Expert Power Control 8220 Series
Expert Power Control 8225 Series

Have your Gude devices always in view - and in control.

With the free Gude Control App you can retrieve all relevant information from your GUDE products regardless of their current whereabouts. Check with your smartphone the important operating figures of your server and rack environment like sensor values (max/min), energy consumption as well as state of inputs and outputs with watchdog functions. In particular, connected consumers can be switched remotely with Gude Control.

"Gude Control" is available for the Expert Power Control 8220/8225 series and can be free downloaded from the Google Play Store and iTunes Store.
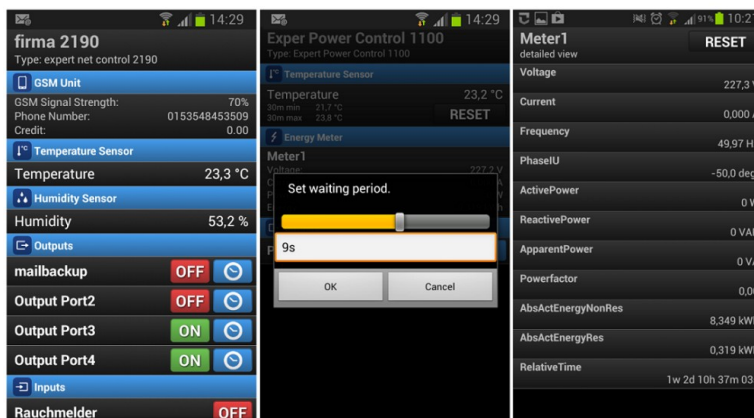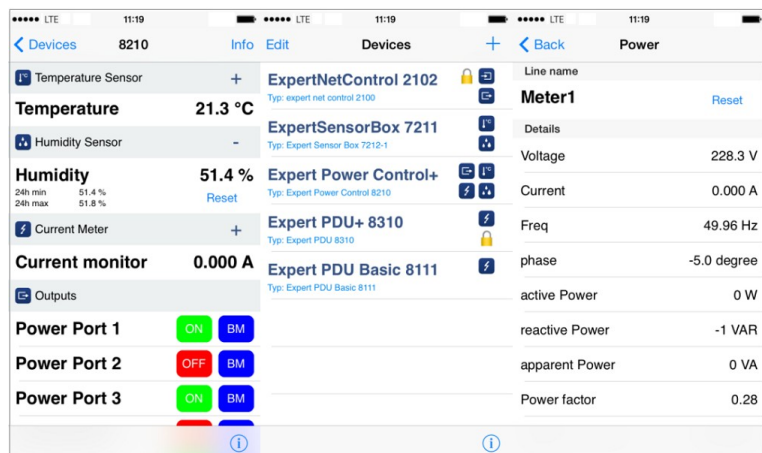
Table of contents

1   Device Description

1.1   Security Advice

- The device must be installed only by qualified personnel according to the following installation and operating instructions.
- The manufacturer does not accept responsibility in case of improper use of the device and particularly any use of equipment that may cause personal injury or material damage.
- The device contains no user-maintenable parts. All maintenance has to be performed by factory trained service personnel.
- This device contains potentially hazardous voltages and should not be opened or disassembled.
- The device can be connected only to 230V AC (50Hz or 60 Hz) power supply sockets.
- The power cords, plugs and sockets have to be in good condition. Always connect the device to properly grounded power sockets.
- The device is intended for indoor use only. Do NOT install them in an area where excessive moisture or heat is present.
- Because of safety and approval issues it is not allowed to modify the device without our permission.
- Please note the safety advises and manuals of connected devices, too.
- The device is NOT a toy. It has to be used or stored out or range of children.
- Care about packaging material. Plastics has to be stored out of range of children. Please recycle the packaging materials.
- In case of further questions, about installation, operation or usage of the device, which are not clear after reading the manual, please do not hesitate to ask our support team.
- Please, never leave connected equipment unattended, that can cause damage.
- Connect only electrical devices that do not have limited on-time. I.e. in case of failure, all connected appliances have to cope with a continuous on-time without causing damage.

1.2   Content of Delivery

The package includes:

- Expert Power Control 8220-1/8220-2/8225-1/8225-2
- 2 x Power Supply cable (IEC C19, max. 16A)
- CD-ROM with Manual and Softwaretools

1.3   Description

The Expert Power Control 8220-1/8225-1 can switch 12 different load outputs (IEC C13, max. 10A), which each 6 outputs are fed from a mains connection (IEC C20, max. 16A) . The device has the following features:

- Switching of 12 load outputs.
- Energy measurement of the two mains connections (voltage , current, active power, reactive power, apparent power, frequency, phase angle , power factor).
- Connecting of two optional external sensors to determine the temperature and humidity, or a input switch.
- Two four-digit 7-segment LED displays (for display of current or temperature / humidity of the external sensors).
- (8225-1 only) Energy measurement for each port of the 12 load outputs and measurement of voltage, current, active power, reactive power, apparent power, frequency , phase angle, power factor

per output .
- Separated over-voltage protection of the two mains connections (Overvoltage Protection).
- Startup delay, individually parametrizable for all load outputs.
- Individually adjustable watchdog function that switches power ports in dependency of the accessibility of a device (network ping) .
- Control and monitoring of the device via Ethernet with an integrated web server and SNMP (v1 and v2c) .
- Generation of messages (e-mail, Syslog and SNMP traps) at relay switching and depending on the energy measurement limits, resp. external sensors.

1.4   Installation

1. 6 plain text displays (on/off) for the state of the outputs (Bank A or B)
2. Current power consumption of the Bank
3. LED indicator whether the Bank is connected to mains supply
4. LED indicator for Over Voltage Protection (green - surge protection is active, red - inactive)

5. Status LED
6. Select button
7. Ok button
8. Ethernet connnector (RJ45)
9. External sensor connectors (RJ45)
10. RS232 connector
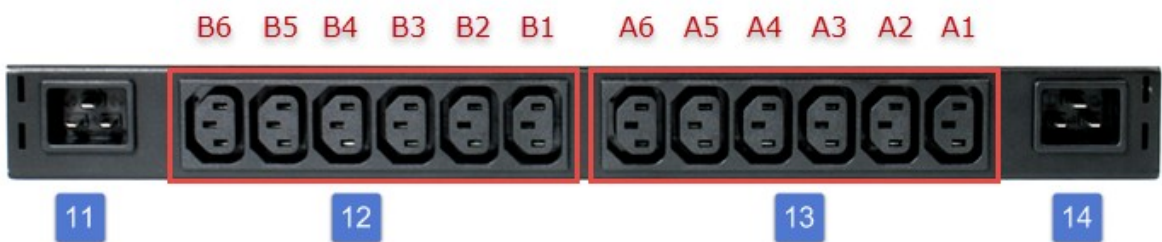
11.Mains supply Bank B (IEC C20, max.16A)

12.6 x Load outputs Bank B (IEC C13, max. 16A)
13.6 x Load outputs Bank A (IEC C13, max. 16A)
14.Mains supply Bank A (IEC C20, max.16A)

Start-up the device

- Connect the two power cords (IEC C19, max. 16A) to the mains supply. The cable connectors are secured as regards their type against unintentional loosening. They must be inserted up to the stop, otherwise there is no secure connection. The plug must not wobble in the socket, or there is no tight connection.
- Plug the network cable into the Ethernet socket (RJ45).
- If required, setup a serial connection to the RS232 port.
- Insert optional external sensors.
- Connect the consumers with the load outputs (IEC C13, max. 10A).

1.5   Dual-Circuit Characteristics

The Expert Power Control 8220-1/8225-1 has two different input circuits (Banks A and B). Therefore the mains supply A (IEC C20, max. 16A) feeds the current to the load outputs A1 to A6 (IEC C13, max. 10A), resp. mains supply B feeds the current to the load outputs B1 to B6 (IEC C13, max. 10A) . The electronics of the device works when one of the two input circuits is supplied .

Twin Port

Two ports of different Banks but with the same number can be combined to a "twin port". Then one port always participates in the switching status of the other port. In the screenshot the ports A1 and B1 are combined, symbolized by the chain link icon. The "Connect twin port" option can be found in the chapter "Configuration - Power Ports" .
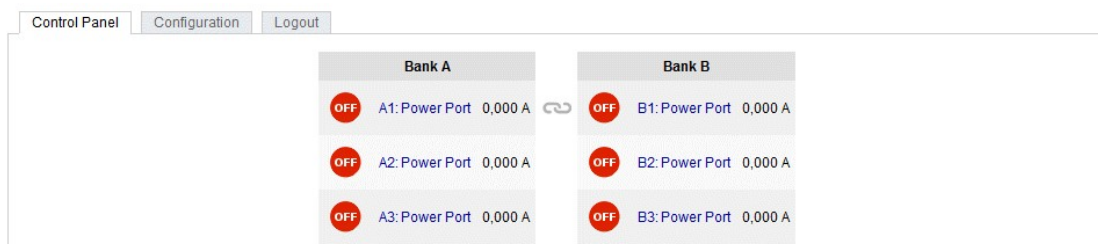
Currentless Bank

If a bank is not receiving power, a red "L" appears in the front panel display, while a operating power supply shows a green " L". Upon entry of the current loss all relays are switched off by the electronics, but the "On" and "Off" LEDs still show the state of the relays when the supply was active. This is symbolized by the flashing of the LEDs.

1.6   Overvoltage Protection

The device contains an overvoltage protection at each of the banks. The protection is based on input side varistors with thermal fuse between phase (L) and neutral (N) to protect the internal electronics and power ports with failure detection (permanently triggered thermal fuse). The state of the protection is indicated on the front panel by a green or red flash. A green flash means that the protection is active, a red flash symbolizes that the overvoltage protection fails. In addition, the status of the overvoltage protection can be seen on the Webpage (HTTP) and acquired with SNMP. Each surge protection module is designed that it can derive a practical unlimited number of voltage pulses in normal installation environments. In an environment with many energy rich surge pulses it can result in permanent loss of function due to aging of the overvoltage protection element.

⚜ Recovering the overvoltage protection function can only be performed by the manufacturer of the device. In the normal case, the device will continue to work even after the failure of the protective function.

⚜ A signaling via e-mail, Syslog or SNMP trap occurs only once during operation, exactly at the moment in which the protection fails. In addition, at the startup of the device a message is generated, when the overvoltage protection is not active.

1.7   Status LED

The Status LED shows different states of the device:

* red: Device is not connected to the Ethernet
* orange: Device is connected to the Ethernet, TCP/IP settings are not allocated
* green: Device is connected to the Ethernet, TCP/IP settings allocated
* periodic blinking: Device is in Bootloader mode.

1.8   Bootloader Mode

Certain actions can, for safety reasons, only be carried out if the device is in bootloader mode. The following operations are possible only in Bootloader Mode:

* Firmware Update
* Configuration with GBL_Conf.exe
* Factory Reset

Activation of the Bootloader Mode

via push button:

* Hold both buttons for 3 seconds (only if the device has 2 buttons)

or

* Remove the power supply
* Hold down the button (or the "Select" button for devices with 2 buttons). If the push button is recessed, use a pin or paper clip
* Connect the operating voltage

by Software: (only if "Enable FW to BL" was previously activated in GBL_Conf.exe)

- Start GBL_Conf.exe
- Do a network search with the *"Search"* menu action
- Activate in menu *"Program Device"* the item *"Enter Bootloader"*

Whether the device is in bootloader mode, is indicated by the flashing of the status LED, or it is shown in GBL_Conf.exe, after a renewed device search, with the appendix "BOOT-LDR" after the device name. In bootloader mode the program GBL_Conf.exe can disable the password and the IP ACL, perform a firmware update, and restore the factory settings.

Activation of the bootloader mode and an abandonment of the bootloader does not change the state of the power or output ports as long as the supply voltage is maintained.

Abandonment of the Bootloader Mode

via push button:

- Hold both buttons for 3 seconds (only if the device has 2 buttons)

or

- Remove and connect the power supply without operating a button

by Software:

- Start GBL_Conf.exe
- Do a network search with the *"Search"* menu action
- In menu *"Program Device"* activate the item *"Enter Firmware"*

Factory Reset

If the device is in bootloader mode, it can always be put back to its factory default. All TCP / IP settings are reset in this operation.

via push button:

- Activate the Bootloader Mode of the device
- Hold down the button (or the "Select" button for devices with 2 buttons) for 6 seconds. If the push button is recessed, use a pin or paper clip
- The status LED will blink in a fast rhythm, please wait until the LED blinks slowly (about 5 seconds)

by Software:

- Activate the Bootloader Mode of the device
- Start GBL_Conf.exe
- In menu *"Program Device"* activate the item *"Reset to Fab Settings"*
- The status LED will blink in a fast rhythm, please wait until the LED blinks slowly (about 5 seconds)

1.9   Firmware-Update

To perform a firmware update, the program GBL_Conf.exe and the latest firmware is needed.

Enable the bootloader mode (see Chapter Bootloader Mode)
Start GBL_Conf.exe

Select the device for which a firmware update is to be performed
Click "Program Device" and then select there "Firmware Update"
Specify the firmware file that should be uploaded

Upon completion of the update process, please start the new firmware of the device. You can do this by simply leaving the bootloader mode.

A firmware update, unlike other functions, is not sent as a network broadcast. Therefore, the device must have a valid IP address and a valid netmask before the firmware update. If necessary, please correct the entries in GBL_Conf.exe in bootloader mode and save them with *"Save Config"*.

If after a firmware update, the web page is not displayed correctly anymore, this may be related to the interaction of Javascript with an outdated browser cache. Not always helps a Ctrl-F5, it is recommended that you manually delete the cache in the browser options. Alternatively, you can test start the browser in "private mode".

1.10 Technical Specifications

Interfaces	1 x Ethernet port (RJ45) 1 x Serial connector (D-SUB, RS232) 2 x Mains supply (IEC C20, max.16A) 2x6 x Load outputs (IEC C13, max. 16A) 2 x RJ45 for external sensor
Network connectivity	10/100 MBit/s 10baseT Ethernet
Protocols	TCP/IP, HTTP, SNMP v1 und v2c, SNMP traps, Syslog, E-Mail (SMTP)
Power Supply	internal power supply (230V AC / -15% / +10%)
Overvoltage Protection • maximum operating voltage • single peak current for 20/80us pulse • max. clamping voltage 20/80us pulse, Ipk = 100A	20mm/190J varistor disk 275VACrms 10000A 710V
Environment • Operating temperature • Storage temperature • Humidity	0°C - 50°C -15°C - 60°C 10% - 85%
Case	powder coated, galvanized steel sheet
Measurements	19" (inches), 1 Rack Unit, (Depth 195mm)
Weight	approx. 3.0kg (8225-1) approx. 2.9kg (8220-1)

1.11   Energy Measurement

Electrical Measurement Specification				
Category	**Range**	**Unit**	**Resolution**	**Inaccuracy (typical)**
Voltage	110-265	V	0.01	< 1%
Current	0,1 - 16	A	0.001	< 1.5%
Frequency	45-65	Hz	0.01	< 0.03%
Phase	-180 - +180	°	0.1	< 1%
Active power	1 - 4000	W	1	< 1.5%
Reactive power	1 - 4000	Var	1	< 1.5%
Apparent power	1 - 4000	VA	1	< 1.5%
Powerfactor	0 - 1	-	0.01	< 3%
Energy Counter				
Active Energy (total)	9.999.999,999	kWh	0.001	< 1.5%
Active Energy (temporary)	9.999.999,999	kWh	0.001	< 1.5%

1.12   Sensor

Two external sensors can be connected to the Expert Power Control 8220-1/8225-1. The following sensors are currently available

Temperature-Sensor 7101	
Cable length	˜ 2m
Connector	RJ45
Measurement range	-20°C to +80°C at ±2°C (maximum) and ±1°C (typical)

Humidity/Temperature-Sensor 7102	
Cable length	˜ 2m
Connector	RJ45
Measurement range	Temp: -20 to +80°C, ±0,5°C (maximum) and ±0,3°C (typical) Humidity: 0-100%, ±3% (maximum) and ±2% (typical)

The sensors are automatically detected after connect. This is indicated by the green LED on the sensor port that is lit permanently.

2   Operating

2.1   Operating the device directly

Port Switching

The current status of the output is indicated by the color of the LED. Red indicates that the output is off, green shows that the output is on. On the device are the buttons "**select**" and "**ok**". If you press "**select**", the LED will blink for the first output, ie the output is selected. Press "**select**" again to select the next output. Hold down the button "**ok**" for two seconds, then the status of the selected output is toggled.

Display Information

If no port is selected manually, repeatedly pressing the "ok" key will show the IP-address and the values of the external sensors on the display.

2.2   Operating by Webinterface

Access the web interface: http://"IP-address" and log-in.

The web page provides an overview of the switching state, energy measurement values of the banks "A" and "B", as well as the external sensors, provided that they are connected. When a single port is clicked at the Expert Power Control 8220-1, a panel with buttons to control a single port appear:

In addition to the panel the measured values of the selected port can be seen at the Expert Power Control 8225-1:

The ports can be switched manually with the "On" and "Off" buttons. If the port is turned on, it can be turned off by pressing the "Reset" button, until after a delay it turns itself on again. The delay time is determined by the parameter Reset Duration, which is described in the chapter about configuration via web interface. The "Close" button dissolves the panel again.

Batchmode

Each individual port can be set for a selectable period of time to the state "switch on" or "switch off".

After the selected time they are automatically switched to the second preselected state.

Optionally the device can be switched via a Perl script or external tools like wget. More information is available on our support wiki at www.gude.info/wiki.

2.3   Using the Serial Interface

There is a serial connection alternatively to the Ethernet port, where the power ports can be switched. You will need a terminal program such as the free supplied Windows HyperTerminal.

Connect your PC to the device via an RS232 serial cable (9-pin RS232). Start your terminal program and select the COM port to which the RS232 cable is connected. Use the following settings for the serial port:

Baudrate	115200
Databits	8
Parity	No
Stoppbits	1
Flow Control	No

If you do not use HyperTerminal, please make sure that your terminal application supports VT100 commands.

If the connection is successful the device reports as in the figure below. Press ENTER to login.

The power ports can be toggled by pressing numerical keys in the terminal program. The character "Z" will show the network settings. To logout, press the Esc key.
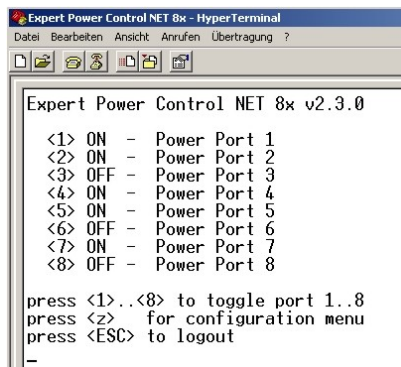
3   Configuration

TCP/IP configuration by DHCP

After switching on the device is scanning on the Ethernet for a DHCP server and requests an unused IP address. Check the IP address that has been assigned and adjust if necessary, that the same IP address is used at each restart. To turn off DHCP use the software GBL_Conf.exe or use the configuration via the web interface.

To check the network settings with GBL_Conf.exe, start the program and choose *"All Devices"* in the *"Search"* menu. From the list select the appropriate device. The lower part of the left half of the window now shows the current network settings of the device. If the IP address is displayed with the default settings (192.168.0.2), either no DHCP server is present on the network, or there could be no free IP address assigned to it.

3.1   Configuration by Software

To view and change the network settings, you can use the program GBL_Conf.exe. The program is available for free on our website www.gude.info and is also available on the accompanying CD-ROM. You can also use GBL_Conf.exe to install firmware updates and trigger a reset to factory defaults.
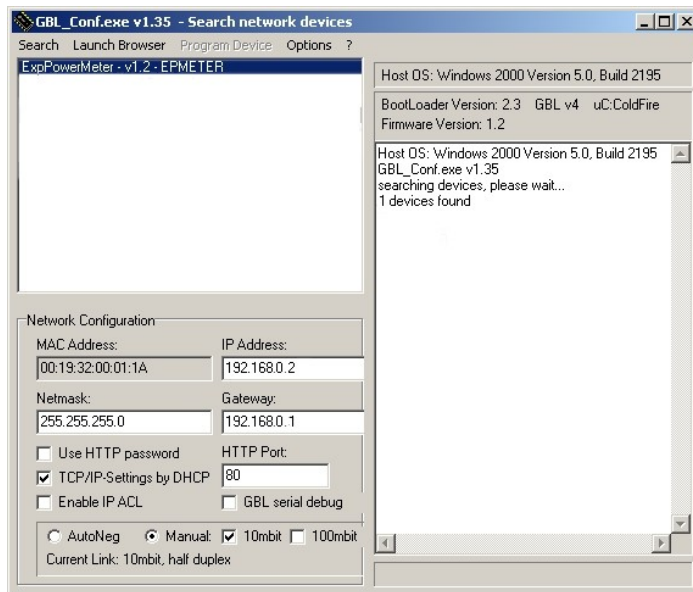
Interface GBL_Conf

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- Activate the Bootloader Mode (see Chapter Bootloader Mode) and choose in menu *"Search"* the item *"Bootloader-Mode Devices only"*
- Enter the desired settings in the edit window and save them with *"Save Config"*.
- Deactivate the boot loader mode for the changes to take effect. Select again *"All Devices"* in the *"Search"* menu of GBL_Conf.exe. The new network configuration is now displayed.

3.2   Configuration via Webinterface

Access the web interface: http://"IP-address" and log-in.

Use the "**Configuration**" Tab to enter the configuration menu.

3.2.1   Configuration - Power Ports

Choose Power Port to configure: This field is used to select the power ports to be configured.

Label: You can assign a name up to 15 characters for each of the power ports. Using the name, an identification of the the device connected to the port can be facilitated.

Start-up Monitoring

It is important, that if necessary the condition of the power ports can be restored after a power failure. Therefore each port can be configured with Initialization status to a specific start-up state. This start-up sequence can be carried out delayed by the parameter Initialization Delay. There is in any case a minimum one-second delay between switching of ports.

Initialization status: This is the port state (on, off, remember last state) the port should be set when the device is turned on. The setting "remember last state" saves the last manually set state of the power port in the EEPROM.

Initialization delay: Here can be configured how long the port should wait to switch to its defined state after the device is turned on. The delay may last up to 8191 seconds. This corresponds to a period of approx. two hours and 20 minutes. A value of zero means that the initialization is off.

Repower delay: When this feature is enabled (value greater than 0), the power port will switch itself on again a specified time after it has been disabled. Unlike the "*Reset*" button this function applies to all switch actions, including SNMP, or an optional serial interface.

Reset Duration: When the "*Reset*" button is triggered, the device turns the power port off, waits for the time entered here (in seconds) and turns the power port on.

Connect twinport: This option combines two relays of the same number of Bank A and Bank B. E.g. A2 and B2. By this connection a port always adopts the status of the connected port, so that both ports always have the same switching state.

3.2.2 Configuration - Watchdog

The watchdog feature enables to monitor various remote devices. Therefore either ICMP pings or TCP pings are sent to the device to be monitored. If these pings are not answered within a certain time (both the time and the number of attempts can be set), the port is reset. This allows e.g. to automatically restart not responding server or NAS systems.

When a watchdog is activated it presents various information in the Control Panel. The information is color-coded.

Green text: The watchdog is active and regularly receives ping replies.
Orange text: The watchdog is currently enabled, and waits for the first Ping response.
Red text: The watchdog is active and receives no ping replies anymore from the configured IP address.

After the watchdog has been enabled, the display remains orange until the watchdog receives a ping response for the first time. Only then the watchdog is activated. Even after triggering a watchdog and a subsequent power port reset, the display will remain orange until the device is rebooted and responds again to ping requests. This will prevent a premature watchdog reset of the port, e.g. when a server needs a long time for a file check.

You can monitor devices on your own network, as well as devices on an external network, e.g. the operating status of a router.

Control Panel   Configuration   Logout

Power Ports · IP Address · IP ACL · HTTP · Sensors · SNMP · Syslog · E-Mail

Configuration - Power Ports

• Choose Power Port to configure: A1: Power Port1 ▾

• Label: Power Port1

• Initialization status: ○ on   ● off   ○ remember last state

• Connect twin port: ○ yes   ● no

• Initialization delay: 0   s

• Repower delay: 0   s

• Reset duration: 10   s

• Enable watchdog: ● yes   ○ no

   • Watchdog action: ● reset   ○ off

   • Watchdog type: ● ICMP   ○ TCP

   • Hostname:

   • Ping interval: 10   s

   • Ping retries: 6

   • retry BOOTING after RESET failure: ● no   ○ yes

[Apply]

Enable watchdog: Enables the watchdog function for this Power Port.

Watchdog action: When selecting *reset,* the Port will be turned off and switched on again after a Reset Duration. The setting *off* leaves the Port in the off state.

Watchdog type: Here you can choose between the monitoring by ICMP pings or TCP pings.

- ICMP Pings: The classic ping (ICMP echo request). It can be used to check the accessibility of network devices (for example, a server).
- TCP Pings: With TCP pings, you can check if a TCP port on the target device would accept a TCP connect. Therefore a non-blocked TCP port should be selected. A good choice would be port 80 for http or port 25 for SMTP.

Hostname: The name or IP address of the monitored network device.

TCP port: Enter the TCP port to be monitored. When using ICMP pings this is not needed.

Ping interval: Select the frequency (in seconds) at which the ping packet is sent to each network device to check its operating status.

Ping retries: After this number of consecutive unanswered ping requests the device is considered inactive.

retry BOOTING after RESET failure: **!!! Be careful, only switch this setting to "yes", if the appliance to be monitored never requires a long boot time !!!**
Normally (this option no selected) the watchdog monitors the connected device. When the watchdog is activated, because the device is not answering, the pre-selected watchdog action is executed. Now the watchdog waits until the monitored device is answering to pings again. After this the watchdog is armed again. When you select the option retry BOOTING after RESET failure, the watchdog is ar-

med **directly** after the watchdog action is executed.

This option has the following pitfall: If at the Port to be monitored a server connected, that is in need for a long boot process, because it is doing a file system check, the server would probably exceed the tripping time of the watchdog. The server would be switched off and on again, and the file system check is restarted. This would be repeated endlessly.

retry Boot after N ping timeouts: If retry BOOTING after RESET failure is enabled, the device waits N Ping intervals until the connected device is switched off and on again.

3.2.3   Configuration - IP Address

Hostname: Here you can enter a name with up to 15 characters. This name will be used for registration on the DHCP server. Special characters and umlauts can cause problems in the network.

IP Address: The IP address of the device.

Netmask: The network mask used in the network.

Gateway address: The IP address of the gateway.

Use DHCP: Select "yes" if the TCP/IP settings should be obtained directly from the DHCP server: When the function is selected, each time the device powers up it is checked if a DHCP server is available on the network. If not, the last used TCP/IP setting will be used further.

All IP changes will take effect directly, there is no need for a restart of the firmware.

3.2.4   Configuration - IP ACL
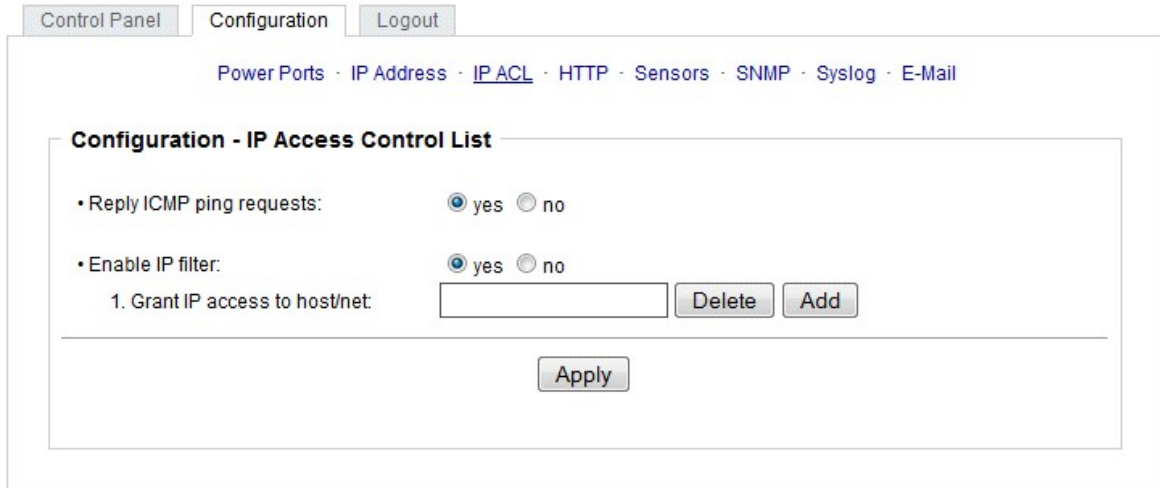
Reply ICMP ping requests: If you enable this feature, the device responds to ICMP pings from the network.

Enable IP filter: Enable or disable the IP filter here. The IP filter represents an access control for incoming IP packets.

Please note that when IP access control is enabled DHCP and SNMP only work if the appropriate servers and clients are registered in the IP access control list.

IP Access Control List

The IP Access Control List (ACL IP) is a filter for incoming IP packets. If the filter is active, you can only connect to hosts and subnets whose IP addresses are entered in the list.

Examples:

Entry in the IP ACL	Meaning
192.168.0.123	the PC with IP Address „192.168.0.123" can access the device
192.168.0.1/24	all devices of subnet „192.168.0.1/24" can access

If you choose a wrong IP ACL setting and locked yourself out, please activate the Bootloader Mode and use GBL_Conf.exe to deactivate the IP ACL.

3.2.5   Configuration - HTTP

HTTP port: Here can be set the port number of the internal HTTP. Possible values are from 1 to 65534 (default: 80). If you do not use the default port, you must append the port number to the address with a colon to address the device from a web browser. Such as: "http://192.168.0.2:800"

Enable auto refresh HTML: If this is activated, the information of the status page is automatically updated via http request (AJAX).

Require HTTP password: If desired, a http password protection can be enabled. In this case, an admin password and a user password can be assigned. The password can have up to 15 characters. User can log in by entering the user's password to query the status information and make changes to ports (if applicable). Admins have the privileges of a User and can change the Configuration settings. In the username field of the password input mask the names "admin" and "user" are supported. In the factory defaults the password for the admin is set to "admin" resp. "user" for the user password.

If you have forgotten your password, please activate the bootloader mode and then turn off the password prompt in GBL_Conf.exe.

3.2.6   Configuration - Sensors

Choose power meter: Selects the measurement of Bank A or B.

Power meter name: The configurable name that will be displayed on the overview page under "Line Name".

Generate AC current messages: Enables the generation of AC current messages.

Maximum/Minimum value: Adjustable limits for current levels (high and low), which sends alerts via SNMP traps, syslog or e-mail.

Hysteresis: This describes the margin of when an event is generated after the measured value has crossed the chosen limit.

Choose sensor port: Selects a type of sensor to configure it. The first digit "1" indicates the number of the sensor port (only important for devices with more than one sensor port). This is followed by the sensor name (e.g. 7002 for the hybrid sensor), a letter for the sub-type sensor and the changeable sensor name. The sensor subtypes are defined as: "T" = temperature, "H" = humidity, "I" = sensor input.

Sensor Name: Changeable name for this sensor. Temperature and humidity can have different names, even if they are from the same sensor.

Generate messages: Enables the generation of sensor messages.

Maximum/Minimum value: Here you can choose whether, and at what Maximum/Minimum temperature or humidity measurements limits the alerts are send via SNMP traps, syslog or email.

Hysteresis: This describes the margin of when an event is generated after the measured value has crossed the chosen limit.

Min/Max measurement period: Selects the time range for the sensor min/max values on the overview web page.

Default Display: Selects whether the power (Current) of the two Banks is shown in the LED display, or the value of an external sensor.

Hysteresis Example:

A Hysteresis value prevents that too much messages are generated, when a sensor value is jittering around a sensor limit. The following example shows the behavior for a temperature sensor and a hysteresis value of "1". An upper limit of "50 °C" is set.

Example:

49.9 °C - is below the upper limit
50.0 °C - a message is generated for reaching the upper limit
50.1 °C - is above the upper limit
...

49.1 °C - is below the upper limit, but in the hysteresis range
49.0 °C - is below the upper limit, but in the hysteresis range
48.9 °C - a message is generated for underrunning the upper limit inclusive hysteresis range
...

3.2.7   Configuration - SNMP
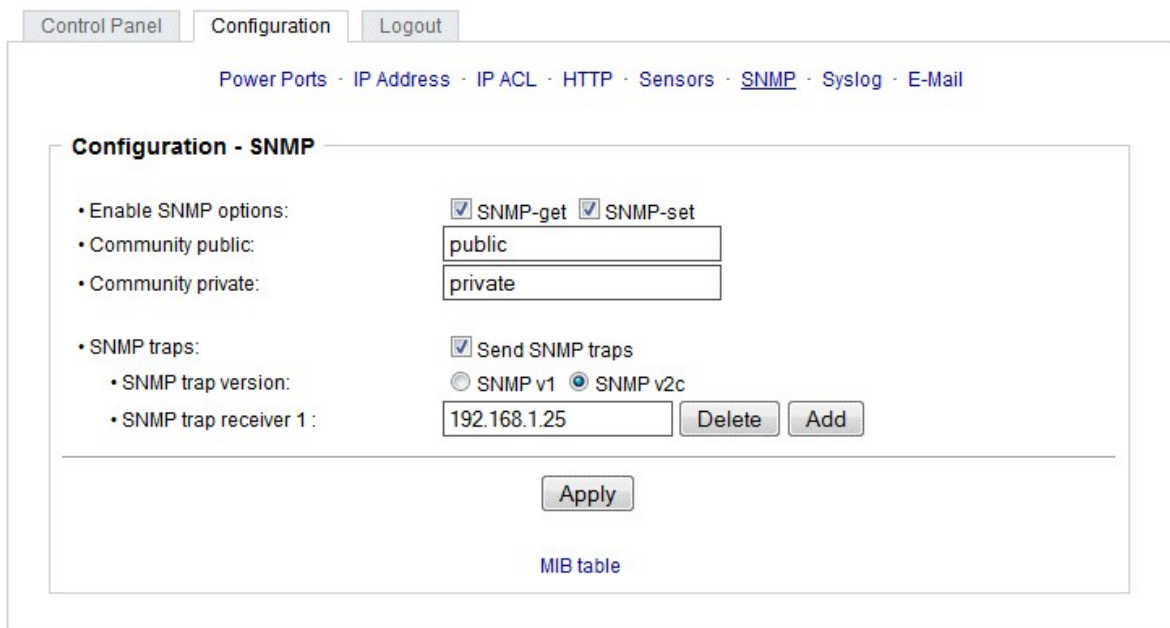
SNMP-get: Enables the acceptance of SNMP-GET commands.

Community public: The community password for SNMP GET requests.

 SNMP-set: Enables the acceptance of SNMP-SET commands.

Community private: The community password for SNMP SET requests.

MIB table: The download link to the text file with the MIB table for the device.

Send SNMP traps: Activates the usage of SNMP traps.

SNMP v1: SNMP traps are sent in SNMP v1 format.

SNMP v2c: SNMP traps are sent in SNMP v2c format.

SNMP trap receiver: You can insert here up to eight SNMP trap receiver.

More information about SNMP settings are available from our support or can be found on the Internet at www.gude.info/wiki.

3.2.8   Configuration - Syslog

Enable Syslog: Enables the usage of Syslog Messages.

Syslog Server: If you have enabled Syslog Messages, enter the IP address of the server to which the syslog information should be transmitted.

3.2.9   Configuration - E-Mail

Enable E-Mail: Activates the email dispatch of messages.

E-Mail Server: The SMTP IP-address of the e-mail server. Either as FQDN, e.g: "mail.gmx.net", or as IP-address, e.g: "213.165.64.20". If required, attach a designated port, e.g: "mail.gmx.net:25".

Sender address: The e-mail address of the sender.

Recipient address: The e-mail address of the recipient.

Enable authentification: Select this option if the e-mail server requires authentication.

Username: User name that is registered with the SMTP e-mail server.

Set new password: Enter the password for the login to the e-mail server.

Repeat password: Enter the password again to confirm it.

4   Protocols

4.1   SNMP

SNMP can be used to obtain status information via UDP (port 161). Supported SNMP commands are:

- GET
- GETNEXT
- GETBULK

- SET

To query via SNMP you need a Network Management System, such as HP OpenView, OpenNMS, Nagios, etc., or the command line tools of the Net-SNMP software.

SNMP-communities

SNMP authenticates requests by communities. A community is a string that acts like a password for a read or a write SNMP access. Since these passwords are sent unencrypted and are easily intercepted with IP sniffers, it is recommended to use a safe network structure (DMZ) when security is required.

MIB

The values that can be read from the device or changed, the so-called "Managed Objects", are described in Management Information Bases (MIBs). The MIB table is build of substructures that are called OIDs (Object Identifiers). An OID number indicates the location of a value within the MIB tree. Each OID may alternatively be referred to with its symbol name (subtree name).

SNMP Traps

SNMP Traps are system messages that are sent via the SNMP protocol to different recipients. SNMP traps are triggered by the following events:

- Switching of the Power Ports
- Exceeding of the max / min values of attached sensors
- State change of digital sensor input ports
- Exceeding of max / min values of the measured power consumption
- Condition change of overvoltage protection

4.2   Syslog

Syslog messages are simple text messages that are sent via UDP to a syslog server. Under Linux, normally a syslog daemon is already running (eg. syslog-ng), for Microsoft Windows systems some freeware programs are available on the market. The syslog messages are sent for the following events:

- Turning on the device
- Enable/disable of syslog in the configuration
- Switching of the Power Ports
- Exceeding of the max / min values of attached sensors
- State change of digital sensor input ports
- Exceeding of max / min values of the measured power consumption
- Condition change of overvoltage protection

4.3   Email

Currently, only SMTP servers are supported, that are offering no authentication (open-relay) or unencrypted authentication (PLAIN). An encrypted authentication to the SMTP server is not possible.

An experienced user can learn whether the desired SMTP server understands the PLAIN authentication, by sending the string "EHLO localhost" with Telnet to the server. Here's an example:

$ telnet smtp.1und1.com 25

```
Trying 212.227.15.129...
Connected to smtp.1und1.com.
Escape character is '^]'.
220 smtp.1und1.com (mreu3) Welcome to Nemesis ESMTP server
EHLO localhost                <---- *TYPE* *THIS*
250-smtp.1und1.com
250-STARTTLS
250-AUTH LOGIN PLAIN          <---- *PLAIN* *SUPPORTED!*
250-AUTH=LOGIN PLAIN
250-SIZE 120000000
250 HELP
```

Email messages are triggered by the following events:

- Switching of the Power Ports
- Exceeding of the max / min values of attached sensors
- State change of digital sensor input ports
- Exceeding of max / min values of the measured power consumption
- Condition change of overvoltage protection

5   Support

You will find the latest product software on our website at www.gude.info available for download. If you have further questions about installation or operation of the unit, please contact our support team. Furthermore, we present in our support wiki at www.gude.info/wiki FAQs and configuration examples.

5.1   Contact

Gude Analog- und Digitalsysteme GmbH
Eintrachtstraße 113
50668 Cologne
Germany

Phone: +49-221-912 90 97
Fax: +49-221-912 90 98
E-Mail: mail@gude.info
Internet: www.gude.info

Managing Director: Dr.-Ing. Michael Gude

District Court: Köln, HRB-Nr. 17 7 84
WEEE-number: DE 58173350
Value added tax identification number (VAT): DE 122778228

5.2   Declarations of conformity

CE EG Konformitätserklärung
EC Declaration of Conformity

Der Hersteller   Gude Analog- und Digital-
The manufacturer   systeme GmbH
                              Eintrachtstr. 113
                              50668 Köln (Deutschland)

erklärt hiermit, dass die folgenden Produkte / hereby declares that the following products

Produktbezeichnung   Expert Power Control 8220-1
Product name   Expert Power Control 8225-1

Beschreibung   IP gesteuerte schaltbare Stromverteilung mit Energiemessung
Description   IP remote controlled power distribution unit with energy metering

mit den Bestimmungen der nachstehenden EU-Richtlinien übereinstimmen / are in accordance with the following European directives

2006/95/EG   Niederspannungsrichtlinie
2006/95/EC   Low Voltage Directive (LVD)

2004/108/EG   Elektromagnetische Verträglichkeit (EMV)
2004/108/EC   Electromagnetic Compatibility (EMC)

2011/65/EU   zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in
                              Elektro- und Elektronikgeräten (RoHS)
                              on the restriction of the use of certain hazardous substances in electrical and electronic
                              equipment (RoHS)

und dass die nachstehenden harmonisierten Europäischen Normen zur Anwendung gelangt sind. / and comply with the following harmonised European standards.

EN 60950-1:2006 /   Einrichtungen der Informationstechnik - Sicherheit / Information technology equipment -
AC:2011   Safety

EN 55022:2010   Einrichtungen der Informationstechnik - Funkstöreigenschaften / Information technology
                              equipment - Radio disturbance characteristics

EN 55024:2010   Einrichtungen der Informationstechnik - Störfestigkeitseigenschaften / Information techno-
                              logy equipment - Immunity characteristics

EN 50581:2012   Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich
                              der Beschränkung gefährlicher Stoffe / Technical documentation for the assessment of
                              electrical and electronic products with respect to the restriction of hazardous substances

Köln, 10.03.2014

Dr. Michael Gude, Geschäftsführer / General manager, CEO

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