User Manual

Expert Power Control 8090 GSM
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 8090 GSM and can be free downloaded from the Google Play Store and iTunes Store.
# Table of contents

## Chapter 1  Device Description

1.1 Security Advice  
1.2 Content of Delivery  
1.3 Description  
1.4 Installation  
1.5 Status LED  
1.6 Bootloader Mode  
1.7 Firmware-Update  
1.8 Technical Specifications  
1.9 Sensor

## Chapter 2  Operating

2.1 Operating the device directly  
2.2 Operating by Webinterface  
2.3 GSM  
2.3.1 SMS  
2.3.2 Voice Call  
2.3.3 Power Port Commands  
2.3.4 Security

## Chapter 3  Configuration

3.1 Configuration by Software  
3.2 Configuration via Webinterface  
3.2.1 Configuration - Power Ports  
3.2.2 Configuration - Watchdog  
3.2.3 Configuration - IP Address  
3.2.4 Configuration - IP ACL  
3.2.5 Configuration - HTTP  
3.2.6 Configuration - Sensors  
3.2.7 Configuration - SNMP  
3.2.8 Configuration - Syslog  
3.2.9 Configuration - E-Mail  
3.2.10 Configuration - GSM
Chapter 4 Protocols

4.1 SNMP 40
4.2 Syslog 41
4.3 Email 41

Chapter 5 Support

5.1 Contact 42
5.2 Declarations of conformity 43
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 of 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.

The human head should always be kept more than 30cm away from the built-in GSM modem.

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 8090 (EPC8090)
- CD-ROM with Manual and Software Tools
- Power Supply cable (max. 16A)
- GSM antenna

What you still need to use all the features of the EPC8090

- SIM Card (prepaid or contract)

1.3 Description

The Expert Power Control (EPC) 8090 is a switchable power distribution unit, that can remote switch other devices in the power grid. The EOC8090 has the following features:

- Switching of 8 load outputs (230V, 10A).
- Connects to an external sensor to measure temperature values.
- Control and monitor the device via Ethernet with an integrated web server and SNMP (v1 and v2c).
The device has a built-in GSM modem, which allows the control of the device. One can thus control the EPC8090 via SMS, Data Call and Voice Call with DTMF tones. When switching the relays and reaching the limits of the external sensor, messages are generated. These messages can be sent by e-mail, syslog, SNMP traps and SMS.

1.4 Installation

1. Status LED output indicator (green - output switched)
2. Temperature sensor connector (RJ11)
3. Ethernet connector (RJ45)
4. Status LED
5. Select button
6. Ok button
7. RS232 Connector (D-SUB)
8. Status LED GSM connection
9. GSM antenna connector
10. SIM Card
11. Eject button for SIM Card

12. Power supply (IEC C20, max. 16A)
13. 8 x Load outputs (IEC C13, max. 16A)

**Start-up the device**

Connect the power cord of the unit to the mains supply.
Plug the network cable into the Ethernet connector (RJ45).

### 1.5 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.

The GSM status LED describes the reception situation of the GSM module:

- **off**: The GSM module is switched off.
- **red**: The GSM module is switched on but has no GSM reception.
- **flashing red**: The module has poor reception.
- **flashing orange**: The module has moderate reception.
- **flashing green**: The module has good reception.

There are three LEDs mounted on the device (traffic light) that show the load condition in addition to the website:

- **green**: Less than 10A is flowing through the power strip.
- **yellow**: The load on the device is between 10A and 14A.
- **flashing red**: There is more than 14A load connected.

### 1.6 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)
1.7 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".

1.8 Technical Specifications

| Interfaces                  | 1 x Ethernet port (RJ45)                  |
|                            | 1 x Serial connector (D-SUB, RS232)      |
|                            | 1 x Power supply (IEC C20, max.16A)      |
|                            | 3 x Load outputs (IEC C13, max. 16A)     |
|                            | 1 x RJ11 for external sensor             |
|                            | 1 x SMA Connector for GSM antenna        |
|                            | 1 x SIM card slot                        |
| Network connectivity       | 10/100 MBit/s 10baseT Ethernet           |
| Protocols                  | TCP/IP, HTTP, DHCP, ICMP, SNMP v1/v2c + traps, Syslog, SMTP |
| GSM Modem                  | Triband GSM Module (900/1800/1900 MHz)   |
| Sim Card                   | Mini-SIM                                 |
| Environment                | Operating temperature 0°C - 50°C         |
|                            | Storage temperature -15°C - 60°C         |
|                            | Humidity 10% - 85%                       |
| Case                       | Powder Coated Metal                      |
| Measurements               | 19" (inches), 1 Rack Unit, (Depth 155mm) |
| Weight                     | approx. 2.8kg                            |
1.9 Sensor

An external sensor can be connected to the EPC 8090. The following sensors are currently available:

<table>
<thead>
<tr>
<th>Temperature-Sensor 7000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable length</td>
</tr>
<tr>
<td>Connector</td>
</tr>
<tr>
<td>Measurement range</td>
</tr>
</tbody>
</table>
The sensor is automatically detected after connect.

2 Operating

2.1 Operating the device directly

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, i.e., 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.
2.2 Operating by Webinterface

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

The website offers an overview of the port status, measurements and sensors, if they are connected. Furthermore, there are buttons to control the state of the ports. 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.

**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.
13

GSM

2.3

To use the GSM functions, there must be an activated SIM card in the SIM card slot located on the front of the unit.

If the SIM card is inserted, and the device is enabled, the integrated GSM module searches automatically for a connection to the GSM network. If this connection works, you can control and configure the device via SMS or by call.

When operating via SMS, send defined SMS commands to the device. The device executes these commands and confirms them with reply SMS.

When operating via phone call, you can perform commands by FreeCall, that allow the unit to perform preconfigured commands, when it is called from a particular phone number. There is no connection established and there are no call charges. Another possibility is the voice call. Here, the device menu is operated using DTMF codes. This type of operation can also be carried out automatically.

Preparing for GSM operation

If you are using a new SIM card, please take note:

1. Preparing the SIM card
   - If you are using a contracted SIM card, please start with step 2
   - If you are using a prepaid SIM card, please take care:
     - There has to be a positive balance on the card
     - The card has to be activated. New prepaid cards need some manual operation at the start of usage. These requests have to be made from a user with a cellphone.

2. SIM-card pin code
   - The device awaits the SIM card pin code 1234 first. Enter this PIN to the SIM card, by using a cellphone. In case you are using another pin code, you have to configure the EPC NET GSM before you activate the GSM part of the device! Otherwise this may lead to a lock of the SIM card.
   - You can disable the need to enter the PIN code on the SIM card with a mobile phone. In this case the EPC NET GSM accepts the SIM card without checking the code.

3. Install SIM card
   - Switch off the device or deactivate the GSM module. Alternatively, you can just turn off the GSM module in the EPC NET GSM via software. Never install a SIM card, when GSM module is active. Otherwise the SIM card may be destroyed.
   - Release the SIM card holder by pressing the yellow button with a fine stick. Insert the SIM card in the ejected plastic tray and slide it back inside until it stops.

4. Connect Antenna
Take the GSM antenna from the box and screw it to the EPC NET GSM by turning clockwise. It is enough to attract the connection hand-tight. Never use pliers to tighten or similar to the antenna, thus inevitably destroying the antenna connection.

5. Activate the EPC NET GSM

Power up the device. In factory default state, the GSM module is deactivated. This is a security setting in delivery to avoid accidentally locking a SIM card with the wrong code.

Log in on the web interface.

Switch to Configuration / GSM / SIM.

Here the button "Enable GSM" is set to "No", that is the GSM module is turned off. Set the button to "yes", then press the button "Apply" to transmit the data to the EPC NET GSM.

Wait some minutes, until the device has logged into the GSM. You can see the status change from the flashing GSM status LED or in the web interface.

GSM Status LED

The GSM status LED displays different states of the GSM module.

LED off
GSM module is deactivated.

LED permanent red
GSM module activated, looking for GSM signal.

LED blinks red
GSM module activated, bad receive quality.

LED permanent orange
GSM module activated, medium receive quality.

LED blinks green
GSM module activated, good receive quality.

The quality of the GSM signal can also be checked in the web interface in the Control Panel.

2.3.1 SMS

2.3.1.1 SMS Commands

Description of the SMS format to send commands to the device:

Format

%[cmd-name] [param 1] […] [param N] {param 1} {…} {param N} 
[param x] = mandatory parameter
{param x} = optional parameter

If activated, a port code or master code will be required. Entering these codes is initiated by p (for Port code) or m (for Master code).
2.3.1.1 Powerport: Query Power Port State

Format

%port state [portnumber] {Portcode/Mastercode}

Command:

Request of status of Power Port 1, Portcode 1111
%port state 1 p1111

Answer:
Device name: epc007
Powerport state: Port 1 on
Account credit: Credit: 130.50 Eur

2.3.1.2 Powerport: Simple Switching

Format

%port [on, off, toggle] [portnumber] {Portcode/Mastercode}

Examples:

Switch off Power Port 2, Mastercode 2222
%port off 2 m2222

Toggle Power Port 8, Portcode 1238
%port toggle 8 p1238

Reset Power Port 6, Portcode 0123
%port reset 6 p0123

Switch on Power Port 1, without Portcode
%port on 1

Answer (example):
Device name: epc007
Power switch: Port 1 off -> on
Account Credit: Credit: 130.50 Eur

2.3.1.3 Powerport: Advanced Switching (Batchmode)

Format

%port batchmode [portnumber] [batch-sequence-number] {Portcode/Mastercode}

[batch-sequence-number]
11’, ‘19’ off, wait [1 .. 9]s, on
21’, ‘29’ on, wait [1 .. 9]s, off
31’, ‘39’ toggle, wait [1 .. 9]s, toggle

Note: Sequence numbers are identical to the DTMF codes for voice calls.
### 2.3.1.1.4 Powerport: Advanced Switching (coldstart)

The command 'coldstart' turns off all Powerports at once. Then it switches the ports temporally delayed on again (according to the current power port configuration), as if the device performs a cold start.

**Format**

\[
\text{%coldstart \{mastercode\}}
\]

**Example:**

\[
\text{%coldstart m0123}
\]

**Answer:**

Device name: epc007  
Switch sequence: coldstart  
Account Credit: Credit: 130.50 Eur

### 2.3.1.5 Configuration: Read

**Format**

\[
\text{%config get \{config-name\} \{mastercode\}}
\]

**[config-name]**:

- all
- code
- telbook
- gsmstatus
- temp
- response
- error
- portname
- admin
- tempmin
- tempmax
gsm

Example:
%config get code m1234

Answer:
Config: code = on

Example:
%config get all

Answer:
Config: code = on
telbook = off
[...]
adminnum = 0161123456
gsm = on

2.3.1.1.6 Configuration: Write

Format
%config set [config-name] [config-value] {Mastercode}

Example:
%config set code off m1234

Answer:
Config: code = off

2.3.1.1.7 Configuration: All Parameter

<table>
<thead>
<tr>
<th>Description</th>
<th>SMS [config-name]</th>
<th>SMS [config-value]</th>
<th>default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master/Port Code enabled?</td>
<td>code</td>
<td>on, off</td>
<td>off</td>
</tr>
<tr>
<td>Check of phone book?</td>
<td>telbook</td>
<td>on, off</td>
<td>off</td>
</tr>
<tr>
<td>Send GSM Status SMS to 'adminnum'</td>
<td>gsmstatus</td>
<td>on, off</td>
<td>off</td>
</tr>
</tbody>
</table>
### 2.3.1.8 Sensors: Query State

**Format**

```
%sensor state [portnumber, all] {Mastercode}
```

**Example:**

Query the state of all sensors, Mastercode 0000
%sensor state m0000

Answer:
Device name: epc007
Port: Sensor port 1
Sensor name: Temperature
Value: NC
Port: Sensor port 2
Sensor name: Temperature
Value: T=22.79C
Value: RH= 76.64%
Account credit: Credit: 130.50 Eur

2.3.1.1.9 Query Device State

Format

%all state (Mastercode)

Example:
Query the state of the device:
%all state

Answer:
Device name: epc007: Status
Outputport state: outp: 1=On 2=On 3=On 4=Off
Inputport state: dinp: 1=Off 2=Off 3=Off 4=Off
Sensor Port 1: senp 1: NC
Sensor Port 2: senp 2: T=22.79C RH= 76.64%
Account credit: Credit: 130.50 Eur

2.3.1.2 SMS replies

2.3.1.2.1 SMS command replies

A command reply SMS looks like:

<table>
<thead>
<tr>
<th>Device name: [name]</th>
<th>prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>[response text]</td>
<td>Command specific reply</td>
</tr>
<tr>
<td>Account credit: [x]</td>
<td></td>
</tr>
</tbody>
</table>

[response text]

Device name: [name]

Power switch: [powerport] [s] -> [s]
[powerport] = Port 1 .. Port 99 (or Config:portname)
[s] = on .. off

Powerport state: [powerport] is [s], [...], [powerport] is [s]
[powerport] = Port 1 .. Port 99 (or Config:portname)
[s] = on .. off

Switch sequence: [s]
[s]
20

[powerport] [c] -> wait t -> [c]
[powerport] = ‘Port 1’ .. ‘Port 99’ (or Config:portname)
[c] = on, off, toggle, coldstart

Account credit: [x]

Config: name = value, [...], name = value

or

command parse error

2.3.1.2.2 Status Change Report SMS

A SMS status change request reply looks like:

<table>
<thead>
<tr>
<th>Device name: [name]</th>
<th>Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>[response text]</td>
<td>Status change request specific reply</td>
</tr>
<tr>
<td>Account credit: [x]</td>
<td></td>
</tr>
</tbody>
</table>

[response text]

Device name: [name]

[powerport] -> [s]
[powerport] = ‘Port 1’ .. ‘Port 99’ (or Config:portname)
[s] = ‘on’ .. ‘off’

[powerport] [s]
[powerport] = ‘Port 1’ .. ‘Port 99’ (or Config:portname)
[s] = batchmode, toggled, Coldstart

Temperature state: [val]
[val] = ‘over the MAX limit’, ‘under the MIN limit’

Account credit: [x]

2.3.2 Voice Call

2.3.2.1 Menu

For operating with VoiceCall, simply call the phone number of the SIM card of the GSM module. When connection is established the device replies with the announcement: “Main menu” and a DTMF tone
In the menu the navigation works via DTMF commands.

Each command starts with # and ends with *.

<table>
<thead>
<tr>
<th>Numbers</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>*1#</td>
<td>Power Port</td>
</tr>
<tr>
<td>*2#</td>
<td>Input Port</td>
</tr>
<tr>
<td>*8#</td>
<td>Status</td>
</tr>
</tbody>
</table>
You can combine multiple commands into a command. Just type the commands one after another and terminate it as a whole with #.

*[Command 1][Command 2]...[Command n]#

Some commands may require the Port or MasterCode. These codes have to be added at end of the command.

Example:

Navigate from Main Menu into the Status Menu using mastercode 1111

*8#  - enter Status Menu
1111  - Mastercode

For the navigation in menus the following commands are required:

*99#  - Jump to Main Menu
*98#  - Return to prev Menu
*97#  - Help
2.3.2.1.1 Power Port Menu

Here you can choose and switch Power Ports or request the status of a Power Port.

Example:

*1#  - Switch to Power Port menu
*5#  - Choose Power Port 5
*01# - Switch on

Or connected into one command: *1501#

Example:

*7# - Choose Power Port 7
*23# - Activate Batchmode No.23 for Power Port 7 - Powerport 7 on, wait 13, off

Example:

*3# - Choose Power Port 3
*03# - Request state of Power Port 4

Or as one command: *303#

Please check the Power Port commands [pc] for further information

2.3.2.1.2 Status Menu

Different states of the device can be requested

*00# Value of the account of the PrePaid card
*01# Request of an SMS with all power port information, announcement “SMS sent”
*02# Request of an SMS with all input port information, announcement “SMS sent”
*03# Request of an SMS with configuration information, announcement “SMS sent”
*04# Request of actual sensor information (a sensor has to be connected)
*10# Request of the state of all Power Ports
*20# Request of the state of all Input Ports

2.3.2.1.3 Parameter Description

[pn] Power-Port Nummer
   - Values: ‘1’ .. ‘9’

[ps]
   - Power-Port State
   - Values: ‘0’ .. ‘1’
   (on/off)

[pc]
   - Power-Port Command
   - Values: ‘00’ .. ‘89’

[in]
   - Input-Port Number
   - Values: ‘1’ .. ‘9’

[is]
   - Input-Port State
- Values: '0' .. '1'
  (on/off)

[sq]
- Status Query
- Values '01' .. '89'

Special Menu Commands (90 .. 00)
- 99 : Jump to Main Menu
- 98 : return to prev Menu
- 97 : Help

### 2.3.3 Power Port Commands

List of possible Power Port commands (pc)

<table>
<thead>
<tr>
<th>Port Command</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>off</td>
<td>Switch off</td>
</tr>
<tr>
<td>01</td>
<td>on</td>
<td>Switch on</td>
</tr>
<tr>
<td>02</td>
<td>toggle</td>
<td>Toggle</td>
</tr>
<tr>
<td>03</td>
<td>state info</td>
<td>Request of state of Power Port</td>
</tr>
<tr>
<td>04</td>
<td>reset</td>
<td>Switch off, wait 30 seconds, switch on</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port Command</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Batchmode: off, wait t1, on</td>
<td>Powerport off, wait t1, Power Port on</td>
</tr>
<tr>
<td>12</td>
<td>Batchmode: off, wait t2, on</td>
<td>Powerport off, wait t2, Power Port on</td>
</tr>
<tr>
<td>13</td>
<td>Batchmode: off, wait t3, on</td>
<td>Powerport off, wait t3, Power Port on</td>
</tr>
<tr>
<td>14</td>
<td>Batchmode: off, wait t4, on</td>
<td>Powerport off, wait t4, Power Port on</td>
</tr>
<tr>
<td>15</td>
<td>Batchmode: off, wait t5, on</td>
<td>Powerport off, wait t5, Power Port on</td>
</tr>
<tr>
<td>16</td>
<td>Batchmode: off, wait t6, on</td>
<td>Powerport off, wait t6, Power Port on</td>
</tr>
<tr>
<td>17</td>
<td>Batchmode: off, wait t7, on</td>
<td>Powerport off, wait t7, Power Port on</td>
</tr>
<tr>
<td>18</td>
<td>Batchmode: off, wait t8, on</td>
<td>Powerport off, wait t8, Power Port on</td>
</tr>
<tr>
<td>19</td>
<td>Batchmode: off, wait t9, on</td>
<td>Powerport off, wait t9, Power Port on</td>
</tr>
<tr>
<td>Port Command</td>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>21</td>
<td>Batchmode: on, wait t1, off</td>
<td>Powerport on, wait t1, Power Port off</td>
</tr>
<tr>
<td>22</td>
<td>Batchmode: on, wait t2, off</td>
<td>Powerport on, wait t2, Power Port off</td>
</tr>
<tr>
<td>23</td>
<td>Batchmode: on, wait t3, off</td>
<td>Powerport on, wait t3, Power Port off</td>
</tr>
<tr>
<td>24</td>
<td>Batchmode: on, wait t4, off</td>
<td>Powerport on, wait t4, Power Port off</td>
</tr>
<tr>
<td>25</td>
<td>Batchmode: on, wait t5, off</td>
<td>Powerport on, wait t5, Power Port off</td>
</tr>
<tr>
<td>26</td>
<td>Batchmode: on, wait t6, off</td>
<td>Powerport on, wait t6, Power Port off</td>
</tr>
<tr>
<td>27</td>
<td>Batchmode: on, wait t7, off</td>
<td>Powerport on, wait t7, Power Port off</td>
</tr>
<tr>
<td>28</td>
<td>Batchmode: on, wait t8, off</td>
<td>Powerport on, wait t8, Power Port off</td>
</tr>
<tr>
<td>29</td>
<td>Batchmode: on, wait t9, off</td>
<td>Powerport on, wait t9, Power Port off</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port Command</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Batchmode: toggle, wait t1, toggle</td>
<td>Power Port toggle, wait t1, Power Port toggle</td>
</tr>
<tr>
<td>32</td>
<td>Batchmode: toggle, wait t2, toggle</td>
<td>Power Port toggle, wait t2, Power Port toggle</td>
</tr>
<tr>
<td>33</td>
<td>Batchmode: toggle, wait t3, toggle</td>
<td>Power Port toggle, wait t3, Power Port toggle</td>
</tr>
<tr>
<td>34</td>
<td>Batchmode: toggle, wait t4, toggle</td>
<td>Power Port toggle, wait t4, Power Port toggle</td>
</tr>
<tr>
<td>35</td>
<td>Batchmode: toggle, wait t5, toggle</td>
<td>Power Port toggle, wait t5, Power Port toggle</td>
</tr>
<tr>
<td>36</td>
<td>Batchmode: toggle, wait t6, toggle</td>
<td>Power Port toggle, wait t6, Power Port toggle</td>
</tr>
<tr>
<td>37</td>
<td>Batchmode: toggle, wait t7, toggle</td>
<td>Power Port toggle, wait t7, Power Port toggle</td>
</tr>
<tr>
<td>38</td>
<td>Batchmode: toggle, wait t8, toggle</td>
<td>Power Port toggle, wait t8, Power Port toggle</td>
</tr>
<tr>
<td>39</td>
<td>Batchmode: toggle, wait t9, toggle</td>
<td>Power Port toggle, wait t9, Power Port toggle</td>
</tr>
</tbody>
</table>
2.3.4 Security

Please note that the device has no security options set in the delivery settings, in order to allow a quick start. For a later use we strongly recommend that you activate the phone book check and code queries. The phone book check provides pretty high security, because only phone book members can operate the device. Unfortunately, there are mobile carriers that allow to simulate any number with some technical effort. These numbers will be marked with a special bit and can only be identified by the police as forged. Unfortunately the GSM network has no possibility to identify this fake numbers. For this reason we recommend the code query.

<table>
<thead>
<tr>
<th>Access</th>
<th>Phonebook Check</th>
<th>Port/MasterCode</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anybody</td>
<td>off</td>
<td>off</td>
<td>Very low</td>
</tr>
<tr>
<td>Phonebook Check</td>
<td>on</td>
<td>off</td>
<td>Normal</td>
</tr>
<tr>
<td>Code Check</td>
<td>off</td>
<td>on</td>
<td>High</td>
</tr>
<tr>
<td>Phonebook and Code Check</td>
<td>on</td>
<td>on</td>
<td>Very high</td>
</tr>
</tbody>
</table>

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.

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.

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 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.
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.

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.

### 3.2.3 Configuration - IP Address

<table>
<thead>
<tr>
<th>Configuration - IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hostname: EPC-0090</td>
</tr>
<tr>
<td>IP Address: 192.168.1.248</td>
</tr>
<tr>
<td>Netmask: 255.255.255.0</td>
</tr>
<tr>
<td>Gateway address: 192.168.1.3</td>
</tr>
<tr>
<td>DNS address: 192.168.1.5</td>
</tr>
<tr>
<td>Use DHCP: yes</td>
</tr>
</tbody>
</table>

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 changes will be effective after a reboot 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:**

<table>
<thead>
<tr>
<th>Entry in the IP ACL</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.0.123</td>
<td>the PC with IP Address „192.168.0.123“ can access the device</td>
</tr>
<tr>
<td>192.168.0.1/24</td>
<td>all devices of subnet „192.168.0.1/24“ can access</td>
</tr>
</tbody>
</table>

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 sensor port:** Selects a type of sensor to configure it. For devices with only one sensor connection, this value is fixed.

**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 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 is the distance between the value that is signaling an overrun of a limit and the value that signals an underrun of the same limit.

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

**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](http://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 authentication: 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.

3.2.10 Configuration - GSM

3.2.10.1 Configuration - GSM General

Enable GSM: Activates the built-in GSM module

SIM PIN: Switches the PIN request of the SIM card on. A wrong Pin leads to a blocking of the SIM card. You cannot change the PIN of the SIM card via this menu option.

My phone number: Please enter here the phone number of the inserted SIM card

Admin SMS number: All device changes are sent via SMS to this mobile number.

Enable admin GSM status information: When active, all GSM status changes are sent via SMS to the Admin.

Enable admin GSM E-mail: When active, all GSM status changes are sent via email to the Admin.

Enable DTMF/SMS access codes: When activated, the mastercode or portcode is needed to switch a port.
3.2.10.2 Configuration - GSM Misc

- **Enable phonebook check**: If selected, only numbers registered to the phonebook can access the GSM module. All other numbers are ignored.

- **Enable freecall**: When active, without accumulating phone charges, the functions assigned to a dialed number can be triggered.

- **Enable GSM for admin only**: If enabled, the GSM functions can only be used when activated from the entered GSM Admin number.

- **Enable SMS response**: When activated, every command SMS is acknowledged from an answer SMS.

- **Enable SMS errors/warning**: Enables the sending of an error SMS when a defective command SMS was received.

- **Enable port name indication**: If selected, the complete port name is sent via SMS. E.g., instead of "Port 1" the name "server 1. floor". This can lead to longer SMS with higher costs.

- **Enable autosync SMS**: When this option is enabled, the EPC tries to request date and time information from the GSM network after power-up.

- **Enable voice in voice call**: If enabled, you hear voice samples when a call is coming (Voicecall).

- **machine-to-machine DTMF tones**: Enables DTMF tones in voice steering.
3.2.10.3 Configuration - GSM Phonebook

The phonebook can be used to store telephone numbers under a name. When the phonebook is activated only stored numbers can access the device.

Furthermore, the "FreeCall" option can be assigned to every number in the phone book. If this number is recognized, a preselected action is executed without accepting the call.

An active "FreeCall" number cannot activate other functions via "Voicecall". If you want to use the voice menu with a "FreeCall" number, you have to suppress the phone number.

3.2.10.4 Configuration - GSM SIM Card

To enter a new SIM card, please press the button "Change GSM SIM-card".
This menu only appears when you insert a SIM card from a phone company that operates outside of Germany. To receive necessary information, contact your wireless service provider.

**IMSI**: Your IMSI number.

The International Mobile Subscriber Identity (IMSI) is used in GSM and UMTS mobile networks to uniquely identify network nodes (internal subscriber identity). Among other data, the IMSI is stored in a special smart card, the so-called SIM (Subscriber Identity Module). A worldwide unique IMSI number is awarded every customer of a mobile network. While the IMSI has nothing to do with the telephone number that is assigned to the SIM card.

**SMS to Email Gateway**: The number of the SMS to email gateway for your network provider.

**Balance request code**: Please enter the word that names the prepaid balance: e.g. "balance", "conto", "balances". You will find this word in the news of your provider when you query your prepaid balance. The correct spelling is important to help the device recognizing whether the current balance is communicated in a message.

**Balance parsing string**: Enter the query that you send to your provider to access your prepaid balance: E.g. "*101#"

### 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 sniffer, 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

**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:

- Switching of the power ports
- Exceeding of the max / min values of attached sensors

**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
```
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 Systems GmbH
Von-der-Wettern-Straße 23
51149 Cologne
Germany

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

**EG Konformitätserklärung**

EC Declaration of Conformity

**Der Hersteller**
The manufacturer

Gude Analog- und Digitalsysteme GmbH
Eintrachtstr. 113
50668 Köln (Deutschland)

erklärt hiermit, dass die folgenden Produkte

**Produktbezeichnung**
Product name

Expert Power Control 8090

**Beschreibung**
Description

IP und GSM gesteuerte schaltbare Stromverteilung
IP and GSM remote controlled power distribution unit

mit den Bestimmungen der nachstehenden EU-Richtlinien übereinstimmen

1999/5/EG
1999/5/EC

R&TTE Richtlinie
R&TTE Directive

2011/65/EU

zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (RoHS)

und dass die nachstehenden harmonisierten Europäischen Normen zur Anwendung gelangt sind.

EN 60950-1:2006 /AC:2011
Einrichtungen der Informationstechnik – Sicherheit / Information technology equipment – Safety - - Article 3.1.a

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

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

EN 301 489-1 V1.8.1
Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) - Article 3.1.b

EN 301 489-7 V1.3.1
Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Article 3.1.b

EN 301 511 V9.0.2
Harmonized EN for mobile stations in the GSM 900 and GSM 1800 bands covering essential requirements under article 3.2 of the R&TTE directive (1999/5/EC) - Article 3.2

EN 50385:2002
Produktnorm zur Konformitätsüberprüfung von Mobilfunk-Basisstationen und stationären Teilnehmergeräten / Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication - Article 3.1.a

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, 01.03.2013

Dr. Michael Gude, Geschäftsführer / General manager, CEO