using a Terminal connection (see §7 "serial port pin configuration" for the configuration of the serial interface connector).
If you use a PC, use the serial cable supplied with the product and a Terminal program such as HyperTerminal from Microsoft.
If you decide to use this method you can directly go to §5 "Configuration using a Terminal connection".

# 3. Configuration using the Power Switch Finder program

Remarks:

∇ The Power Switch and the PC used to configure it have to be connected on the <u>same</u> <u>segment</u> of the network. The protocol of this program can not be routed so it can not be used to configure the Power Switch through a WAN or the Internet.

∇ This program does not work if the administrator has deactivated it in the configuration of the Power Switch (for security reasons for example).

1. Start the program *PS-Finder.exe* on the CD-ROM.
   The Power Switch Finder window appears.
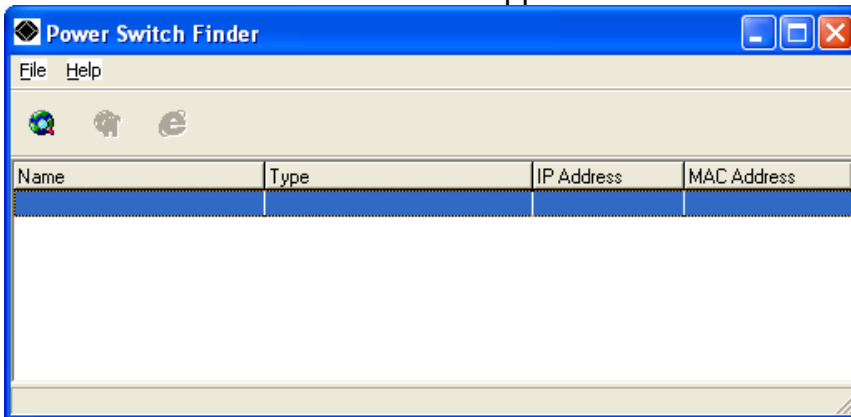
2. In the tool bar click on the ***first left button*** or choose the ***File/Scan*** Menu*.*
   The program browses the segment on which is connected your PC and displays the name, the type, the IP and MAC Address of the connected Power Switch.

3. In the tool bar click on the ***second left button*** or choose the ***File/Configure*** Menu*.*
   The properties dialog box appears and you can now configure all parameters. To configure all other parameters click on the ***Options*** button on the bottom of the dialog box.
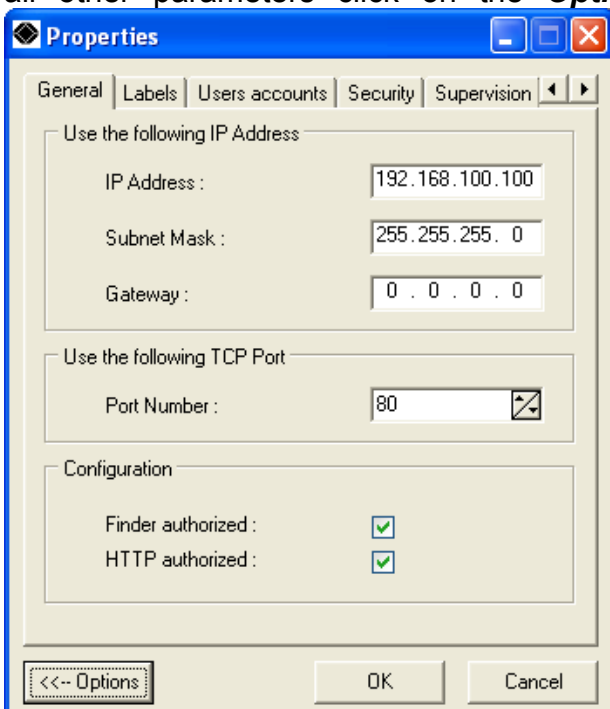
General Tab
This tab is used to attribute all the network parameters.

Labels Tab
This tab is used to attribute a name to the device and its controlled power socket.

User Accounts Tab
This tab is used to attribute a name and a password to the administrator and the user.

Security Tab
This tab is used to define addresses which are authorised or denied access to the Power Switch over the Network. For all details about this features please refer to chapter 6 "Security parameters configuration".

Supervision Tab
This tab is used to define the IP address of the device which has to be supervised and all the corresponding parameters. The Power Switch can supervise IP devices by pinging a specific IP address and/or by scanning a specific port number.

Remark: the supervision function works only if the power outlet is ON.

Options Tab
This tab is used to define the default status of the controlled power socket after power up and the delay for the restart function.

Miscellaneous Tab
This tab indicates the number of Power Ups and the number of switching cycles from OFF to ON.

4. Configuration using a Web browser

Remarks:
- ∇ In order to be able to access the Web server of the Power Switch, you must before have configured its network parameters (ask your network administrator).
- ∇ The configuration using a Web browser does not work if the administrator has deactivated it in the configuration of the Power Switch (for security reasons for example).
- ∇ The Web server of the Power Switch works with Internet Explorer Version 6.0 or higher and with Netscape Version 6.1 or higher.

1. Start your Web browser.

2. Type the IP address of your Power Switch.
   The browser displays the authentication dialog box.
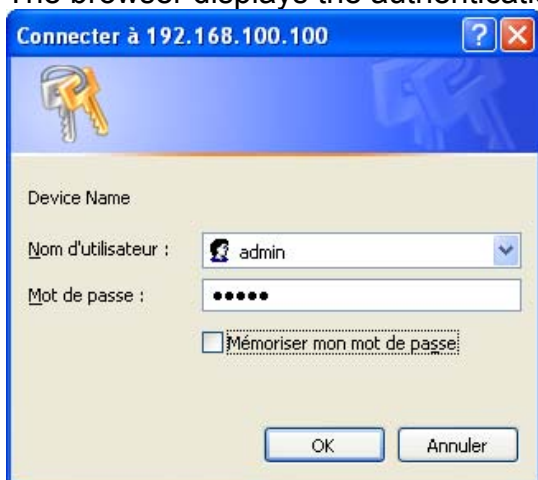
3. Enter the <u>administrator name</u> (default value = admin) and the <u>administrator password</u> (default value = admin) and click on OK.
   The home page is displayed, allowing you to configure all the parameters of the Power Switch.
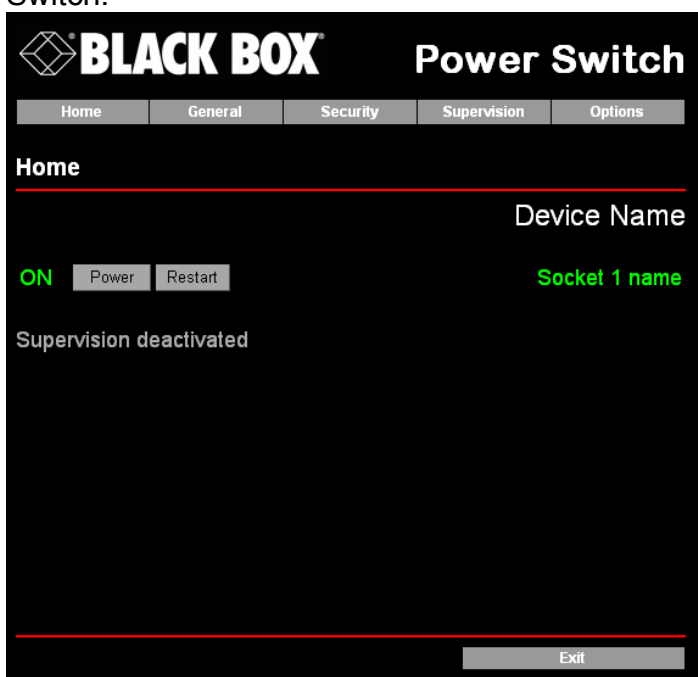
Home Tab

This tab is used to switch on, off and restart the controlled power socket and to configure the Power Switch.

General Tab

This tab is used to:
- attribute a label to the Power Switch and its controlled power socket
- define all IP parameters (IP Address, Subnet mask, Gateway and Port number)
- enable or disable the use of the Power Switch Finder program
- enable or disable the configuration of the Power Switch through HTTP.

Security Tab

This tab is used to define the Name and the Address of the Administrator and the User.
It's also used to set the Network Security Masks. For all details about this features, please refer to chapter 6 "Security parameters configuration".

Supervision Tab

This tab is used to define the IP Address of the device that has to be supervised and all the corresponding parameters. The Power Switch can supervise IP devices by pinging a specific IP address and/or scanning a specific port number.
Remark: the supervision function works only if the power outlet is ON.

Options Tab

This tab is used to define the default status of the controlled power socket after power up and the delay for the restart function. This tab also indicates the number of Power Ups and the number of switching cycles from OFF to ON.

5. Configuration using a Terminal Connection

The RS232 serial port of the Power Switch can be used to control its power socket and to configure its Web server.

To configure the Web server:

1. Use the supplied RS232 serial cable to connect the Power Switch-1 to an available serial port of your PC.

2. Run a terminal program such as Windows HyperTerminal.

3. Configure the appropriate serial port with the following settings:
   9.600 bauds, 8 bits, no parity, 1 stop bit and no flow control.

4. From your computer, press <ENTER> until the prompt «>» appears on your screen. (the Power Switch is now in Command mode and is waiting for commands to switch the power socket).

5. Press the <TAB> key on your keyboard.
   The Configuration menu appears on your screen and the Power Switch is now in Configuration mode. Follow the menu to configure the Web server of your Power Switch.

```
Power Switch 1 Guard
Version: 1.2.0.2

Commands :

Display

   /DS      Display Socket State

Control

   /SS      Switch the socket

Configuration

   /NP       Network Parameters Setting
   /PS       Passwords Setting
   /NS       Device and Socket Name Setting
   /SP       Socket Parameters Setting
   /SU       Device Supervision Setting
   /IS       IP Security Setting
   /RS       Restart the Device

Enter Selection
>
```

All commands start with the slash «/»
(ex.: type the command **/NP** to go to the **N**etwork **P**arameters setting menu.
To display the current menu again, press <ENTER>.
To go to the previous menu and to display it, press <ESC>.

Remark: to leave the configuration mode, type the restart command **/RS**. This is particularly important if you want to control the power outlet later through the serial connection.

6. Security parameters configuration

Explanations about the masks settings:

∇ Each mask can be an IP address or a range of IP addresses.

∇ Each mask allows you to authorise or deny access to the Web server of the Power Switch to specific addresses or to specific ranges of addresses.

∇ Each mask can be activated or deactivated (without function in this case).

∇ Each IP address consists of a series of four eight-bit numbers. The number 255 is used as a wildcard, so it replaces all others.

∇ Masks are listed in order of descending priority; so Mask 1 has the highest priority.

∇ Masks have a cumulative effect; high priority masks supersede the effect of lower priority masks.

Example 1:
⇒ Deny the access to all IP addresses except 192.168.001.015

Mask	IP Address	Permit	Deny	Activated
#1	192.168.001.015	✓		✓
#2	255.255.255.255		✓	✓

Example 2:
⇒ Permit access only to IP addresses beginning with 192.

Mask	IP Address	Permit	Deny	Activated
#1	192.255.255.255	✓		✓
#2	255.255.255.255		✓	✓

Example 3:

⇒ Permit access only to IP addresses beginning with 192
⇒ Deny access to IP address 192.168.001.010

Mask	IP Address	Permit	Deny	Activated
#1	192.168.001.010		✓	✓
#2	192.255.255.255	✓		✓
#3	255.255.255.255		✓	✓

Example 4:

⇒ Permit access to IP addresses beginning with 192
⇒ Deny access to address 192.168.001.010
⇒ Permit access to IP addresses beginning with 217.128.103

Mask	IP Address	Permit	Deny	Activated
#1	192.168.001.010		✓	✓
#2	192.255.255.255	✓		✓
#4	217.128.103.255	✓		✓
#3	255.255.255.255		✓	✓

7. Ping and Port Scanning

Power Switch has two methods to check whether an IP equipment (PC, server, router, Webcam...) is still alive.

Ping
The first method uses the well-known Ping command whereby a request is sent to a specific IP address. The Ping command, which is an echo request, enables you to determine through an ICMP protocol (Internet Control Message Protocol) if an IP device is available on the network. If the system reacts to this request, Power Switch knows that the TCP/IP connection is established. If the system does not react to one or several requests, Power Switch can automatically switch off and after a specified delay switch again on the IP equipment (Reboot).

Port Scanning
The second method uses the Port Scan command to test a specific TCP/IP port. In other words, this command allows you to find out if a specific protocol is available on a server (for example HTTP, FTP, Telnet, SMTP, POP...). Power Switch simply tries a connection to a specific server port. If the connection is possible, Power Switch knows that a server program is running there. If the connection is not possible, Power Switch can automatically switch off and after a specified delay switch again on the IP equipment (Reboot).

Remarks:
− The Ping and Scan function can be used separately or together.
− The network route between Power Switch and the IP device to supervise should be as direct as possible, so do not use unnecessary routers and complex wiring between them. A problem on a router or the wiring could reboot the IP device to supervise.
− Execute several Pings and/or Scans before running the Reboot function. It could be possible that the IP device to supervise doesn't respond although the IP device is still working.
− Choose a realistic supervision cycle. One second is possible, however it's not necessary to overload the network with Pings and Scans requests.

Recommended values:

Interval between Requests	10 sec or more
Number of unsuccessful Requests before Reboot	3 or more
Delay before Reboot	10 sec or more
Delay before first Request after Reboot	120 sec or more

8 Serial port pin configuration

The serial connection uses a SUB-D9 connector with the following configuration:
Pin 2 = TxD (transmit data to the PC)
Pin 3 = RxD (receive commands)
Pin 5 = GnD

Parameters: 9600, n, 8, 1 without flow control.

9. Command the state of the socket through a Web browser

1. Start your Web browser
   Type the IP address of your Power Switch.
   The browser displays the authentication dialog box.

2. Enter a user name and its corresponding password.

   − If you enter the <u>administrator name</u> (default value = admin) and the <u>administrator password</u> (default value = admin) and click OK, you will be able to control the socket status and also to configure all the parameters of the Power Switch.

   − If you enter the <u>user name</u> (default value = user1) and the <u>user password</u> (default value = user1) and click OK, you will be able to control the socket status only.

   The button **Power** allows you to switch the socket ON and OFF.
   The button **Restart** allows you to switch the socket OFF. It will be automatically switched on after the delay fixed by the administrator during the configuration (default value is 5 sec).

   Under the command button is displayed the state of the IP supervision.

   − If the supervision function is deactivated (can be done by the administrator only) the message «Supervision deactivated» is displayed.

   − If the supervision function is activated (can be done by the administrator only) the message «Supervision activated» is displayed.

   Remark: if you switch the socket OFF, the supervision function is temporarily deactivated and the message "Supervision temporarily deactivated" is displayed.

10. Command the state of the socket through a serial connection

The socket of the Power Switch-1 can also be controlled using a simple ASCII protocol over a RS232 serial connection.

To control the power socket:

1. Use the supplied RS232 serial cable to connect the Power Switch-1 to an available serial port of your PC.

2. Run a terminal program such as Windows HyperTerminal.

3. Configure the appropriate serial port of your Terminal program with the following settings: 9.600 bauds, 8 bits, no parity, 1 stop bit, no flow control.
   If you use the MicroTerminal program on the CD (folder miscellaneous) you have only to choose the used serial port, this program is already configured at 9.600 bauds, 8 bits, no parity, 1 stop bit, no flow control.

4. On your computer, press <ENTER> until the prompt «>» appears on your screen. (the Power Switch is now in command mode and is waiting for commands to switch the power socket).

Remark: the power outlet of the Power Switch can only be controlled if the Power Switch is in Command mode and NOT in Configuration mode. If you are in Configuration mode, type the */RS* command to leave this mode. By default, the Power Switch is in Command mode after a power up.

Use the following commands:

p=1 and press <ENTER> to switch the socket ON
p=0 <ENTER> to switch the socket OFF
p=r <ENTER> to restart the socket
p=t <ENTER> to toggle the socket

The Power Switch accepts lower case and upper case commands.
The version of the firmware can be displayed by typing "?" followed by <**ENTER**>.

11. Technical data

Network standards	IEEE 802.3, 10BASE-T
Network protocols	TCP/IP, HTTP
Network connection	RJ-45 connector for UTP CAT5
Max. network cable length	100 meters (not included)
Serial connection	RS232, SUB-D 9 female
Nominal input voltage	230 V/50Hz
Input power socket	IEC-320
Output voltage	230 V/50Hz
Output power socket	IEC-320
Maximum total current	10 A
Fuse	10 A(T)
LED's	1 for Power and Network Traffic 1 for the socket status
Operating temperature	0°C to +40°C
Operating humidity	10% to 80%
Dimensions	185 X 103 X 43 mm
Weight	0,8 Kg
Approvals	CE, EN55022 & EN55024

All modifications reserved

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