Manual
AK-SecurePowerSwitch
AK-SecureSocketSwitch

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AK-SecureSocketSwitch

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AK-SecurePowerSwitch

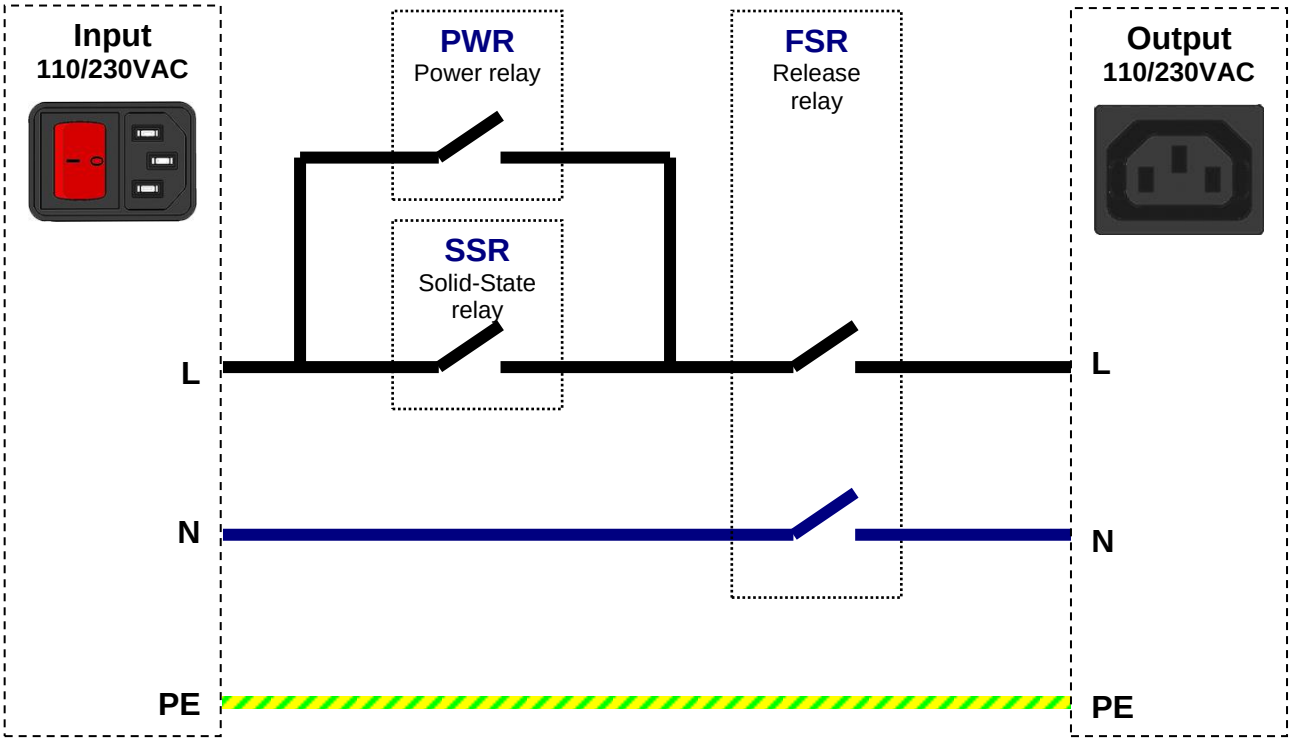
General description

With the **SecurePowerSwitch** it is possible to switch any electrical devices on or off via the IP network or to monitor them. Due to its unique switching mode, the electrical consumers are gently, quickly and safely disconnected from or connected to the 110/230VAC mains voltage. Your electrical terminal is switched in only 10ms, i.e. half a sinus wave. To do so, no electro-mechanic relay, but a fully electronic solid state relay is being used. It particularly distinguishes itself by the following features:

- Almost unlimited service life
- High system reliability
- Short response time
- The loads are switched bounce-free and free from wear
- It is not possible to burn the contacts
- No switching clicks
- No electromagnetic emission (disturbing others)
- Service- and maintenance-free

AK-SecurePowerSwitch

Importance and functional principle of the relay



L = Outer conductor
N = Neutral conductor
PE = Protective conductor

Release (FSR) relay

The release relay has to completely disconnect the connected consumers from the 110/230VAC mains voltage. For reasons of safety this relay serves to disconnect the power supply of all sectors according to DIN VDE 0100. Therefore, it is designed with two poles and disconnects L and N simultaneously from the connected consumers. This relay is free of load, and it is not used to switch electrical devices.

SSR relay

The solid state relay is the actual switching relay and switches the electronic devices on or off. 100ms before and 100ms after the switching operation, the SSR relay is activated or deactivated. It is only used for wear-free and failure-free switching.

PWR relay

For very little loads of <10 watts, the solid state relay does not switch for technical reasons since it is below the so-called „**Minimum Load“**. In order to also switch these loads (measuring instruments, small power supply units, etc.) this relay takes over the switching function. Furthermore, the PWR relay takes over the load when the SSR relay is being inactivated and thus avoids an unnecessary power consumption of the SSR relay.

AK-SecurePowerSwitch

Specifications:

Dimensions:	198 x 120 x 48 mm (LxWxH)
Housing:	1mm metal housing
Weight:	1.2 kg
Temperature range:	-40°C .. + 70°C
Standards:	CE / WEEE / RoHS-II EN 55022 Class B EN 55024 Class A
System of protection:	IP30
Power supply:	110-230VAC 50/60Hz About 2.5 watts
Switching capacity:	110-230VAC 50/60Hz 10A or 2300 watts 8A or 2000 watts continuous load
Connections:	1 x IEC box mounting receptacle C13 1 x IEC box mounting receptacle C14 With switch and fusing 2 x RJ45 (Mini-Hub) 1 x RS232 9Pol Sub-D connector
Ethernet:	AutoM-DIX 10 Half Duplex 10 Full Duplex 100 Half Duplex 100 Full Duplex AutoSensing
Network protocols:	IPv4, TCP, UDP, FTP, FTPS, TFTP, ICMP, ARP, SNMP, LPR, DHCP,BOOTP, DNS, TELNET, HTML, http, HTTPS, DYNDNS, SMTP, POP3, SYSLOG, IPv6, NDP, ICMPv6, DHCPv6, TCPv6, UDPv6, Netbios-NS, LLMNR, ZeroConfig(APIPA, AutoIP), IP-Multicast, SSL/TLS
Solid state relay:	Zero-voltage switch Operating voltage = 48-660VAC Switching capacity = 50A Switching time = 10ms Max. overvoltage = 1200Vpk Max. impulse peak = 625 A(10ms) Max. load category AC51 = 50 Aeff Max. load category AC53 = 15 Aeff

AK-SecurePowerSwitch

Front side

1.) Manual rocker switch with delay against accidental switching on.

Two functions can be attained by actuating these rocker switches:

1.) Factory default function.
All values of the **SecurePowerSwitch** are reset to factory settings. This function is enabled by pressing the switch after switching on the **SecurePowerSwitch** until 2 signal tones sound. Then the switch may be released.

2.) Manually switching the relay on or off.
This function is enabled by actuating the switch for about 2 seconds. Then 2 signal tones sound and the switch may be released. It is possible to set the actuating period of the switch in the configuration menu.

2.) Status display

These LEDs indicate the following states:

On/Off: Indicates that the relays are switched on or off.

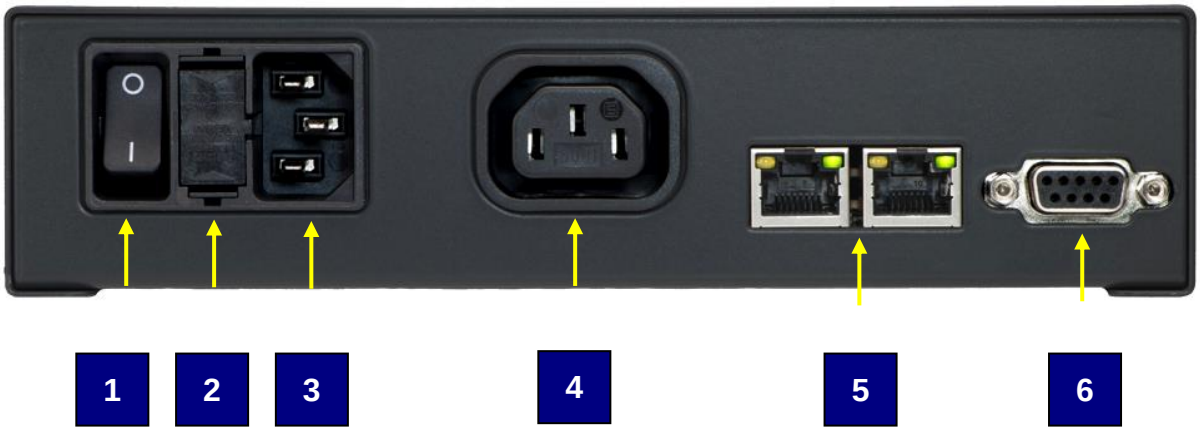
Network: Indicates that the **SecurePowerSwitch** is receiving or sending network packages. It does not indicate the network activities. It is directly indicated on the rear side of the RJ45 bushing.

PS state: Indicates the state of the process part. Should flash once per second in case of an emergency.

PS error: Indicates an error, such as e.g. the relays are switched, but no current flows since the terminal is still switched off.

AK-SecurePowerSwitch

Rear side



1.) Mains switch

By actuating this switch, all items may be switched zero potential and currentless. This is a two-pole on/off switch.

2.) Fuse holder (10A slowblow)

A fuse is located behind this flap. It can be accessed by unlocking the smaller clips using a screwdriver.

Caution: **First, switch off the device!**

3.) 110/230VAC input

4.) 110/230VAC output

Note:

It is possible to use cables with inlet connectors for non-heating apparatus IEC-60320 C13/C14 for the mounting sockets.

5.) Network connection

This is a small MiniHub. It automatically distributes the incoming and outgoing network traffic.

6.) RS232 interface

It can be used as DeviceServer and is provided for future functions such as e.g. room monitoring.

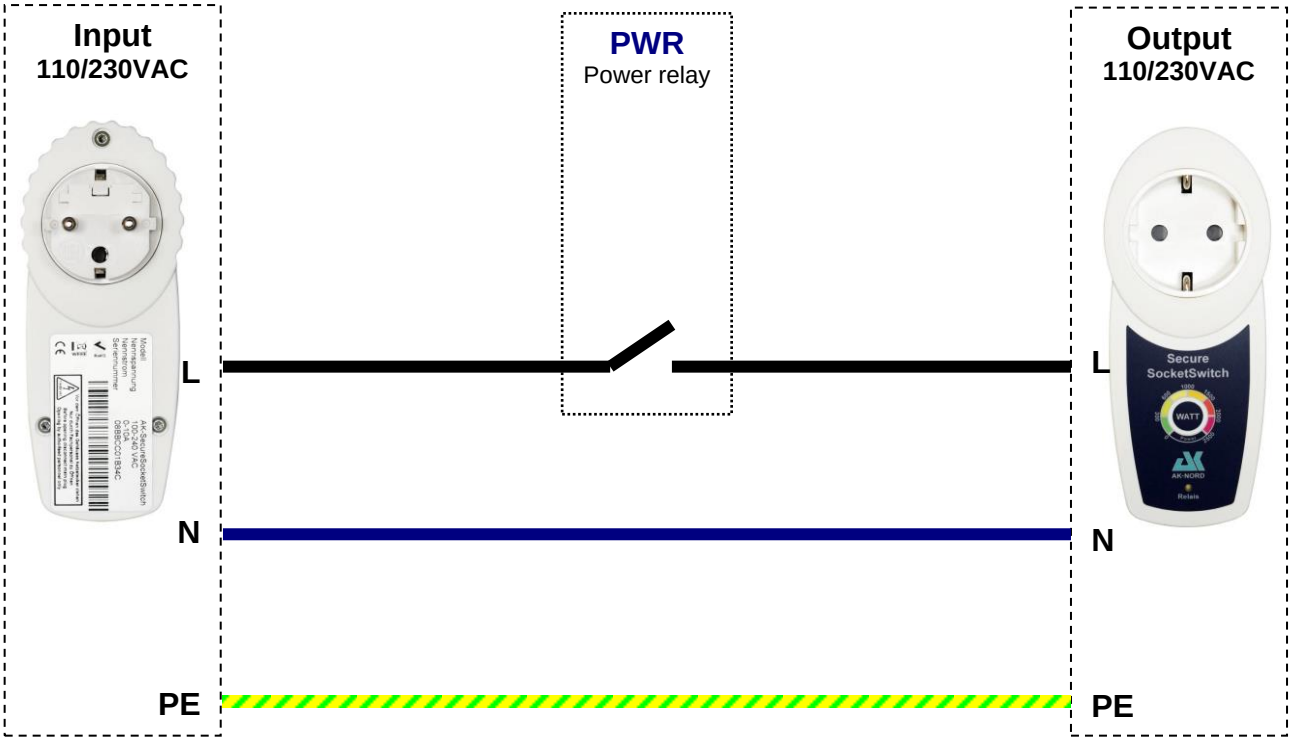
AK-SecureSocketSwitch

General description

The **AK-SecureSocketSwitch** is a switchable IP socket, which allows you to switch on or off any power consumers, to monitor them and to measure the current power consumption. Due to the integrated micro switch you do not need any additional power supply cable, since the **AK-SecureSocketSwitch** has two integrated network connections. The high-performance and safety relay which is equipped with silver tin oxyde contacts (AgSnO2), offers you a high switching capacity, a high level of durability as well as a reliable and trouble-free operation. The network connection is performed by default via a 1024Bit-SSL encryption and can additionally be secured or expanded by server and client certificates. The consumption data are logged for up to 30 days and can be displayed on the WEB monitor. Lots of additionally programmable software functions allow you to control, reduce and optimize your power consumption in a targeted and efficient way. Using our M2M solution, the **AK-SecureSocketSwitch** is easily and simply available via the Internet at any time. Without apps and without tools.

AK-SecureSocketSwitch

Functional mode of the relay



L = phase conductor
N = neutral conductor
PE = non-fused earth conductor

PWR Relay

The PWR relay has in particular high quality and is mechanically reliable relay. In particular the contact surfaces were additionally finished with AgSnO2 (silver tin oxyde) and therefore they have a little tendency to weld and a high burn-off resistance. Thus, the PWR relay offers you a high switching capacity, a high durability as well as a reliable and trouble-free operation.

AK- SecureSocketSwitch

Specification:

Dimensions:	135 x 55 x 40 mm (LxWxH)
Housing:	Impact-proof ABS plastic
Weight:	200 grams
Temperature range:	-40°C .. + 70°C
Defaults:	CE / WEEE / RoHS-II EN 55022 Class B EN 55024 Class A
Protection class:	IP30
Power supply:	110-230VAC 50/60Hz about 1.2 watts
Switching capacity:	110-230VAC 50/60Hz 10A or 2300 watts
Connections:	1 x CEE 7/4 connector plug (type F) 1 x CEE 7/4 power input (type F) 2 x RJ45 (mini hub)
Ethernet:	AutoM-DIX 10 Half Duplex 10 Full Duplex 100 Half Duplex 100 Full Duplex AutoSensing
Network protocols:	IPv4, TCP, UDP, FTP, FTPS, TFTP, ICMP, ARP, SNMP, LPR, DHCP,BOOTP, DNS, TELNET, HTML, http, HTTPS, DYNDNS, SMTP, POP3, SYSLOG, IPv6, NDP, ICMPv6, DHCPv6, TCPv6, UDPv6, Netbios-NS, LLMNR, ZeroConfig(APIPA, AutoIP), IP-Multicast, SSL/TLS

Relay:		
	Contact material	= AgSnO2
	Max. continuous current	= 16A
	Max. switch-on current	= 25A
	Nominal voltage	= 250V
	Max. switching voltage	= 400V
	Max. switching capacity AC1	= 4.000 VA
	Max. switching capacity AC15	= 750VA

AK- SecureSocketSwitch

Front side:

1.) Optical consumption indicator

Depending on the power consumption of the connected device, the current power consumptions will be displayed with colours.

2.) Relay – LED

These LEDs indicate the following statuses:

On: Indicates that the relay is switched on.
Off: Indicates that the relay is switched off.

AK- SecureSocketSwitch

Rear side:

1.) Network connection

This is a small micro switch It automatically distributes the incoming and outgoing network traffic. Since you do not have to use an existing network connection during action, it will not be necessary to lay an additional network cable.

2.) Manual pushbutton (laterally recessed)

By this switching sensor it is possible to achieve two functions:

1.) Factory – Default function.

It allows resetting all values of the **SecureSocketSwitch** to factory settings. This is done by plugging the **SecureSocketSwitch** into an outlet while keep pressing the pushbutton. As soon as the consumption indicator illuminates two blue consumption indicators, you can release the pushbutton.

2.) Manually switch on/off the relay.

The relay starts ON or OFF by shortly pressing the pushbutton. The status is displayed with the green relay LED. Once the status indicates green, the optical consumption display will also be illuminated but in blue.

Configuration

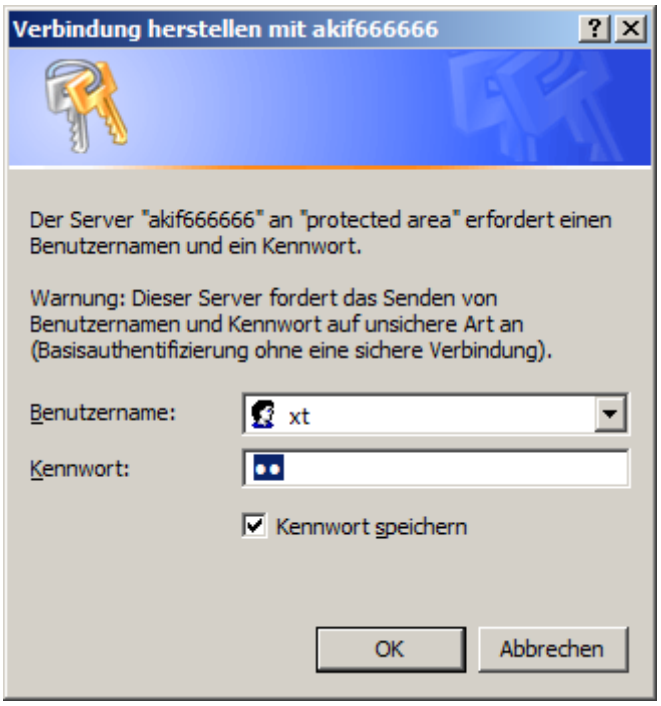
Determining the password

You may access the homepage of the **SecurePowerSwitch** via a web browser.

Enter e.g. **http://192.168.100.100** and you will be asked to enter the user name and password.

Note:
If you do not know the IP address, you may also use the DNS name which is consisting of the “AKIF” and the last three digits of the MAC address when delivered. The MAC address can always be found on the device label of the **SecurePowerSwitch**. This label is at the bottom of the device.

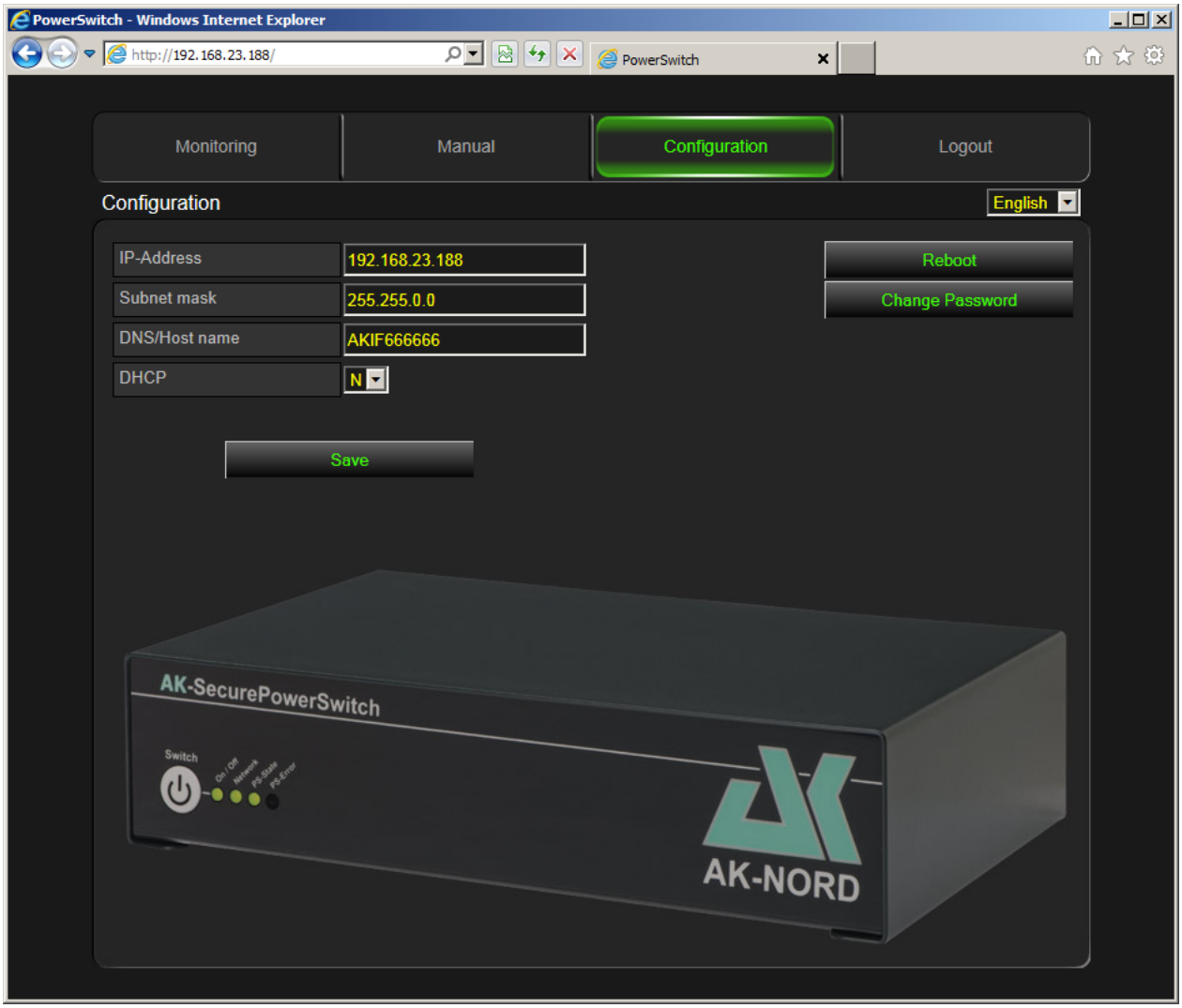
For instance: 08-BB-CC-66-66-66 i.e. **http://AKIF666666**



The user name and the password in the delivery status are always **“XT”** and can be written in upper or lower case letters.

Configuration

Then you are requested to enter the user name and the password. For safety reasons, this page will be displayed until you have determined the user name and the password.



After having made all entries, press the button **“Save”** and then switch over to the **“Monitor”**.

Configuration

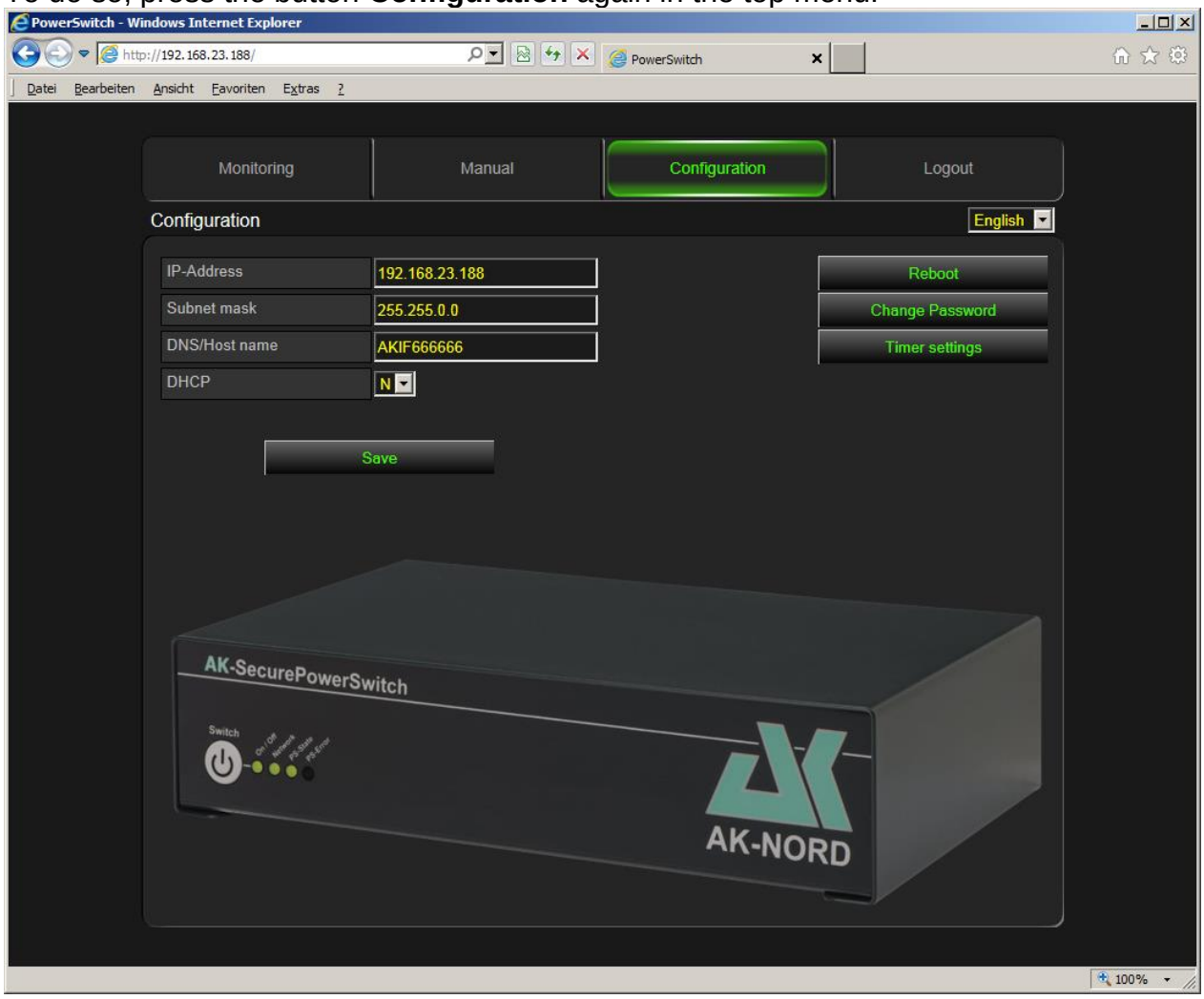
The Web monitor can be easily attained without any additional APP via the network, the Internet or via a mobile terminal such as e.g. a mobile phone. It indicates all relevant data in real-time and you will immediately get an overview of the consumption or the output of the connected electrical consumer.

Note:
The existing WEB interface can be replaced, adapted or modified to the specific customer requirements. A flash file system is available which can be reached easily and simply after having activated it via an FTP connection. There you will find the complete homepage of the **SecurePowerSwitch.**

Configuration

Standard configuration:

To do so, press the button **Configuration** again in the top menu.



Then you can determine the IP address, the subnet mask, the DNS/Host name as well as the DHCP procedures. By clicking on **"Save"** these values are continuously saved in the **SecurePowerSwitch**.

Note:
As long as the **DHCP** is positioned on **"Y"**, it is not possible to modify neither the IP address nor the subnet mask.

Note:
The modified values are only taken over when the system is restarted. To do so, press the button **"Restart"**.

Configuration

Timer settings

Activate a timer using this menu. To do so, first set the exact time. You may either activate an Internet time (NTP) or you may set the internal Real-Time-Clock (RTC).

NTP:
Set “NTP Y/N” to “Y” and press the button “Save”. After restarting, the NTP time will fade in.
Note:
To do so, it is necessary to connect the AK-SecurePowerSwitch to the Internet or to a ntp-server in the LAN.

RTC: (in preparation)
The current PC will be faded in. Press the button “Adopt” and the time will be saved in the RTC.
Note:
After a few days you should check the time. If you detect a considerable deviation between the PC time and the RTC time, then press again the button “Apply”. If you repeat this process more often, fewer deviations will occur. This will be attained by an internal automatic correction.

Configuration

Make sure that NTP settings are correct and the correct time is displayed in the “NTP Time” field. This is a prerequisite for switching on/off correctly.

You can set a time for switching on and a time for switching off for each day of the week. To do this, please use a separate block (left/right) of each weekday. The fields "when" and "Watt" are optional and can be saved unchanged with "--" and 0.

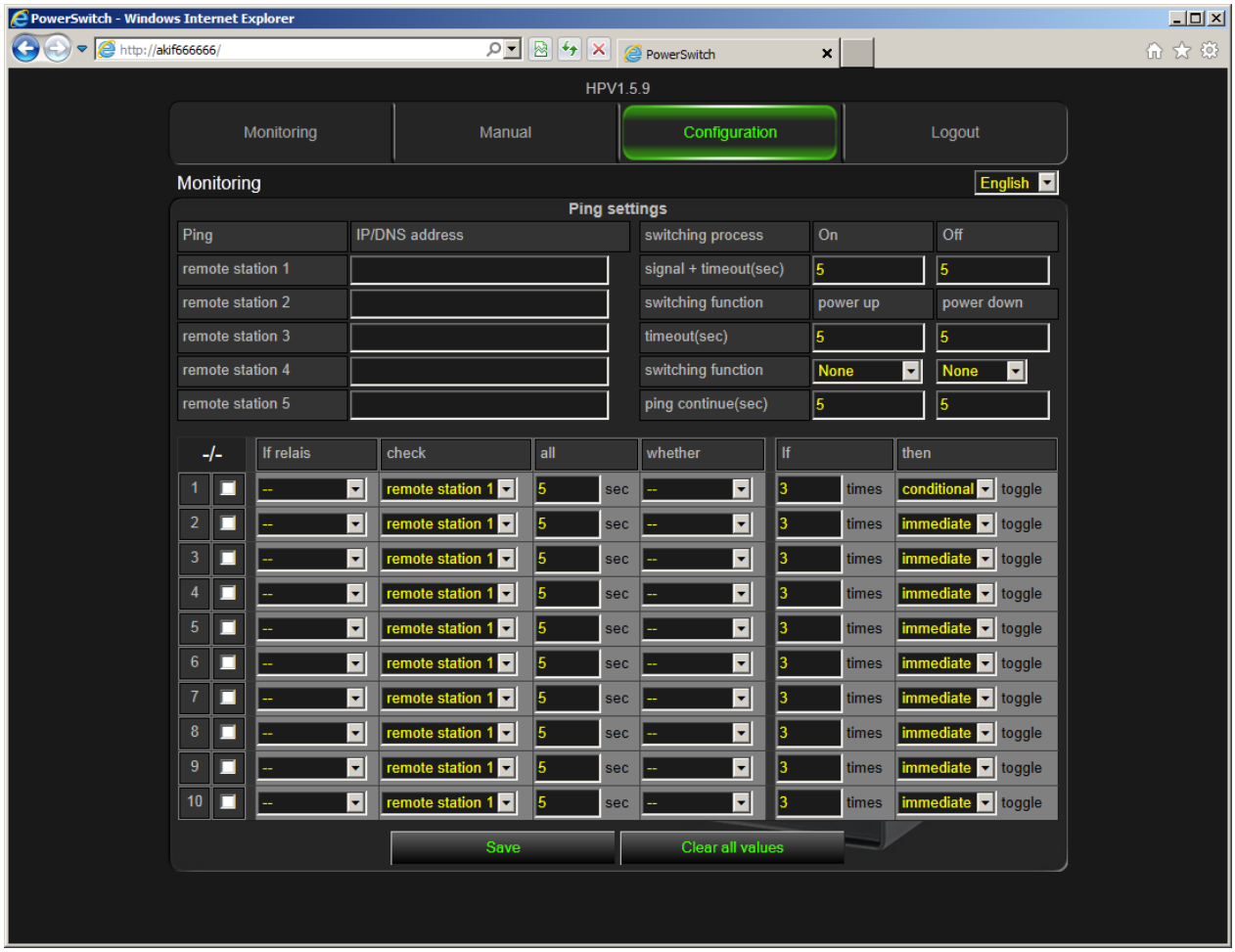
For example, if the power is to be switched off on Sundays at 10:00 and switched on at 14:00, the line for Sunday would look like this:

Configuration

Watchdog Function:

In this menu you can control switch processes which are triggered depending on the availability of devices in the network.

Note:
The Watchdog Function **as well as** the Timer Function do not block each other. Mind possible overlapping in order that no unnecessary or uncontrolled switch processes are performed if you have programmed switch processes for both functions.



Possible switch conditions:

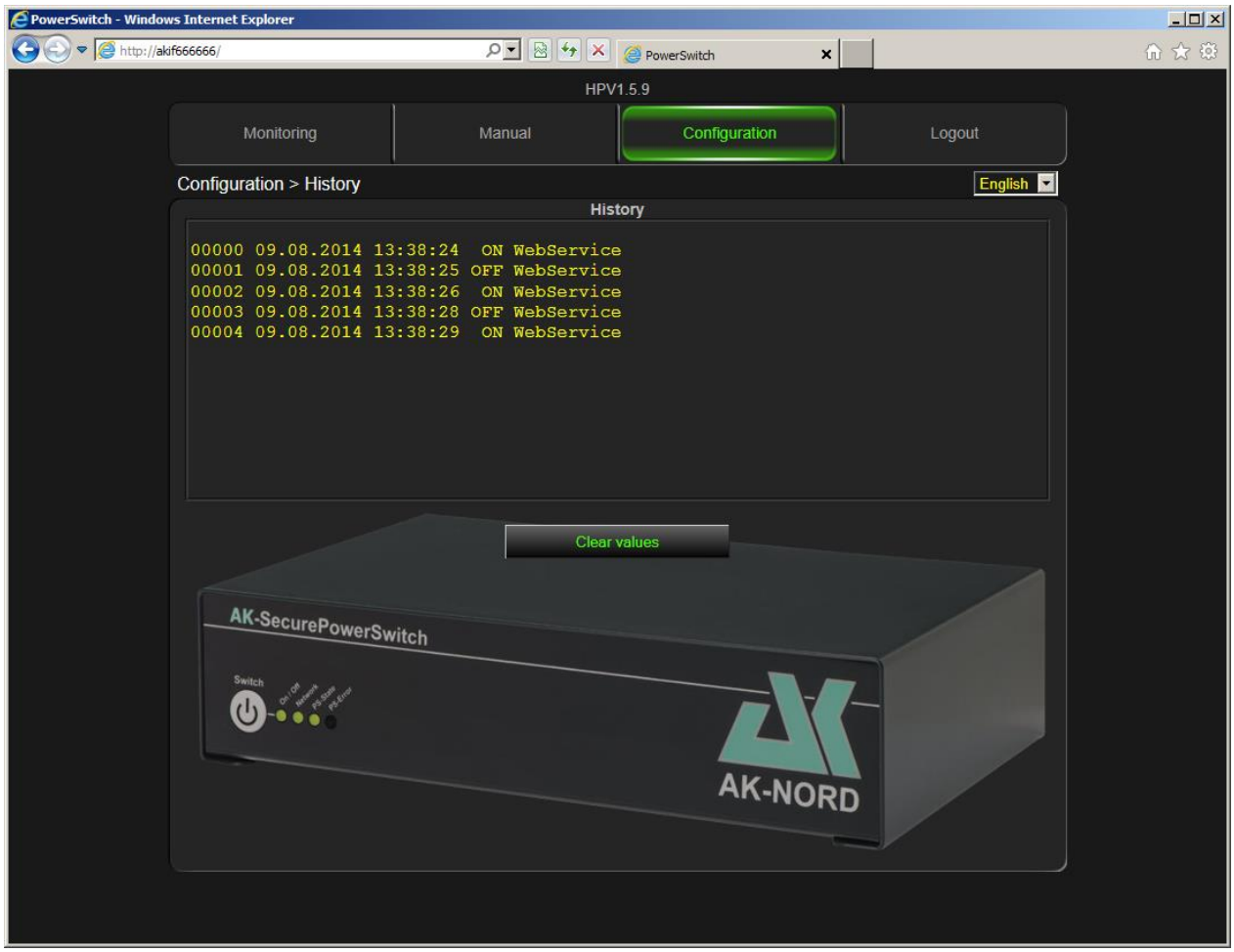
Immediately: If the current condition of the row is valid, it is immediately switched over.

Conditionally: All rows need to be valid which have the current relay switch status.

Configuration

History function:

Using the History function you can view the last 15 switch operations. It is displayed which switch functions were triggered on which date at what time.



Possible entries:

WebService: A switch function was triggered via the homepage

Software: A switch function was triggered via a TCP/IP connection

OverCurrent: The measured current flow was too high.

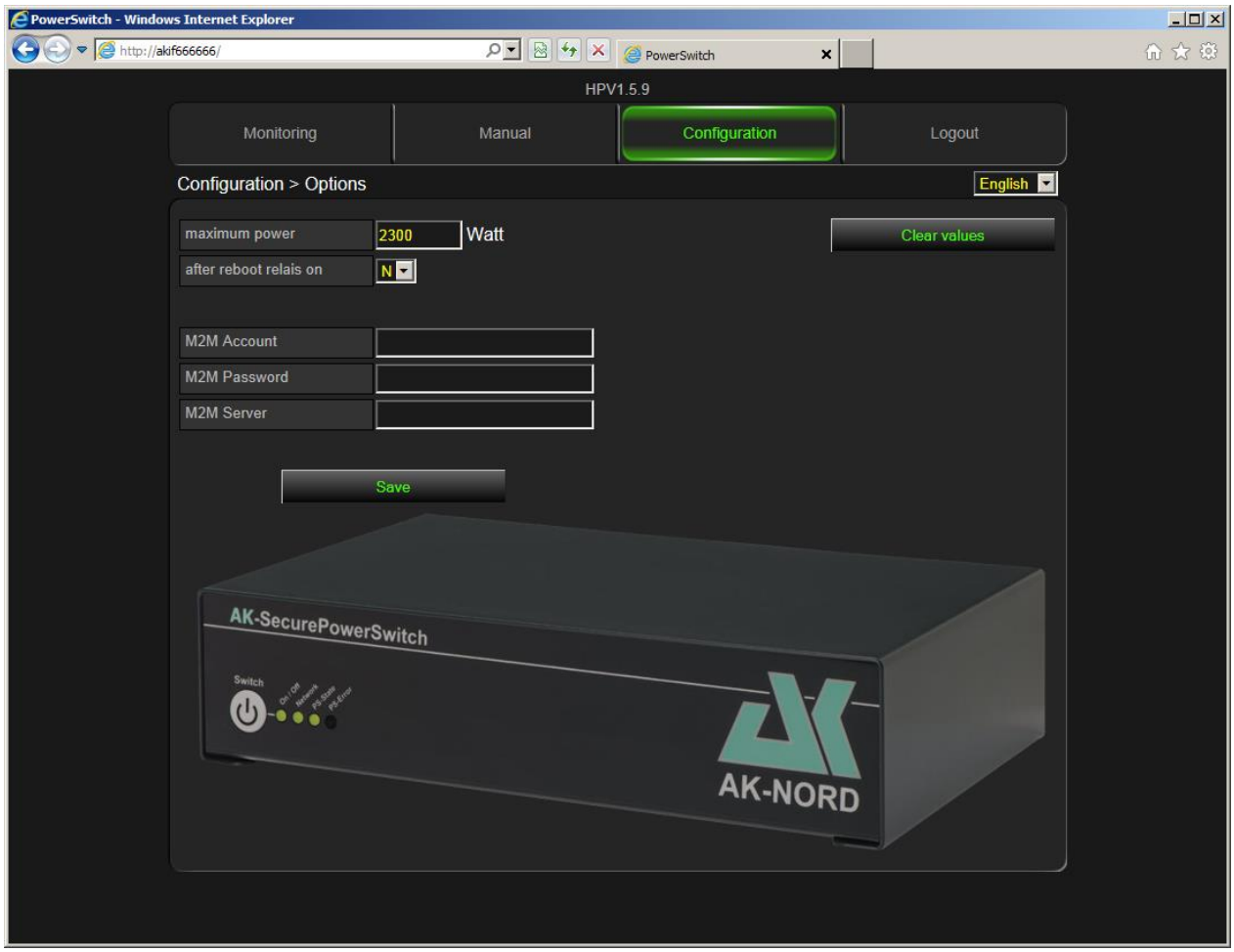
StartUp: When switching the PowerSwitch it was determined that it shall be switched on immediately.

Button: The external switch was pressed.

Configuration

Options :

Additional options may be activated via this menu.



Possible options:

Maximum power: With respect to safety you can determine a value in watts which must not be exceeded. If this value is attained, the relay will automatically switch off.

After restart, relay on: Here you can determine if the relay is automatically switched on after switching on.

M2M – Account name: Set up an account under www.myopengate.com and
M2M – Password: enter the access data as well as the password under the account name.

M2M – Server: Enter the rendezvous server here. In this case „**akserver1.com**“

Note:
These functions are only activated after restarting the system. Do not use any special characters for the account name and the password and pay attention to the using upper and lower case letters!

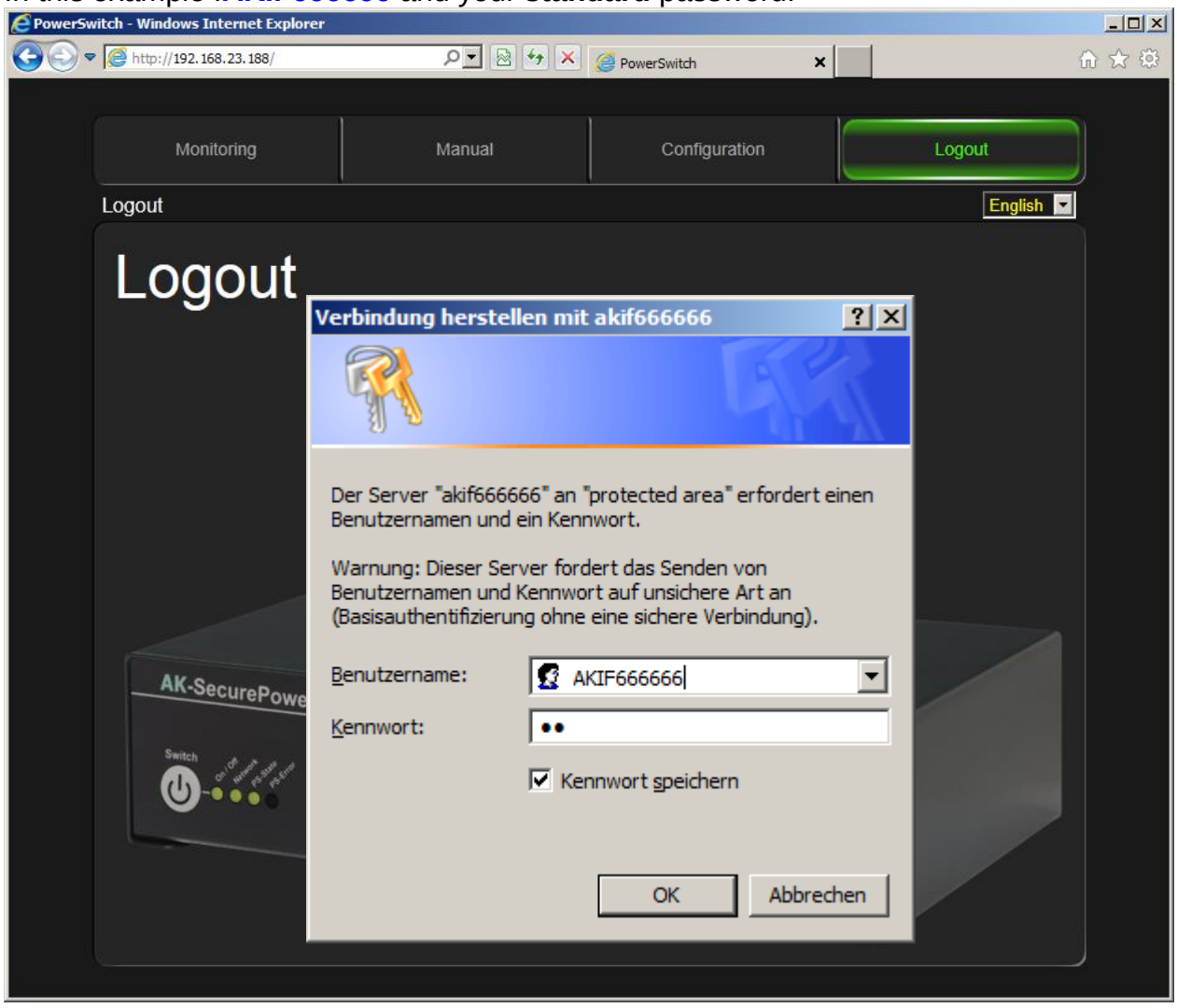
Configuration

Expert configuration

Log in by entering the administrator name in order to perform continuing or special configurations. To do so, click on the button **“Log out”** in the top menu and then click again on the button **“Monitor”.**

Then you will be asked to enter a user name and the password. Do not use your standard user name, but “AKIF” and the last three digits of the MAC address. The MAC address can always be found on the device label of the **SecurePowerSwitch**. This label is positioned at the bottom of the device.

In this example :**AKIF666666** and your **standard** password.



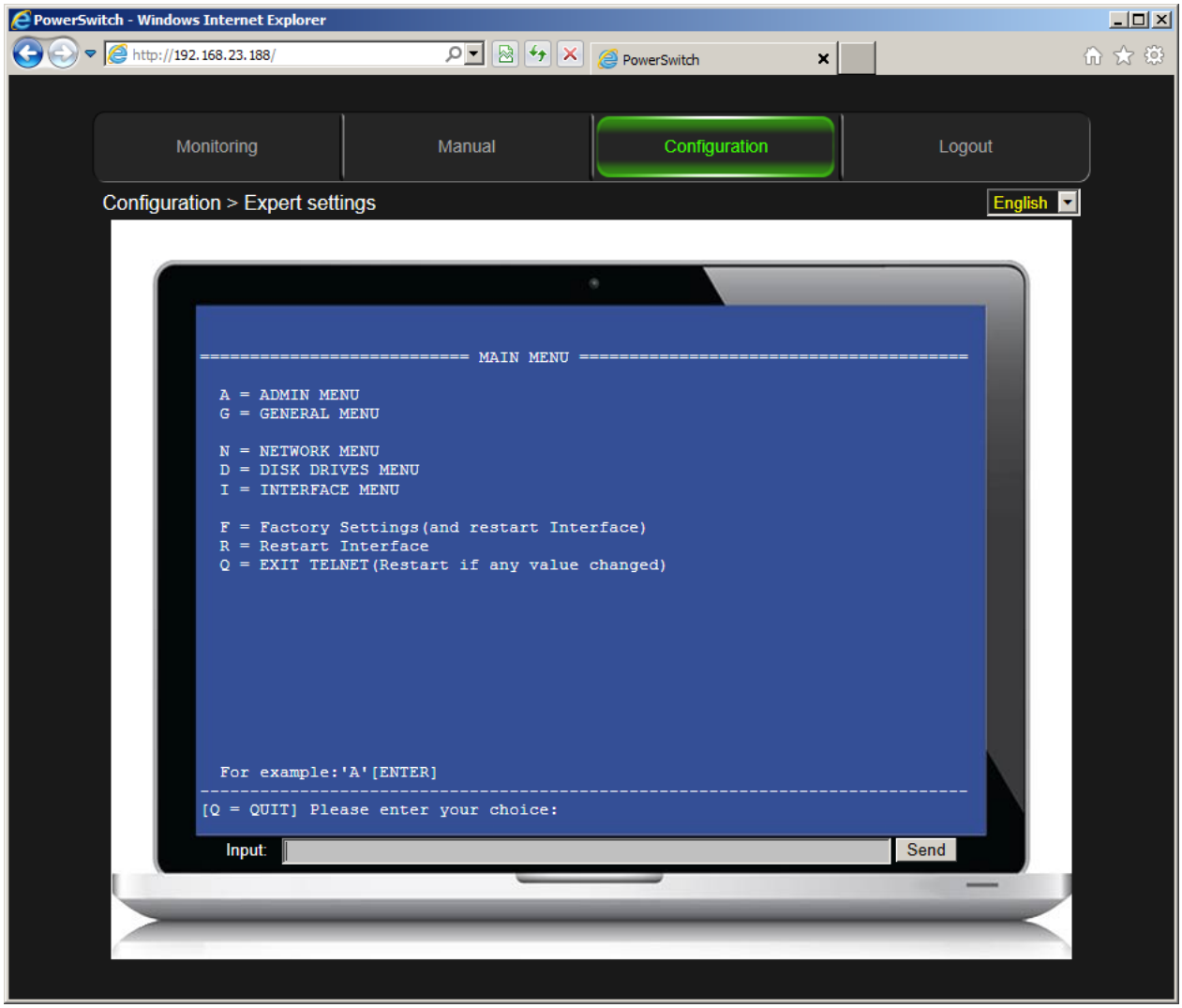
Configuration

Click again on the button **“Configuration”** in the top menu and then the button **“Expert-Settings”** will be displayed.

Enter the special configuration menu of the **SecurePowerSwitch** by pressing the button **“Expert-Settings”**.

Configuration

Then you have the option to perform any setting.



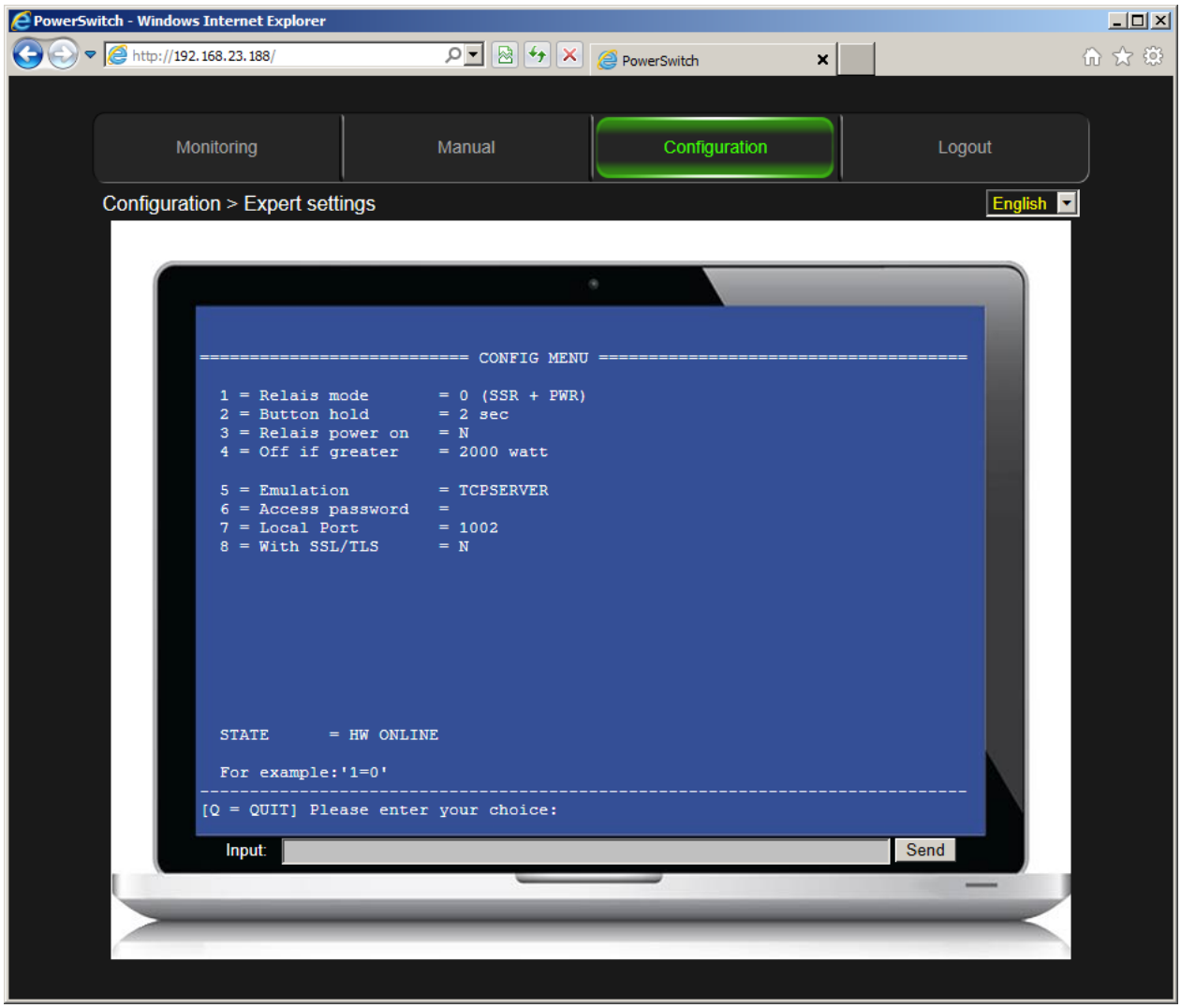
Note:
Please find below an explanation of the configuration menu. Please find further information regarding the whole menu under:

http://www.ak-nord.de/de/daten/handbuch_xxl_ts.pdf

Select “I” for “INTERFACE MENU”. To do so, enter an “I” into the input row and then press the button “ENTER”. Then press “1+ENTER” and once again “1+ENTER”. Then you are in the **“Config Menu”** of the **SecurePowerSwitch**.

Configuration

Configuration menu



Note:
In order to modify the value, first enter the figure or the letter of the menu item, the icon **"="** and then the new value. Confirm your entry by pressing the button **"ENTER"**. Then the menu will be displayed with the new value.

Configuration

1 = Relay mode
Currently not activated.

2 = Button hold = 2sec
Time in seconds which has to pass until a manual switching process is accepted by pressing the button on the front panel.

3 = Relay power on = N
Herewith you may decide if the relay is automatically switched on or not after having switched on the device.

4 = Off if greater = 2000 watt
Herewith you may determine when the **SecurePowerSwitch** will automatically switch off.

6 = Access password =
Setting the password for the TCP/IP port. The password only has to be transmitted if it has been configured accordingly. If a password is required, it must sent at the beginning of the data transfer, otherwise a communication is not possible and the control port will immediately be closed.

7 = Local Port = 1002
Herewith you determine the TCP-IP control port for the ASCII commands. It is blocked if it is set to “0”.

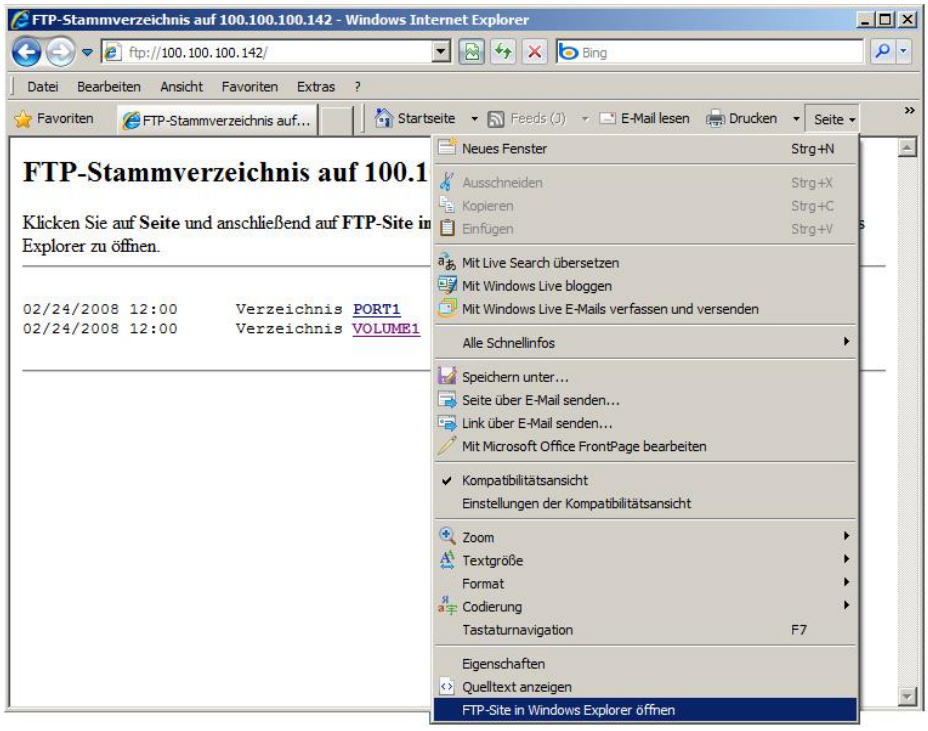
8 = With SSL/TLS = N
Herewith you determine if the control port is only enabled via an encrypted connection.
N = unencrypted.
Y = encrypted via SSL/TLS

Configuration

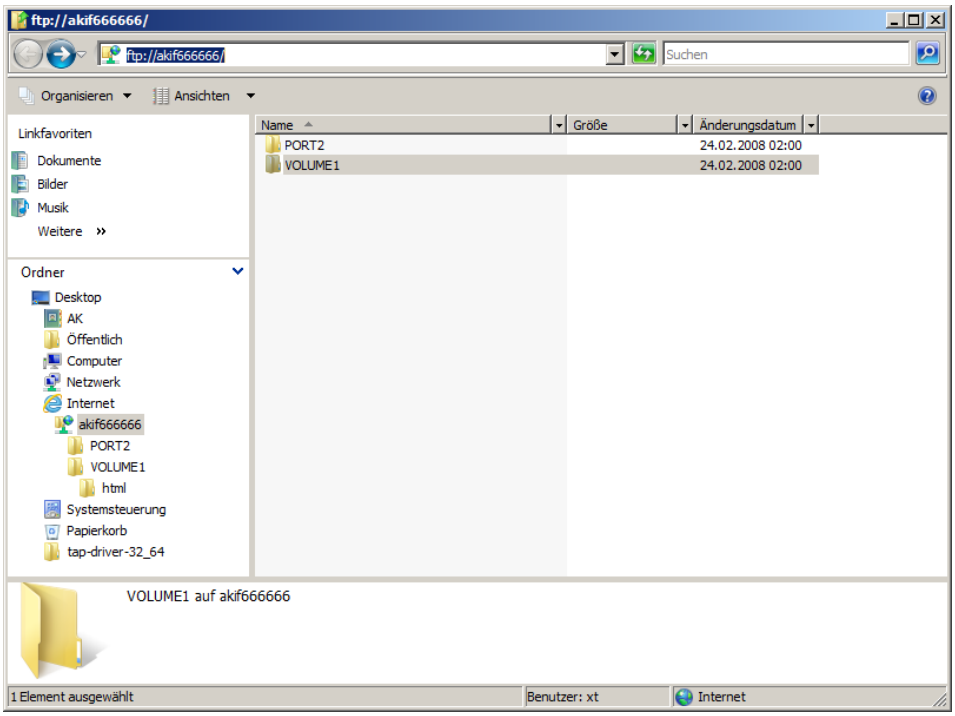
Changing the homepage

In order to access the Flash-File system of the **SecurePowerSwitch** enter e.g. ftp://akif666666 in the Internet Explorer instead of http://akif666666. You also have the option to use an FTP program.

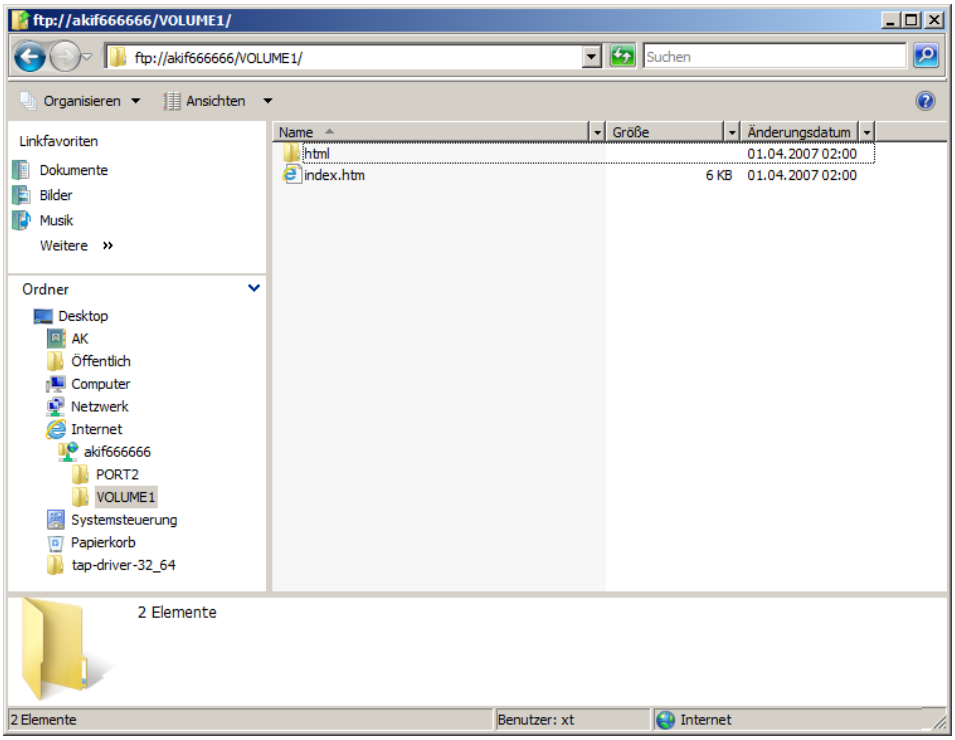
Change-over to the FTP screen of the Internet Explorers.



Configuration



Then, select the folder **“Volume1”**



Then you can change, delete or replace the existing homepage.

Note:
Make sure that the index file is always named “index.htm”. Always copy the SSL certificates or a new UPDATE on the root directory **“Volume1”**. For the update, please first delete the directory HTML and the index.htm. Then copy the update on the **“Volume1”** and **restart** the system.

Configuration

Replacing the firmware

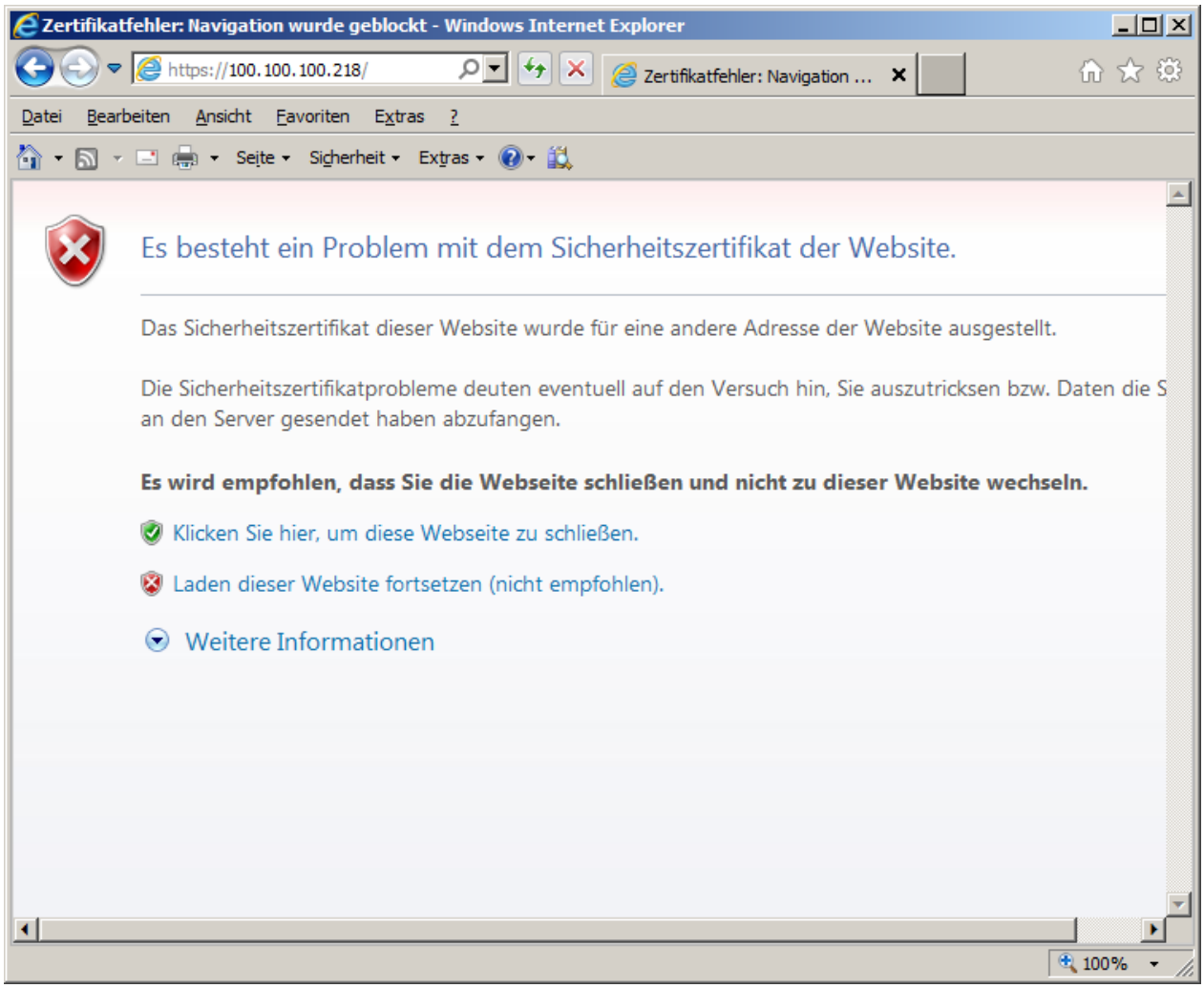
Please proceed in the same way as for **“Changing the homepage”**. But delete the directory **“HTML”** as well as the **“index.htm”** and subsequently copy the update on the root directory (**Volume1**). Then close the FTP Explorer and click on **“Restart”**

Note:
The previously deleted homepage will be automatically recreated.

SSL encryption

Encryption and certificate control

When using SSL/TLS without other or special certificates the internal certificates of the **SecurePowerSwitch** are always used for a connection via HTTPS or a secured TCP/IP connection. In this way, it is guaranteed that the data exchange is encrypted in any case and that it is not possible to read the content in the network. However, the Browser will always indicate an unsafe connection.



This is due to the reason that the browser (Client) obtains a certificate of the **SecurePowerSwitch** (Server) when establishing the connection which cannot be checked or which was signed by a certification body (CA) that is unknown to the browser. It is also possible that the certificate was created for another name (CN) which does not correspond to the above indicated address (IP).

SSL encryption

Server certificate (Server side certificate)

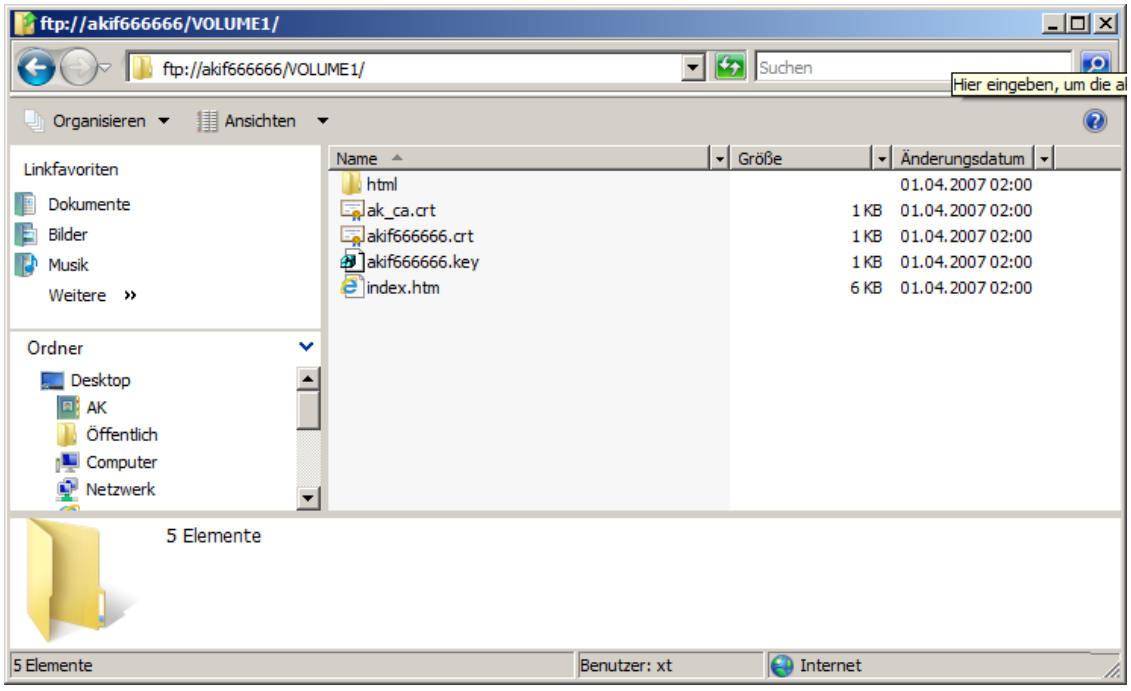
In order that the Browser (Client) establishes a connection to the **SecurePowerSwitch** (Server) and is able to determine without doubts that it is really connected to the **SecurePowerSwitch** and is able to determine without doubts that it is really connected to the **SecurePowerSwitch** (Server). To do so, have a certificate created by a “CA” for the DNS name of the **SecurePowerSwitch**, e.g. „AKIF666666“ and install it on the **SecurePowerSwitch** (Server). To do so, please proceed in the same way as for „Modifying homepage“ and copy the certificate on the root directory (**Volume1**) of the **SecurePowerSwitch**.

The certificate must have the following properties.

The suffix of the certificate always has to read xxxxxxxx.CRT.
The suffix of the key always has to read „xxxxxxxx.KEY“.
The file name has to read “AKIF” with the last three digits of the MAC address or “AK_SERVER”.
The letters can be upper or lower case.
Both files have to be saved in the “PEM“” format.

Example:
The MAC address reads **08-BB-CC-66-66-66.** Then you can either copy
AKIF666666.CRT
AKIF666666.KEY
or
AK_SERVER.CRT
AK_SERVER.KEY

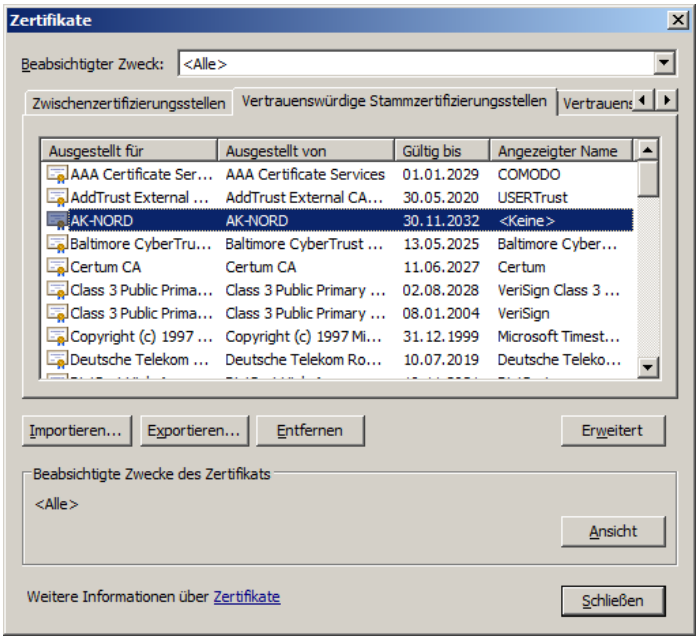
to the **SecurePowerSwitch**.



SSL encryption

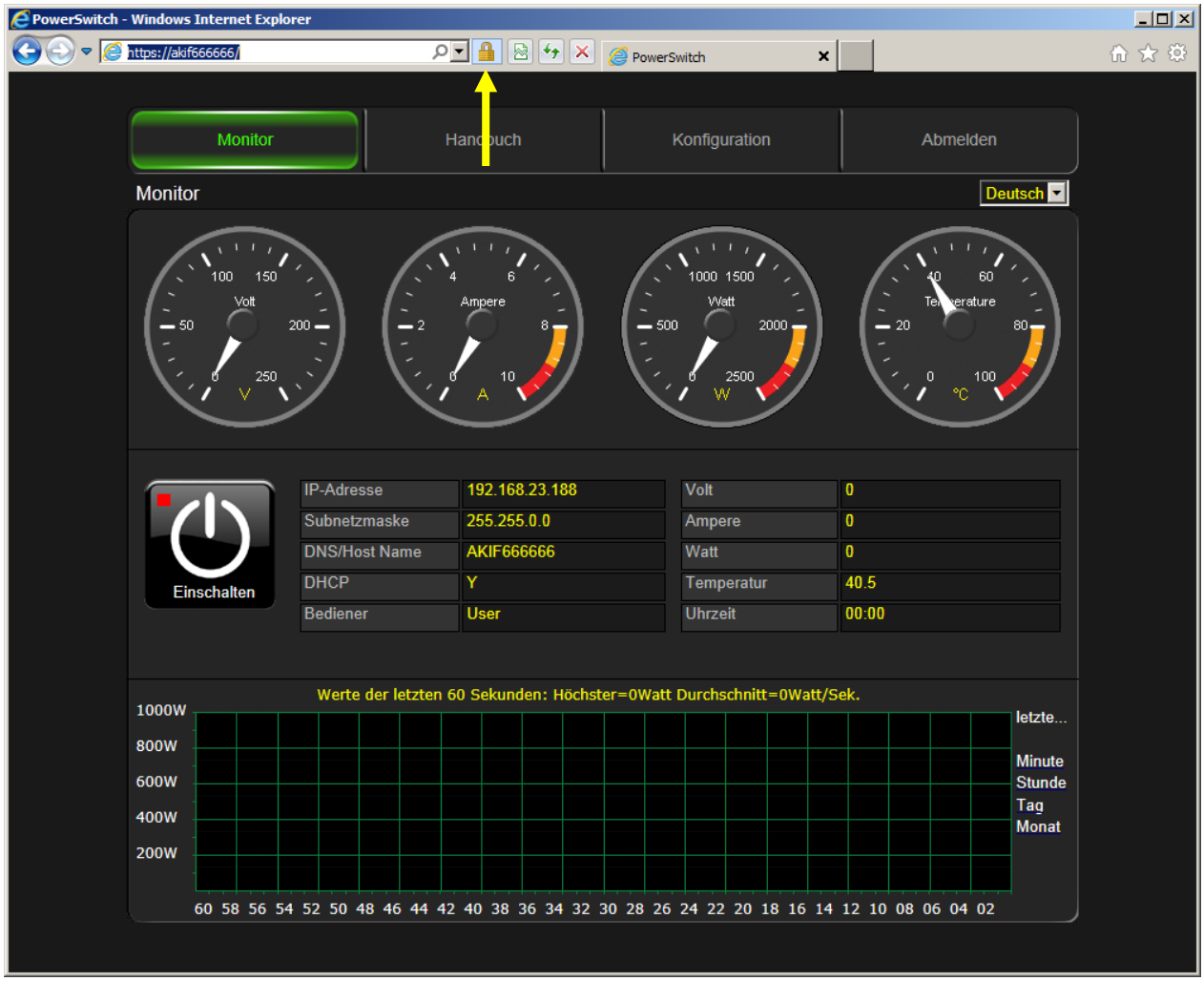
If you create a certificate yourself e.g. by using the OPENSSL tool then you have to install the corresponding CA file using the public key on your browser.

Note:
If the certificate is edited by an official “CA” it is not necessary to do anything else.



SSL encryption

Restart the browser and then enter e.g. “HTTPS://AKIF666666”. Your Browser will no longer indicate an unsafe connection.

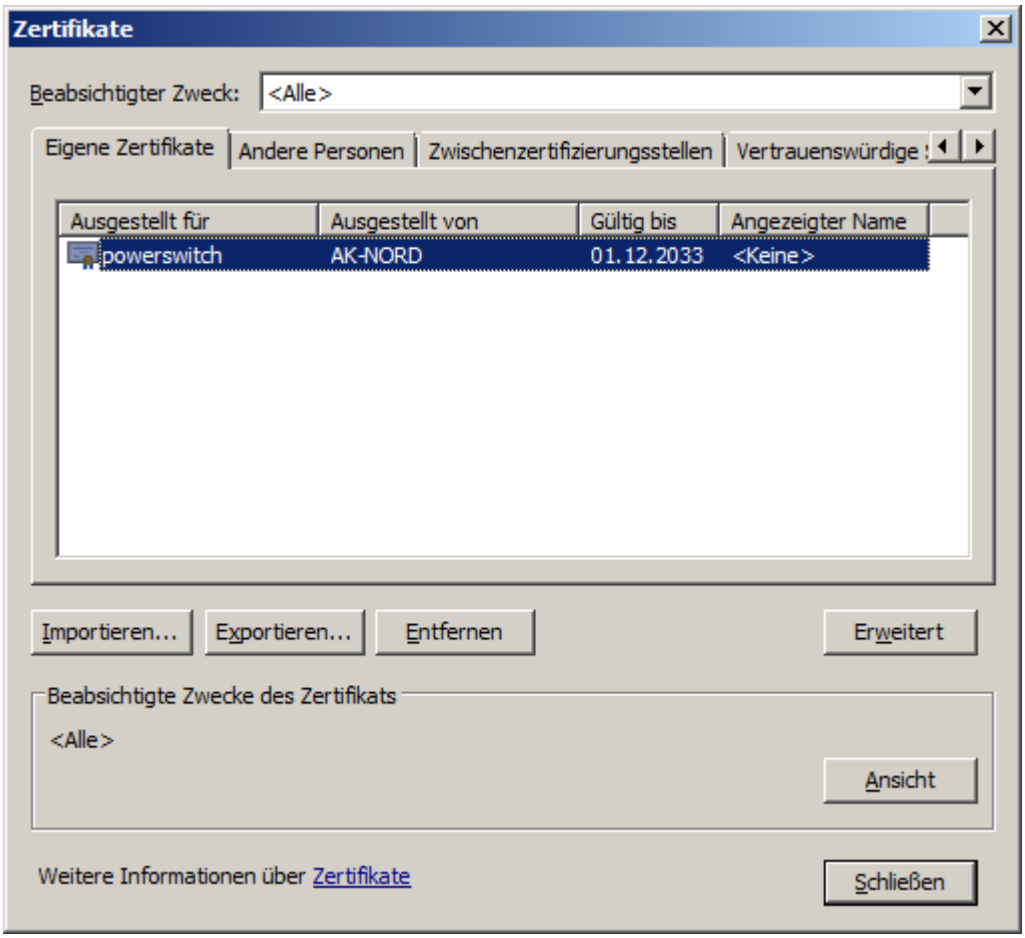


SSL encryption

Client certificate (Client side certificate)

Client certificates do not distinguish themselves from the server certificates but they are used in another way. A server certificate serves a browser for instance to verify the identity of a **SecurePowerSwitch** (Server). On the other hand, a client certificate would allow the **SecurePowerSwitch** (Server) to check the identity of the user of the browser. Thus, there is the option to allow access to the **SecurePowerSwitch** only to admitted or selected users via the browser via the encrypted TCP/IP connection.

To do so, it is possible to create a client certificate by the certification body (CA) and also to install it on the corresponding browser.



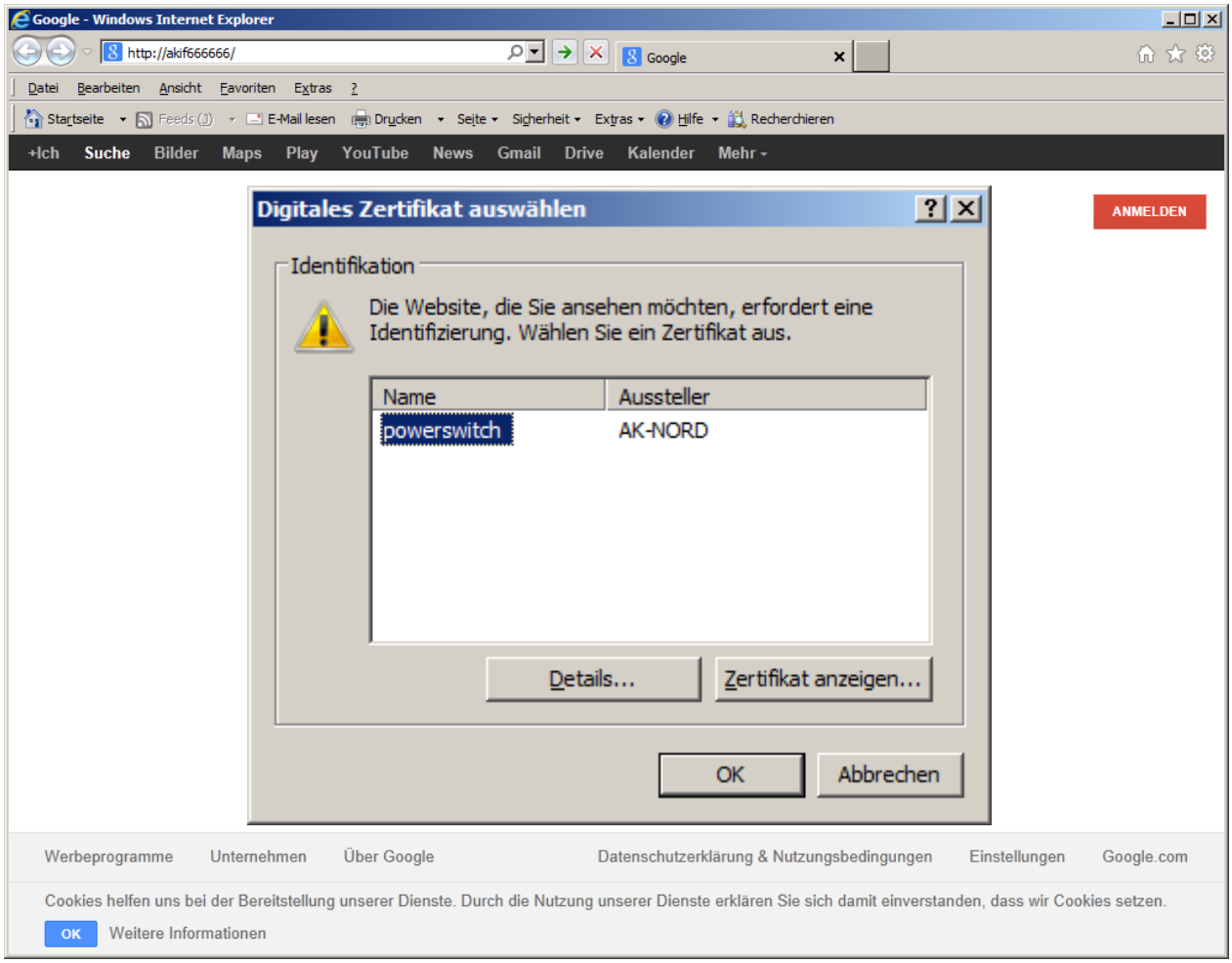
After that, you have to copy the corresponding CA file including the public key to the **SecurePowerSwitch** (Server) and to set the **"Server verify opt"** in the SSL menu to **"7"**.

The CA file must have the following properties.

The name of the CA file must always read AK_CA.CRT
The letters can be upper or lower case.
The file has to be saved in the **"PEM"** format.

SSL encryption

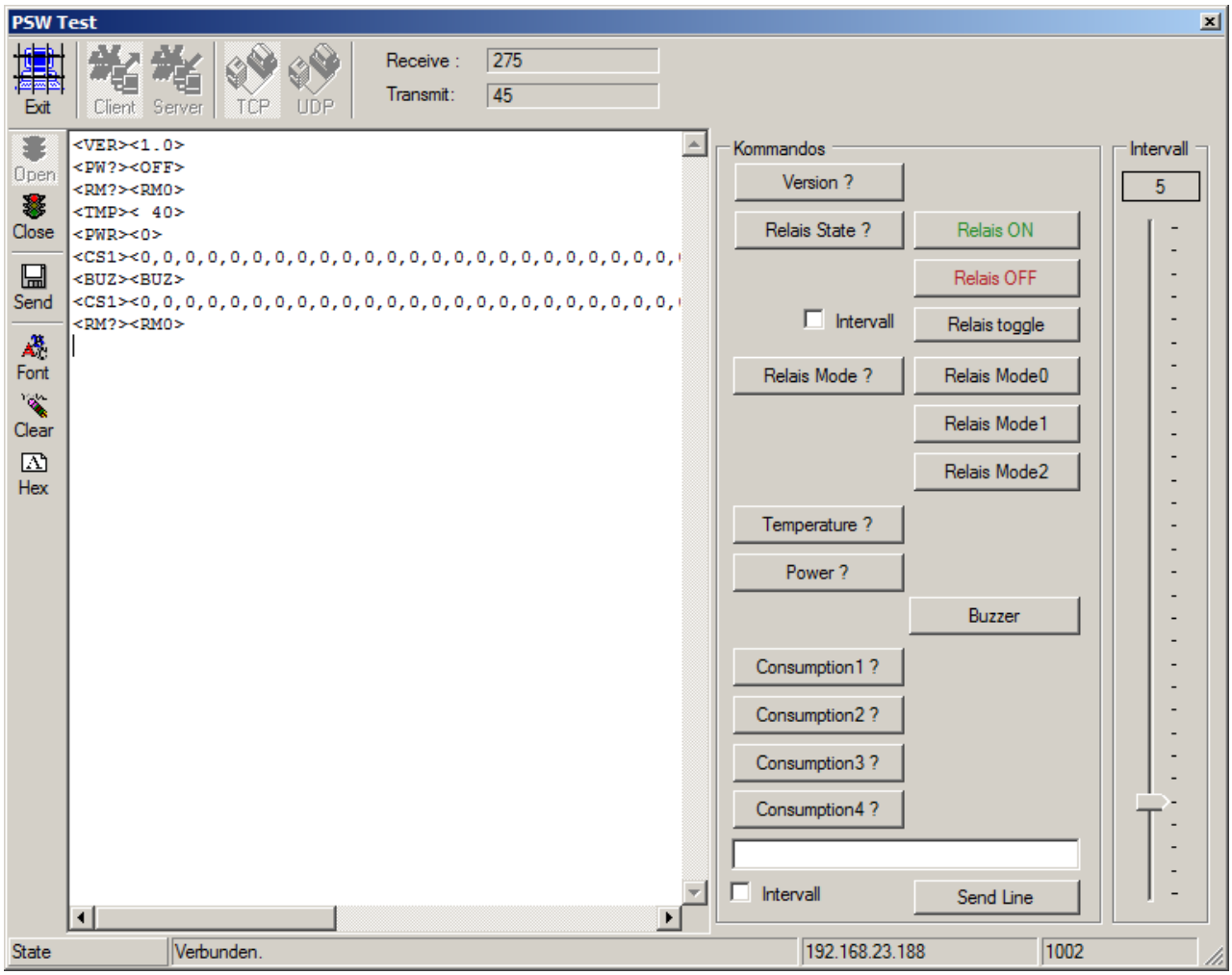
Restart your browser and enter e.g. „HTTPS://AKIF666666“. Your Browser will ask you to select a client certificate for the connection. If your browser cannot prove this certificate or if you transfer the wrong certificate the connection will not be admitted.



Note:
If you do not want to purchase an official certificate for your application we will help you in creating these certificates using the OPENSSL tool.

Data exchange via TCP/IP

Test program



It is possible to test all control commands via the network using the PSW test program. It includes the network protocols TCP and UDP and can be used under Windows. It shows the sent and and received control commands.

Data exchange via TCP/IP

Commands

Control: Port 1002 (can be set). All characters are transmitted in ASCII

Cmd	Bytes	Meaning	Answers	Bytes	Meaning	Protocol
<VER>	5	Read version	<1.0>	5	Software version 1.0	UDP/TCP
<TMP>	5	Get temperature	< 27> <ERR> <-29>	5	+27° Unknown -29°	UDP/TCP
<BUZ>	5	1 x Signal tone	<BUZ>	5	Signal tone	UDP/TCP
<PW?>	5	Power Info	<ON> <OFF>	4 5	Relay switched on. Relay switched off.	UDP/TCP
<PW1>	5	Power ON	<ON>	4	Switch on relay	UDP/TCP
<PW0>	5	Power OFF	<OFF>	5	Switch off relay	UDP/TCP
<PWR>	5	Power Read	<0> <2300>	3-6	Power consumption in watts	UDP/TCP
<RM?>	5	Relay mode	<RM0> <RM1> <RM2>	5	Request of the switching mode	UDP/TCP
<RM0>	5	Relay mode0	<RM0>	5	No possible	UDP/TCP
<RM1>	5	Relay mode1	<RM1>	5	No possible	UDP/TCP
<RM2>	5	Relay mode2	<RM2>	5	No possible	UDP/TCP
<CS1>	5	Power consumption	<.....>		last 60 sec.	UDP/TCP
<CS2>	5	Power consumption	<.....>		last 60 min.	UDP/TCP
<CS3>	5	Power consumption	<.....>		last 24 h	UDP/TCP
<CS4>	5	Power consumption	<.....>		last 30 days	UDP/TCP
<.....>	3-17	Password		0	Send password	UDP/TCP

Remark: Password
The password only has to be transmitted if it has been configured accordingly. If a password is required, it must sent at the beginning of the data transfer, otherwise a communication is not possible and the control port will be immediately be closed. Refer to **"Expert-Settings"**.

Remark: Temperature
The temperature is not the environmental temperature of the **SecurePowerSwitch**. It is rather the internal temperature or the temperature of the switching. Here it shall be tested if the connected consumers will cause an overload of the relay as well as of the switching. In this case, the device would automatically switch off. Temperatures of up to + 70° are usual. For this setting it is possible to set a threshold value in the configuration.

Remark: Power consumption
It indicates the effective current consumption of the connected consumers in watts.

Note:
CS1-4 can only be read from version 1.5.0.

Data exchange by XML

Read data

Execute an HTTP-GET "**AK_PS.XML?req=64830**" and you will get the following answer:

```
<?xml version="1.0" encoding="UTF-8"?>
<AK_PS>
      <IP>192.168.23.188</IP>
      <SN>255.255.0.0</SN>
      <NAME>AKIF666666</NAME>
      <DHCP>Y</DHCP>
      <MODE>0</MODE>
      <WATT>0</WATT>
      <TEMP> 36</TEMP>
      <CLOCK>00:00</CLOCK>
      <STATUS>OFF</STATUS>
</AK_PS>
```

<IP>	= IP address in ASCII
<SN>	= Subnet mask in ASCII
<NAME>	= DNS/Host Name in ASCII
<DHCP>	= DHCP switched on (Y) or off (N)
<MODE>	= Relay mode (not used)
<WATT>	= Effective current consumption of the connected device
<TEMP>	= Internal temperature
<CLOCK>	= Effective time (NTP)
<STATUS>	= Relay switched on (ON) or off (OFF)

From **Version 1.5.0** you may additionally read the consumption data. Execute an HTTP-GET "**AK_PS.XML?req=64830&consumption=1**" and you will additionally obtain <CONSUMPTION>:

```
<?xml version="1.0" encoding="UTF-8"?>
<AK_PS>
      <IP>192.168.23.188</IP>
      <SN>255.255.0.0</SN>
      <NAME>AKIF666666</NAME>
      <DHCP>Y</DHCP>
      <MODE>0</MODE>
      <WATT>0</WATT>
      <TEMP> 36</TEMP>
      <CLOCK>00:00</CLOCK>
      <STATUS>OFF</STATUS>
      <CONSUMPTION>0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1368,1872,
      1854,1818,1818,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0</CONSUMPTION>
</AK_PS>
```

consumption=1	Consumption data of the last 60 seconds in watts
consumption=2	Consumption data of the last 60 minutes in watts
consumption=3	Consumption data of the last 24 hours in watts
consumption=4	Consumption data of the last 30 days in watts

Note: „**req=64830"** is not necessary to be sent It only serves to distinguish the single requests.

Data exchange by XML

Switching the relay:

Execute an HTTP-POST “**AK_PS.XML**” and send the following XML data

```
<?xml version="1.0" encoding="UTF-8"?>
<AK_PS>
<STATUS>TOGGLE</STATUS>
</AK_PS>
```

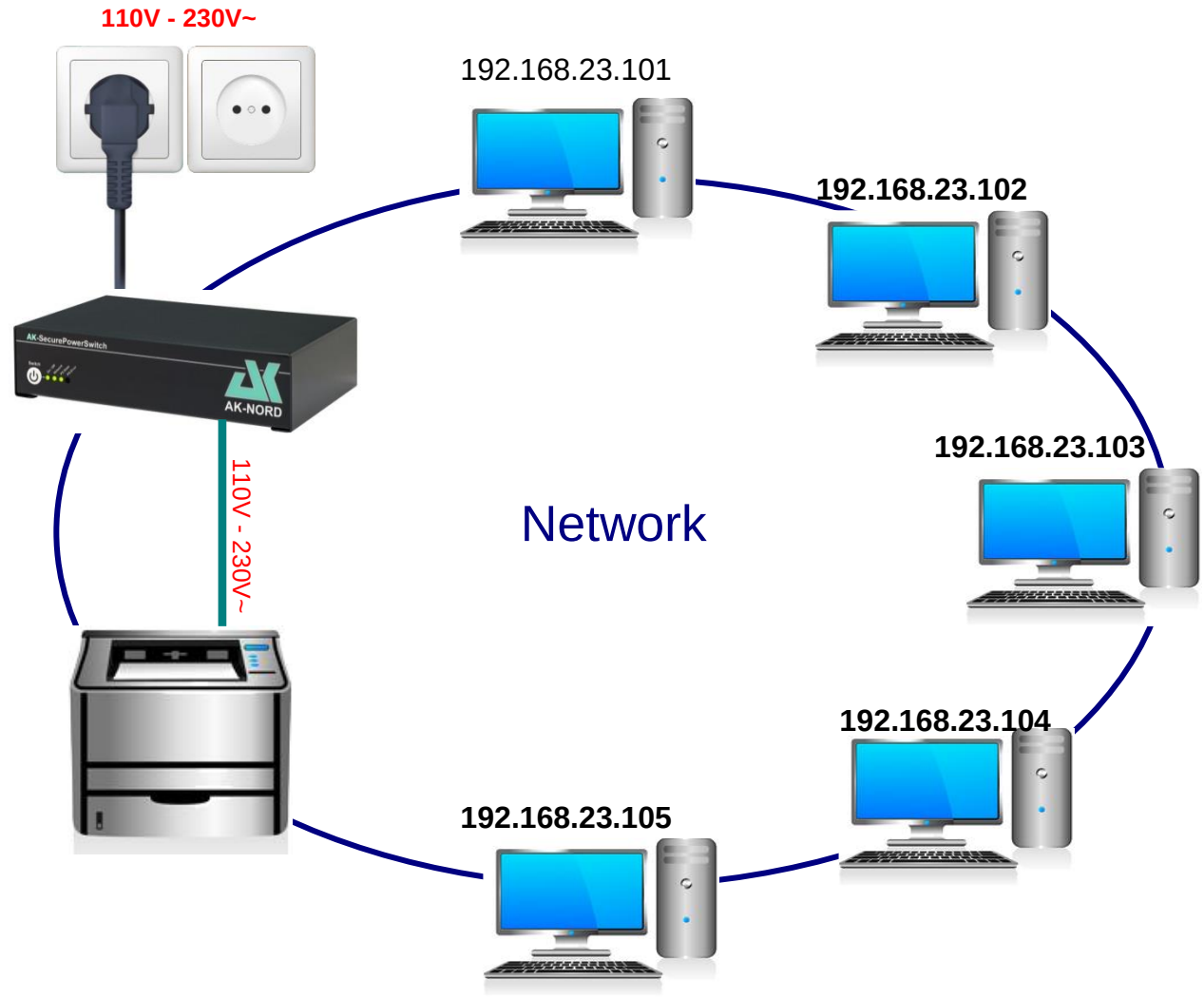
<STATUS> = TOGGLE = switching over
= OFF = switching off
= ON = switching on

Application example 1

Automatic switching the power consumers in the office on or off:

Switches off all power consumers which are not required, if certain working places are not used. Often devices such as photocopying machines, departmental printers, franking machines and other office machines are switched on overnight, unless they are not used and thus energy is consumed unnecessarily.

Example: Departmental printers:
You have a department with 5 working places which access the same departmental printer. If all 5 working places are switched off, the departmental printer may also be switched off. As soon as the first working place is switched on again, the departmental printer should also be switched on again.

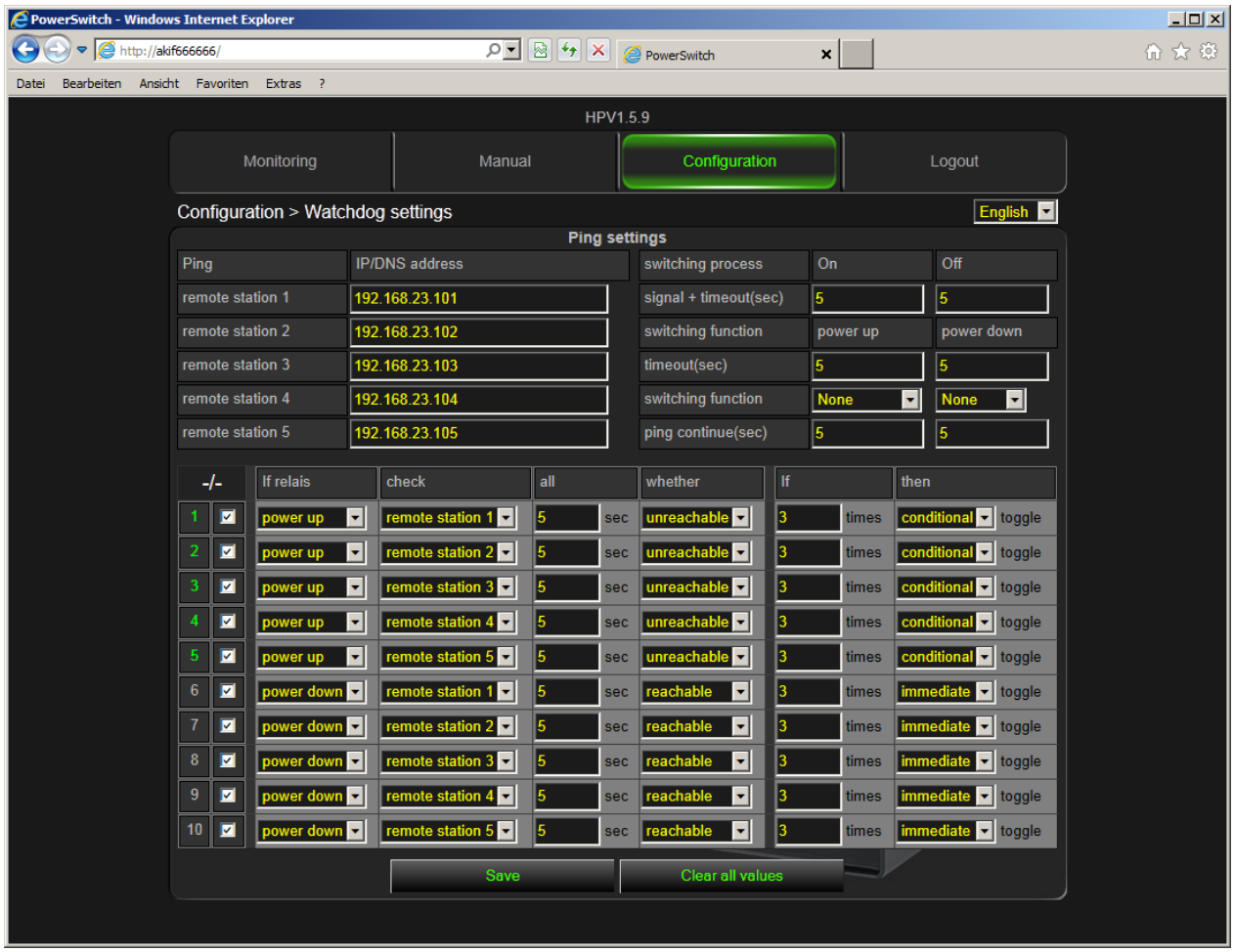


Network
Power supply cord(110-230V)

Configuration

Settings :

First enter the IP addresses or the DNS names of the workings station which needs to be monitored under **“Target station”**. You can enter the conditions in the lower area of the page. In this case, the **SecurePowerSwitch** checks with the conditions 1 to 5 if the corresponding working station are not available. If all 5 working stations are no longer available, the **SecurePowerSwitch** switches off the departmental printer. The conditions 6 to 10 are used to check if one of the working stations was switched on again and is available. If this is the case, the **SecurePowerSwitch** **immediately** switches on the departmental printer.



In order to check the function, the individual numbers of the conditions indicate the status of the test in colours.

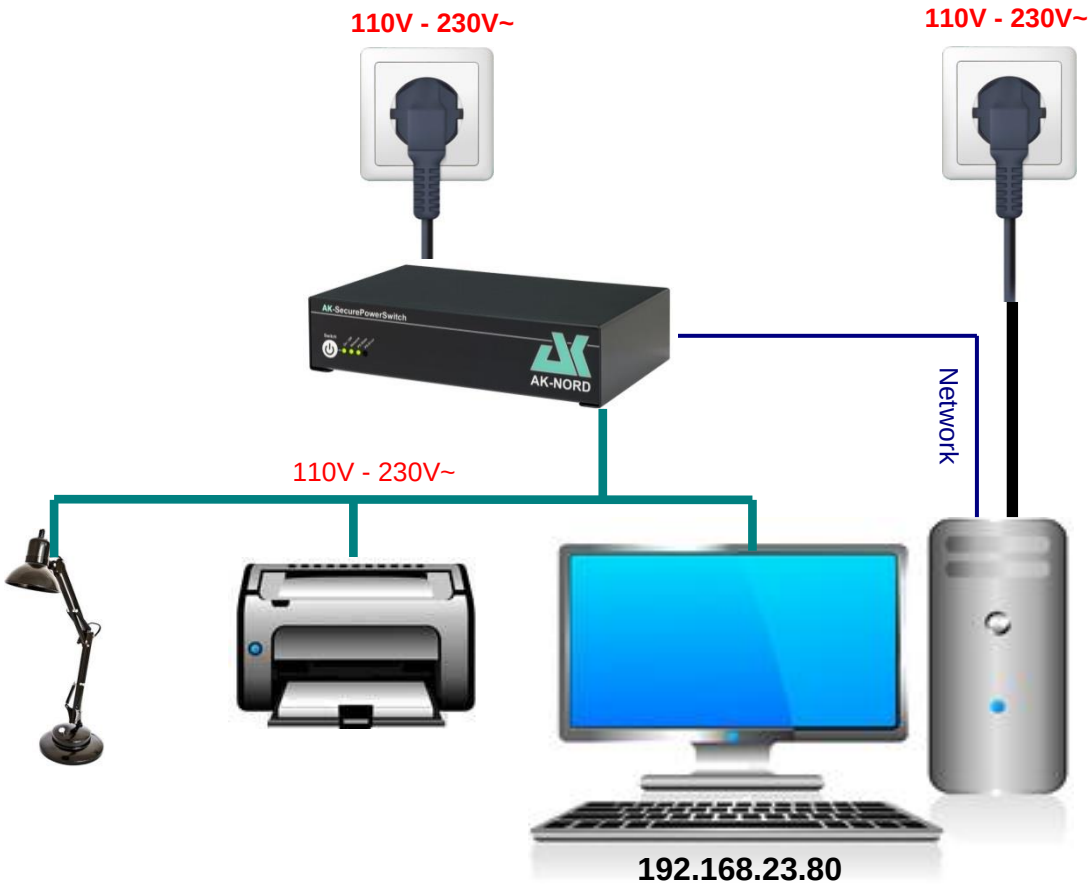
Green: The condition applies.
Yellow: The condition applies; the test is not completed yet.
Red: The condition does not apply.

Application example 2

Automatic switching on or off the power consumers at a working place:

Switches off all power consumers at the working place as soon as the PC is switched off. Often devices such as working place printers, monitors and other office machines are switched on overnight, unless they are not used and thus energy is consumed unnecessarily.

Example: Working place:
You have a working place with a PC, monitor, printer and a working place lamp. If the PC/computer is switched off, all power consumers should be automatically switched off.

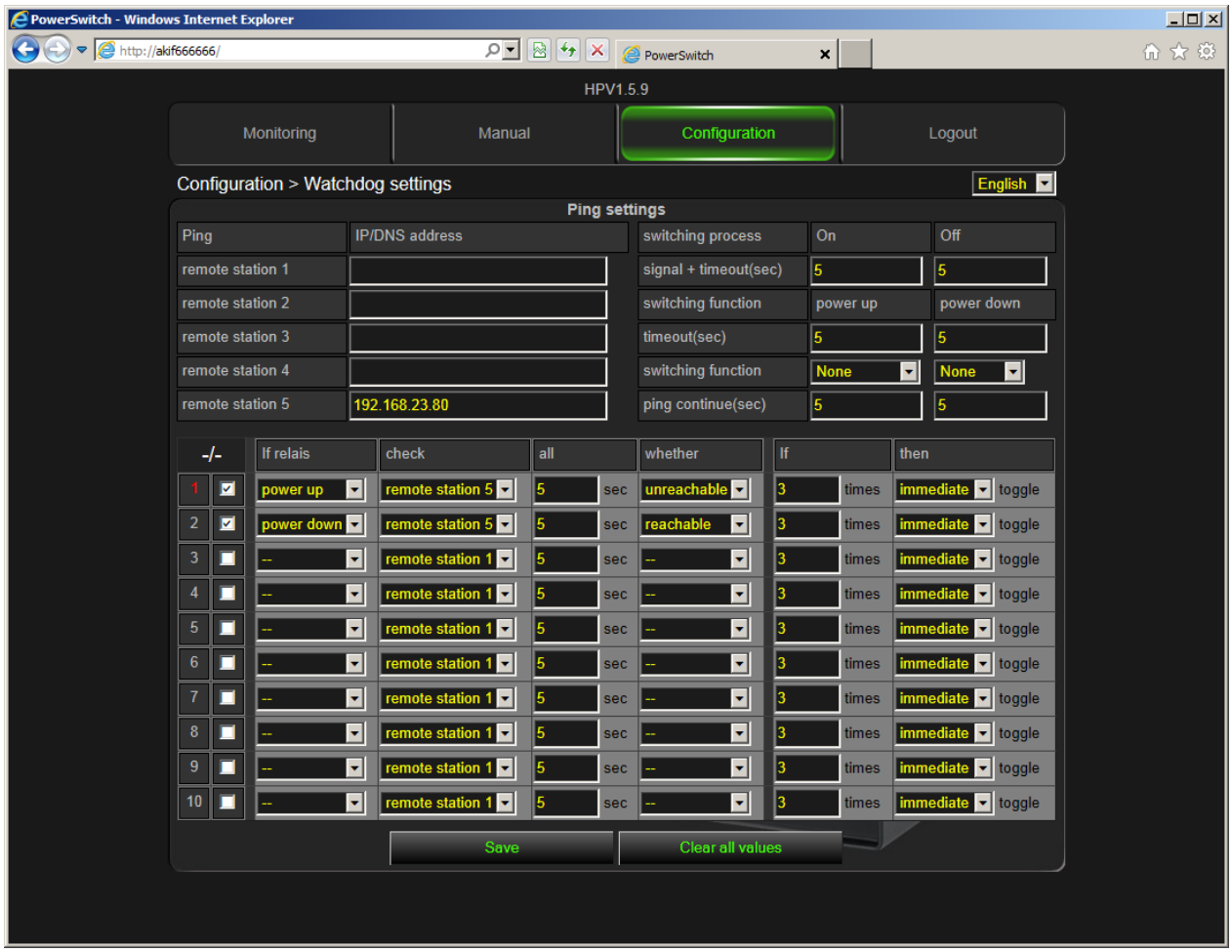


Network
Power supply cord(110-230V)

Configuration

Settings :

First enter the IP addresses or the DNS names of the workings station which need to be monitored under **“Target station”**. In this case it regards your working place computer. You can enter the conditions in the bottom part of the page. Then, the **SecurePowerSwitch** checks if the working station indicated under **“Target station 5”** is available or not. If the computer is available in the network, i.e. if it was switched on, then the Condition2 applies and the power consumers will be switched on. If the computer is switched off again, then the Condition1 applies and the power consumers will be switched off again.



In order to check the function, the individual numbers of the conditions indicate the status of the test in colours.

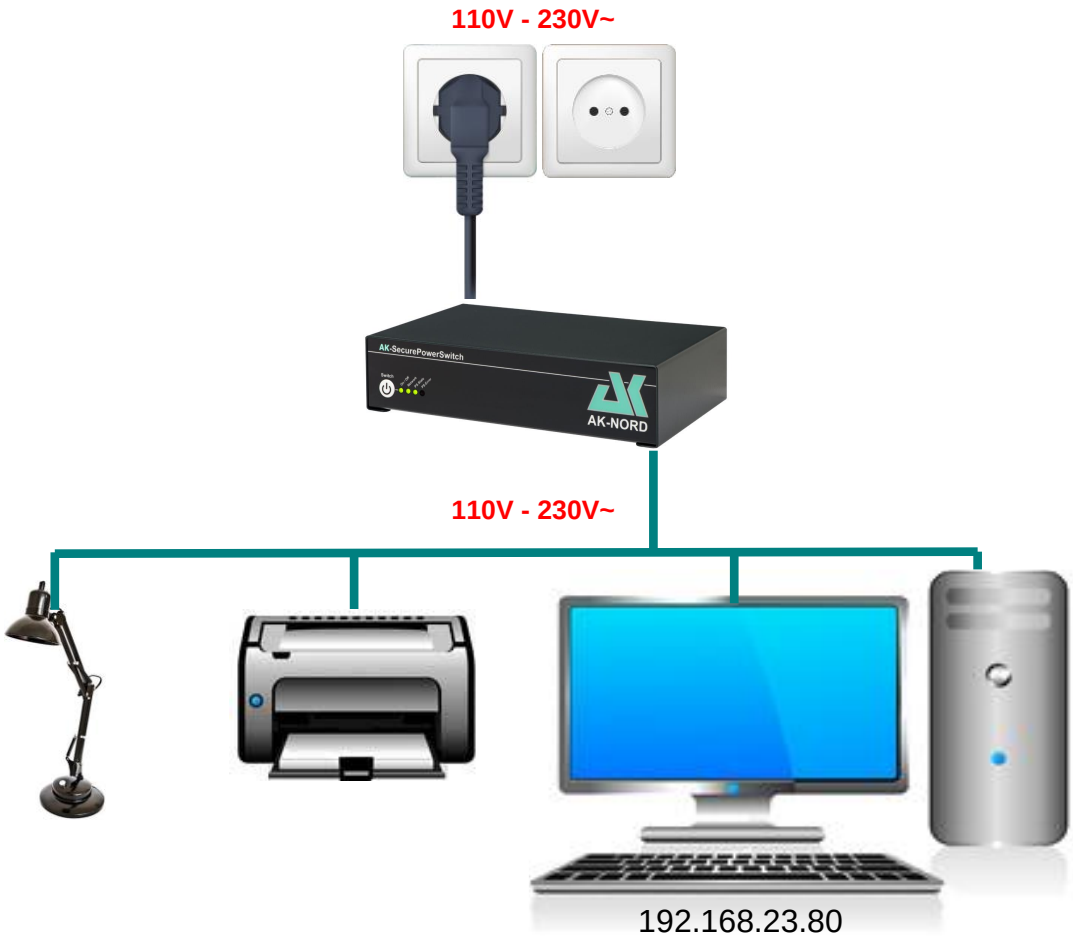
Green: The condition applies.
Yellow: The condition applies; the test is not completed yet.
Red: The condition does not apply.

Application example 3

Time and consumption-controlled switching the power consumers on or off:

Switching off the working place at a certain point in time, **if** it is no longer used.
In this way it is made sure that all devices which are no longer needed such as working place printer, working lamps, etc. are switched off at the end of the office hours.

Example: Working place:
You have core working hours from 8 a.m. to 5 p.m. and your working place includes a PC, monitor, printer and a working place lamp. If the PC is running in the standby mode or is switched off you only consume 60 watts at the working place, otherwise you consume 120 watts. With the help of the power consumption it is possible to determine if the working place is currently used or not.

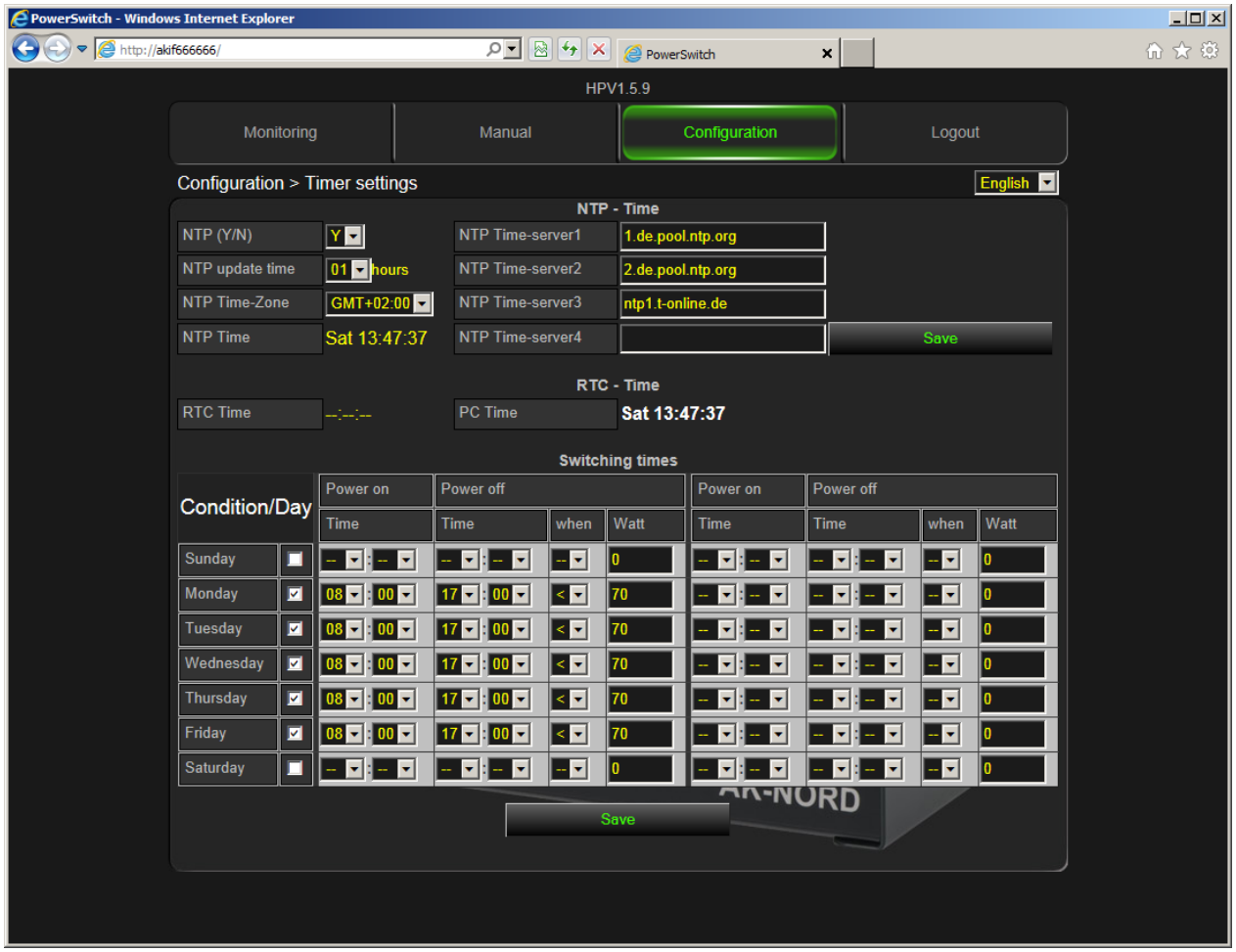


Power supply cord(110-230V)

Configuration

Settings :

Enter the working hours for each day of the week. I.e. at what time the working place shall be supplied with power and when power shall be switched off. Additionally enter as condition that the **SecurePowerSwitch** shall only be switched off, if it detects that less than 70 watts are used after 5 p.m.

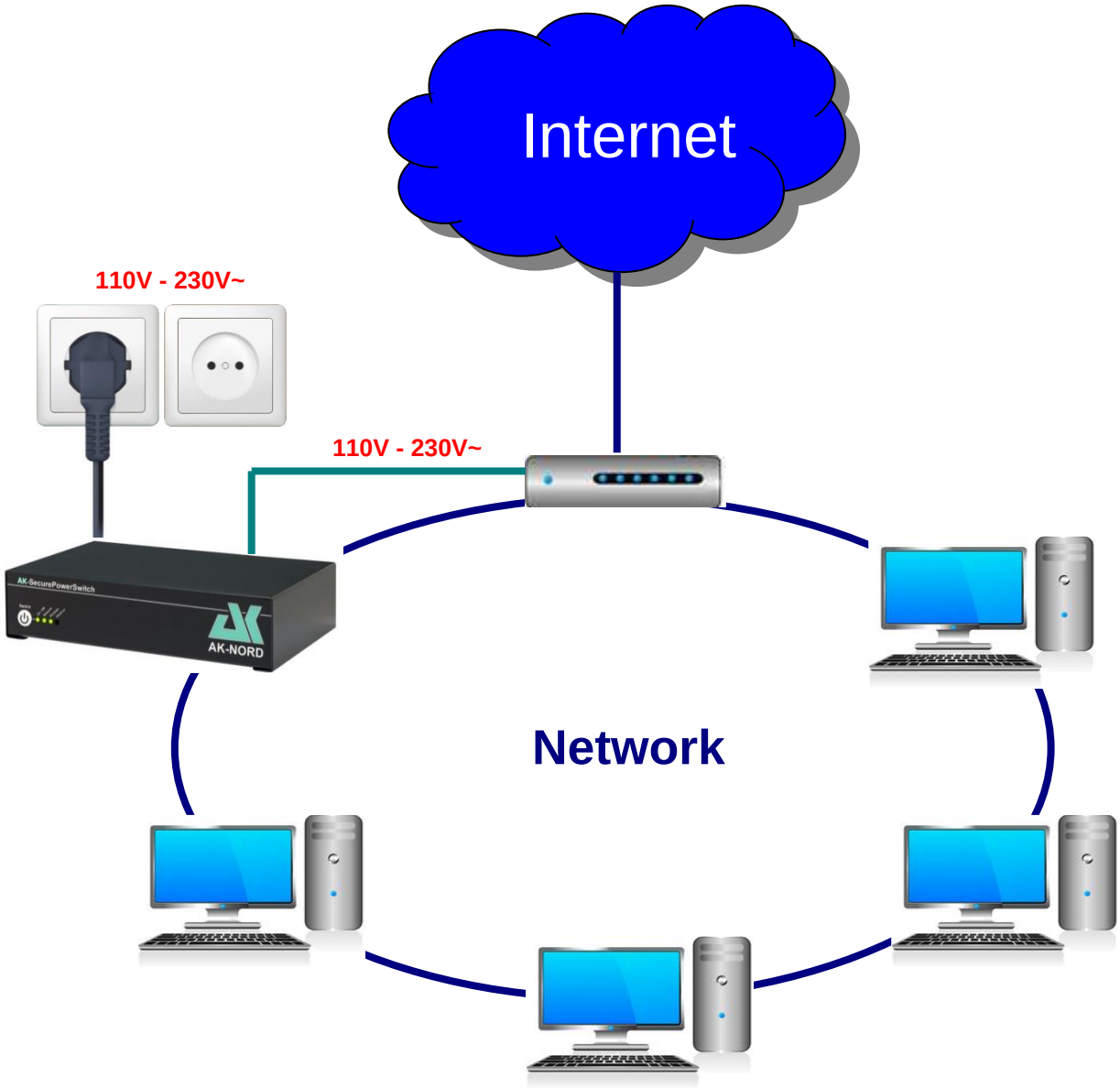


Application example 4

Suppressing devices by an interruption in the power supply:

Short interruptions in the power supply, e.g. if a device in the network can no longer be addressed or if no function is available.

Example: Router monitoring:
Sometimes, no Internet connection is available. In order to remedy this problem, briefly switch the router off and on again. The **SecurePowerSwitch** can independently detect this fault and automatically execute an interruption in the power supply.

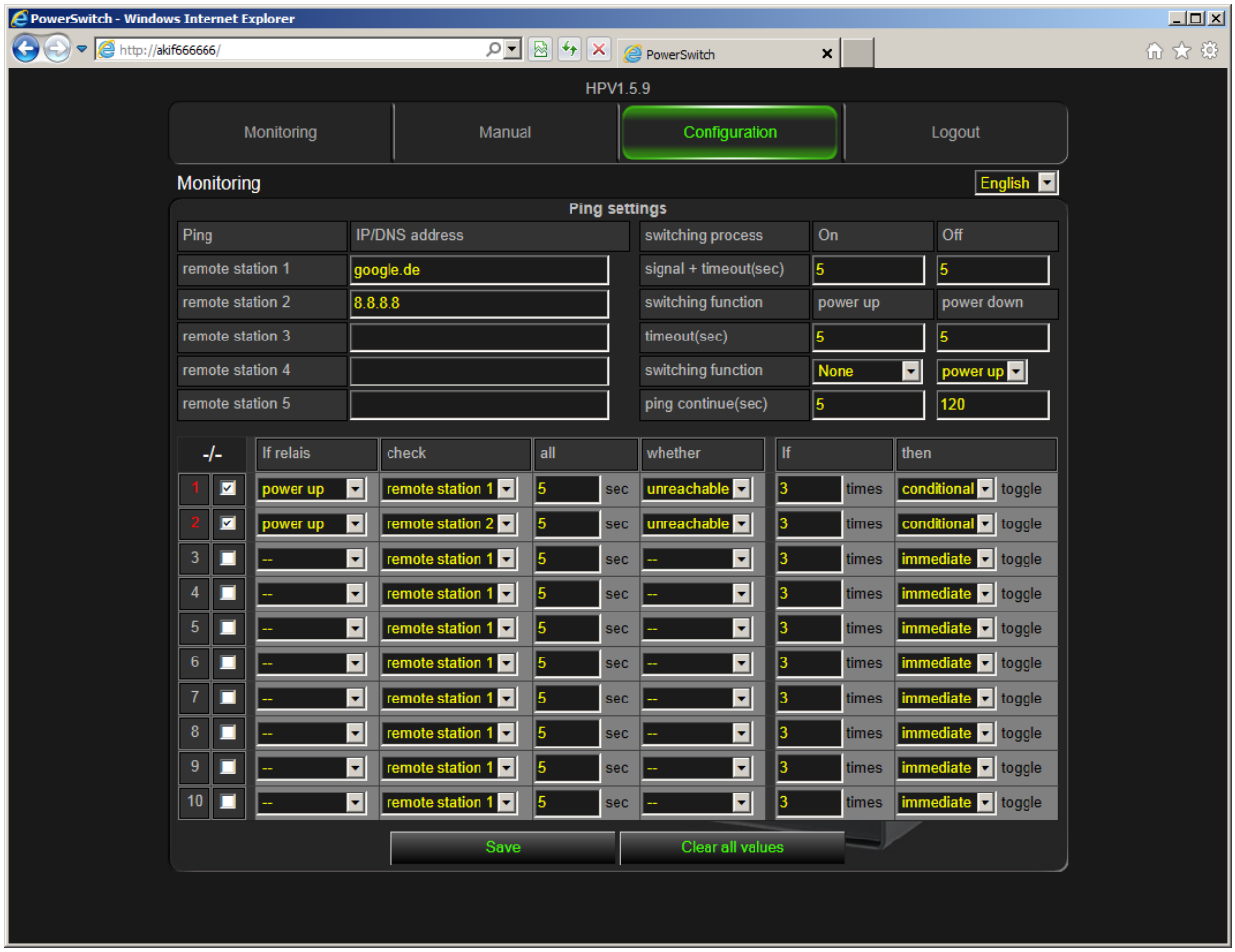


Network
Power supply cord(110-230V)
Switching line(110-230V)

Configuration

Settings :

First enter the IP addresses or the DNS names of the servers which are available on the Internet under “Target station”. In this case, two reliable servers are used which should normally be available at any time. Even if one server is not available for a short time, there is no accidental switch function since the other server is still available. If there is a failure of the router, both servers are no longer available as described in this case. This will then result in the switch-over procedure “Off” and takes place as follows: (refer to the following page)

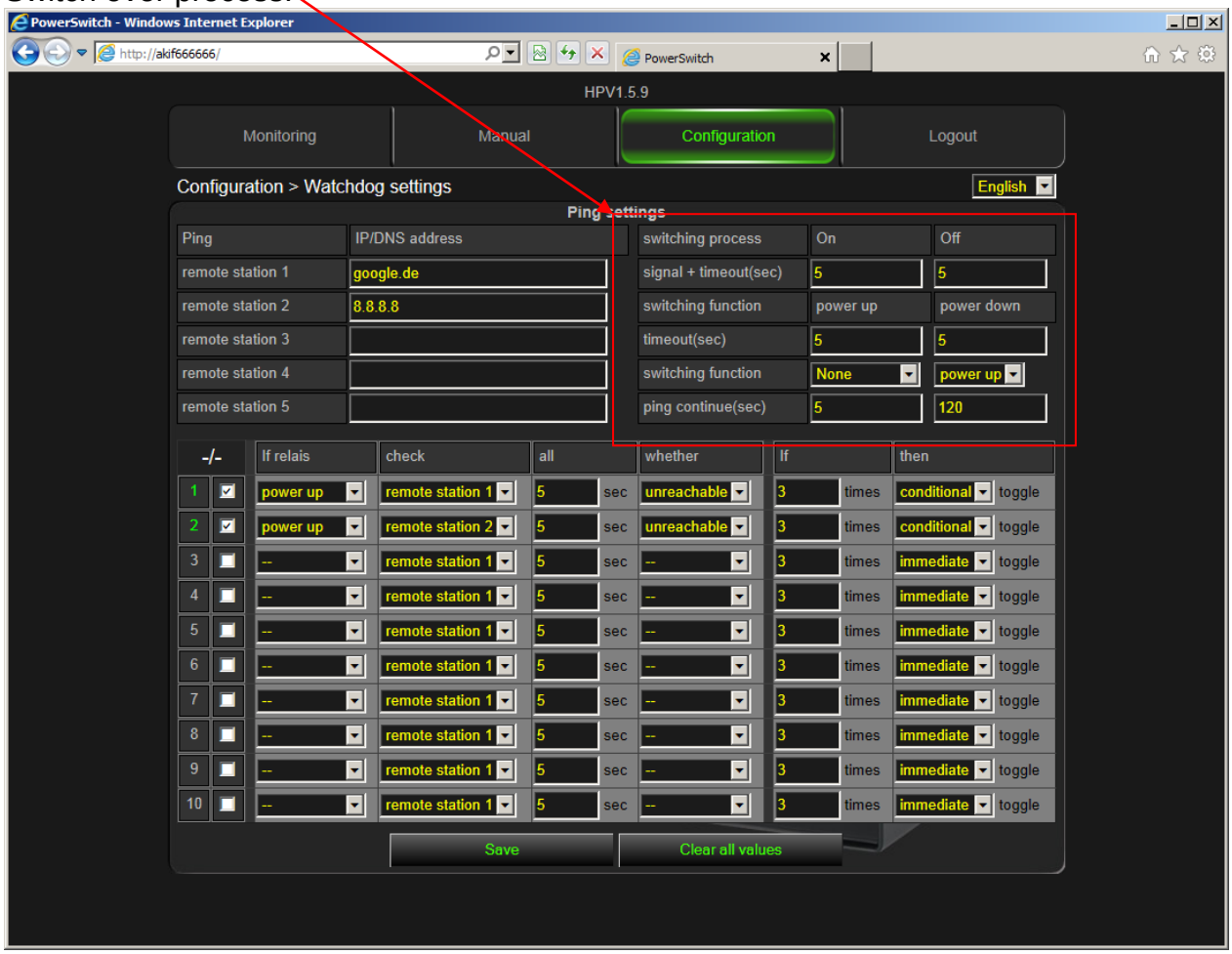


In order to check the function, the individual numbers of the conditions indicate the status of the test in colours.

Green: The condition applies.
Yellow: The condition applies; the test is not completed yet.
Red: The condition does not apply.

Configuration

Switch over process.



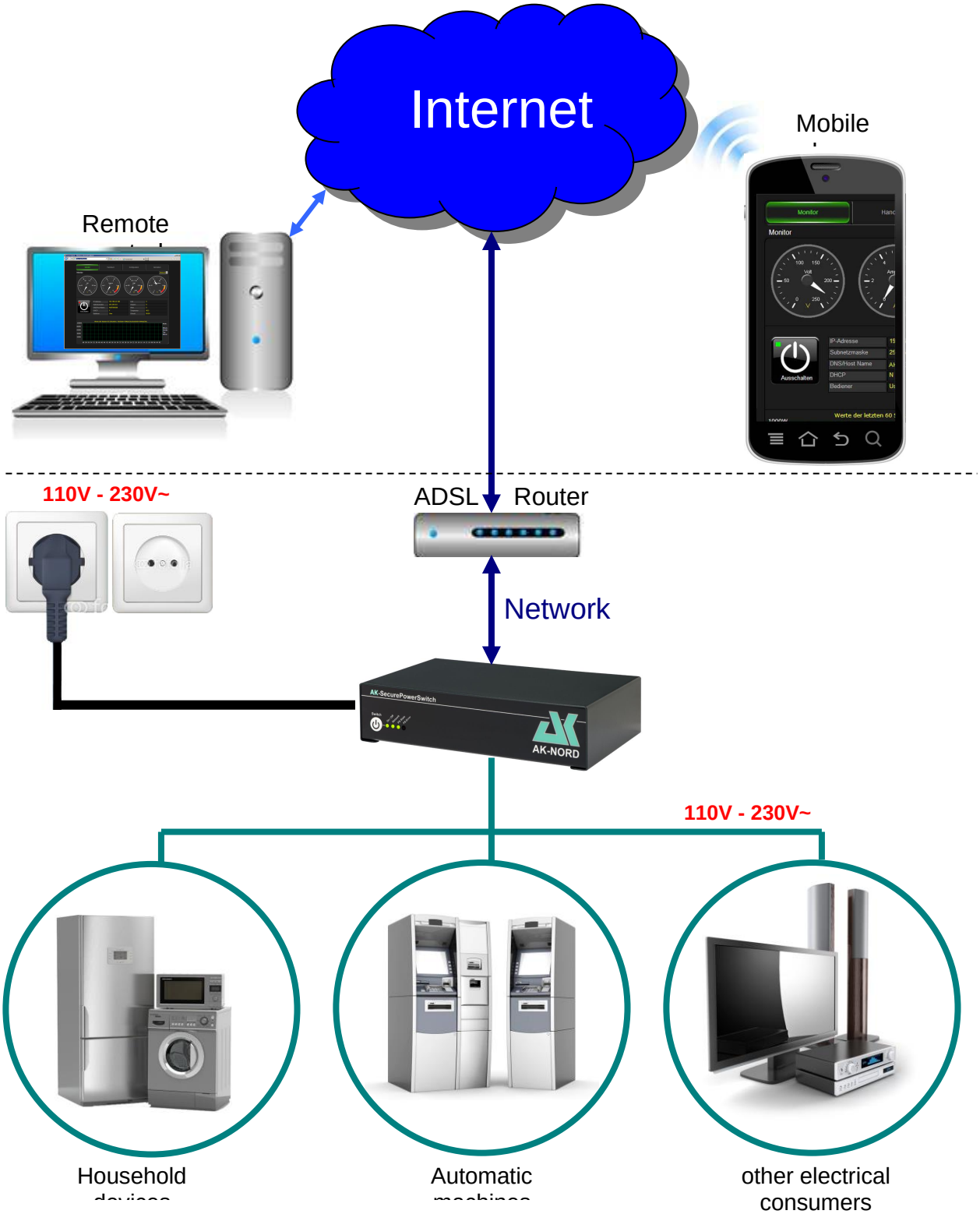
1.) You hear an acoustical signal in form of 3 short beeps.
2.) It is waited for 5 seconds.
3.) The relay switches off and the power supply is interrupted.
4.) It is waited for 5 seconds.
5.) The relay switches on again and the power supply is restored.
6.) It is waited for 2 minutes.
7.) The monitoring is restarted.

Note:
Enter a sufficient waiting time for **"Proceed ping"**. After the interruption of the power supply it may be that your terminal (router) needs some time in order to restore the normal function or working capacity. If the time is too little, the **SecurePowerSwitch** switches off the power of the router before it was even possible to reach the indicated server.

Application example 5

Switching electrical devices via the Internet:

Example: Controlling the **SecurePowerSwitch** via the Internet.

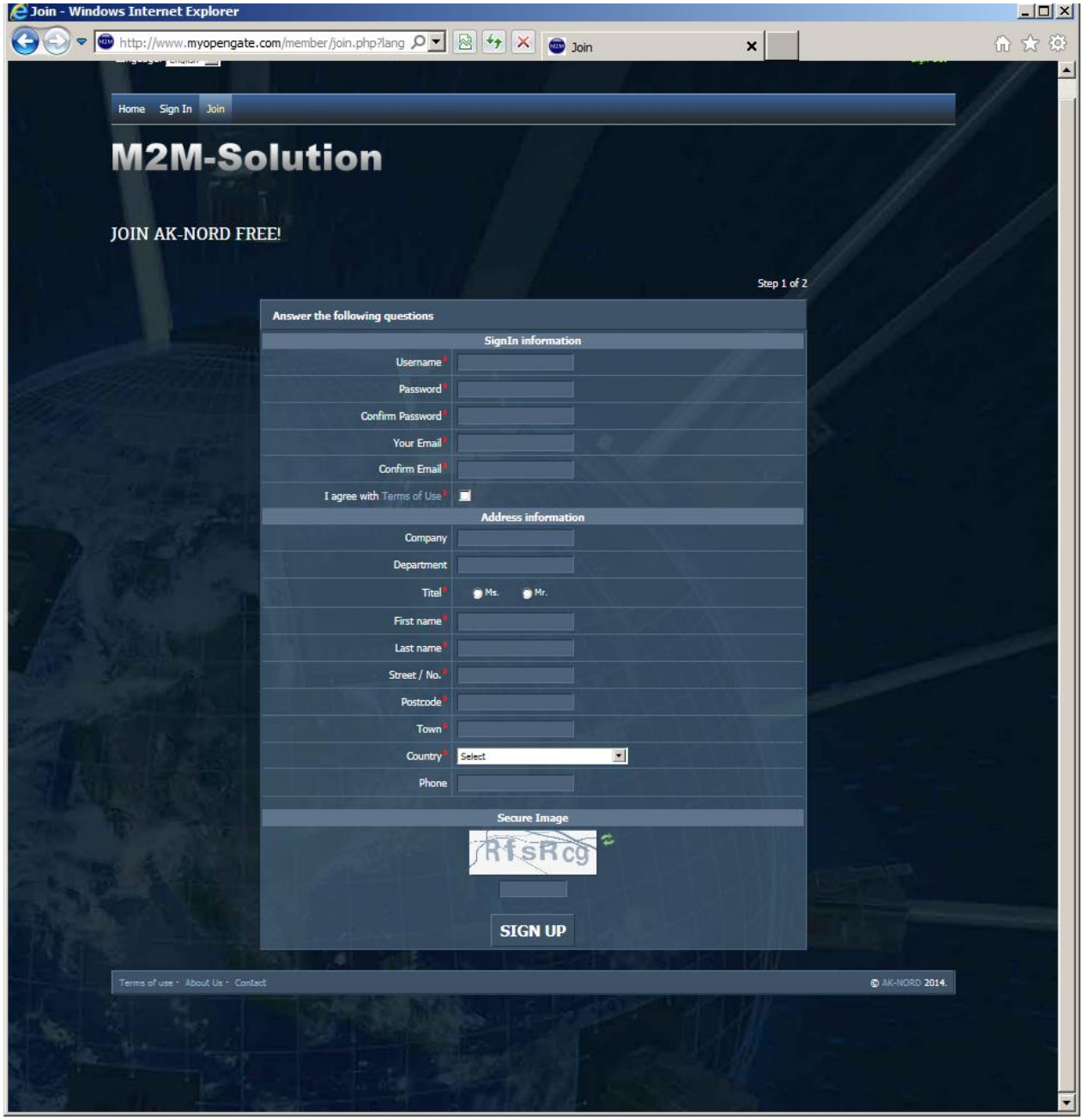


Network
Power supply cord(110-230V)
Switching line(110-230V)

Configuration

Registration:

Register on the homepage http://www.myopengate.com and follow the instructions on the homepage.

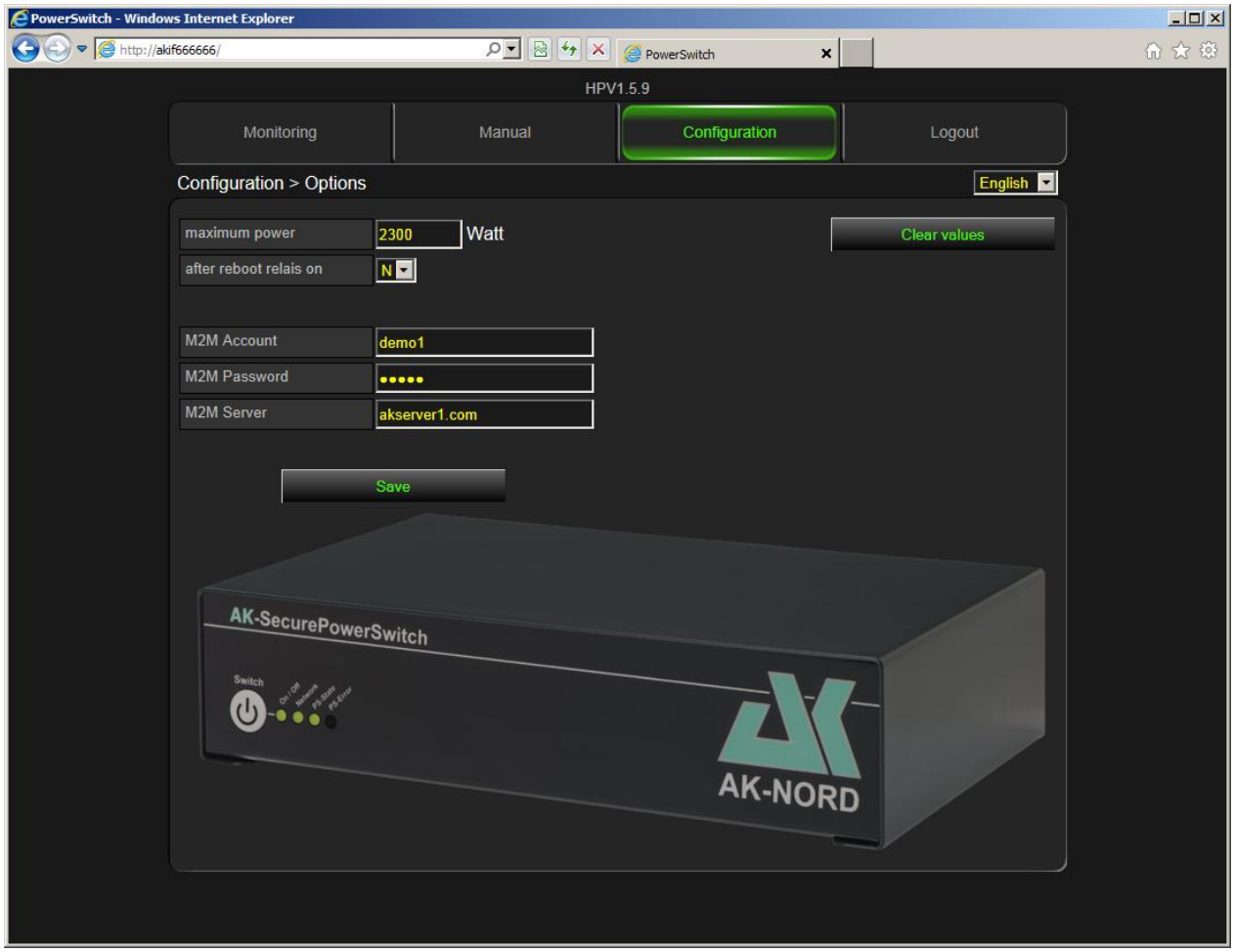


Note:
Do not use any special characters for the user name/account name and the password and pay attention to the using upper and lower case letters!

Configuration

Configuration:

After the successful registration you have to enter the log-in data which were previously assigned during registration, such as user name/account name and the password in the **SecurePowerSwitch**. To do so, please connect your device to the **SecurePowerSwitch** via your browser and select the **menu Options** via the configuration**.** These log-in data are also stored there.



M2M – Account name: The user name assigned in MyOpenGate.
M2M – Password: The password assigned in MyOpenGate.
M2M – Server: Enter the rendezvous server here. In this case „**akserver1.com**“

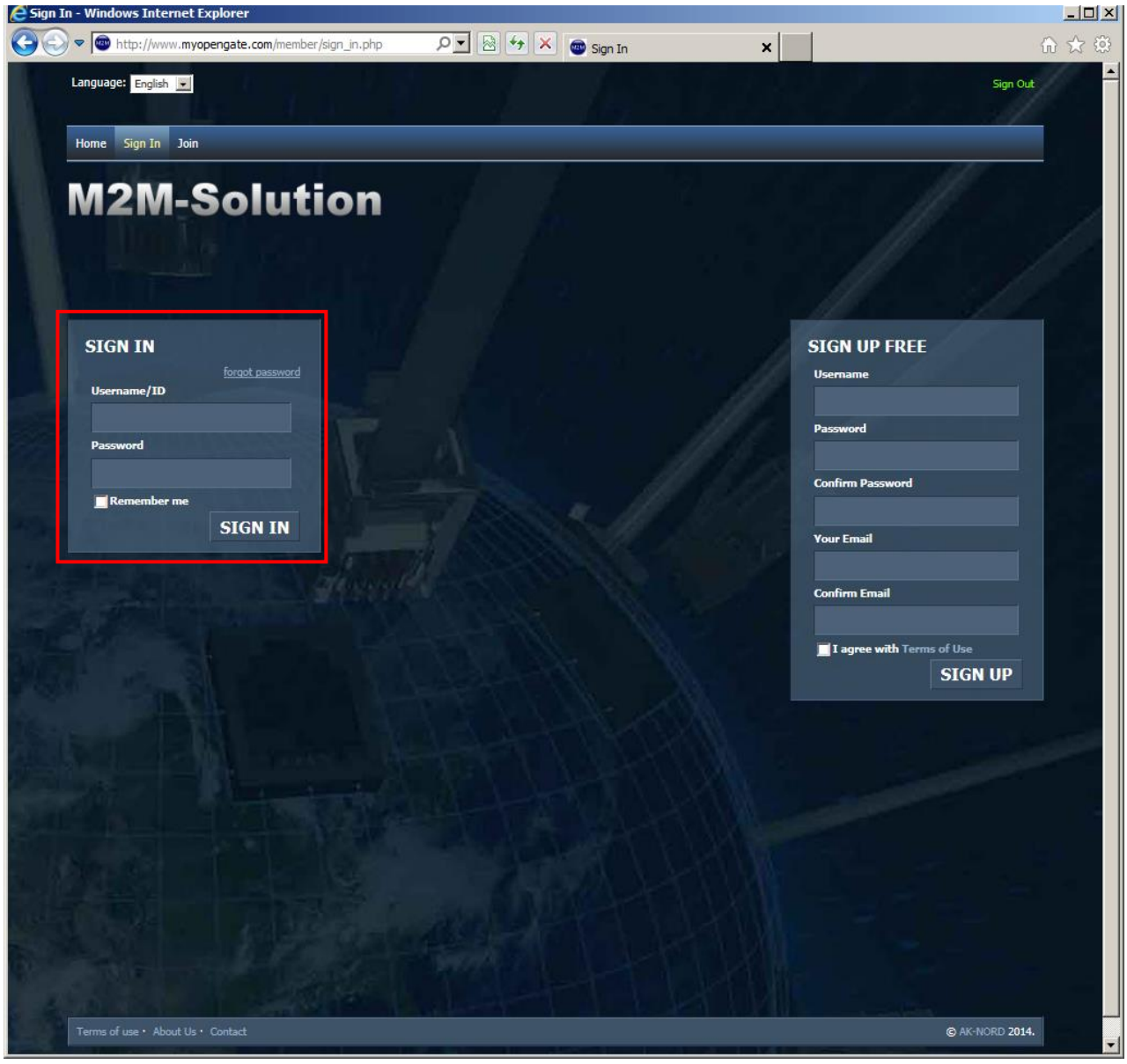
Note:
These functions are only activated after **restarting the system**. Do not use any special characters for the account name and the password and pay attention to the using upper and lower case letters!

Note:
Generally you do not need to reconfigure your router on site for this process. The whole log-in and the connection establishment is executed encrypted.

Connection

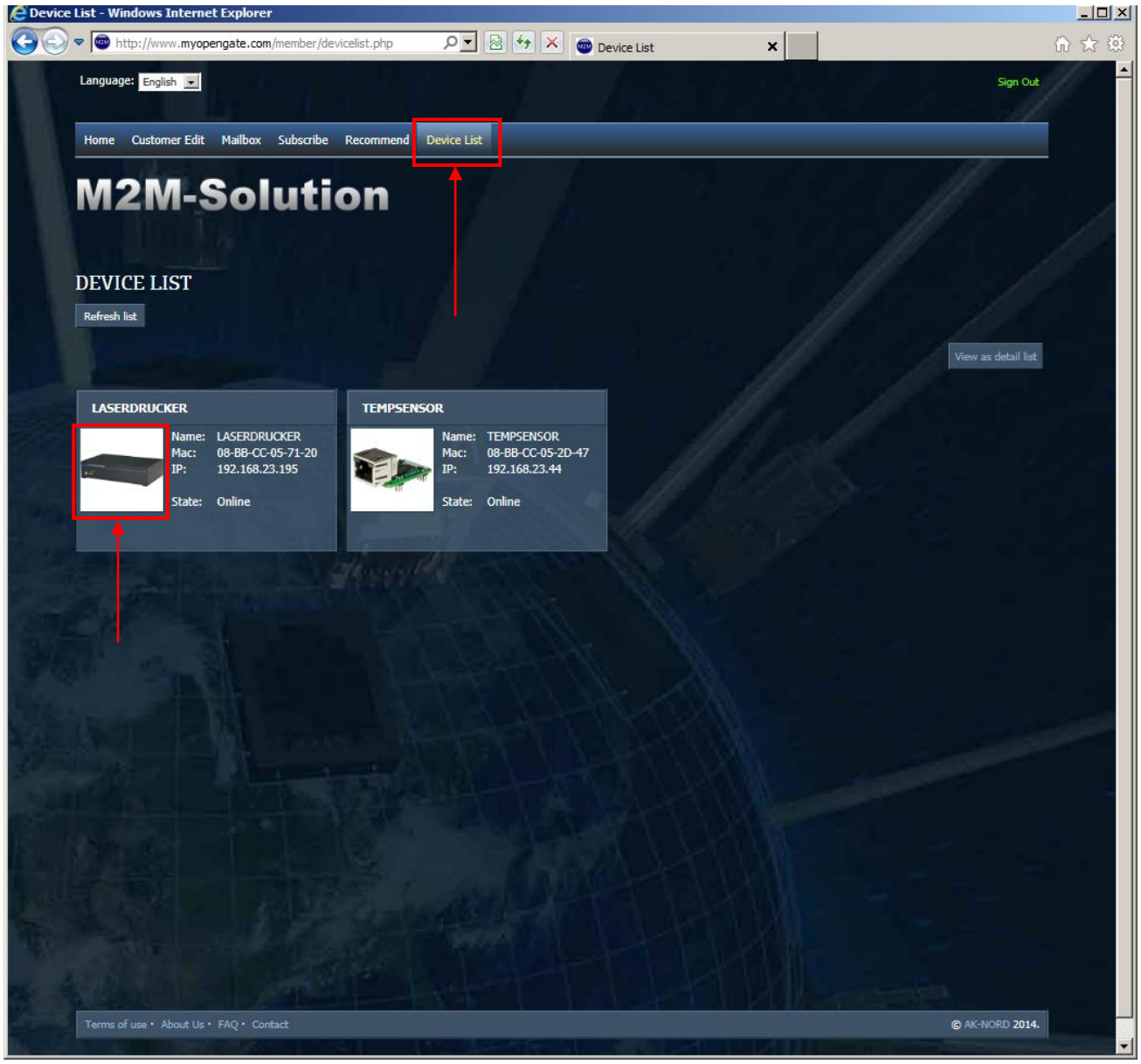
Remote control with the PC via the Internet:

Connect **your device again** under http://myopengate.com and log-in your account with your M2M access data.



Connection

Then select the **“Device list”** from the menu. All devices connected to this account are displayed. Then click on the corresponding device icon and you are immediately connected to the device.



Connection

From now on you are directly connected to your **SecurePowerSwitch**, e.g. at home. Of course, Since it is protected by access data, you have to enter the user name and the password of the **SecurePowerSwitch** here.
(refer to Determine password or Expert configuration)

Then you can switch the device on or off which is connected to the **SecurePowerSwitch**, read the current power consumption or change the settings.

Connection

Remote control with the SmartPhone via the Internet:

Of course, you can directly access the **SecurePowerSwitch** over the Internet via SmartPhone or Pad.

Start the browser on your SmartPhone. Connect to the Internet site http://www.myopengate.com and log in with your user data.

1

From now on you are directly connected to your SecurePowerSwitch, e.g. at home. Of course, since it is protected by access data, you have to enter the user name and the password of the SecurePowerSwitch here.

3

Then click on the corresponding device icon and you are immediately connected to the device.

2

Then you can switch the device on or off which is connected to the SecurePower-Switch, read the current power consumption or change the settings.

4