MANUAL
EXIGO TOOL

≋ REGIN
THE CHALLENGER

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Chapter 1 **About this manual**

This manual is designed to be an aid during installation and use of Exigo Tool. It describes all the functions unique to the program. The Exigo control parameters however are not described here. For detailed information on these, please see the Exigo manual.

Chapter 2 **Installation**

To install and run Exigo Tool you need a PC running Windows 2000, Windows XP, Windows Vista, Windows 7 or Windows 8, Windows 8.1 or Windows 10.

Communication with an Exigo requires a special communication cable, E-CABLE2-USB.

Exigo tool is a self-installing program that can be downloaded from Regin's website (www.regincontrols.com). Simply download the software and double-click the **.exe** file. Next, follow the instructions provided by the installation program.

Chapter 3 About Exigo Tool

Exigo tool is a Windows-based PC program for configuration and maintenance of the Exigo series controllers.

Exigo tool has not been designed with the intention of being a fully fledged SCADA program.
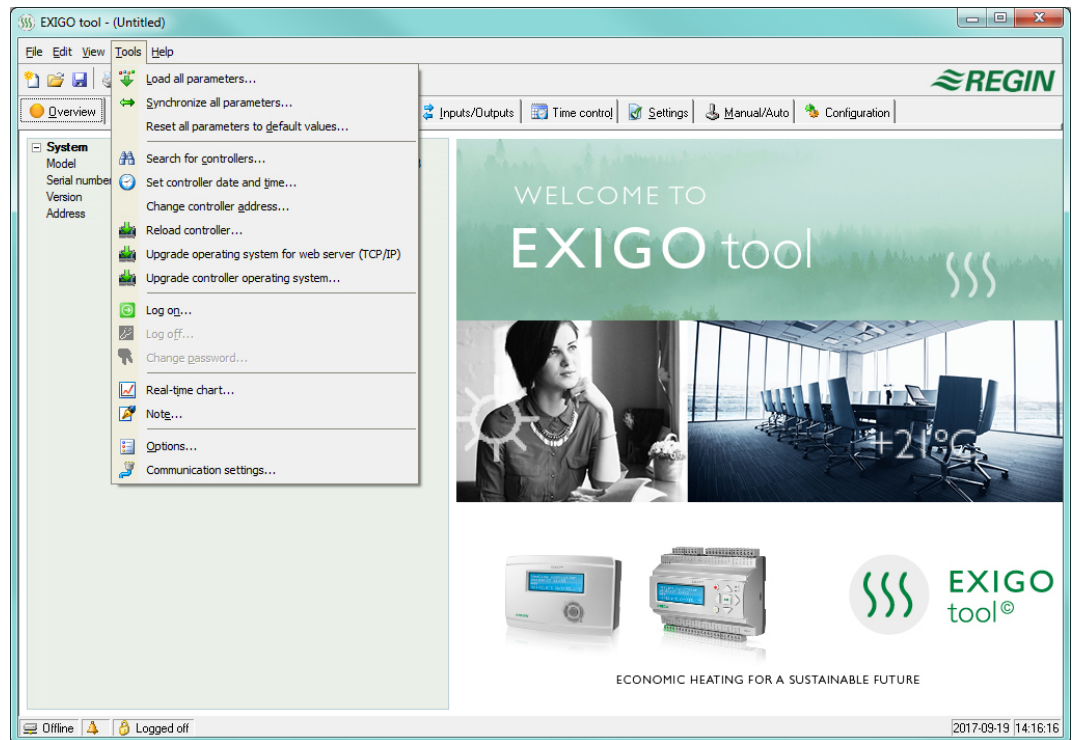
The display window is divided into several parts:

At the top, there is a menu bar with standard Windows type drop-down menus.

Below the menu bar is a toolbar that gives direct access to various functions. All functions in the toolbar are also accessible through the menu bar system.

Below the toolbar there is a row of folder tabs giving access to several folders that can be shown, one at a time in the area below the tabs.

At the bottom of the window is the status bar.

This manual will mainly describe the functions of the items in the menu bar and the buttons in the toolbar. These functions are basically the same for all Exigo applications. Since the contents of the folders vary depending on which of the programs you are running they will not be covered in detail in this manual. Use the Exigo manual for reference.

Chapter 4 **Startup**

The installation program will have placed an Exigo Tool folder in the **All programs → Regin** folder in the Start menu. This folder contains the link to Exigo Tool.
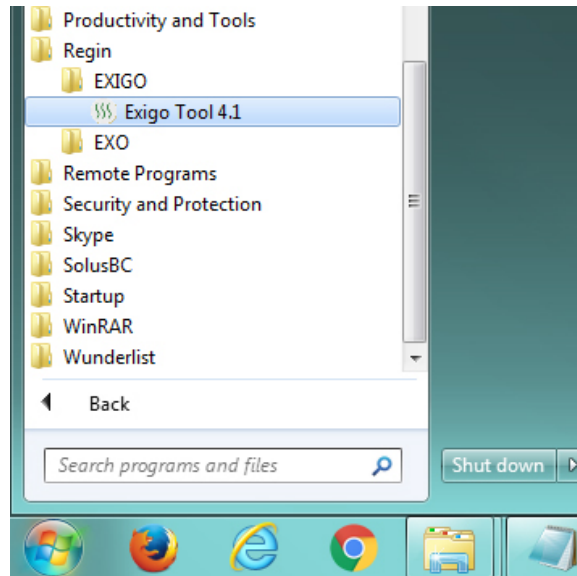

To start the program, click on the Start button at the lower left corner of the display. Then click on **All programs**, the folder **Regin,** the sub folder **EXIGO** and finally on the program you wish to run.

To avoid having to go through the Start folder, you can create a shortcut on the desktop by pointing at the program name, click and hold the left mouse button and drag the program name from the folder onto the desktop. Release the button and click on "Create shortcut here".

During installation under Windows 8 or Windows 8.1, Exigo Tool is placed under "All apps", which can be reached using the Start screen. From here, it is only neccessary to click on the relevant icon to start the program. It is also possible to create a shortcut to Exigo Tool in the taskbar. To do so, right-click on the icon and select "Pin to taskbar" from the toolbar visible at the bottom of the screen.

On start-up Exigo Tool will automatically search for any controller connected to the computer and connect to it if it is of a type suitable to the program being loaded. If no suitable controller is found, the program will start offline.
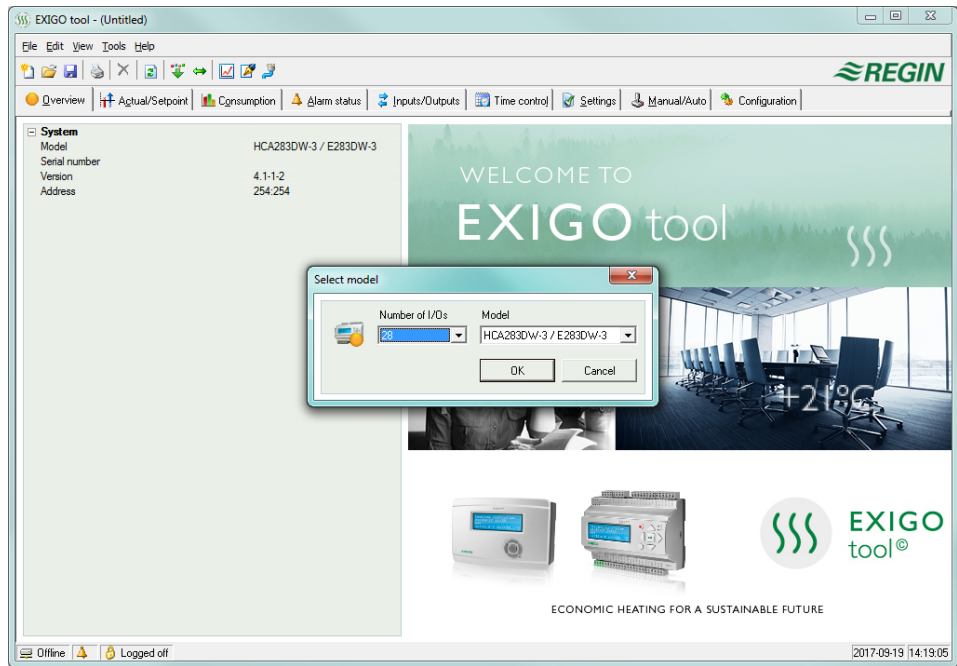
Exigo Tool always starts with a box where you enter which controller model you are using. The Overview folder is also displayed. Make sure that you enter the correct model, or errors may occur in the control and alarm handling.

Chapter 5 **Menu bar**

The menu bar has five drop-down menus; **File**, **Edit**, **View**, **Tools** and **Help**.

5.1 File

These items are used to handle configuration files. The data describing a configuration can be saved as a file. Any number of different configurations can be saved, the only limit being available disk space. The files will be saved using the extension **.htc** and need about 104 kb of disk space. The files contain only plain text and can be opened using regular editing programs like Notepad or WordPad.
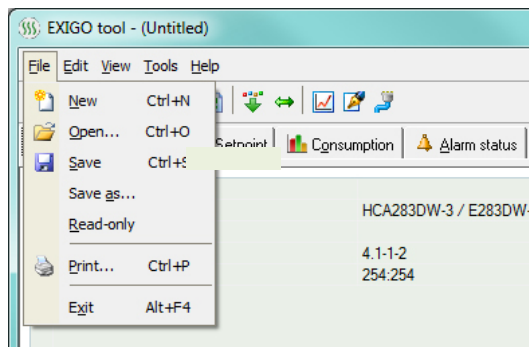
New

New will open a new unnamed file. A box will appear, in which the relevant model of Exigo is selected. If you are unsure of which model you are using, the article number can be located on the right-hand (short) side of the controller. Make sure that you choose the correct model. If you load an incorrect model, unexplainable alarms, etc., may appear, as certain functions not visible in the present model may be activated.

Open

Opens a saved file.

Save

Saves the current file to disk. If the file is unnamed, you will be prompted for a name.

Save as

Saves the current file to disk using a new name of your choice.

Read only

This item can normally be ignored. Should you for some reason open two instances of the same file one of them will be marked as Read only to prevent data conflict.
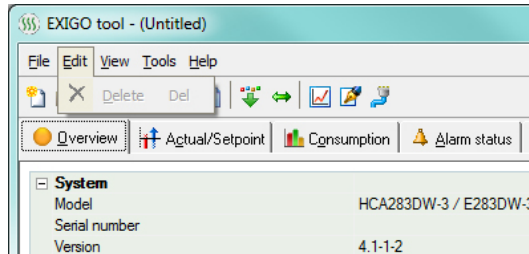
Print

Prints a list showing all the configuration settings of the present file.

Exit

Close Exigo tool. If the present configuration is unsaved you will be asked if you wish to save it before closing.

5.2 Edit

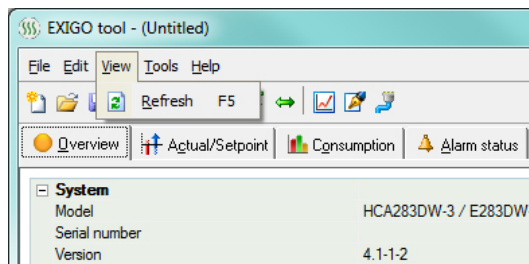The **Edit** menu only contains one item:

Delete

Delete is only used in conjunction with holiday periods to remove assigned periods.

5.3 View

The **View** menu contains one item:

Refresh

Exigo Tool is not a dynamic program, meaning that if a parameter value is changed in a connected Exigo (such as, for instance, a temperature), the corresponding value in Exigo Tool will not automatically be updated. Instead, the Exigo Tool user must manually initiate reading of parameter values from the controller.

Update initiates a reading of all dynamic parameters from the connected controller. The display is updated with the new values.

When you change between display tabs, an update is automatically initiated.

Alternatively, the **Update** button in the toolbar (see **Toolbar** below) or the **F5** key on the computer keyboard can be used.

You can choose to auto refresh pictures with dynamic values, i.e. an automatic activation of the **F5** update function at settable intervals. See section *Options*.

5.4 Tools
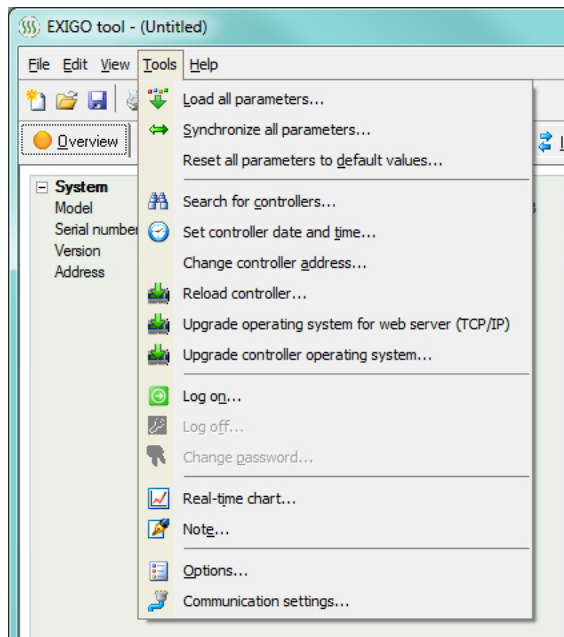
Load all parameters

Download all present parameters from Exigo Tool to the connected Exigo controller.

Synchronize all parameters

All parameter values in the Exigo are compared with the corresponding values in Exigo Tool. All discrepancies will be listed. All items in the list are normally tick-marked. By removing the tick-mark from an item you can exclude it from the selection. You can then choose to update Exigo Tool using the controller values or update the controller using the Exigo Tool values.

Reset all parameters to default values

Resets all Exigo Tool parameter values to their default values.

Search for controllers

If, on startup, Exigo Tool fails to establish contact with a connected controller it is usually due to an address mismatch. This function will search through all the possible addresses and list the addresses of the unit that is connected to the computer. These addresses are then written into the address fields in the folder **Configuration / System**.
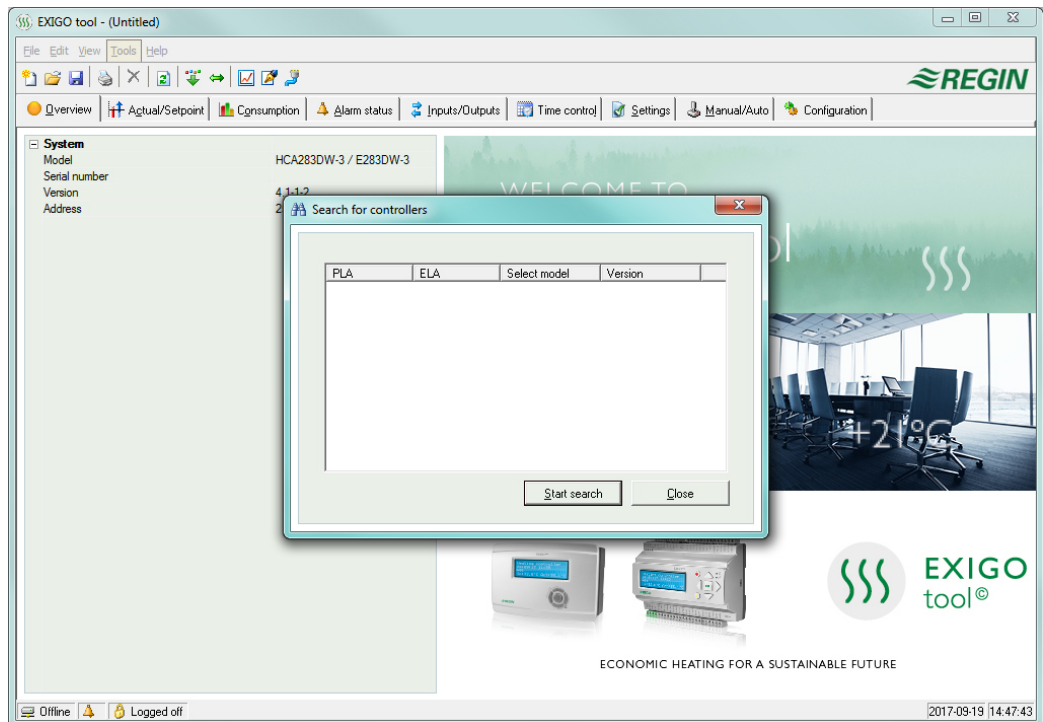
Set controller date and time

Synchronizes the controller date and time with the computer date and time.

Change controller address

This function is used for changing the addresses of the connected controller. The address is normally 254:254. If the controller is intended to be used in an EXOline network, the addresses must be changed since the connected controllers have different addresses.
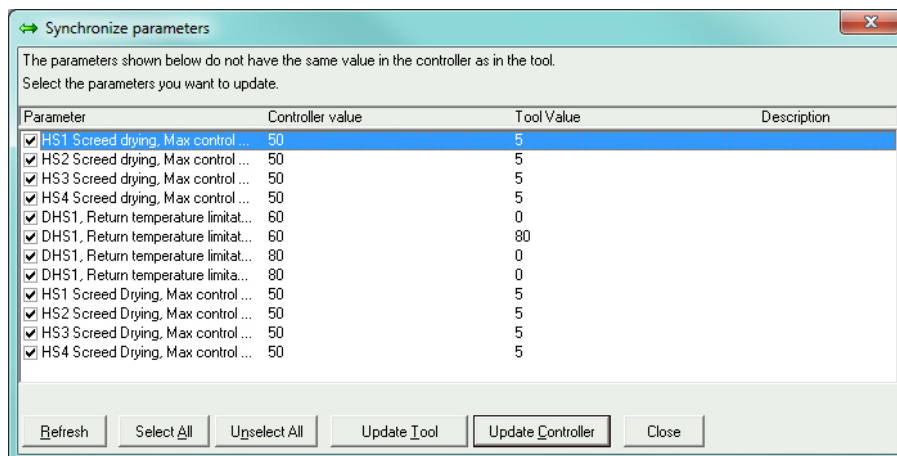
Reload controller

Downloads the current control program from Exigo Tool to the controller.

Use this function to install updated program revisions. Note, though, that since the hardware differs between controllers of different sizes, the Exigo Tool program and the Exigo model must be compatible.
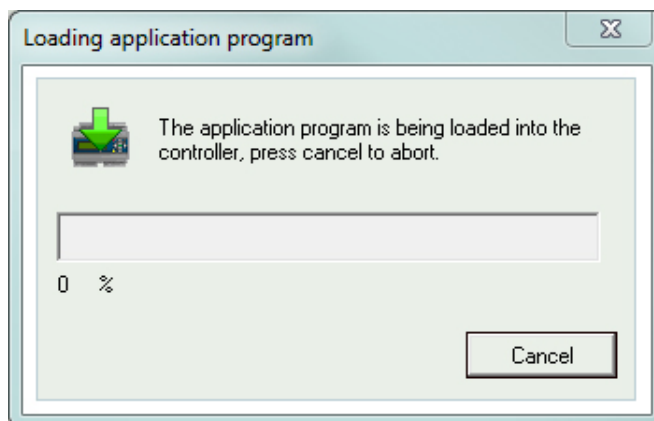
The below dialogue window will be displayed:
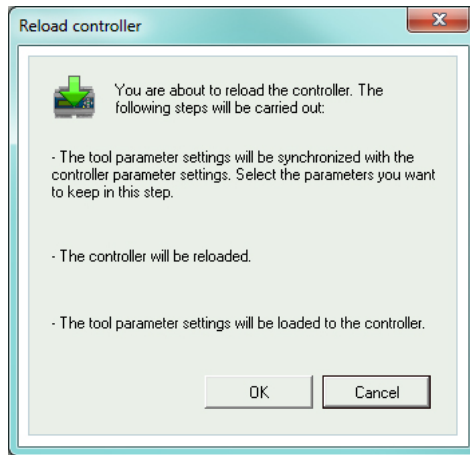
Click "OK" to reload the controller. The "Synchronize parameters" dialogue window till be displayed:
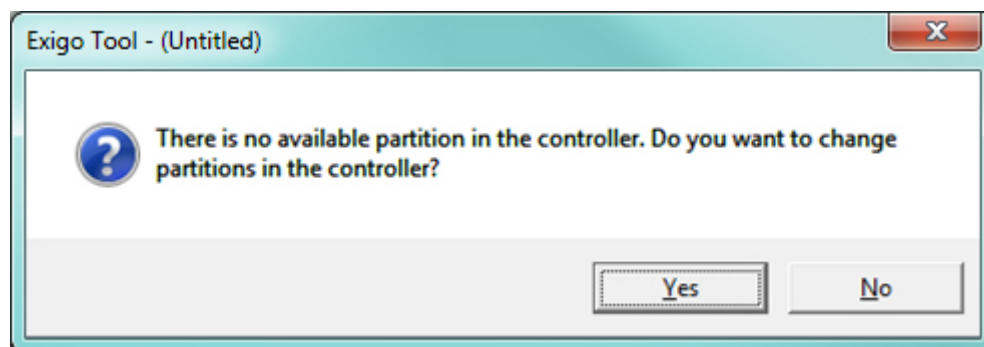

Select whether differences in parameter configuration should be updated in Exigo Tool or in the controller.

After the controller has been reloaded with the new application program, the below dialogue window will be displayed:
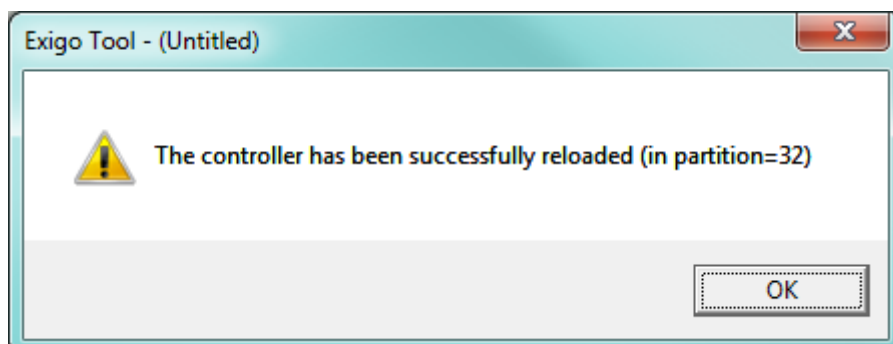
If the controller was manufactured before 2015, the following window will be displayed before it can be reloaded:

Click "Yes".

A warning message will now be displayed:
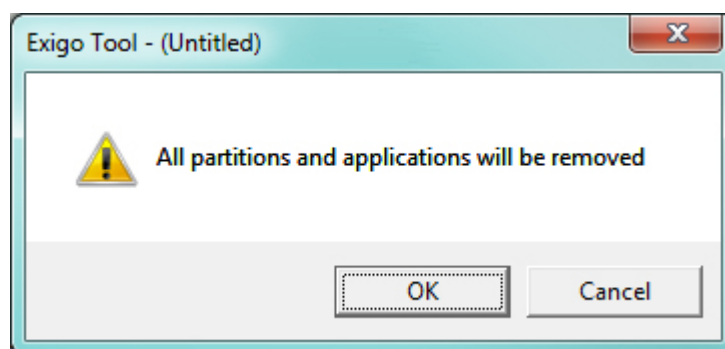
Click "OK".

The controller has now been repartitioned to make room for the application.

Next, follow the directions above for reloading the controller.

Another warning message will now be displayed:

Click "Yes".

Upgrade controller operating system

Unless the controller is brand new, it is advisable to upgrade the operating system.

Log on

Exigo has four different log-on levels, 1, 2, 3 and 5.

5 is the basic level with the lowest access, 3 is the operator level giving more access, 2 is the service level giving even more access and 1 is the Admin level with full access.

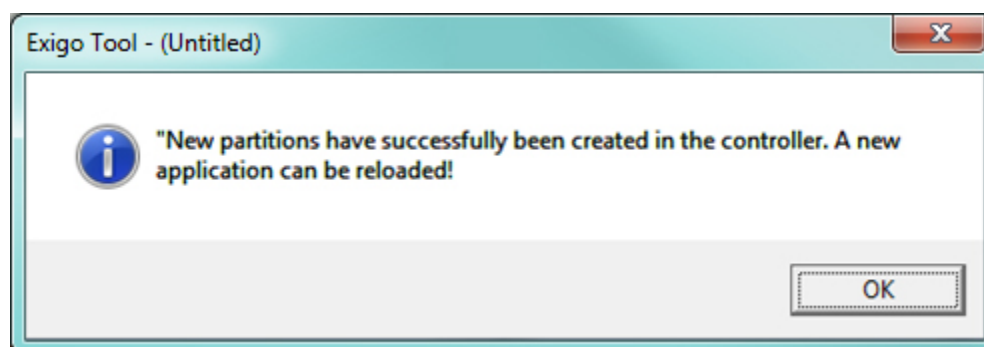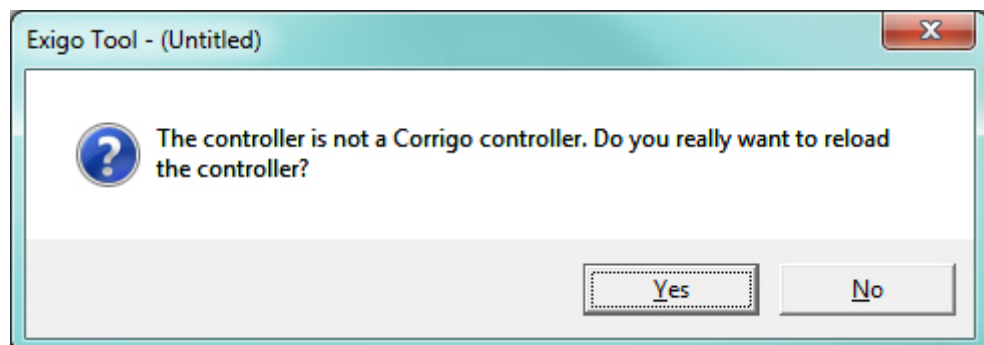Exigo tool only uses the levels **Logged off, Service, Operator** and **Admin**.

As default Exigo comes with the following passwords for the different levels:

Admin   1111
Service   2222
Operator   3333

Should you try to perform an operation which requires a higher access level than the one you have, you will be prompted to change log-on level.

Log off
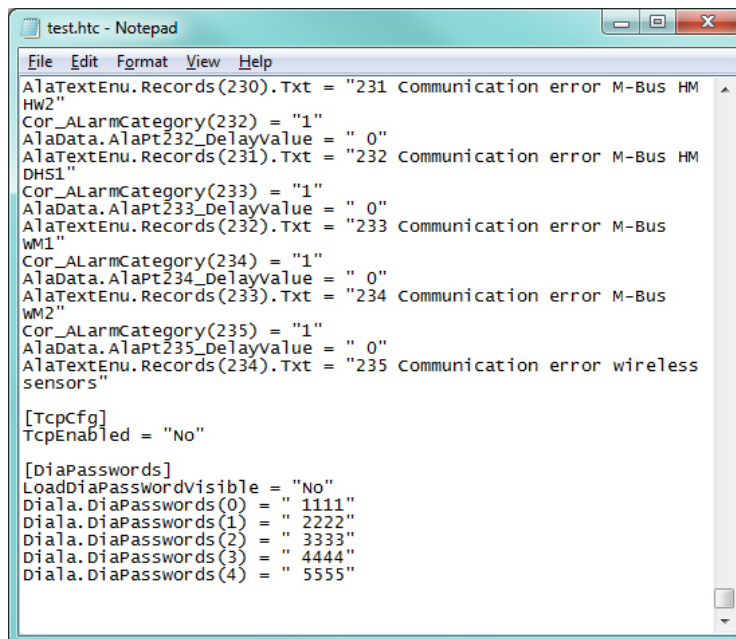
Only active if you are logged on as **Operator** or **Admin**. Enables log-off to the basic level.

Change password

Only active if you are logged on as **Operator** or **Admin**. Permits change of the password for the present log-on level.

Load new default passwords

When loading vtc-, htc-, or btc-files, it is possible to include new passwords for all the levels. The files are text files describing a configuration. Open the file, for example in Wordpad or Notepad. At the end of the vtc-file, there is a section, **DiaPasswords**, which deals with the log on codes.

To be able to load new default passwords, change **LoadDiaPassWordVisible** from "No" to "Yes".

Change "1111", "2222" and "3333" to the values you want the levels Admin, Service and Operator to have. "4444" is not used by the controller and "5555" for basic level should not be changed.

Save the file.

Start Exigo Tool and import the file.

Real-time chart

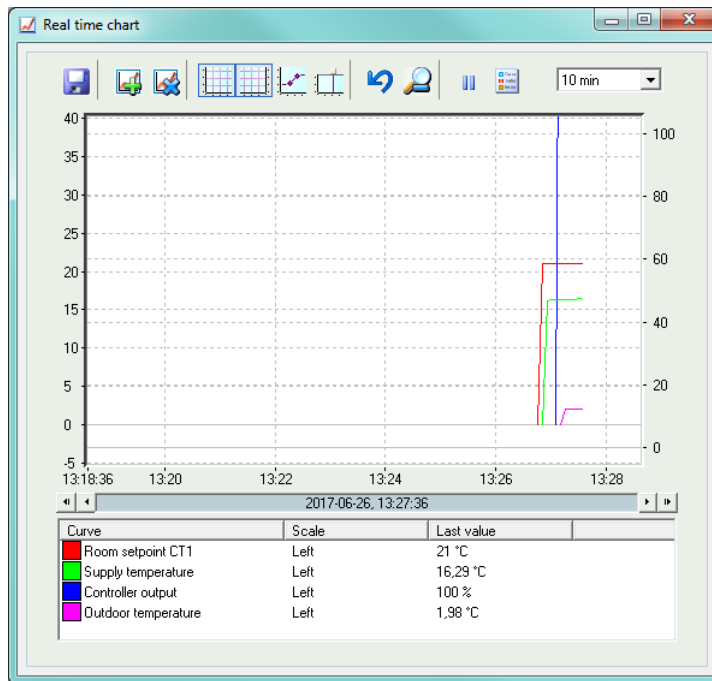Creates a real-time chart. Up to four parameters of your choice can be logged. The diagram has vertical scales with individually settable left or right scaling. The chosen parameters are listed at the bottom of the screen together with information on colour, which of the vertical scales it is referring to and latest recorded value. The chart has left and right vertical scales with individually settable ranges. The horizontal timeline can be changed so that the chart window can show longer or shorter intervals. Using the scrollbar at the bottom of the chart you can scroll along the timeline to show any position since the recording started. Values are recorded every 5 seconds. All recorded values can be saved to a textfile for later use in, for example, a spread-sheet program such as Excel.

Several sessions of the real-time chart can be run at the same time if you wish to study more than four parameters.

The charts cannot be saved. Upon exiting, all values and settings are lost. It is however possible to use the **Alt+PrtScr** keys on the keyboard to take a screenshot of the current chart, which can then be saved.

Real-time chart tools
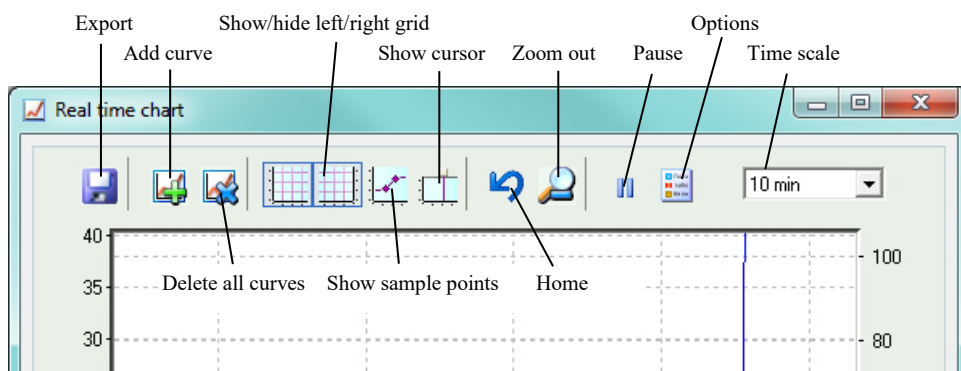
Export

Exports all recorded values to a .txt file. The values are tab-separated for easy import to, for example, Excel. Each line of the text file contains the values from one recording together with the time for the recording. Recorded data are saved for approximately 24 hours.

Add curve

A click on this button reveals a list of all parameters that can be displayed in the chart. Choose up to 4 parameters.

Delete all curves

Deletes all the selected curves.

Show/hide left/right grid

Chart grids scaled to the left and right scales can be displayed or hidden.

Show node points

A marker can be displayed on each curve at the point of each recording.

Show cursor

Displays a vertical line on the chart display. The cursor can be moved along the timeline. When the cursor is active, instead of showing the latest recorded values in the parameter list, the values at the cursor position are displayed. In this way you can check back on earlier record values.

Go to home

Home position is the chart position in which the "recording pens" are close to the right hand edge of the chart. If you have scrolled back along the timeline you can use this button to jump back to normal position.

Pause

Pauses entry of new curve segments into the chart. Data acquisition continues, however, and new readings are saved every 5 seconds. Pressing **Pause** again will cause all the saved readings to be added into the chart.

Options

Set various options.
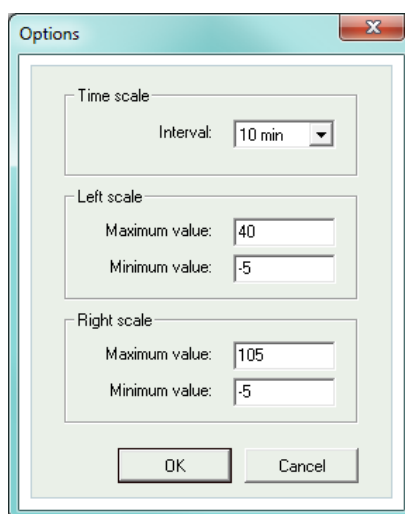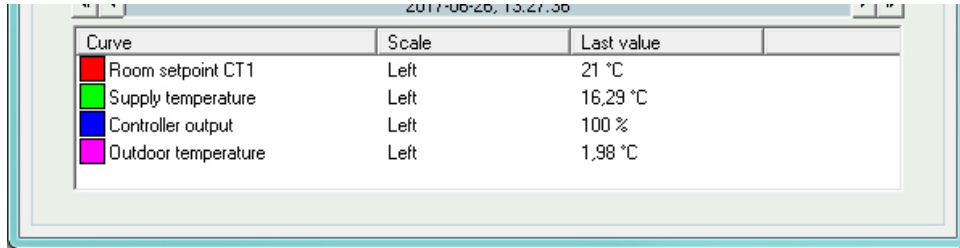
Time scale signifies the time width of the chart display.

Left scale / Right scale sets the scaling for the left and right chart scales.

Time scale

Sets the time width of the chart display.

Parameter list

The list shows the parameters assigned to the chart. To remove a parameter, right-click on it and choose **Remove**.

To change which of the right / left scales the parameter curve is referring to, right-click and choose properties or double-click with the left mouse-button.

Note

Gives access to a notepad area. Any text written here is saved together with the configuration file. If you make a printout of the configuration the notepad text is included in the printout.

Options

Permits the setting of some program parameters.
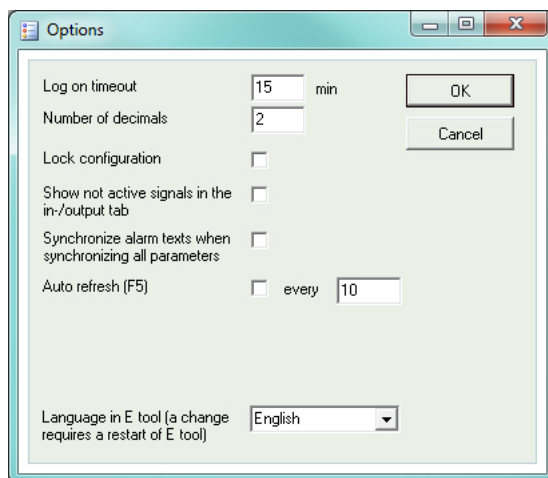
You can choose to auto refresh pictures with dynamic values, i.e. an automatic activation of the **F5** update function at settable intervals.

Log-on timeout

After inactivity for longer than the set time the log-on level will be set to 5.

Number of decimals

Sets the number of decimals displayed. All calculations however, are always done with full precision.

Lock configuration

Blocks access to the configuration tab.

Show not active signals in the in-/output tab

All inputs and outputs are displayed under the Inputs/Outputs tab.

Synchronize alarm texts when synchronizing all parameters

When synchronizing all parameters, alarm texts will also be synchronized.

Communication

Setting of the communication between Exigo tool and controller.

You can choose if the communication should take place via E-CABLE (serial) or the TCP/IP port.
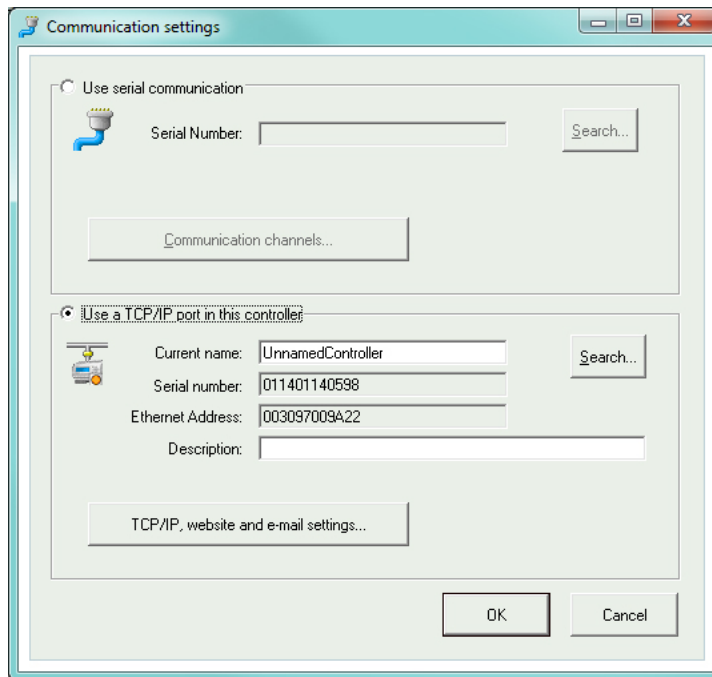
Serial communication

Click on **Communication channels** and then on **Serial**.
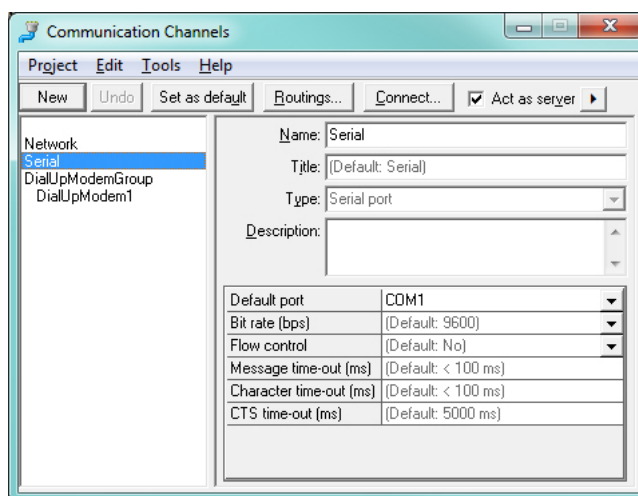
Ensure that the suggested COM port corresponds to the COM port which the computer has assigned to E-CABLE. You can see which Com port has been assigned in the **Control panel → System → Device Manager → Ports (COM & LPT)**.
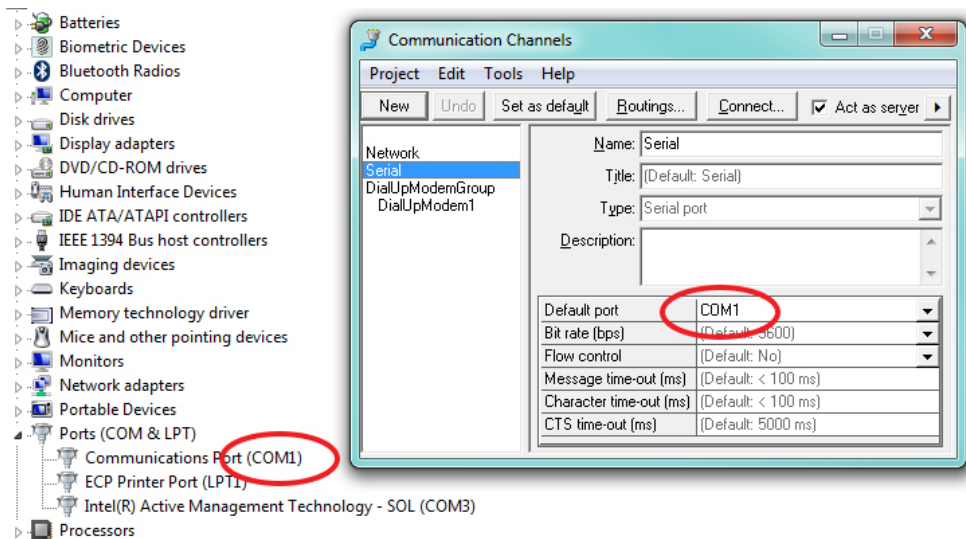
TCP/IP communication

If the controller has a TCP/IP port, it can communicate via a TCP/IP network. This is done by selecting **Use a TCP/IP port in this controller**.

By pressing on **TCP/IP, website and e-mail settings**, you can choose between three different connection possibilities:

1. Crossover network cable

2. Automatically by DHCP (dynamic IP address)

3. Static IP address

See chapter 10 for the remaining setting options.

1. Crossover network cable

In the most basic case, a crossover network cable, E CABLE-TCP/IP, is used. The user is connected directly to the controller. Connect a crossover TCP/IP-cable directly between the controller and the computer. Start Exigo tool. Open the tool "Communication settings" from the menu **Tools** or via the icon in the toolbar.

Choose **Use a TCP/IP port in this controller**. The program will ask if you are using a crossover network cable. Answer "Yes" to this question. The program will now search for controllers. Since no DHCP is available, a "broadcast" address will be used. Therefore, it is important that the computer is only connected directly to the current controller with a crossover Cat5-cable. If the search was successful, the controller's IP-settings will be shown: IP address, Subnet mask and Default Gateway (if there is one). If no values are shown: press "Search". A search window will be opened and hopefully the controller's TCP/IP card will be found and its serial number will be shown in the window. Select the row and press "OK".

If the program cannot find a controller:

*   Check the cable and contacts.

*   Control if there are more active network connections via **Control panel→Network connections**. Inactivate all except "Local area connection". If a wireless network connection is active, it should also be deactivated.

*   Press **Search** again.

*   Enter the IP address, the Subnet mask and, if any, the Gateway for the controller and press **Load TCP/IP settings**.

A message will be shown if the loading was successful. Press **OK**. You may get a message that a TCP/IP-connection has been established, but a controller with the address 254:254 could not been found. Instead, a controller with another PLA:ELA address has been found. Answer "Yes" to the question whether this controller should be used instead. Exigo tool can now be used for configuration/downloading/upgrading/synchronisation etc.

2. Automatically by DHCP (dynamic IP address)

In this case, you choose the standard setting **Obtain IP settings automatically (by DHCP)**.

This configuration is suitable for most networks equipped with a DHCP server, and, above all, when it is required that the controllers are assigned their addresses dynamically.

The following requirements have to be fulfilled:

The DHCP server and the DNS server must cooperate since the controller sends its DNS name to the DHCP server. This function is supported by Windows 2000 Server, Windows 2003 Server and Windows 2008 Server. The function is also incorporated in most routers. The DHCP server gives the controller an IP address and registers the IP adress and the DNS name in the DNS server.

Each DNS name must be unique.

The EXOline-TCP port, 26486, must be open from the controller to the main computer. This is especially important when the communication passes through a firewall.

When the controller and the computer running Exigo tool are on the same subnet, you do not have to specify a DNS name or a domain. When the controller and the computer are on different subnets, you have to specify the DNS name and the Domain. You get the domain name from the network administrator.

3. Static IP address

In this case, the static IP address of the controller is specified.

This configuration is most suitable for networks without a DHCP Server. You can also use it if you do not trust the network services completely, as it is the communication that has the best qualification to work when servers etc. do not. As long as routers and switches work well, this configuration alternative will work.

The following requirements have to be fulfilled: The EXOline-TCP port, 26486, must be open from the controller to the main computer. This is especially important when the communication passes through a firewall.

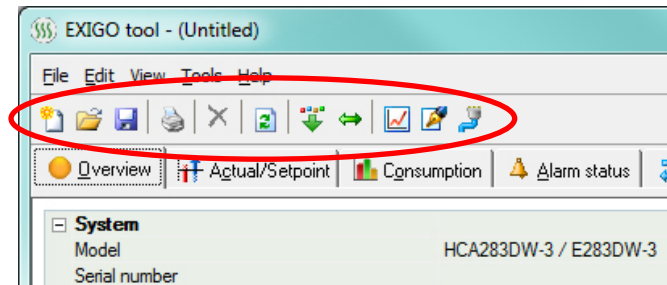Static IP address, Net Mask and Default Gateway are obtained from the network administrator.

5.5 Help

Gives access to manuals, variable lists and the program revision information.

Chapter 6 Toolbar

The toolbar provides shortcuts to several functions.

By placing the cursor over a tool icon, a tool tip will be displayed giving a short description of the tool.

All the tools are described in the menu bar description above.

Chapter 7 **Folders**

7.1 General

The contents of the various folders depend on which Exigo model the program has been configured for.

Therefore, the contents will not be described in detail here.

Items in a folder that somehow belong together are grouped. Group names are displayed in bold. The groups are normally shown expanded, that is that all the items in the group are displayed, headed by the group name. A group can be compressed to show only the group name by clicking on the box with a - (minus) to the left of the group name. For a compressed group, the box will contain a +. Click on it to expand the group.

Setting values

Many of the folders contain settable values. If you pass the cursor over such a value a text box (tool tip) will be displayed showing the permitted value interval.

If you have a controller connected you must download a value to the controller for it to become active.

Downloading can be done in several ways:

Right-click on any single item and choose **Load parameters**. This will download only that single parameter.

Right-click on a group name and choose **Load parameters**. This will download all parameters in the chosen group.

Click on the **Load all parameters** button on the toolbar.

Click on **Tools** on the Menu bar and choose **Load all parameters**.

These last two methods will, as the name implies, download all parameters to the controller.

You can also synchronize parameters following the same rules as above but choose **Synchronize parameters**. A useful tool to compare the settings in the controller with the settings in Exigo tool.

It is also possible to reset parameters to default values by right-clicking and choosing **Reset parameters to default values**.

7.2 Overview
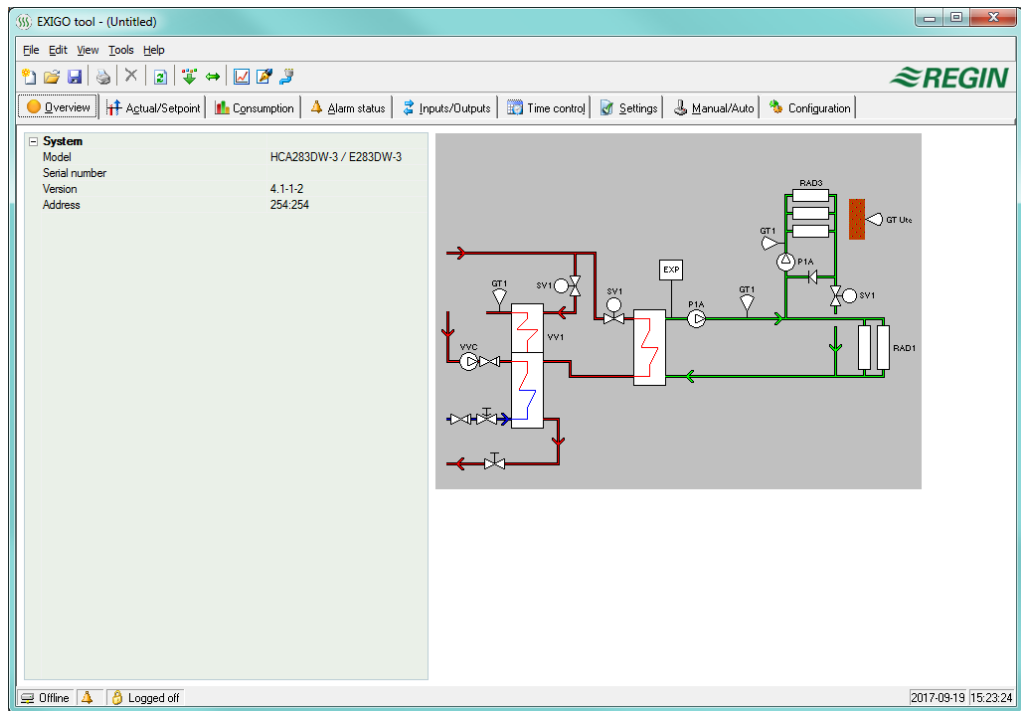
The major part of the Overview folder displays a process diagram. The diagram is a static bitmap illustration that can be edited using, for example Paint. Any number of different diagrams can be saved. Which diagram is displayed is governed by the setting of the parameter **Process picture** in the **System** subfolder in the configuration folder.

Down the left-hand edge of the Overview folde*r* there is a list of the most important control parameters. To update the values, press **F5** or click on the **Refresh** button in the toolbar. You can choose to auto refresh pictures with dynamic values, i.e. an automatic activation of the **F5** update function at settable intervals. See *Options*.

7.3 Actual / Setpoint
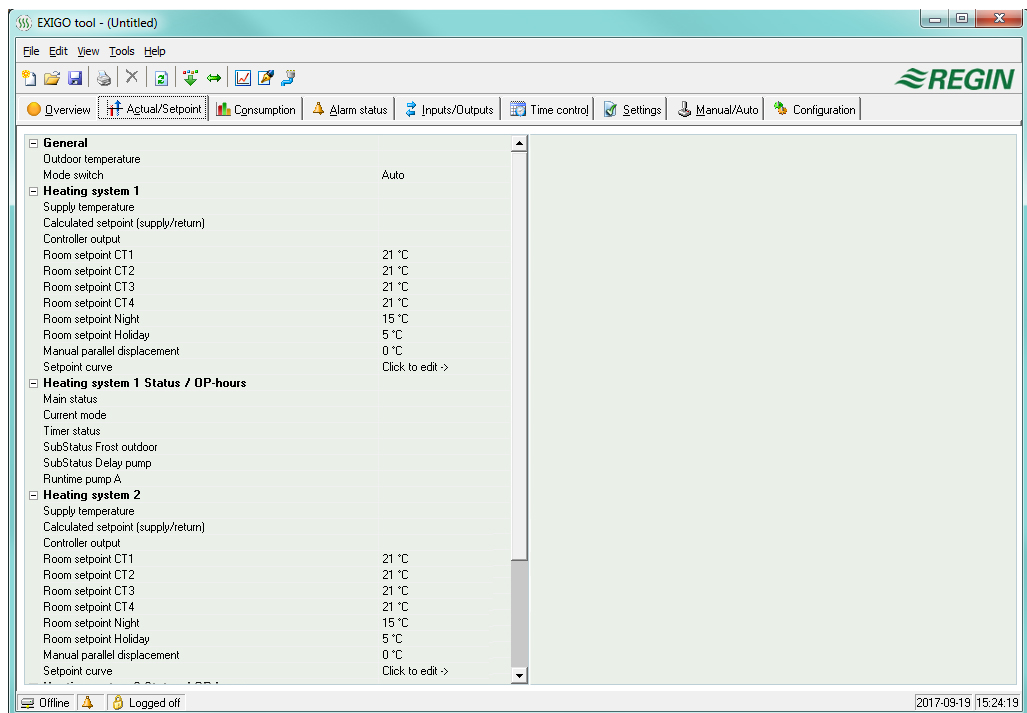
Displays relevant setpoint values and actual values.

Real-time chart

When right-clicking on some of the groups you are given the option of creating a real-time chart. This chart will be created containing the four first recordable parameters in the group.

7.4 Consumption
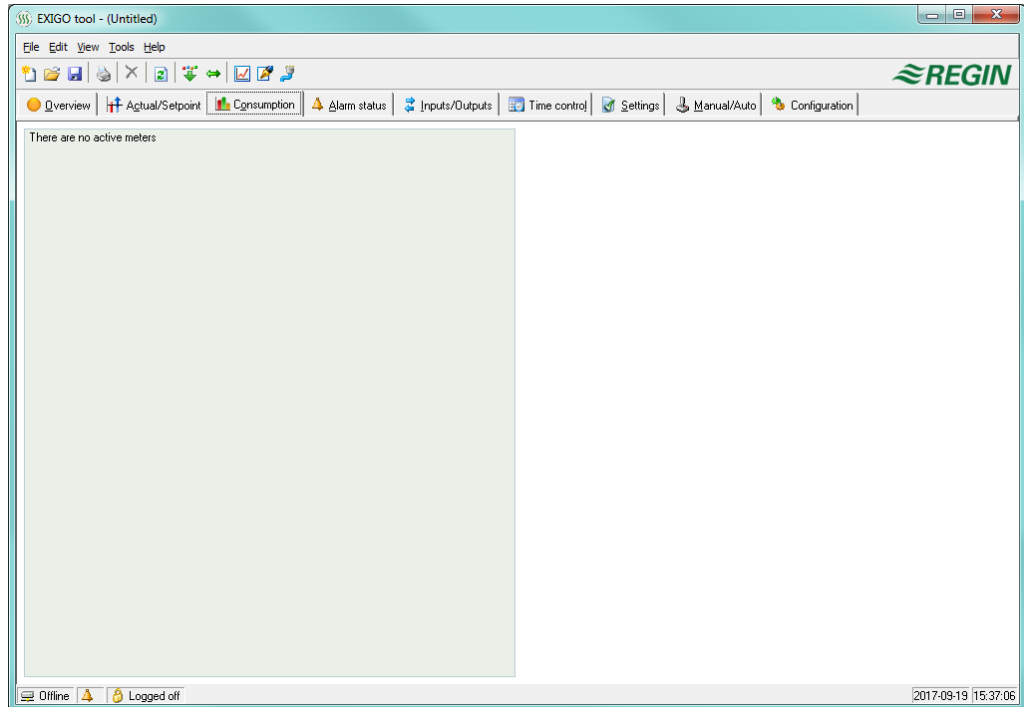
Displays consumption values for energy meter, heat water meter and cold water meter. The values are calculated using pulse constants that are set in the submenu **Pulse constants** in the configuration folder or are communicated from M-Bus meters if a controller with M-Bus interface is selected.

7.5 Alarm status
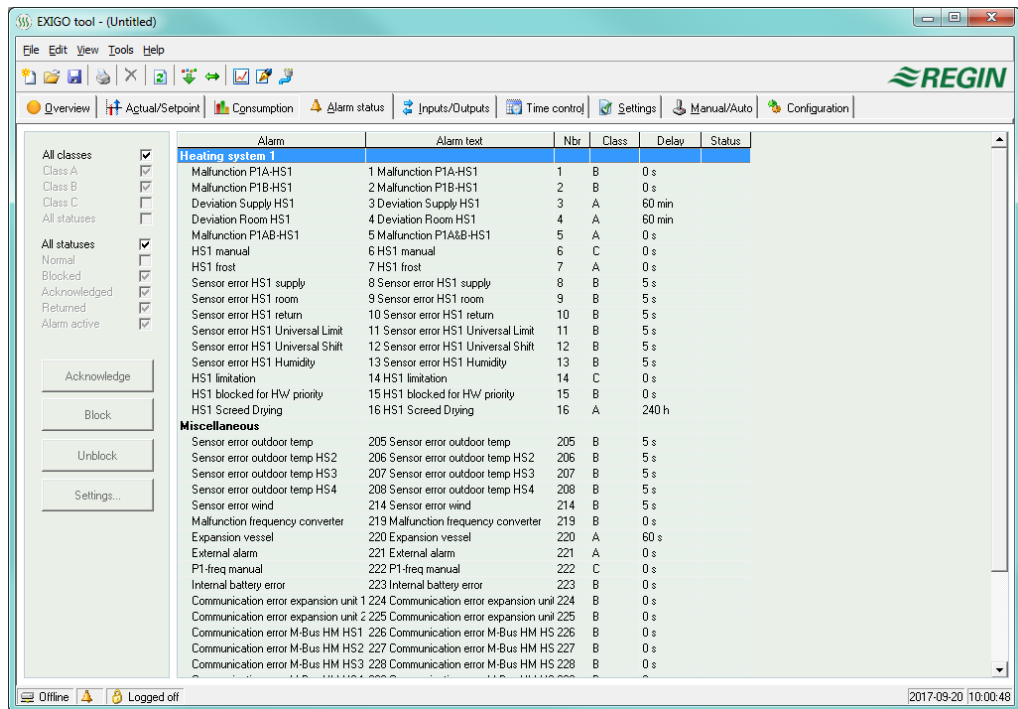
Permits handling of all enabled alarms.

The alarm settings can be changed by either double-clicking on the alarm you wish to change or by marking the alarm and then clicking on the button **Settings**.

Alarm settings can also be changed in the folder **Settings/Alarm objects**.

NOTE! Changes made to alarm settings must be downloaded to become active.

Alarm indications

Green status box: Non-activated alarm.

Red box with an exclamation mark: Active alarm.

Red, green-bordered box: Reset, not acknowledged alarm.

Blue box with a white tick-mark: Active, acknowledged alarm.

Grey box with a black X: Blocked alarms.

Any changes made to alarm status in Exigo tool are instantly transmitted to the controller without the need to use **Load parameters**. Changes in alarm status in the controller however are not displayed in Exigo tool until you make a refresh.

To keep track of changes in alarm status when looking at other folders, look at the alarm box in the status bar at the bottom of the window.

Alarm categories

Exigo has three alarm categories, **Sum alarm A**, **Sum alarm B** and **Sum alarm C**.

A and B/C alarms will activate the digital outputs A-alarm and B/C alarm respectively if configured. Both will activate the **Sum alarm** output if configured.

C alarms are internal only.

C alarms need not be acknowledged. Once they reset, they automatically return to normal status.

Alarms can be shown according to class: **A**, **B**, **C** or **All classes**, and according to status: **Normal**, **Blocked**, **Acknowledged**, **Returned**, **Alarm active and All statuses.**

Alarm text in Exigo

The alarm text that is displayed in the Exigo on activated alarm is shown in column 2, **Alarm text**. This text can be changed, but only via Exigo Tool. Double-clicking on the alarm text will open a dialogue box in which various alarm parameters, including the alarm text itself, can be changed.
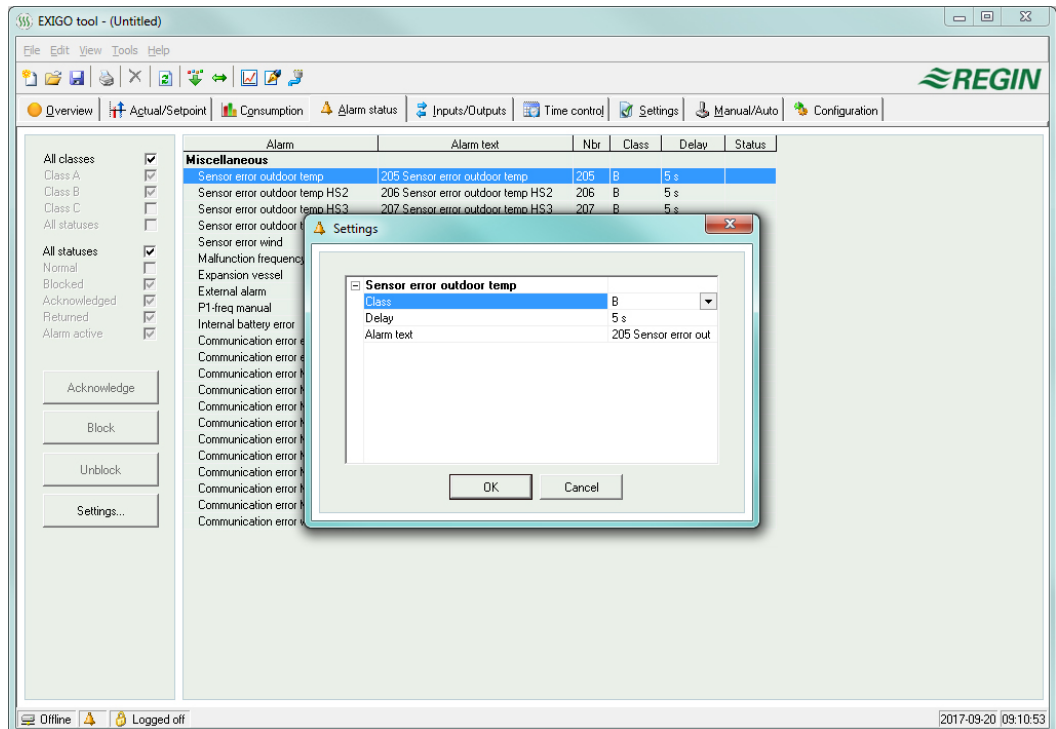
The alarm text, including any possible space, may not consist of more than 38 characters. These will be distributed on 2 rows of 19 characters each. If a word in the text extends past the 19th position, the whole word will be moved to the second row. To avoid this, a hyphen can be added in the 19th position, followed by a space and then the rest of the word.

**Example:** The message "Sensor error relative humidity supply air" consists of 40 characters, but since the third word extends past the 19th position, the following will be shown in the display:

```
Sensor error
Relative humidity su
9 Sept 08:52 Class B
```

However, if the text is changed to: "Sensor error RH supply air", it will instead result in:

```
Sensor error RH
supply air
9 Sept 08:52 Class B
```

7.6 Inputs/Outputs
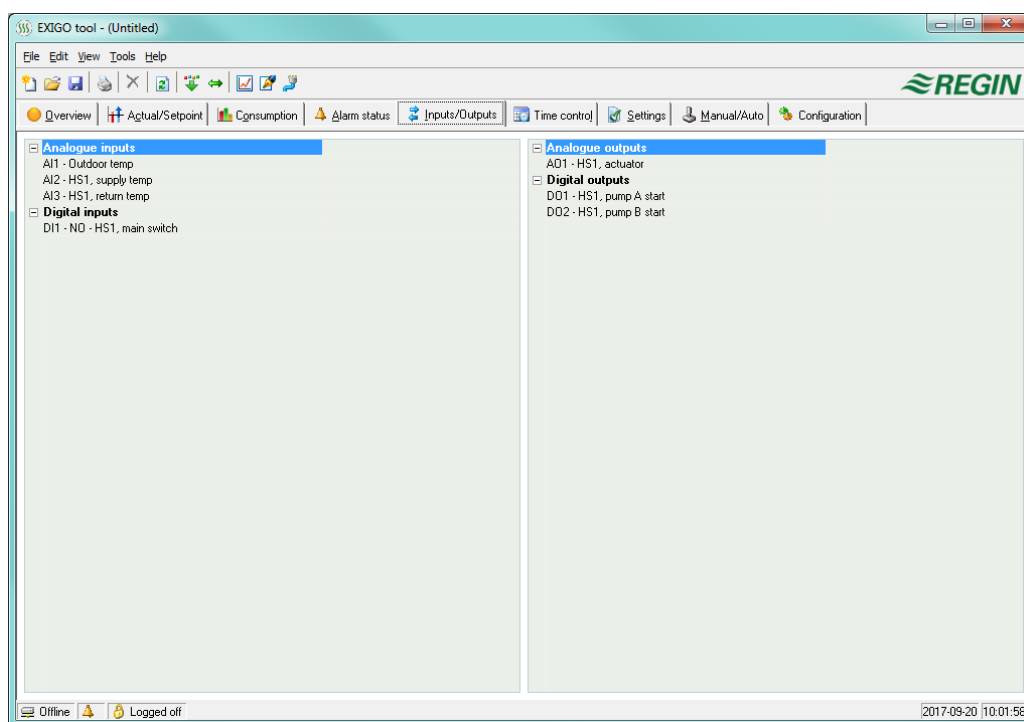
Shows actual values for all inputs and outputs. As this is a read-only folder, no settings can be made here.

Un-configured inputs and outputs are greyed. See the box entitled **Options** under **Tools.**

7.7 Time control
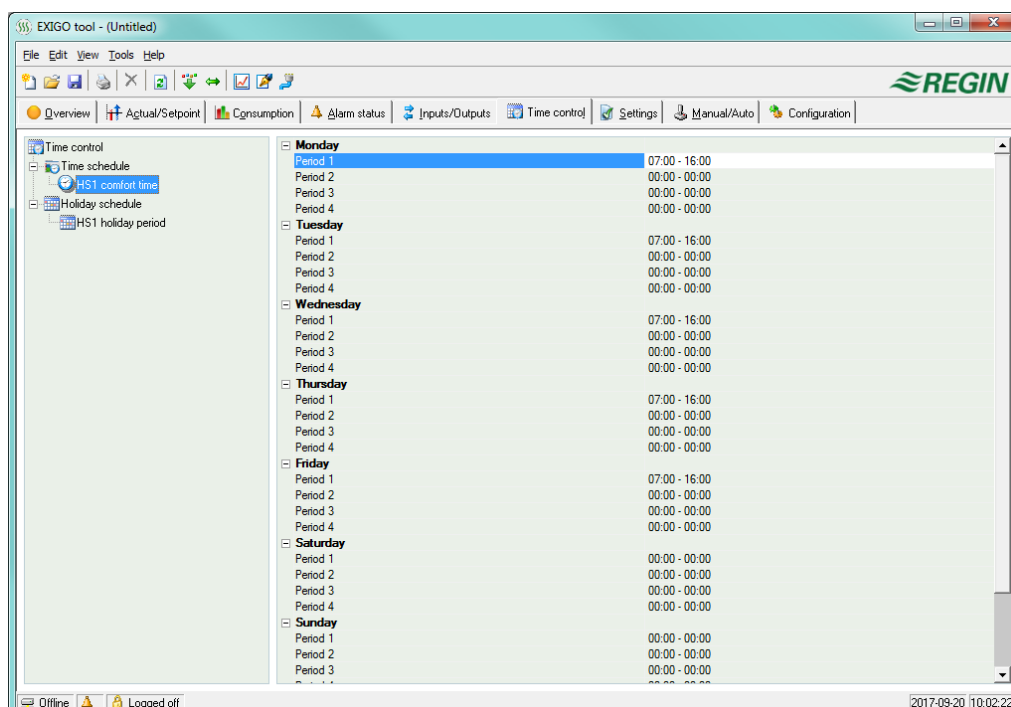
Here you set the daily comfort periods. Each control function has its own set of daily schedules

There are four periods for each day.

The 8th day, **Holiday**, governs the activity on all days marked as holidays in the holiday schedule, see below.

The schedules for **Time channel output 1…5** dictate the activation of the corresponding digital output signal.

To deactivate a period, set the time to 00:00 – 00:00.

To run the unit 24 hours a day, set the time to 00:00 – 24:00.

Note: An interval cannot exceed over midnight. For example, if you want to configure a period from 18:00 to 02:00, you have to divide it into two periods: Day 1 18:00 – 24:00 and day 2 00:00 – 02:00.

Holiday schedule

Up to 10 separate holiday periods can be configured for each system (110 in total). A holiday period can be anything from one day up to 365 consecutive days.
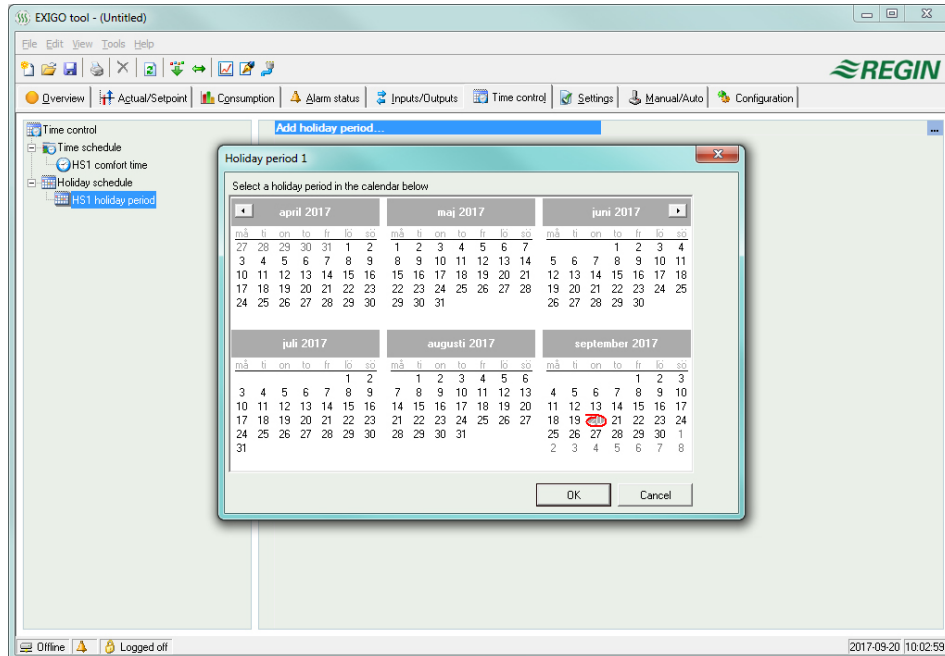
To create a holiday period, click on the button at the right end of the line *Add holiday period.*

To pick a single date, click on it, a marker will indicate your choice, then click on **OK**. To pick a period, click and hold on the first date, drag the cursor to the last date and release the button. The period will be marked. Click **OK**. Alternatively, click on the first date, press and hold the **Shift**-key on your keyboard and click on the last date of the period. The period will be marked. Click **OK**.

Although the calendar seems to extend far into the distant future, holiday periods can only extend up to one year from the present date. Should you choose a date further ahead than one year, the date will be replaced by the same date within one year from the present.

To remove unwanted holiday periods, use the **Delete** button in the toolbar.

Holidays/holiday periods that have been set will be valid every year, until they are removed. This means that for example Christmas and New Year will only have to be set once and are then valid for all future.

7.8 Settings

Controller settings
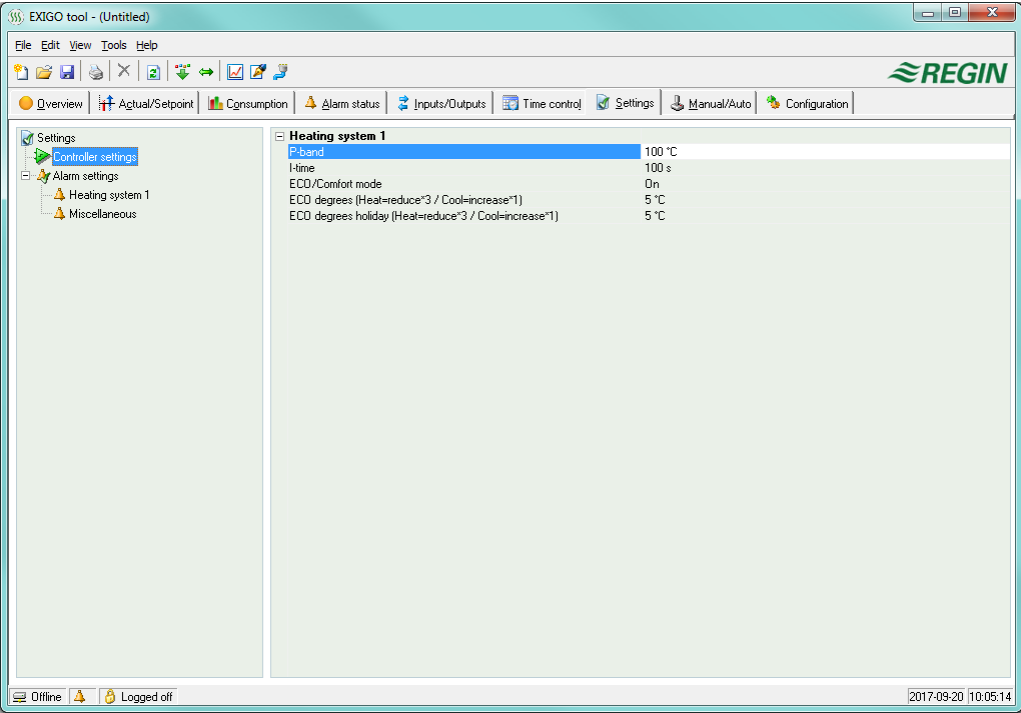
Setting of the control parameters, such as P band and I time.

Parameter setting-interval endpoint values and default value are displayed if you place the cursor over a parameter value.

Changes must be downloaded to the controller in order to take effect.

To download, right-click on a parameter name or a parameter group name and choose **Load parameters** or click on **Load all parameters** in the toolbar or the **Tools** menu.

Alarm settings / alarm objects
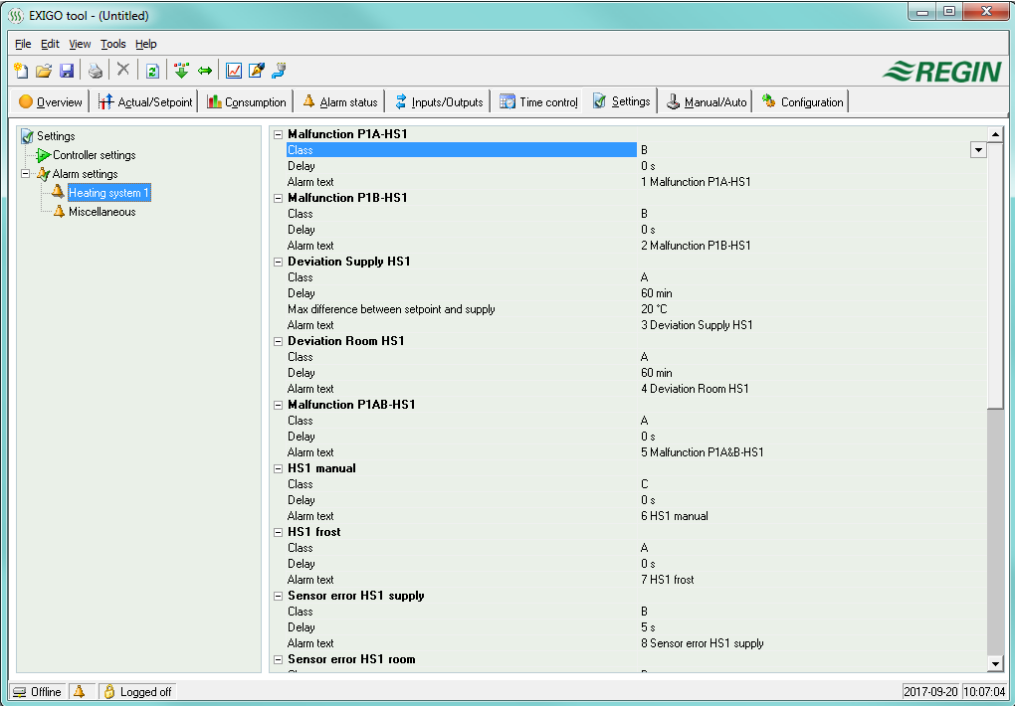
Setting of alarm parameters. These settings can also be made in the **Alarm status** folder. See the section on **Alarm status**, above.

Disabled alarms will be removed from the alarm list in the Alarm status folder.

A and B/C alarms will activate the digital outputs A-alarm and B-alarm respectively if configured. Both will activate the Sum alarm output if configured.

7.9 Manual / Auto
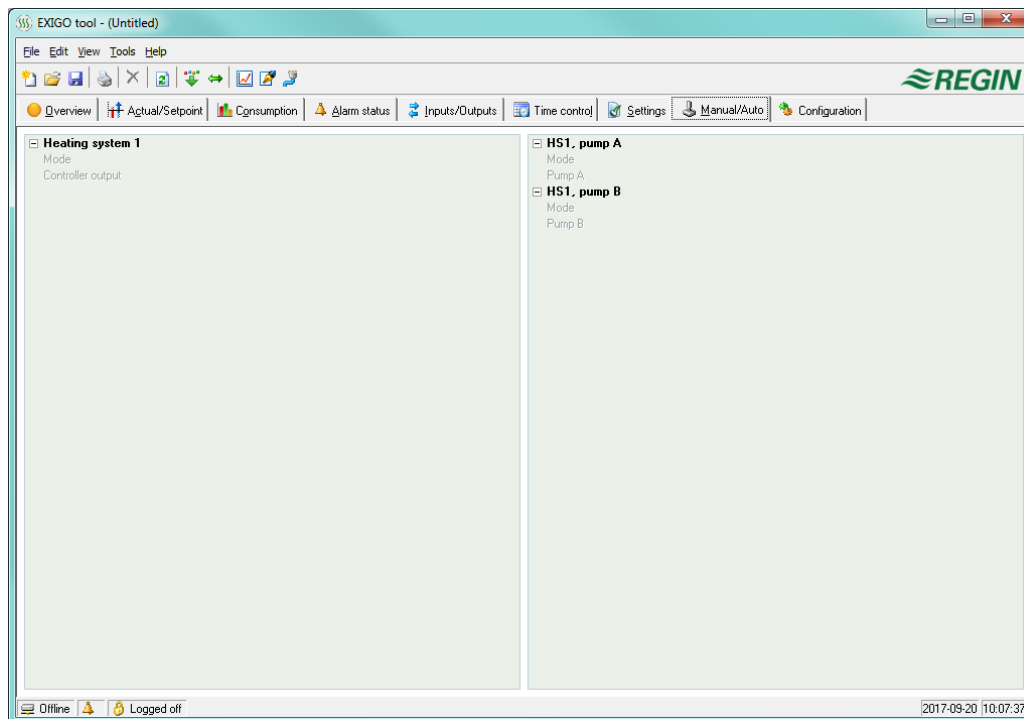
In this menu, you can take manual command of most controller functions. This is highly useful for testing purposes.

Setting functions to manual command will generate alarms to ensure that control is returned to Auto.

In this menu, all changes are instantly downloaded to any attached controller, it is not necessary to run **Load parameters** for changes to take effect.

7.10 Configuration
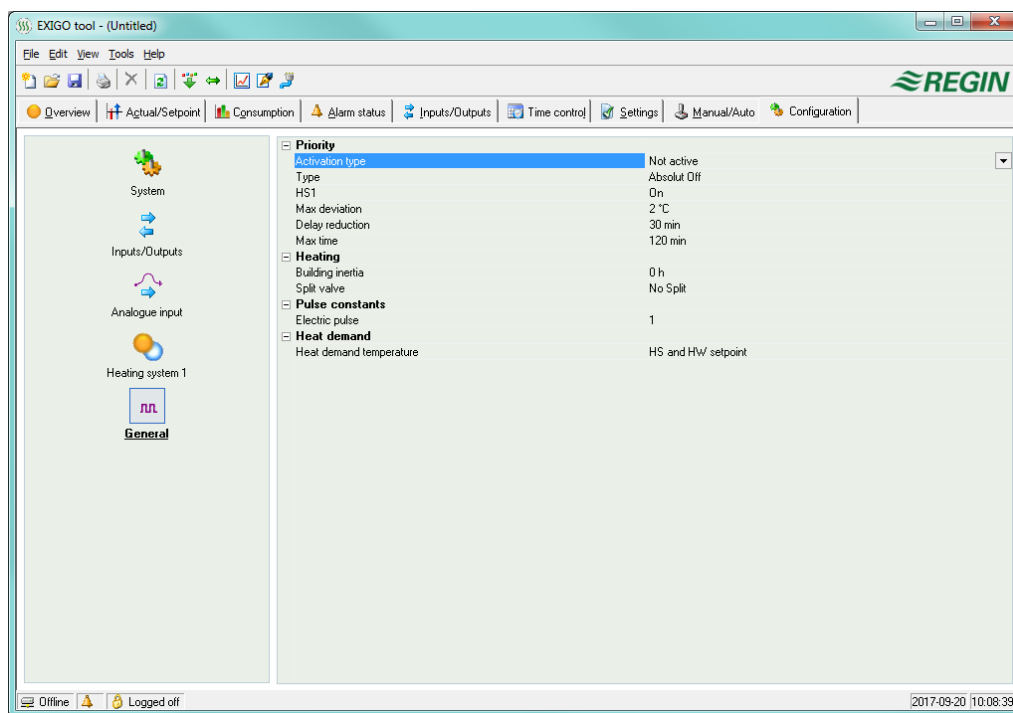
This folder contains all the configuration parameters for the Exigo. Since the contents are very diverse, the folder has been divided into sub-folders. These are accessed by clicking on the buttons in the left-hand button-list. For detailed information on these, please see the Exigo manual.

Chapter 8 **Expansion units**

As of version 3.0, one/two expansion units can be connected to Exigo. Any controller model can be used as an expansion unit but since the display will not show anything, a controller without a display is normally used.

Set the selected port to "Expansion units" and choose under **Configuration/System** which controllers you want to connect. Next, connect them to the computer. Depending on configuration, "Initiate Expansion unit 1" and/or "Initiate Expansion unit 2" will be shown under **Tools**. This initiation function is used for Exigo models which are not factory loaded with version 3.0.

For controllers that are factory loaded with version 3.0 or later, you can select "Expansion unit 1" or "Expansion unit 2" under **Application choices** in the controller. In this case, Exigo Tool is not required to set the controller as an expansion unit.
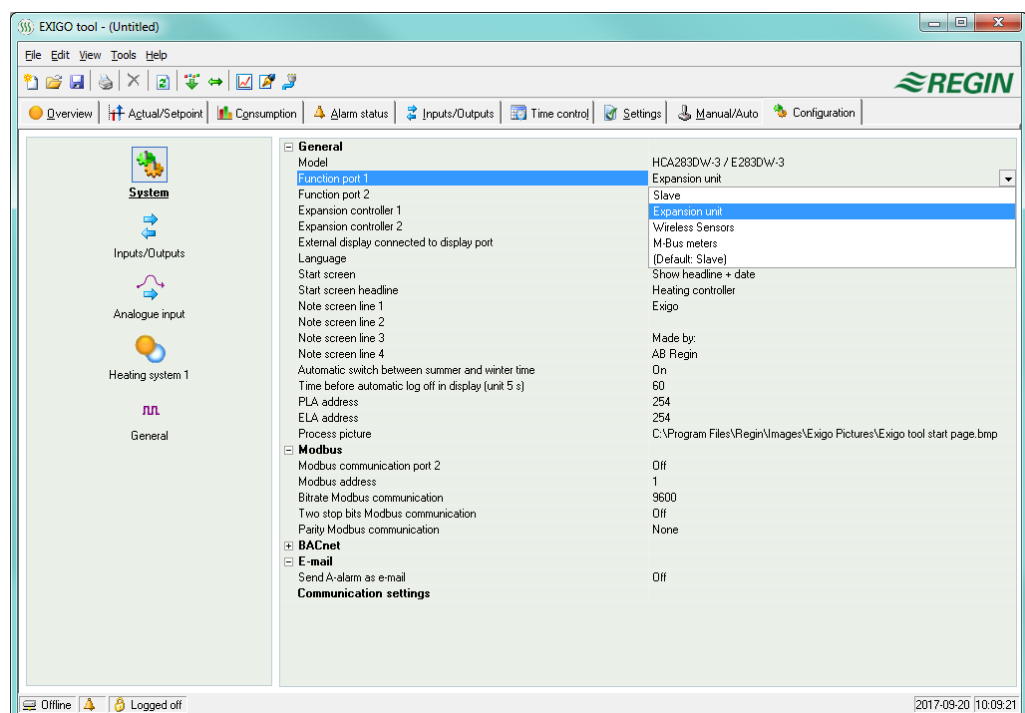
After initiating the expansion units and configuring the program, all controller units are connected. Then the master unit is connected to the computer via the chosen port in order for the configuration to be loaded. The controller is configured in the same way as is described in chapter 5.

Chapter 9 **TCP/IP – network terms**

9.1 Networks, subnets, routers

IP network

An **IP network** is a cluster of cables and devices, where an equipment with one IP address can communicate with any other IP addressed equipment. Internet is *one* network, and when your home computer connects to the Internet, you become part of the Internet.

Subnet

Networks are divided into *subnets*, which are linked with *routers*. Routers need some kind of map of the network (or at least of the closest subnets, and somewhere to send everything else). A computer only needs to know the address of the closest router. A local switched Ethernet network is *one* subnet. Routers can have several Ethernet ports for different Ethernet networks, or maybe an Ethernet port and an ADSL connection.

9.2 IP address, Subnet mask, Default Gateway, DNS server

IP address

Each computer or network connected controller has an IP address consisting of four numbers between 0 and 255, making up a total of 32 bits.

Subnet mask

Each computer or network connected controller also has a subnet mask consisting of 32 bits.

Example

If the IP address is 192.0.2.73 and the subnet mask is 255.255.255.0, then the subnet addresses are from 192.0.2.0 up to 192.0.2.255, and 192.0.2.73 is your address on the subnet. Sometimes the subnet mask is specified by the number of bits used (always starting at the beginning of the subnet mask). The subnet is then 192.0.2.0/24, and the IP address and the subnet mask can also be specified together: 192.02.73/24.

Default Gateway

Each computer and each controller using TCP/IP communication must know the IP address to the router that goes out from its subnet. The IP address of this router is usually called the *default gateway*. All traffic that shall be sent out of your own subnet is sent to the default gateway.

DNS name

The computer or the controller must know the address of the equipment it is going to communicate with. This can be given as an IP address or a *DNS name*. DNS is a name service which can translate hierarchical names like **exomaincomputer.regincontrols.com** to an IP address. Several DNS servers are part of the system, but you only have to know the IP address to one of them.

IP configuration, a short summary

A complete IP configuration consists of the IP address of your computer, the subnet mask, the IP address of the closest router (also called the *default gateway*) and a DNS server.

9.3 DHCP, fixed and dynamic addresses

Static and dynamic

The IP settings of a given piece of equipment can be manually configured, making it a so-called *static* IP address. It may also, upon starting up, be assigned an available IP address and additional IP settings from a special computer, a so-called DHCP server, on the subnet. This is referred to as receiving a *dynamic* IP address.

Dynamic IP addresses

The use of dynamic addresses presents a problem when other equipments try to contact the equipment, as the dynamic addresses are unknown in advance and are subject to change. To be able to contact equipment using dynamic addresses, your equipment need to use DNS, which also has to be updated when the dynamic address is changed via DHCP. This is commonly used in corporate networks and for Windows computer. However, most Internet Service Providers and several types of EXO controllers do not support the DNS update via DHCP, and must therefore use a static IP address.

9.4 White and black addresses

Black addresses

There is a shortage of IP addresses on the Internet and organizations are encouraged to use internal IP addresses on internal networks. Different companies may use the same address series, as their internal work computers never really need to connect directly to each other. This kind of addressing is called *private* or *black* addressing.

Reserved addresses

The following addresses are reserved for private nets:

192.168.0.0 - 192.168.255.255

172.16.0.0 - 172.31.255.255

10.0.0.0 - 10.255.255.255

See also: *RFC1918, Address Allocation for Private Internets* [Online document], via http://www.ietf.org/rfc/rfc1918.txt (last verified March 04, 2016).

White addresses

Addresses that are unique on the Internet are called public or *white* adresses. More information of the use of IP addresses can be found in the document: *RFC3330, Special-use, IPv4 addresses* [Online document], via http://www.ietf.org/rfc/rfc3330.txt (last verified March 04, 2016).

NAT

Firewalls can act as agents for computers with private IP addresses, when they are searching the Internet for information. A connection from a computer with a black IP address is transformed into a connection from the firewall (which has a public IP address) to the Internet server. The Internet server may then return the information to the firewall which forwards it to the computer with the black address. This is called *NAT* or *masquerading*.

EXO

In general, NAT also works with EXOscada and EXO controllers, although the connection must be initiated from within the black network and target the white network.

NAT router

You can also have a NAT router to forward traffic from the white net to a computer on the black net. This is accomplished by letting traffic to a specific TCP port or UDP port to be forwarded to an IP address on the black net.

EXO controllers

There are Internet Service Providers that target, e.g. housing co-operatives, offering only private dynamic addresses. EXO controllers with a TCP/IP port can manage controllers connected this way, provided that the main computer has a static or a DNS registered public address. The EXO system can also manage the reverse condition, and allows a main computer with a private address to contact controllers with public addresses.

9.5 Tunnels

Two private networks

Another way to manage a connection via the Internet from a work computer to a main computer on a company network that uses private IP addresses, is to create a tunnel going into the network. A tunnel means connecting two networks using private IP addresses via the Internet, by encrypting all network packages to the destination network (encryption includes IP addresses and other information). The encryption is done by the firewall of one of the networks. The package is issued a new "address label" specifying the other firewall's public address. This firewall decrypts the contents and forwards it to the destination work station within its network. Any listeners that do not have knowledge of the password will not be able to decrypt the traffic. This technology is also called VPN.

PC – black network

A tunnel can also be created between a single computer and a private network. Nowadays, it is common for travelling salesmen to connect their mobile stations via GPRS and the Internet, and then connect to the company network using a tunnel. The same technology can be used by the duty technician to work with the EXOscada work station from his home, from the service vehicle or similar.

Chapter 10 **Exigo with web interface**

See chapter 9 for explanations of terms used in this chapter.

10.1 Connection

The controller must be connected to a static, white IP address.

If the Exigo is to be located behind a router with a built-in firewall, the router must be configured. The router should have a fixed white IP address. It must then find the controller, either by sending an IP address to the controller or by entering the controller's MAC address. Thereafter, all incoming traffic on Ports 80 and 26486 should be NAT routed to the black IP address of the controller. See the router manual for this.

Ports 80 and 26486 on the internet modem must also be open for incoming traffic.

This is built into the Exigo and is based on the fact that it has an integrated web interface. Using NAT-routing, you can also connect more than one web server behind the same white IP address.

A Exigo can handle a maximum of 5 connections from Exigo Tool, EXOscada and web browser at a time.

## 10.2 Two or more Exigo behind the same router

Two or more Exigo with integrated web server can be connected behind the same router, if the communication routes are defined to the router. As mentioned previously, this is known as *Port Forwarding* or *NAT routing*. Using this method, the router will know to which black IP address (LAN) it should connect communication via the different WAN ports.

For the second Exigo, the communication port must be set to EXOline. This setting is made in **Configuration/System/Website**. For example, you can set the port to 26000 instead of 26486.
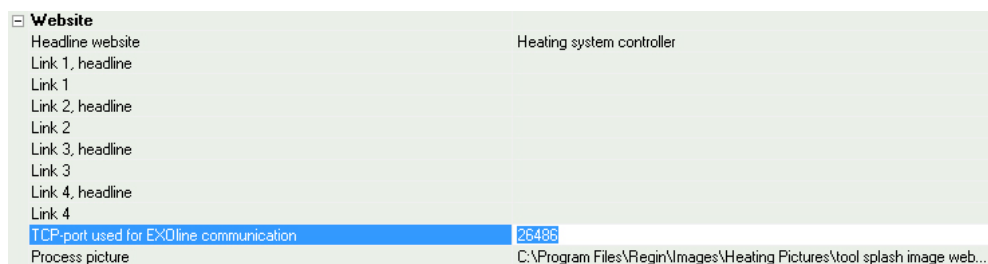

Then go to **Tools/Load website to the controller** to load the unit with the new setting. If using a third Exigo, it can for example be set to communicate EXOline on port 26001.

The example below visualises the communication routes in a router which has been set to NAT routing to two Exigo. The same pattern is followed if the number of Exigo units is three, four, five, and so on.

IP: 192.168.0.20   IP: 192.168.0.30
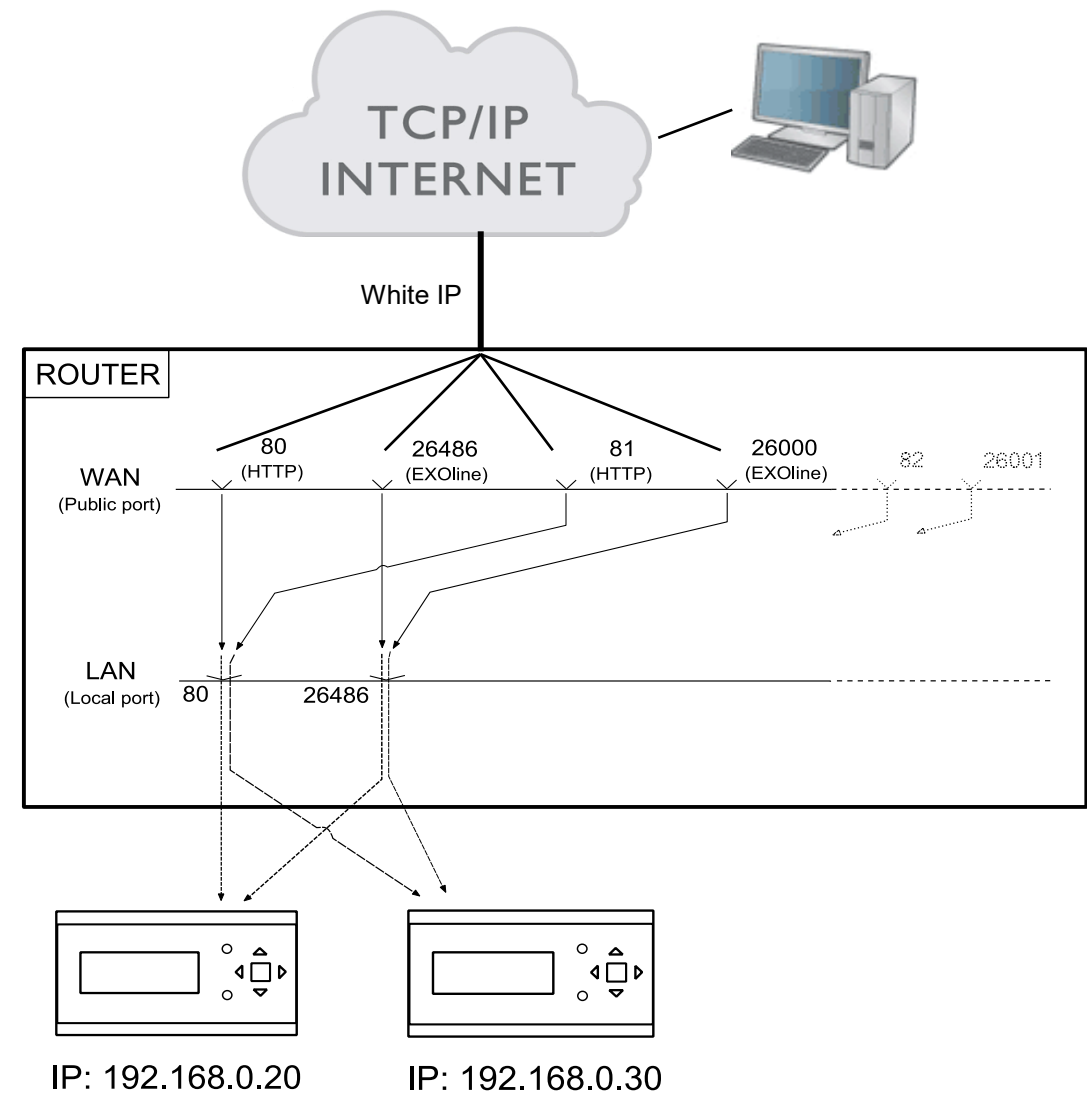
If you (as in the example) want to access the unit with black IP, 192.168.0.30, in the web browser of the client computer, you must enter the white IP or DNS of the router followed by ":81" in the address field of the web browser. Then the web server in the Exigo will send back information on the layout of the website to the client computer (through the same NAT routing). It will also open a Java application in the client computer which, among other things, controls the EXOline communication.

The router settings in the example may differ depending on the manufacturer. See the example below for guidance.
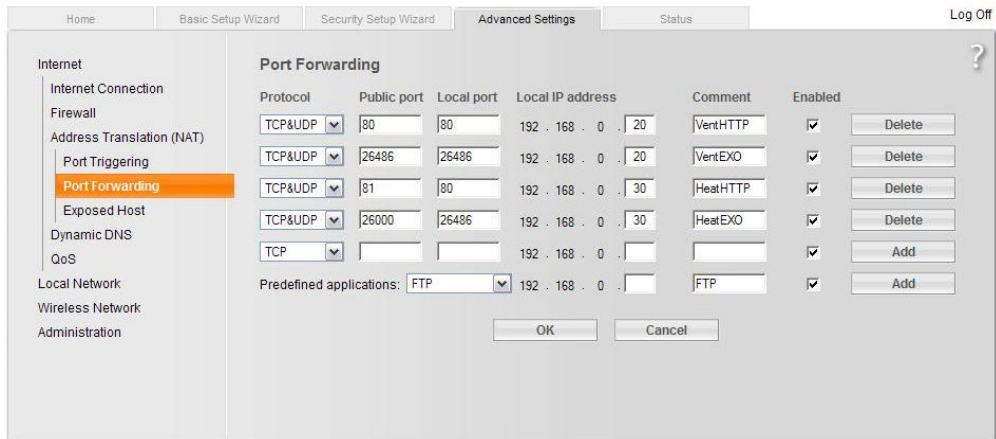
10.3 Web server configuration

As before, all configuration of the controller parameters takes place via Exigo Tool or directly in the display. No configuration can be done via the web server. For configuration of the controller, see the previous chapters in this manual or the manual for Exigo.

If the configuration of the controller's parameters is changed, the website is automatically downloaded to the web server. You only need to refresh the website if the settings for the website are changed.

Configuration of the TCP/IP port

To configure the TCP/IP port in the Exigo, go to **Tools/Communication settings.** Choose **Use a TCP/IP port in this controller**. Select the right cable when asked. Then press **Search** to find the correct Exigo.
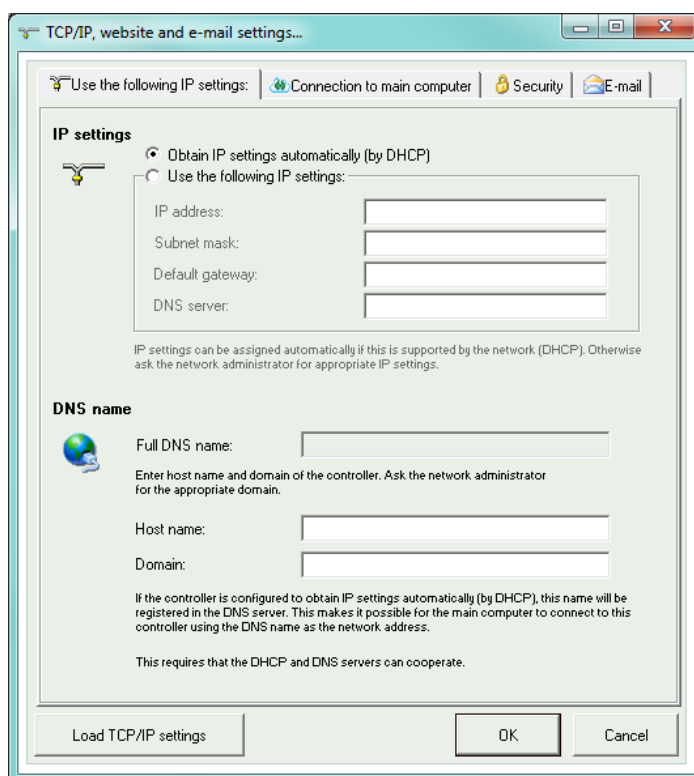
After the program has found the correct Exigo, select it and click "OK".

Then click the button **TCP/IP, website and e-mail settings**.

The tabs in the resulting dialogue box permits the following settings to be made:

IP settings

From here you choose if the controller should have a static IP address or whether the DHCP server should give it a dynamic IP address.

If the TCP/IP port uses fixed IP and you have given the e-mail server's network name, you must also enter a DNS server under **Use the following IP settings**. The TCP/IP port can then translate the network name into an IP address. If DHCP is used, this will take place automatically.

DNS name

The Exigo can be connected to a DNS name, for example:

DNS name: Exigoweb, Domain: regincontrols.com.

The controller's IP address will then be connected to the DNS name **Exigoweb.regincontrols.com**.
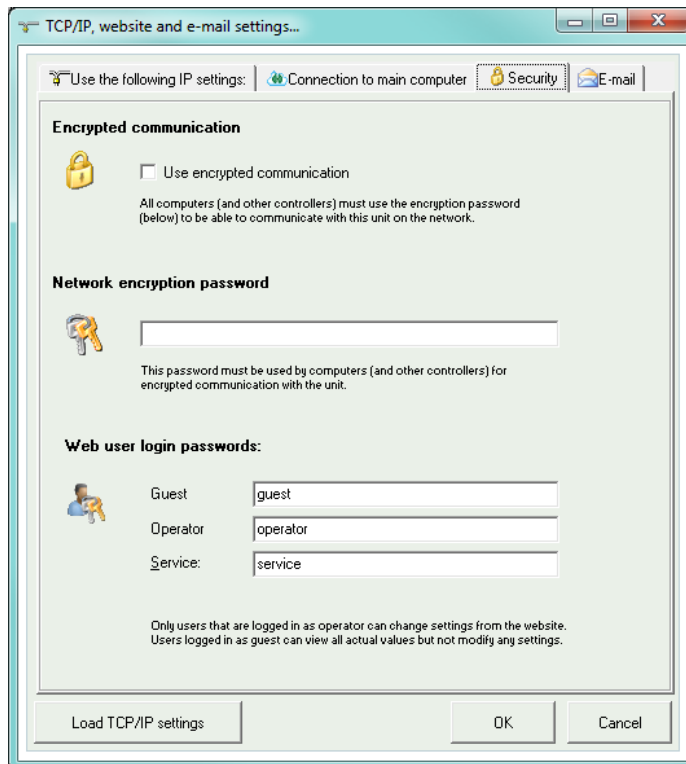

Main computer network address

To connect the Exigo to CLOUDigo (see chapter 12), enter the DNS name "connect2cloudigo.regincontrols.com" into the address field. For more information, see the section about CLOUDigo.
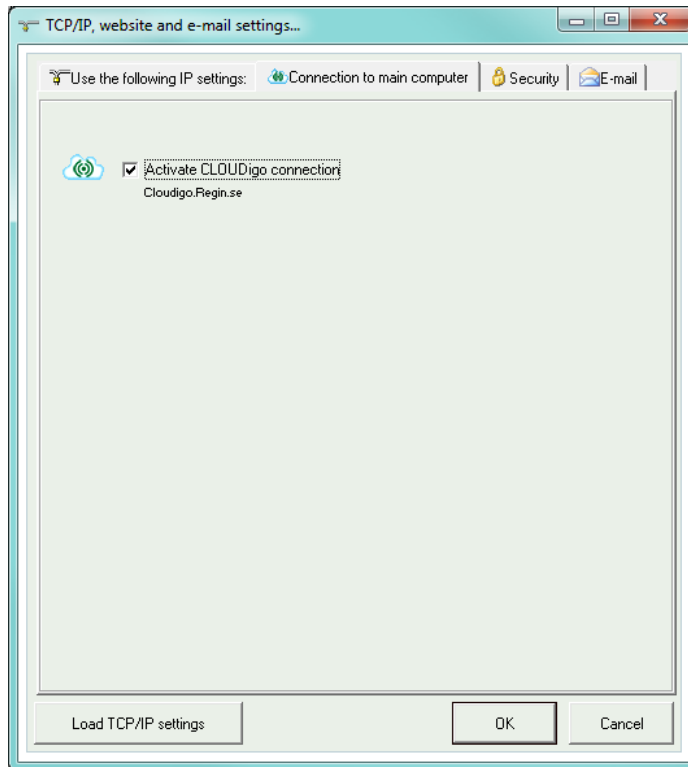
Encrypted communication

The encryption is used to prevent other users in the TCP/IP network from connecting to the Exigo via Exigo Tool.

The password is only used when you want to reach the Exigo via Exigo Tool. If you lose the password, the controller must be cleansed and reloaded.

Web user login passwords

The passwords to log on to the website. **Guest**s have permission to view all values. **Operator**s are authorised to view and change all setpoints and values. **Service** has the highest access level and can change all contents of the website.

E-mail server settings

Network address to the E-mail server

Here you give the outgoing SMTP e-mail server, via which the TCP/IP port should send e-mails, either as a network name (DNS name, e.g. smtp.exampledomain.se) or as an IP address. Within local area networks, you usually give an IP address. If you are connected to the Internet, network names are more common. Your network technician or Internet supplier can tell you which e-mail server you should give.

Note: If you give a network name, this must be connected directly to the e-mail server. It cannot be an alias for another network name. To test if you have a directly connected network name, you can use the Windows command line interpreter to run the **Ping** command on the network name (for example Ping smtp.exampledomain.se) and see if the command reports "Pinging smtp.exampledomain.se".

Login name and Login password

These two fields are only used if the outgoing e-mail server requires logging on and supports the AUTH LOGIN method. Otherwise, leave them empty. Other log on methods or coding are currently not supported.

E-mail sender address

Here, you write the sender address that should be given in the e-mail. Certain e-mail servers and junk mail filters require that a real e-mail address is used here. Otherwise, you can give a fictitious sender address, e.g. **MyController@MyDomain.se**. Ask your network technician for advice if you are unsure.

Load TCP/IP settings

After the above settings have been made, you download the settings to the Exigo by clicking this button.

Chapter 11 **CLOUDigo – a cloud service**

It is possible to connect an Exigo with integrated web server to CLOUDigo, a cloud-based service that makes it easy to supervise a controller via the Internet.

To connect the controller to CLOUDigo, enter **Communication settings→TCP/IP, website and e-mail settings** and check the box "Activate connection to CLOUDigo". Next, click on "Load TCP/IP settings". The relevant address for connecting will now be loaded into the controller.
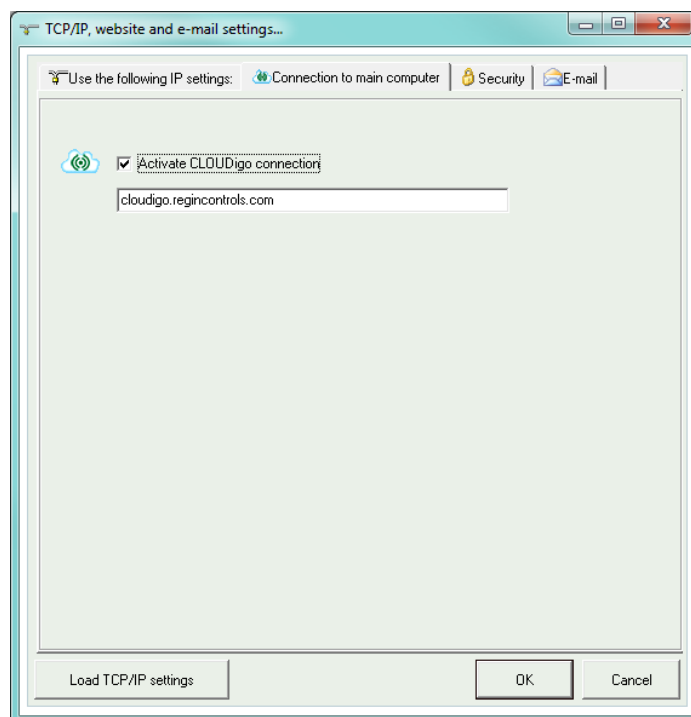
Once this step has been completed, the controller will by itself locate the CLOUDigo server in which all settings are stored. The user then navigates to the same server and controls the air handling system from there.

For additional handling information, see the document "CLOUDigo user guide", available for download from Regin's website: www.regincontrols.com.