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Manual

LXL Series:
AK-Dinrail-LXL
ATTO-LXL

Content

Setup

Access via Network

The devices from AK-Nord are delivered from the factory with the DHCP setting activated. I.e. you need a started DHCP server in your network, so that a LXL device gets a valid IP from this server.

To determine which IP address the device has received, please install the XTAdminXXL tool from AK-Nord. You can find this on our website www.ak-nord.de in the download area.

If you do not want to install the XTAdminXXL tool, you can alternatively look up the assigned IP address in the logs of the DHCP server using the MAC address of the device.

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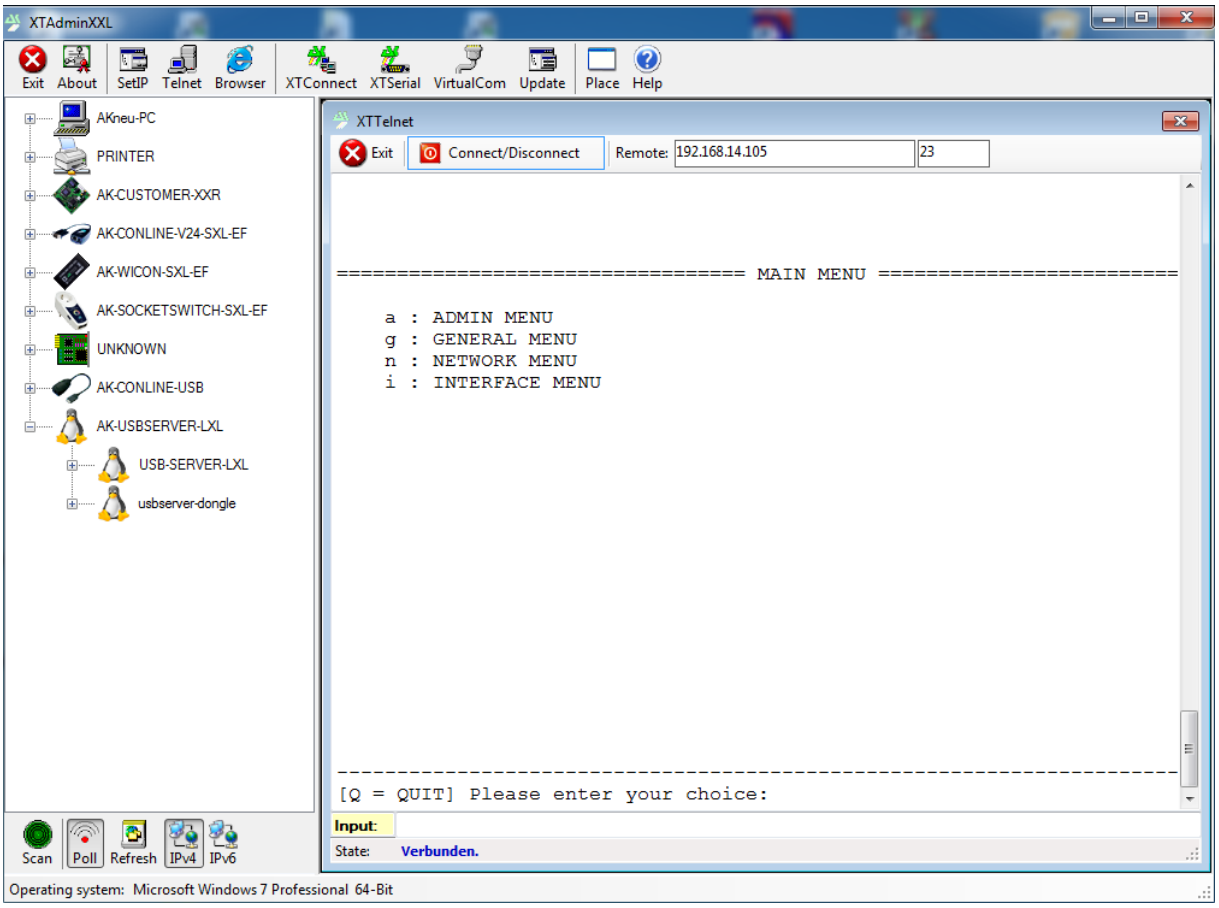


Once you know the assigned IP address of the device, you can configure it via Telnet menu (port 23).
For this purpose please use the Telnet window in our XTAdminXXL tool or one of the other Telnet programs like e.g. PuTTY.
For devices without root access, you can log in with the user admin. The default password for this is ak-nord. For root image, the default password for user root is xt. As soon as you are logged in to the device via ssh, you can access the configuration menu using the telnet localhost command.

Access via debug console (UART):

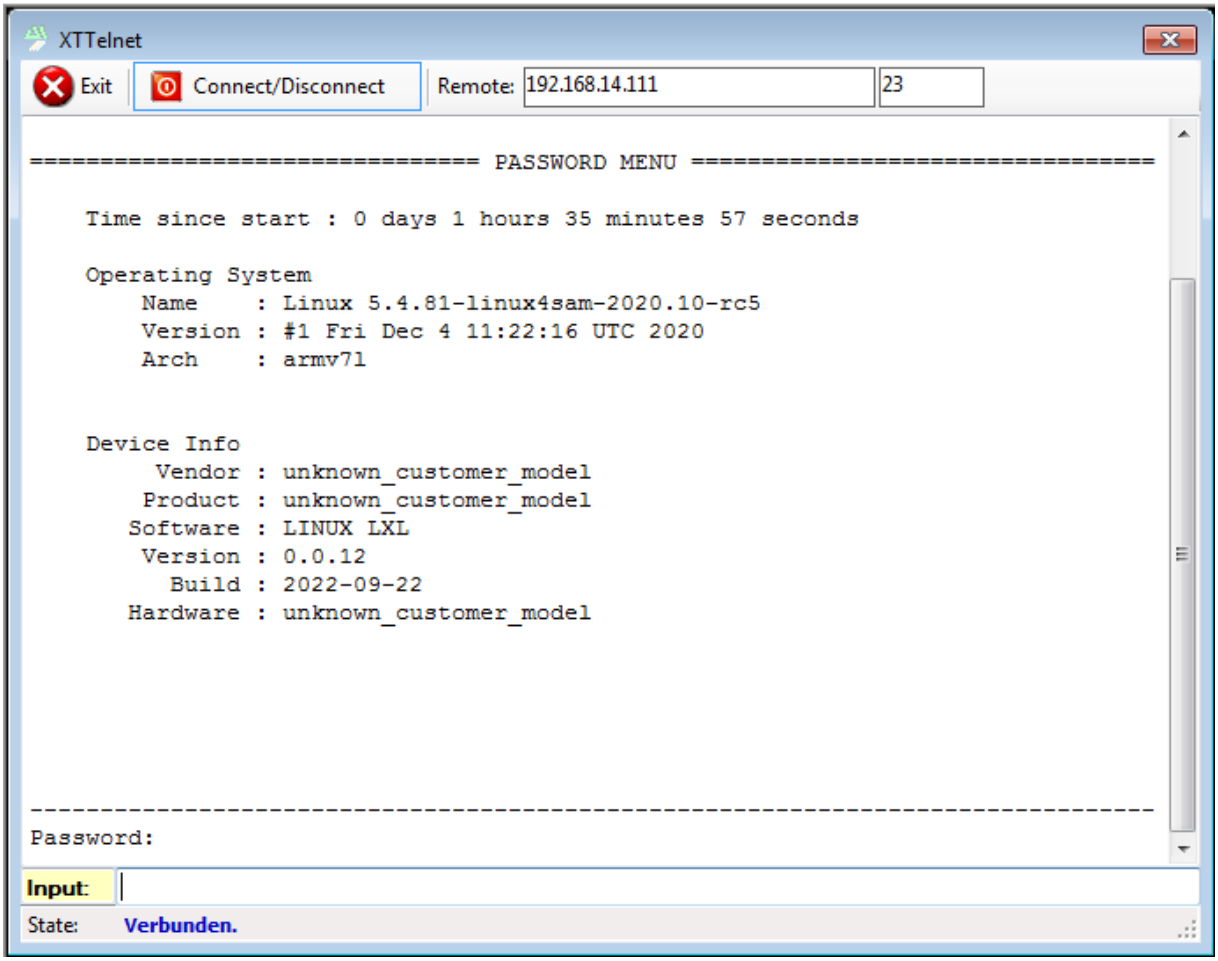
Devices such as SER2USB-LXL (without WLAN) do not have a network interface, but you can use a USB-C cable to connect the device to be configured to a PC via USB and use a programme such as putty to establish a connection via the serial interface. As soon as the SER2USB device is connected to the Windows PC, a new COM port appears in the Windows device manager. You will need the COM number assigned by Windows, e.g. COM10, to establish the connection. Then set the following connection parameters in putty (or another programme for serial communication):

COM no. e.g. COM10 (this can be found in the Windows device manager)
Baud rate: 115200
Data bits: 8
Parity: N
Stop bits: 1
Flow control: N

As soon as the connection is established, you will see the login prompt and can log in with the same users as for ssh access, see previous chapter. After successfully logging in, you can access the configuration menu via the telnet localhost command.

Telnet-Configuration

The first thing you will see is the password window. The default password is **xt**. For security reasons, you should change this password during the initial configuration.



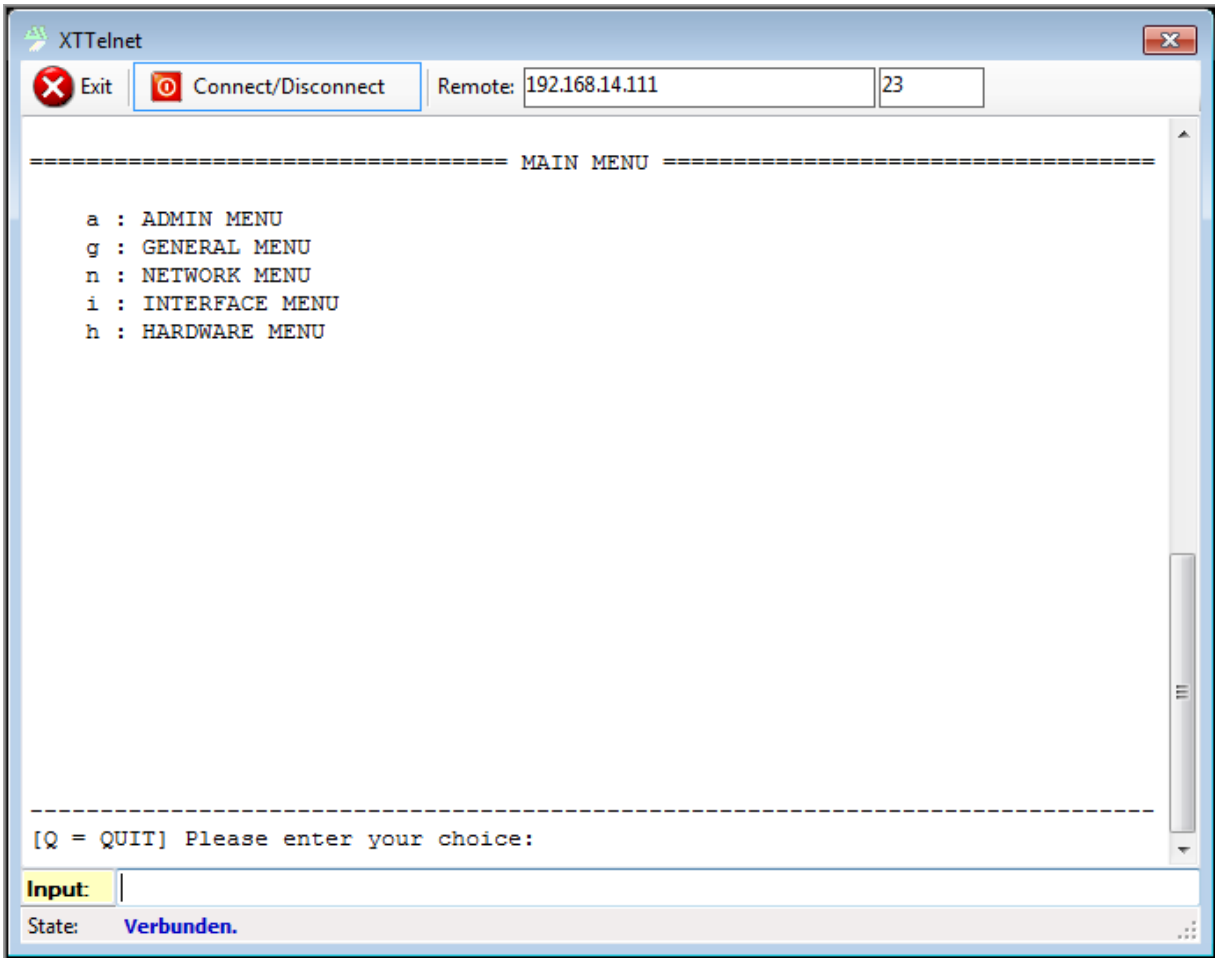
After entering the password correctly, you will get to the main menu. Navigation through the Telnet menu is very simple. You have a menu item ID in front of each menu item. This is usually a letter or a number like "a" for the "ADMIN MENU" or "1" for the hostname:

a : ADMIN MENU"
1 : Hostname = USB-SERVER-LXL

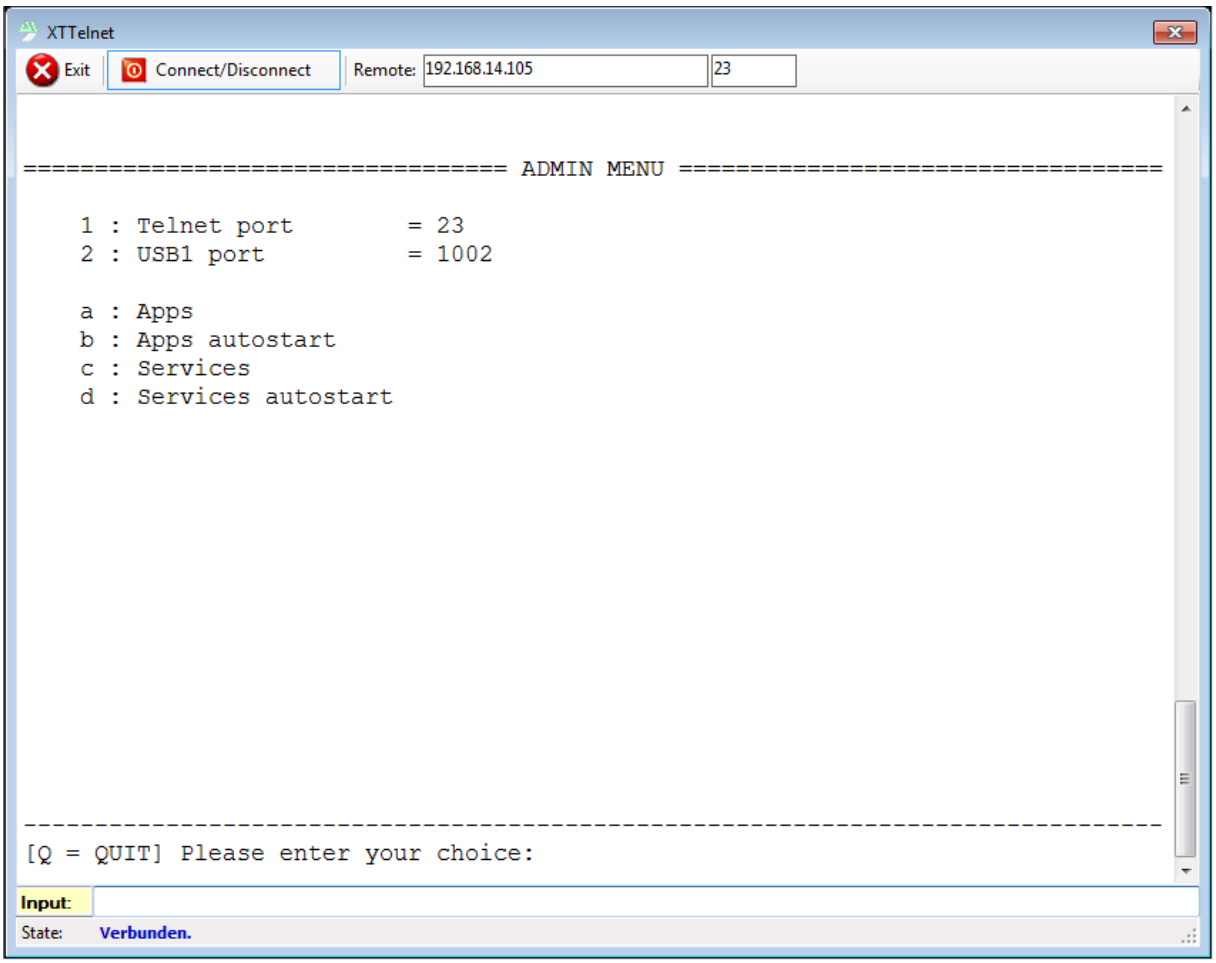
Enter "a" to call up the ADMIN MENU. Press "q" to close the current menu and return to the previous menu. Entering "q" in the MAIN MENU terminates the Telnet connection to the device. To change a configuration value, you must enter the <menu item ID>=<new value>. For the host name, for example, it would look like this:

1=usbserver_webcam

MAIN MENU:


XTTelnet
Exit
Connect/Disconnect
Remote:
192.168.14.111
23
========== MAIN MENU ==========
a : ADMIN MENU
g : GENERAL MENU
n : NETWORK MENU
i : INTERFACE MENU
h : HARDWARE MENU
[Q = QUIT] Please enter your choice:
Input:
State:
Verbunden.

ADMIN MENU:



1 : Telnet port
Here you can configure the port for network access. Default is 23.

2 : USB1 port
Here you can define the TCP/IP or UDP port that is allowed for the USB interface. Data can be received from or sent to USB via this port.

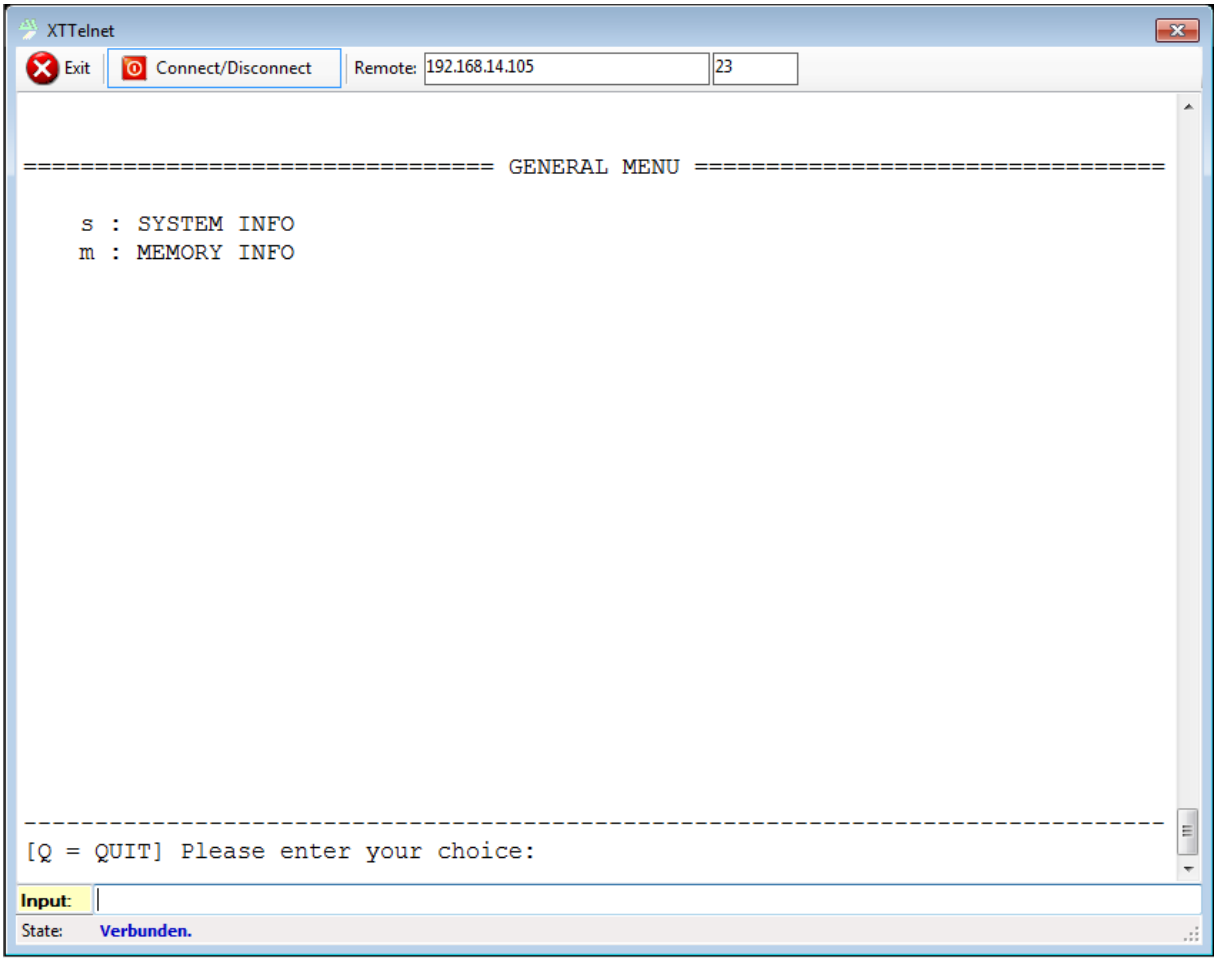
a : Apps
Here you can start or stop the AK-Nord programs.

b : Apps autostart
Configuration of Autostart when booting the AK-Nord programs.

c : Services
Here you can start or stop Linux services like e.g. NTP server.

d : Services autostart
Here you can configure the autostart of Linux services at boot time.

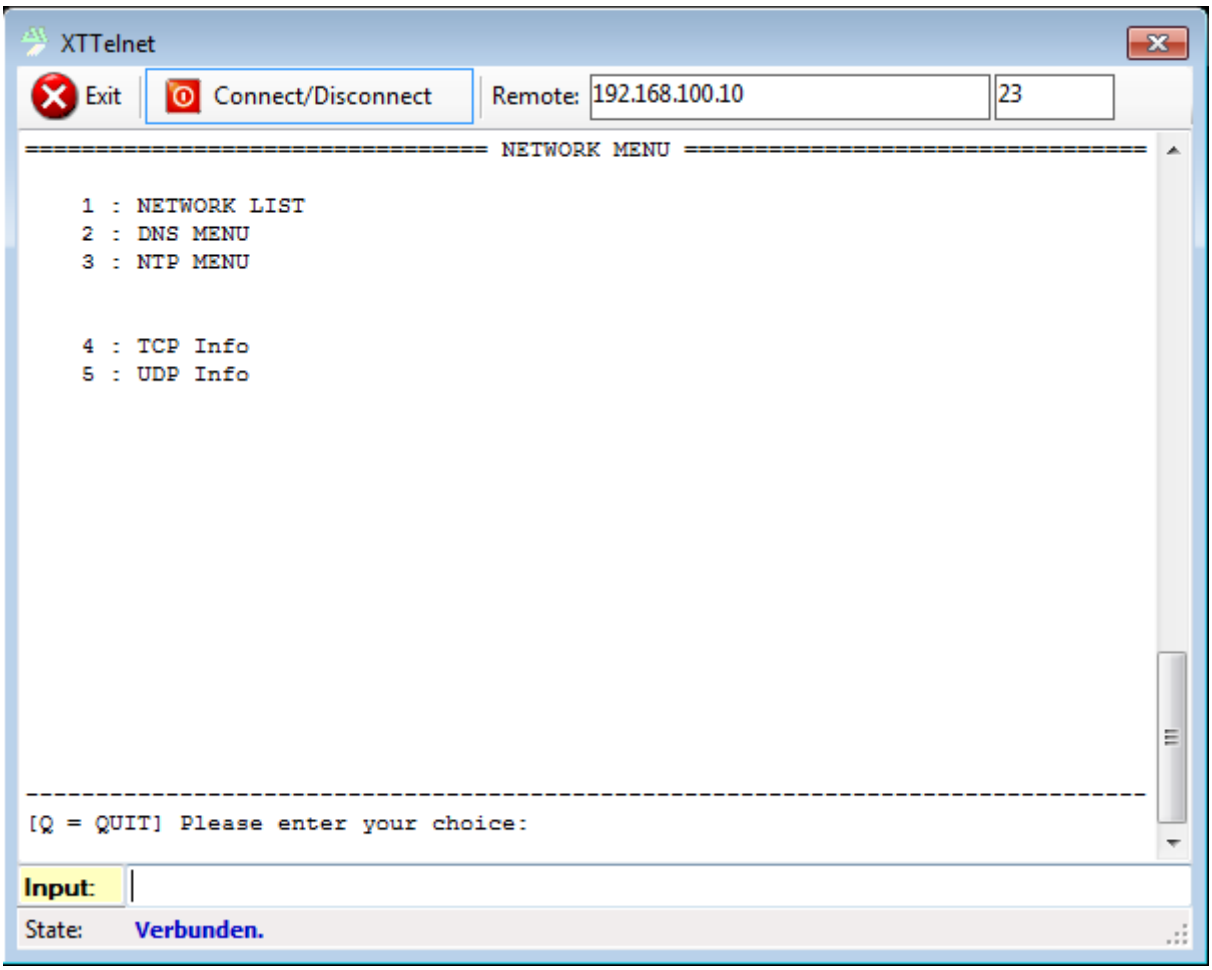
GENERAL MENU:



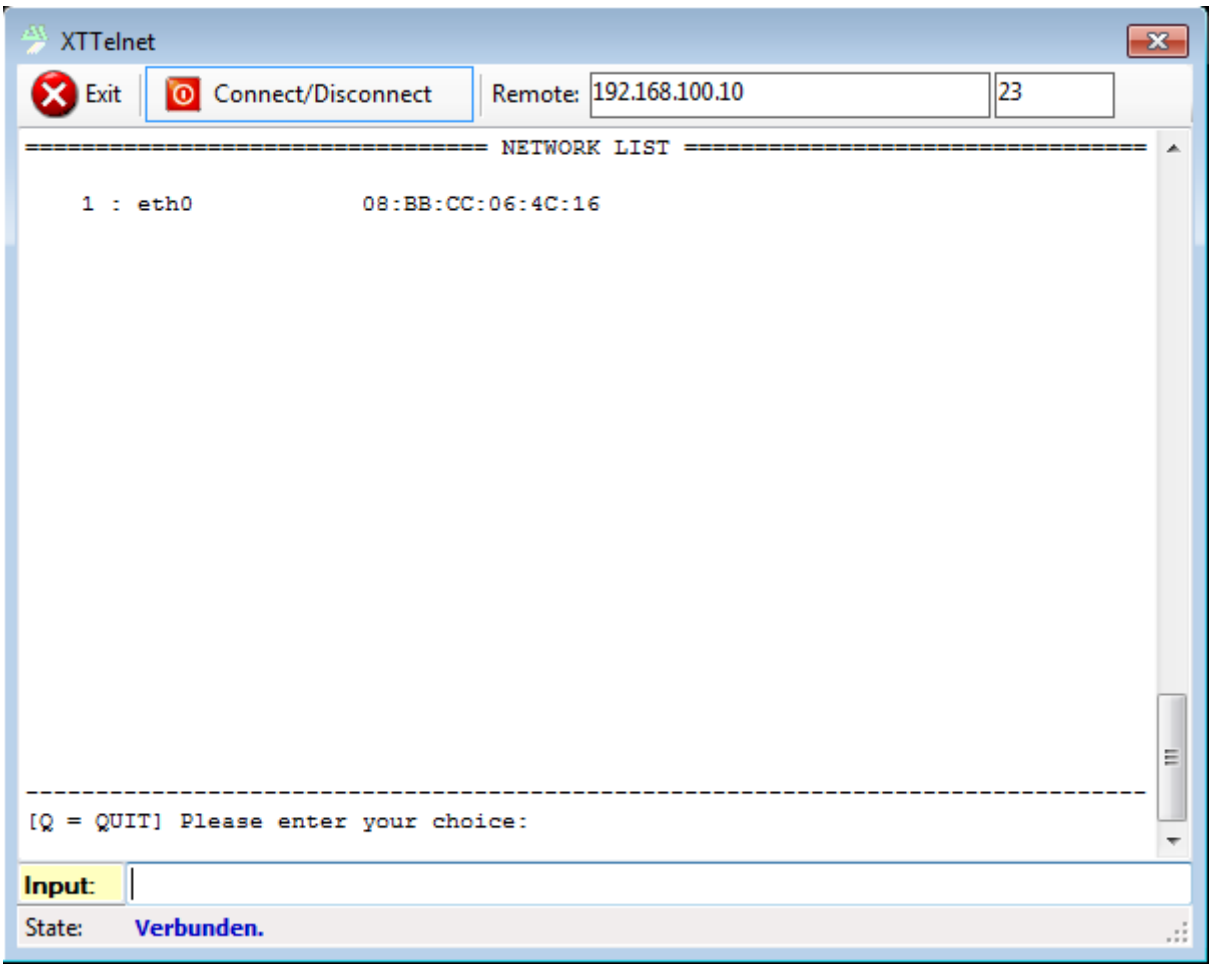
s : SYSTEM INFO
Here you can view the system information like Linux version, runtime etc..

m : MEMORY INFO
Here information about the consumption of the working memory is displayed.

NETWORK MENU:

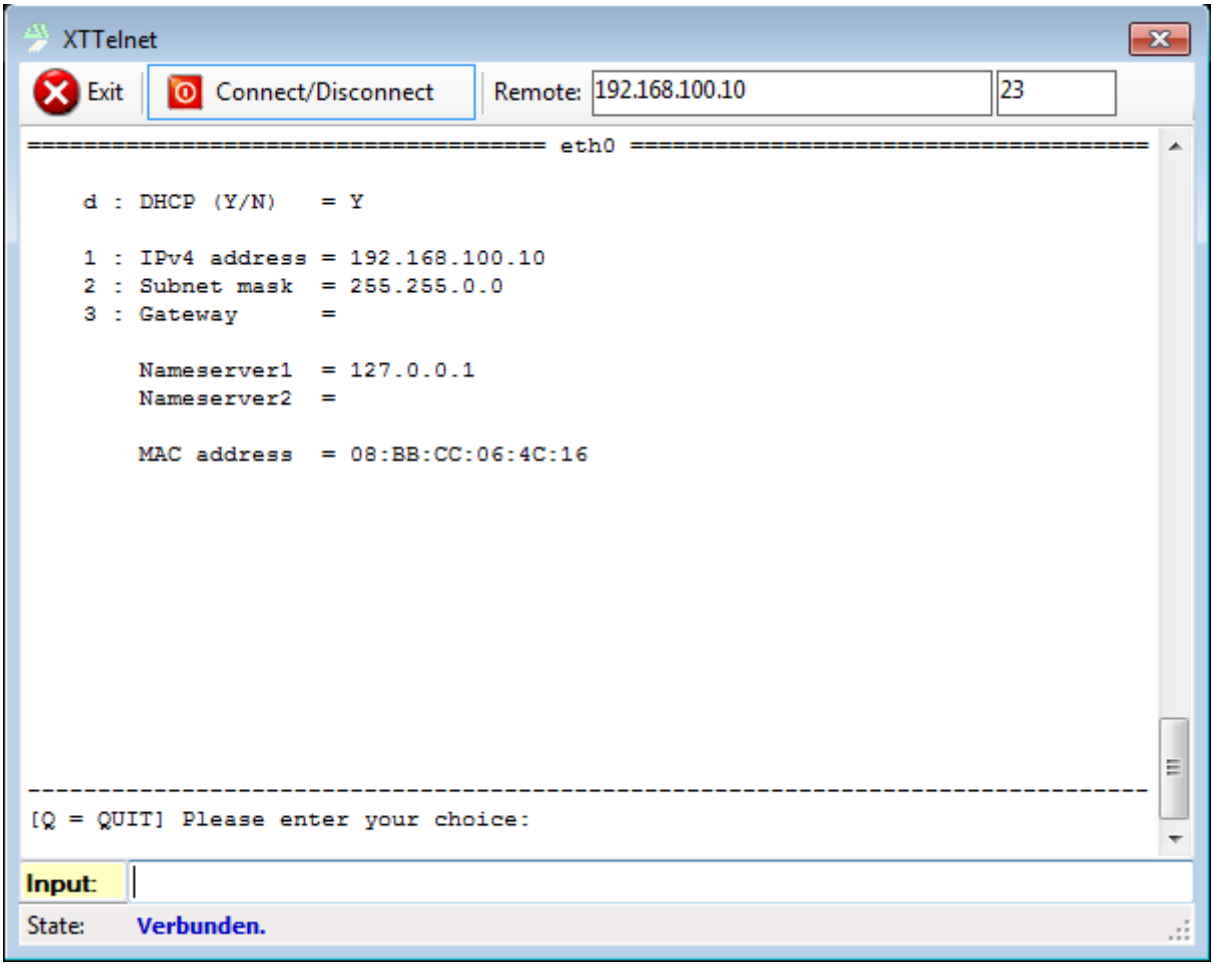


NETWORK LIST:



Here you can see the list of all available network cards.

NETWORK CARD CONFIGURATION:



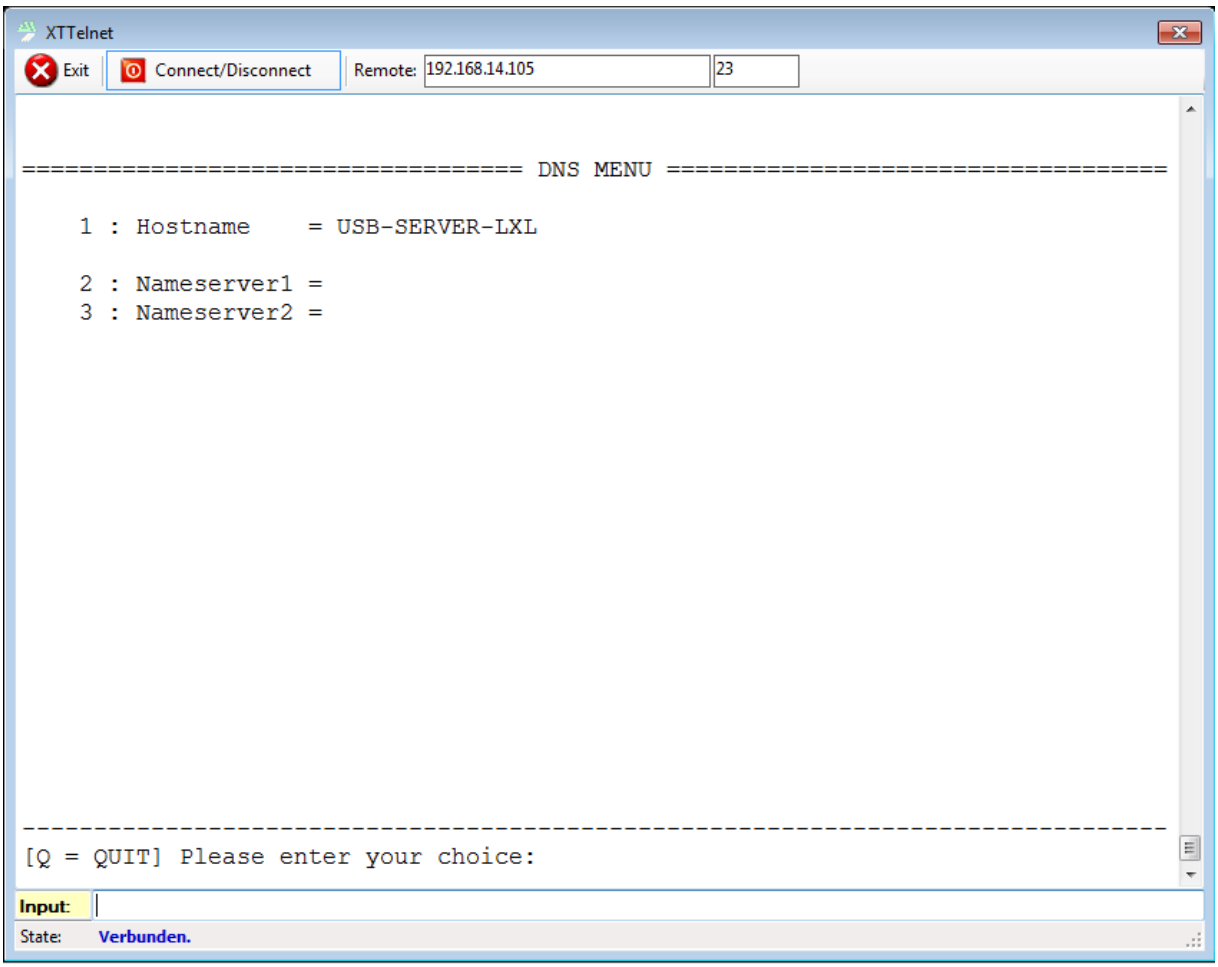
d : DHCP(Y/N)
Here you can configure whether the IP address should be obtained dynamically from a DHCP server or not.

1 : IPv4 address
If DHCP is active, the current IPv4 address of the device is displayed here. If DHCP is switched off, the fixed IP address for the device can be assigned here.

2 : Subnet mask
If DHCP is active, the network mask assigned by the DHCP server is displayed here. If DHCP is switched off, the network mask can be assigned manually here..

3 : Gateway
A gateway can be configured manually here if DHCP is off. When DHCP is enabled, the gateway assigned by the DHCP server is displayed here.

DNS MENU:

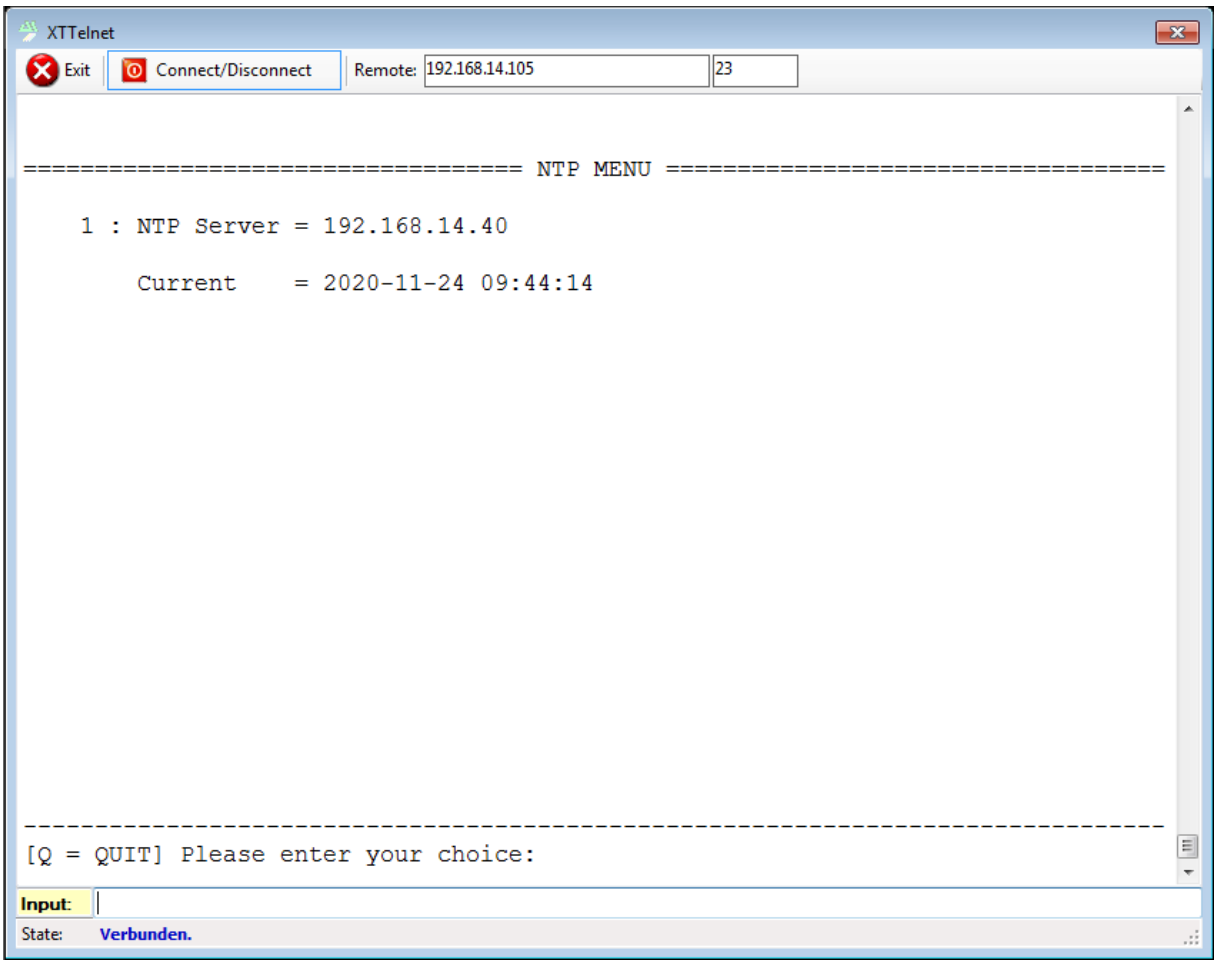


1 : Hostname
Here you can configure the host name of the device. The following characters are allowed: 0-9, A-z, minus sign and dot.

2 : Nameserver1
Here you can enter IP address of your 1st name server manually.

3 : Nameserver2
Here you can enter IP address of your 2nd name server manually.

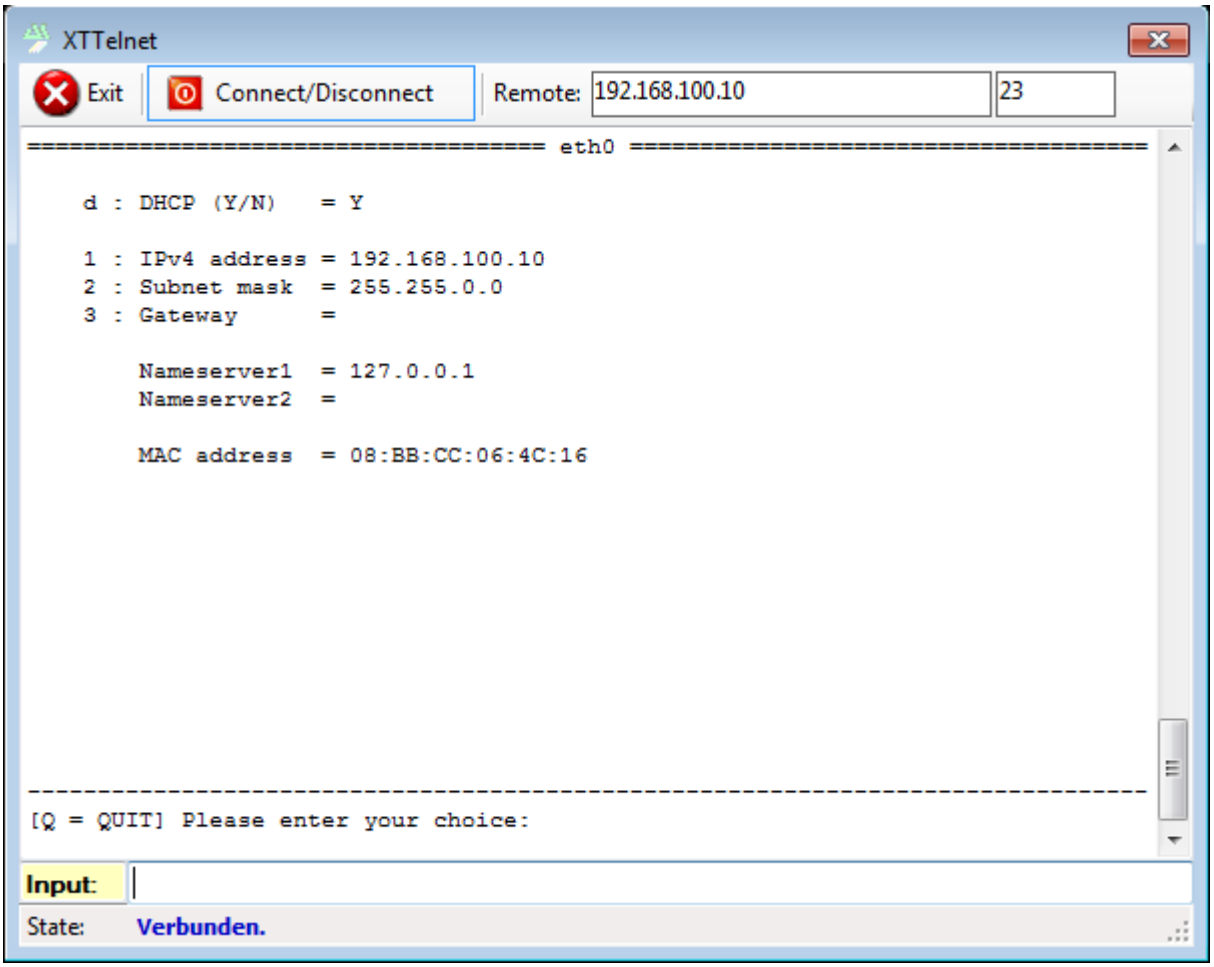
NTP MENU:



1 : NTP Server
Here you can enter the IP address or the hostname for the NTP server for time synchronization.

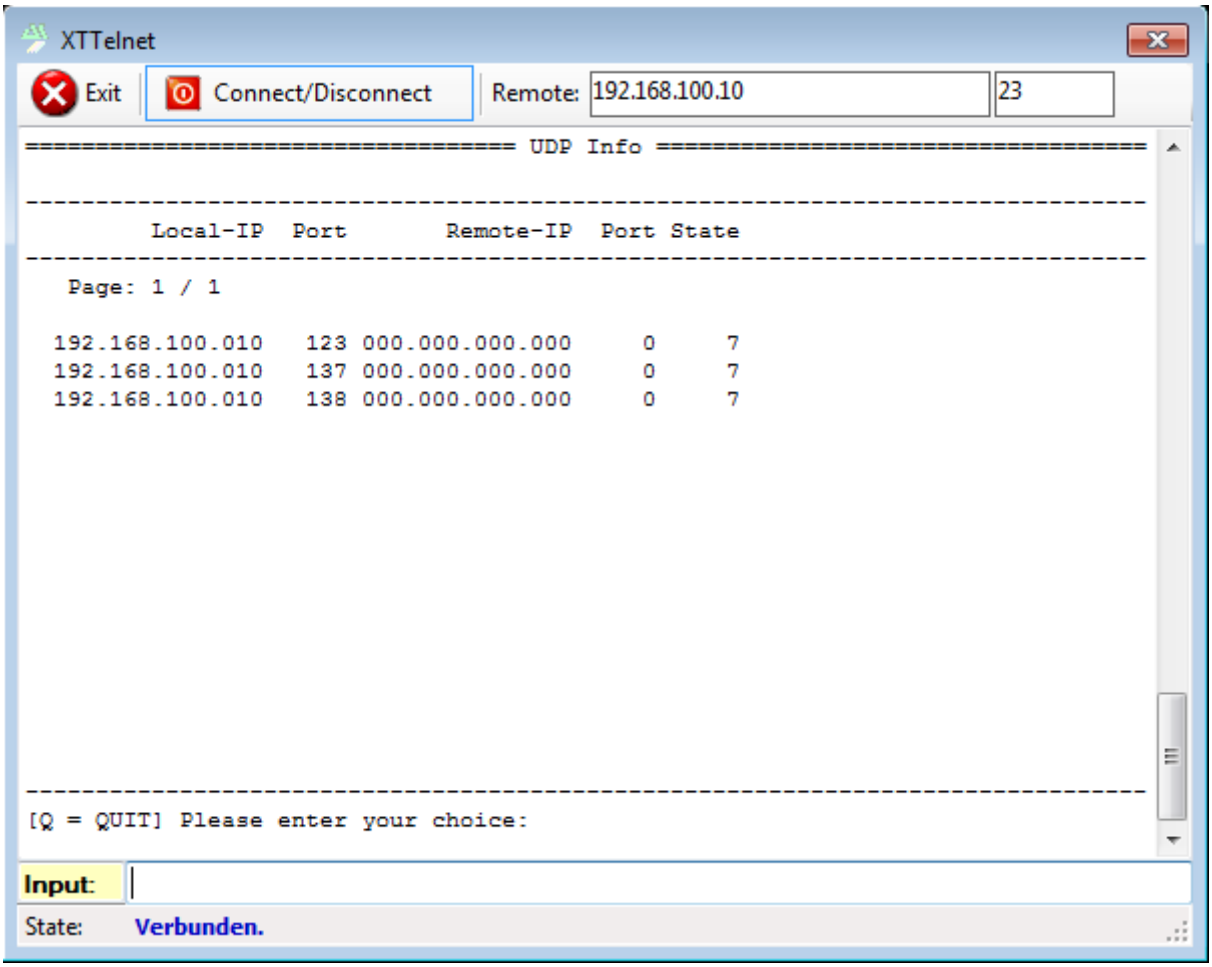
Current displays the current time on the device.

TCP INFO:



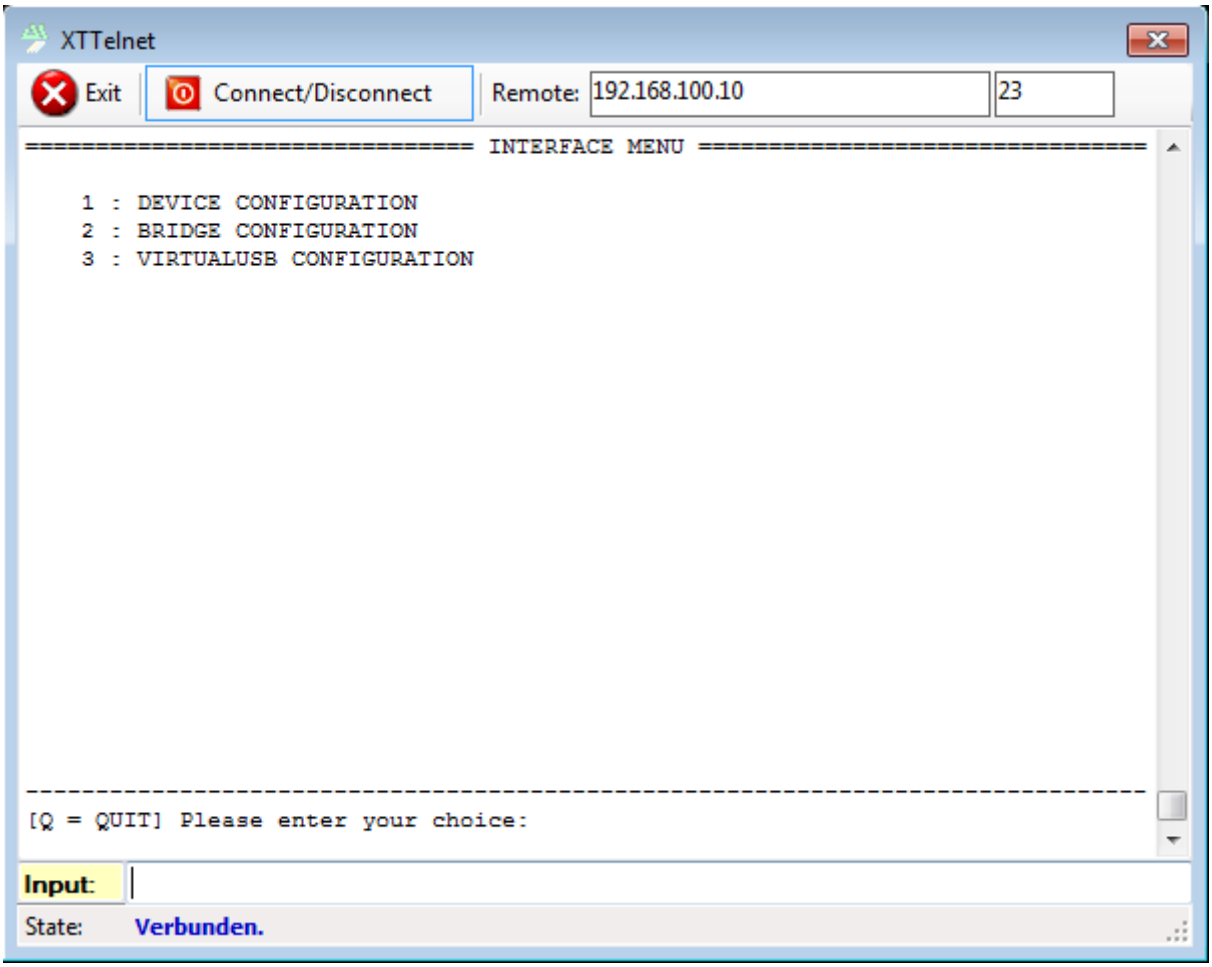
Here you can see an overview of all active network connections of the device via TCP.

UDP INFO:



Here you can see an overview of all active network connections of the device via UDP.

INTERFACE MENU:

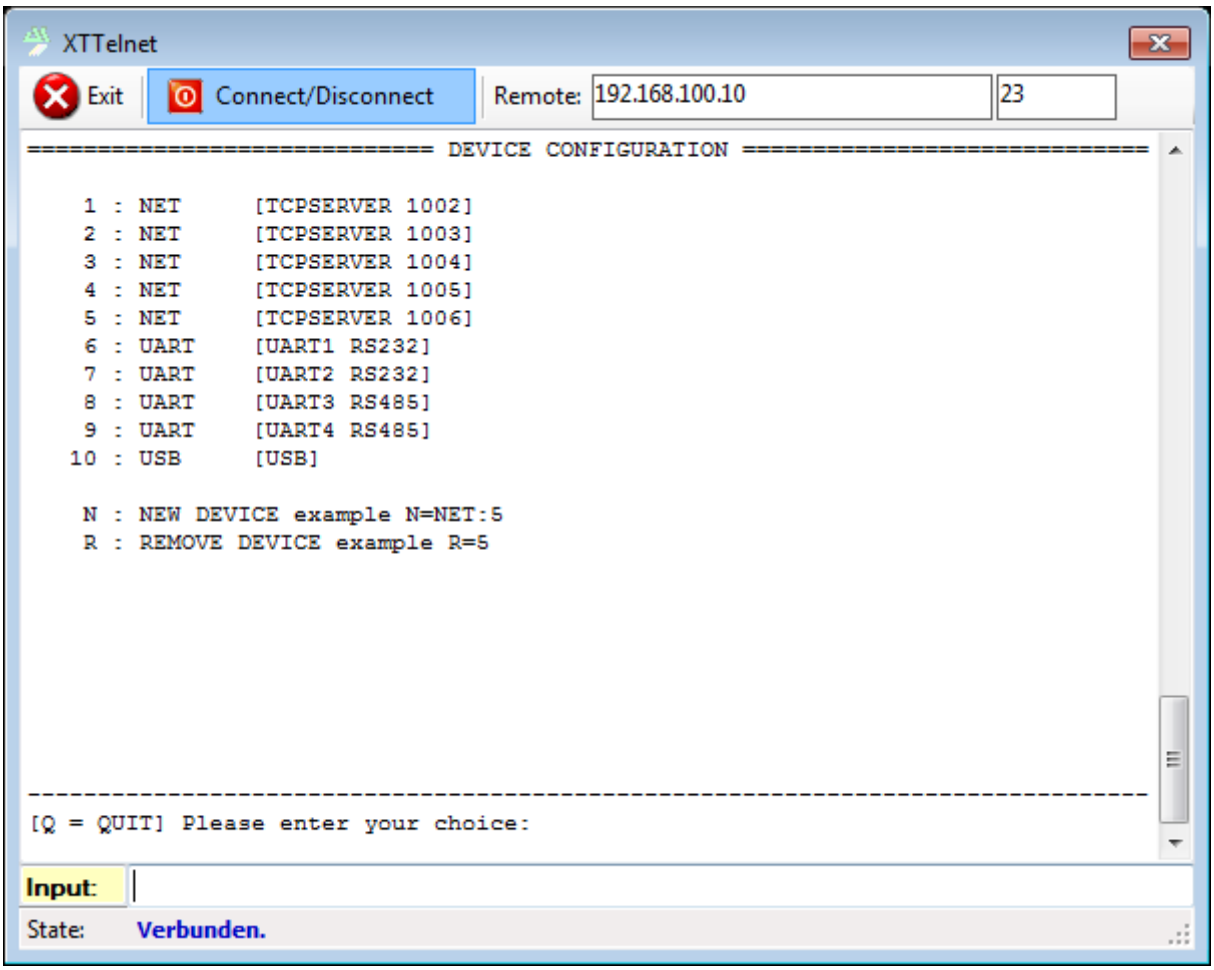


BRIDGE-Konzept:

AK-Nord's bridge concept offers you, the customer, the greatest possible flexibility. You can dynamically store up to 10 parallel bridge configurations. Each bridge configuration can link two DEVICE objects with each other and thus ensure bidirectional communication between the two objects. You can also link two devices of the same device type.

There are different device types that you can configure:
NET: network connection (TCPSERVER, TCPCLIENT, UDPSERVER, UDPCLIENT)
UART: RS232/RS485 serial device
USB: USB device of the following classes (CDC 0x02, printer 0x07, HID 0x03, CDC-Data 0x0a)
USBUART: USB2RS232 converter
FILE: File (only one direction: writing to the file)
TTLIO: Control of individual I/O pins
SPI: under development
I2C: under development

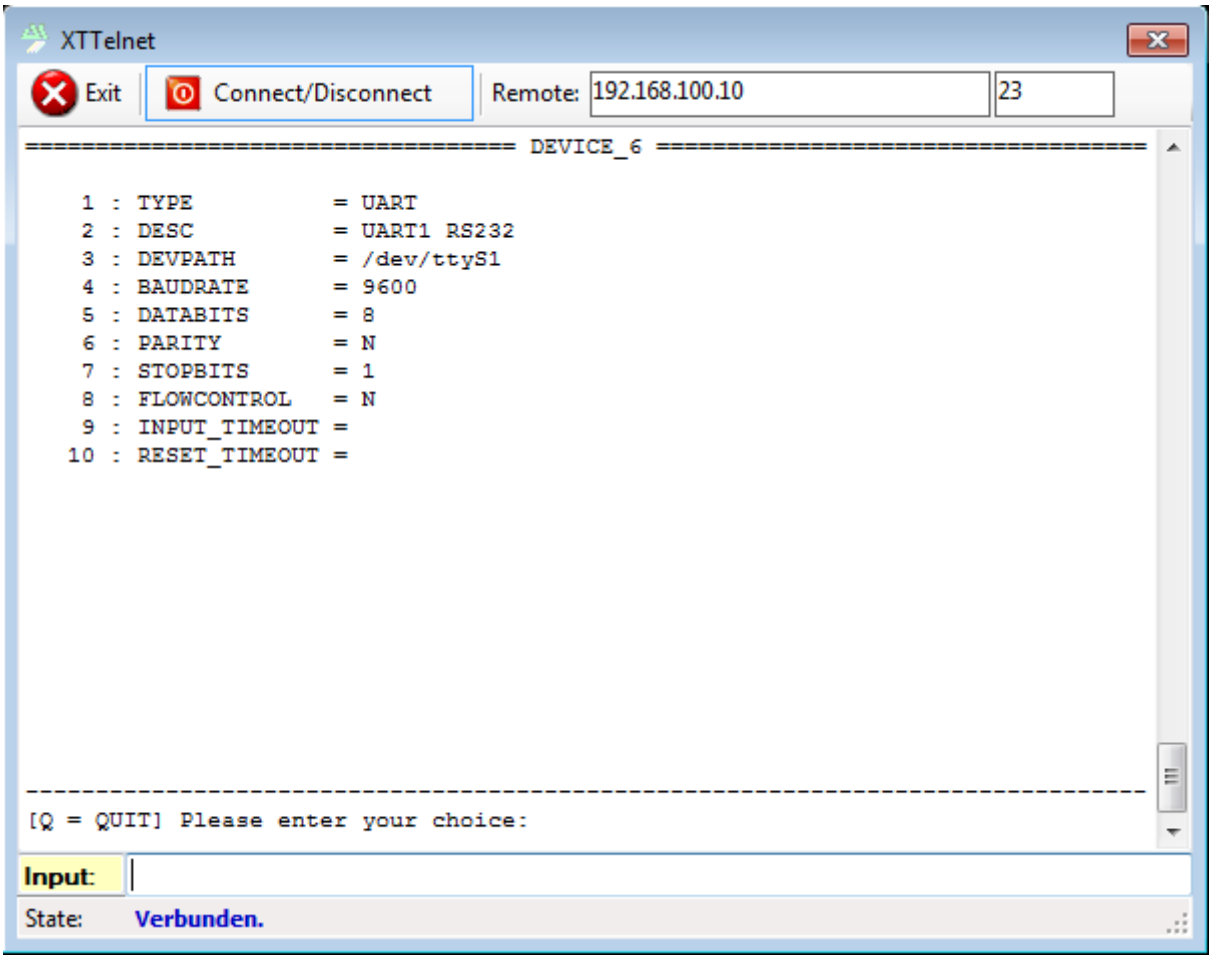
DEVICE CONFIGURATION:



N : NEW DEVICE
Here you can add a new device configuration. The type for the new device is mandatory so that suitable configuration parameters are added. If you enter N=UART, a new UART device is created with the next free DEVICE_ID.
Optionally, you can also specify a specific free ID. The input must then look like this: N=UART:11

R : REMOVE DEVICE
This allows you to delete a device configuration.

UART DEVICE Parameter:



1 : TYPE
Device type, the following values are permitted: NET, UART, USB, USBUART, TTLIO, SPI, I2C. Other types can be realised on request.
Note: If you change a configured type, all current settings are deleted, as each type requires its own configuration parameters.

2 : DESC
Description for this configuration.

3 : DEVPATH
UART device file under Linux, e.g. /dev/ttyS0 - /dev/ttyS5.

4 : BAUDRATE
Baudrate such as: 2400, 9600, 115200 etc.

5 : DATABITS
Possible values: 5,6,7,8.

6 : PARITY
O=Oven, E=Even.

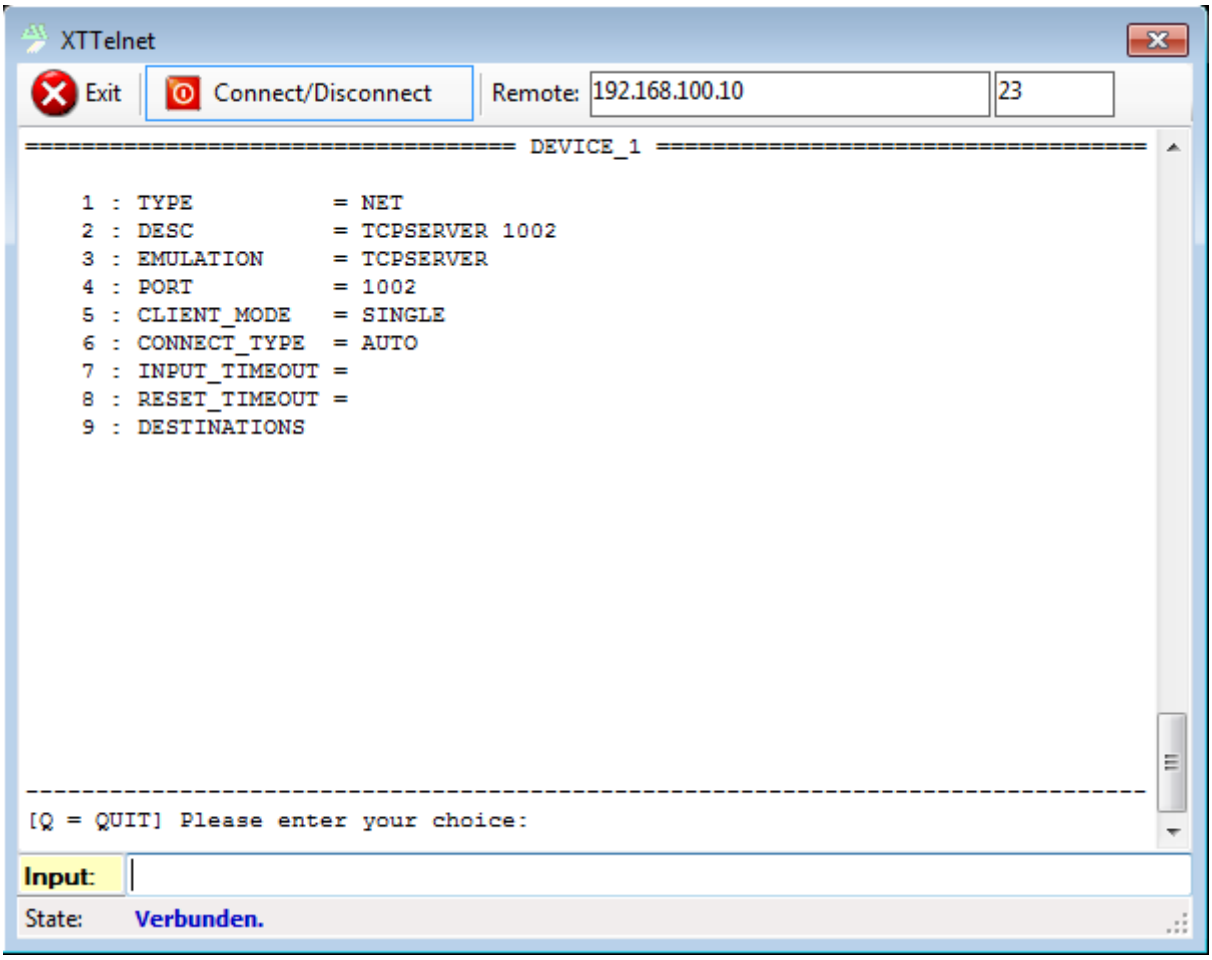
7 : STOPBITS
Allowed values: 1 or 2.

8 : FLOWCONTROL
H=Hardware(CTS/RTS) S=Software(XON/XOFF).

9 : INPUT_TIMEOUT (in ms)
You can enter a time-out duration in ms here. This is the time period that is waited after each byte coming from the device (UART) before the data is sent to the other side of the bridge. If 0 is entered, the data is forwarded as quickly as possible. This can be used to collect the data so that it is sent in one piece.

10 : RESET_TIMEOUT(in seconds)
If a device cannot be initialised, the bridge is reset after this time has elapsed and the device is initialised again.

NET DEVICE Parameter:



1 : TYPE
Device type, the following values are permitted: NET, UART, USB, USBUART, TTLIO, SPI, I2C. Other types can be realised on request.
Note: If you change a configured type, all current settings are deleted, as each type requires its own configuration parameters.

2 : DESC
Description for this configuration.

3 : EMULATION
Here you can enter the desired operating mode for the respective interface. The following values are permitted: TCPSERVER, UDPSERVER, TCPCLIENT, UDPCLIENT.

4 : PORT
For TCPSERVER and UDPSERVER, the port on which the server is started is entered here.

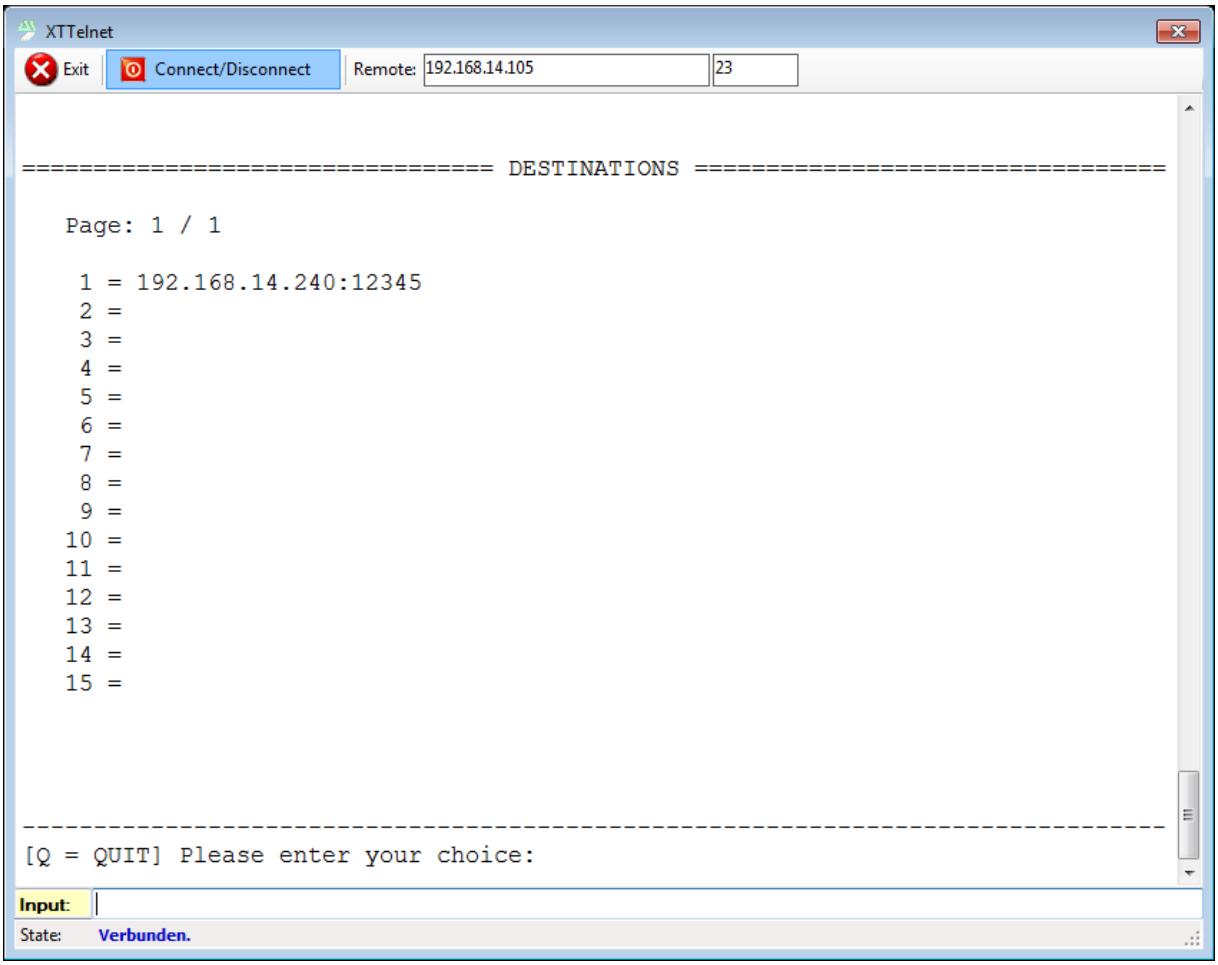
5 : CLIENT_MODE(MULTI/SINGLE)
With TCPCLIENT emulation, you can select the client mode here. MULTI means that the connection is established to all destinations. With SINGLE, the destination reached first always wins.
With UDPCLIENT, only MULTI really makes sense, as the UDP protocol by definition does not provide for a connection to be established in advance. The data is simply sent.

6 : CONNECT TYPE(AUTO/ONDATA)
With TCPCLIENT emulation, you can decide here when the connection is established. With AUTO, the connection is established immediately as soon as the device is ready for operation. With ONDATA, the connection is only established as soon as the first data is received from the interface.

7 : INPUT_TIMEOUT (ms)
You can enter a time-out duration in ms here. This is the time period that is waited after each byte coming from the device (network socket) before the data is sent to the other side of the bridge. If 0 is entered, the data is forwarded as quickly as possible. This can be used to collect the data so that it is sent in one piece.

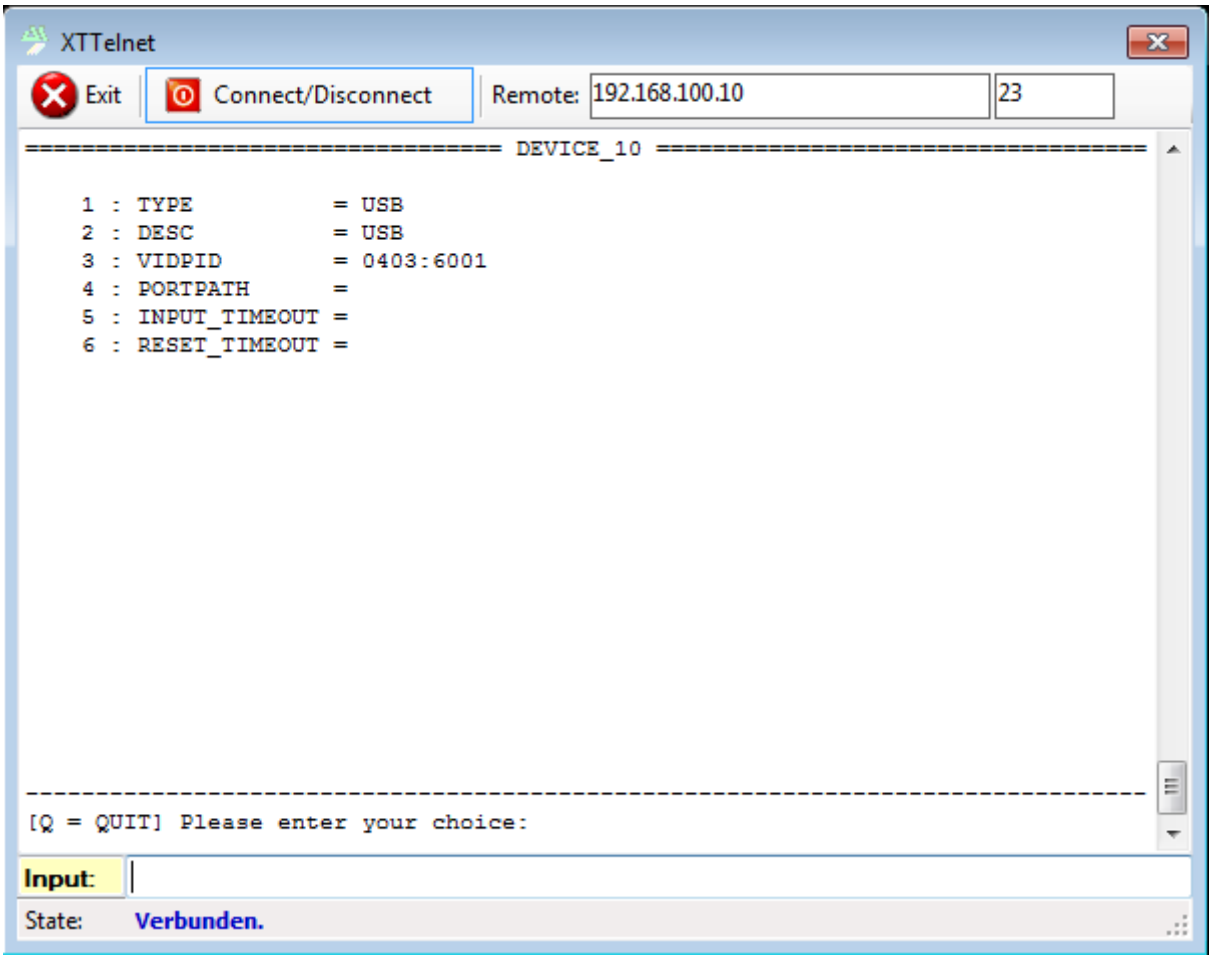
8 : RESET_TIMEOUT(in Sekunden)
If the device cannot be initialised, the bridge is reset after this time has elapsed and the device is initialised again.

9. DESTINATIONS



Here you can enter the destinations (IP:Port) for the TCPCLIENT or UDPCLIENT emulations. Depending on the CLIENT_MODE, one or more network connections are then established.

USB DEVICE Parameter:



1 : TYPE
Device type, the following values are permitted: NET, UART, USB, USBUART, TTLIO, SPI, I2C. Other types can be realised on request.
Note: If you change a configured type, all current settings are deleted, as each type requires its own configuration parameters.

2 : DESC
Description for this configuration.

3 : VIDPID
You have the option of recognising a USB device via its VID and PID combination. This is always recommended if you always use the same USB device/model or, alternatively, you can also store the path of a USB port, see point 4: PORTPATH

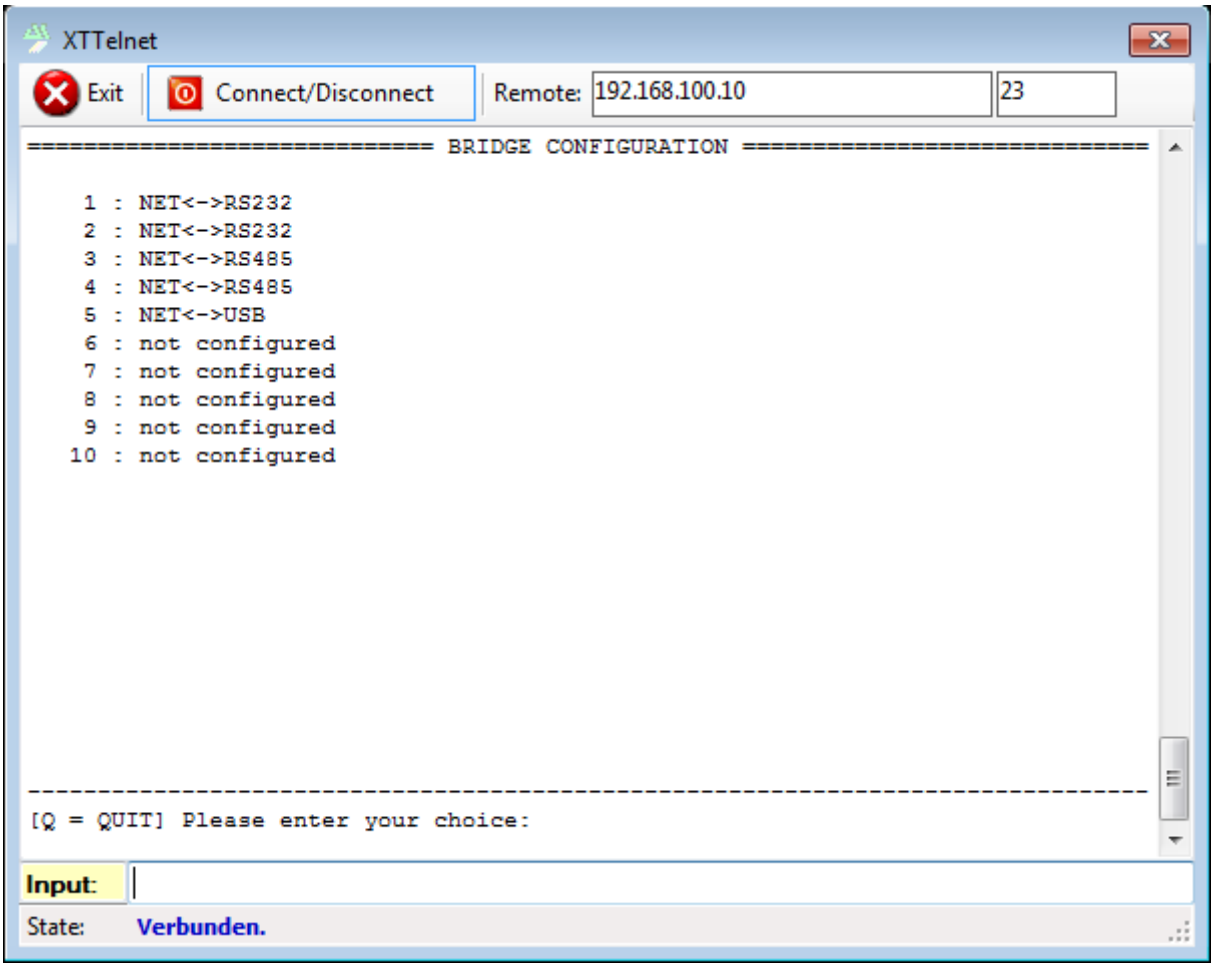
4 : PORTPATH
This is the alternative configuration variant to point 3: VIDPID.
You can use this to store the path of a USB port. This variant is recommended if you want to configure different USB devices for a bridge.
Example: /usb2/2-2

5 : INPUT_TIMEOUT (ms)
You can enter a time-out duration in ms here. This is the time period that is waited after each byte coming from the device (USB) before the data is sent to the other side of the bridge. If 0 is entered, the data is forwarded as quickly as possible. This can be used to collect the data so that it is sent in one piece.

6 : RESET_TIMEOUT(in seconds)
If a device cannot be initialised, the bridge is reset after this time has elapsed and the device is initialised again.

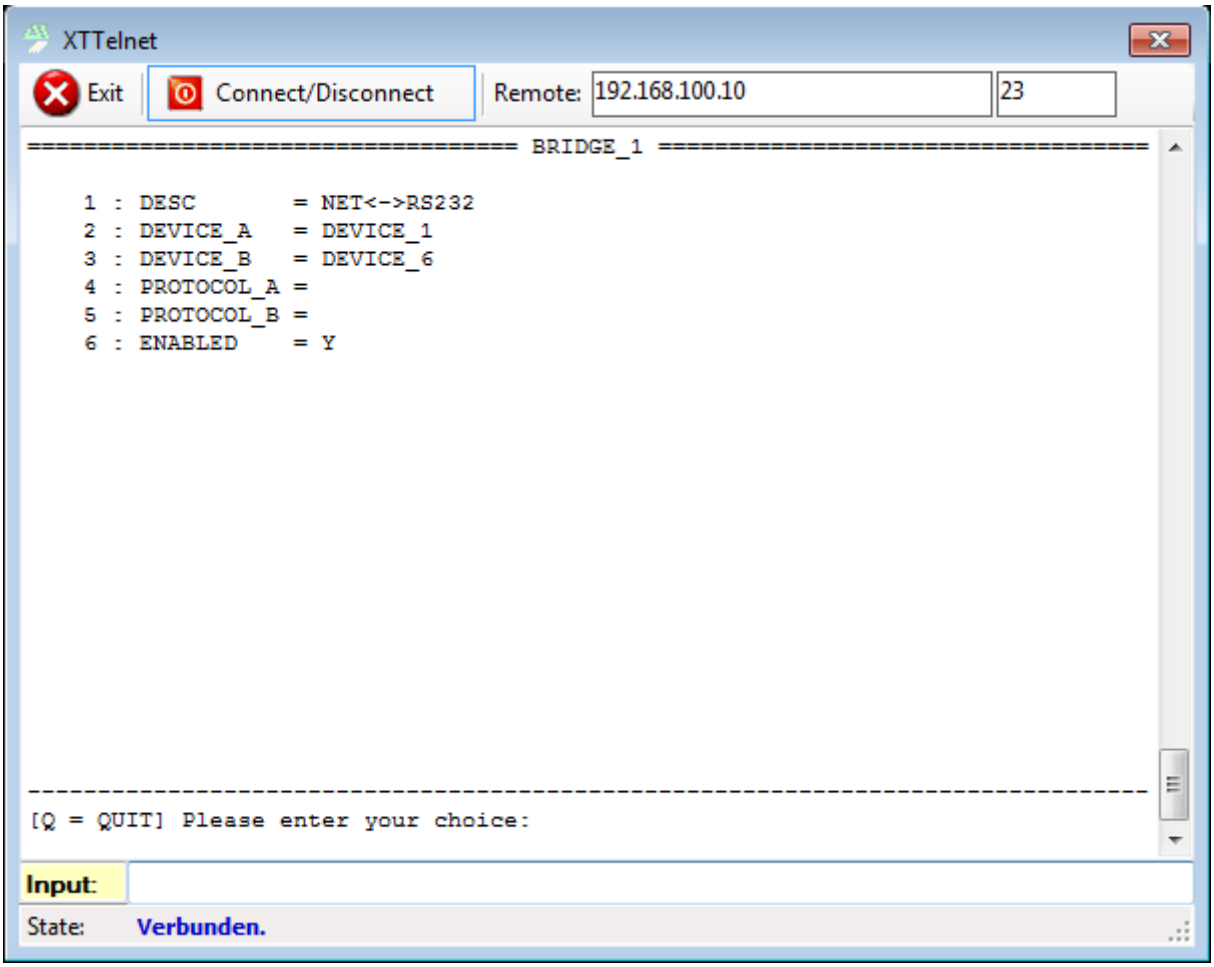
This USB device configuration is an alternative to the VIRTUAL USB solution. If you use "Virtual USB", you must deactivate the USB bridge. The same applies to the other direction. If you want to use USB bridge, you must deactivate the Virtual USB configuration for this port.

BRIDGE CONFIGURATION:



Here you can see the list of all bridge configurations.

BRIDGE Parameter:



1 : DESC
Description for this configuration.

2 : DEVICE_A
Device ID for the A side of the bridge.

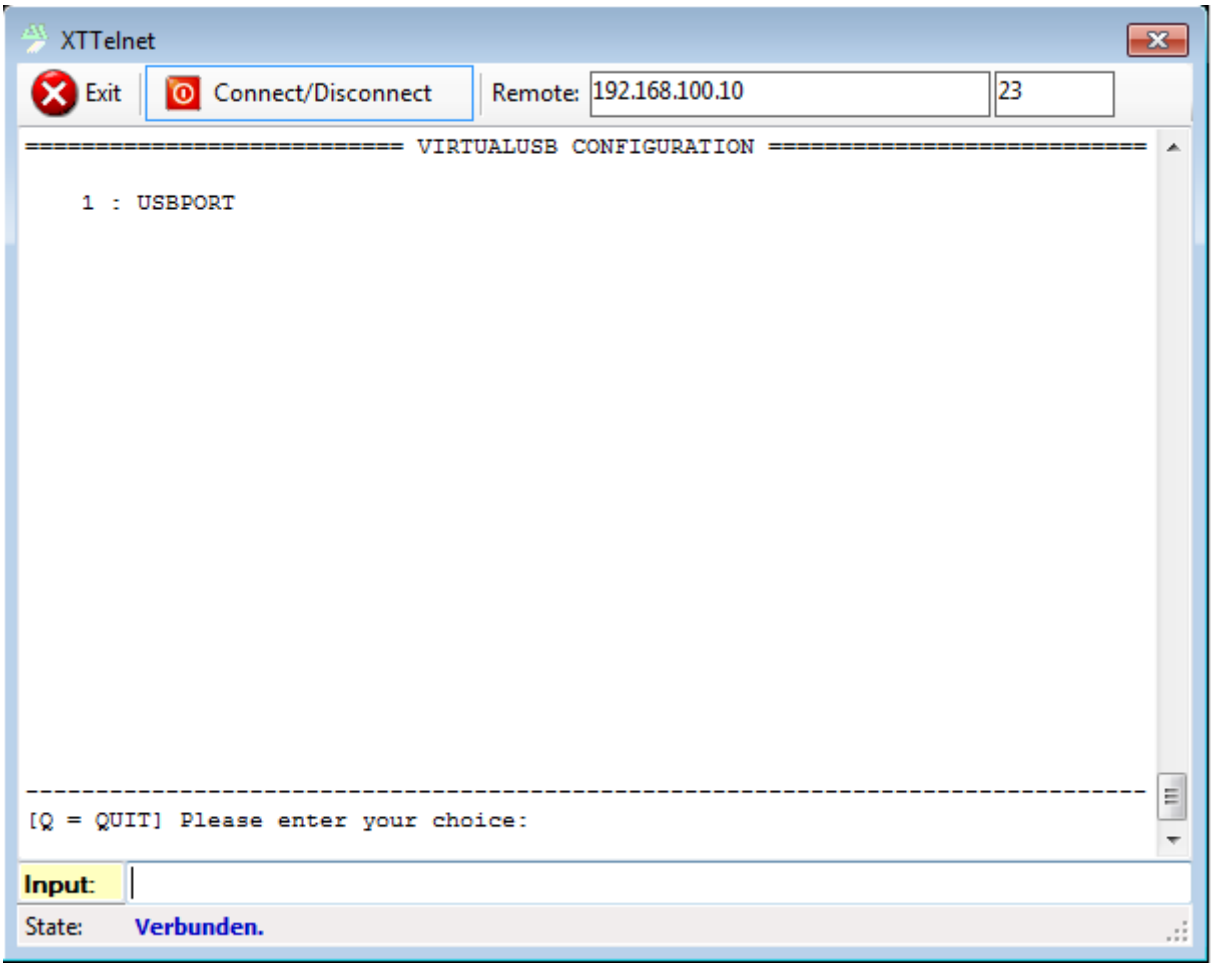
3 : DEVICE_B
Device ID for the B side of the bridge.

4 : PROTOCOL_A
A special protocol/customised solutions for the A-side can be activated here.

5 : PROTOCOL_B
A special protocol/customised solutions for the B-side can be activated here.

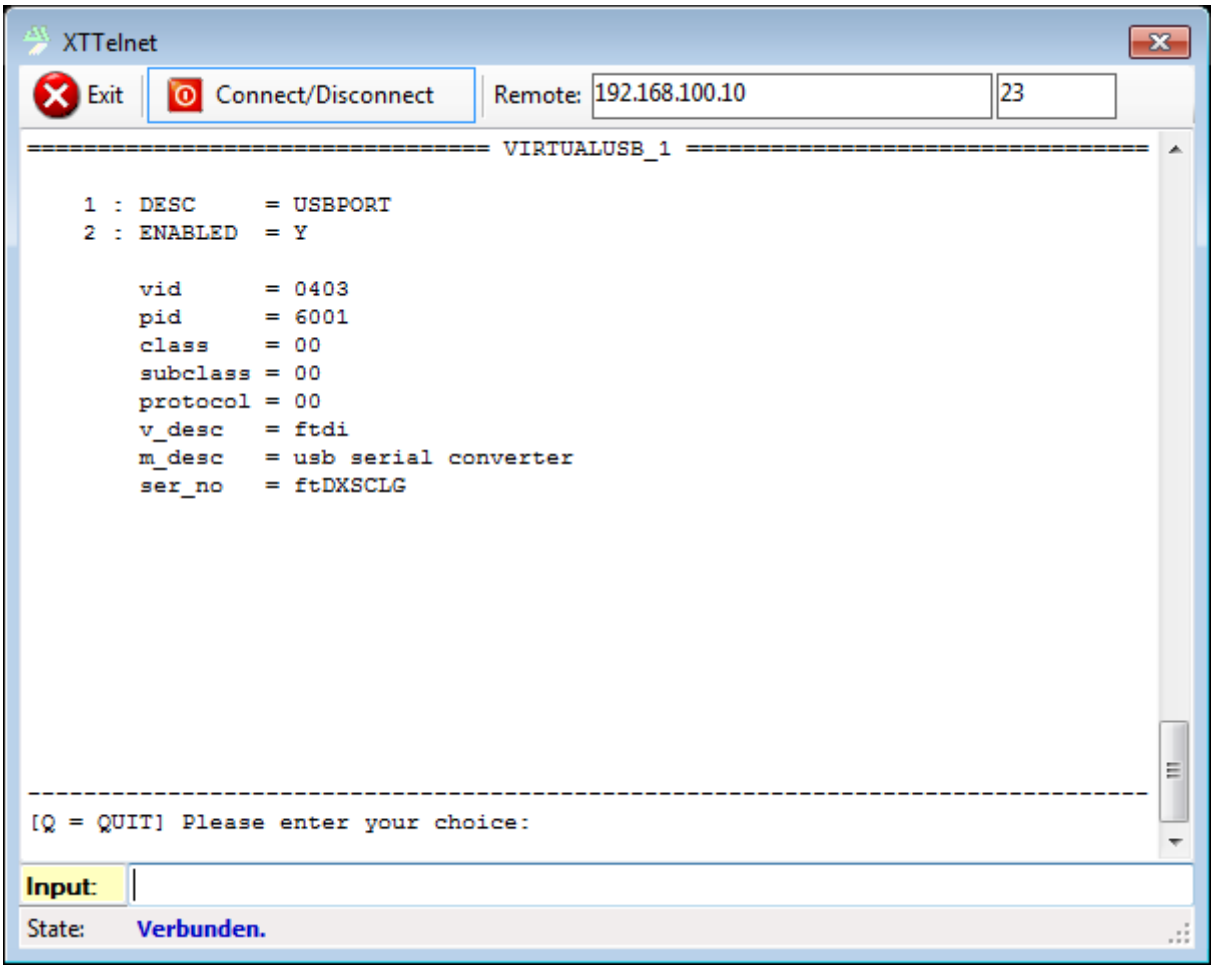
6 : ENABLED
Y=This configuration is active. N=disabled (saves hardware resources).

VIRTUALUSB CONFIGURATION:



Here you can see the list of available USB ports on your device.

VIRTUALUSB Parameter:

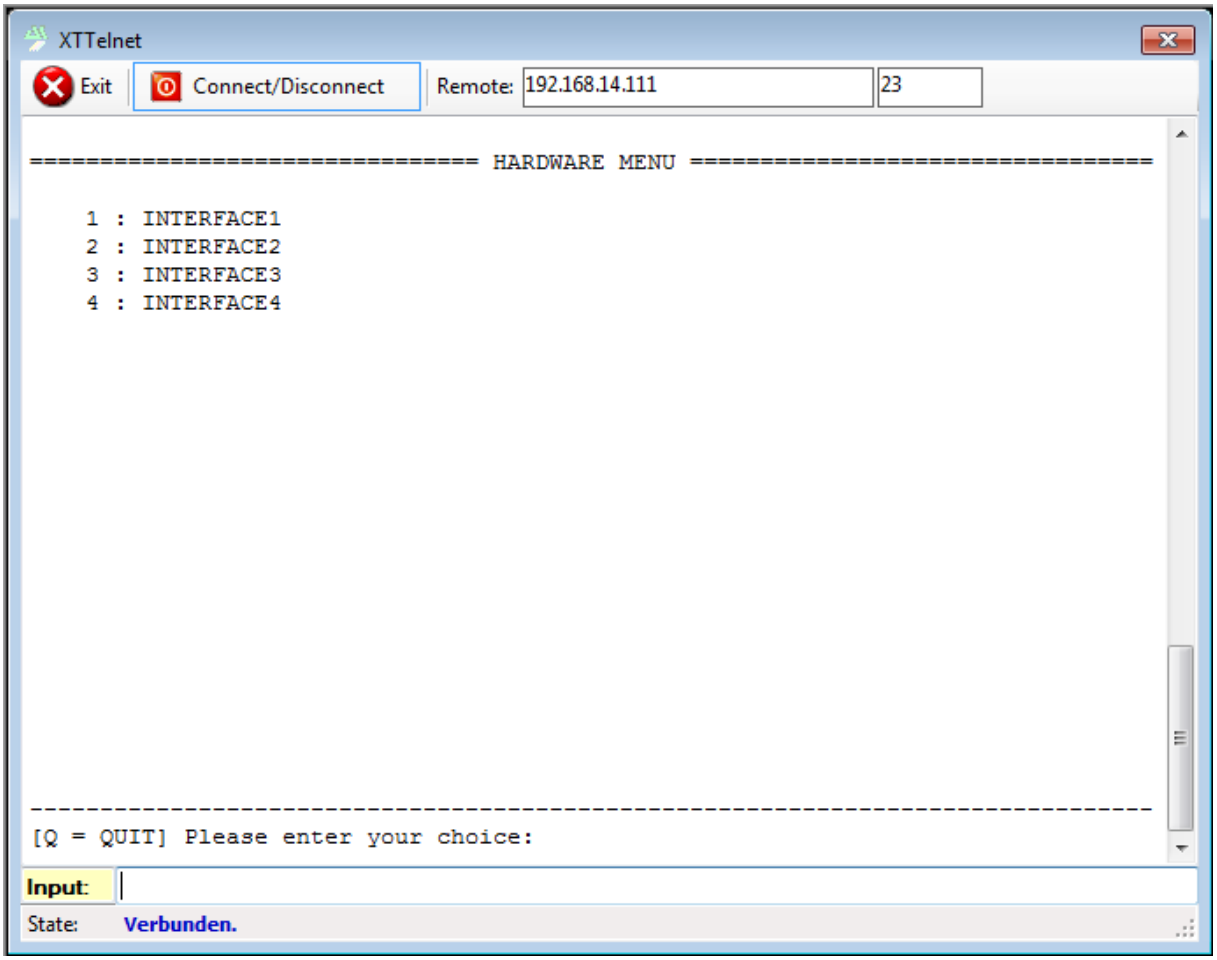


1 : DESC
Description for this port. This text is displayed in the graphical user interface of the USB client.

2 : ENABLED
Y=This port is enabled via VIRTUAL-USB and can be controlled by the USB client.
N=This port works without a VIRTUAL-USB solution. This port can therefore be operated via the DEVICE / BRIDGE configuration.

Device information on the currently connected USB device is displayed under the configuration parameters.

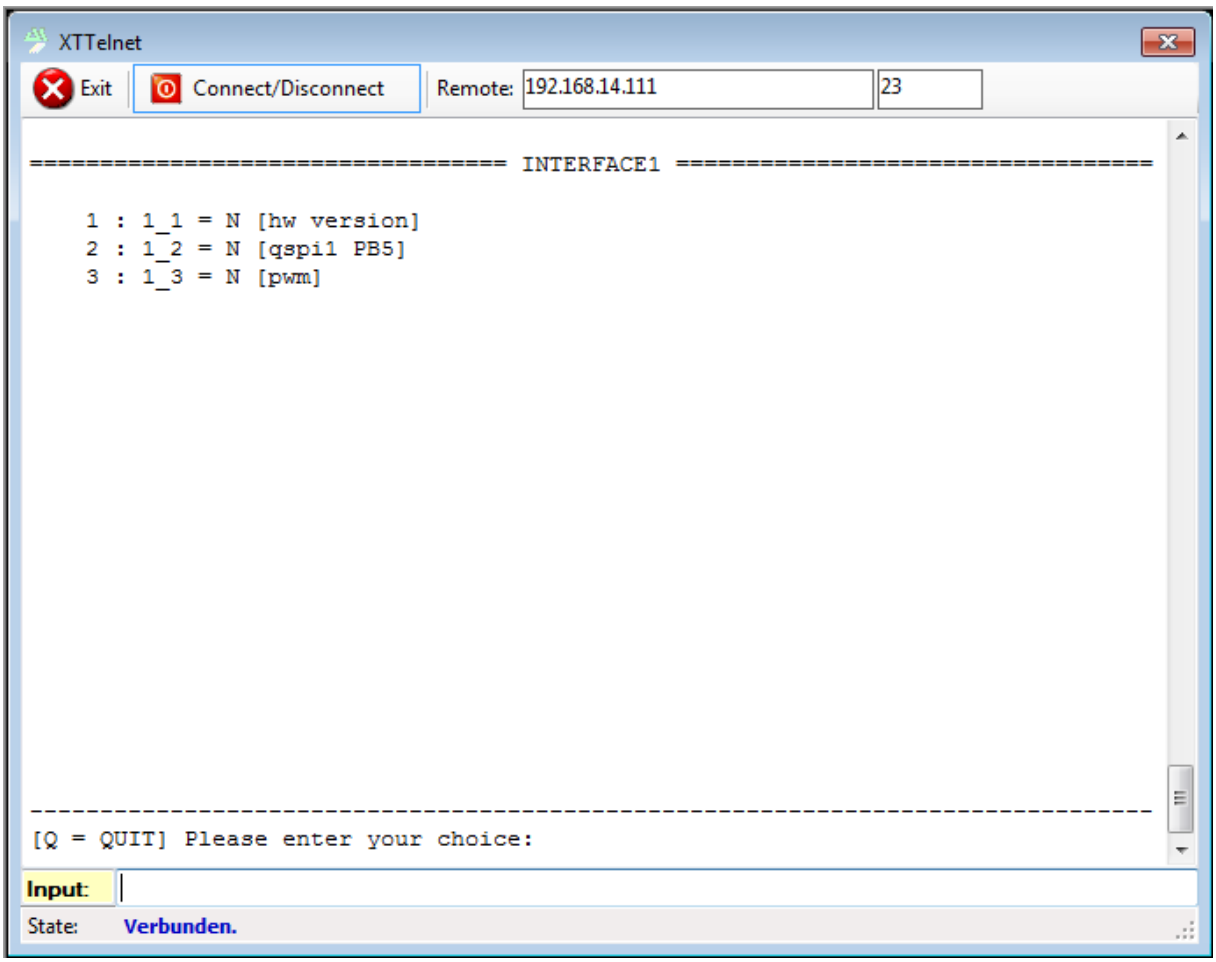
HARDWARE MENU only for ATTO-LXL:



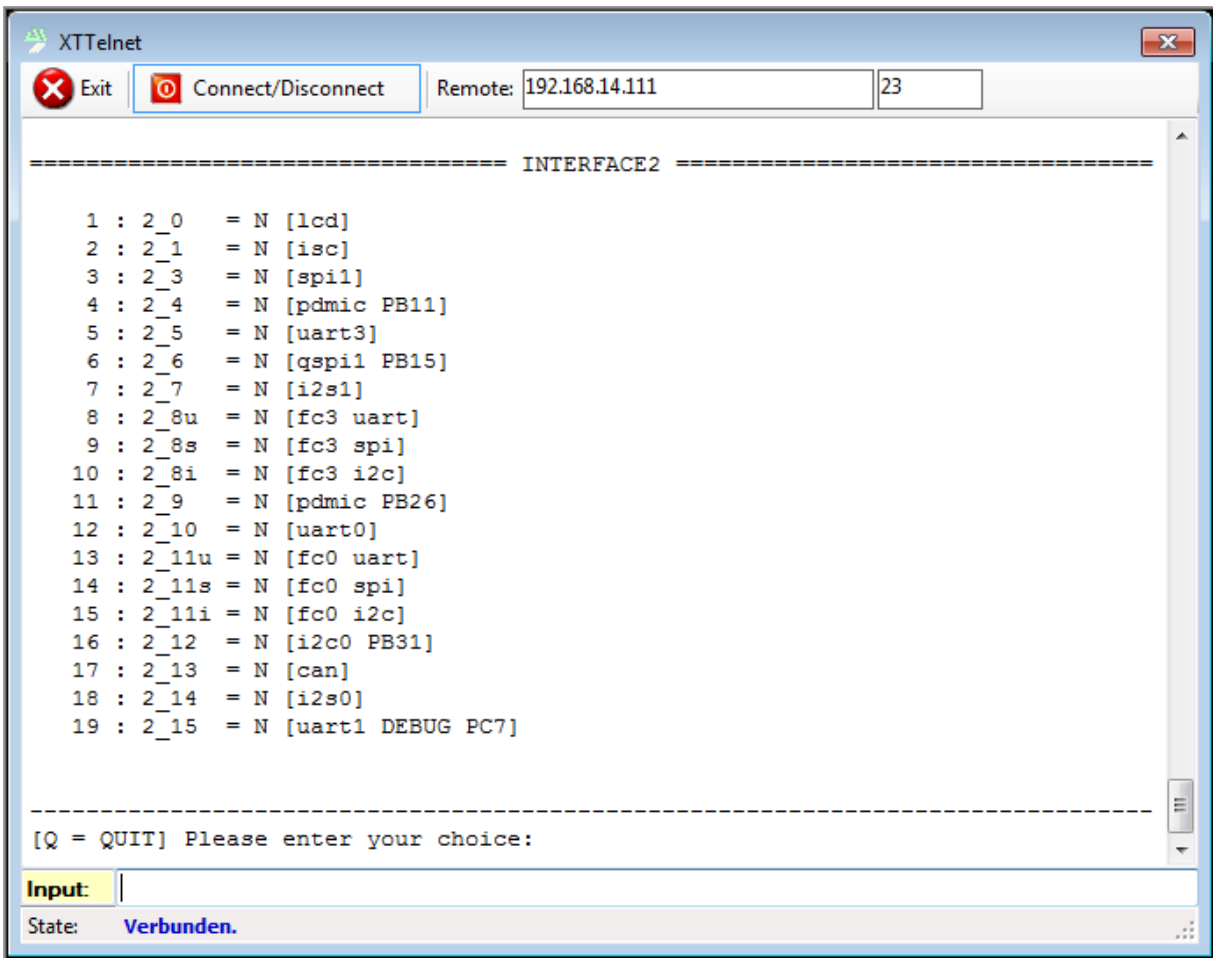
Here you can activate or deactivate the interfaces.
The changes only take effect after a reboot of the ATTO module.

Some interfaces use the same pins and cannot be activated at the same time. Detailed information about the pin assignment of the individual interfaces can be found in the data sheet of ATTO module.

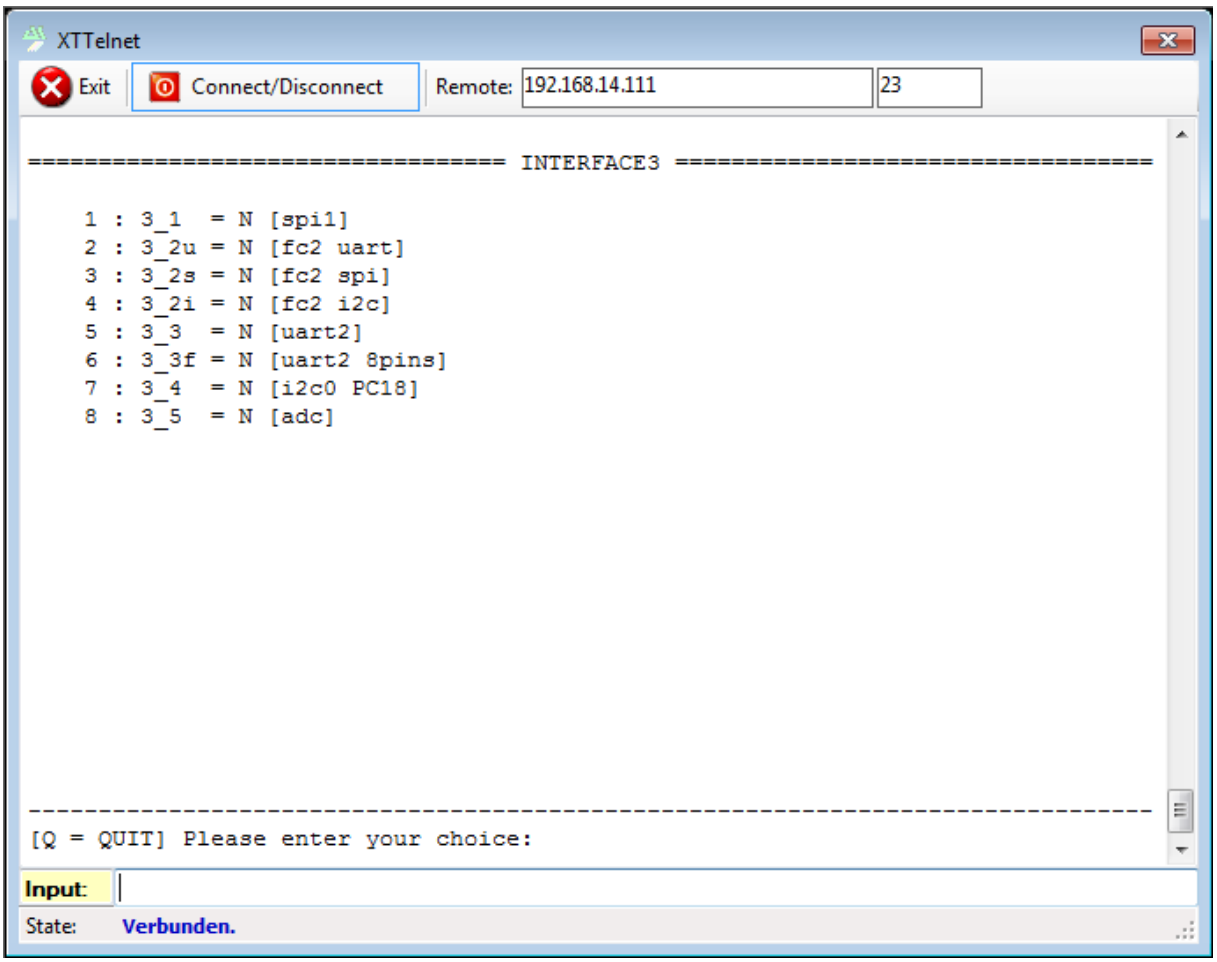
INTERFACE_1:


XTTelnet
Exit
Connect/Disconnect
Remote:
192.168.14.111
23
========== INTERFACE1 ==========
1 : 1_1 = N [hw version]
2 : 1_2 = N [qspi1 PB5]
3 : 1_3 = N [pwm]
[Q = QUIT] Please enter your choice:
Input:
State:
Verbunden.

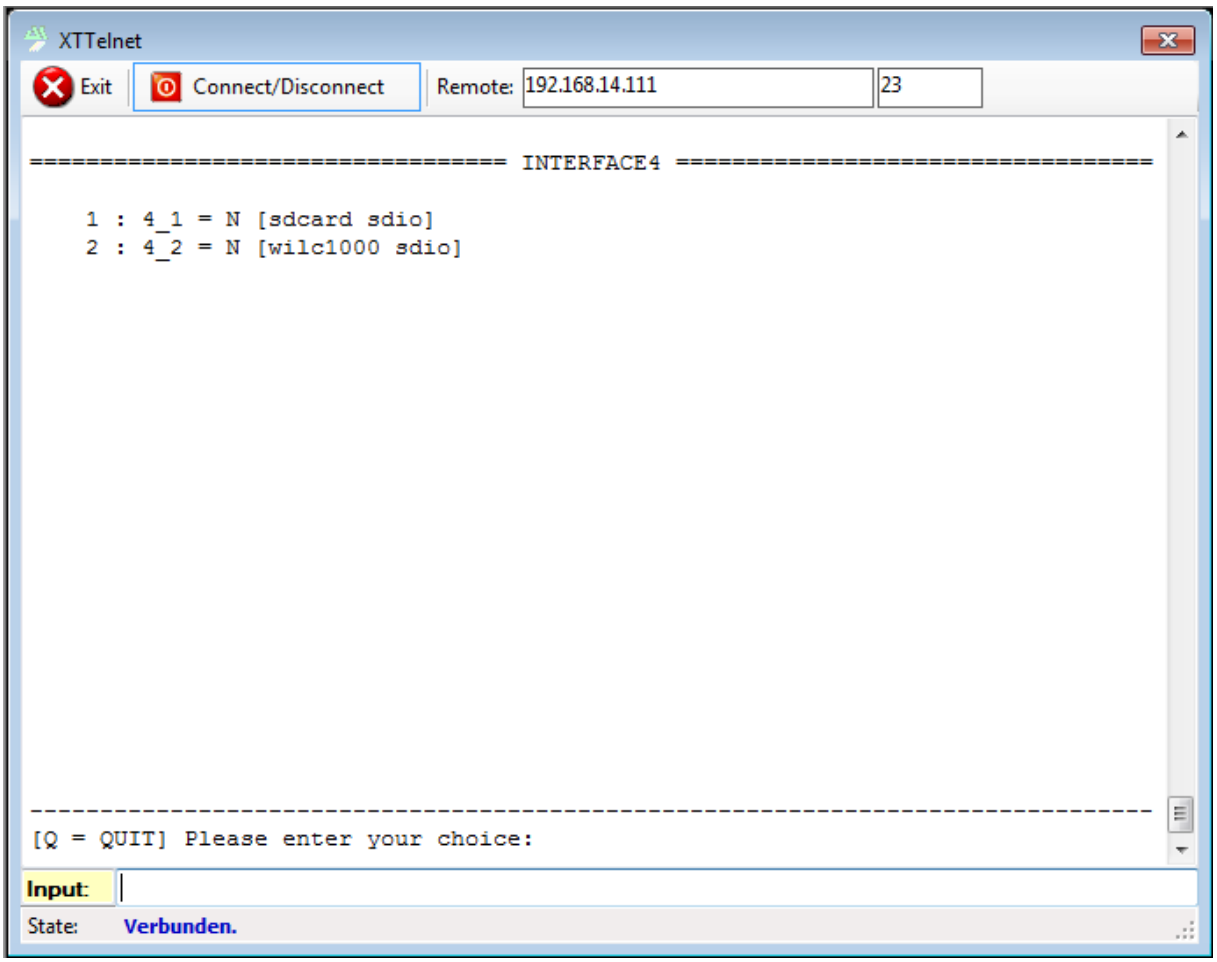
INTERFACE_2:


XTTelnet
Exit
Connect/Disconnect
Remote: 192.168.14.111
23
================================== INTERFACE2 ==================================
1 : 2_0 = N [lcd]
2 : 2_1 = N [isc]
3 : 2_3 = N [spi1]
4 : 2_4 = N [pdmic PB11]
5 : 2_5 = N [uart3]
6 : 2_6 = N [qspi1 PB15]
7 : 2_7 = N [i2s1]
8 : 2_8u = N [fc3 uart]
9 : 2_8s = N [fc3 spi]
10 : 2_8i = N [fc3 i2c]
11 : 2_9 = N [pdmic PB26]
12 : 2_10 = N [uart0]
13 : 2_11u = N [fc0 uart]
14 : 2_11s = N [fc0 spi]
15 : 2_11i = N [fc0 i2c]
16 : 2_12 = N [i2c0 PB31]
17 : 2_13 = N [can]
18 : 2_14 = N [i2s0]
19 : 2_15 = N [uart1 DEBUG PC7]
[Q = QUIT] Please enter your choice:
Input:
State: Verbunden.

INTERFACE_3:


XTTelnet
Exit
Connect/Disconnect
Remote: 192.168.14.111
23
================================ INTERFACE3 ================================
1 : 3_1 = N [spi1]
2 : 3_2u = N [fc2 uart]
3 : 3_2s = N [fc2 spi]
4 : 3_2i = N [fc2 i2c]
5 : 3_3 = N [uart2]
6 : 3_3f = N [uart2 8pins]
7 : 3_4 = N [i2c0 PC18]
8 : 3_5 = N [adc]
[Q = QUIT] Please enter your choice:
Input:
State: Verbunden.

INTERFACE_4:

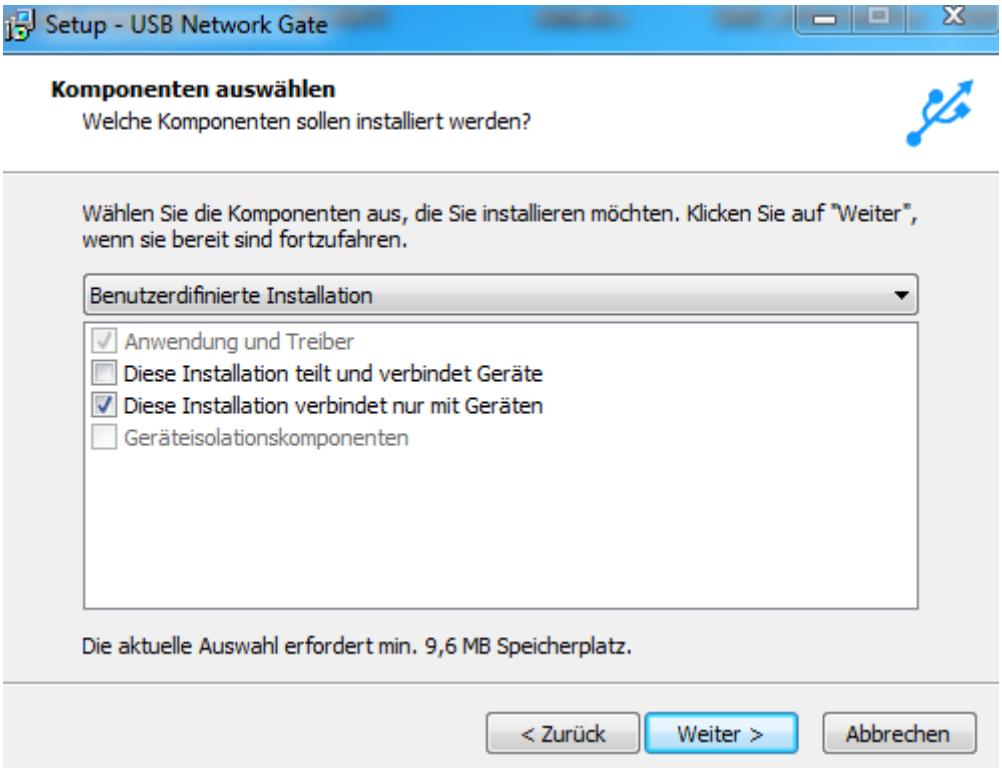

XTTelnet
Exit
Connect/Disconnect
Remote: 192.168.14.111
23
========== INTERFACE4 ==========
1 : 4_1 = N [sdcard sdio]
2 : 4_2 = N [wilc1000 sdio]
[Q = QUIT] Please enter your choice:
Input:
State: Verbunden.

Virtual USB

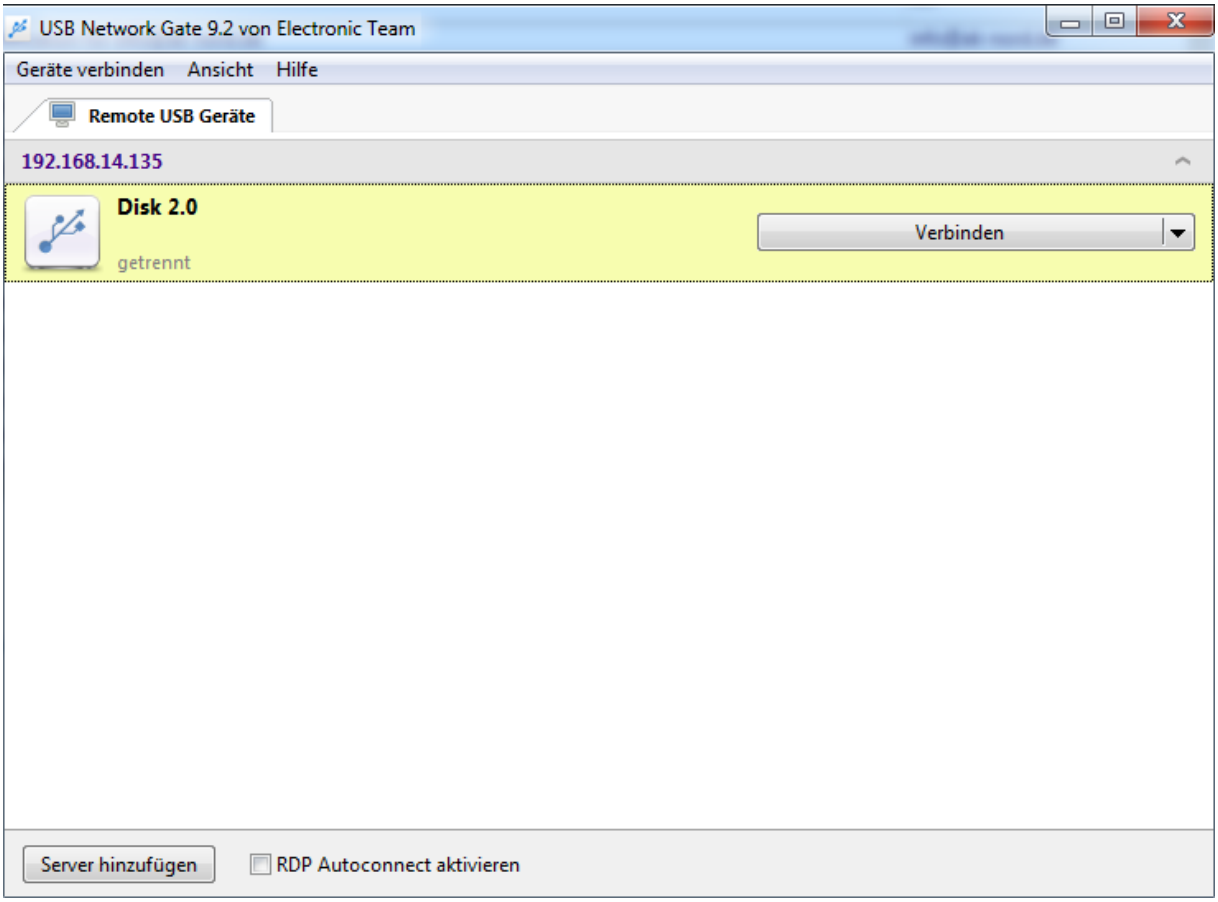
The Virtual USB service is pre-installed on the device. Please select the emulation "VIRTUAL" at the USB-Config-Menu. To use the virtual USB devices you still need the Virtual-USB-client. You can download it from the this website:

https://www.eltima.com/de/products/usb-over-ethernet/download/

During the installation, please select this option "This installation connects to devices only" in the component selections.



After installing the client, the USB-Server-LXL is displayed in the list of USB hubs and you can connect the connected USB device in the client to the PC.


USB Network Gate 9.2 von Electronic Team
Geräte verbinden
Ansicht
Hilfe
Remote USB Geräte
192.168.14.135
Disk 2.0
getrennt
Verbinden
Server hinzufügen
RDP Autoconnect aktivieren

Rescue-Modus

If your device does not boot anymore, you have the possibility to put the device into the reset mode. To do this, press and hold the factory reset button while booting and watch out for the orange LED on the network socket. As soon as the reset mode is started, this LED flashes once for a long time and twice for a short time.

When you are in the Rescuemode, the device gets a fixed IP address in the network: 192.168.100.100.

To install a new firmware you now only have to bring a PC/laptop or similar into the same network. The easiest way is to set the IP address of your PC to e.g. 192.168.100.50 for a short time and then call the following address in the WEB browser:

https://192.168.100.100:8080

Here you can then import a new firmware, which you can get from AK-Nord.

To get a firmware please contact:

service@ak-nord.de

Update

There are two ways to update the firmware.

For the first option, you only need a browser and the device must be accessible via the network. Call up the IP address of the device with port 8080 in the browser, e.g:
http://192.168.100.10:8080
And install the update via the web interface.

For devices without a network interface, e.g. SER2USB-LXL, you have another option to install the update via a USB stick. To do this, please log in as root via Debug-Console, see chapter "Access via Debug-Console". Then connect the USB stick where the update file with the name ser2usb.swu is located and then start the script /home/root/usbupdate.sh

Factory Settings

To perform factory reset, you must hold the factory reset button for 5 seconds during operation and then release it.

The factory settings are applied and the device restarts once. Now DHCP is active again and network access is switched on.

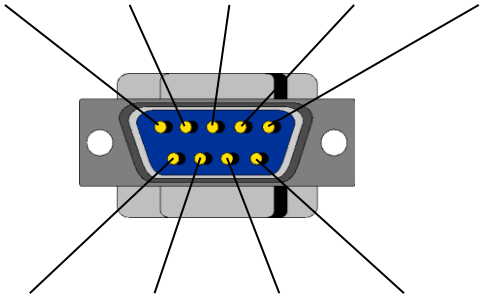
AK-DinRail-Server-LXL

RS232 interface 2
Port 1003

RS232 interface 1
Port 1002

RS232 connectors
plug

CD(1) RXD(2) TXD(3) DTR(4) GND(5)



DSR(6) RTS(7) CTS(8) RI(9)

Network

RS485 connector 2
Port 1005

RS485 connector 1
Port 1004

Power supply

RS485 connectors

Ground / GND	
RS485+ / RS485-A	
RS485- / RS485-B	

Power supply

Shield	
+7-60 **VDC** 2 W	
-7-60 **VDC** 2 W	

USB Port

LED

DIP-switch RS485
Termination, Pullup, Pulldown

1. Power LED
2. Network Link
3. Network activity
4. Status LED