USER MANUAL

PingBrother® EPIW102, EPIW104 & EPIW104P

industrial switch with managed passive POE & watchdog functions

CONTENT

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Chapter 1

1.1 Preface

PingBrother is a passive POE switch (PSE), that can work on nearly any low voltage power (8-56V DC or 9-42V AC), and can distribute its input power to any kind of connected standard or non standard POE devices (PD).

The POE output power can be fully managed either manually, remotely over the network, or by its own built-in control system which works as an IP watchdog. Email notification can be made about the events and responses.

It's a great cost-effective multifunctional tool for unattended functioning network devices such as IP cameras, Wifi radios, VOIP devices and switches, especially those which have a POE support. By manually deactivating the POE function, PingBrother can control any connected non-POE device by its relay contact outlets.

1.2 CE MARK WARNING

This is a Class-A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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1.3 FCC WARNING

This Equipment has been tested and found to comply with the limits for a Class-A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radiofrequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Chapter 2

2.1 Physical description

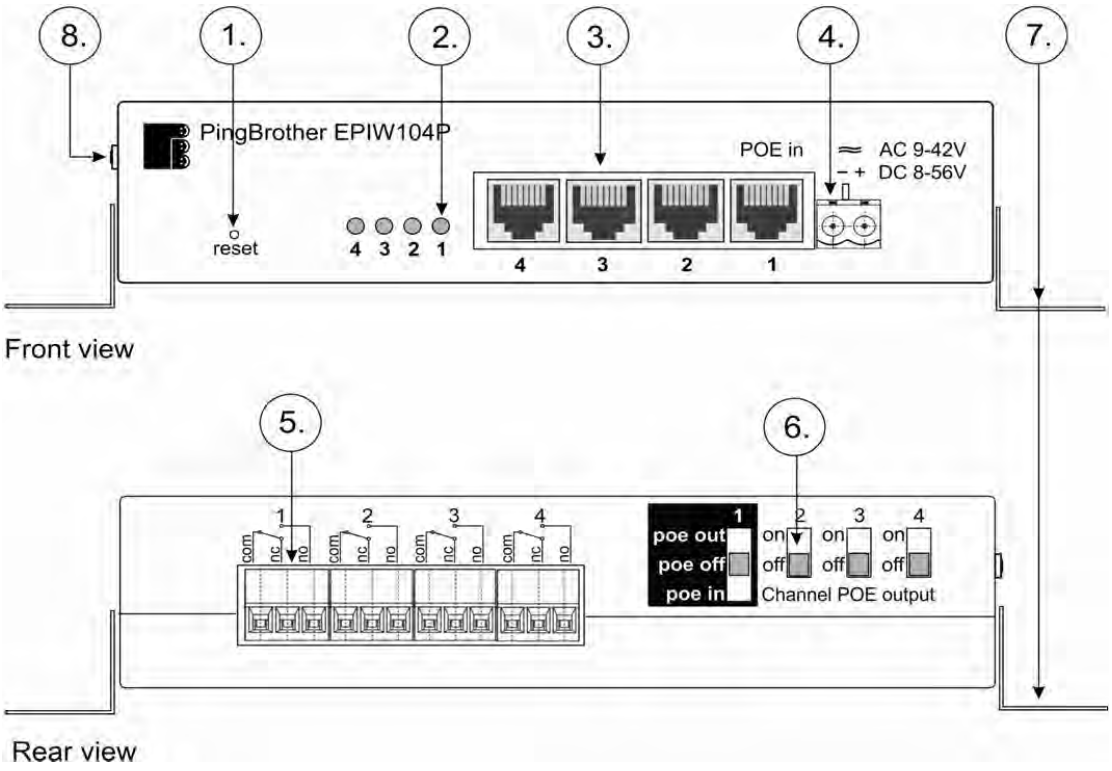

Figure 1

1. Reset button
2. Indicator LEDs (4 LEDs: EPIW104 & 104P, 2 LEDs: EPIW102)
3. Ethernet connectors (4 connectors: EPIW104 & 104P, 2 connectors: EPIW102)
4. Terminal block power connector
5. Relay contact outlets (4 outlets: EPIW104 & 104P, 2 outlets: EPIW102)
6. POE power selector slide switch (4 switches: EPIW104 & 104P, 2 switches: EPIW102)
7. Mounting brackets for wall installation
8. External temperature sensor connector (only EPIW104P)

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2.2 Channel states and configuration

	State of channels	
Channel description in the web based GUI of the device	on	off
State of relays 1-4	not energized	energized
POE power out on eth 1-4	on	off
LED indicators 1-4	on	off
“no”outlet of terminal blocks 1-4	open	closed
“nc” outlet of terminal blocks 1-4	closed	open

Table 1

2.3 Power input assignment

There are two different options to power the device

- Passive POE input on Ethernet port 1
  (for pin allocation see Table2 on page 7)
- External power Input through the Terminal Block connector

In both cases the power input can be:

- 9-42V AC or
- 8-56V DC

Please note, that in case of a reverse DC power input the device functions properly, but the outgoing POE power polarity will also be reversed compared to the default (See Table2 on page 6)

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2.4 Ethernet ports

RJ45 Fast Ethernet 100Base-TX port with passive PoE extension

RJ45 Pin	Color	Function	RJ45 pin for Straight cable (MDI, EIA/TIA568A)	RJ45 pin for Crossover cable (MDI, EIA/TIA568A)
1	Green	Data TX +	1	3
2	Green/White	Data TX -	2	6
3	Orange	Data RX +	3	1
4	Blue	POE power +	4	4
5	Blue/White	POE power +	5	5
6	Orange/White	Data RX -	6	2
7	Brown	POE power -	7	7
8	Brown/White	POE power -	8	8

Table 2

2.5 POE power selector slide switches

The POE power selector slide switches (Figure1 / 6) allow full flexibility of the device. You can use them to select the input power that the unit gets, either via the terminal block power connector or a POE input. With these switches, you can also select if the POE power is output to the Ethernet ports or not.

Settings examples table

SW 1	SW 2-4	TB Power connector	Description
poe out	on	power in	Power injector (Figure 2 on page 7.)
poe in	on	not used	Power distributor (Figure 3 on page 7.)
poe in	off	power out	POE separator function (Figure 3 on page 7)
poe off	off	power in	Using with non POE device

Please note, that if the powering comes via Terminal Block connector, but the SW1 is on “POE in” state, the POE power appears on the eth1 port and you cannot turn this off with the software.

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2.6 Application example figures

Figure 2

Figure 3

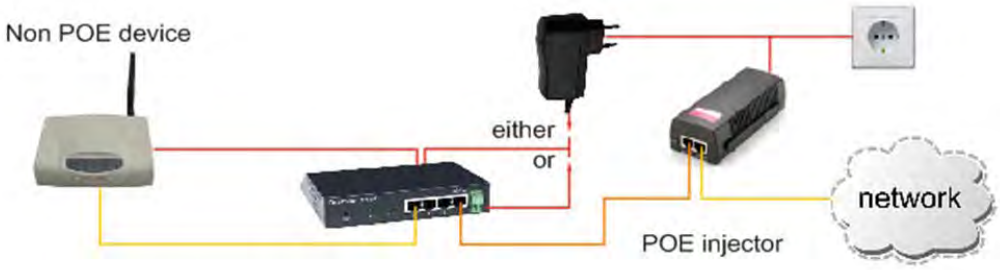

Figure 4

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Chapter 3

Software configuration.

3.1 WEB-based management

The PingBrother can be configured locally or remotely via any web browser.

- Default IP address: 192.168.1.234
- Default username: admin
- Default password: admin

3.1.1 Status screen

On the status screen you can check the current software and hardware version, input voltage, device internal temperature, uptime, and the states of channels. The external temperature, current and power consumption readings only appear in the EPIW104P device. In case of an AC input, the voltage, current and power measurement do not work properly with Firmware 1.4. This will be fixed in a later firmware version.

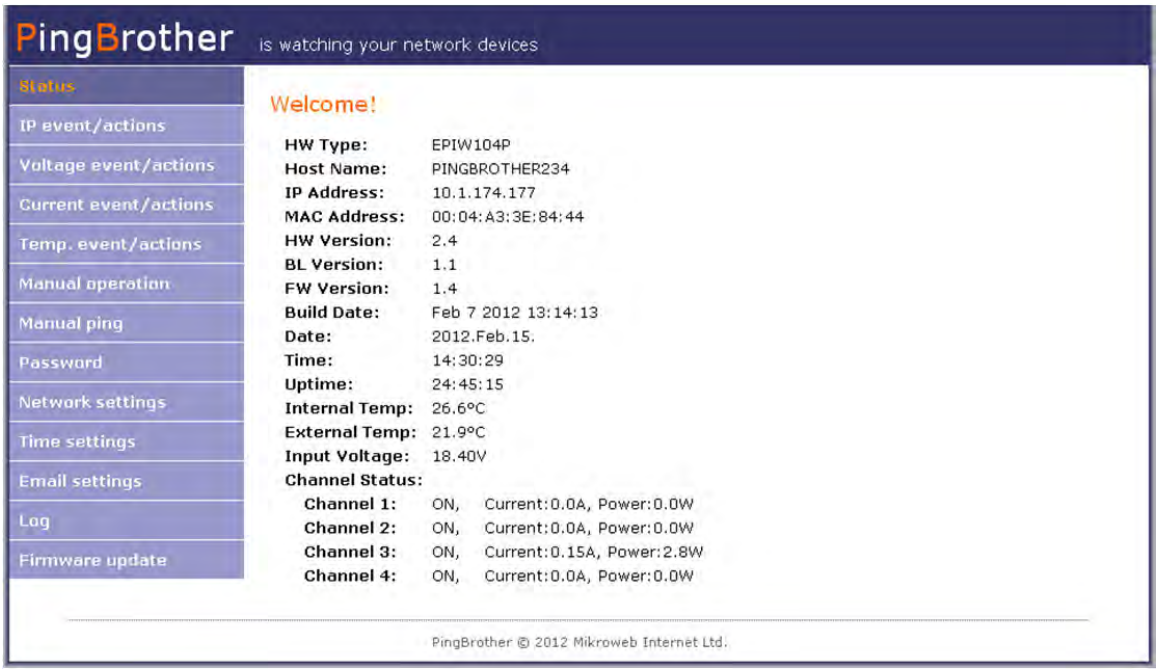

Figure 5

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3.1.2 IP event & actions configuration

In this menu you can manage the IP watchdog functions.

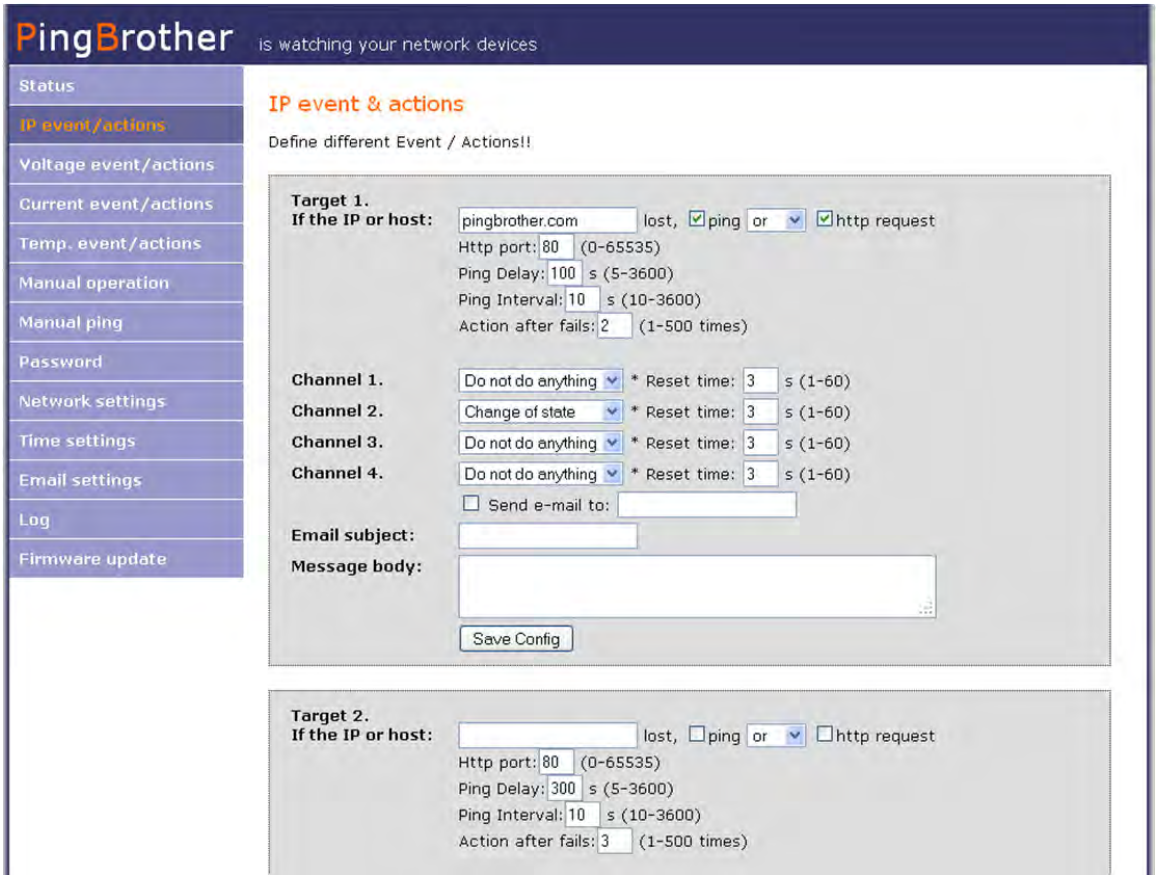

Figure 6

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Parameter specifications:

- Watched host: can be an IP address or a domain name
- HTTP port of the watched host (0-65535, default 80)
- Ping delay: minimum time between the device startup or channel off->on transition and the first ping check (5-3600, default 300 sec)

Please note, that the ping delay must be considerably longer than the boot time of the watched device, otherwise an infinite loop can occur.

- Ping interval: the time between two icmp or http requests
- Action after fails: number of lost icmp or http replies to activate the specified action
- Email address: mailing address for notification
- Email subject of the notification
- Message body of the notification

Action specifications:

The following actions can be set up on all channels:

- Do not do anything
- Turn ON: the channel turns on
- Turn OFF: the channel turns off
- Change of state: In case of a specified event, the state of the channel changes (Off instead of On, or On instead of Off)
- Reset: turns off the channel for a specified reset time, and turns the channel back on afterwards.
- Reset time (1-60, default 3 sec)

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3.1.3 Voltage event & actions configuration (only EPIW104P device)

In this menu you can manage the responses to input voltage changes

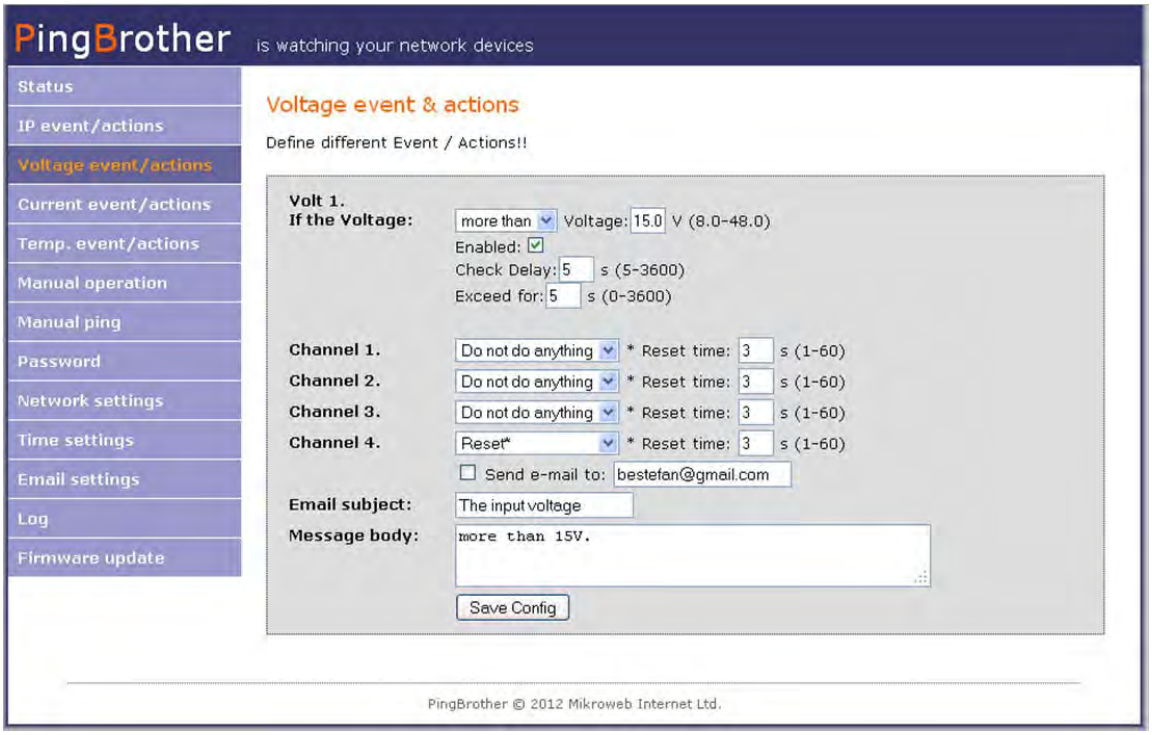

Figure 7

Parameter specifications:

- Check delay: minimum time between the device startup or channel off->on transition and the first voltage check (5-3600, default 5 sec)
- Exceed for: the smallest time of an event for response to be made

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Action specifications:

The following actions can be set up on all channels:

- Do not do anything
- Turn ON: the channel turns on
- Turn OFF: the channel turns off
- Compare: If the voltage passes the threshold limit, the channel turns on, and if the voltage passes the threshold limit in the other direction, the channel turns off
- Reset: turns off the channel for a specified reset time, and turns the channel back on afterwards
- Reset time (1-60, default 3 sec)

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3.1.4 Current event & actions configuration (only EPIW104P device)

In this menu you can manage the responses to current changes on the POE ports

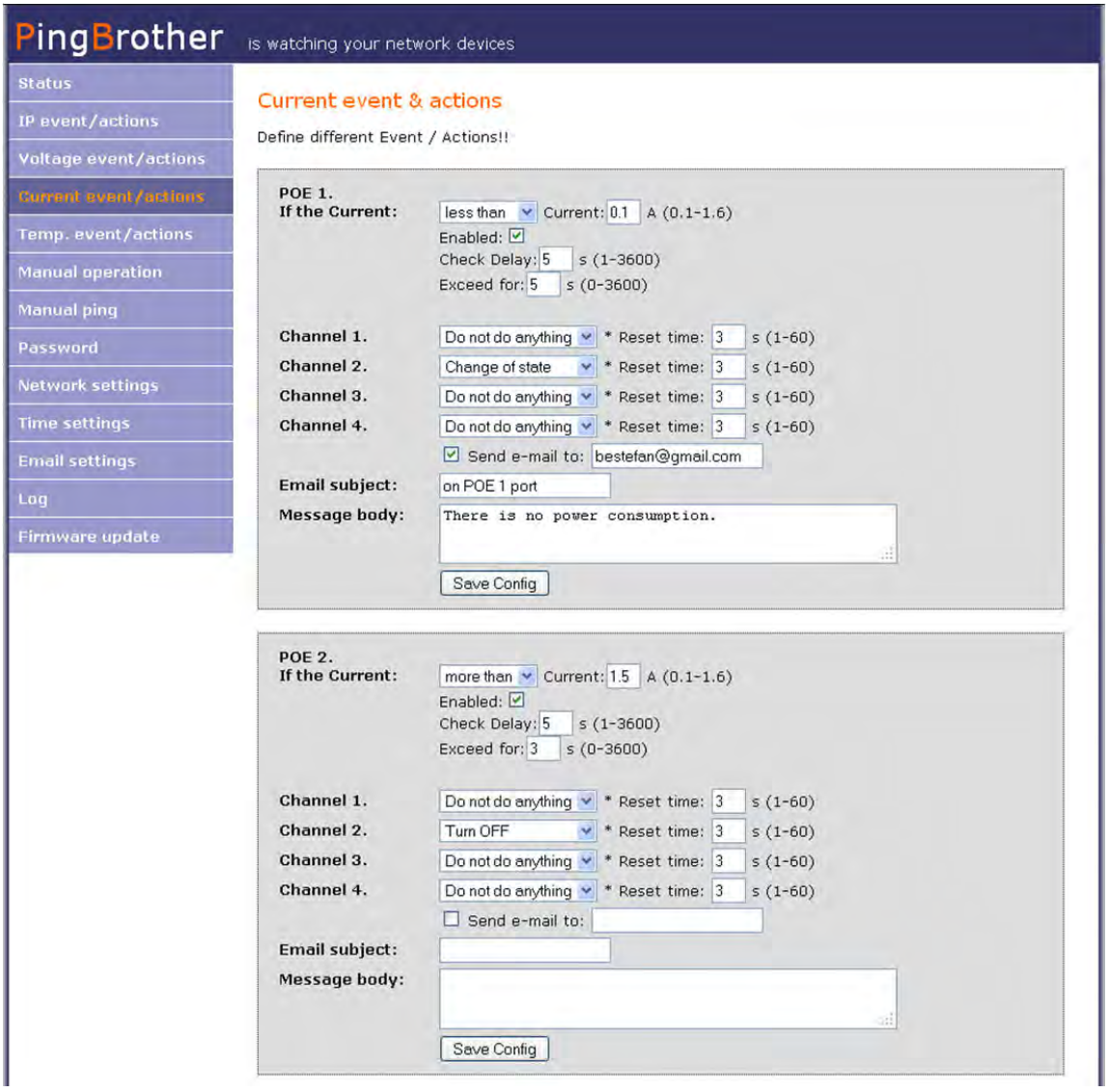

Figure 8

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Parameter specifications:

- Check delay: minimum time between the device startup or channel off->on transition and the first current check (1-3600, default 5 sec)
- Exceed for: the smallest time of an event for response to be made

Action specifications:

On all channels the following actions can be set up:

- Do not do anything
- Turn ON: the channel turns on
- Turn OFF: the channel turns off
- Change of state: In case of a specified event, the state of the channel changes (Off instead of On, or On instead of Off)
- Reset: turns off the channel for a specified reset time, and turns the channel back on afterwards
- Reset time (1-60, default 3 sec)

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3.1.5 Temperature event & actions configuration (only EPIW104P device)

In this menu you can manage the responses to internal or external temperature changes

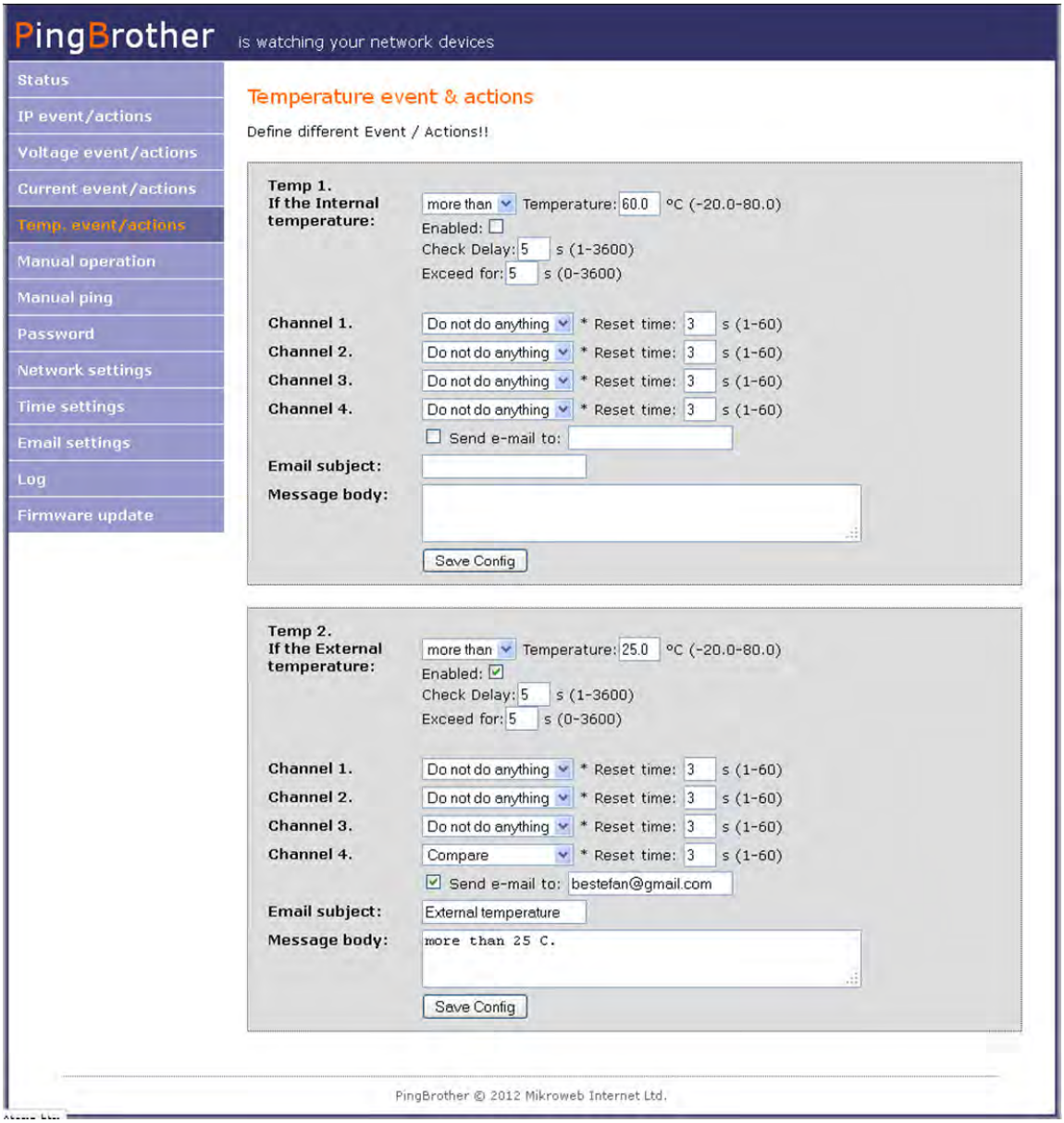

Figure 9

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Parameter specifications:

- Internal temperature: the air temperature in the device case
- External temperature: the temperature that the connected external temperature sensor measures
- Check delay: minimum time between the device startup or channel off->on transition and the first current check (1-3600, default 5 sec)
- Exceed for: the smallest time of an event for response to be made

Action specifications:

The following actions can be set up on all channels:

- Do not do anything
- Turn ON: the channel turns on
- Turn OFF: the channel turns off
- Compare: If the temperature passes the threshold limit, the channel turns on, and if the temperature passes the threshold limit in the other direction, the channel turns off (thermostat function)
- Reset: turns off the channel for a specified reset time, and turns the channel back on afterwards
- Reset time (1-60, default 3 sec)

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3.1.6 Manual operation

Allows manually switching the states of the channels via a web browser

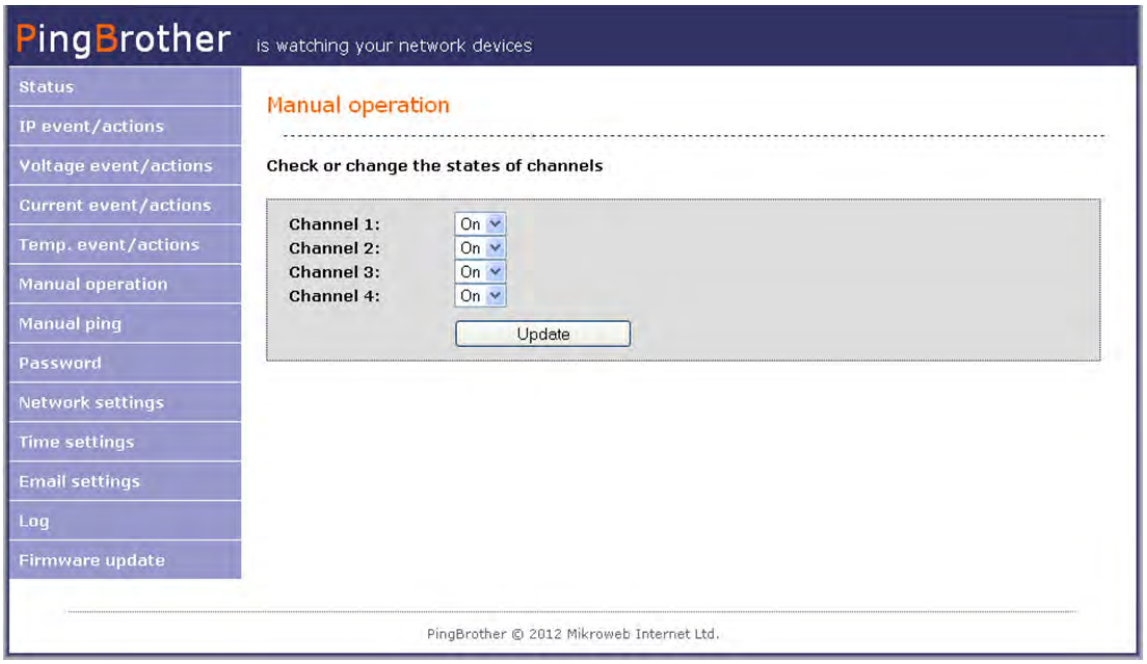

Figure 10

Please note, that if simultaneously more than one command comes from a manual operation or from the automated IP/Event menu, always the last command will be performed.

It is possible to switch the channels remotely by pure http (get method) commands. With this option the outputs can be managed by any 3rd party programs remotely. The username and password should be sent in base64 coding.

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Examples:

Turn all channels off:

http://PingBrothers_IP_or_hostname/protect/PBmanual.htm?Relay1=0&Relay2=0&Relay3=0&Relay4=0

Turn all channels on:

http://PingBrothers_IP_or_hostname/protect/PBmanual.htm?Relay1=1&Relay2=1&Relay3=1&Relay4=1

3.1.7 Manual ping

Manually pinging an IP or host from PingBrother

Figure 11

3.1.8 Password configuration

For changing the administrator password

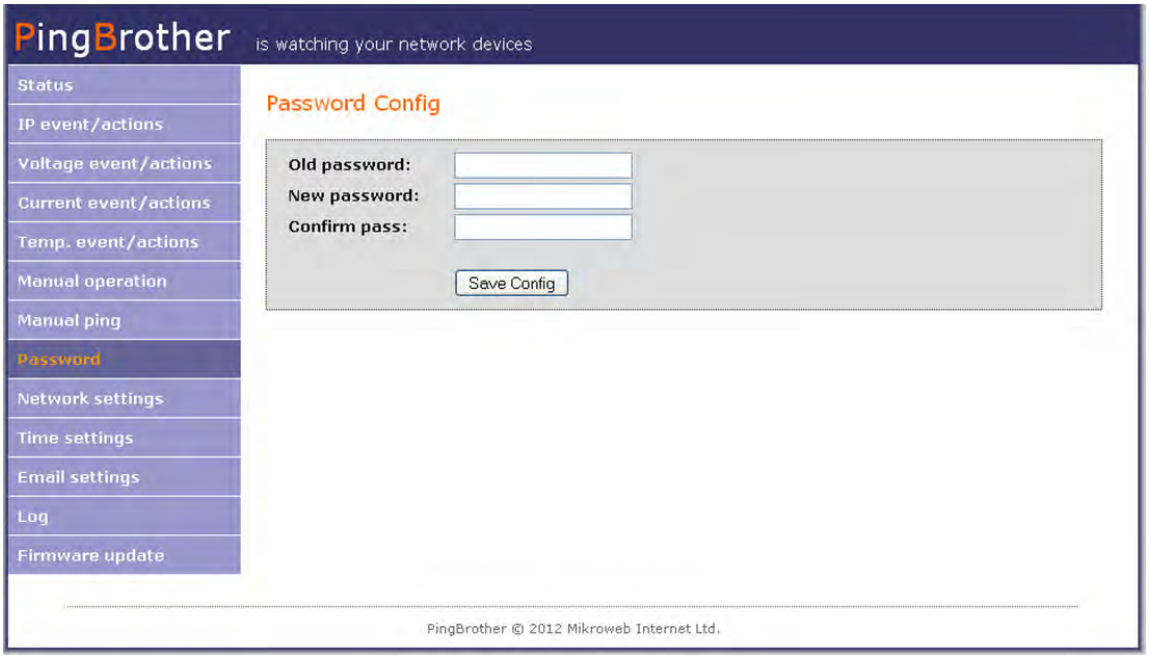

Figure 12

3.1.9 Network configuration

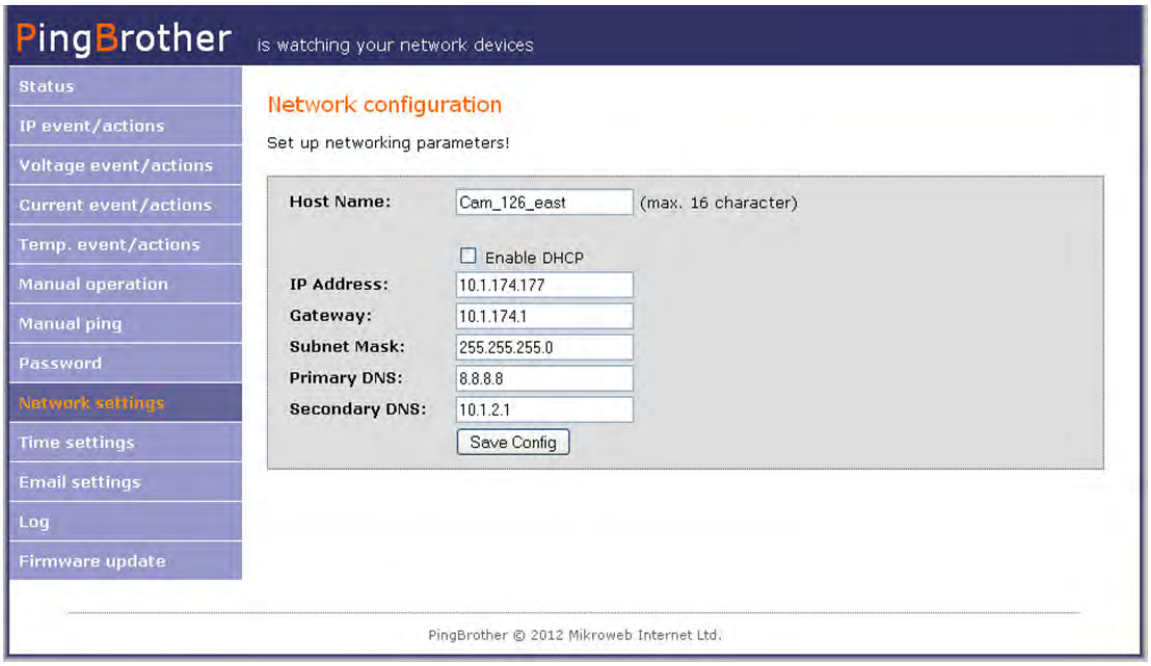

Figure 13

Parameter specifications:

- Host name
- Enable / disable DHCP client
- IP address (IPv4)
- Gateway
- Subnet mask
- Primary DNS
- Secondary DNS

If the DHCP is enabled, you can see the server allocated IP configuration details in this page.

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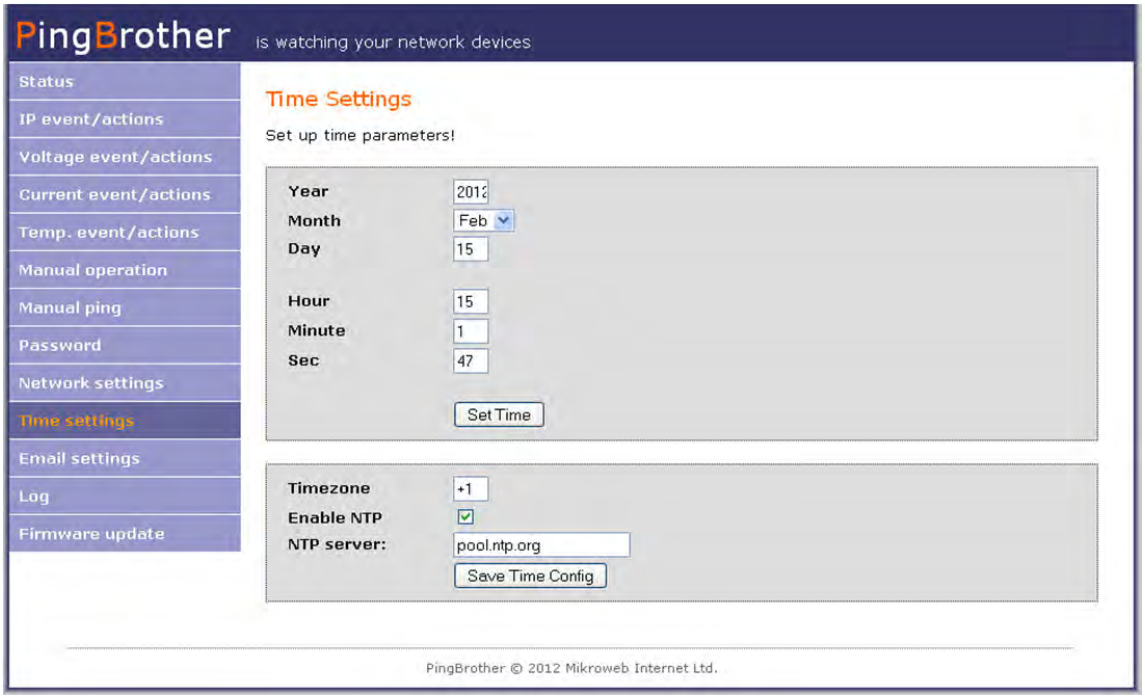
3.1.10 Time settings

Here you can set time and date values



Parameter specifications:

- Manual settings:
  - Year
  - Month
  - Day
  - Hour
  - Minute
  - Sec

- Automatic NTP server synchronization:
  - Time zone: the difference between your local time and GMT
  - Enable NTP: if you select this option, the manual time settings will be automatically overwritten by the NTP server every 10 minutes
  - NTP server: the URL or IP address of your NTP server

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3.1.11 Email configuration

These are parameters for sending a notification email

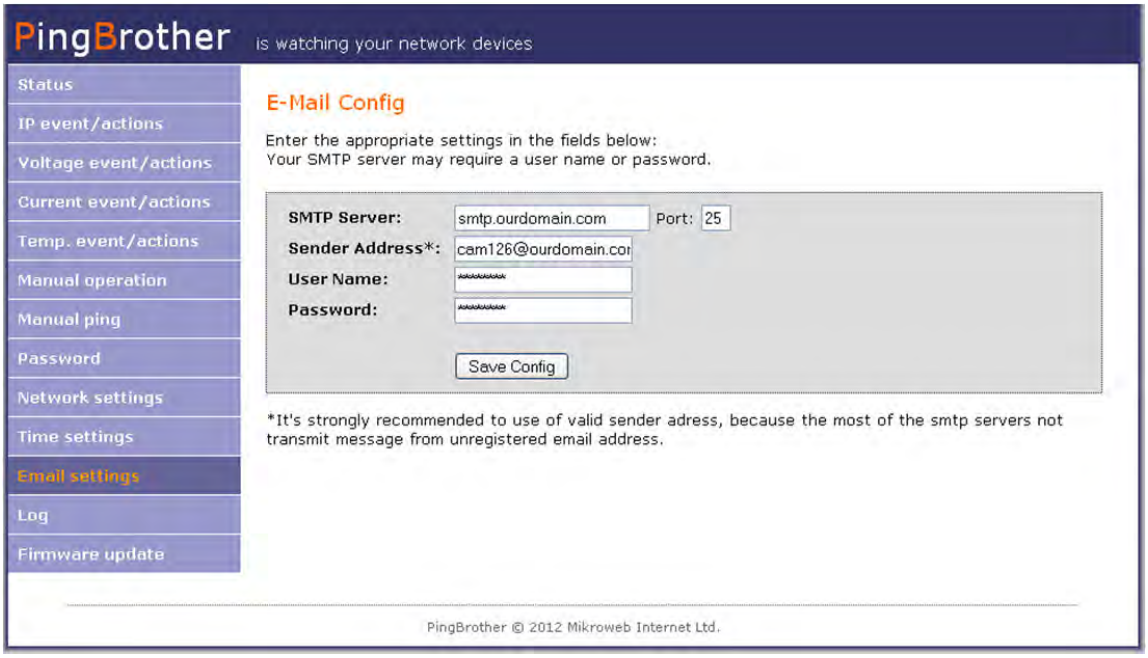

Figure 15

If your SMTP server has no password authentication, leave the User Name and Password boxes empty. SSL authentication is not available at the moment.

3.1.12 System log

PingBrother is capable of logging various system events and action information. Logs are saved in the device's memory (RAM).

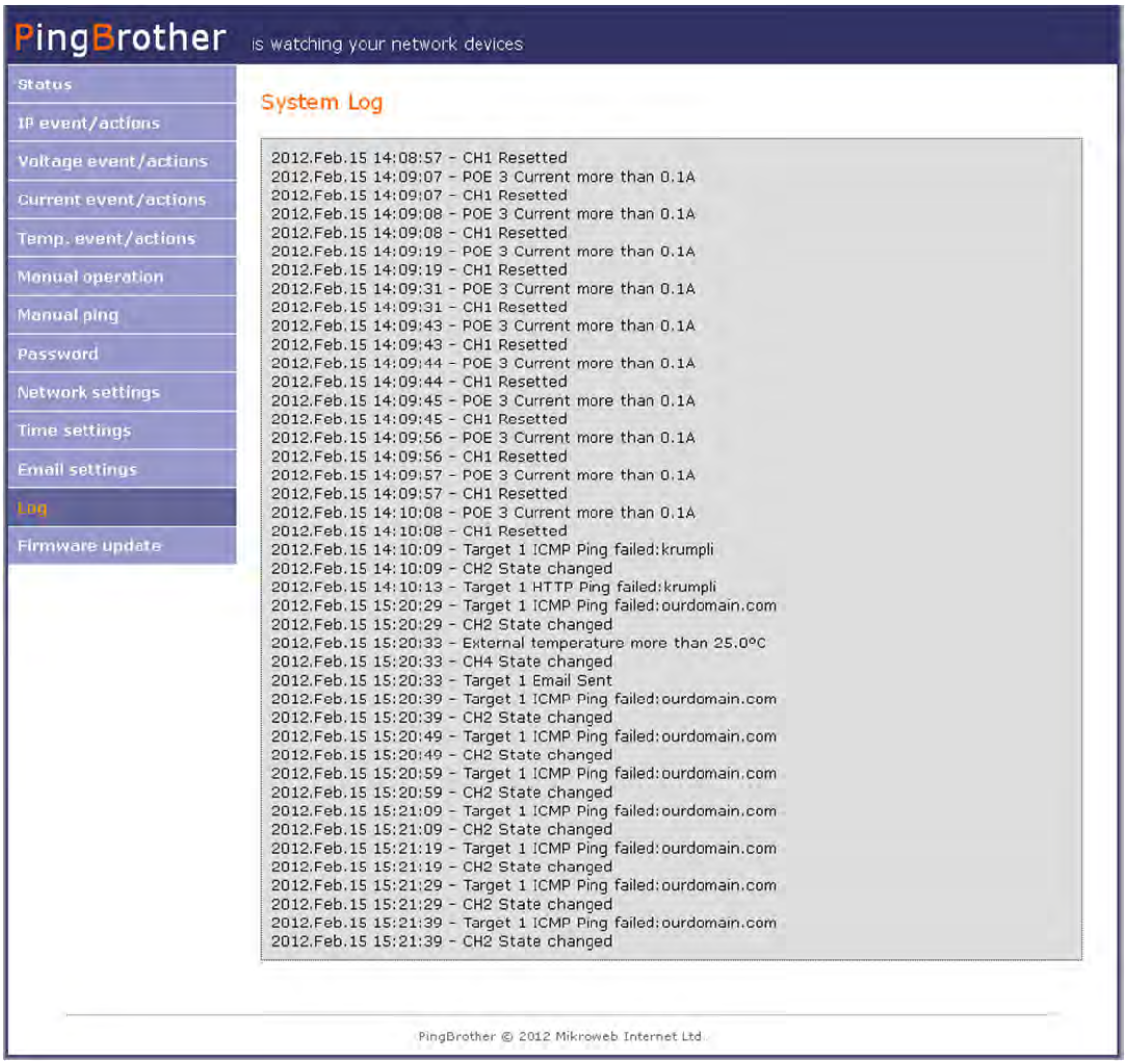

Figure 16

Log entries can be made about:

- ICMP ping fail
- HTTP check fail
- Manually switching the states of the channels
- Automatic responses of the IP event / actions menu
    - Channel reset
    - Channel on
    - Channel off
    - Changes the position of the channels
    - Notification emails
    - Voltage actions (only EPIW104P device)
    - Current actions (only EPIW104P device)
    - Temperature actions (only EPIW104P device)

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3.1.13 Firmware update

Browse and upload a firmware

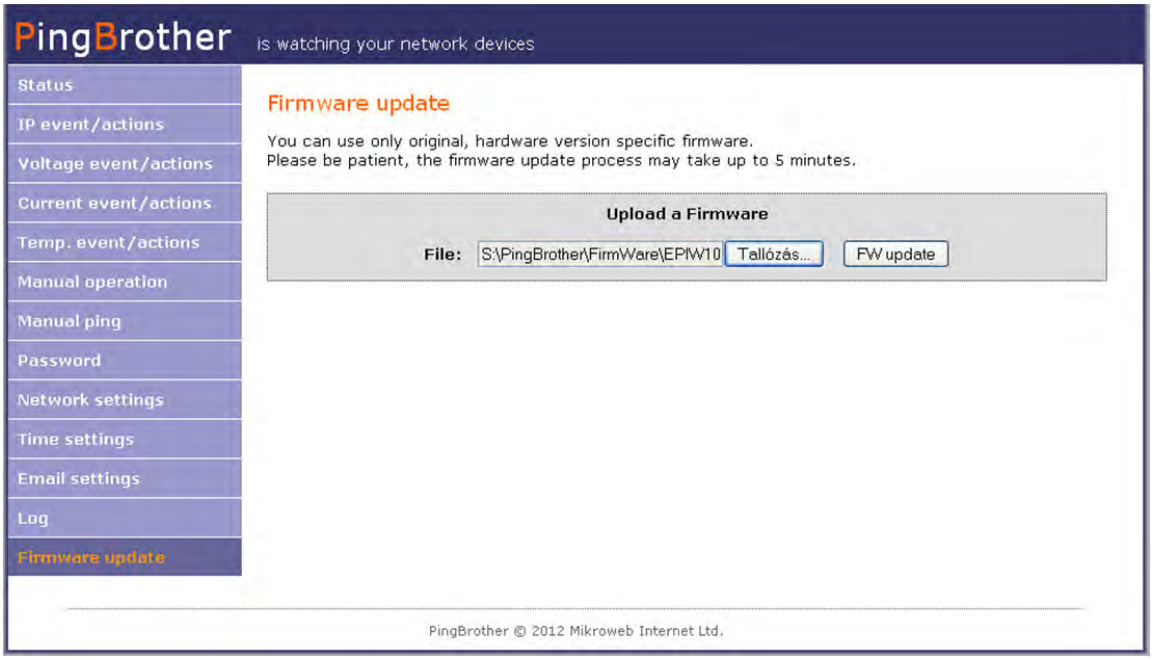

Figure 17

You can only use original and hardware specific firmware. Please be patient, the firmware update process may take up to 5 minutes. During the last 2 minutes of the update process, the network switch function is also unavailable.

After the firmware update the Event / Action and all other user defined settings such as password, IP address, etc. will remain unchanged. If this is changed later, the firmware description will include a warning about it.

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3.2 Reset the device

It is possible to reset all settings to the factory default, for example in case of a lost password. The recovery steps are the following:

- Power OFF
- Press the reset button (Figure 1/1)
- Power ON
- Hold the reset button until all the four indicator LEDs are on (6-8 sec)
- Release the reset button

After the reset the device's IP address will be restored to the default:

192.168.1.234

3.3 Co-use with a standard 802.3af POE PD-s

PingBrother can power standard IEEE 802.3af-2003 POE devices, and properly works with them under the following conditions:

- The powered device (PD) is 802.3af Mode B (midspan) compatible
- A 48V DC power supply is used to supply power to the PingBrother
- The power of the PSU is scaled according to the type and number of the powered devices

It is always recommended to perform testing before use.

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Capter4

4.1 Technical specifications

Model	EPIW102
Input operating voltage (via connector or POE)	8-56V DC or 9-42V AC
POE output voltage on all ethernet port	8-56V DC or 9-42V AC
Total Power Budget	30W
Max. self Power Consumption of the device	8W
Max. Power Consumption on each eth. port	15W
Number of 10/100 POE capable eth port	2
Max switching Voltage on terminal blocks	220V DC, 250V AC
Max. switching Power on terminal blocks	30W / 230V
Max switching current on terminal blocks	2 A
3-pol terminal block of Change-over relay	2
POE operating mode selection slide switch	2
Plug-in2-pin terminal block power connector	1
Led indicators	2x3
Case material	steel
Safety	CE/EN60950
Operating Temperature	-30 to +80 C
Operating Humidity	5 to 90% Non-condensing
Shock and Vibration	IEC60068-2-27, IEC60068-2-6
Dimensions	149 x 81 x 35 mm
Product weight	415 g
Services, events, actions	
Web based GUI	yes
IP address	IPV4 static or dhcp
Protocols	TCP/IP, HTTP, SNMP, ICMP, IGMP
Specifications	IEEE802.3, IEEE802.3u, IEEE802.3x
Packet features	2k MAC address, 384kbit packet buffer memory, max. packet lenght: 1552/1536 bytes
Watched IP address about loss of ping or http	2
Internal and external watchdog	yes
Action: POE on/off	yes
Scheduled POE management	yes
Action: relay toggle	yes
Action: email sending	yes
Input voltage measurement	yes
Actions due to change of input voltage	no
4 port POE current measurement	no
Actions due to change of current or power	no
Internal temperature measurement	yes
External temperature measurement	no
Actions due to change of temperature	no

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Model	EPIW104
Input operating voltage (via connector or POE)	8-56V DC or 9-42V AC
POE output voltage on all ethernet port	8-56V DC or 9-42V AC
Total Power Budget	60W
Max. self Power Consumption of the device	8W
Max. Power Consumption on each eth. port	15W
Number of 10/100 POE capable eth port	4
Max switching Voltage on terminal blocks	220V DC, 250V AC
Max. switching Power on terminal blocks	30W / 230V
Max switching current on terminal blocks	2 A
3-pol terminal block of Change-over relay	4
POE operating mode selection slide switch	4
Plug-in2-pin terminal block power connector	1
Led indicators	4x3
Case material	steel
Safety	CE/EN60950
Operating Temperature	-30 to +80 C
Operating Humidity	5 to 95% Non-condensing
Shock and Vibration	IEC60068-2-27, IEC60068-2-6
Dimensions	149 x 81 x 35 mm
Product weight	450 g
Services, events, actions	
Web based GUI	yes
IP address	IPV4 static or dhcp
Protocols	TCP/IP, HTTP, SNMP, ICMP, IGMP
Specifications	IEEE802.3, IEEE802.3u, IEEE802.3x
Packet features	2k MAC address, 384kbit packket buffer memory, max. packet lenght: 1552/1536 bytes
Watched IP address about loss of ping or http	4
Internal and external watchdog	yes
Action: POE on/off	yes
Scheduled POE management	yes
Action: relay toggle	yes
Action: email sending	yes
Input voltage measurement	yes
Actions due to change of input voltage	no
4 port POE current measurement	no
Actions due to change of current or power	no
Internal temperature measurement	yes
External temperature measurement	no
Actions due to change of temperature	no

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Model	EPIW104P
Input operating voltage (via connector or POE)	8-56V DC or 9-42V AC
POE output voltage on all ethernet port	8-56V DC or 9-42V AC
Total Power Budget	120W
Max. self Power Consumption of the device	8W
Max. Power Consumption on each eth. port	30W
Number of 10/100 POE capable eth port	4
Max switching Voltage on terminal blocks	220V DC, 250V AC
Max. switching Power on terminal blocks	30W / 230V
Max switching current on terminal blocks	2 A
3-pol terminal block of Change-over relay	4
POE operating mode selection slide switch	4
Plug-in2-pin terminal block power connector	1
Led indicators	4x3
Case material	steel
Safety	CE/EN60950
Operating Temperature	-30 to +80 C
Operating Humidity	5 to 90% Non-condensing
Shock and Vibration	IEC60068-2-27, IEC60068-2-6
Accuracy of voltage measurement	± 1 V
Accuracy of current measurement	± 0.1 A
Accuracy of temperature measurement	± 2 C
Dimensions	149 x 81 x 35 mm
Product weight	427 g
Services, events, actions	
Web based GUI	yes
IP address	IPV4 static or dhcp
Protocols	TCP/IP, HTTP, SNMP, ICMP, IGMP
Specifications	IEEE802.3, IEEE802.3u, IEEE802.3x
Packet features	2k MAC address, 384kbit packet buffer memory, max. packet lenght: 1552/1536 bytes
Watched IP address about loss of ping or http	4
Internal and external watchdog	yes
Action: POE on/off	yes
Scheduled POE management	yes
Action: relay toggle	yes
Action: email sending	yes
Input voltage measurement	yes
Actions due to change of input voltage	yes
4 port POE current measurement	yes
Actions due to change of current or power	yes
Internal temperature measurement	yes
External temperature measurement	yes
Actions due to change of temperature	yes

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