Description

- **8** sockets controlled independently via Ethernet/Internet with the web browser.
- Worldwide control.
- No software (except web browser) needed to control or adjust.
- Can be used by any operating system (with a web browser).
- **HTML of the pages can be changed** and loaded on.
- **8 inputs or outputs** (IO) - freely configurable with edge detection and toggle (not ADV).
- Backup system.
- **Sensor** (temperature, humidity and brightness) connectable (only HUT, HUT2).
- Automatic IP assignment: DHCP.
- Automatic time setting from an SNTP server.
- Calling via host name eg: http: // net-control or IP.
- Free choice of the HTTP port (0-65535), thus several devices accessible from the Internet.
- '**HoldOn**' buttons: relay or IO remains on as long as the button is held down. Two relays or IO's can be used for the +/- control (for example dimmer).
- 30 plain text **timers** for relays & IO with "If timer" (switches depending on the relay or IO).
- **Timer Exceptions** (day / month). On selected days all timers are skipped.
- **Keepalive function**: A network device can be pinged and - should it not respond - be disconnected from the mains for an adjustable period of time.
- Automatic and time-delayed (0-18.2h) switching on the sockets after starting (power failure).
- Switching can also be done as a pulse (0-65535 sec.; 0-18.2h).
- Time distance of the relays with simultaneous switching can be determined.
- **Wake on LAN.**
- Sockets can be locked individually.
- **User system** with rights assignment.
- German / English selectable as menu language.
- **Logbook** of the last 128 events. Power failures are registered (**retained without voltage**).
- **UDP interface and URL interface** for integration into own software.
- Multi NET-PwrCtrl Controls all devices on the network (also as **C# source code**).
- Firmware upgrade via Ethernet possible at any time (Ethernet Bootloader).

LAN interface

Standards Compliance	IIEEE802.3(10 Base-T)
Data transfer rates	10 MBit/s
Protocols	ARP, DNS, IP, NetBIOS Name Service, ICMP (Ping), UDP, TCP, DHCP, HTTP, SNTP, SMTP.
Plug type	RJ-45
Cable Compatibility	100 BASE-TX: Category 5, 2 4 UTP 10 BASE-T: Category 3, 4, 5 2 UTP

ADV, ZX

Characteristics:	PRO	POWER	POWER 19"
Sockets (Controllable):	8 (8)	8 (8)	8 (8)
Nominal voltage:	100-240VAC 50-60Hz	100-240VAC 50-60Hz	100-240VAC 50-60Hz
LAN cable	2 m	2 m	2 m
Power cable	1,9 m	1,9 m	1,9 m
Power consumption	3,6 W	3,6 W	3,6 W
Max. Load on the sockets			
All total max .:	2300 VA	4600 VA	4600 VA
Each socket max .:	2300 VA	2300 VA	2300 VA

IO

Characteristics:	PRO	POWER	POWER 19"
Sockets (Controllable):	8 (8)	8 (8)	8 (8)
Digital input / output (I / O):	8 - DB15 Socket	8 - DB15 Socket	8 - DB15 Socket
Nominal voltage:	100-240VAC 50-60Hz	100-240VAC 50-60Hz	100-240VAC 50-60Hz
LAN cable	2 m	2 m	2 m
Power cable	1,9 m	1,9 m	1,9 m
Power consumption	3,6 W	3,6 W	3,6 W
Max. Load on the sockets			
All total max .:	2300 VA	4600 VA	4600 VA
Each socket max .:	2300 VA	2300 VA	2300 VA

HUT 2

Characteristics:	HUT2(C) LV(-S)	HUT2(C) HV(-S)
Relays	8	8
Digital input/output (I/O):	8	8
Sensor Port	RJ45	RJ45
Nominal voltage:	8-30VAC/10-40VDC	100-240VAC 50-60Hz
LAN cable	2 m	2 m
Power consumption	1,6 W	3,6 W
Max. Load of a relay	16A/250V~ 16A/14V- TÜV R50126372	16A/250V~ 16A/14V- TÜV R50126372

HUT 3

Characteristics:	HUT3 LV	HUT3 HV
Relays	8	8
Digital input/output (I/O):	8	8
Sensor Port	RJ45	RJ45
Nominal voltage:	8-30VAC/10-40VDC	100-240VAC 50-60Hz
LAN cable	2 m	2 m
Power consumption	1,6 W	3,6 W
Max. Load of a relay	16A/250V~ 16A/14V-	16A/250V~ 16A/14V-

Installation

Connect the network cable. Connect the NET-PwrCtrl to the mains.
The LED flashes fast in the first 2 seconds and then every second.
Since most networks have a DHCP server (also present in a DSL-Router), the network setting is automated.

Start the browser with the address: http://net-control or net-control/.

User: **admin**
Password: **anel**

If the device does not answer, please check if the DHCP server is present in the network or continue with the instructions "Without DHCP" below.

The program ‚NET-PwrCtrl Discoverer.exe' searches for all devices in the network.

With DHCP

Since most networks have a DHCP server (also present in a DSL-Router), the network setting is automated. After switching on the NET-PwrCtrl, the DHCP function ensures the allocation of all necessary parameters to be included in the network.

The device can now be accessed via browser with the address: http://net-control.

Without DHCP (not recommended)

Connect the device and assign the following parameters to the network card:

IP: 192.168.0.1;
Subnet mask: 255.255.255.0.

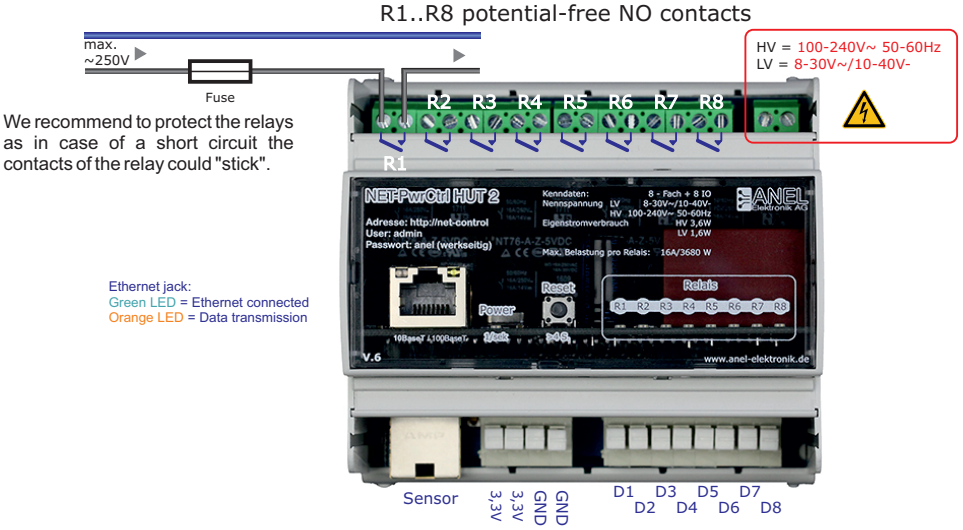
The device can now via browser with the address:
http://192.168.0.244
or
http://net-control
be called and adjusted as desired.

ADV, IO, ZX

Ethernet jack:
Green LED = Ethernet connected
Orange LED = Data transmission

Fuse 10A + spare fuse

HUT



Call NET-PwrCtrl

Call the NET-PwrCtrl:

- About the hostname from the browser. Name of the device = hostname. (http://net-control in delivery state). If the name of the device is changed, the host name changes accordingly.
- About ‚NET-PwrCtrl Discoverer.exe'. This program searches for all devices in the network and lists them. Double-click on the found strip opens it in the browser.
- Over IP, for example: 192.168.0.5. The IP address is from the DHCP server (mostly in the router) automatically assigned. If the DHCP server is missing, the IP can also be assigned manually.

Multiple devices in the network: The NET-PwrCtrl is supplied with the host name: "net-control". The host name must be unique on the network, so it must be changed in the first NET-PwrCtrl before the second one can be connected.

HTTP Port: If default port HTTP 80 has be changed to address multiple devices from the Internet or to operate HTTP server, address the device have to specify the hostname (or IP) + ":" + port number, e.g. http://net-control:85.

Two same host names with different IP's in the router table may disturb the connection until prevented.

Reset

Reset the NET-PwrCtrl: via Settings/LAN/Factory Settings

or reset button:

Press and hold the reset button for more than 4 seconds. The power LED will flash 2 times per second. Release the button.

For settings: Time, I/O, Switching, Wake On LAN, Timer, Keepalive and Sensors can by clicking on the star (top right)  reset **this single function** to factory settings.

Display (only HUT3)

Pressing the reset button once switches the display on. Pressing again switches between displays. The status of the reset button is shown in the display: restart / reset / cancel

Restart: Hold the reset button down for > 4 seconds. The power LED then flashes twice per second. The display shows: "Restart". Release the button. Device restarts.
Factory settings: Hold the reset button down for > 8 seconds. The power LED then flashes 4 times per second. Display shows: "Reset". Release the button. NET-PwrCtrl is reset and restarts.

If you continue to hold the reset button, "Cancel" appears. After releasing the button, the device continues to work without any changes. Reset process is canceled.

HTML-Upload

The HTML of the pages can be changed and uploaded.

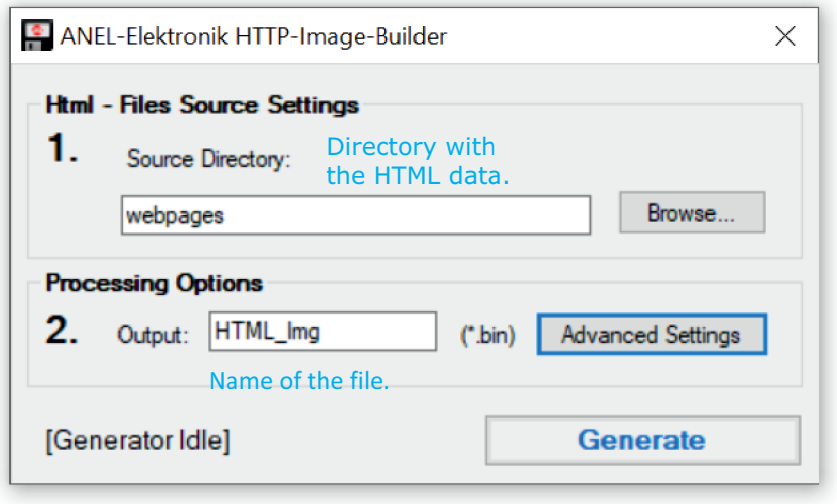
Please note:
There are max. 256kB Flash memory for HTML available.
File name can not be longer than 20 characters (including extension).

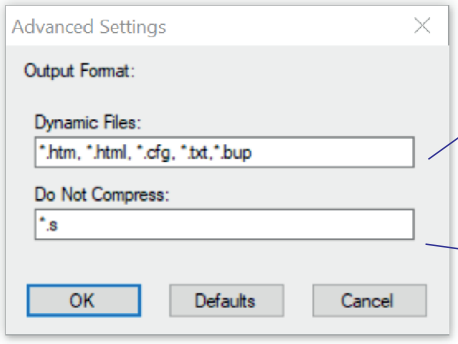
Important! If NET-PwrCtrl can not be reached after the upload (error in the HTML data), via */html_upload* a direct connection to the upload can be established.

The HTML data (HTML/webpages) can be merged with the *HTTP Image Builder.exe* into a .bin file (HTML_Img.bin). This .bin file can be then uploaded. Depending on the size of the .bin file, the process takes up to 30 seconds.

If there are problems with the display in the browser:
Delete browser data (history) (Ctrl + Shift + Del)

HTTP Image Builder.exe





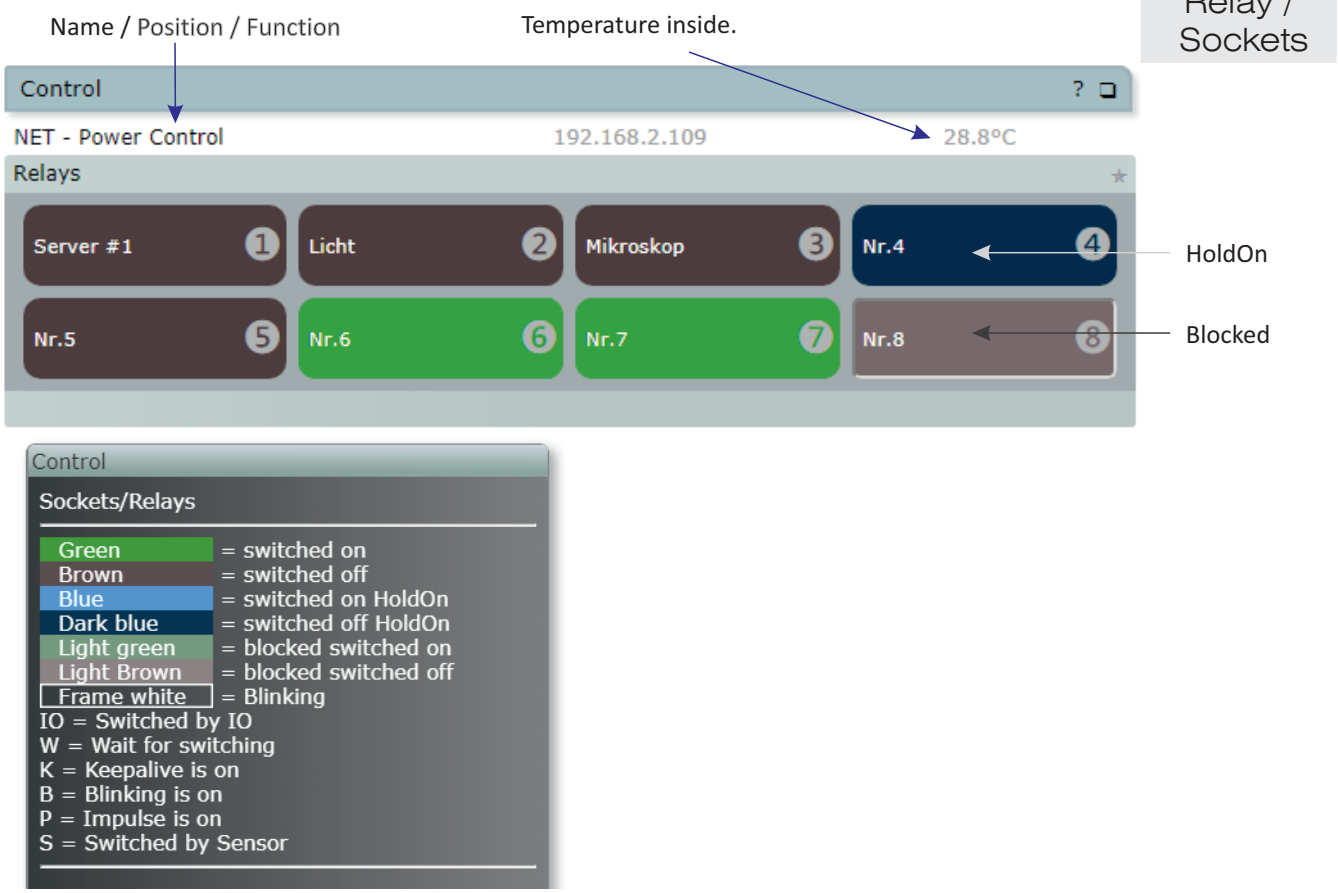
Files that are in the * .bin file to be compiled.

Files that do not contain ~name~ variables are compressed. Specify data types that should not be compressed here.

Control

Relays/Sockets

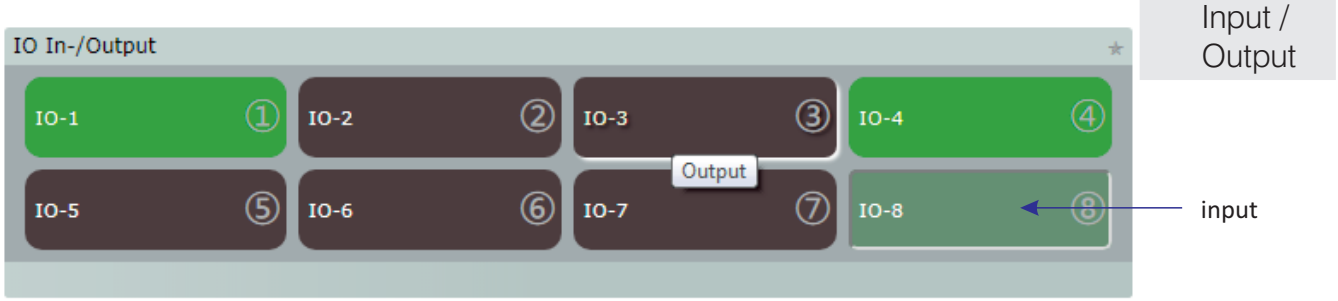
Relay / Sockets

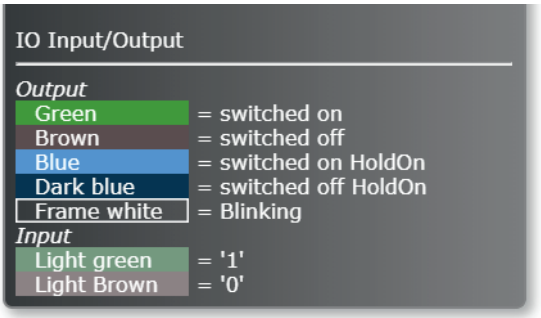


Digital Input/Output (I/O)

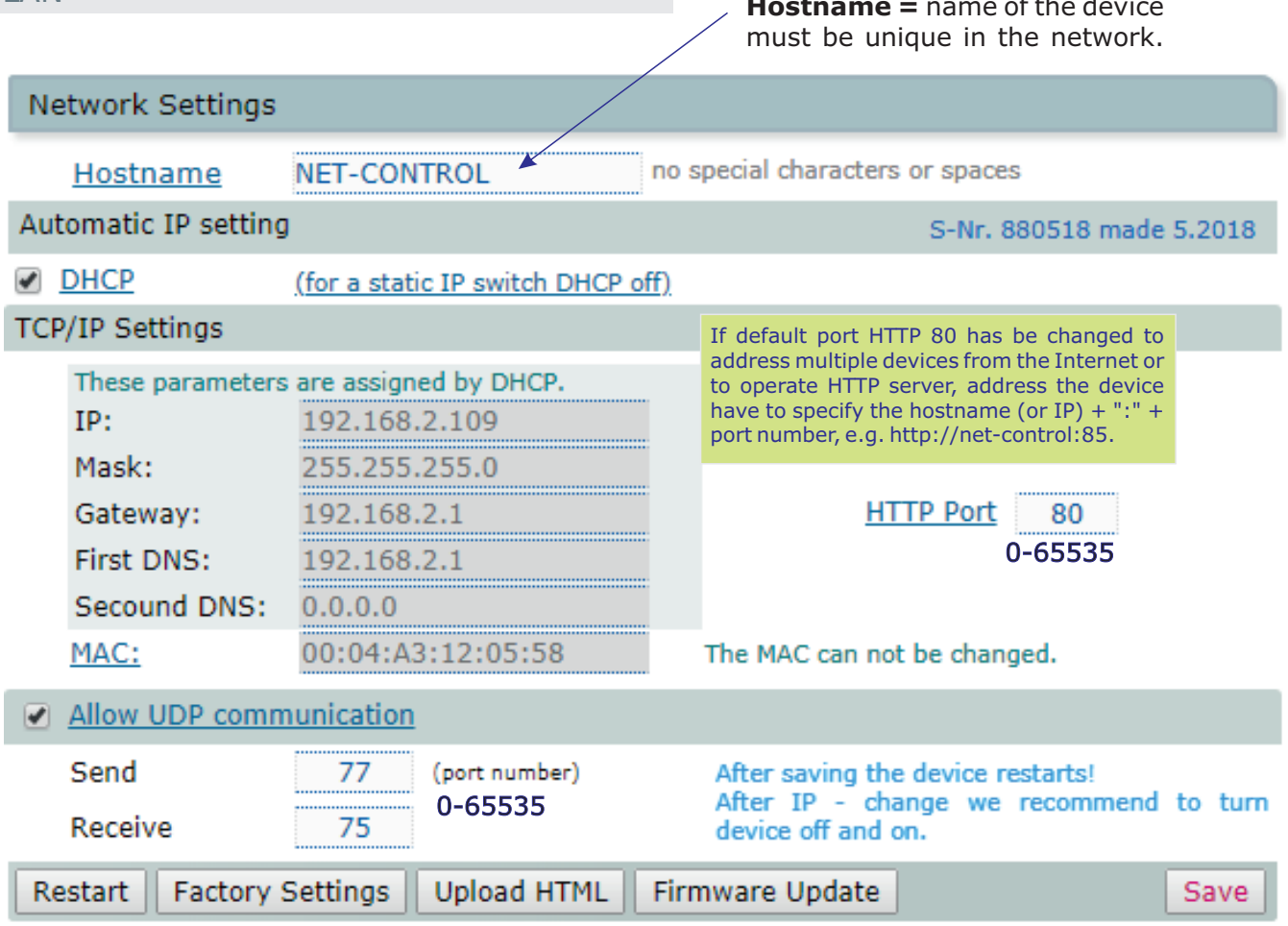
This feature is not in ADV & ZX

Input / Output





LAN



MAC must be unique in the network and must not be changed. The last three pairs of digits form the serial number.

The **UDP communication**. The UDP interface can also be used to control the device from its own application.

Factory settings: Sets all parameters of the device to factory settings and restarts without changing the switching status of the relays.

The functions: Save, Restart, Factory Settings and Firmware Update restarts NET-PwrCtrl.

Important: If the host name or IP of the device has been changed:
- Browser (all windows) must be closed.
- Start the browser and call NET-PwrCtrl with the host name.

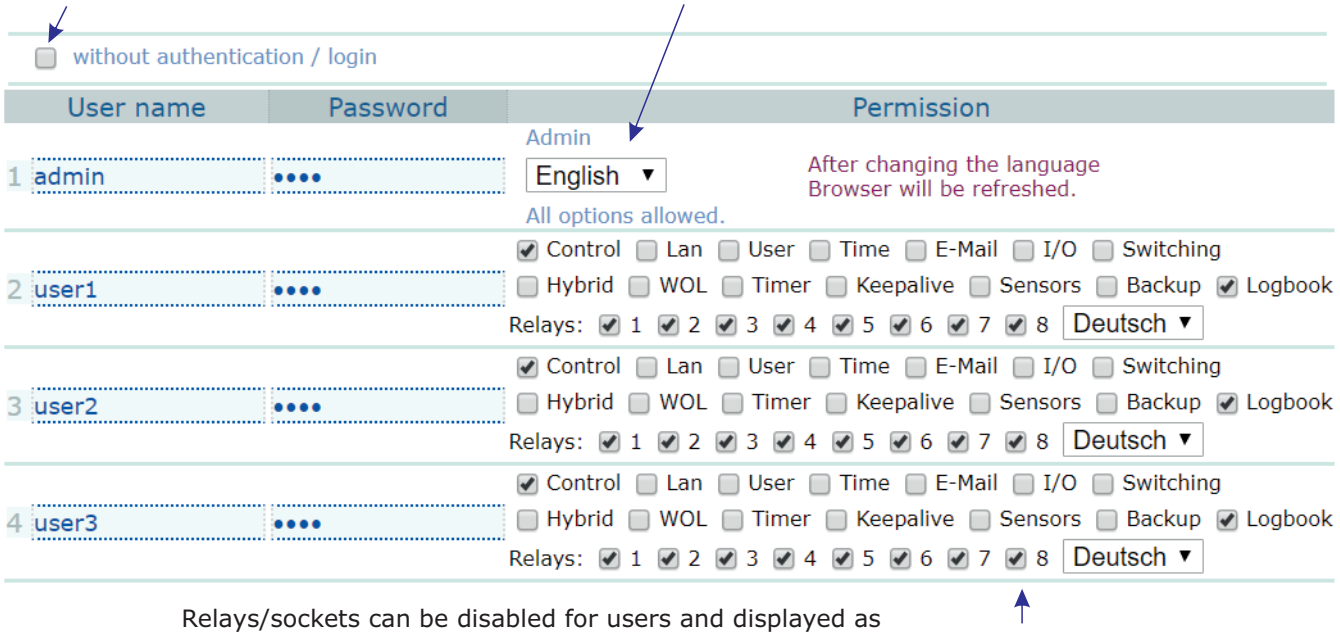
After 6 minutes, the assignment in the browser / NetBios will be deleted automatically.

User

Username and password are limited to 12 characters each. Options without permission are not displayed.
This setting is also relevant for the UDP control (user;password).

Authentication (Login) can be switched off here. This option only appears when admin is logging in.

The language can be changed here anytime.
After saving, the browser is automatically refreshed.

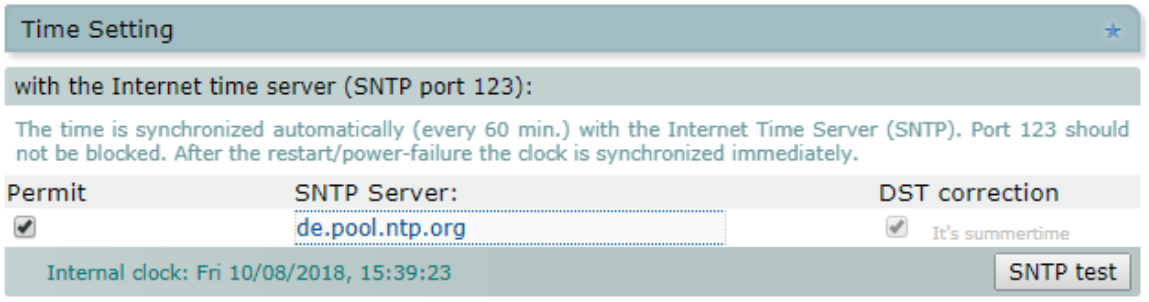


Relays/sockets can be disabled for users and displayed as inactive (as locked in Settings/Switching).

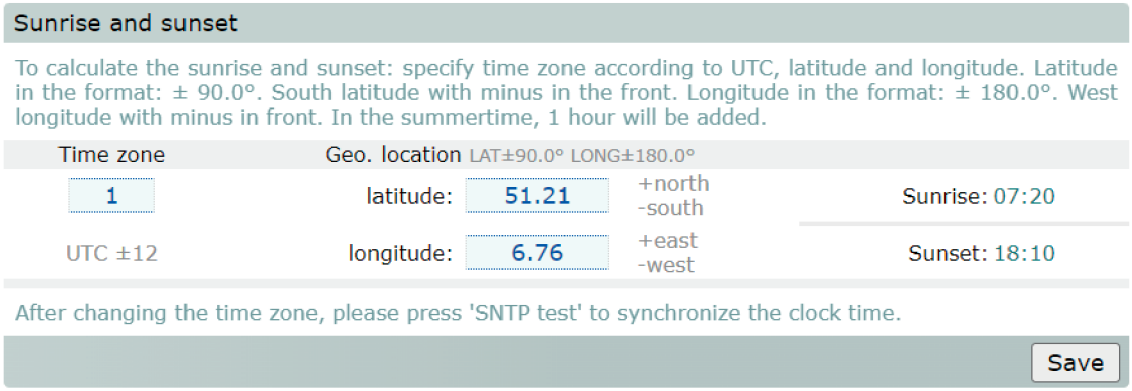
Time

With Internet access, the time is automatically synchronized by an SNTP server (port 123 - must not be blocked by the firewall). The system clock is corrected every 4 hours with the SNTP time. Without Internet access, the time must be synchronized via browser time / system time.

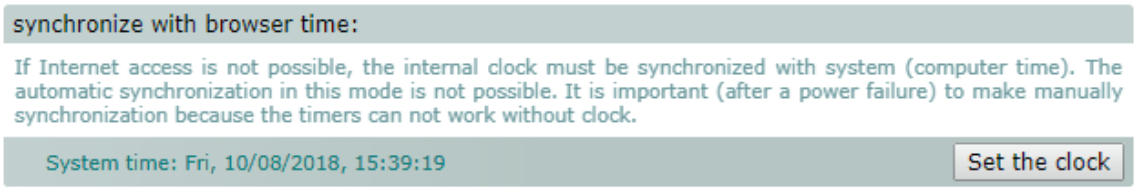
The timers are inactive without valid time synchronization.



To calculate the sunrise and sunset, specify latitude in the format B ± 90,0 °. Southern latitude is indicated by "-". Specify latitude in the format: L ± 180,0 °. Western length is indicated by "-". To the geographical position the time zone (UTC) have to be changed. In DST time 1 hour is added. With the correction, the on and off times can be adjusted. The respective sunrise and sunset times will be recalculated every day at midnight.

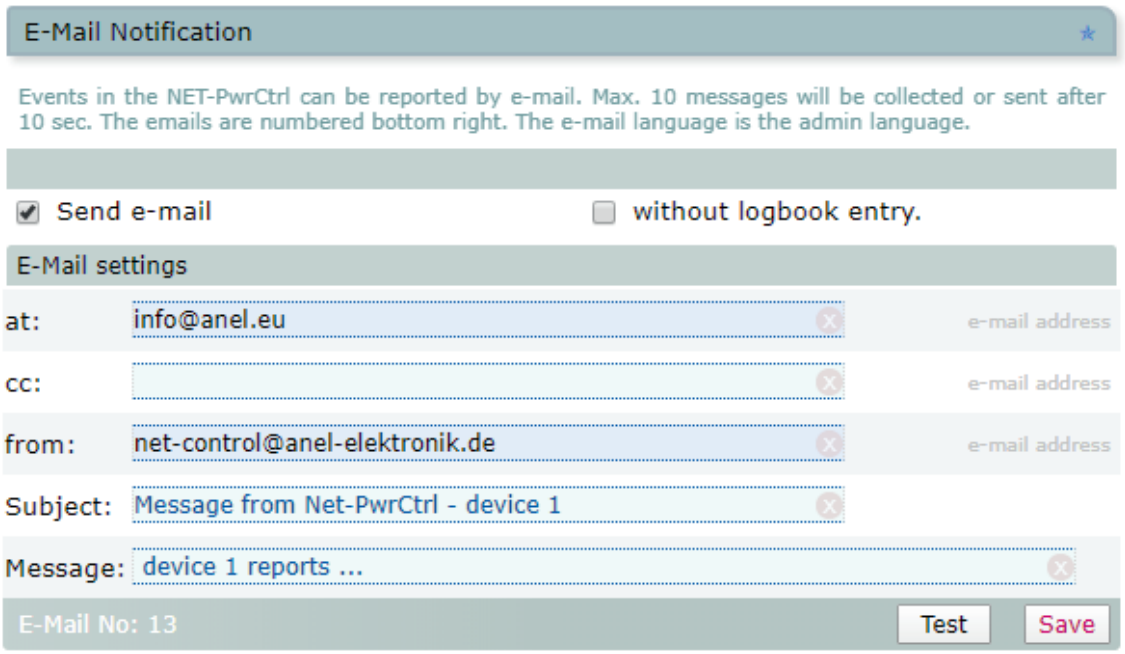


If Internet access is not possible, the internal clock of the device must be synchronized via the system clock (computer time).

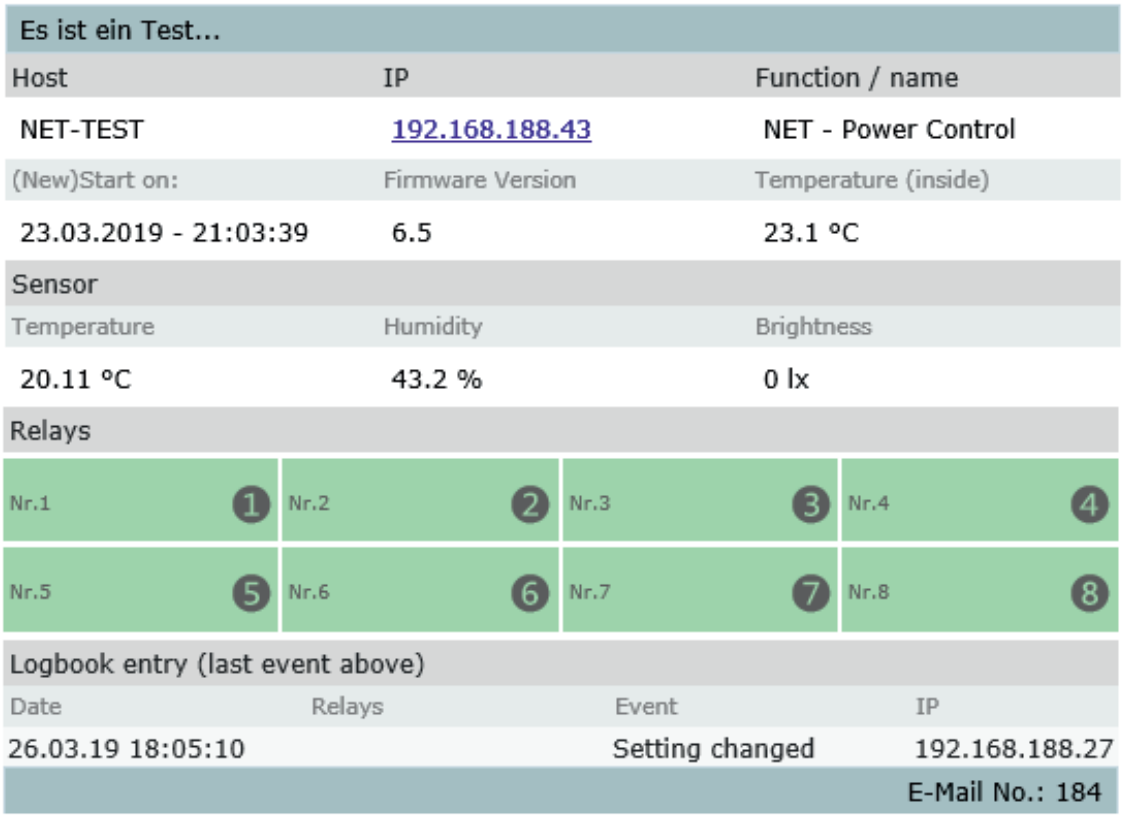


E-Mail

Events in the NET-PwrCtrl can be reported by e-mail. Max. 10 messages will be collected or sent after 10 sec. The emails are numbered bottom right.



Example E-Mail



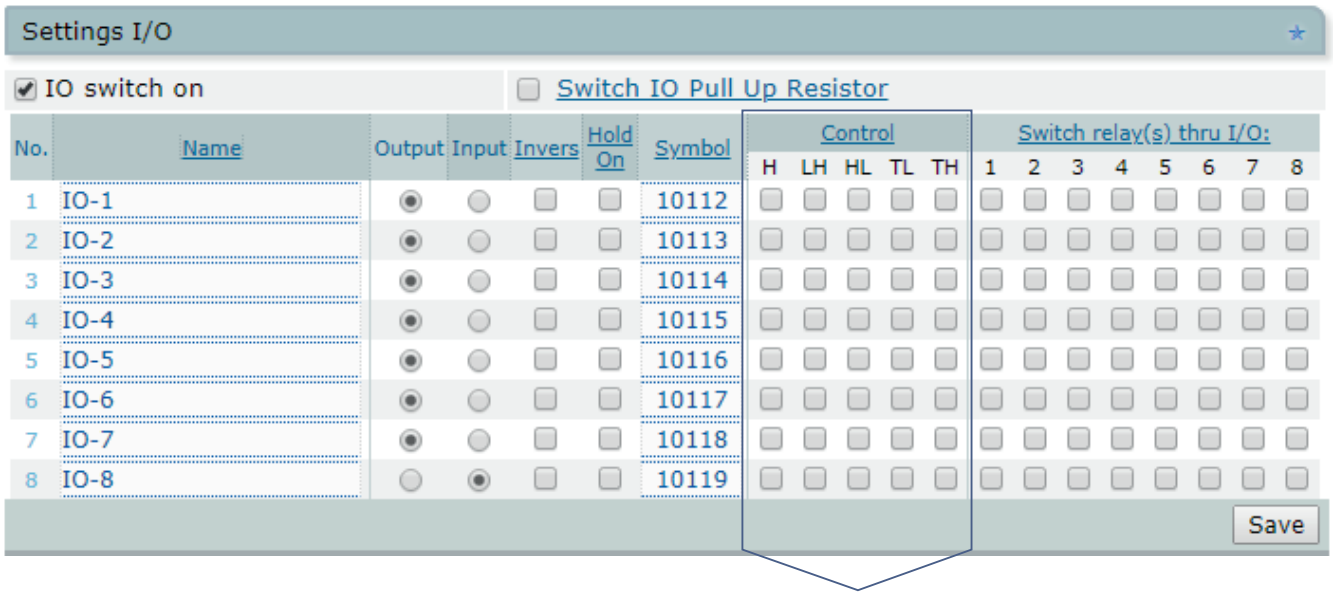
IO - Input/Output

This feature is not in ADV & ZX

IO can be used as an input - to recognize external events such as: doors, windows, etc;
as output - further control channels can be set up.

The purpose of the inversion is - regardless of the type of switching (normally open or normally closed) - to represent all desired keys the same. Example: If IO1 - IO3 normally-open and IO4 normally closed, IO4 can be inverted so that all inputs are displayed identically and therefore changes are detected more quickly.

A pullup resistor "pulls" the input to logical 1 (about 2.5V). This allows switches - connected between GND and an input - to be operated directly (without additional elements).

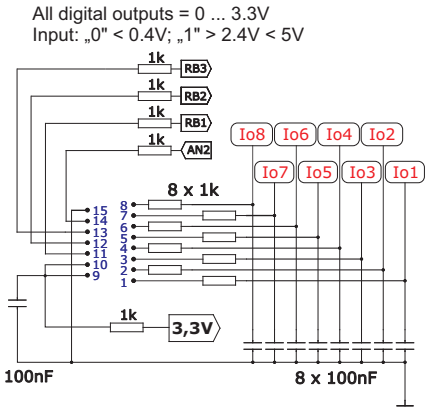


If the function: "Switch relay(s) thru I/O" is used, the "Control" function can be used to determine the type of control (edge) of the IO input when switching the relays:

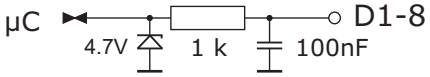
H	level control (is IO high (H) is the relay on, IO = 0 (L) is off.
LH	switching on at rising edge from L (0) to H (1); switch off manually.
HL	switch off on falling edge from H to L; switch on manually.
TL	toggle (switching) with rising edge from L to H.
TH	toggle (switching) on falling edge from H to L.

An unused I/O output can be used as a switch for multiple sockets.

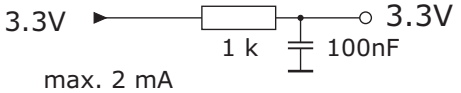
NET-PwrCtrl IO



NET-PwrCtrl HUT



Output: „0" = 0V; „1" = 3,3V max. 2 mA
Input: „0" < 0.4V; „1" > 2.4V < 12V



max. 2 mA

Switching

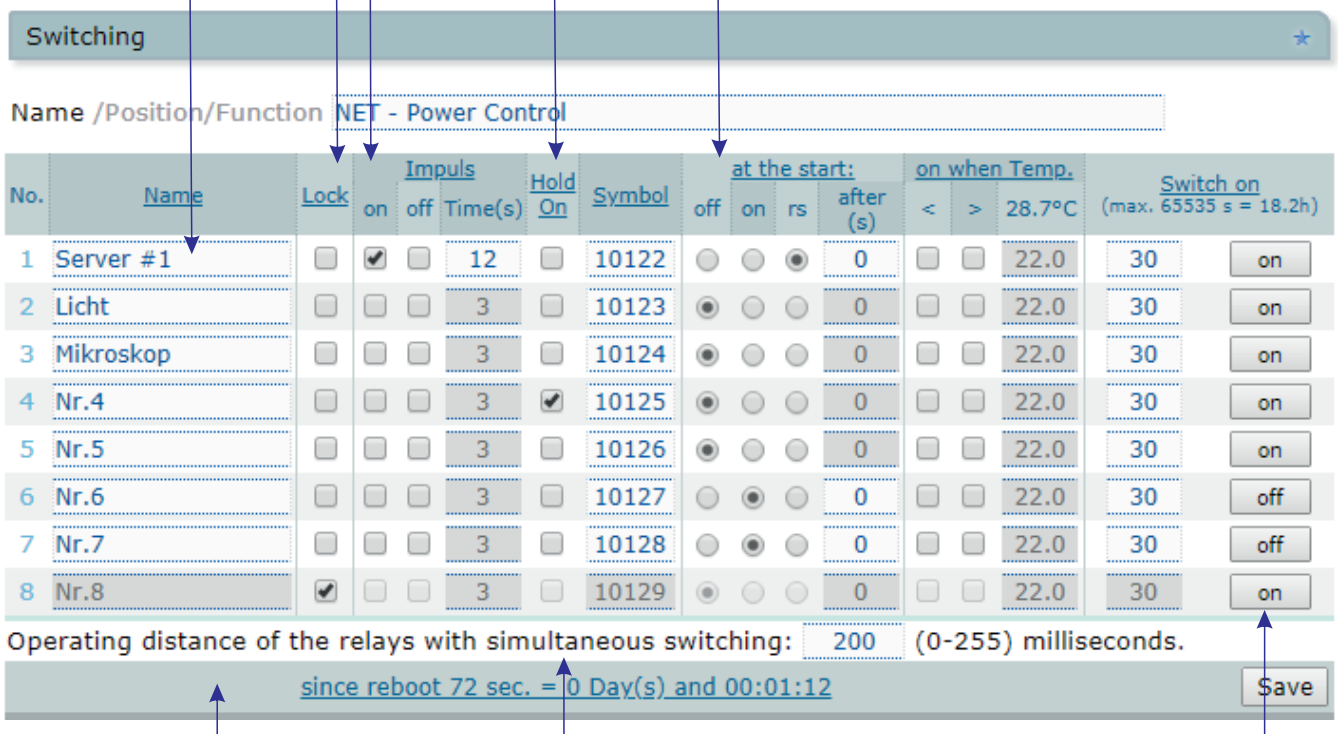
Relay is set for the given time (max 65535 seconds = 18.2h):
when **on**, switched on (relay normally off).
when **off**, switched off (relay normally on).
It is used to control external devices that require a switching pulse. This function has the **highest priority**. All other switching operations (timer, etc.) are switched as an impulse.

Lock: locks the individual sockets/relays for the controll. Button appears gray and can not be clicked.

The name of the socket can be max. 16 characters. Special characters can "confuse" some browsers.

Relay or IO is switched on as long as the key is held down. Two relays or IO's can be used for +/- control (eg dimmer).

After the **restart (power failure)** there is the following switching behaviour for the sockets:
[off] - switch off.
[on] - switch on if necessary with delay [to (s)].
[rs] - restore the last state, if necessary with delay.
The delay can be max. 65535 seconds are what: 1092 minutes or 18.2 hours results



Shows elapsed seconds since restart - important for the time delay after startup: It helps to find out how far the power up process has progressed.

Simultaneous switching = only possible via UDP-, URL-Protocol or IO.

The sockets are - for an interval of max. 65535 seconds - on or off. The action taken is indicated in the button and depends on the state of the socket (switched on / off).

This feature is only in ZX

Switching - ZX (Zero Cross)

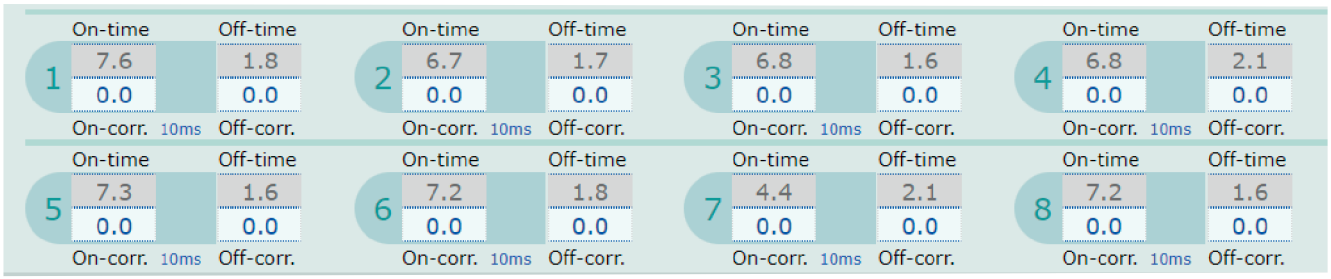
1. Zero crossing switch

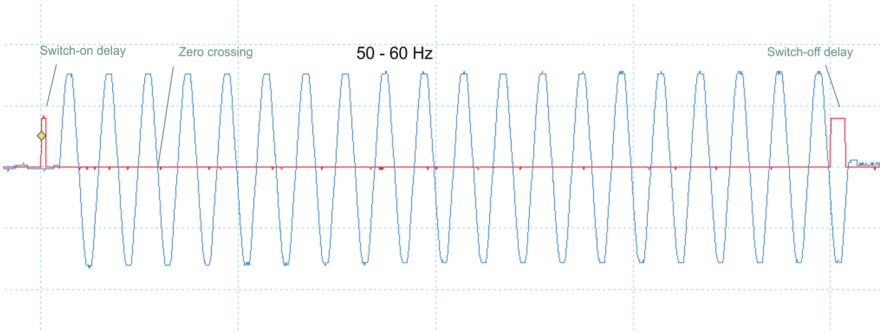
In order to minimize the load on the relay contacts and thereby on the connected device, the processor calculates a delay based on the determined switch-on and switch-off times, which corresponds to the zero crossing of the mains voltage.

It is switched without voltage, so without high inrush current.

During production, the on and off times of the relay are determined. Delay is added to these times to reach the next zero crossing. All 10 ms at 50 Hz; 8.3 ms at 60 Hz. For example: 10ms - 7.4 (on time) = 2.6ms delay.

The correction can shift the delay up to 10 ms.





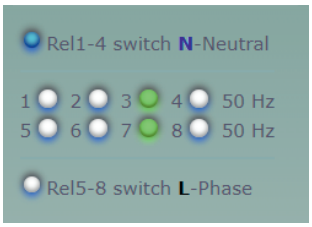
2. Detection of which line (L/N - Hot/Neutral) is switched.

Sensor between the contact of the relay and the ground line detects the phase.

For sockets without reverse polarity protection (such as Schuko), the supply plug of the strip can be rotated in the socket.
In systems where the phase is determined: Switzerland, UK, France, the wiring of the power supply should be checked.

3. Recognize that a relay has actually switched.

Sensor, connected to the contacts of the relay, measures the output voltage.



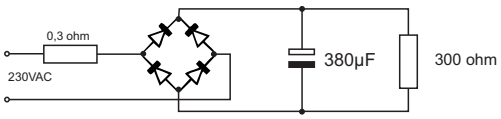
In the Power and Power 19" version, different supply systems can be connected for both sides (relays 1-4 and 5-8):
e.g. 1-4 120VAC 60 Hz and 5-8 230VAC 50 Hz.

The Earth of both sides is also separate.
The housing of the device is grounded with sockets 5-8, i.e. with the power supply of the electronics.

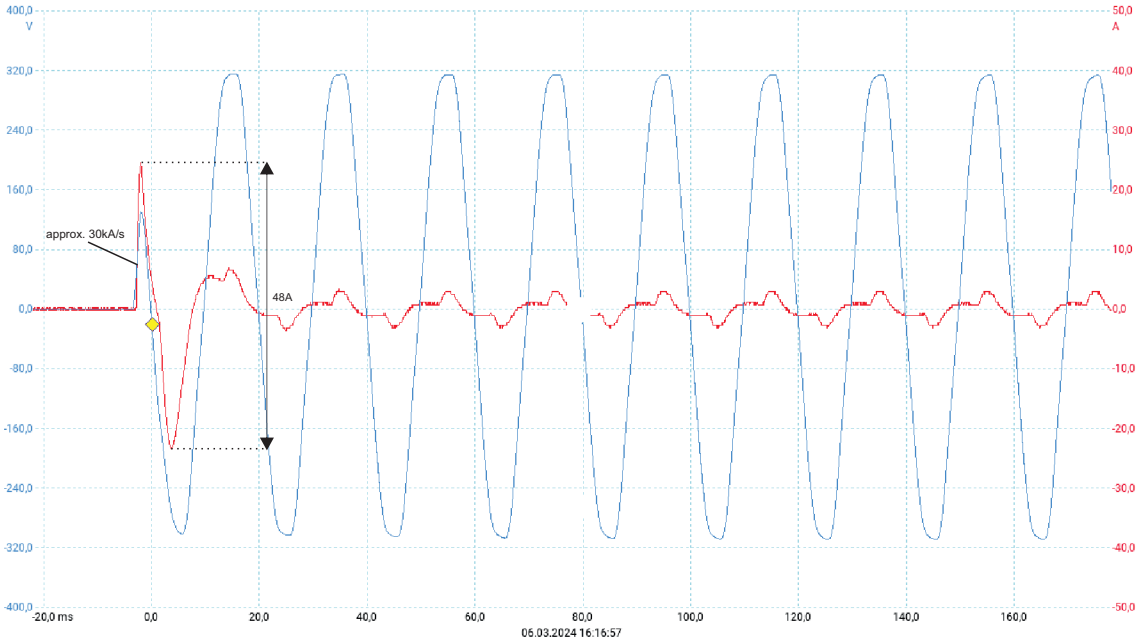
Switching - ZX (Zero Cross)

This feature is only in ZX

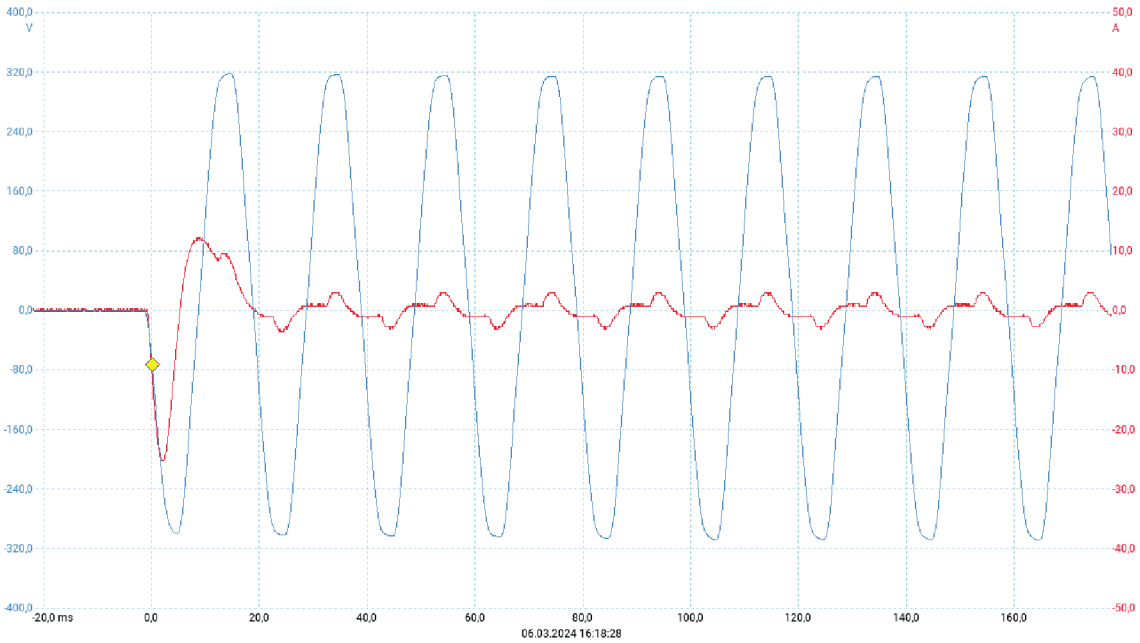
Capacitive Load Test:
230VAC, 380µF capacitor +
serial resistance 0.3 ohm +
300 ohm load = 1.4A = 322VA



Without zero crossing detection



With zero crossing detection.

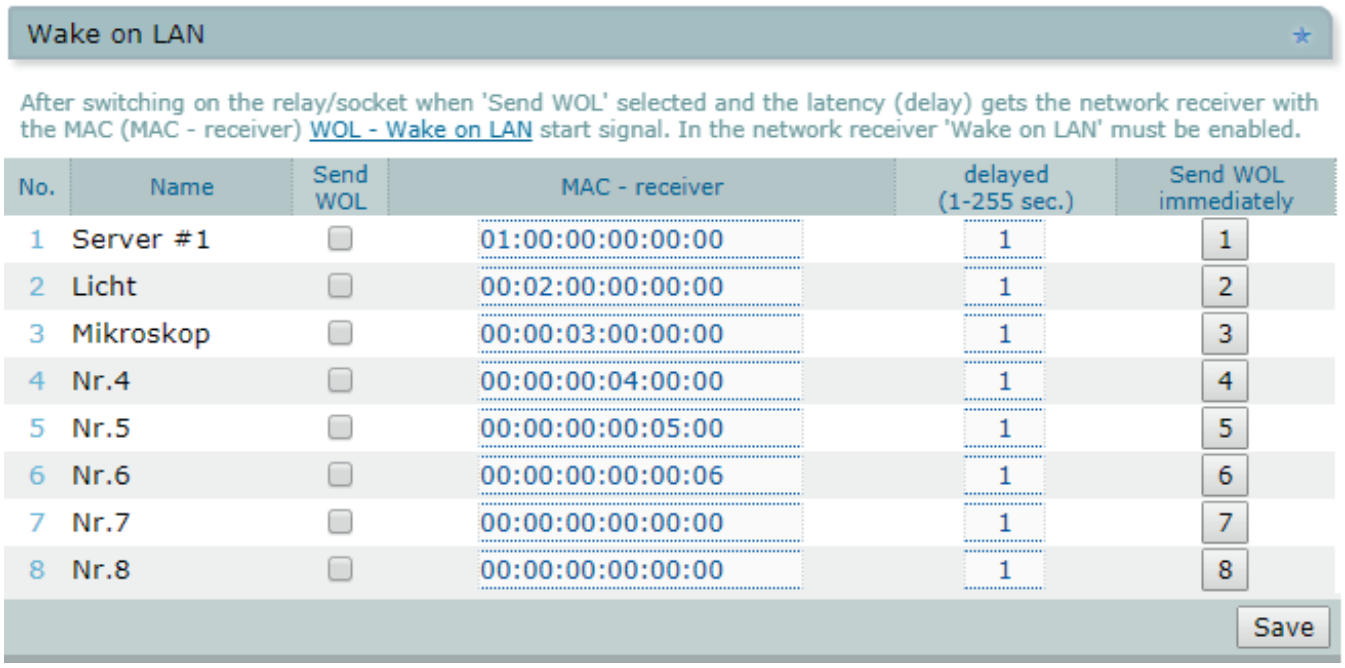


Wake on LAN

After turning on the relay when "WOL sending" is selected and the delay has elapsed (delayed (1-255 sec.)), 'Wake on LAN' start signal is sent to the network receiver with the MAC (MAC receiver).

The Wake on LAN (in BIOS) option must be enabled in the network receiver.

"Send WOL immediately" button immediately sends the WOL signal regardless of the status of the relay and "Send WOL".



Timer

They are "plain text timers". Each line is a timer that either turns on or off. Relays and IOs can be switched. There can be a maximum of 30 timers. Semicolon (;) at the beginning means a comment or switches the timer off.

There are four types of timers:
- Weekly timer
- Sunrise/Sunset timer
- One-Shot-Timer
- If-Timer

Relay / IO number = r1-r8; R1-R8; io1-io8; IO1-IO8
Relay / IO Name = name of the relay or IO in " " e.g.: "R.1".
on/off for switching on or off.
Time HH: MM: SS with am / pm optional
Weekdays 1-7 (1 = Sunday, 7 = Saturday) also separated by commas: 1,3,6-7
sr = sunrise
ss = sunset
both optional: +/- HH: MM: SS time **correction**
Date YYYY / MM / DD HH: MM: SS am / pm optional.
Condition: Format:? (!) Relay / IO number / "Name"? = when switched on; ?! when turned off.

Weekly timer
Relay/IO on/off weekdays
r1 on 8:30:01 1-7

Sun timer
Relay/IO on/off ss/sr(+/-correction) weekdays
"IO.8" on sr+00:15:00 1-7

One-shot timer
Relay/IO on/off date
"R.8" on 2019/12/30 08:30:07

If timer
Condition + weekly timer / sun timer / one-shot timer
?r1 io2 off 18:02:00 2,3,5-7

Important !: If the timer should switch immediately after saving (if they are in the switching window), the switching times must be sorted (from early to late; sunrise - sr to sunset - ss) for a specific relay or IO.
If the sorting is reversed, the timers do not switch until the next period (day).
Example:
R2 off 07:35:00 1-7
R2 on 17:00:00 1-7
when saving at 13:20, R2 is switched on immediately.
R2 on 17:00:00 1-7
R2 off 07:35:00 1-7
switched not.

Keepalive Timer

Keepalive Timer:
Sends to the IP a ping [every (min)] and [if there is no echo (no answer)] consecutively - the relay switches off for [shutdown for (sec.)] .
After [continue after (min)], pinging continues. With the "Ping" button the IP can be pinged and tested.

'Switch off for '= 0: it is only switched off.
'Continue after (min)' = 0: the function does not continue during the overflow.

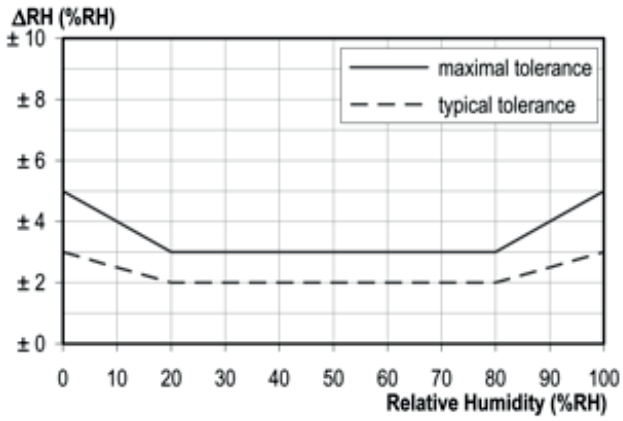
Max. ping response time = 1000ms.

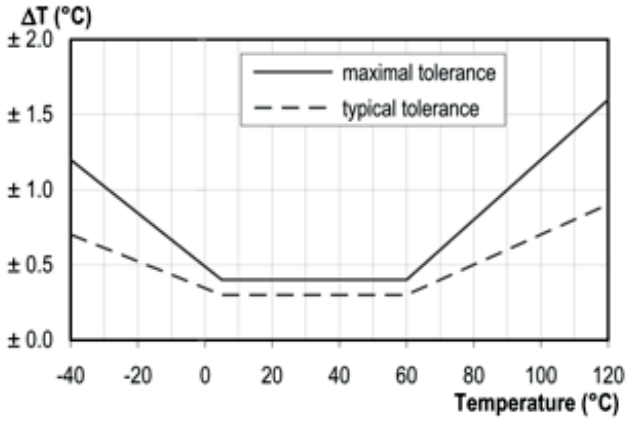
This function only HUT

Sensors

- External sensor for the Net-PwrCtrl - HUT & IO.
- Temperature, humidity & brightness with high accuracy.
- 5 settings per parameter.
- Connection (simple and cost-effective) via ethernet cable including power.
- Adjustable hysteresis.
- All relays controllable.
- Adapter for HUT / HUT2
- DIN rail and 'wall' mounting.

Measurement:	Temperature	Humidity	Brightness
Sensor IC	SHT21	SHT21	BH1750FVI
Operating Range	-40 - +125 °C	0 - 100 %RH	0 - 65535 lx
Resolution	0.01 °C	0.04 %RH	1 lx
Accuracy tolerance	±0.3 °C	±2.0 %RH	1.2
Repeatability	±0.1 °C	±0.1 %RH	1 lx





Configuration Backup

The saved configuration file can be used to configure several NET-PwrCtrl with the same setting.

When you click 'Save Configuration', a **net-pwrctrl.bup** is downloaded.

Danger! Restoring will overwrite the existing configuration.
The network settings are retained.

After the successful recovery, NET-PwrCtrl restarts.

API interfaces

Please use the description from our forum:

UDP - Control

For control from the software via UDP socket.

https://forum.anel.eu/viewtopic.php?f=16&t=207&sid=98b504e8d840396fe5cb098faf560b51

URL - Control

For the control from the address bar of the browser.

https://forum.anel.eu/viewtopic.php?f=52&t=888&sid=98b504e8d840396fe5cb098faf560b51

Windows .bat / cmd - Control

Tool for controlling all NET-PwrCtrl from
the windows command prompt/.bat file/own software.

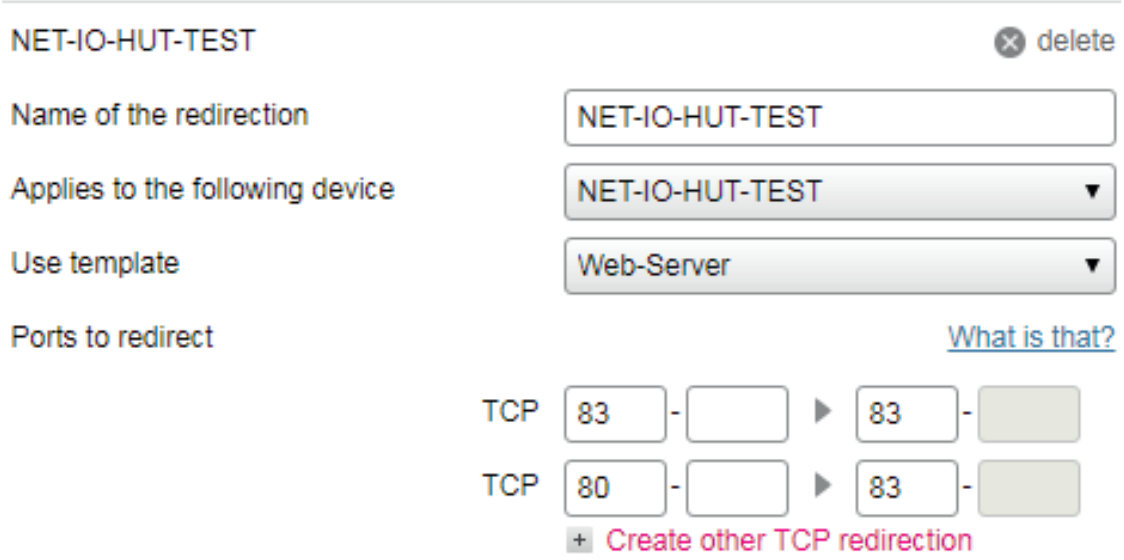
https://forum.anel.eu/viewtopic.php?f=59&t=994&sid=98b504e8d840396fe5cb098faf560b51

Access from the Internet

If NET-PwrCtrl should be controlled from the Internet (via DSL access), the router must be set accordingly: The router's port forwarding must be set to the IP and port of the NET-PwrCtrl.
NET-PwrCtrl can then be called from the Internet using the router's **Internet IP address** (DSL-address **not** 192.168.x.x). Hostname can only be used internally.

If there are several devices, the port address of the NET-PwrCtrl must be changed (e.g. to 81).
Port forwarding must be set accordingly. Each NET-PwrCtrl must have a different port number.
With the Internet-IP-address:Port can be called. (http://46.88.135.21**:81**)

Below: example of setting.



Another possibility: ngrok. A (small) server allows access from the Internet without port forwarding and via https: (SSL). It requires registration but is free for only one HTTP/TCP tunnel (stand 08.2018).
Call: *ngrok.exe http <your ip>:<your port> region=eu*
then http://localhost:4040 in the browser for the address.