



HANDS-ON TRAINING GUIDE

BARIONET

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1 Introduction

1.1 About “Barionet”

The Barionet is a network PLC (programmable logic controller). It offers hardware interfaces to connect sensors, switches, devices (e.g.: serial RS232 / RS485, 1-wire and Wiegand) and many IOs to connect switches or sensors or devices. Beside that the Barionet offers Control interfaces (e.g. TCP, UDP, HTTP/CGI, SNMP, Modbus/TCP) and the BCL programming interface to control IOs or communicate to his connected equipment. The Barionet is very universal and has excellent communication capabilities.

1.2 About this manual

Beside this guide is also a complete product manual existing. This guide is more focused on some little exercise how to use the IO and the other interfaces practically. It describes procedures on a very low level, so that also Barionet beginners and users with limited electrical or IT-knowledge can follow.

1.3 Product features (Interfaces)

Barionet50:

- 4 digital inputs
- 4 relays (digital, max 0.5A at 30VDC)
- 1 serial RS232 interface
- 1 serial RS485 interface
- 1 Dallas One-wire interface
- 1 network interface

Barionet100:

- 8 digital inputs (inputs 1-4 are usable as analog input also)
- 4 digital outputs
- 2 relays (digital, max. 5A at 240VAC)
- 1 serial RS232 interface
- 1 serial RS485 interface
- 1 Dallas One-wire interface
- 1 Wiegand interface
- 1 network interface

2 How to use the hardware interfaces

This chapter will explain how to use the hardware IO interfaces and how to wire your equipment to the Barionet.

When following these instructions, then please make always sure that your Barionet is not powered up during wiring/connecting your equipment to the Barionet !

Please make also sure you not overload (not too high voltage or load) the Barionet's hardware interfaces (like inputs, outputs or relays).

2.1 How to use the digital inputs ?

A digital input of the Barionet knows only two states : *ON (1)* or *OFF (0)*

On the Barionet100 the input polarity can be changed in the configuration setup (under "IO").

There are three different ways to use a digital input :

A – connecting input to ground directly

B – using with a (manual) button/switch

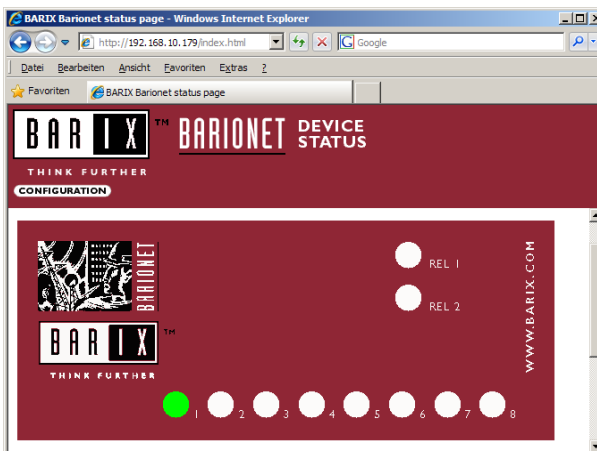
C – using with a sensor (or automatic switch)

2.1.1 Connecting the input directly to input ground

A digital input can be connected directly to the input ground. So the inputs can be easily tested. For that connect any digital input to the digital ground. On the Barionet 50 connect pin 1 of the J7 connector with pin 1 of J8.



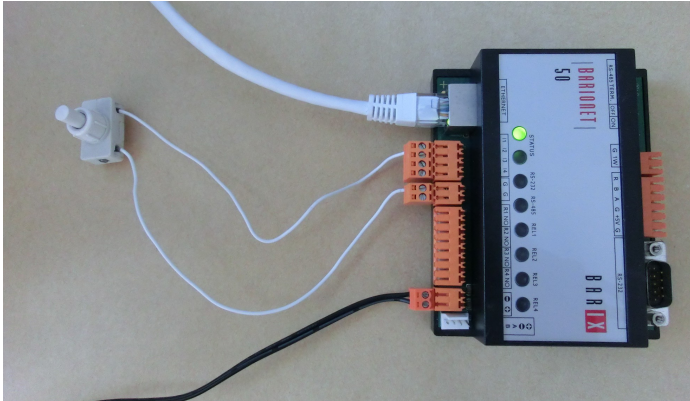
On the Barionet100 connect e.g. Pin1 and Pin9 of the J6 connector (see picture above).



As result you will see a color change for Input 1 on the Barionet's homepage.

2.1.2 Using digital input with a switch / button

That's very similar to the previous section, take any switch or button and connect it between the digital input and the input ground of the Barionet.

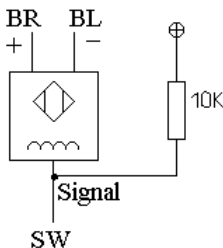


When properly connected, then you should see changing the color on the Barionet's homepage for the according input when pressing your button or a changing value in the according Barionet IO register.

2.1.3 Using digital input with a sensor

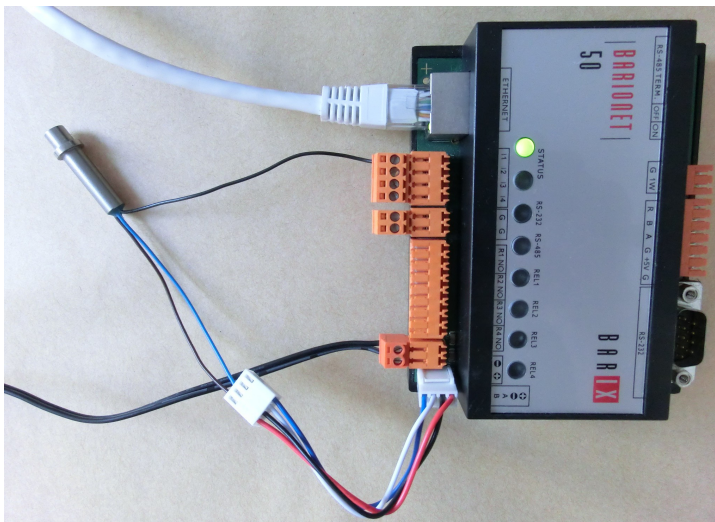
There are thousands of sensors on the market, e.g. like motion detector, optical sensors (photoelectric switch), humidity detector, magnetic contact switch, float switch,

In the picture below is used a powered contact sensor on the Barionet, here is a wiring diagram of this sensor:



The blue and the brown cable are the power cables of the sensor. In this case the Barionet50 (pin 1+2 of J10) is powering the sensor.

The signal wire of the sensor is connected to input 1 of the Barionet.



Attention, before doing that make sure the sensor can handle the same power as the Barionet is using and your PSU is providing enough power for Barionet + sensor! The sensor can be powered externally also, in this case it could make sense to use the same ground as reference for the input signal.

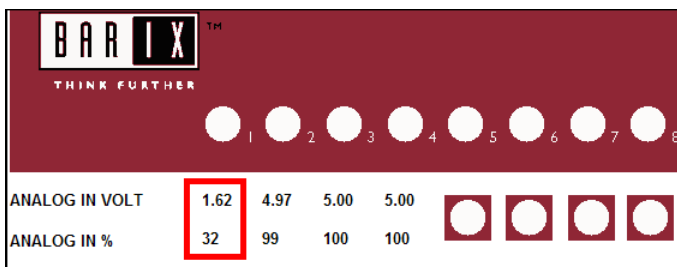
2.2 How to use the analog inputs ?

Over the analog inputs the Barionet100 can measure voltages. Only the Barionet100 has 4 analog inputs (inputs 1- 4).

To measure voltages from 0-5 V connect the “+” wire to an input (e.g. pin 1 of J6 connector) and the “-” wire to the input ground (pin 9 of the J6 connector). For this test a simple battery can be used. It’s recommended to turn off the internal pull-up resistor in the Barionet setup (under I/O).



On the Barionet’s homepage is shown the measured voltage now.



If you have (or if you expect) higher voltages than 5V then you must use an additional voltage divider, please check the Barionet Family manual for more

information. Information about usage of the Barionet analog registers and converting the register values you can find in chapter 4.

2.3 How to use / wire a relay ?

The Barionet 50/100 relays (and the digital outputs) know two states (ON or OFF). It's the preferred choice for switching (on/off) connected devices.

Make sure the equipment connected to the relay never overloads a relay (also not with the peak load when turning on) otherwise it can destroy the relay!

Barionet50 relay supports max 0.5A at 30VDC (15W peak).

Barionet100 relay supports max 5A at 240VAC (1200 Wp).

Another difference between Barionet 50 and 100 relays is the Barionet100 relay has 3 pins (Common, NO and NC). NO means normally open and closes by switching, NC means it's normally closed and opens by switching.

By selecting which pin you use you decide for the desired behavior. The Barionet50 has only 2 pins (Common and NO).



The wiring to connect your electrical device to the Barionet relay is pretty simple. Your electrical device has typically two wires (+ and -). Simple spoken you have to cut through one of these two wires in the middle and connect these two ends to the relay, one end to Common (pin 4 of J3) and the other end to NO (pin 5 of J3) or NC. But before you do that make sure your complete equipment is not powered during the installation!

Over the homepage or the control interface the relays can be switched, the relay status LED will go on when switched ON.

2.4 How to use a digital output ?

The digital outputs of the Barionet100 must be used without or only with a very low load, otherwise please use a relay! The digital outputs should be used for signaling only and not to switch (turn on/off) any devices, else it can destroy the digital output of the Barionet100.

2.5 How to use / connect a Barix Temp sensor ?

Both Barionets (50 and 100) support the Dallas 1-wire Temp sensor (type DS18B20). This sensor has a 12-bit resolution but the Barionet converts this to a 10-bit accuracy.

On the Barionet50 the temperature sensor will be connected over J4 interface (yellow cable to 1W, black cable to Ground).

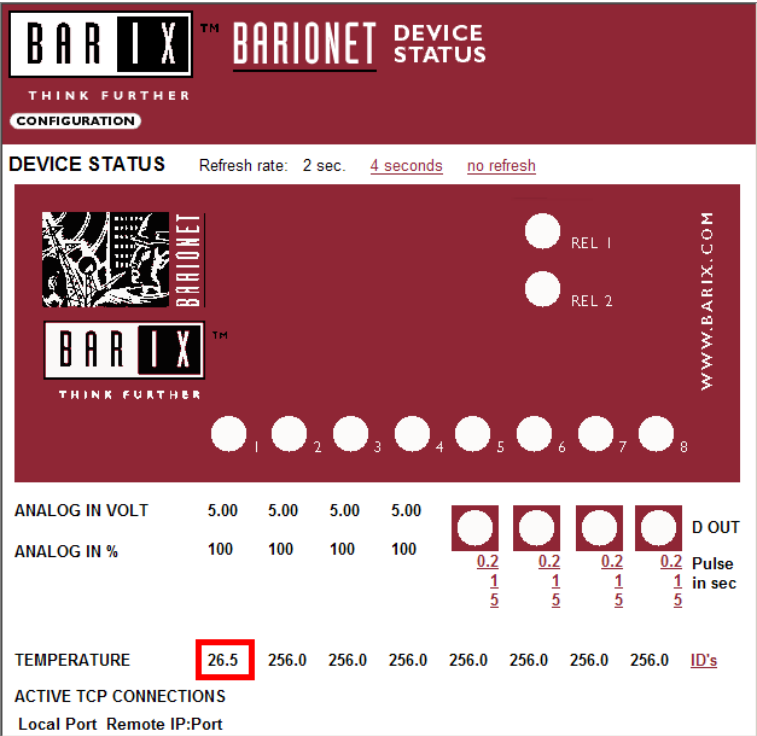
For the Barionet100 the Barionet Family manual shows two different wiring schematics. One looks like the following picture.



Here the sensor's black wire is connected to pin 14 of the J6 connector and the yellow wire is connected to pin 3 of the J5 connector (over extension cable, white wire). Before connecting a temperature sensor to the Barionet you should turn off the Barionet.

Up to 50 temperature sensors can be connected and will be supported from the Barionet.

The temperature value (in °C) of the first 8 sensors will be displayed on the Barionet’s homepage, the values from all temperature sensors can be requested from the Barionet registers also.



Information about reading the values from the Barionet registers and converting the register values you can find in chapter 4.

On the Barionet50 also any other 1-wire sensors can be used, but in this case all the 1-wire communication must be programmed over BCL (for more information see BCL programmers manual).

3 How to use the control interfaces

On the Barionet homepage some of the hardware IOs can be controlled. Only over the Control interfaces you have access to all IO registers. Over these Control interfaces it's possible to switch outputs, read the input registers/states or check other Barionet information.

The following Control interfaces are available:

- TCP
- UDP
- HTTP / CGI
- SNMP
- Modbus/TCP

Other interfaces and commands can be added over the BCL programming language.

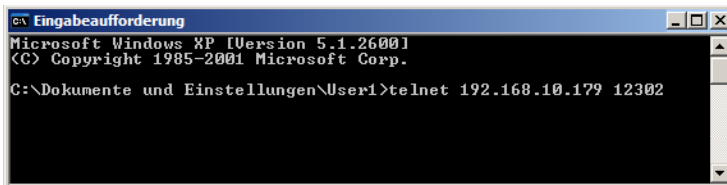
3.1 How to use the TCP control interface ?

To use the TCP control interface any Telnet application can be used, like Telnet command from command prompt, Teraterm, Hyperterminal and so on. But before it can be used it must be enabled in the Barionet setup under "CONTROL" - TCP Command Port, there define any port number, e.g. 12302 .

In the following example a Windows “**Telnet**” command is used.

Open a Windows command prompt and send the command

e.g.: `telnet <IP address of the Barionet> <port number>`

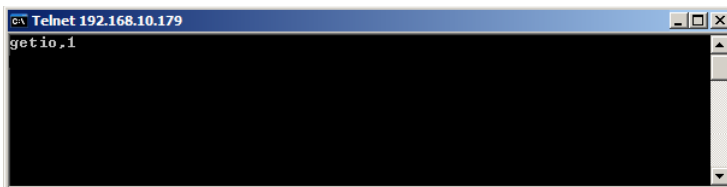


```
Microsoft Windows XP [Version 5.1.26001]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Dokumente und Einstellungen\User1>telnet 192.168.10.179 12302
```

The PC connects to the Barionet and a Telnet window is opened on the PC.

Over the “**getio**” command the state of an input register can be requested.



```
Telnet 192.168.10.179
getio,1
```

In the picture above the state for register 1 is requested, this register 1 is for the first relay.

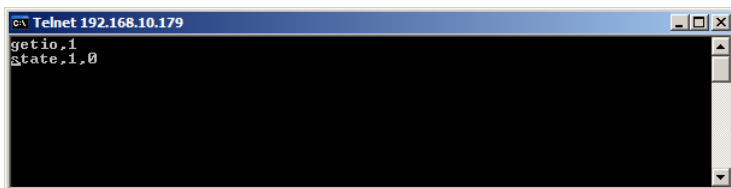
register 1– 99 is for the relays

register 101 – 199 is for the digital outputs

register 201 – 299 is for the digital inputs

register 501 – 599 is for the analog inputs

register 601 – 650 is for the temp sensors



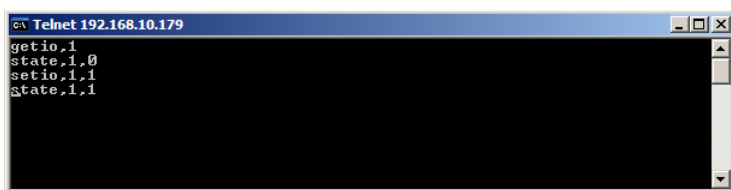
```

c:\ Telnet 192.168.10.179
getio,1
state,1,0

```

The Barionet will respond with the current state of register 1. As you see the value is 0 , means the relay is off.

In the next picture below the command “**setio,1,1**” is sent.



```

c:\ Telnet 192.168.10.179
getio,1
state,1,0
setio,1,1
state,1,1

```

This means a command to switch register 1 to value 1 is sent. After sending the command the Barionet will change register value and automatically respond with the new state. The relay is now switched ON.

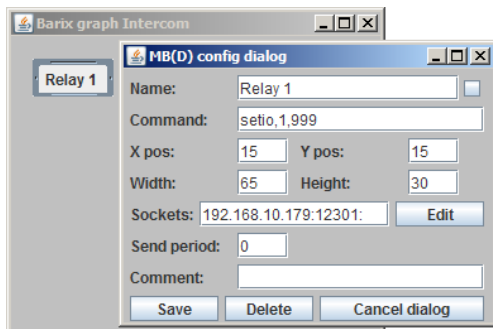
The relays/outputs can be switched ON (1), OFF (0), toggled (999) and can be also pulsed (2-9999 ,switched on for a defined period in 1/10 seconds).

3.2 How to use the UDP control interface ?

To use the UDP control interface are probably not so much standard applications existing as for the TCP Control interface, that could make it a little bit more complicated. But using the UDP control interface has some advantages, e.g. many network clients can use this UDP interface at the same time, that is not possible with TCP. Before you can use this function the UDP command port must be enabled in the Barionet setup, please define a valid port number (e.g. 12301) to enable it.

One solution to use UDP command interface is the Barix ICgraph application. This can communicate over UDP and as Java application it can run on almost all platforms. ICgraph can send UDP commands to the Barionet and also display the state response from the Barionet. Here is a little example showing how to control a Barionet over ICgraph.

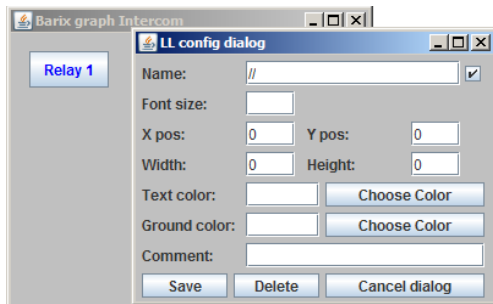
To send a UDP command create a Message Button (MB).



In the left picture a new direct Message button will be created which sends the command “setio,1,999” when pressed. This command will toggle the Barionet relay 1 to reverse state as soon the command is received.

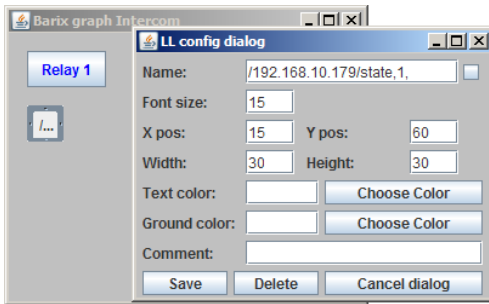
Note, after saving the ICgraph configuration, the application should be also restarted to get the new configuration active!

For monitoring the state of the relay in ICgraph a dynamic label can be used. Two steps are necessary for that.



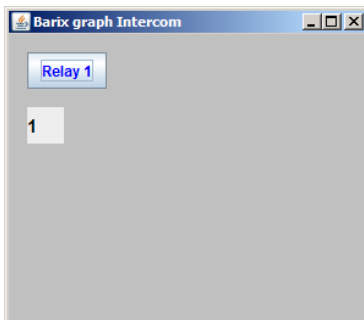
First a generic label is required so that ICgraph is generally able to forward any incoming network messages to the ICgraph screen, see picture left.

Now the label to display the relay state can be created.



In the “Name” field the sender IP address must be defined and for which content of the incoming UDP message ICgraph should look. This defined part will be not displayed in ICgraph, but all characters after “state,1,” from the incoming UDP network

message will be displayed in this label field on Icgraph.



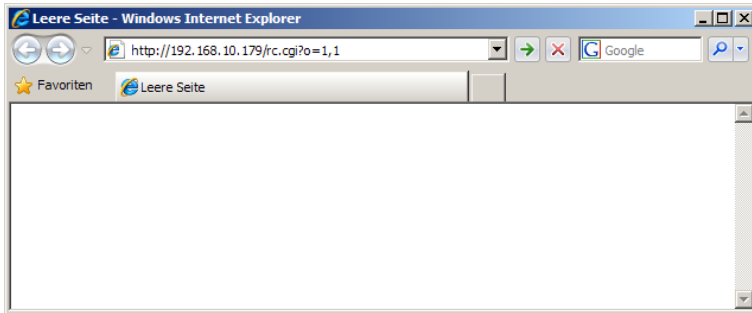
As final result there is a button to switch the Barionet relay and a little status field showing the current state after last relay switching.

Such state information can be requested from ICgraph also periodically e.g. every 3 seconds. In the ICgraph software package is a Barionet demo configuration that allows a

much better Barionet control over UDP.

3.3 How to use the HTTP/CGI control interface ?

The HTTP/CGI command allows to control the Barionet over the browser. There is per default only one IO control command implemented, the “o=” command to set/switch the outputs/relays.



Type in the browser's URL line the command :

<http://ip-address/rc.cgi?o=x,y>

x = Barionet register number , y = register value

and the Barionet will immediately change the status of the selected register/relay/output. See example above in the picture.

Requesting an input state over CGI is per default not implemented in the Barionet, but it can be easily added over BCL.

3.4 How to use the SNMP control interface ?

SNMP is called **S**imple **N**etwork **M**anagement **P**rotocol, it's implemented in many network devices like PCs, printers and other network equipment like the Barionet.

There are professional SNMP management applications and simpler SNMP browsers as also SNMP trap receivers on the market available.

SNMP consists of two different parts, the SNMP request (must come from requested server and the device will answer) and the SNMP trap (SNMP message to server without request, e.g. for alarming). The SNMP request mostly can be used in read/write mode, means a server can write into the device's SNMP table.

In the appendix (see chapter 6.1) the "MIB Browser" (third party software) from the company iReasoning Inc. is used as demo.

3.5 How to communicate with Modbus ?

Modbus is an industrial standard protocol for communication with devices. There are some different ways to communicate with Modbus to the Barionet.

- to the Barionet itself over Modbus/TCP
- over Modbus/RTU or Modbus/ASCII to a Barionet serially connected device. In this scenario is the Barionet a serial gateway only.

To communicate with any Modbus slave devices, you need a Modbus Master. As Modbus Master many PC softwares are available on the market/internet and also many SCADA systems have Modbus drivers implemented. In the appendix (see chapter 6.2) is a Modbus Scanner software from Chipkin Automation Systems shown as example.

For second solution (serial gateway to Modbus device) you will need additionally a redirector software. Here the Lantronix Redirector v3.xxx (see appendix, chapter 6.3) could be a good option.

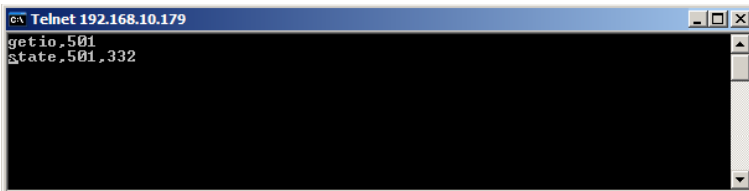
By the way, over the Barionet programming language BCL the Barionet can communicate also as Modbus Master directly over Modbus with serially connected Modbus/RTU slave devices, programming DEMOs are available for that.

For the communication with Barionet extension units is no Barionet required, they can also work standalone and communicate over RS485 with Modbus/RTU to any other Modbus Master.

4 How to convert register values

4.1 Converting analog register value

When reading a value from a Barionet analog input register (register 5xx), then



```
cx Telnet 192.168.10.179
get io,501
state,501,332
```

the real voltage value must be calculated.

The calculation for the analog input voltage is :

$$5 / 1023 * \text{register value} = \text{value in V}$$

e.g.: $5 / 1023 * 332 = 1,62 \text{ V}$

4.2 Converting temperature register value

When reading a value from the Barionet temperature register (register 601-650), then the real voltage value must be calculated.

The calculation for the temperature value is :

$$\text{register value} * 5 / 80 = \text{value in } ^\circ\text{Celsius}$$

e.g.: $332 * 5 / 80 = 20,7 \text{ } ^\circ\text{C}$

or

$$(\text{register value} * 9 + 2560) / 80 = \text{value in } ^\circ\text{Fahrenheit}$$

e.g.: $(332 * 9 + 2560) / 80 = 69,3 \text{ } ^\circ\text{F}$

5 How to connect extension units to the Barionet

If a Barionet100 or Barionet50 has not enough IOs/relays available or the IOs/relays support not the right voltage, then it is possible to expand the IO capabilities of the Barionet by using Barionet extension units. Connecting the extension units is a little bit different on the two Barionet models.

There are three different Barionet extension units available, the IO12, the R6 and the X8. More information to these extension units you can find on www.barix.com.

Generally the power for the extension unit can be taken from the Barionet itself, but make sure the power supply of the Barionet can supply enough power for all connected devices. When the extension unit is too far away from the Barionet or should run with a different voltage, then it should be powered separately.

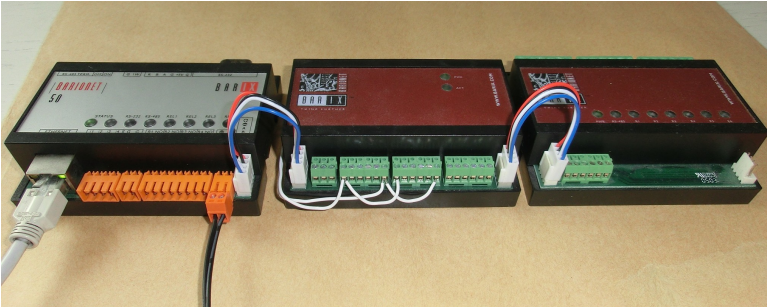
Per RS485 specification the maximum RS485 cable length is 4000 feet or 1200 meters for the complete RS485 bus. Maximum 31 x RS485 slaves and 1 x RS485 master allows the RS485 specification for one serial RS485 network.

That a Barionet can work with connected extension units requires an additional BCL application.

5.1 Wiring

5.1.1 Barionet50

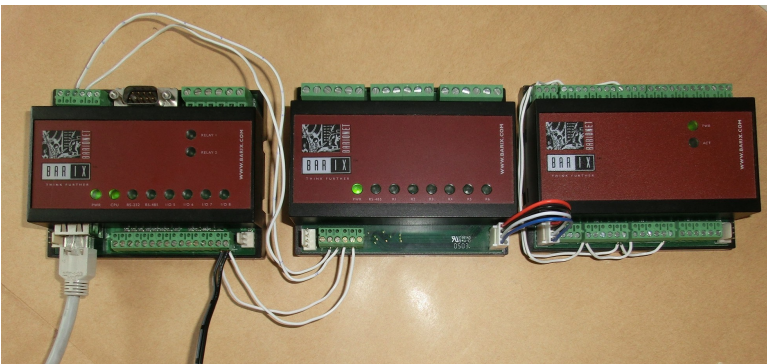
For the Barionet50 use simply the supplied 4-pin extension cable.



When you will connect more than one extension unit then connect it to the previous extension unit also over an additional 4-pin extension cable. The 4-pin cable provides power and also the RS485 connection to the extensions.

5.1.2 Barionet100

To connect the first extension unit with the Barionet100 wiring in the following way:



for RS485:

Barionet100	R6	IO12	X8
Pin 4 of J7	Pin 2 of J1	Pin 2 of J11	Pin 2 of J3
Pin 5 of J7	Pin 3 of J1	Pin 3 of J11	Pin 3 of J3

for power :

The extensions can be powered from the Barionet directly, but they should be powered separately when they are too far away from the Barionet or require a different voltage or the Barionet power supply is not strong enough.

Barionet100	R6	IO12	X8
Pin 15 of J6	Pin 4 of J1	Pin 1 of J5	Pin 4 of J3
Pin 16 of J6	Pin 5 of J1	Pin 3 of J5	Pin 5 of J3

5.2 Required BCL application for Barionet

That a Barionet can communicate with one or more connected Barionet extension units, it needs a BCL application loaded on the Barionet.

Barix has developed many BCL applications which can be used as they are or they can be used also as base for your own development (source code mostly included).

Here are examples of existing BCL applications e.g.:

- to control upto 15 R6 devices
- to control two X8 devices (inclusive analog values)
- to control upto 7 extensions (R6, X8 or IO12 – no analog)

These applications and some more can be found on: www.bcl-applications.info

Select there the right application, e.g. the “Barionet extension addressing tool” and unzip it on your PC.

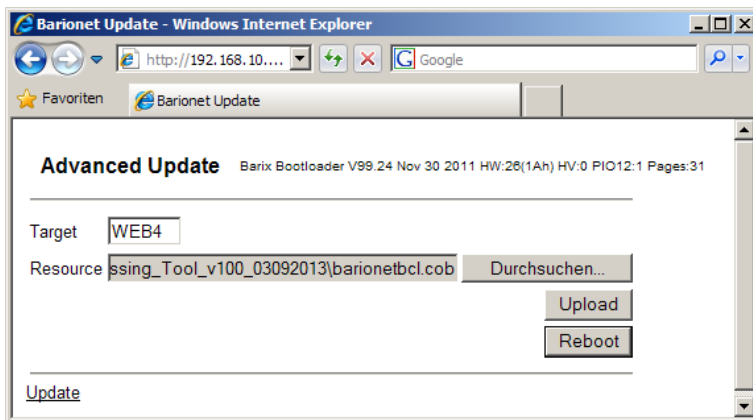
Per default is the IO-tunnel application loaded on the Barionet which supports one R6 unit.

5.3 Loading BCL application to Barionet

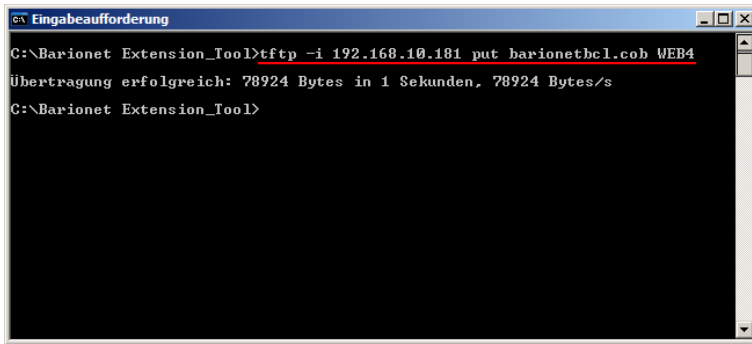
To load a BCL application to your Barionet select the in the package contained file “Barionetbcl.cob” and upload it to web area “WEB4” (case sensitive) of your Barionet.

At this point there is a difference for the Barionet50 and the Barionet100.

For the Barionet50 you can use the web update function (sub page “Advanced update”).



For the Barionet100 you have to use the TFTP update. This you can start from the command prompt (see picture below) or with any third party TFTP tools.



```
C:\Barionet_Extension_Tool>tftp -i 192.168.10.181 put barionetbcl.cob WEB4
Übertragung erfolgreich: 78924 Bytes in 1 Sekunden, 78924 Bytes/s
C:\Barionet_Extension_Tool>
```

When the upload is finished then please reboot your Barionet50/100 !

5.4 Using Barionet Extension Addressing Tool

First make sure the Barionets RS485 port is configured to the following settings :

19200 baud, 1 stop bit , 8 data bits, even parity (enabled) and local port number = 0

That are the default settings of the extension units.

If set correctly, then click the “APPLICATION SETUP” button and change to the “Modbus addressing page”.

At the beginning all your extensions can be connected at the same time. When you have multiple extension devices connected to your Barionet then you need to address these. Please use the upper part of this page to assign a Modbus address between 255 and 249 (default is 255) to your extension devices. The required Serial number can be found on the backside of the extension device. When multiple devices using the same Modbus address then they are not displayed in the “Addressing table”.

BARIX TM **BARIONET** DEVICE CONFIGURATION

THINK FURTHER

SETTINGS | DEFAULTS | REBOOT | UPDATE | APPLICATION SETUP | HOME

[IO control page](#) [Reload page](#)

Serial No: -

R272:

R273:

R274:

R275:

Addressing table

Modbus address	Device (reg.256)	FW (reg.257)	Sn-Nr (reg.258)	Barionet register value	
				IO range Inputs	IO range Output/Relay
255	B3	8	7 - 138	211 - 222	111 - 122
254	B1	2	4 - 226	0 - 0	11 - 16
253	B1	6	24 - 153	0 - 0	17 - 22
252	B3	11	23 - 68	223 - 234	123 - 134
251	B3	11	12 - 169	235 - 246	135 - 146
250	B2	11	25 - 62	247 - 254	147 - 154
249	0	0	0 - 0	0 - 0	0 - 0

These register numbers are used in the Modbus/RTU protocol, as referred to under "Command 69" in the manual, and all are numbered xxx-1 relative to the register numbers in the complete register map in the device manual.

After changing the setting of any extension reload the page (click "Reload page" button) and check below in addressing table.

Addressing table

The addressing table lists the discovered extension devices on the Barionet. It displays the device type, the firmware version of the discovered extension devices, and the range of Barionet registers for the IOs of each extension device assigned from this application. To refresh the view (e.g. after Modbus address change) reload this web page. If multiple extension devices have the same Modbus address, then only one (the first answering) will be displayed. In this case change to a unique modbus address of these devices.

Device types:
 B1 = R6
 B2 = X8
 B3 = IO12

When all devices have an unique Modbus address then click the “Reload page” link and check the “Addressing table”. In the “Addressing table” you can see the Modbus address, the device type and the assigned Barionet registers for the IOs of each extension device.

These Barionet registers can be controlled now from all Barionet control interfaces (TCP, UDP, CGI, SNMP and Modbus/TCP) or from the “IO control page”.

BARIX™

BARIONET

DEVICE CONFIGURATION

THINK FURTHER

SETTINGS | DEFAULTS | REBOOT | UPDATE | APPLICATION SETUP | HOME

Modbus addressing page

R6/IO12/X8 Control tool

Register	11	16	17	22	23	28	29	34
Relays	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inputs (2xx)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outputs (1xx)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Register	35	40	41	46	47	52	53	58
Relays	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inputs (2xx)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outputs (1xx)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Register	59	64	65	70	71	76	77	82
Relays	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inputs (2xx)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outputs (1xx)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional to this web control the extension relays and the digital inputs & outputs can be now controlled over Barionet's UDP or TCP command port, CGI, Modbus(TCP) or also SNMP by using the standard Barionet command syntax. Note, all relays and only the first 72 inputs/outputs can be controlled from this web page, all other extension IOs can be controlled over the other Barionet Command interfaces only.

Command example for UDP or TCP command port :
setio,111,999 (for output 1 on first output extension)
or
getio,212 (for input 2 on first input extension)
or
setio,18,999 (for relay 2 on second relay extension)

The IO registers are mapped automatically by this application, depending from the sequence of the Modbus addressing. The assigned registers you can see in the Modbus addressing page, check this first !

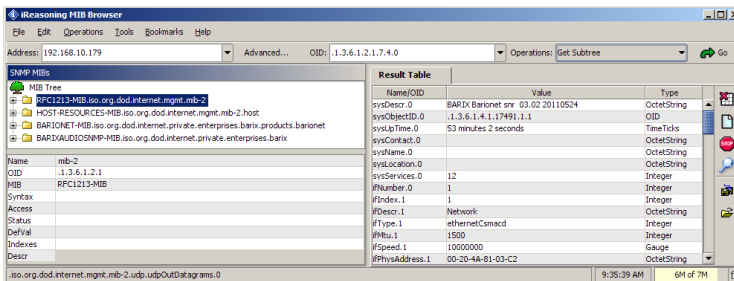
6 Appendix – Third Party softwares

6.1 MIB Browser from iReasoning Inc.

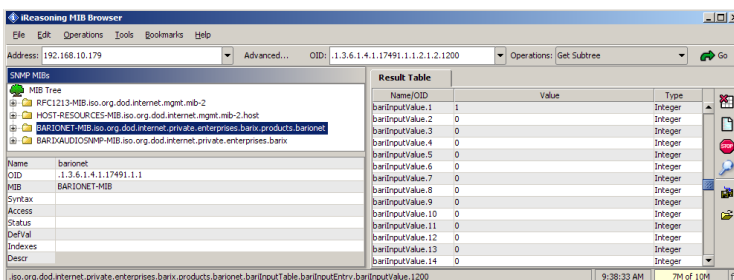
The MIB Browser from iReasoning Inc. can be used to read/write the Barionet registers over SNMP (SNMP request), the standard MIB as also the private MIB. Additionally it can be used also as SNMP trap receiver.

6.1.1 SNMP Request

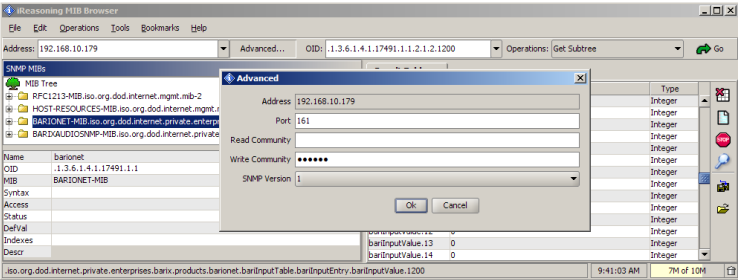
SNMP devices and servers support a Standard MIB table (see next picture) which contains some network and general device statistics but also a Private MIB (device specific table, shown on following pictures) is possible.



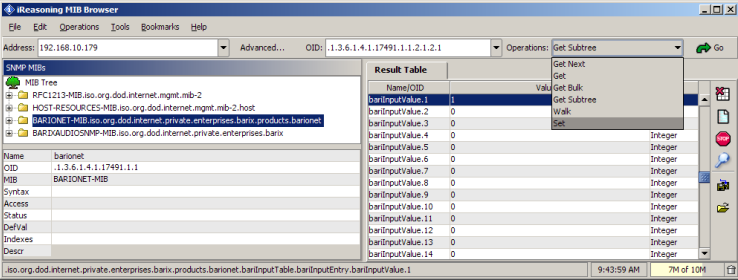
Both Barionets offer a Private MIB on their homepage for download (under Configuration/SNMP). Such Private MIB can be installed on the SNMP server



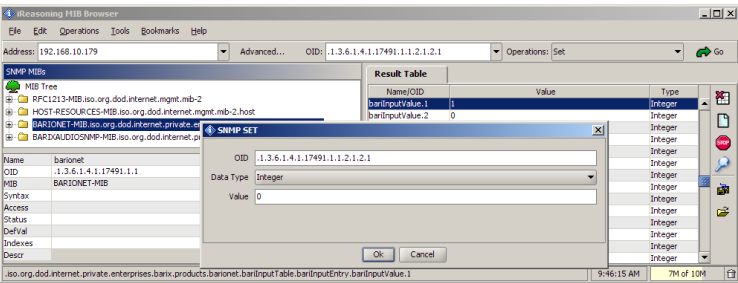
application, over this the Barionet registers can be controlled via SNMP. To write to the Barionet registers and change register values the SNMP write community password (“privat”) must be set before.



To write to the Barionet’s SNMP register select one of the Barionet input (IO) registers and select the “Set” option.



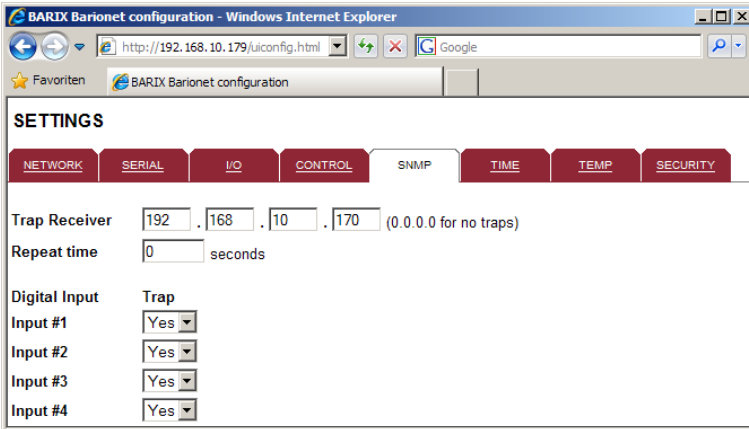
On the iReasoning MIB Browser opens now a new window, there the desired value to write to this register can be set. In the picture below the register 1 to set is the opposite value as it currently is (from 1 to 0).



As result the Barionet relay is switching and a “successful” message opens.

6.1.2 SNMP Trap

The SNMP trap must be enabled in the Barionet's setup under CONFIGURATION / SNMP.

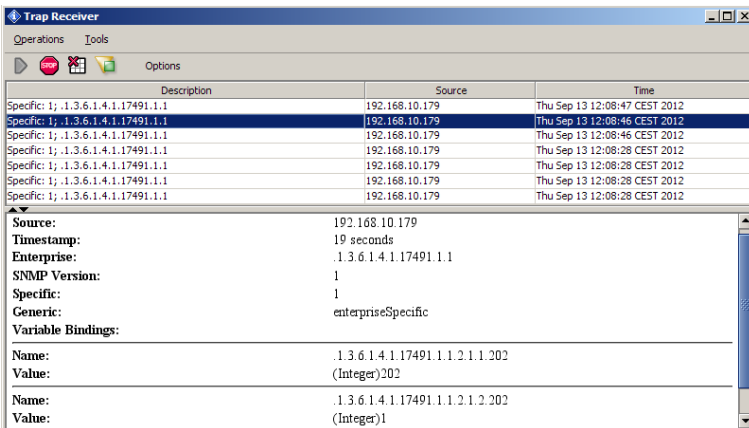


The screenshot shows the 'BARIX Barionet configuration - Windows Internet Explorer' window. The address bar shows 'http://192.168.10.179/uiconfig.html'. The page title is 'SETTINGS'. There are tabs for NETWORK, SERIAL, I/O, CONTROL, SNMP (selected), TIME, TEMP, and SECURITY. The SNMP settings are as follows:

- Trap Receiver: 192 . 168 . 10 . 170 (0.0.0.0 for no traps)
- Repeat time: 0 seconds
- Digital Input: Trap
- Input #1: Yes
- Input #2: Yes
- Input #3: Yes
- Input #4: Yes

When enabled the Barionet will send SNMP traps whenever an input state is changing on the Barionet or at reboot.

To receive a SNMP trap you need a SNMP Trap receiver software installed on your PC, as shown below.



The screenshot shows the 'Trap Receiver' application window. It has tabs for Operations and Tools. The main area displays a table of received traps:

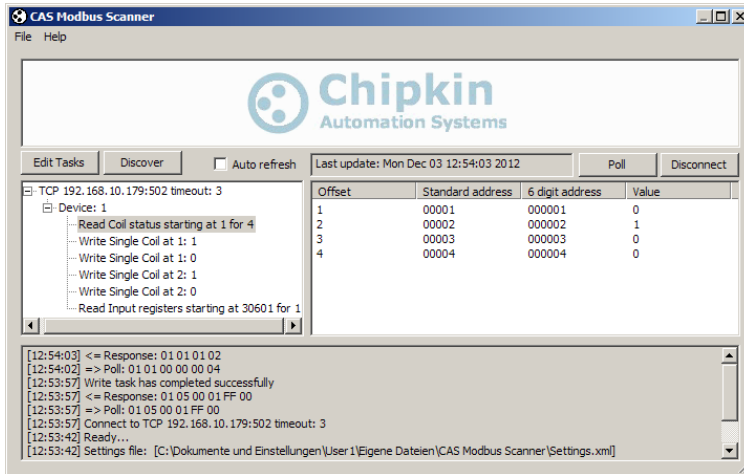
Description	Source	Time
Specific: 1; .1.3.6.1.4.1.17491.1.1	192.168.10.179	Thu Sep 13 12:08:47 CEST 2012
Specific: 1; .1.3.6.1.4.1.17491.1.1	192.168.10.179	Thu Sep 13 12:08:46 CEST 2012
Specific: 1; .1.3.6.1.4.1.17491.1.1	192.168.10.179	Thu Sep 13 12:08:46 CEST 2012
Specific: 1; .1.3.6.1.4.1.17491.1.1	192.168.10.179	Thu Sep 13 12:08:28 CEST 2012
Specific: 1; .1.3.6.1.4.1.17491.1.1	192.168.10.179	Thu Sep 13 12:08:28 CEST 2012
Specific: 1; .1.3.6.1.4.1.17491.1.1	192.168.10.179	Thu Sep 13 12:08:28 CEST 2012
Specific: 1; .1.3.6.1.4.1.17491.1.1	192.168.10.179	Thu Sep 13 12:08:28 CEST 2012

Below the table, the configuration details are shown:

- Source: 192.168.10.179
- Timestamp: 19 seconds
- Enterprise: .1.3.6.1.4.1.17491.1.1
- SNMP Version: 1
- Specific: 1
- Generic: enterpriseSpecific
- Variable Bindings:
 - Name: .1.3.6.1.4.1.17491.1.1.2.1.2.202
 - Value: (Integer)202
 - Name: .1.3.6.1.4.1.17491.1.1.2.1.2.202
 - Value: (Integer)1

6.2 Modbus Scanner from Chipkin Automation Systems

With this application it's possible to read/write Modbus registers on the Barionet.



On the previous screenshot on the left side are shown the commands to read / write the registers for the Barionet relays. On the right side is the result of the polled read command shown (shows relay 2 is active).

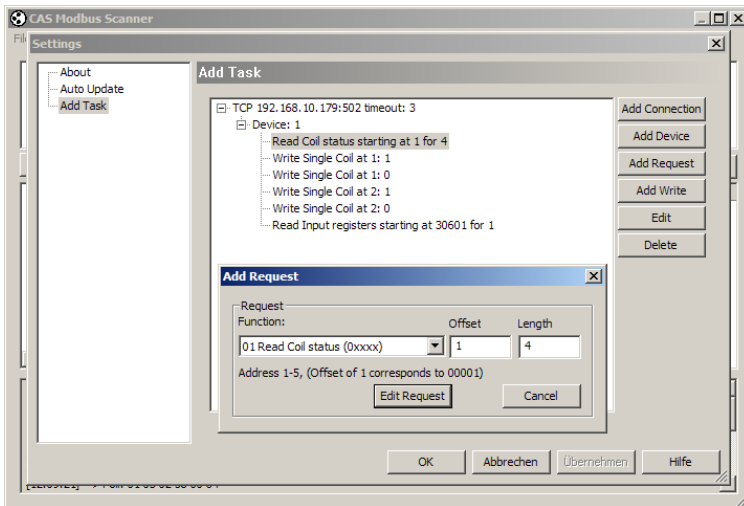
How to configure it with the Chipkin Automation software:

Following are 3 configuration examples :

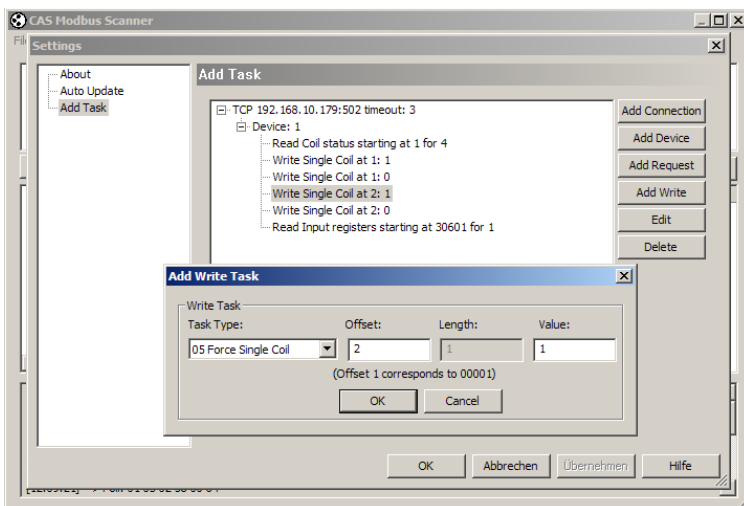
- one to read the status of all 4 relays outputs
- one to write/set a relay output
- one to read a temperature value

But before the Read/write request can be defined a connection and a device number/address must be defined. When using Modbus/TCP then the Device address is not important, so it can be set to any address.

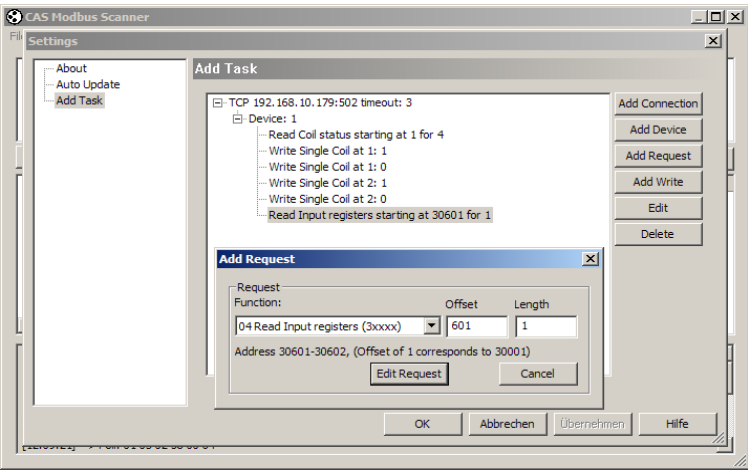
To read state information add a request for “Read Coil status”. The offset 1 means it will start with Modbus-Barionet register 1 and the length 4 defines the number registers to read (inclusive start register).



To write/set a Modbus-Barionet register add a “Write” for “05 Force Single Coil”. The offset 2 means it writes to register 2 the defined value (1). In this case it will activate the second Barionet relay.



To read temperature register values over Modbus/TCP from the Barionet add a request for “04 Read Input registers”. The offset 601 means it will start with Modbus register 601 (Barionet register for the first temperature sensor), the length 1 defines that only one register will be read.

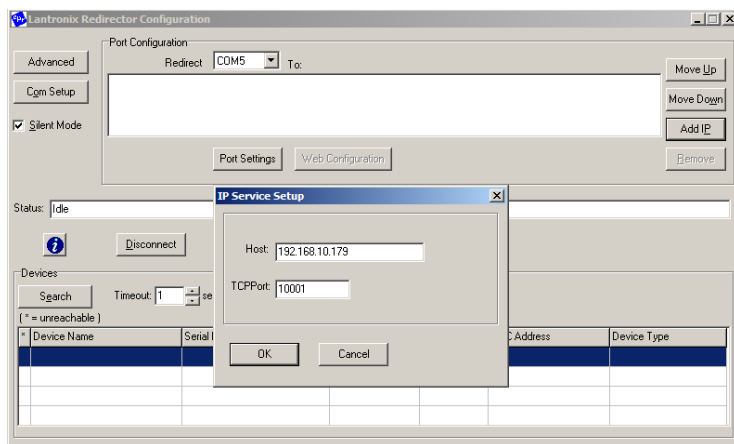


6.3 Serial Redirector software from Lantronix Inc.

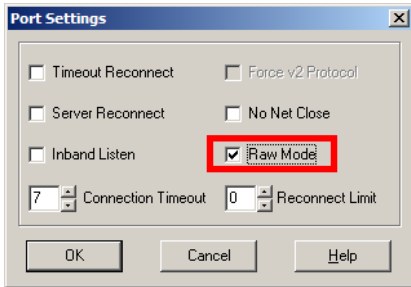
A serial redirector PC software can create virtual COM ports on the PC and reroute serial data in the back of the PC application over network to a serial device. This makes sense when the serial device is too far away to connect it serially to the PC, then a serial device can be connected to the Barionet serial ports and the Redirector connects to the Barionet's serial TCP socket.

Typical applications for that are remote maintenance of any engines or modems and so on.

All Barionets are using a Lantronix chip inside, this company offers also a good serial redirector software. The Lantronix Redirector software in version 3.1.0.4 is used in the following example:



After installation of the Redirector software open it and choose/add under “Com Setup” the new virtual COM port (e.g. COM5), then save the settings and reboot your PC. When the PC is rebooted, open it again and select under “Redirect” the desired COM port and click “Add IP”. In the opening window define the Barionet's IP-address and TCP Port number for the serial port, then close it by clicking “OK”.



As next click “Port Settings” and mark there “RAW Mode” and click “OK” to close it. Finally save the settings and close the Redirector setup. Now the redirector is ready for the use. Open your serial PC application and select there the new virtual COM port and start

the communication.

The newer Lantronix Redirector version 4.x is not working with Barix products !

Attention, this Lantronix Redirector we have only tested on Windows operating systems until Windows XP !

7 Important Barionet help links

The Barionet is a complex product, so also question may come up from you. If you cannot find an answer to your question here, in the Barionet Family manual or could be not answered from your distributor then there are some support resources in the internet available:

<http://bcl-applications.info>

This link offers DEMO BCL applications for Barix products, e.g. for the Barionet extension units and many more.

<https://groups.io/g/barionet>

That's the link to the Barionet Support forum, there you will find answers to many asked questions. Barionet experts from all over the world are sharing their knowledge here.

<http://wiki.barix.com>

The Barix Wiki page provides also much valuable Barionet knowledge.

The Barionet family manual and latest firmwares are downloadable from here:

for Barionet100: <https://www.barix.com/downloads/?product=226>

for Barionet50 : <https://www.barix.com/downloads/?product=209>

8 Legal Information

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