WEBDYN

GATEWAY SPECIFICATION

WebdynRF WM-Bus

Gateway dedicated to energy control and Smart Metering

INDEX

1 Remarks concerning this manual

This guide describes the assembly, installation and commissioning of the device. Please ensure these instructions are always available.
For management instructions for the data exchanged by the gateway with the remote server, refer to the operating manual for the WebdynRF gateway (cf. ME-WebdynRF_FR.pdf).

1.1 Scope

This technical description is valid for Wavenis WebdynRF gateways from hardware version 1 and software version 2.4.0. onwards.

1.2 Product versions

Depending on the type of GSM modem and radio card, there are several product versions:

Wavenis radio card:

Product references	Versions
WG0606-A01	2G modem – 868 MHz/25 mW Wavenis
WG0606-A02	3G modem – 868 MHz/25 mW Wavenis
WG0606-A03	2G modem – 868 MHz/500 mW Wavenis
WG0606-A04	3G modem – 868 MHz/500 mW Wavenis
WG0606-A11	2G modem – 915 MHz/25 mW Wavenis
WG0606-A12	3G modem – 915 MHz/25 mW Wavenis
WG0606-A13	2G modem – 915 MHz/500 mW Wavenis
WG0606-A14	3G modem – 915 MHz/500 mW Wavenis
WG0606-A21	2G modem – 433 MHz/10 mW Wavenis
WG0606-A22	3G modem – 433 MHz/10 mW Wavenis

Wireless M-Bus radio card:

Product references	Versions
WG0607-A01	WebdynRF-WirelessMbus-868 MHz-2G
WG0607-A02	WebdynRF-WirelessMbus-868 MHz-3G
WG0607-A11	WebdynRF-WirelessMbus-169 MHz-2G
WG0607-A12	WebdynRF-WirelessMbus-169 MHz-3G

RFID radio card:

Product reference	Versions
WG0608-A01	2G modem - RFID

Accessories common to all products:

Product references	Versions
AC0102-02	12V external power supply unit
AC0103-00	24V DIN rail-mounted power supply
AC0201-01	Remote dual-band GPRS antenna with 5m of cable
AC0201-02	Remote dual-band GPRS antenna with 20m of cable
AC0201-03	Remote dual-band GPRS antenna with 10m of cable
AC0501-01	IP67 box, circuit breaker, 24V DC power supply, UPS unit and 12V lead batteries

This manual covers all versions of the product.

1.3 Target group

This guide is aimed at installers.

1.4 General operating principle

The WebdynRF platform is the new range of Webdyn concentrators dedicated to wireless networks. Gathering data from meters or sensors and checking I/Os are basic functionalities for the WebdynRF gateway. The services targeted by the WebdynRF gateway are remote meter reading, and buildings energy management.
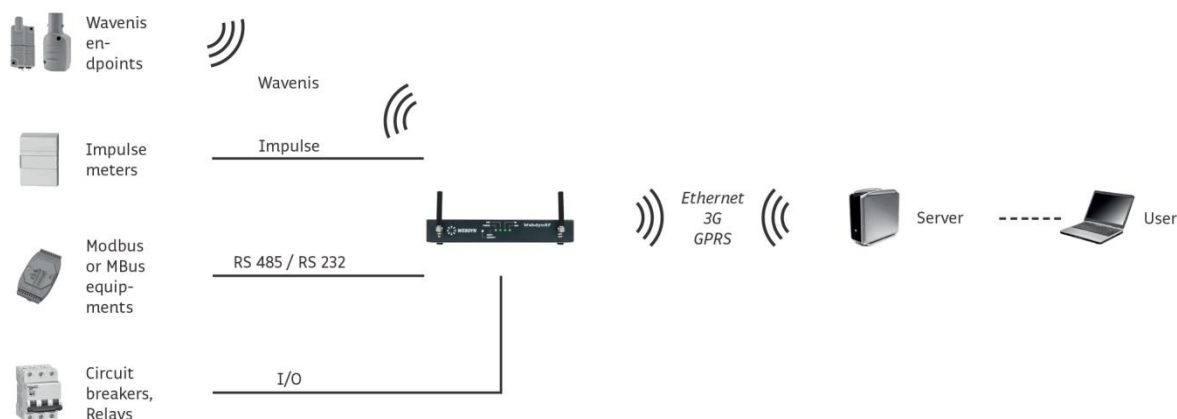
Technical Specifications: Wavenis WebdynRF

TECHNICAL

– **Radio interface :** 433/868/915MHz Wavenis
– **I/O interfaces :** 3 digital dry contact inputs - impulse and 1 digital output - relay
– **Serial interfaces :** 1 Modbus RS485 port and 1 Modbus/MBus RS232 port
– **IP network interfaces :** Ethernet: 10/100Mbits/s – GSM/GPRS : 850/900/1800/1900Mhz

GENERAL

– **Power supply :** lithium-ion battery [+12/24v] DC supplied via an external batery (Accessory)
– **Internal battery :** Li-Ion 650mAH
– **external battery :** 1 external UPS monitoring via three dedicated dry contact inputs
– **T° :** operating : -20°C/+70°C - Storage : -20°C/+85°C
– **Dimension :** 20x12x3,2cm compact metallic box
– **RTTE certification :** 1995/5/CEEE
– **Power consumption :** 7W maximum

MONITORING

– Wavenis sensors network monitoring
– RS232 serial port (Modbus or M-Bus) monitoring
– RS485 Modbus serial port monitoring
– Three dry contact inputs (digital or impulse) monitoring
– Relay output monitoring

2   Safety instructions

You absolutely must follow all the safety instructions featured in this guide.
Failure to follow these instructions may damage the devices and endanger people.

⚠	The WebdynRF gateway may be damaged by ESDs (Electrostatic Discharges). • All of the installation work for the WebdynRF should only be carried out by an authorized professional electrician. • Avoid any contact with the components' connections or the connectors' contacts.

⚠	The WebdynRF gateway contains a Lithium battery: ATTENTION THERE IS A RISK OF AN EXPLOSION OCCURRING IF THE BATTERY IS REPLACED WITH THE WRONG TYPE OF BATTERY. DISPOSE OF USED BATTERIES IN ACCORDANCE WITH INSTRUCTIONS

3   Unpacking

3.1   Delivery contents

Check that all the items have been delivered and that the device has not been damaged. Contact Webdyn if the delivery is incomplete or damaged.

WebdynRF Gateway
(Ref.: WG0606-AXX)

The following are delivered with the gateway:
- 2 L-shaped antennas (RF/Modem)
- 1 set of Weidmüller connectors

Only in the event of being ordered as an accessory:

12V external power supply unit
(Ref.: AC0102-02)

*Remote dual-band GPRS antenna with 5m or 20m of cable
(Ref.: AC0201-01 or AC0201-02)*

DIN Rail and wall-mounting fastening kit
(Ref.: AC0301-01)

3.2   Identification of the gateway

Information label:
You can identify the WebdynRF gateway from its information label, which is located beneath the box.
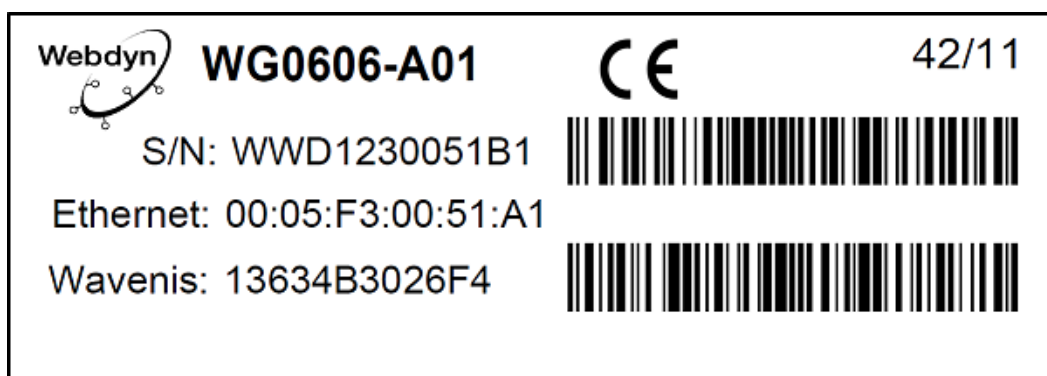
This label contains (in the case of the Wavenis version):

- The name of the product (WG0606-A01).
- The production date (in WW/YY format in the top right-hand corner).
- The serial No. in clear text and as a code 128 barcode.
- The MAC address (Ethernet) in clear text.
- The Wavenis radio address in clear text and as a code 128 barcode.

Software version:
You will find the software version on the gateway's Web interface. The software version is indicated on the *Overview* page.

4   Mounting

4.1   Choosing the environment

Comply with the following environmental conditions.

- Operating temperature: -5°C to +45°C.
  ⚠️ Battery performance declines in temperatures lower than 0°C and higher than 45°C.
- Storage temperature: -20°C to +45°C (for a period of less than one month)
                                 -20°C to +35°C (for a period longer than one month)
- The ambient humidity must be between 10 and 90% RH.
- Protect the WebdynRF from dust, humidity, harmful substances, and condensation.
- The distance between the WebdynRF and the Modbus equipment must not exceed the maximum permitted distance for the corresponding type of interface (RS485 or RS232).
- If using the cellular link, make sure that reception is optimal whilst mounting the unit (see 5.2.2).

The WebdynRF gateway must send data from your installation to the remote server automatically and at regular intervals: for this, you will need to fulfill the following conditions:

- To send installation data via Ethernet, the network must include a router enabling access to the Internet.
- To send installation data via a GSM link, the network coverage must be satisfactory.
- If you are using the remote GSM antenna option, refer to Chapter 4.5 before assembling the gateway.

⚠️ To optimize Wavenis and GSM reception sensitivity, you absolutely must keep a clear space of 20 cm around the antennas.

4.2   Mounting the WebdynRF on its feet

The WebdynRF may be placed on its feet on a flat surface.
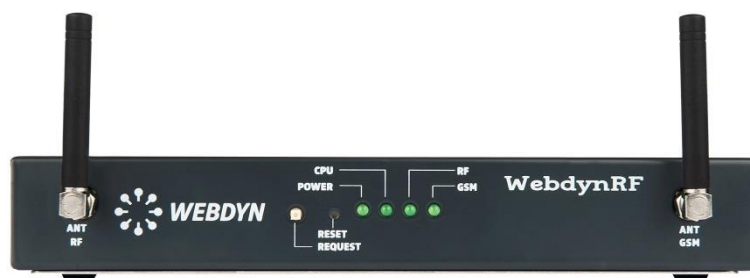
4.3   Mounting the WebdynRF on a DIN Rail

The WebdynRF may be mounted on a 35mm standardized metal rail (DIN Rail).
This rail mounting requires additional mounting accessory *Ref: KFIX01*.

1. Mount the fastening kit onto the gateway:

2. Hook the WebdynRF onto the rail using the two supports.

4.4 Wall mounting the WebdynRF

The WebdynRF may be fastened onto a wall.
This rail mounting requires additional mounting accessory *Ref: KFIX01*.

1. Mount the fastening kit onto the gateway:

2. Lift the 2 tabs in order to lock the fastenings into position:

3. Determine the gateway's position and mark the drill holes using a pencil.
4. Drill the holes (diameter: 6 mm) in the locations marked and insert the pins.
5. Use screws to fasten the WebdynRF to the wall.

## 4.5   Mounting the remote GPRS/GSM antenna

Only in the event of ordering the following accessory: Remote dual-band GPRS antenna with 5 m or 20 m of cable (Ref.: AC0201-01 or AC0201-02).

Contents of the kit:

A: 1 antenna.
B: 1 antenna bracket with a 5 or 20 meter antenna cable.

1. Determine the position of the antenna by using the bracket on the wall, and mark drill holes using a pencil.
2. Drill the holes (diameter: 6 mm) in the locations marked and insert the pins.
3. Use screws to fasten the antenna bracket to the wall.
4. Screw the antenna onto the antenna cable.
5. Screw the cable onto the WebdynRF antenna socket.
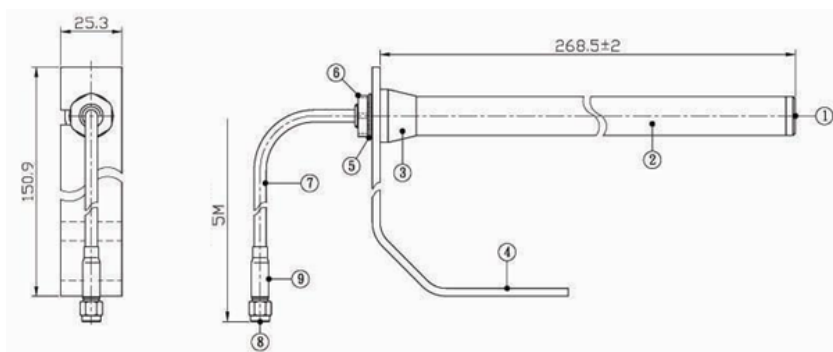
Cable: RG-58.
Frequencies: 824-960 MHz; 1710-1990 MHz.

5   Electrical connection

> • All the cabling work absolutely must be carried out by a specialized qualified electrician.
> • Before installation, all the devices connected to the corresponding communication bus must be disconnected from the electrical network (DC and AC).
> • Please follow all the safety instructions featured in your equipment's documentation.

5.1 Overview of the external interfaces and of the LEDs

The box's front panel:

Antennas:
RF ANT: Antenna for the RF link.
GSM ANT: Antenna for the GPRS or 3G link.

The buttons:

Button	Description
REQUEST	Short press => Connection request Long press (3s) => Displays the reception level for the GSM signal (see GSM LED) 3 successive long presses => Returns parameters to their factory settings
RESET	Restarts the gateway's hardware

The LEDs:

LED	Description
POWER	Lights up when the product is powered up.
CPU	Lights up depending on CPU activity.
RF	As its default setting, it is off. It flashes in the event of RF traffic, or when a computer is connected in transparent mode.
GSM	Lights up during GSM connection. Lights up for 1 second upon receiving an SMS. When the Request button is pressed for a long time, it indicates the level of the RSSI signal received by a number of flashes (0 to 5 times). 0 – Signal power ≤ -112 dBm 1 – Signal power of -111 dBm to -96 dBm 2 – Signal power of -96 dBm to -81 dBm 3 – Signal power of -81 dBm to -66 dBm 4 – Signal power of -66 dBm to -51 dBm 5 – Signal power > -51 dBm

The box's rear panel:

12/24V: The gateway's power supply.
UPS: Uninterruptible power supply status inputs.
Input: 3 on-off inputs.
Output: 1 on-off output.
RS485/RS422: 1 RS485/RS422 port.
USB: USB socket.
*LAN*: LAN socket.
Serial RS232: RS232 port, type DB9.

5.2 Connecting the gateway to the Internet for communication with the remote server

This chapter describes connecting the WebdynRF to the Internet for communication with the remote server. This communication may be selected from one of three different types of media:

- Ethernet via an ADSL line.
- GPRS (product versions WG0606-A01 and WG0606-A03).
- 3G (product versions WG0606-A02 and WG0606-A04).

5.2.1 Connection to the Internet via an ADSL line

Connect the WebdynRF gateway to the ADSL network by using the Ethernet socket marked LAN on the gateway's rear panel.
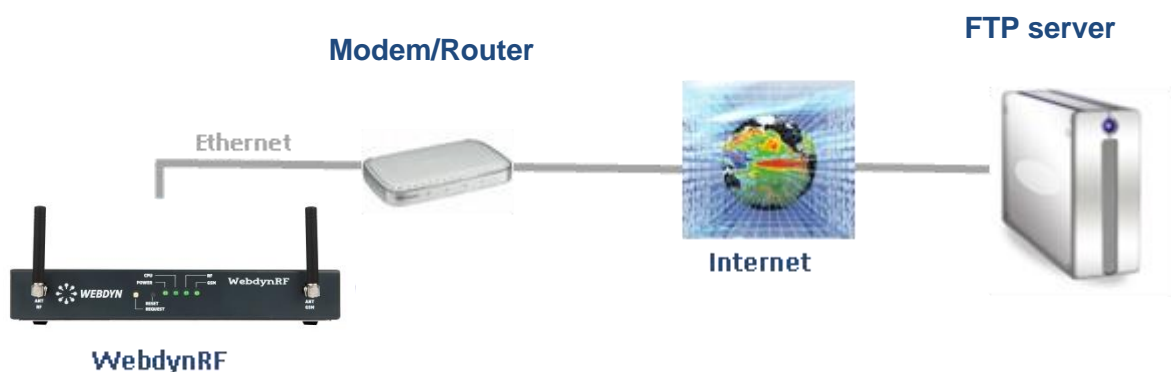
The length and quality of the cable may have negative repercussions on the quality of the signal.

Use an Ethernet cable complying with the following remarks:

- A straight cable is recommended.
- Use a good-quality cable: as a minimum, a category 5 (STP Cat 5) or higher shielded twisted pair cable.
- The maximum permitted length of the Ethernet cable is 100 m per segment.

ℹ	**Upon delivery, the IP configuration parameters for the WebdynRF gateway are as follows:**

IP address: 192.168.1.12
Sub-network mask: 255. 255. 255.0
**DHCP: Deactivated**

ℹ	**Network administrator**

If your local network is managed by a network administrator, contact him before integrating the WebdynRF gateway into your network.

5.2.2   Internet connection via a GPRS or 3G link

To use a GPRS link or a 3G link and to enable the gateway to communicate with the remote server, you need to insert a SIM card into the gateway's internal drawer.
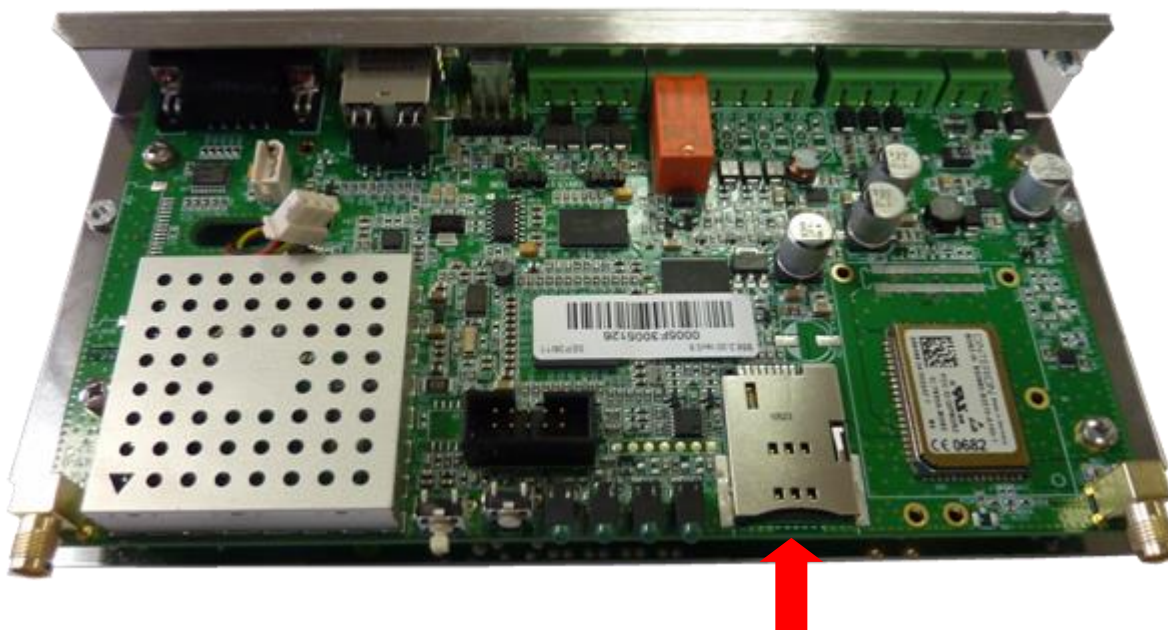
- To ensure smooth running of the WebdynRF in GPRS or 3G mode, you must insert a SIM card with the following characteristics:
  - o Possibility of receiving and sending SMSs.
  - o GPRS or 3G communication included.

- Insert the SIM card into the product.

- In the gateway's factory configuration, the code management setting is *PIN Mode = off* (see 8.2.1).
- There are three possible scenarios:

- The PIN code is deactivated: modem communication is active.
- The PIN code is activated and equals 0000: modem communication is active.
- The PIN code is activated and differs from 0000: modem communication is experiencing an error.

> ⚠️ If the SIM card has a PIN code that has been activated but is different from 0000 when the gateway is first started up, it will be blocked after 3 attempts.
> You can unblock it by using a mobile phone with the PUK code provided by your operator.

To communicate with the remote server via GSM, the gateway must be positioned in an optimal GSM coverage area.

To ascertain the signal quality received by the gateway, use the *Request* button, giving it a long press (for 3 seconds).

The GSM (RSSI) signal reception level is displayed on the GSM LED by a number of flashes (0 to 5 times).

The correspondence between the number of flashes and the power of the signal is shown below:

0 – Signal power ≤ -112 dBm
1 – Signal power of -111 dBm to -96 dBm
2 – Signal power of -96 dBm to -81 dBm
3 – Signal power of -81 dBm to -66 dBm
4 – Signal power of -66 dBm to -51 dBm
5 - Signal power > -51 dBm

> ⚠️ **As a minimum, the power of the signal received must equal -96 dBm or 2 flashes.**

5.3   Connecting the gateway's on-off output

The WebdynRF gateway has 1 on-off output.
This output may be used as a digital output.

5.4   Connecting the gateway's on-off inputs

The WebdynRF gateway has 3 on-off inputs.
These inputs may be used as digital inputs for triggering alarms or as a pulse meter (see the operating manual for further details).

> ⚠️ To avoid damaging the gateway, do not input current or voltage via the on-off inputs.

In pulse meter mode, the pulse length must be 10 ms as a minimum and 1000 ms as a maximum in order to be taken into account.

5.5   Connecting the gateway to Modbus equipment via the RS485 link

This chapter describes connecting the WebdynRF to the RS485 bus for communication with Modbus equipment.

The RS485 interface used is marked with the label RS485/RS 422.
This is a 4-wire or 2-wire interface.
Choosing between 4 wires or 2 wires is done automatically by the onboard software.
The gateway may be located at the end of the RS485 communication bus, or in the middle of the bus.
To ensure that the RS485 data bus functions, it must have a 120 Ohm plug on both ends.
Depending on the positioning of the gateway on the bus, this plug must be placed outside the box.

Consult the Modbus equipment documentation concerning its RS485 cabling and connection principle.

Once the RS485 cable is available in the vicinity of the gateway:
1. Strip off approximately 4 cm of the RS485 communication cable's sheath.
3. Cut the shielding back to the length of the cable sheath.
4. Strip the wires to a length of approximately 6 mm.
5. Connect the conductors to the connector marked RS485/RS422, following the assignments in your RS485 communication bus.

4-wire RS485 assembly:

TX+   TX-   RX+   RX-
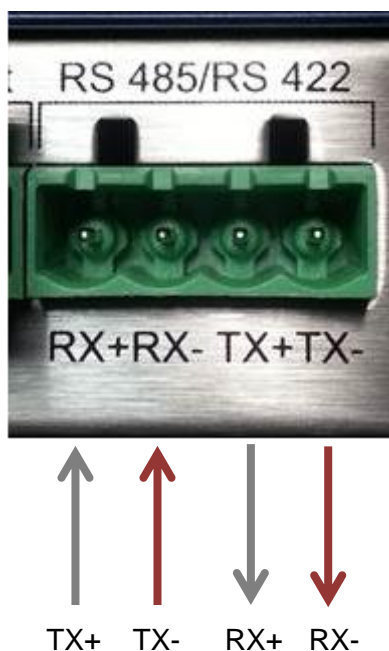
2-wire RS485 assembly:

D+   D-
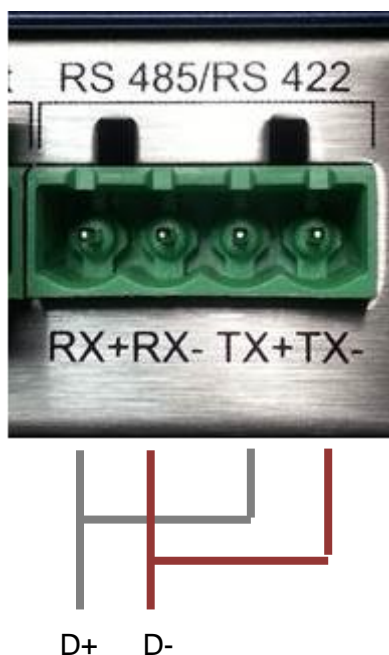
5.6   Connecting the gateway to equipment via the RS232 link

The RS232 port may be used to gather data from M-Bus equipment. An M-Bus transceiver must be connected to the RS232 port and this port must be configured in M-Bus mode (see section 0).
M-Bus equipment must be configured with a unique address on the bus.

A scan of the bus must be initiated from the Web interface (see section 0). The M-Bus equipment discovered during this scan will be queried upon each occurrence of the

associated scheduler. If some equipment items are either removed from the bus or added to it, a new scan must be initiated so that the gateway will factor in the modification.

6   Connecting to a local PC via Ethernet for configuration purposes

During the initial commissioning, the WebdynRF gateway must be configured via the Ethernet network using a PC (either a portable or fixed PC).
The PC may be connected to the gateway directly, or integrated into the gateway's local network, particularly if the ADSL link is used for communication with the remote server.

This chapter describes the two types of connection for hooking up a PC to the gateway.

6.1   Direct connection of the PC to the gateway

Connect the WebdynRF gateway directly to the PC by using the Ethernet interface on the box and a straight or crossover Ethernet cable. To identify the PC's Ethernet socket, refer to the PC's documentation.

> **Recommendations relating to the Ethernet cabling:**
>
> The length and quality of the cable may have negative repercussions on the quality of the signal:
> - Use a good quality cable; as a minimum a category 5 (STP Cat 5) or higher shielded twisted pair cable.
> - The maximum permitted length of the Ethernet cable is 100 m per segment.

6.2   Connecting the PC to the gateway on a local network

Connect the WebdynRF gateway to the local network by using the box's Ethernet interface and a straight or crossover Ethernet cable. To identify the Switch/Hub's Ethernet socket, refer to its documentation.

Recommendations concerning Ethernet cabling:

The length and quality of the cable may have negative repercussions on the quality of the signal:
- A straight cable is necessary.
- Use a good quality cable; as a minimum a category 5 (STP Cat 5) or higher shielded twisted pair cable.
- The maximum permitted length of the Ethernet cable is 100 m per segment.

6.3   Network configuration of the PC for accessing the gateway

With the PC connected directly to the gateway (see 6.1) or connected to the gateway on a local network (see 0), you need to configure a fixed IP address on the PC within the same IP address field and within the same sub-network as for the WebdynRF gateway.

Upon delivery, the settings of the WebdynRF gateway are as follows:

IP address: 192.168.1.12
Sub-network mask: 255. 255. 255.0
DHCP: deactivated

Network administrator
If your local network is managed by a network administrator, contact him before integrating the WebdynRF gateway into your network.

The next step enables the network address for a PC to be configured in order to gain access to the WebdynRF gateway:

Configuration of a second IP address on the PC:

1. In a Windows environment (2000 or XP) click on *Start/Parameters/Network connections and remote access*. The *Network connections and remote access* window will be displayed.
2. Using the right button, click on *Local network* and then click on *Properties*.
3. Select *Internet Protocol (TCP/IPv4)* and then click on *Properties*.
4. Then, click on *Advanced*.
5. In the *IP address* field, click on *Add*.
6. Enter the IP address 192.168.1.xxx (xxx from 1 to 254 and different from 12) and the sub-network mask 255. 255. 255.0.
7. Click on *Add*.
8. To validate the settings, click on *OK* in each of the three windows.
9. Close the *Network connection and remote access* window.

7   Connecting the power supply

Connect the power supply only when all the other devices are connected to the WebdynRF gateway.

Check whether the following connections (if used) are connected correctly before powering up the gateway:

- On-off output.
- On-off inputs.
- RS485 input used for connecting equipment items.
- RS232 output used for connecting equipment items.

1- Connect the cable to the 12/24V input of the gateway's thumbscrew connector, making sure the polarity is correct.

2- Connect the power supply used to the mains.

Start-up phase for the WebdynRF gateway:

Before connecting the power supply unit, LED POWER will light up. The gateway will take approximately 20 seconds to start up. Its initialization is completed when the CPU LED flashes on and off over a period of 0.5 s.

Information about the characteristics of the power supply to be used:

The power supply must deliver 12 to 24V and 15W.

---
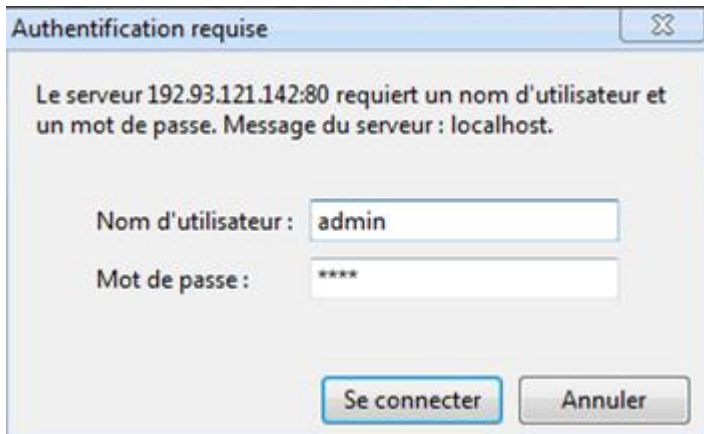
8   Commissioning the gateway

The WebdynRF gateway is configured via the integrated Web interface.

8.1   Connection to the onboard Web interface

1. Launch the Web browser
   The Web interface is compatible with the latest versions of Firefox, Chrome and Internet Explorer. Older versions may work but are no longer supported (for example IE 7).

2. Visit the WebdynRF gateway homepage using the browser's address line http://192.168.1.12.

3. A login window will be displayed:

The default password for the administrator is `high`.

4. The homepage will be displayed:

> ℹ️ If Web pages are accessed during the gateway's initialization phase, the [Loading…] logo will be displayed.
> Wait until the gateway is fully initialized before accessing Web pages.

8.2   Configuration of the gateway's connectivity

The *Connectivity* page enables the gateway to be configured so that it may communicate with the remote server.

8.2.1   Configuration of the modem connection

Parameters	Description
PIN Mode	*Off*: The SIM card's PIN code must be deactivated.
	Manual: The SIM card's PIN code must be entered in the PIN Code box.
	Automatic: *Not implemented.*
PIN Code	The SIM card's PIN code to be filled in if *Manual* is selected in PIN Mode.
Call Number	GPRS call number. The default number *99***1#* is valid in the majority of cases.
APN	Name of the APN of your mobile operator.
Login	Your mobile operator's APN user name.
Password	Your mobile operator's APN password.
Mode	*OnDemand*: The gateway establishes the connection only when it has to communicate with the remote server. It cuts it off when the data transfer is completed after a timeframe that can be configured in *Disconnect delay*.
	AlwaysOn: *Not implemented.*
	AlwaysOff: This mode is to be used in the case of connection with the remote server via Ethernet. This connection is done via modem, but if a valid SIM card is inserted, the gateway may receive incoming SMSs or calls and transmit SMSs.
	Off: The modem is always off. This mode is to be used in the case of connection with the remote server via Ethernet without the possibility of receiving calls or SMSs or sending SMSs.
Disconnect delay	Value of the wait delay in *OnDemand* between the end of data exchanges and the end of the connection.
Caller ID	List of the telephone numbers permitted for incoming SMSs and calls.

> **ℹ** **Consult your mobile operator in order to obtain the information (APN, login, password) relating to your SIM card.**

8.2.2   Configuration of the Ethernet connection

Parameters	Description
IP	Enter the IP address at which the WebdynRF gateway is accessible.
Netmask	Enter the sub-network mask for your network. This mask limits the Ethernet network to the IP addresses defined and separates the network ranges from each other.
Gateway	Enter the address of the gateway for your network. The gateway's address is the IP address of the device that establishes the Internet connection. Generally speaking, the address entered here is the one for your ADSL router.
Use DHCP	You have the option of obtaining the Ethernet parameters automatically if the network infrastructure enables it. In this case, select the dynamic mode and refer to the configuration of your DHCP server in order to find out your gateway's IP address.
DNS servers	The DNS (Domain Name System) server translates the explicit Web addresses (for example www.webdyn.com) into the corresponding IP addresses. Here, enter the addresses of the DNS servers that you have received from your ISP (Internet Service Provider). You can also enter your router's IP address.

8.2.3 Configuration of the remote FTP server

This field makes it possible to fill in the configuration of the remote FTP server enabling data exchanges.
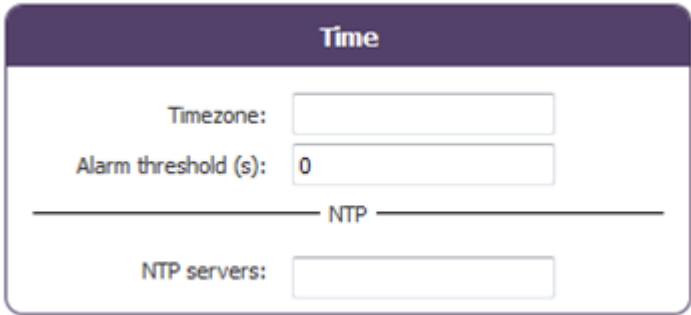
Parameters	Description
Address	IP address or name of the remote FTP server
Login	The user name used by the gateway for connection to the remote FTP server
Password	The password used by the gateway for the connection to the remote FTP server
Mode	Active or passive
Use FTPS	To be ticked if the remote server is an FTPS one
Root	The root directory on the remote FTP server
WS notification	None: No Web Services notification
	Put: Notification via Web Services when the gateway puts data on the FTP server
	Get: Notification via Web Services when the gateway downloads data from the FTP server
	Both: Put & Get

8.2.4   Time zone configuration
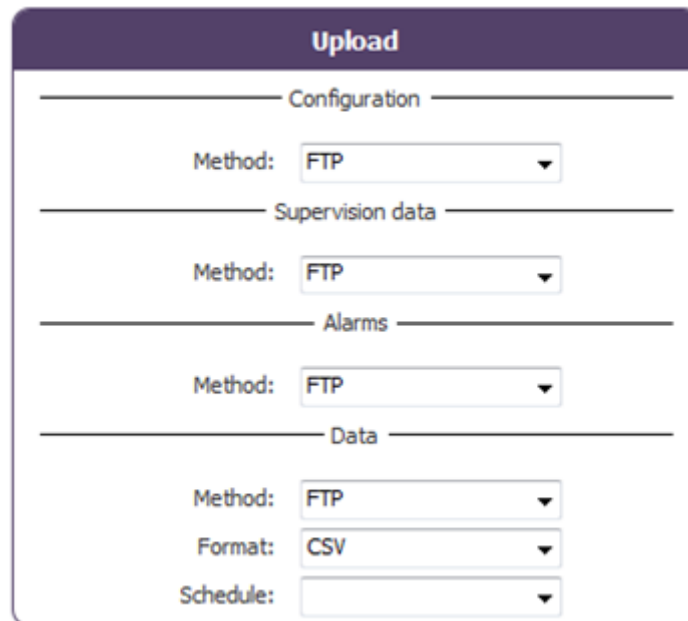
Parameters	Description
Timezone	Text field for indicating the time zone. The format must comply with the TZ format; see the link: http://en.wikipedia.org/wiki/Zone.tab
Alarm threshold (s)	Difference in seconds between the gateway time and the NTP synchronization time, above and beyond which an alarm is emitted
NTP servers	IP addresses of the NTP servers used for synchronization of the gateway's clock

8.2.5   Data transfer configuration

The gateway can put 4 types of data on the remote server:

- The gateway's configuration data.
- The gateway's supervision data.
- Alarms
- Index, Modbus, and RF data.

For each type of data, the gateway can use the FTP method.
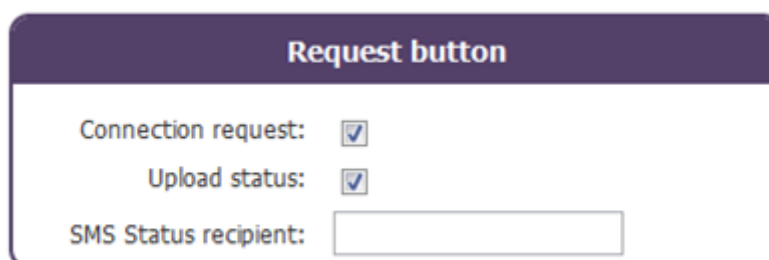

The data format can be XML or CSV.
When the CSV format is selected, only the Wavenis data will be in this format. All the other data will be sent in XML format.

The lodging of data must be associated with a *Schedule* by filling in its configured unique ID (see section 0).

> **Consult the operating manual for the WebdynRF gateway-Wavenis in order to ascertain the format and content of the configuration, supervision, alarm and Wavenis data files.**

8.2.6   Request button

By default, pressing the Request button on the product's front panel will trigger a connection to the remote server and uploading of the data recorded as well as the lodging of a status file. Both can be selectively deactivated.

A status SMS can also be sent to a specified recipient.
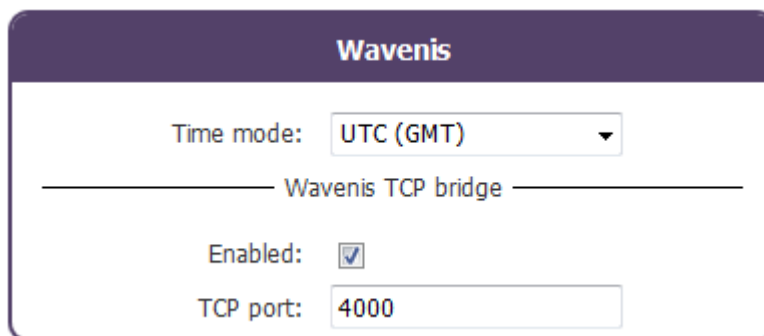
8.3 System configuration

8.3.1 Configuration of Wavenis parameters

The management mode for the dates and times of the Wavenis modules enables the way the dates and times are either sent or are to be sent to the modules to be defined on the WebdynRF gateway.

The times of the modules can be managed:
- UTC (GMT): UTC time
- Local time with DST
- Local time w/o DST

The Wavenis bridge enables the gateway to be configured in Serial/IP mode in order to use it as a Coronis WavePort via Ethernet.

All you have to do is activate the *Enabled* box and specify the TCP port number to be used.

Via Webdyn's Toolbox, this configuration enables the Coronis Wavenet Monitor software to be used to configure the Wavenis radio network (see section 8.7.2).

8.3.2   Ports configuration

The gateway's ports can be configured using the following parameters:

Port	Values	Description
rs232	Off Mbus	RS232 deactivated RS232 activated in MBus mode
rs485	Off Modbus	RS485 deactivated RS232 activated in MBus mode
Input #1/mode	Digital input Pulse	Digital input mode Pulse input mode
Input #2/mode	Digital input Pulse	Digital input mode Pulse input mode
Input #3/mode	Digital input Pulse	Digital input mode Pulse input mode

The parameters of the RS485 port are:
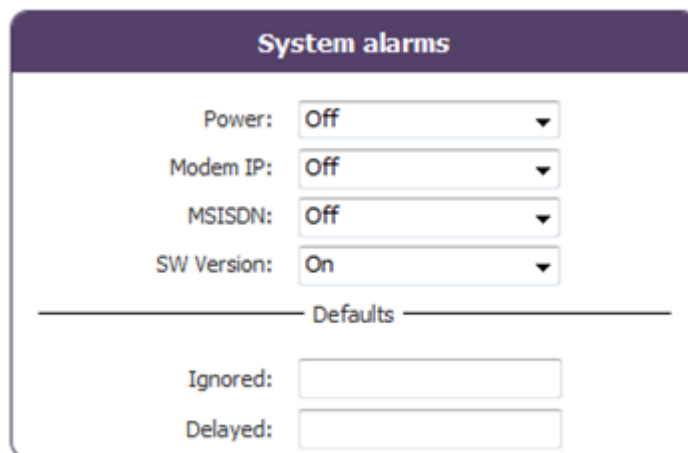
Name	Value
Mode	**off**, modbus
Baudrate	4800, 9600, **19200**, 38400, 57600, 115200
Data bits	8
Parity	odd, **even**, none
stop_bit	**1**, 2

8.4   Alarms configuration

The gateway can generate 3 types of alarm:
- System alarms.
- Wavenis alarms.
- On-off input alarms.

8.4.1   System alarms

There are 5 types of system alarms:

- *Power:* Alarm generated upon loss and return of the power supply.
- *Modem IP:* Alarm generated if the gateway's IP address changes.
- *MSISDN:* Alarm generated if the SIM card inserted in the gateway is changed.
- *SW Version:* Alarm generated if the gateway's firmware version changes (during an update)
- Fault.

Each alarm source may be activated individually and be transferred immediately to the remote server (*On*) or upon the next connection (*Delayed*).

The gateway also generates fault alarms, the codes of which are shown below:
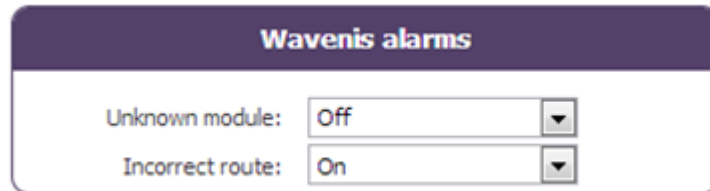
Code	Description
D_MODEM	Modem fault
D_ETHERNET	Ethernet interface fault
D_WAVENIS	Wavenis fault
D_INTERNAL_BAT	Internal battery fault

Each fault is transferred immediately to the remote server by the gateway.

In the *Ignored* box, the fault codes ignored by the gateway can be listed. Should several fault codes be entered, they must be separated by a ',' (comma) character.

In the *Delayed* box, the fault codes listed transferred by the gateway upon the next connection can be listed. Should several fault codes be entered, they must be separated by a ',' (comma) character.

8.4.2 Wavenis alarms

When the gateway receives a Wavenis alarm message, it acknowledges it (to the sending module).
If the alarm is triggered from a known module, the gateway processes it and then initiates a connection to the remote server in order to lodge it.
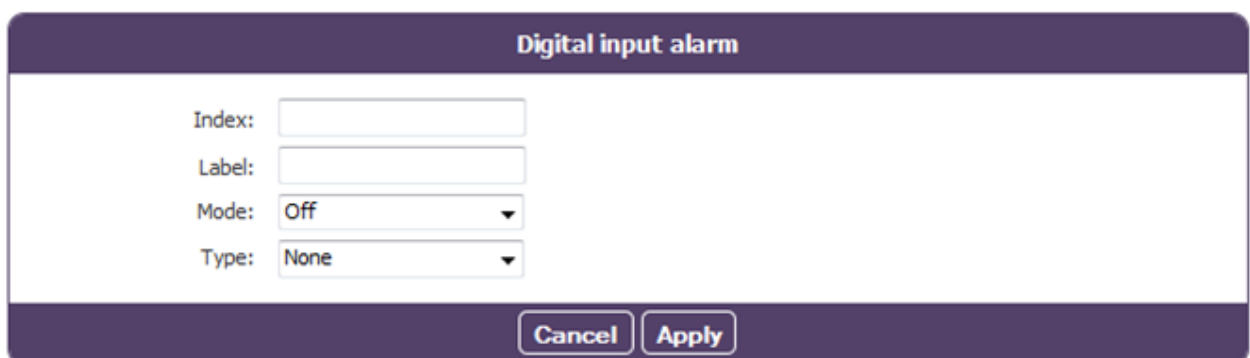If the alarm comes from an unknown module, a *Wavenis_unknown* alarm is triggered. This alarm will be sent only once per module and may be sent immediately (*On*) or upon the next connection (*Delayed*).
If the alarm is triggered from a known module but has followed a radio path that is different from the one configured, an *Incorrect route* alarm is triggered.
This alarm will be sent only once per module and may be sent immediately (*On*) or upon the next connection (*Delayed*).

The gateway does not filter Wavenis alarms (in other words, there are no parameters enabling the alarms for a given module to be selected). They may nevertheless be activated and/or deactivated during configuration of the module itself.
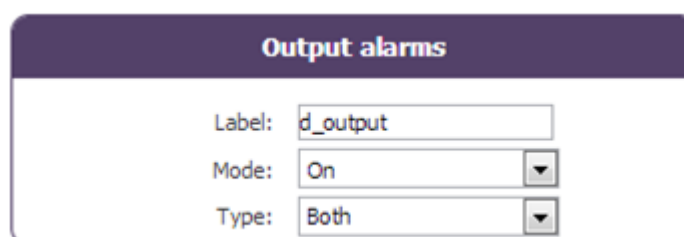
8.5 On-off input alarms

Multiple alarms may be configured for digital inputs.
An alarm for a digital input may be configured as follows:

Name	Description
Index	Index for the digital entry
Label	Name of the alarm (for information purposes only)
Mode	*On*: Immediate sending *Off*: Sending deactivated *Delayed*: Sending upon the next connection
Type	*None:* Detection deactivated *Rising:* Rising edge detection *Falling:* Falling edge detection *Both:* Rising & Falling

8.5.1 On-off output alarms

An alarm may be configured for the digital output.

Name	Description
Label	Name of the alarm (for information purposes only)
Mode	*On*: Immediate sending *Off*: Sending deactivated *Delayed*: Sending upon the next connection
Type	*None:* Detection deactivated *Rising:* Rising edge detection *Falling:* Falling edge detection *Both:* Rising & Falling

8.6 Schedules configuration

The scheduler is in charge of all the periodic tasks.
The configuration of the scheduler consists of a list of schedules.
Each of these schedules has a unique ID that is used to link a task to a precise schedule.
They may be used independently to trigger data gathering and to download data.

Schedule

Id:	
Label:	
Type:	Daily ▼
Time:	
Interval:	
Count:	

Cancel Apply

Add new schedule

Click here to add a new schedule …

Each schedule is configured as follows:

Name	Description
Id	The schedule's unique ID.
Label	Name of the schedule, for information purposes only.
Type	*Daily, Weekly, Monthly, Yearly* or *Follower*: see the description below.
Time	Time of the first occurrence (not used for *Yearly* schedules).
Day of Week	Number of the day of the week of the first occurrence (1 = Monday, 7 = Sunday) (used only for *Weekly* schedules).
Day of Month	Number of the day of the month of the first occurrence (used only for *Monthly* schedules).
Date & Time	Date and time of the first occurrence in a given period (used only for *Yearly* schedules).
Interval	Interval between occurrences (in seconds).
Count	The number of occurrences.
Parent	Reference to the parent schedule for a *Follower* schedule.

Configuration of the various types of schedules:

Daily schedule:
Every day, the first occurrence T0 is provided by the time filled in under *Time.*
The format of the time variable is as follows: HH:MM:SS. For example 09:30:00

The next occurrences will occur at time T_i:

$$T_i = T_0 + i \times \Delta t \qquad \begin{cases} i < count \\ \forall i \; jour(T_i) = jour(T_0) \end{cases}$$

jour = day

Δt is the value in seconds filled in under *interval*.

Weekly schedule:
Every week, the first occurrence T0 is provided by the day of the week filled in under *dayofweek* and the time, filled in under *time*.

The next occurrences will occur at time T$_i$:

$$T_i = T_0 + i \times \Delta t \qquad \begin{cases} i < count \\ \forall i \; semaine(T_i) = semaine(T_0) \end{cases}$$

semaine = week

Δt is the value in seconds filled in under *interval*.

Monthly schedule:
Every month, the first occurrence T0 is provided by the number of the day of the month, filled in under *dayofmonth*, and the time, filled in under *time*.

The next occurrences will occur at time T$_i$:

$$T_i = T_0 + i \times \Delta t \qquad \begin{cases} i < count \\ \forall i \; mois(T_i) = mois(T_0) \end{cases}$$

mois = month

Δt is the value in seconds filled in under *interval*.

Yearly schedule:
Every year, the first occurrence T0 is provided by the date filled in under *Date & Time.*
The format is as follows: YYYY-MM-DDTHH:MM:SS
For example, for a first occurrence on 11 February 2012 at 13H00:
Time = 2012-02-11T13:00:00.

The next occurrences will occur at time T$_i$:

$$T_i = T_0 + i \times \Delta t \qquad \begin{cases} i < count \\ \forall i \; année(T_i) = année(T_0) \end{cases}$$

année = year

Δt is the value in seconds filled in under *interval*.

Follower schedule:
A "Follower" schedule will be produced after the end of each occurrence of the reference schedule. The *Parent* schedule cannot be a "Follower" schedule.
This type, for example, enables the uploading of data to be triggered after completion of a data gathering operation envisaged.

Example:
You want to gather data from all the Wavenis modules once a day at midnight and download the data just after that. You can configure a "*Daily*" schedule for the data gathering and a "*Follower*" schedule for the first schedule for uploading data.

Examples:

Need	*Type*	*Time*	*Day of Week*	*Day of Month*	*Date & Time*	*Interval*	*Count*
Every Tuesday at 15:00:00	Weekly	15:00:00	*2*			0	1
Every 2nd day of the month at 00:00:00	Monthly	00:00:00		*2*		0	1
Every day at 14:00:00	Daily	14:00:00				0	1
Every hour from 8H00 to 18H00 every Tuesday	Weekly	08:00:00	*2*			3600	11
Every 2 hours from 8H00 to 20H00 on 31 December	Yearly				2012-12-31T08:00:00	7200	7

8.7   Configuration of the Wavenis radio network

Wavenis product versions
There are two ways of implementing the Wavenis radio network:

- If you already know the full Wavenis mapping, you can configure the modules manually one by one by using the *Wavenis* table on the onboard Web interface.

- If you wish to build your Wavenis network by using the gateway as a Waveport and the Wavenet Monitor configuration tool, you can directly import the configuration file from this Coronis tool.

The gateway supports the following Wavenis modules:

- Waveflow (1, 2 and 4 inputs)
- Dallas Wavetherm (1 and 2 inputs), PT100 (1 input) and PT1000 (1 input)
- Wavesense 4-20mA (1 input) and 0-5V (1 input)
- Wavelog (2 and 4 inputs)

8.7.1 Configuration of the radio modules via the Web interface

Each module is configured as follows:

Name	Description
Address	Wavenis address
Label	Name of the module (for information purposes only)
Type	Type of module
Mode	Reading mode (immediate, datalog)
Nb Input	Number of module inputs
Schedule	Schedule's unique ID used for the module reading (see 0)
Repeaters	List of the radio addresses of the repeaters

The Wavenis address may be entered in its hexadecimal form (12 digits) or in its decimal form (15 digits, with an optional hyphen after the 5th and 7th figures).
The repeaters must be entered from the gateway to the module.
The modules associated with the same schedule are read in the order configured.
A request for a given module is repeated up to three times if necessary.

8.7.2 Configuration via the Wavenet Monitor and Toolbox software
The stages below explain how you can build your Wavenis network by using the gateway as a Waveport with the Wavenet Monitor configuration tool and importing the configuration file from this Coronis tool into the gateway.

8.7.3 Installation of Com0Com
On the PC used, first of all you have to install Com0com.

This software makes it possible to create a pair of virtual ports which are connected to each other via a virtual cable.

- Download the zip file from the following URL:
http://sourceforge.net/projects/com0com/

- Launch *setup.exe.* and follow the installation stages:
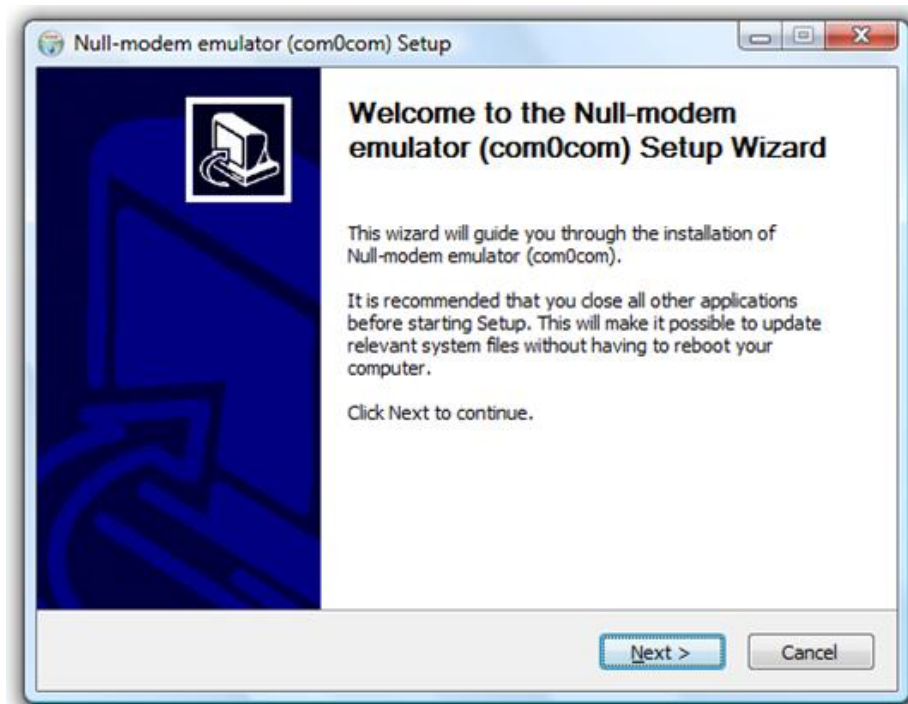
- Click on *Next.*
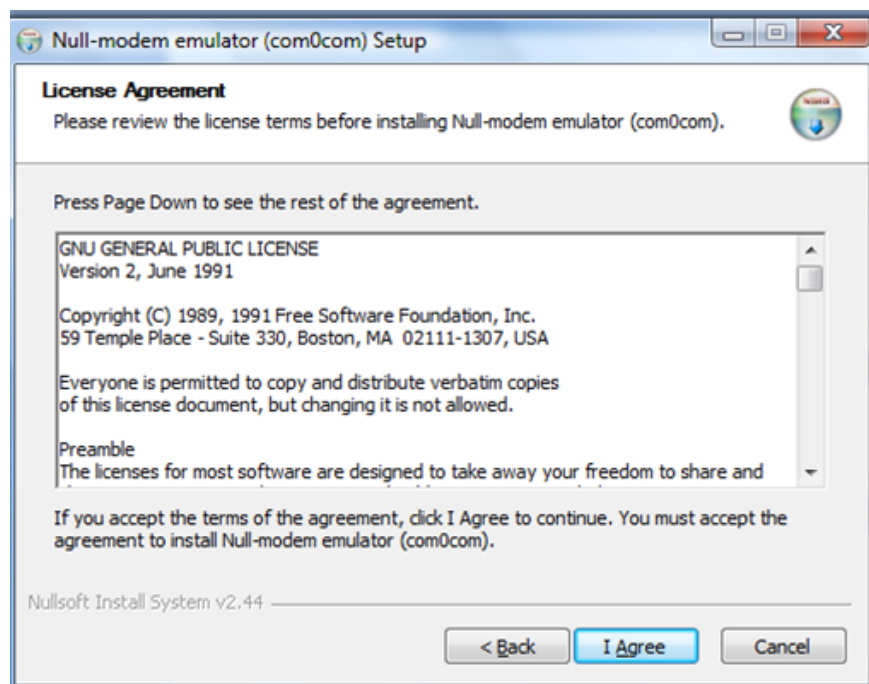
- Click on *Agree.*
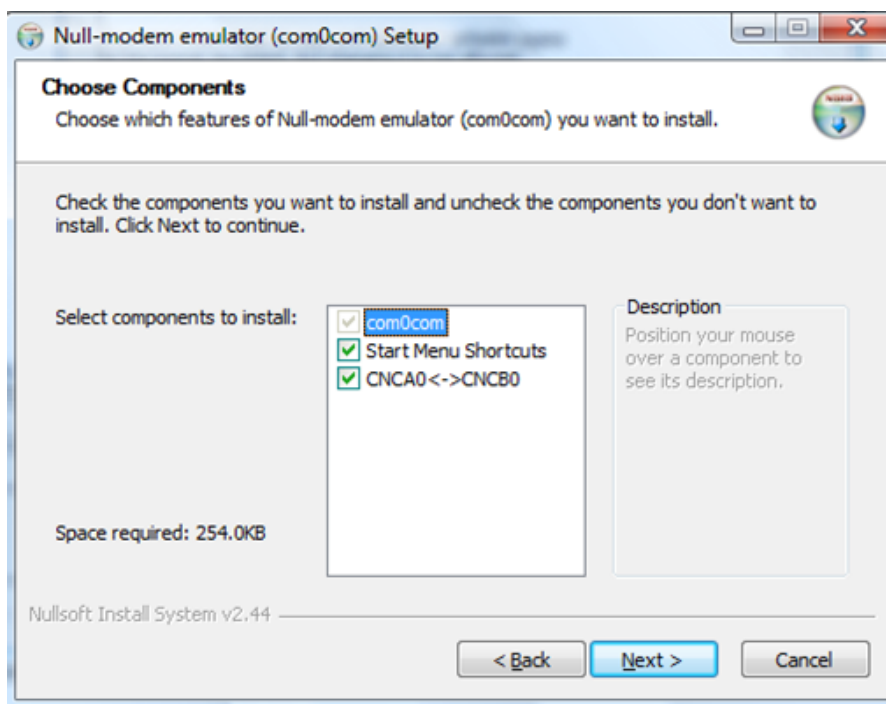
- Click on *Next.*
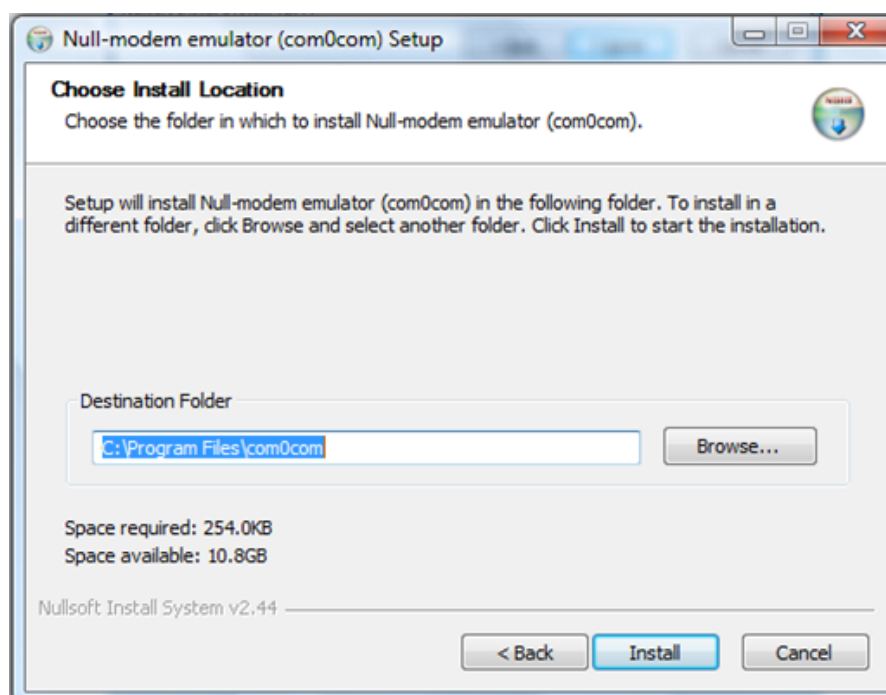
- Fill in an installation directory and click on *Install:*
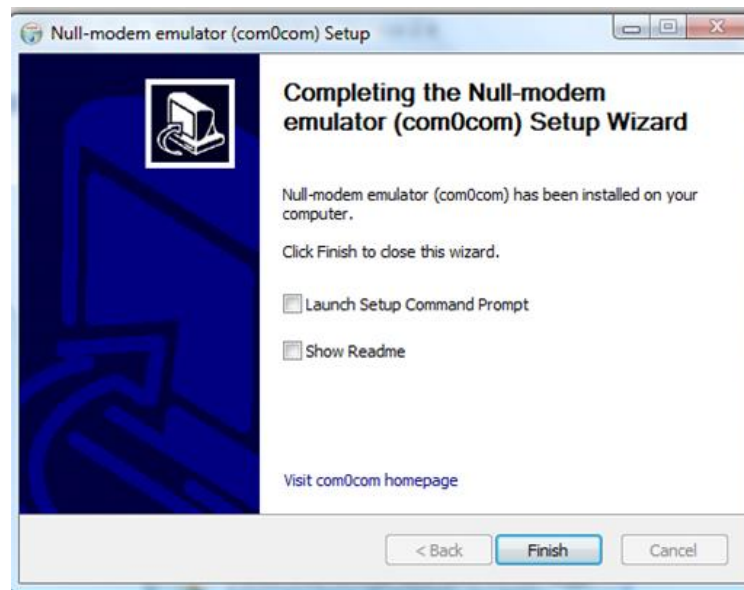

- Once the installation is completed, click on *Finish:*

8.7.3.1 *Installation of Visual C++ libraries*

To enable the Toolbox to function, you have to install the *Microsoft Visual C++ 2010 Redistributable Package (x86)* plug-in.

- Download the plug-in from the following URL:
http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=5555
- Launch *vcredist_x86.exe*.
- Click on *Install:*
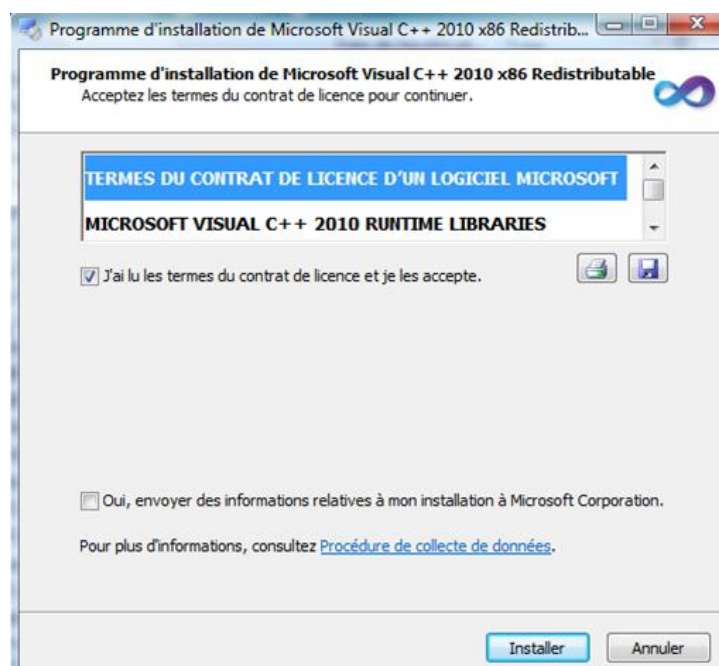
- Once the installation is completed, click on *Finish:*
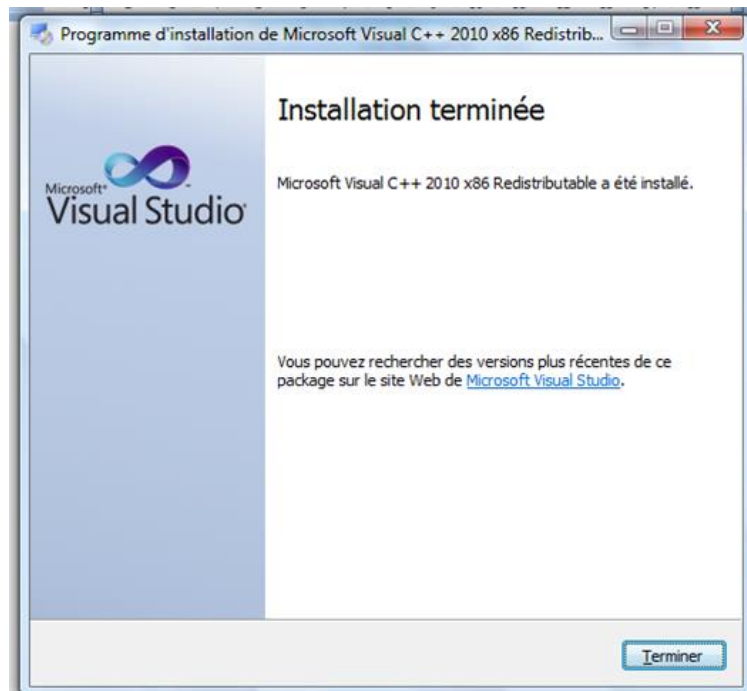
8.7.3.2   *Toolbox installation*

You can download Toolbox from the following URL:

http://www.webdyn.com/wp-content/uploads/2011/10/WRF_Toolbox.zip

You then have to extract the zip file into a directory of your choice.
The following files will be created:
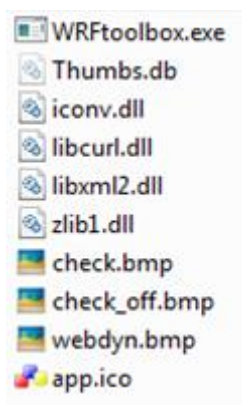
8.7.3.3 *Using the gateway with Wavenet Monitor*

To use the gateway as a Waveport and to put together the Wavenis radio mapping using the Wavenis Monitor software, follow these steps:

- Connect your PC via Ethernet to the gateway (see section 6.1).
- Activate the *Wavenis TCP Bridge* mode and specify a TCP port (see section 0).
- Launch the com0com setup featured in the Windows *Start* menu:
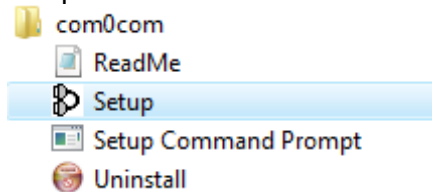
- Rename the CNCA1 port as a serial port name from the available names ranging from COM1 to COM9 (for example COM9):
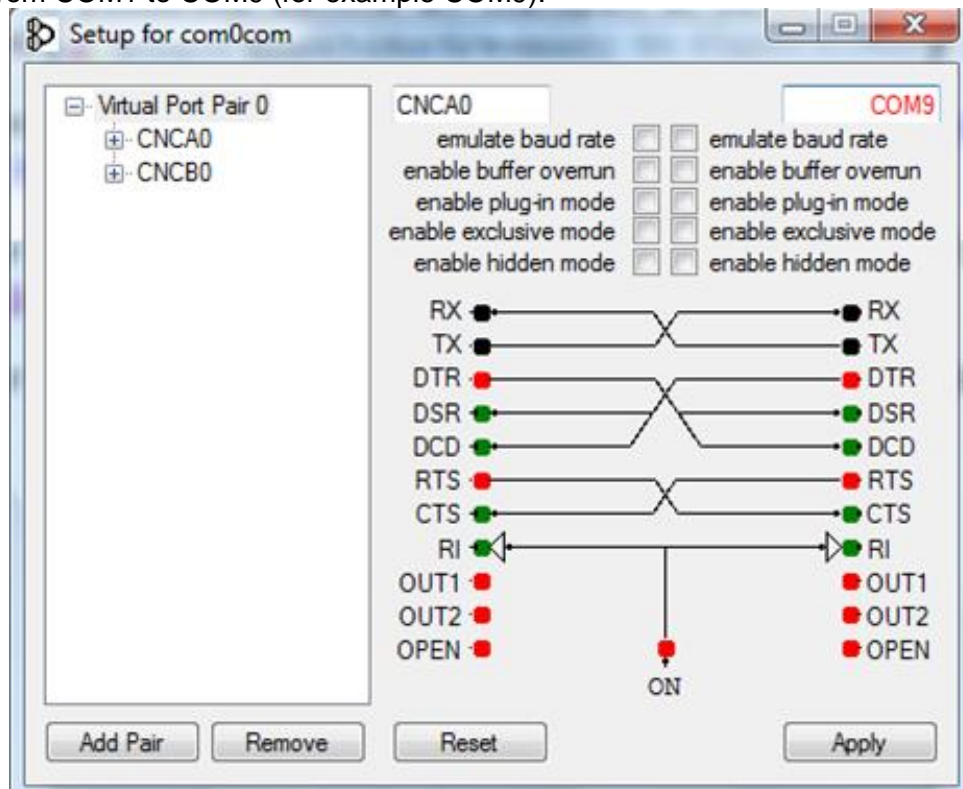
- Click on *Apply* and on *Continue:*
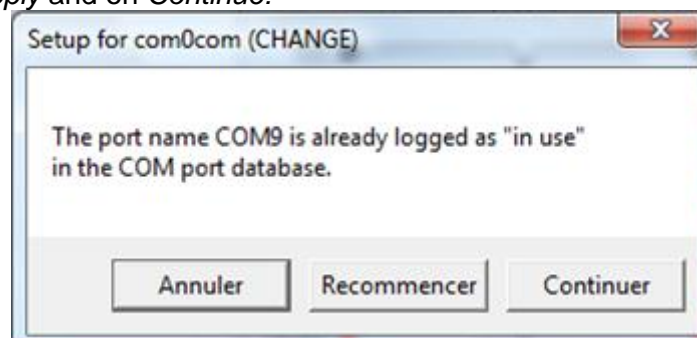
- Close the com0com tool.
- Launch the *Toolbox* by executing *WRFtoolbox.exe*.
- In the *Config* tab, fill in the following pieces of information:
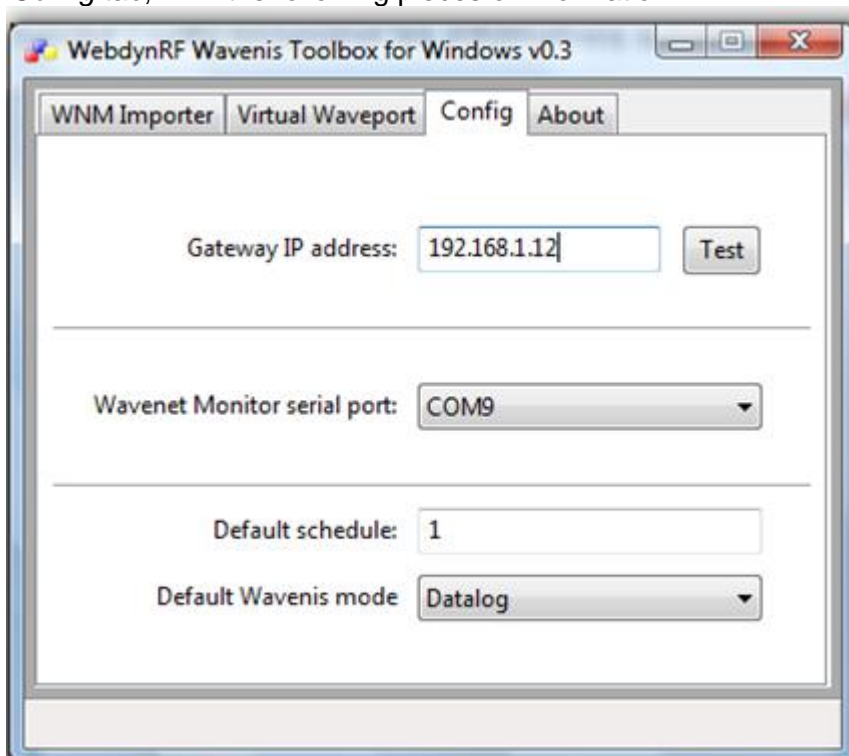
- o The gateway's IP address. You can test the TCP communication with the gateway by clicking on *Test*. If there is functional communication, the gateway will return its UID and its software version:
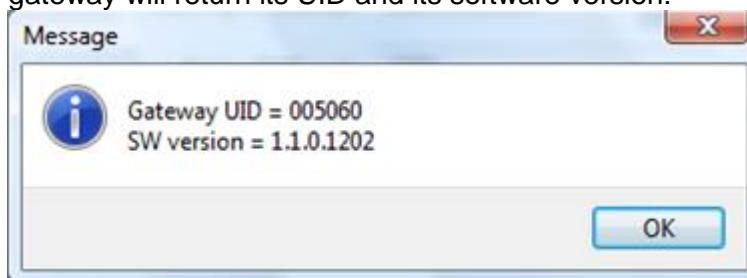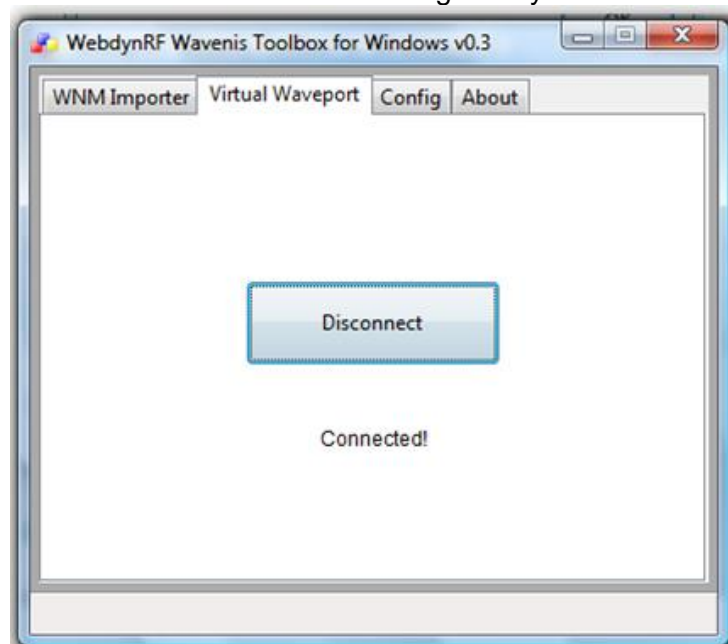

- o The TCP port configured in the gateway.
- o The COM port configured in com0com.
- o The schedule's unique ID to be applied to all the modules (see section 0).
- o The modules reading mode (*Datalog* or *Immediate*).

- In the *Virtual Waveport* tab, click on *Connect*:
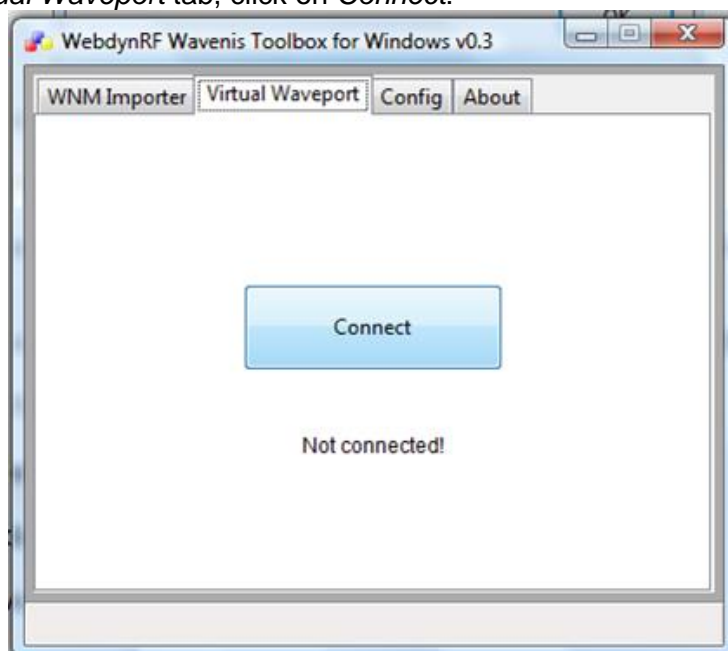
- This means that the PC is connected to the gateway via the virtual serial port:

- You can now use Wavenet Monitor by configuring the virtual COM port (COM9 in our example) within the Waveport connection:
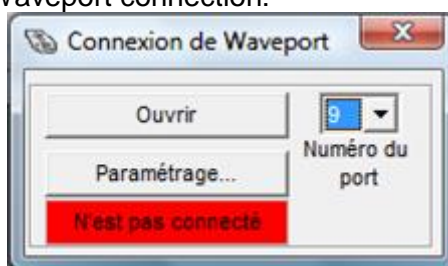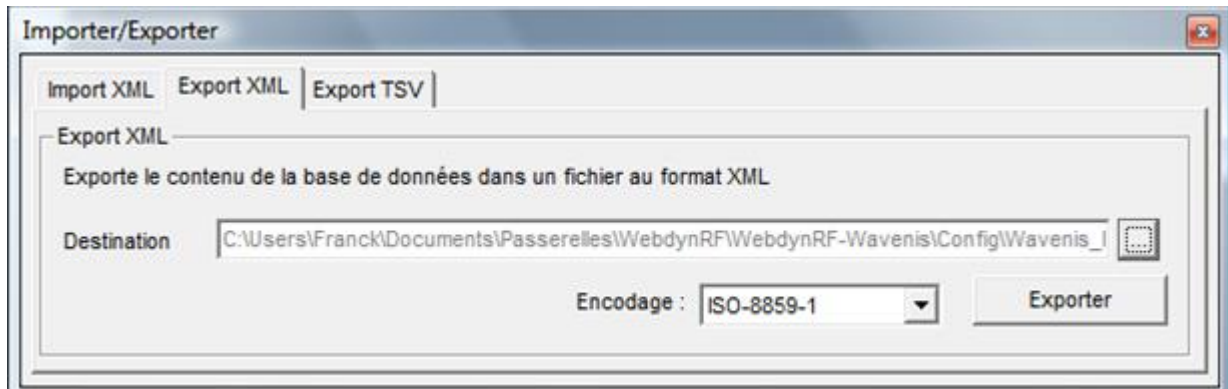
- Click on *Open*.
- This enables you to build the Wavenis network.

> **i** **Consult the Wavenet Monitor software's Coronis documentation in order to put together the Wavenis mapping.**

- Once the Wavenis network is configured in Wavenet Monitor, you must export the following in an XML file:
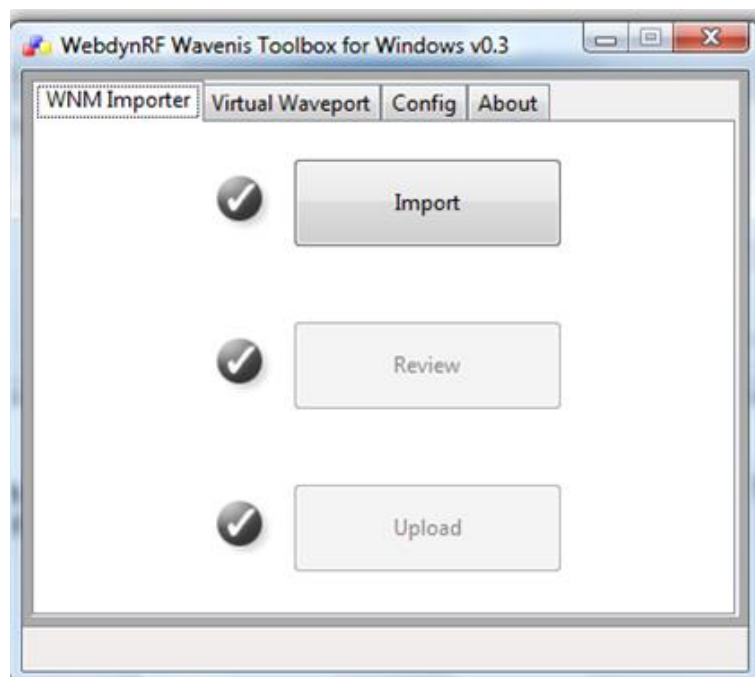

### 8.7.3.4 _Importing the Wavenis configuration into the gateway_

Once your Wavenis network has been built and exported in the form of a Wavenet Monitor XML file, you have to import it into the gateway by using Toolbox.

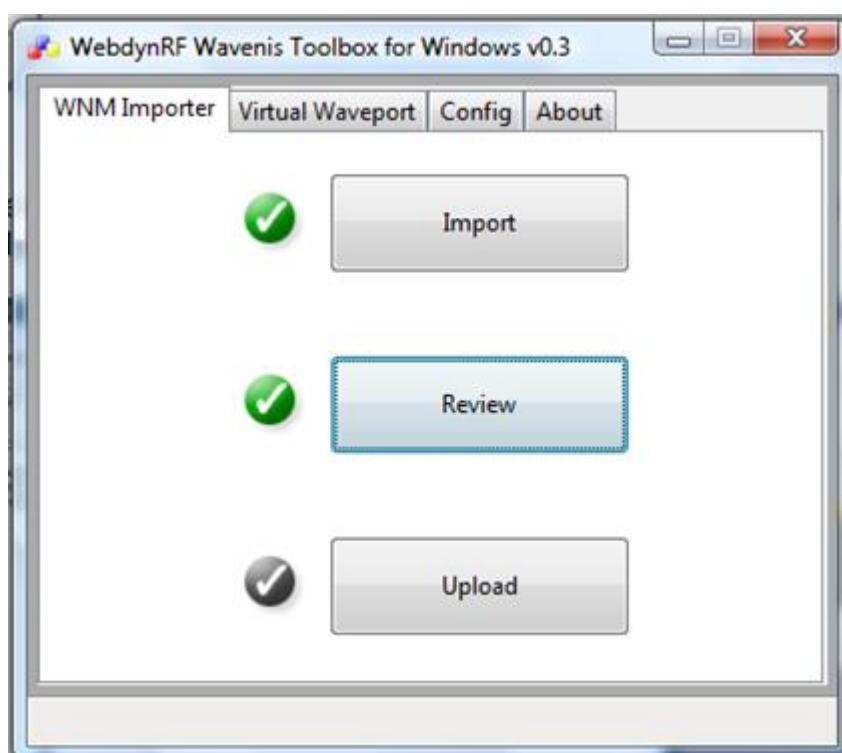To do that, carry out the following steps:

- Import the XML file into the gateway using Toolbox: click on *Import* on the WNM Importer tab:

- A window will be displayed, indicating the number of modules imported:
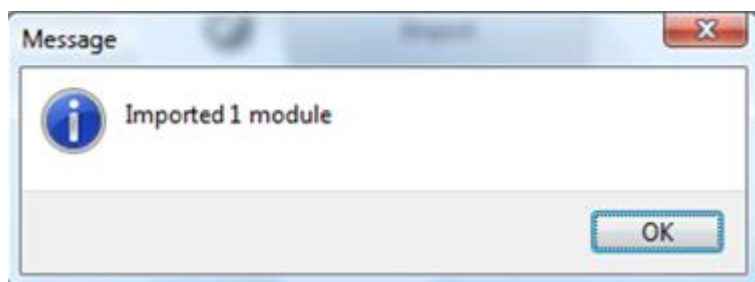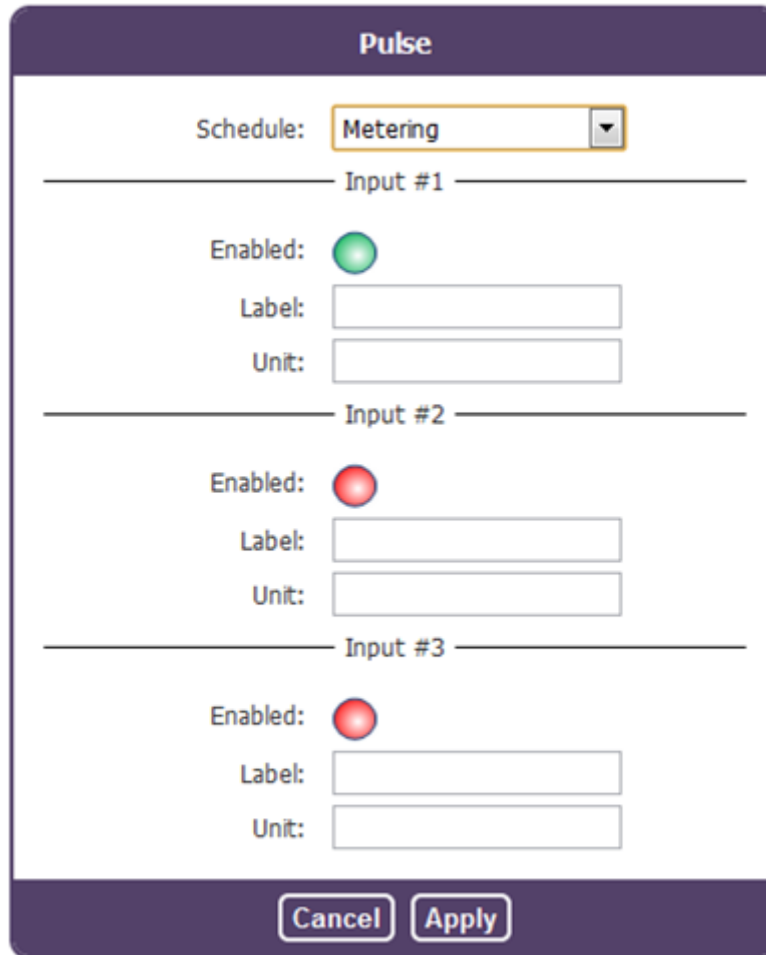

- Click on *Review* to view the configuration file in WebdynRF format:
- Click on *Upload* to transfer the configuration file onto WebdynRF:

You can check whether modules are present on the onboard Web page's Wavenis tab.

8.8   Metering configuration

8.8.1   Pulse inputs
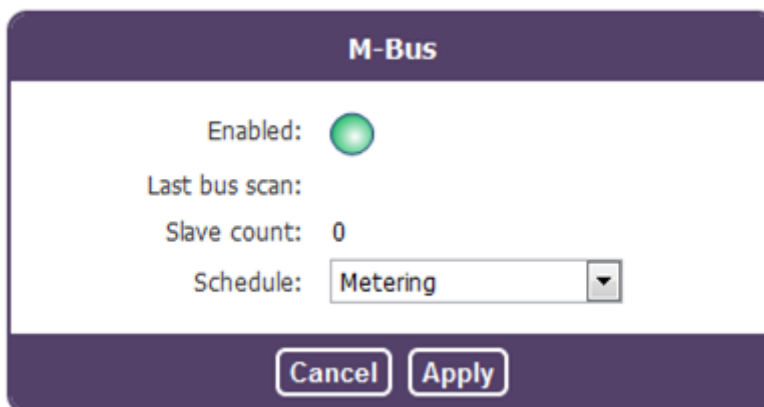

Digital inputs may be selectively configured as pulse meters (see section 0). Once the input is activated, an associated meter will increase incrementally after each pulse lasting more than 10ms. The current value will be saved for each occurrence of the schedule specified. The unit and label parameters are added to the data saved with the index value.
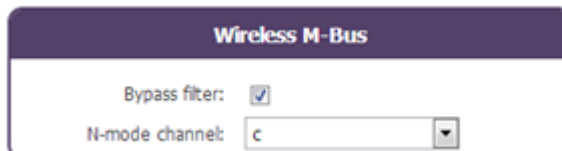
8.8.2 M-Bus

If the RS232 port is configured in MBus mode (see section 0), acquisition may be activated using the associated schedule.

8.8.3 169 MHz Wireless Mbus
169MHz Wireless Mbus product versions

The 169MHz Wireless M-Bus radio card version of the WebdynRF gateway may receive data from known Wireless M-Bus modules (filtering activated), or may not (if the filtering is deactivated).

The interface enables the filtering of the modules to be activated or deactivated and enables the N mode channel used to be selected.

8.2 N mode – Physical link parameters

The sub-modes must be assigned to the channels and frequencies as described in Table 18.

Table 18 – N mode - Frequencies

Sub-mode	Channel[b]	Central frequency [MHz]	Channels separation [kHz]	GFSK [kbps]	GMSK [kbps]	4GFSK [kbps]	Frequency tolerance [± kHz]
N1a, N2a	1a[c]	169.406250	12.5		4.8		1.5
N1b, N2b	1b	169.418750	12.5		4.8		1.5
N1c, N2c	2a	169.431250	12.5	2.4			2.0
N1d, N2d	2b	169.443750	12.5	2.4			2.0
N1e, N2e	3a	169.456250	12.5		4.8		1.5
N1f, N2f	3b[c]	169.468750	12.5		4.8		1.5
N2g	0[d]	169.437500	50			38.4	4.25
[a]	1	169.412500	25				
[a]	2	169.437500	25				
[a]	3	169.462500	25				

[a] These channels are optional and are reserved for future use of uses specific to the country concerned.

[b] Designation of the channels in accordance with EU Commission decision 2005/928/EC.

[c] Use of these channels must be given priority should there be a need to retransmit the data transmitted by the meter.

[d] This channel may be used for retransmitting metering data on a multi-hop basis, as specified in EN 13757-5. The load factor for the transmission from the meter must be limited to 0.02% on this channel.

Extract from standard EN 13757-4

If the filtering is activated, the modules configuration is carried out using the following interface:
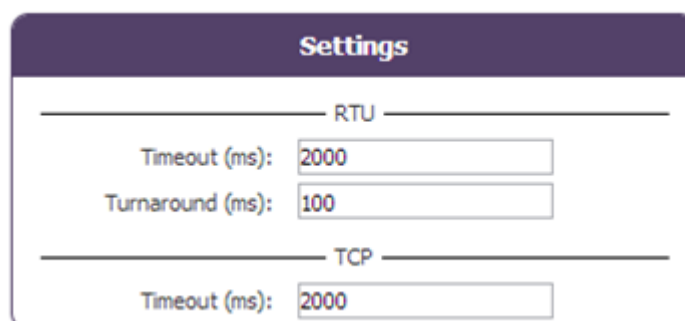
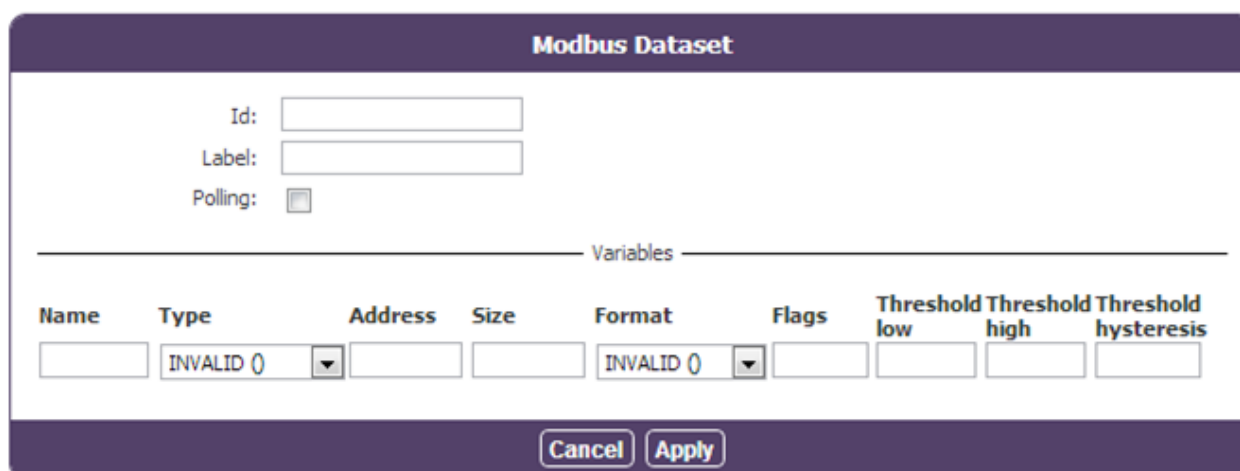| Name	Description
Address	Wireless M-Bus address
Label	Name of the module (for information purposes only)
Key	Encryption key for the module (if it is blank, there is no encryption)

8.9 Modbus configuration

Name	Description
RTU	
Timeout (ms)	Modbus/RTU response timeout in ms
Turnaround (ms)	Modbus/RTU turnaround delay in ms
TCP	
Timeout (ms)	Modbus/TCP response timeout in ms

As a supplement to these parameters, the port must be configured as "modbus" (see section 0).
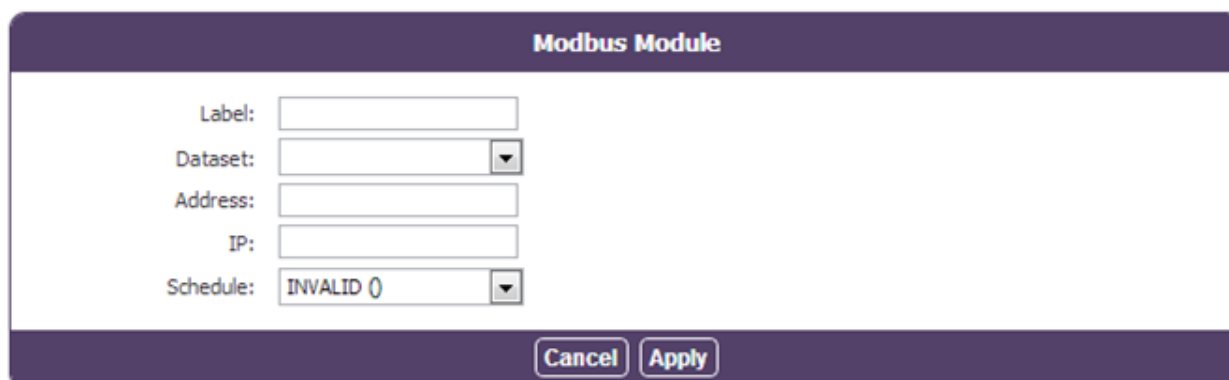
The configuration of a dataset consists of configuring the following parameters:

Name	Description
Id	Unique ID for the Modbus dataset
Label	Name of the dataset (for information purposes only)
Polling	Continuous polling (*true* or *false*)

Each variable is defined by the following parameters:

Name	Description
Name	Name of the variable (for information purposes only)
Type	Type of variable (S0, S1, S3, S4)
Address	16-bit extended register address
Size	Size in bits for *discrete input* and *coil*, in bytes for the registers
Format	Raw, Boolean, integer, float or ASCII
Flags	cmd_only, little_endian, no_opt, is_status or is_alarm
Threshold low	Low threshold level
Threshold high	High threshold level
Threshold hysteresis	Hysteresis applied to both thresholds
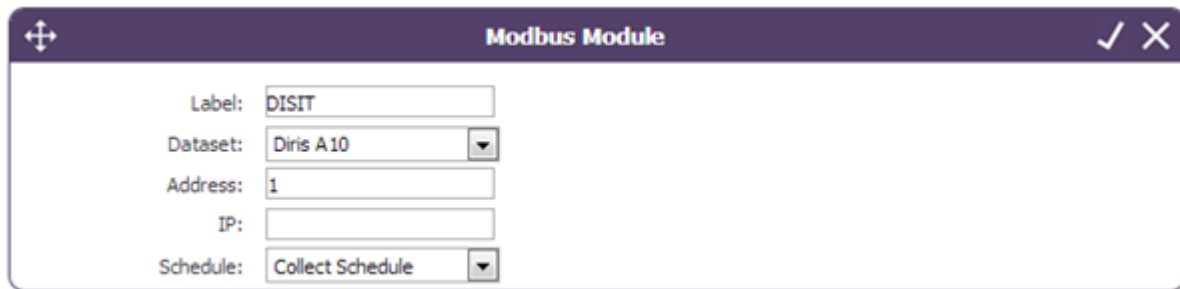
For the configuration details, see the operating manual.

Modbus Module

Label: _____

Dataset: _____ ▼

Address: _____

IP: _____

Schedule: INVALID () ▼

[Cancel] [Apply]

The configuration of a Modbus module includes the following parameters:

Name	Description
Label	Name for information purposes only
Dataset	Dataset ID
Address	Modbus address (1-247)
IP	IP address (blank for RTU equipment)
Schedule	Schedule ID
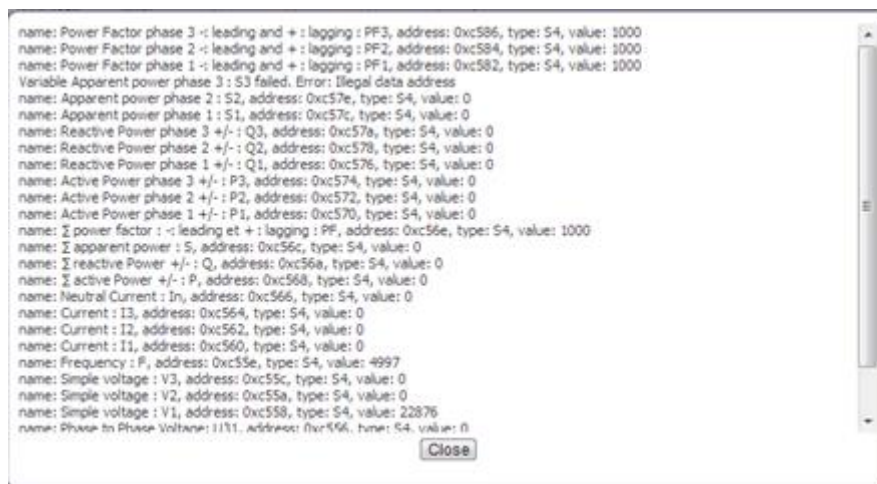
To verify the right configuration for a Modbus module, you can press ✓ :

	Modbus Module	✓ ✕
Label:	DISIT	
Dataset:	Diris A10 ▼	
Address:	1	
IP:		
Schedule:	Collect Schedule ▼	

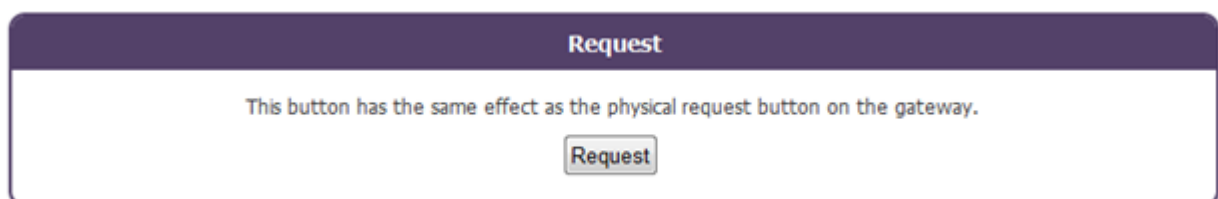The result of the Modbus module query will be displayed in a window:

```
name: Power Factor phase 3 -: leading and + : lagging : PF3, address: 0xc586, type: S4, value: 1000
name: Power Factor phase 2 -: leading and + : lagging : PF2, address: 0xc584, type: S4, value: 1000
name: Power Factor phase 1 -: leading and + : lagging : PF1, address: 0xc582, type: S4, value: 1000
Variable Apparent power phase 3 : S3 failed. Error: Illegal data address
name: Apparent power phase 2 : S2, address: 0xc57e, type: S4, value: 0
name: Apparent power phase 1 : S1, address: 0xc57c, type: S4, value: 0
name: Reactive Power phase 3 +/- : Q3, address: 0xc57a, type: S4, value: 0
name: Reactive Power phase 2 +/- : Q2, address: 0xc578, type: S4, value: 0
name: Reactive Power phase 1 +/- : Q1, address: 0xc576, type: S4, value: 0
name: Active Power phase 3 +/- : P3, address: 0xc574, type: S4, value: 0
name: Active Power phase 2 +/- : P2, address: 0xc572, type: S4, value: 0
name: Active Power phase 1 +/- : P1, address: 0xc570, type: S4, value: 0
name: Σ power factor : -: leading et + : lagging : PF, address: 0xc56e, type: S4, value: 1000
name: Σ apparent power : S, address: 0xc56c, type: S4, value: 0
name: Σ reactive Power +/- : Q, address: 0xc56a, type: S4, value: 0
name: Σ active Power +/- : P, address: 0xc568, type: S4, value: 0
name: Neutral Current : In, address: 0xc566, type: S4, value: 0
name: Current : I3, address: 0xc564, type: S4, value: 0
name: Current : I2, address: 0xc562, type: S4, value: 0
name: Current : I1, address: 0xc560, type: S4, value: 0
name: Frequency : F, address: 0xc55e, type: S4, value: 4997
name: Simple voltage : V3, address: 0xc55c, type: S4, value: 0
name: Simple voltage : V2, address: 0xc55a, type: S4, value: 0
name: Simple voltage : V1, address: 0xc558, type: S4, value: 22876
name: Phase to Phase Voltage : U31, address: 0xc556, type: S4, value: 0
```
Close

8.10   Executable actions
8.10.1   Request for connection to the remote server

Request
This button has the same effect as the physical request button on the gateway.
Request

This button has the same effect as the physical button featured on the product's front panel. A pop-up window will appear that displays all of the connection stages, and particularly the NTP synchronization and the Inbox directory verification, and indicates all the files downloaded.

8.10.2 M-Bus scan request

A scan of the M-Bus equipment can be launched using this button. The M-Bus equipment discovered during this scan will be queried upon each occurrence of the associated scheduler. If equipment items are removed from the bus or added to it, a new scan must be initiated so that the gateway may take the modification into account.

8.10.3 Reboot request

This button enables the gateway to be restarted properly.

8.10.4 Wavenis RSSI scan request

A scan of the RSSI values of all the Wavenis modules can be triggered using this button. A pop-up window will display the RSSI values and a list indicating the modules that could not be connected to.

8.10.5 Uploading system files

This window makes it possible to perform local uploading of configuration files or new firmware onto the gateway.

8.11 Request for connection to the remote server

Once configuration has been carried out, you must prompt the gateway's connection to the remote server by briefly pressing the *REQUEST button*.
The GSM LED will light up while GSM connection is in progress.

9 **Check on the gateway's smooth running**

To check that the gateway and the radio mapping are running smoothly, you can trigger a scan of the Coronis modules and the lodging of a *Supervision* file.
There are two solutions for doing this:

- If you have access to the remote server, put a *scan* command in the INBOX directory. Below is an example of a *scan* XML command:

```
<commands>
   <cmd cid='Install'>
     <scan mode='rtc life-counter rssi data'/>
   </cmd>
</commands>
```

This command triggers:
  - A reading of the clock, the status of the battery, the RSSI level, and the immediate data for each module configured.
  - Lodging of the supervision file containing this information (except for the immediate data).
  - Lodging of the Wavenis data file containing the immediate data.

Once this command file is put on the remote server in the INBOX directory, you must prompt the gateway's connection to the remote server by briefly pressing the *REQUEST* button.

- If you do not have access to the remote server so that this operation can be triggered, you can carry it out via SMS.
  SMS to send to the gateway:

```
cmd=scan
cid=Install
mode=rtc,life-counter,rssi,data
```

The data requested (except for the immediate data) will be uploaded onto the remote server as supervision data using the corresponding configured downloading method. The immediate data (scan data) will be uploaded onto the remote server as Wavenis data using the corresponding configured uploading method.

Once the gateway has lodged the data, you can check the information fed back.

> **Consult the gateway's operating manual for the management instructions for the data exchanged by the gateway with the remote server (cf. ME-WebdynRF-Wavenis.pdf)**

10 **Local FTP server**

The gateway has an onboard local FTP server. It functions as a local INBOX. One single file may be put on this server at a time.

It accepts configuration files and binary files for updating purposes.

11 Shutting down the WebdynRF gateway

Disconnect the 12/24V connector's power supply cable.
The WebdynRF gateway is equipped with a back-up battery. Upon losing its power supply, it sends an alert to the server and then continues functioning until the battery is flat.

12 Support

Should you experience technical issues relating to our products, please contact Webdyn's support service:

Webdyn SA
26 Rue des Gaudines
78100 Saint-Germain-en-Laye
FRANCE
Tel.:   +33 1 39 04 29 40
Fax.: +33 1 39 04 29 41
E-mail: support@webdyn.com
http://www.webdyn.com

We will need the following details:
- The gateway's serial number.
- The gateway's hardware and software versions.