Expert Power Control NET 2x6

The twelve fold Remote Power Switch for TCP/IP networks

GUDE
ANALOG – und
DIGITALSYSTEME
GmbH

Manual

Content

Security Advise

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-serviceable parts. All repairs must be performed by factorytrained service personnel.

Check that the power cords, plugs and sockets are in proper condition.

The device can be connected only to 230V AC (50 or 60 Hz) sockets.

Always plug the device into properly earthed 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.

Packaging material is NOT a toy. 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.

1. Description

With **Expert Power Control NET 2x6** (**EPC NET 2x6**) electrical devices can be switched via a TCP/IP network. There are only two steps necessary for installation: The connection to an electric circuit and a TCP/IP network and the configuration of the IP settings. Afterwards **EPC NET 2x6** can be switched by all PCs of the network.

2. Hardware

2.1 Extend of Delivery

Included in delivery are:
- **Expert Power Control NET 2x6** for 19"-Installation
- Power supply cable (IEC)
- CD-ROM including Software and Manual
- Short manual

2.2 Installation

1.) Connect the power supply cable to the power socket (7) at the rear side of **EPC NET 2x6** and a socket. **EPC NET 2x6** now is booting and shortly after ready for usage.

2.) Plug the Ethernet cable into the connector (3) on the front side of **EPC NET 2x6** and connect it to your Ethernet.

3.) Connect the clients to the active outlets at the rear side of **EPC NET 2x6** (8).

To be able to use all 12 Power Ports correctly, both Power Supply Cables have to be connected to the Power sockets (7). If there is only one Power Supply Cable connected, only the half of the Power Ports (A1-A6 or B1-B6) will perform correctly, depending on the Power Socket (A or B) which is connected to the Power.
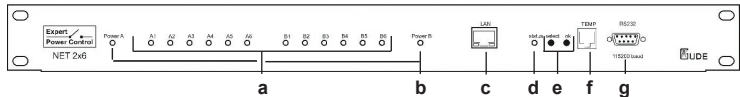
Figure 1 Front side of EPC NET 2x6

a   b   c   d e   f   g

Figure 2 Rear side of EPC NET 2x6

h   i

a) Power Port LEDs
b) Power supply LEDs
c) Ethernet connector (RJ45)
d) StatusLED
e) Buttons „*select*" and „*ok*"

f) TEMP interface
g) RS232 connector
h) 2 Power Socket (IEC C20, max. 16A)
i) 12 (2 x 6) Power Ports (IEC C13, max. 10A)

2.3 Status LED

The Status LED (d) shows different states of the device:

- Status LED red: Device is not connected to the ethernet

- Status LED orange: Device is connected to the ethernet, TCP/IP settings are not allocated

- Status LED green: Device is connected to the ethernet, TCP/IP settings allocated, device is ready to use

- Status LED blinks alternately red and green: Device is in Bootloader mode.

3. Configuration

3.1 Automatic configuration by DHCP

After switch-on **EPC NET 2x6** looks for a DHCP server and requests an available IP address (*for deactivation of that feature see 3.2*).

Please check the IP adress allocated to **EPC NET 2x6** in the DHCP server settings to make sure that the same address is used at every reboot.

3.2 Network configuration by *GBL_Conf.exe*

For changing the network properties manually, the program *GBL_Conf.exe* is required. This tool is available for free on our website **www.gude.info**.

Furthermore *GBL_Conf.exe* enables you to install firmware updates and to reset **EPC NET 2x6** to its factory settings (*see 5.2)*.

Activate bootloader mode of **EPC NET 2x6** and run *GBL_ Conf.exe* (*see 5.1*). The program will look automatically for connected devices and will display their network configuration.

If the displayed IP address accords with the factory settings (192.168.0.2), there is either no DHCP server available in the network or no free IP address could be allocated.

Enter a free IP address and the according netmask in the entry mask, then save these changes by clicking on *Program Device →SaveConfig*.

Restart **EPC NET 2x6** by switching it off and on again, so that the changes will take effect. Now click on *Search* in order to have the new network configuration displayed.
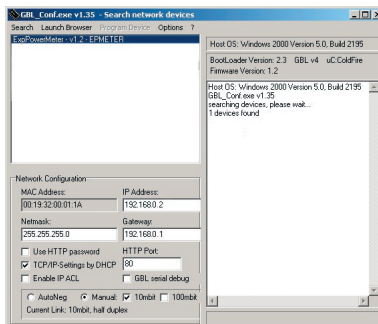

Figure 3 *Gbl_Conf.exe*

3.3 Configuration by Webinterface

Go to the website of **EPC NET 2x6**. Enter the IP address of **EPC NET 2x6** into the address line of your internet browser:

*http://"IP address of **EPC NET 2x6**"/*

Expert Power Control NET 2x6

Expert Power Control NET 2x6

LOGIN

Figure 4 LOGIN

and press LOGIN.

To enter the configuration menu, click on „Configuration" on the upper left side of the screen.

Configuration - Power Ports

Label
A name with a maximum of 15 characters can be entered here for each Power Port.

After power-up switch
The Power Port's switching state after a power-on of **EPC NET 2x6** can be defined here (*on, off, remember last state*).
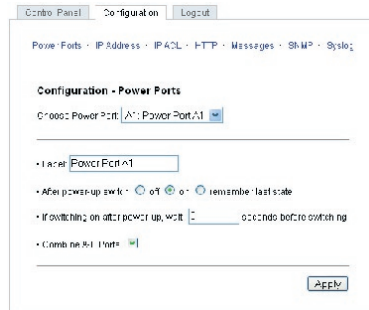

Figure 5 Configuration - Power Ports

If switching on after power-up, wait ...
A switching delay of a Power Port can be defined here that is applied after switch on of **EPC NET 2x6**. The delay can last up to 8191 seconds.

All Power Ports have a default delay of 1 second, to prevent current peaks. This Delay can not be disabled.

Combine A-B Ports
Here you can combine Power Ports. This means Power Ports of Source Bank A and its equivalent of Bank B (Example A2 - B2) switch synchronized.

Power Ports that are configured for combined switching are marked with a **C** in the Switching menu (figure 14) and the serial interface (figure 16).

Configuration - IP Address

Hostname

Enter the host name of **EPC NET 2x6**. **EPC NET 2x6** uses this name to connect with DHCP server.

Special signs may destabilize your network.

Figure 6 Configuration - IP Address

IP Address

Here you can change the IP address of **EPC NET 2x6**.

Netmask

Here you can change the netmask of **EPC NET 2x6**.

Gateway

Here you can change the standard gateway of **EPC NET 2x6**.

Use DHCP

Here you can set, if **EPC NET 2x6** shall get its TCP/IP settings directly from your DHCP server. If DHCP is activated, EPC NET 2x6 proves if a DHCP server is active inside of your LAN. Then EPC NET 2x6 requests TCP/IP settings from this server. If there is no DHCP server inside of your network, we recommend to de-
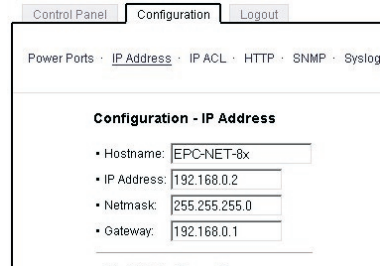
activate this function.

Configuration IP ACL

Reply ICMP-Ping requests
Here you can set, if **EPC NET 2x6** shell react on pings.

Enable IP Filter
Here you can activate the IP Access Control List (IP ACL) of **EPC NET 2x6**.

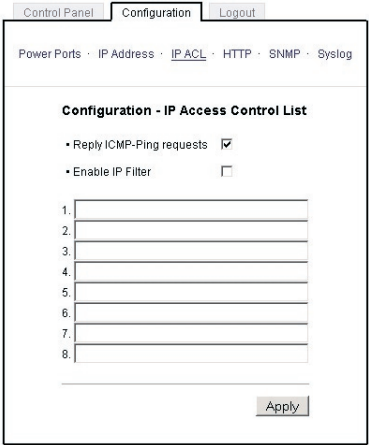**If IP ACL is active, DHCP and SNMP only work, if all necessary servers and cli-**

Figure 7 Configuration IP ACL

ents are registered in this List.

Configuration - HTTP

HTTP Port
Here you can enter hte HTTP port number, if necessary. Possible numbers are 1 ... 65534 (standard: 80). To get access to EPC NET 2x6, you have to enter the port number behind the IP address of **EPC NET 2x6**:
http://192.168.0.2:1720

Figure 8 Configuration - HTTP

Require HTTP Password
Password protected access can be activated here. In this case, a user and an admin password have to be defined. Passwords have a maximum lengths of 15 characters.

Administrators are authorized to switch all ports and to modify the settings of **EPC NET 2x6** and of all ports. The username of the admin is *"admin"*.

Users are authorized to switch all ports but are not allowed to modify the settings of neither **EPC NET 2x6** nor the ports. The username of the user is *"user"*.

If you have forgotten your password, activate the bootloader mode of EPC NET 2x6, start GBL-Conf.exe and deactivate the password request.

All changes need a restart of the firmware to get valid.

Configuration - Messages
Here you can configure if and at which Min-/Max-Tempera-

Figure 9: Configuration - Messages

ture EPC NET 2x6 shell send temperature alerts via SNMP-Traps and Syslog.

Configuration - SNMP

Enable SNMP-get
Here you can activate SNMP-get protocol of **EPC NET 2x6**.

SNMP public community
Here you can enter the SNMP public community.

Figure 10 Configuration - SNMP

Enable SNMP-set
Here you can activate SNMP-set protocol of **EPC NET 2x6**.

SNMP private community
Here you can enter the SNMP private community.

Download SNMP-MIB
Here you can download the MIBs of **EPC NET 2x6**.

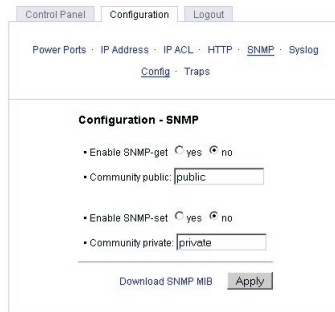## Configuration - SNMP Trap Receiver List

Enable Traps
Here you can activate SNMP-traps. if enabled, EPC NET 2x6 will dispatch SNMP-traps to all receivers listed. Receivers have to be listed as follows: IP address (and, if necessary the HTTP port) e.g.: *192.168.0.2:8000*

Trap Version
Here you can choose between SNMP-traps standard 1 and 2c.

Use SNMP only if your network is fitted for.

More information about the SNMP functions of **EPC NET 2x6**, you can find in chapter 3.5, on *http://www.gude.info/wiki* or ask our support team.

Configuration - Syslog

Use Syslog
Here you can activate Syslog of **EPC NET 2x6**.

Figure 11 Configuration Syslog

Syslog Server IP
If syslog is active enter here the IP address of you Syslog server.

Syslog Port
If syslog is active enter here the port number, that your Syslog server uses to receive syslog information.

More information about Syslog you can find in chapter 3.6, on *http://www.gude.info/wiki* or ask our support team.

3.4 IP Access Control List

IP Access Control List (IP ACL) acts as an IP filter for your **EPC**

NET 2x6. Wether it is active hosts and subnets only can contact **EPC NET 2x6**, if their IP adresses are stated in this IP ACL.
e.g.: „*http://192.168.0.1*" or „*http://192.168.0.1/24*"

If you locked yourself out by mistake, please activate the boot-loader mode of **EPC NET 2x6**, start *Gbl_Conf.exe* and deacti-vate IP ACL.

You can find more information about configuration of IP ACL in chapter 3.3 or have a look at *http://www.gude.info/wiki*.

3.5 SNMP

To get detailed status information of **EPC NET 2x6** SNMP can be used. SNMP communicates via UDP (port 161) with **EPC NET 2x6**: You can use SNMP to switch the power ports as well.

Supported SNMP commands:
- SNMPGET: request status information
- SNMPGETNEXT: request the next status information
- SNMPSET :   **EPC NET 2x6** request change of sta-tus

You will need a Network Management System, e.g. HP-Open View, OpenNMS, Nagios etc., or the command line tools of NET-SNMP to request information of **EPC NET 2x6** via SNMP.

SNMP Communities

SNMP authentifies requests by so called communities.
The public community has to be added to SNMP-read-requests and the private community to SNMP write requests. You can see the SNMP communites like read/write passwords. SNMP v1 and v2 transmit the communities without encryption. Therefore it is simple to spy out these communities. We recommend to use a DMZ or IP ACL.

MIBs

All information, that can be requested or changed, the so called „Managed Objects", are described in „Management Information Bases" (MIBs).

There are three MIBs, which can be requested from **EPC NET 2x6**:
„system", „interface" and „powerports"
„system" and „interface" are standardised MIBs (MIB-II).
„powerports" (GUDEADS-EPC-MIB::gadsEPC) was created especially for **EPC NET 2x6**.
At least, there are so called Object Identifiers (OID) subordinated to those three structures. An OID describes the location of an information inside a MIB.

SNMP-Traps

SNMP-Traps are system messages, sent via SNMP-protocol to different clients. On following events, Expert Power Control NET 2x6 will dispatch a SNMP-Trap:

- Switching of the Power Ports

You can find more information about configuration of SNMP in Chapter 3.3 or have a look at *http://www.gude.info/wiki*.

3.6 Syslog

Syslog messages are simple text messages transmitted to a syslog server using UDP.
Linux OS regularly have a syslog daemon installed, e.g. syslog-ng. For Windows there are some freeware tools available.

On following events, **EPC NET 2x6** will send a syslog message:
- Booting up
- Activation/deactivation of syslog
- Switching of Power Ports

You can find more information about configuration of Syslog in chapter 3.3 or have a look at *http://www.gude.info/wiki*.

4. Switching

4.1 Switching at the device

EPC NET 2x6 disposes of two buttons: *"select"* and *"ok"*. By pushing *"select"*, the LED of Power Port 1 starts blinking which means that it is selected. By pushing the button again, the next Power Port is selected. If you want to change the switching state of the selected Power Port, push the *"ok"* button for two seconds.
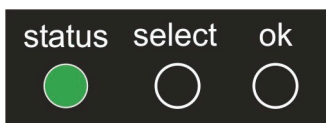
Figure 12 Buttons

You can check the status of the Power Ports by the color of the Power Port status LED (green=enabled/red=disabled).

4.2 Switching by Webinterface

Go to the website of **EPC NET 2x6**. Enter the IP address of **EPC NET 2x6** into the address line of your internet browser:

*http://"IP address of **EPC NET 2x6**"/*

Figure 13 LOGIN

and press LOGIN

Switching

Here you are able to switch the ports directly.
You can check the status of the Power Ports by the color of the
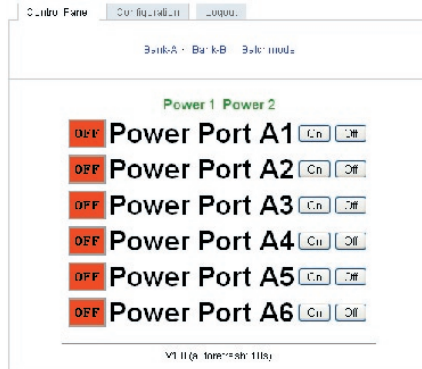
Figure 14 Switching

Power Port status LED (green=enabled/red=disabled).

Batchmode

Each Power Port of **EPC NET 2x6** can be switched on or switched off for a selectable delay (1-30 sec. or 1-30 min.). After the chosen delay the selected port will be switched off or switched on again auto-matically.

Optionally the device can be accessed by using the pearl script *„EPC_Control.pl"* through the command line (e.g. for automatic or time-triggered switching).

For more information please refer to our website:
www.gude.info/wiki

4.3 Switching via Serial Interface

Alternatively to the Ethernet interface, the Power Ports of **EPC NET 2x6** can be switched through its serial interface. It only requires a terminal program like HyperTerminal, a program provided under Windows for free (to be found under *Programs→ Accessories→Communication*).

Connect your PC with **EPC NET 2x6** by a 9-pole serial cable (RS232) and plug the device into a outlet. Now you can turn on **EPC NET 2x6**. The boot process lasts a few seconds longer than by Ethernet.

You can access **EPC NET 2x6** through the terminal program as soon as the status LED shines green. Choose the COM port that is connected to **EPC NET 2x6** and enter the following values for the serial interface:

Bits per second:	115200
Data bits:	8
Parity:	no
Stop bits:	1
Flow control:	no

If you do not use *HyperTerminal*, please make sure that the terminal program supports VT100 commands.

After having it connected successfully, **EPC NET 2x6** answers as shown in figure 15. Press *Enter* for login.

Figure 15 Login RS232

Now the Power Ports can be switched on and off per number keys. By pressing *c* you can check the network configuration and by pressing *Esc* you can log out (*see Figure16*).

```
Expert Power Control NET 2x6 v1.0

  <1> OFF -  Power Port A1
  <2> OFF -  Power Port A2
  <3> OFF -  Power Port A3
  <4> OFF -  Power Port A4
  <5> OFF -  Power Port A5
  <6> OFF -  Power Port A6
  <7> OFF -  Power Port B1
  <8> OFF -  Power Port B2
  <9> OFF -  Power Port B3
  <A> OFF -  Power Port B4
  <B> OFF -  Power Port B5
  <C> OFF -  Power Port B6

press <1>..<C> to toggle port 1..12
press <z>   for configuration menu
press <ESC> to logout
```

Figure 16 Switching RS232

4.4 Temperature sensor

Connect the temperature sensor with the TEMP connector at the front of the device. If it is connected exactly, the recent temperature is displayed in the login window (Figure 4 and 13), in the switching window (Figure 14) and can be requested via SNMP.
The temperature sensor can be ordered as additional supplies. More information can be found at *www.gude.info* or requested at *mail@gude.info*.

Figure 17 Temperature sensor

5. Features

5.1 Bootloader mode

To activate the bootloader mode of **EPC NET 2x6** the buttons *"select"* and *"ok" (see Figure 12)* at the front must be pushed for three seconds. In bootloader mode it is possible to disable the password protection, to update the firmware and to restore the default settings by running the program *GBL_Conf.exe*.

The bootloader mode of **EPC NET 2x6** is indicated by *"BOOT-LDR"* appended to the device name in the program window of *GBL_Conf.exe* and by the alternately red and green blinking status led.

During bootloader mode an alteration of the switching state of a port is not possible.

To deactivate the bootloader mode press the buttons *"select"* and *"ok"* again for three seconds.

5.2 Firmware update

In order to update the firmware the program *GBL_Conf.exe* and the latest firmware are needed.

Activate the bootloader mode of **EPC NET 2x6** (*see 4.1*) and run the program *GBL_Conf.exe*. On the left side of the program window all **EPC NET 2x6** that are in the network are listed. Select the one, that should be updated, click on *Program Device→Firmware Update* and determine the location of the new firmware.
To activate the new firmware, you have to deactivate the bootloader mode of **EPC NET 2x6**.

5.3. Technical information

Connections:	1 x Ethernet (RJ45)
	1 x Serial Interface (D-SUB, RS232)
	8 x Power Ports (IEC C13, max. 10A)
	1 x Power supply inlet (IEC C20, max. 16A)
Network connection:	10 MBit 10baseT Ethernet
Protocols:	TCP/IP, HTTP, SNMP, Syslog
Voltage:	230 V
Operating temperatur:	0°C-50°C
Dimensions:	19" / 1 rack unit
Weight:	2,3 kg

5.4. Default settings

In order to restore the default settings **EPC NET 2x6** must be started in bootloader mode (*see 5.1*). Besides that the program *GBL_Conf.exe* is required.

Default settings EPC NET 2x6

Name:	EPC-NET-2x6
IP address:	192.168.0.2
Netmask:	255.255.255.0
Gateway:	192.168.0.0
DHCP:	enabled
Password:	disabled
HTTP Port:	80
IP ACL:	disabled

Power Port 1-8

Name:	Power Port A1 - B6
After restart:	disabled

Run *GBL_Conf.exe* and select the **EPC NET 2x6** whose settings should be restored. Then click on *Program Device→Reset to Fab default*.

Please notice that all current settings will be deleted. The default settings will be loaded when **EPC NET 2x6** is restarted the next time.

6. Support

More information, current drivers and software can be found on *http://www.gude.info*.

In case of further questions, about installation or operation of **EPC NET 2x6**, please have look at *www.gude.info/wiki* or do not hesitate to contact our support (*mail@gude.info*).

Hereby we confirm, that **Expert Power Control NET 2x6** is compliant to 2002/95/EC of the European Community.

	Konformitätserklärung / Declaration of Conformity	CE

Die Firma / The manufacturer

	Gude Analog- und Digitalsysteme GmbH		
Anschrift/Address:	Eintrachtstr. 113, 50668 Köln		
Telefon/Phone:	0221 – 912 90 97	**Fax:**	0221 – 912 90 98
Web:	www.gude.info	**Mail:**	mail@gude.info

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

Produktkennzeichnung / Product name

Expert Power Control NET und/and **Expert Power Control NET IEC** und/and **Expert Power Control NET 4x** und/and **Expert Power Control NET 8x** und/and **Expert Power Control NET 2x6** und/and **Expert Power Control NET 24x**

Schaltbare Ein- bzw. Mehrfach-Steckdose für TCP/IP Netzwerke / Switchable single and multiple socket for TCP/IP networks

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

Referenz-Nummer / Reference no.	**Titel / Title**
89/336/EWG / 89/336/EEC	Elektromagnetische Verträglichkeit / Electromagnetic Compatibility
2006/95/EWG / 2006/95/EEC	Niederspannungsrichtlinie / Low Voltage Electrical Equipment
93/68/EWG / 93/68/EEC	CE Kennzeichnung / CE marking

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

Norm / Standard	**Titel / Title**
EN 55022:2006 + A1, A2	Einrichtungen der Informationstechnik: Funkstöreigenschaften – Grenzwerte und Messverfahren
EN 55022:2006 + A1, A2	Information technology equipment: Radio disturbance characteristics - Limits and methods of measurement
EN 55024:1998 + A1, A2	Einrichtungen der Informationstechnik: Störfestigkeitseigenschaften – Grenzwerte und Prüfverfahren
EN 55024:1998 + A1, A2	Information technology equipment: Immunity characteristics - Limits and methods of measurement
EN 61000-3-2:2006	Elektromagnetische Verträglichkeit Teil 3-2: Grenzwerte - Grenzwerte für Oberschwingungsströme
EN 61000-3-2:2006	Electromagnetic compatibility Part 3-2 : Limits – Limits for harmonic current emissions
EN 60950-1:2006	Sicherheit von Einrichtungen der Informationstechnik
EN 60950-1:2006	Safety for Industrial Control Equipment

Köln, 30.06.2008

GUDE
ANALOG – und
DIGITALSYSTEME
GmbH
Eintrachtstr. 113, 50668 Köln
Tel.: 0221 / 912 90 97
Fax: 0221 / 912 90 98
www.gude.info - info@gude.info

Dr. Michael Gude, Geschäftsführer / CEO

CONTACT

Gude Analog- und Digitalsysteme GmbH
Eintrachtstrasse 113
50668 Koeln

Tel.: +49-221-912 90 97
Fax: +49-221-912 90 98

E-Mail: mail@Gude.info
Web: www.Gude.info