E tool and Corrigo Web
User manual
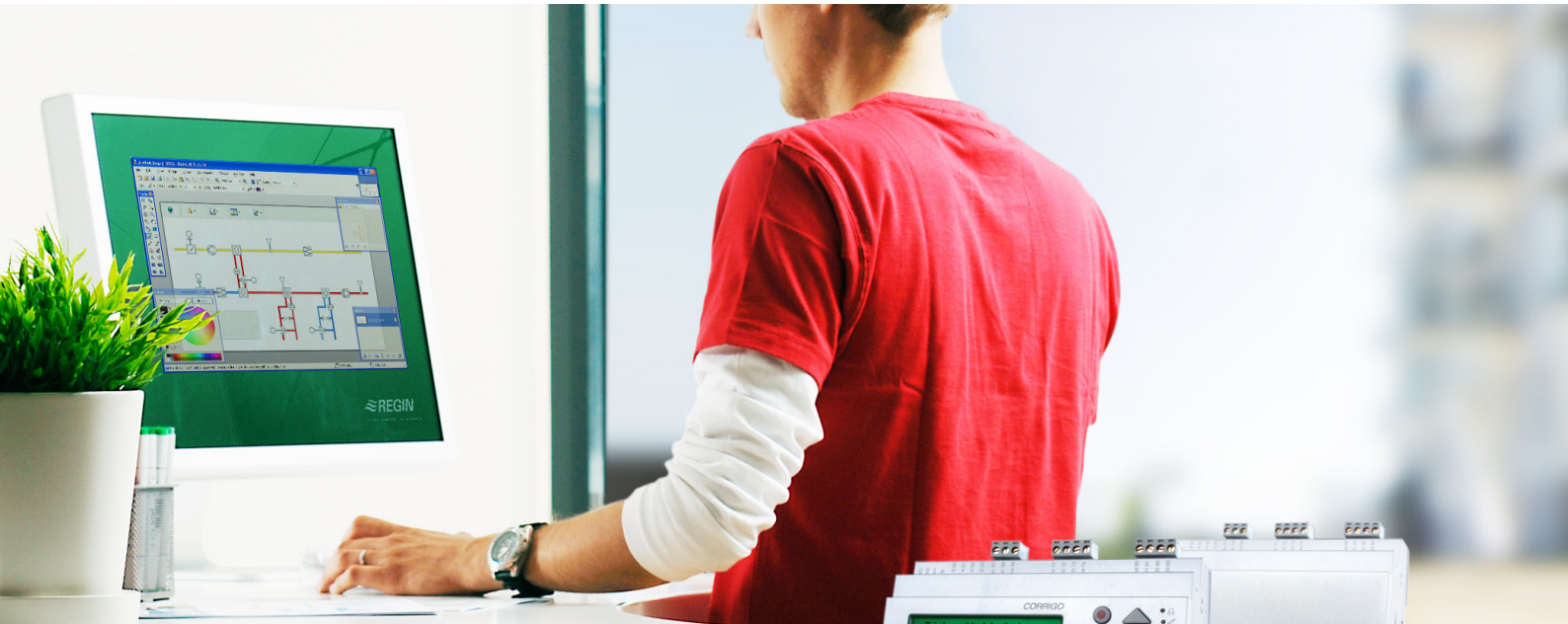
≈REGIN

THE CHALLENGER IN BUILDING AUTOMATION

1. User manual E tool

Revision H, May 2011

Software revision: 3.0

This manual covers E tool for both heating (E tool Heating), ventilation (E tool Ventilation) and boiler control
(E tool Boiler).

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® Corrigo

™ E tool

2. About this manual

This manual is designed to be an aid during installation and use of E tool. It describes all the functions unique to the program. The Corrigo E control parameters however are not described here. For detailed information on these, please see the manual for the controller and application in question.

News

Regin Building Access, (Android application): From version 3.0-1-06 of the ventilation application and version 3.0-1-02 of the heating application, you can communicate with the controller from an Android phone. This is done via an application (app) which is free of charge and can be ordered from Regin or downloaded from Android Market. There are two applications, one for ventilation and one for heating. See chapter 13 for more information.

3. Installation

To install and run E tool you need a PC running Windows 2000, Windows XP, Windows Vista or Windows 7.

To run Corrigo Web, you need Internet Explorer 7.0 or later and Java.

To communicate with a Corrigo you need a special communication cable, E-Cable.

E tool is delivered as a self-installing program on a CD, or can be downloaded from Regin's website (www.regin.se).

Load the CD and follow the on-screen instructions, or download the program folder from www.regin.se. Unzip the folder and run the setup.exe file, which you will find in the unzipped folder.

4. About E tool

E tool Heating, E tool Ventilation and E tool Boiler are Windows-based PC-programs for configuration and maintenance of the various Corrigo E series controllers.

E tool has not been designed with the intention of being a full 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 there is a Toolbar which gives direct access to various functions. All the functions in the E toolbar are also accessible through the menu bar system.

Below the E toolbar there is a row of folder tabs giving access to a number of 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 E toolbar. These functions are basically the same for all Corrigo 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 appropriate Corrigo E controller manual for reference.

5. Startup
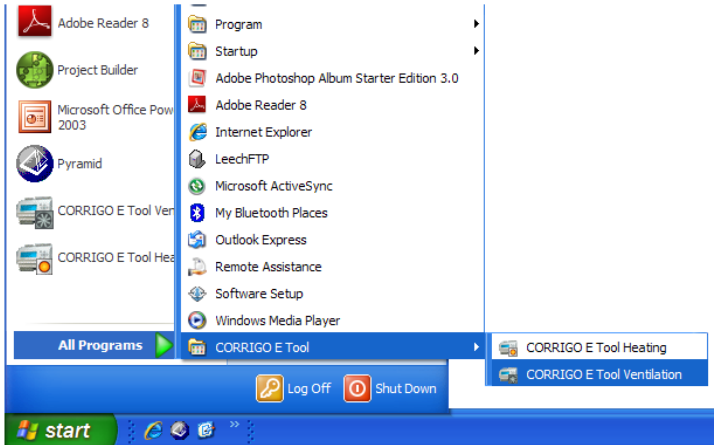
The installation program will have placed a Corrigo E tool folder in the Programs folder in the Start menu. This folder contains the links to E tool Heating, E tool Ventilation and E tool Boiler.

To start either program, click on the Start button at the lower left hand corner of the display. Then click on Programs, the folder Corrigo E tool and finally 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 right hand mouse button and drag the program name from the folder onto the desktop. Release the button and click on "Create shortcut here".

On start-up E 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 Corrigo controller is found the program will start offline.
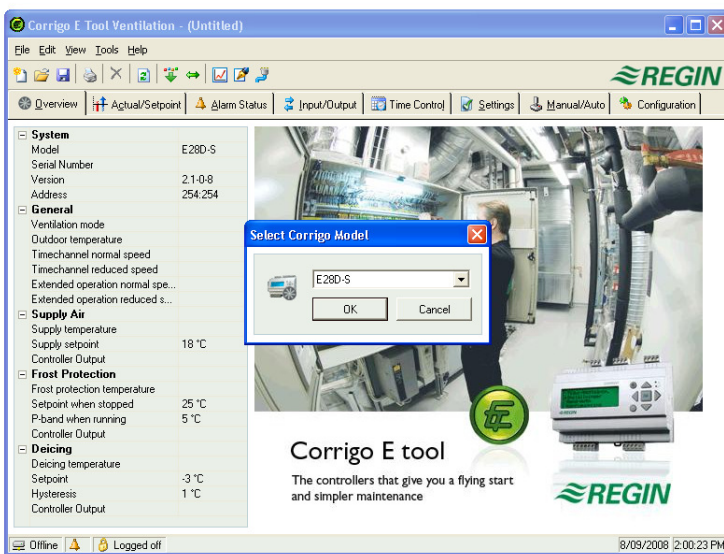

E tool always starts with a box where you enter which Corrigo model you are using. The Overview folder is also displayed. Make sure that you enter the correct model, or strange things may occur in the control and alarm handling.

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6. Menu bar

The menu bar has five drop-down menus:

6.1 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 file will have a .vtc extension for ventilation, .htc for heating and .btc for boiler control and needs about 22 kb of disk space. The files are pure text files and can be opened using regular editing programs like Notepad or WordPad.
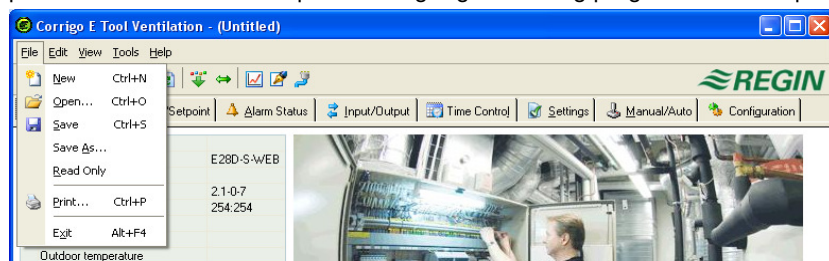
New

New will open a new unnamed file. A box appears where you choose the model of your Corrigo. If you are unsure which model you are using, you will find the article number on the right short side of the controller. Make sure that you choose the correct model. If you load an incorrect model in a Corrigo, unexplainable alarms etc. may appear since certain functions can be activated that are not visible in the present model.

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 for the same file one of them will be marked as Read only to prevent data conflict.

Print
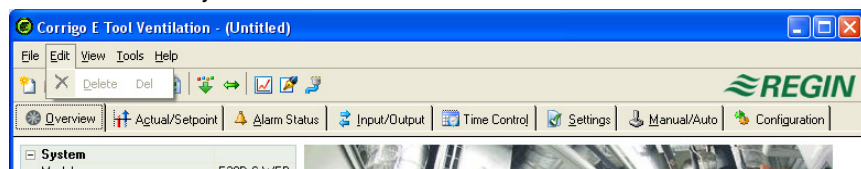
Will give a printed list showing all the configuration settings of the present file.

Exit

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

6.2 Edit

The edit menu only contains one item:

Delete

Delete is only used in conjunction with Holiday periods. Use delete to remove assigned periods.

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6.3 View

The view menu contains one item.

Refresh

E tool is not a dynamic program. If a parameter value is changed in a connected Corrigo, for example a temperature, the corresponding value in E tool will not automatically be updated. The E tool user must 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 finger that presses F5 at settable intervals. See "Options" on page 9.

If the controller revision is older than the E tool revision, you are asked what you want to do to make them compatible. See section 9.
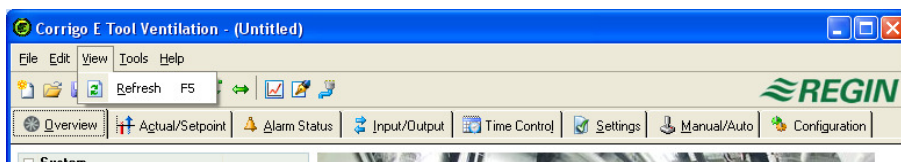
6.4 Tools
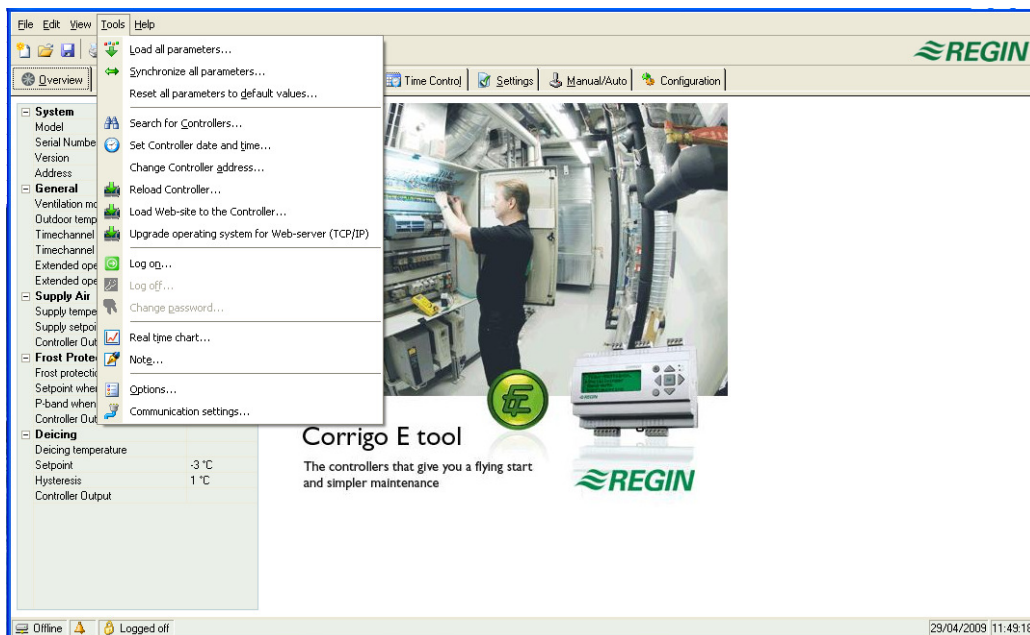
Load all parameters

Download all present parameters from Corrigo E tool to the Corrigo E controller.

Synchronize all parameters

All parameter values in the Corrigo E are compared with the corresponding values in E 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 E tool using the controller values or update the controller using the E tool values.

Reset all parameters to default values

Resets all E tool parameter values to default values.

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Search for controllers

If, on startup, E 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.
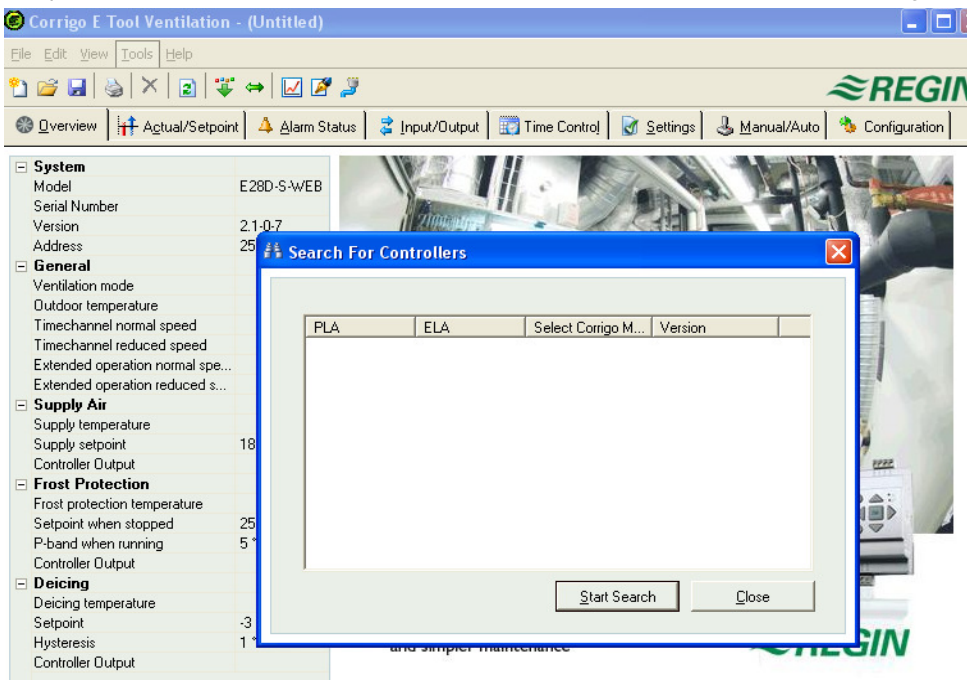
Set controller date and time

Will synchronize the controller date and time with the computer date and time.

Change controller addresses

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 the controller

Downloads the current control program from E tool to the controller.

Use this function to install updated program revisions. You can also use it to convert a Corrigo E Heating to a Corrigo E Ventilation or a Corrigo E Boiler and vice versa. Note, though, that since the hardware differs between controllers of different sizes, the E tool program and the Corrigo model must be compatible. For example, to load a Corrigo E15, the E tool program must be made for an E15. Otherwise, unexpected events may take place.

From version 3.0 it is also possible to load an older program version. You can choose between 2.1, 2.3 and 3.0.

E tool Rev. H
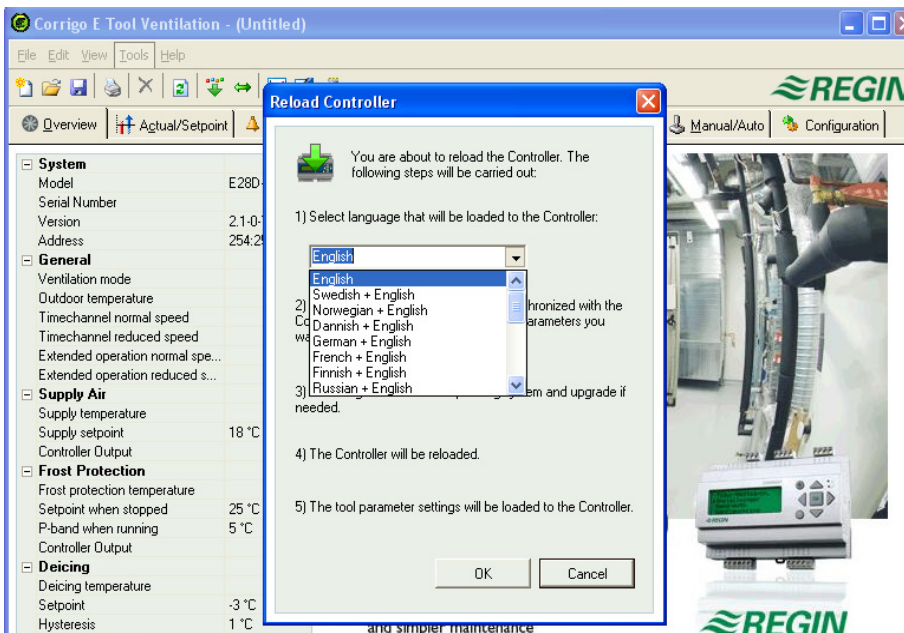
Reload the Web-site to the controller

Downloads the configuration to the webserver in the Corrigo. A model with TCP/IP communication must be used. More details in chapter 11.

Upgrade operating system for web server (only shown for Corrigo Web)

Unless the Corrigo is brand new it is advisable to upgrade the TCP/IP operating system.

Log on

Corrigo E 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 system level with full access.

E tool only uses the levels Normal, Operator and System.

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

System   1111
Service   2222
Operator   3333
Normal   5555

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.
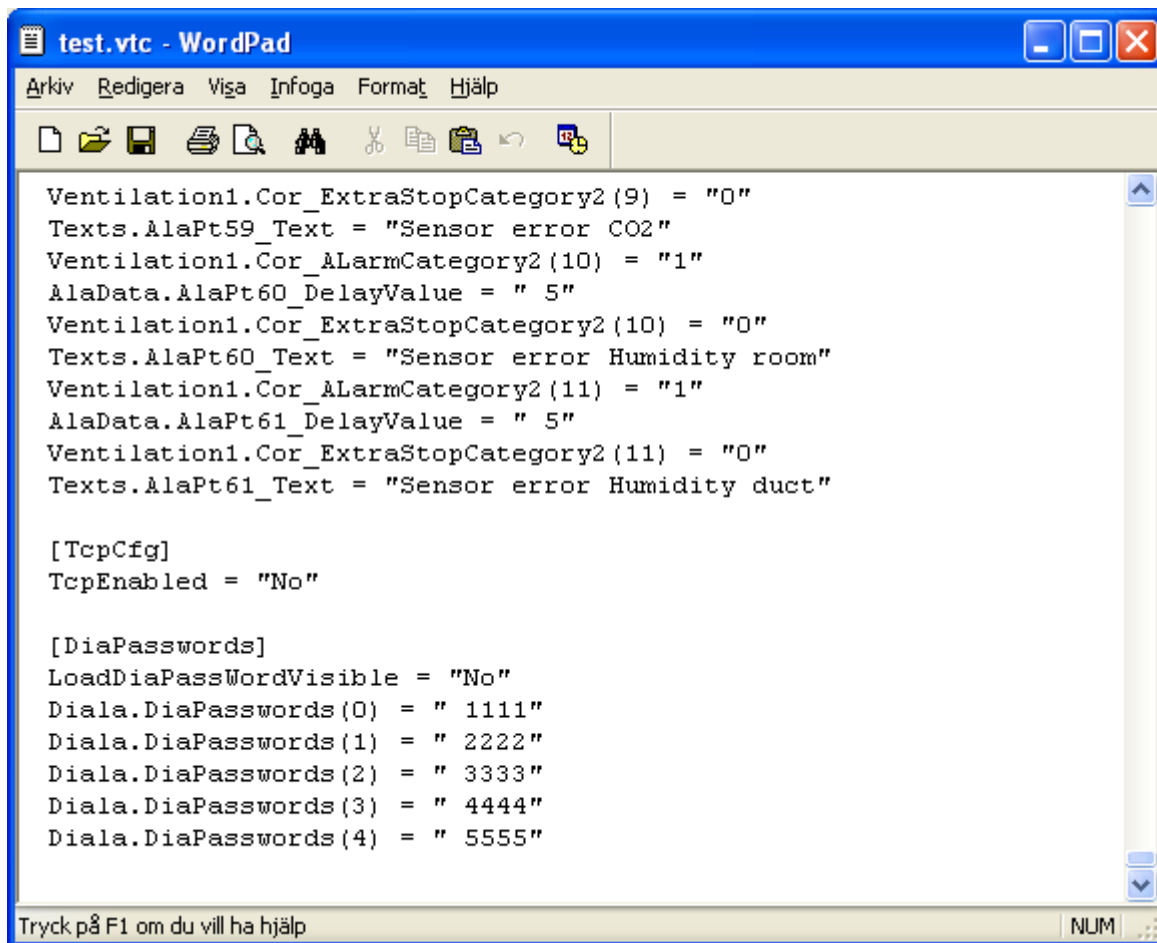
Log off

Is only active if you are logged on as Operator or System. Enables log-off to the basic level.

Change password

Is only active if you are logged on as Operator or System. 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 in for example Wordpad or Notepad. At the end of the vtc-file, there is a section, DiaPasswords, which deals with the log on codes.

```
test.vtc - WordPad
Arkiv   Redigera   Visa   Infoga   Format   Hjälp

Ventilation1.Cor_ExtraStopCategory2(9) = "0"
Texts.AlaPt59_Text = "Sensor error CO2"
Ventilation1.Cor_ALarmCategory2(10) = "1"
AlaData.AlaPt60_DelayValue = " 5"
Ventilation1.Cor_ExtraStopCategory2(10) = "0"
Texts.AlaPt60_Text = "Sensor error Humidity room"
Ventilation1.Cor_ALarmCategory2(11) = "1"
AlaData.AlaPt61_DelayValue = " 5"
Ventilation1.Cor_ExtraStopCategory2(11) = "0"
Texts.AlaPt61_Text = "Sensor error Humidity duct"

[TcpCfg]
TcpEnabled = "No"

[DiaPasswords]
LoadDiaPassWordVisible = "No"
Diala.DiaPasswords(0) = " 1111"
Diala.DiaPasswords(1) = " 2222"
Diala.DiaPasswords(2) = " 3333"
Diala.DiaPasswords(3) = " 4444"
Diala.DiaPasswords(4) = " 5555"

Tryck på F1 om du vill ha hjälp                                    NUM
```

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

E tool Rev. H

Change "1111", "2222" and "3333" to the values you want the levels System, Service and Operator to have.
"4444" is not used by Corrigo and "5555" for basic level should not be changed.
Save the vtc-file.

Start E tool and import the file. When downloading parameters to the Corrigo, a checkbox is shown which you can check if you want the passwords to be downloaded.
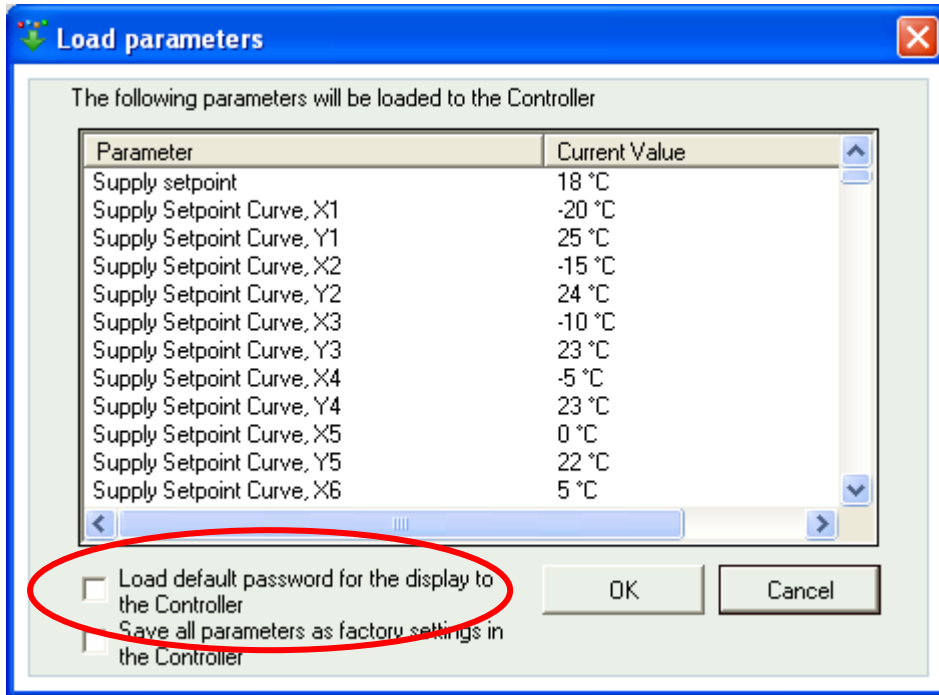
Load new factory settings (only Ventilation)

If LoadDiaPassWordVisible has been set to "Yes", a checkbox is shown which makes it possible to save the downloaded parameters as factory settings in the controller. The values will then be used by the command Restore to factory settings. For more information, see section 16.25.10 in the Corrigo Ventilation manual.

E tool Rev. H
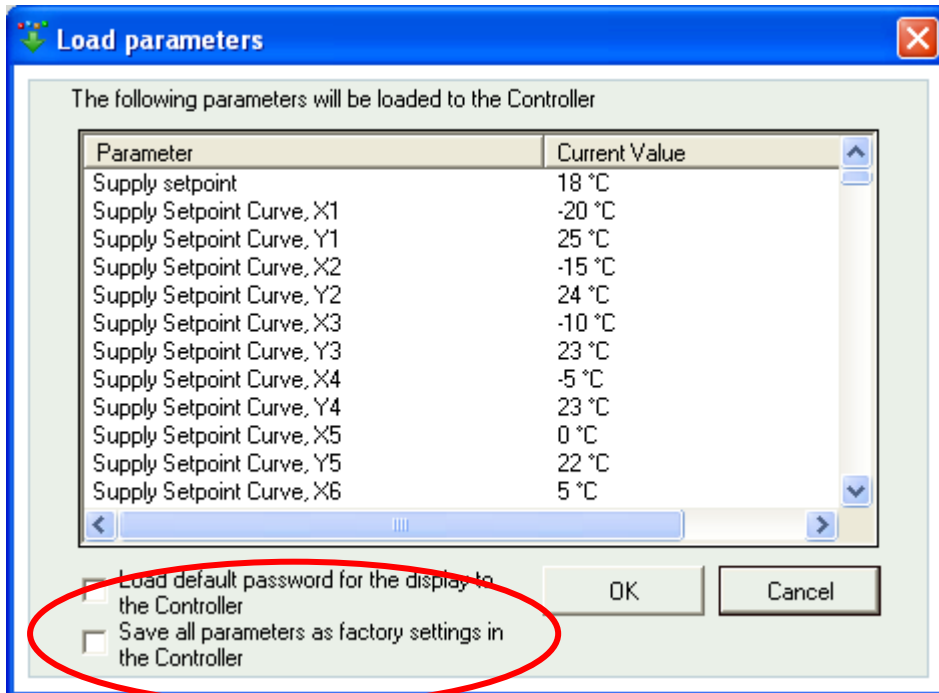
Real time chart

Creates a real time chart. Up to four parameters of your choice can be logged. 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 sho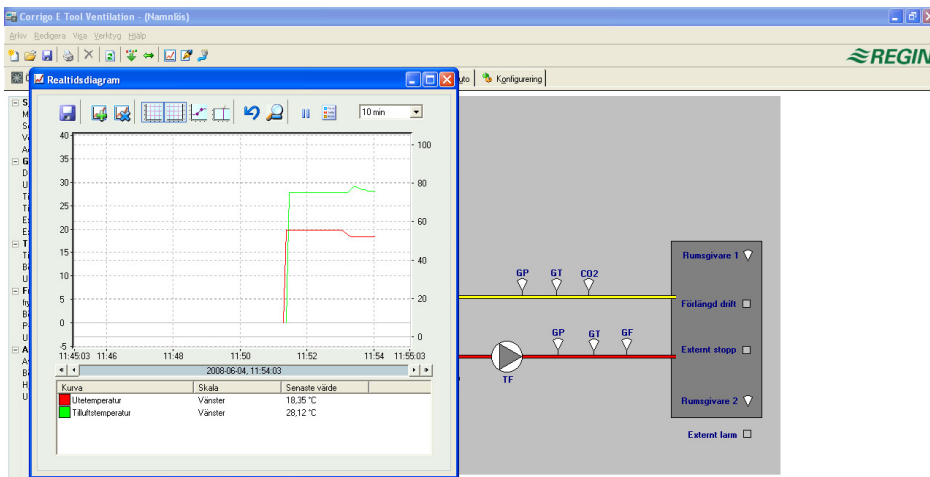w longer or shorter intervals. Using the scrollbar at the bottom of the chart you can scroll along the timeline to show any position since the recording started. Values are recorded every 5 seconds. All recorded values can be saved to a textfile for later use in, for example, a spread-sheet program.

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

The chart cannot be saved. On exiting all values and settings are lost.

Real time chart tools
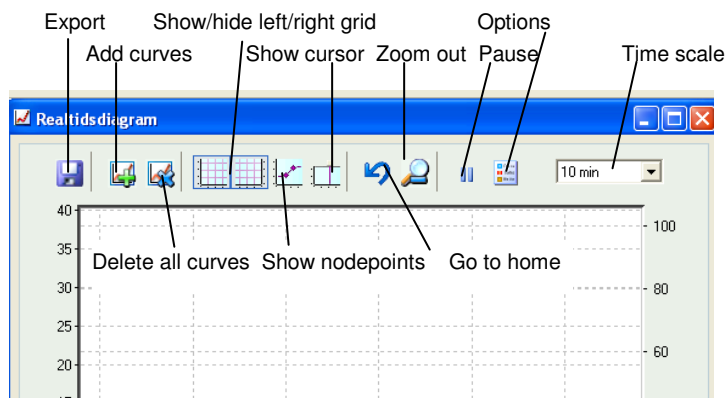
Export

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. Any number of values can be saved, the only limit being available disk space.

Add curves

A click on this button reveals a list of all Corrigo 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 nodepoints

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.

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Go to home

Home position is the chart position where you have the "recording pens" 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 the chart. The "paper" stops scrolling and no new curve segments are added. Data acquisition continues, however, and new readings are saved every 5 seconds. Press Pause again and all the saved readings will be added to the chart.

Options

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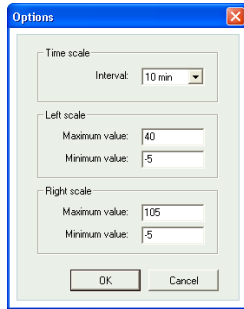
Time scale signifies the time width of the chart display.

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 parameter 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.

Notes

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.
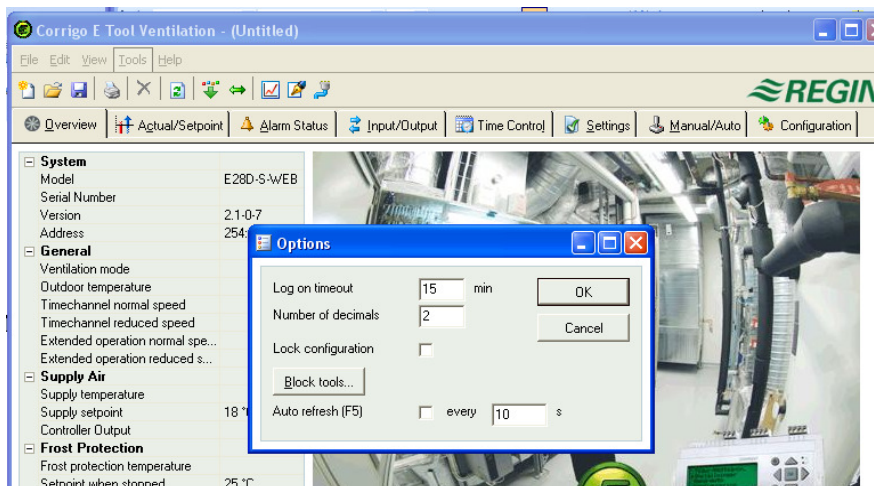
E tool Rev. H

You can choose to auto refresh pictures with dynamic values, i.e. an automatic finger that presses F5 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.

Block tools

Not used.

Communication

Setting of the communication between E tool and controller.

Which communication is suggested depends on which Corrigo model has been loaded into E tool at start-up. Serial communication is suggested for all models except Corrigo Web.
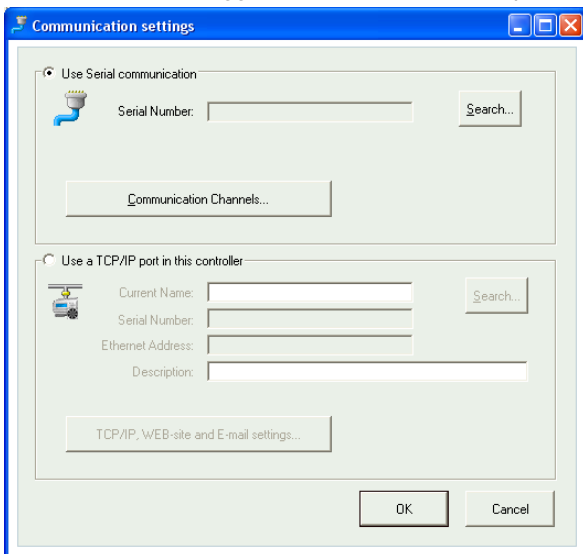
Click on Communication channels and then on Serial
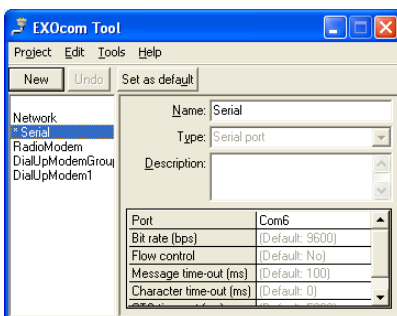
Check that the suggested Com port corresponds to the Com port which the computer has assigned to E-cable**.** You can see which Com port has been assigned in the Control panel / System / Device Manager / Ports (COM & LPT).

If you have opened E tool with a Corrigo Web, you can choose if the communication should take place via E-cable (serial) or via the TCP/IP port.

E tool Rev. H
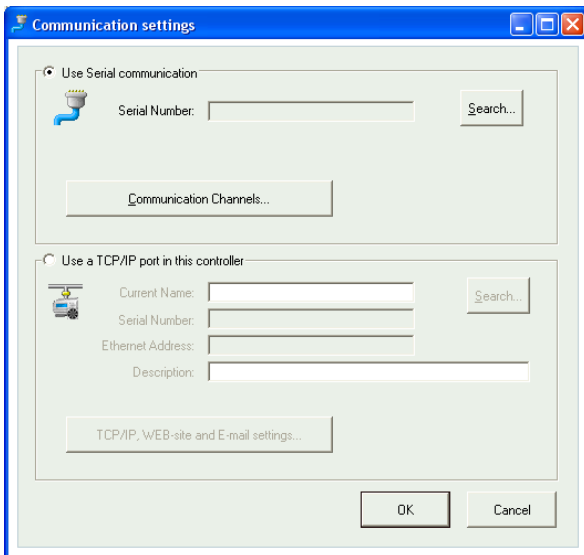
TCP/IP communication
If the controller has a TCP/IP port (E…-WEB models), it can communicate via a TCP/IP network. This is done by selecting **Use a TCP/IP port in this controller**.

By pressing on **TCP/IP, WEB-site 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 11 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 E 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:

- Control the cable and contacts.
- Control if there are more active network connections (Control panel/Network connections). Inactivate all except the "Local area connection".
- 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.
E tool can now be used for configuration/downloading/upgrading/synchronisation etc.

If the message "Cannot read index variable 255:30.QSystem.PLA. Not responding." is shown, there is no connection between the controller's TCP/IP card and the operating system EXOreal on the controller's base circuit board. This may be due to an old EXOreal-version combined with a certain version of components on the TCP/IP card. The problem can be solved by loading the latest EXOreal-version to the controller. However, to do this a connection must first be established (catch-22). By "Powering up" and "Searching" multiple times, you may be able to establish a connection. Otherwise, the controller must be sent to Regin for upgrading.

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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. The Windows 2000 Server and the Windows 2003 Server support this. 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 E 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.
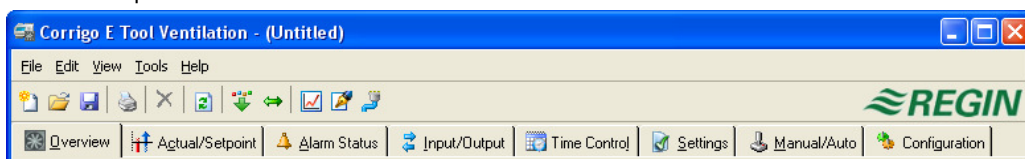
You get the static IP address, Net Mask and Default Gateway from the network administrator.

6.5 Help

Gives access to help texts and revision information.

7. Toolbar

The toolbar provides shortcuts to a selection of functions.

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

All the E tools except for Refresh have been described in the menu bar description above.

8. Folders

8.1 General

The contents of the various folders depend on which of the programs E tool Heating or E tool Ventilation you are running and also on which Corrigo model, E28, E15 or E8 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 Corrigo connected you must download a value to the Corrigo for it to become active.

Downloading can be done in several ways:

1. Right-click on any single item and choose **Load parameters**. This will download only that single parameter.
2. Right-click on a group name and choose **Load parameters**. This will download all parameters in the chosen group.
3. Click on the **Load all parameters** button on the E toolbar.
4. 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 Corrigo.

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

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

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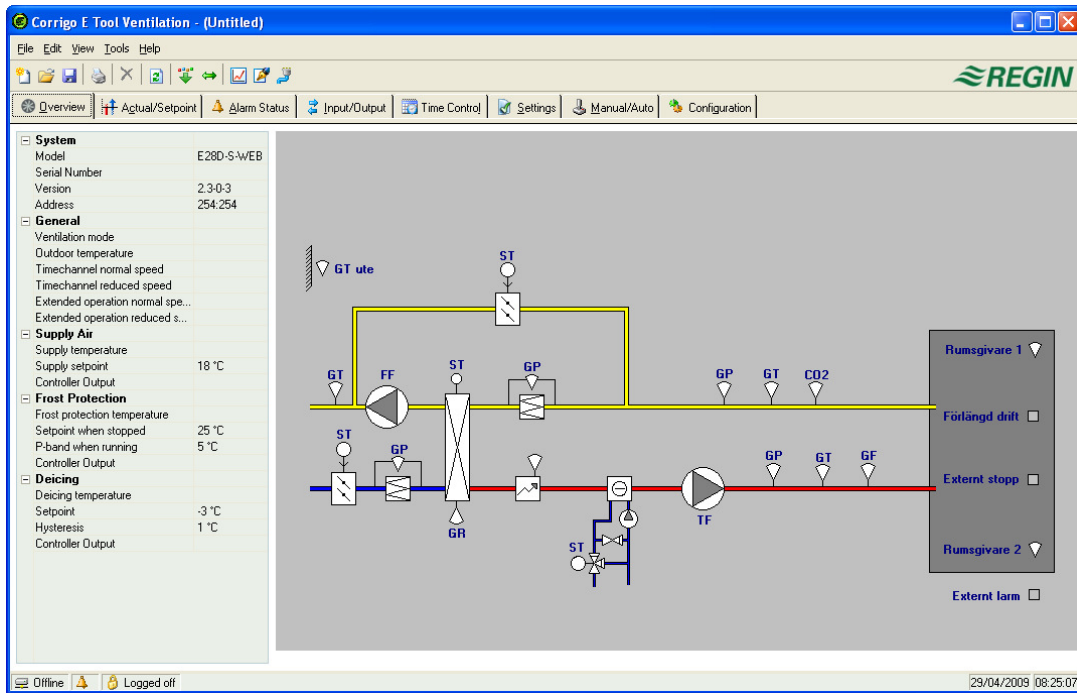
The major part of the Overview folder displays a process diagram. The diagram is a static bitmap illustration that can be edited using, for example Paint. Any number of different diagrams can be saved. Which diagram is displayed is governed by the setting of the parameter *Process picture* in the *System*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

Down the left-hand edge of the *Overview folder* there is a list of the most important control parameters. To update the values, press F5 or click on the **refresh** button in the E tool bar. You can choose to auto refresh pictures with dynamic values, i.e. an automatic finger that presses F5 at settable intervals. See *Options* on page 9.

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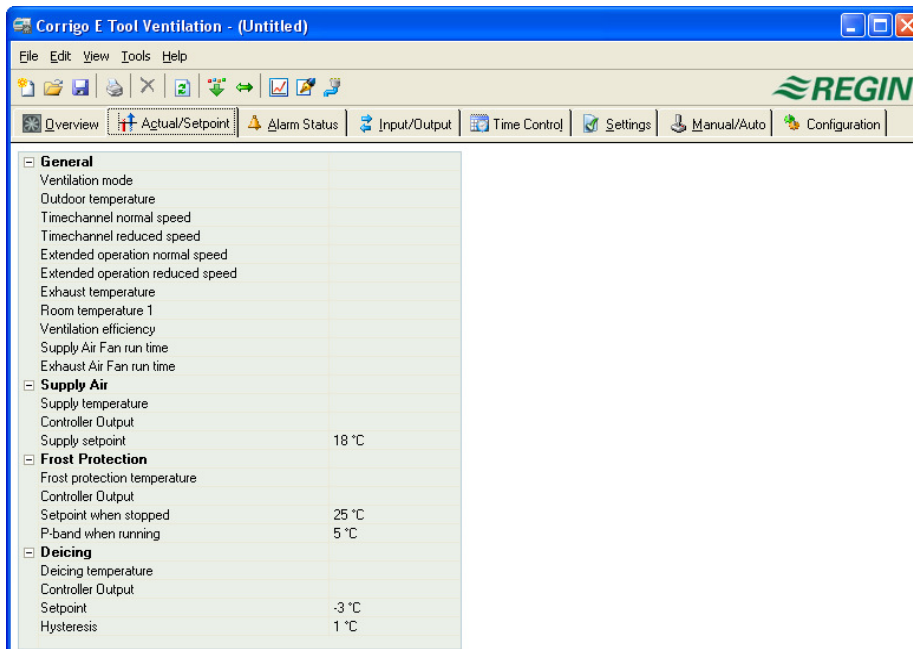
Displays relevant setpoint values and actual values.

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.

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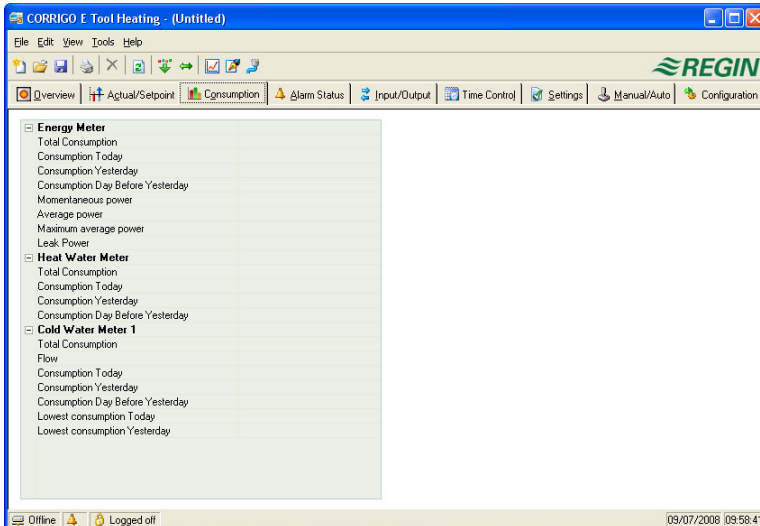## 8.4 Consumption (only E tool Heating and E tool Boiler)

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.

8.5 Alarm status
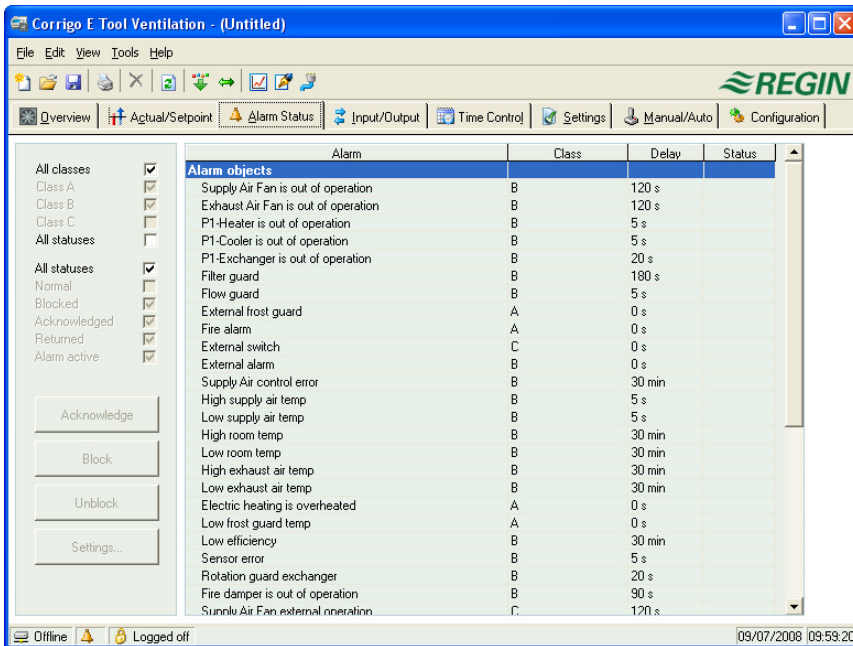
Permits handling of all enabled alarms.

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

Non-activated alarms are shown with a green status box.

Active alarms have a red box with an exclamation mark.

Reset, not acknowledged alarms have a red, green-bordered box.

Active, acknowledged alarms have a blue box with a white tick-mark.

Blocked alarms have a grey box with a black X.

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Any changes made to alarm status in E 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 E 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

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

A and B alarms will activate the digital outputs A-alarm and B-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 Corrigo

The alarm text that is displayed in the Corrigo on activated alarm is shown in column 2 Alarm text. This text can be changed, but only via E tool. (NB At the moment, this only applies to Ventilation and Heating. Boiler does not have changeable texts). Double-click on the alarm text and a box will appear where various alarm parameters, for example the alarm text, can be changed.
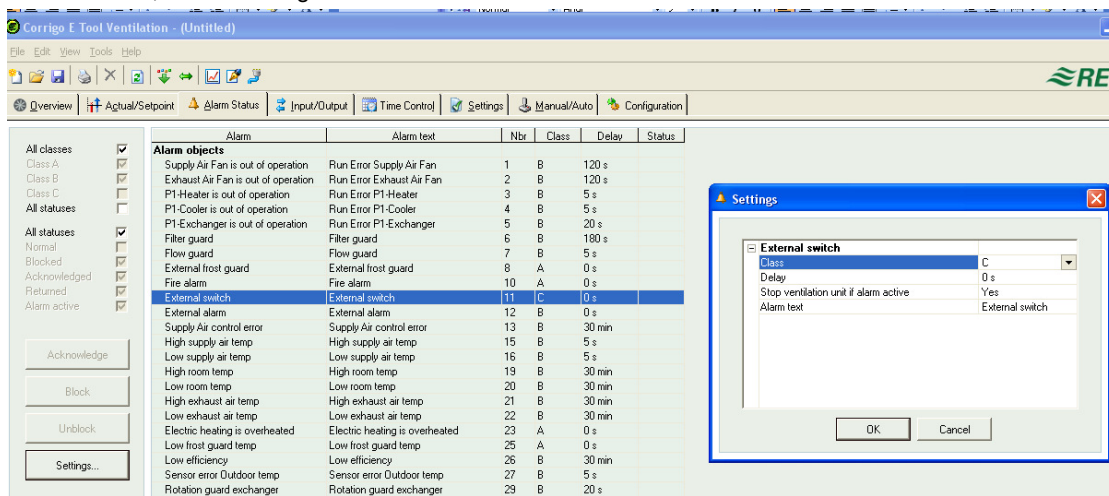
The alarm text, including any possible space, may not consist of more than 38 characters. These will be distributed on 2 rows of 19 characters each. If a word in the text goes over the 19th position, the whole word will be moved to the second row. To avoid this you can add a hyphen in the 19th position, thereafter space and then the rest of the word.

Example: "Sensor error Relative Humidity supply air" consists of 40 characters, but since the third word goes over the 19th position, the following will be shown in the display:

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

However, if you change the text to: "Sensor error RH supply air", you will get:

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

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8.6 Inputs/Outputs
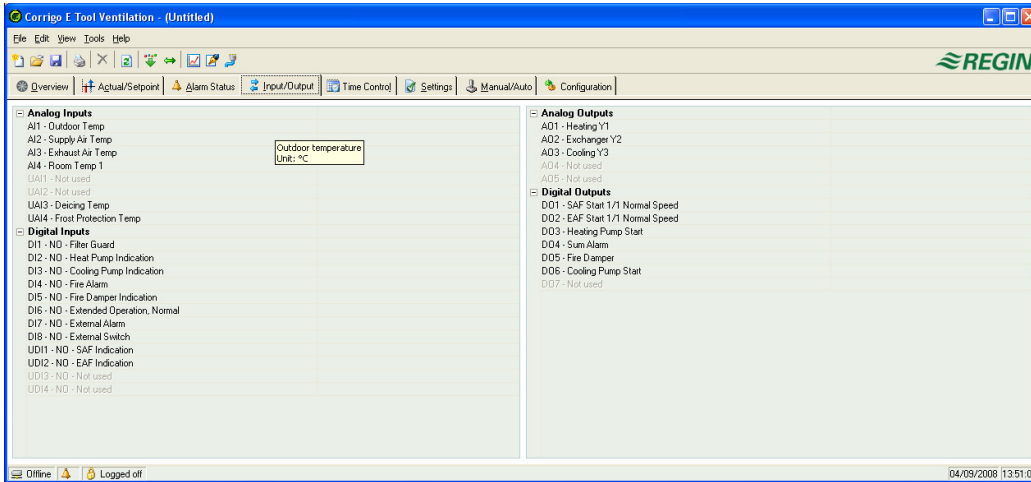
Shows actual values for all inputs and outputs.

This is a read-only folder. No settings can be made here.

Un-configured inputs and outputs are greyed.

8.7 Time control
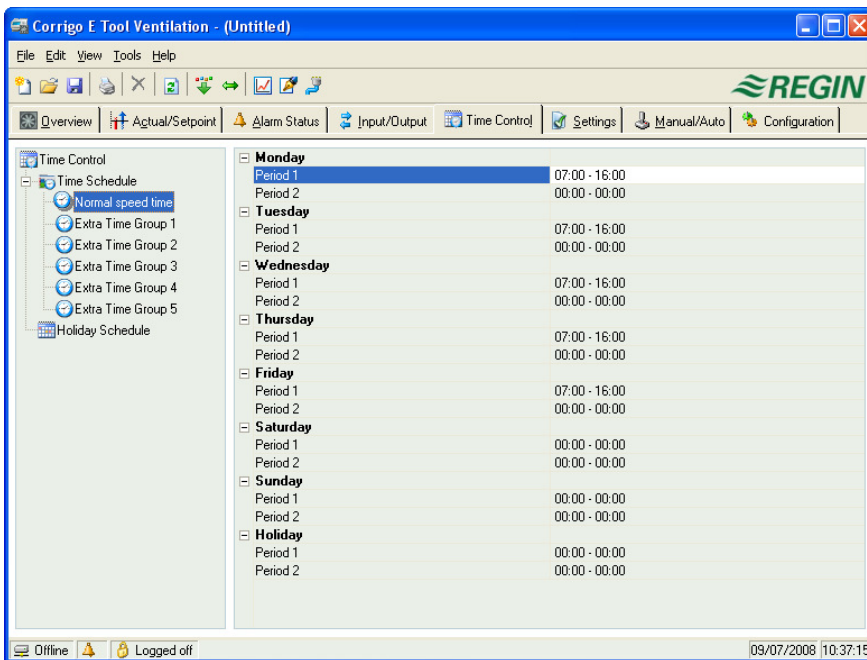
E tool Heating and E tool Boiler

Here you set the daily comfort periods.

Each control function has its own set of daily schedules

For each day there are two periods.

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

The schedules for *Timer 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.

E tool Ventilation

Here you set the daily running periods.

If single-speed fans have been configured there is only one set of daily schedules.

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If two-speed or pressure controlled fans have been configured there will be two sets of daily schedules. One for normal running speed and one for reduced speed.

For each day there are two periods.

Should the running periods for normal and reduced speed overlap, normal speed will take precedence.

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

The schedules for *Timer 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
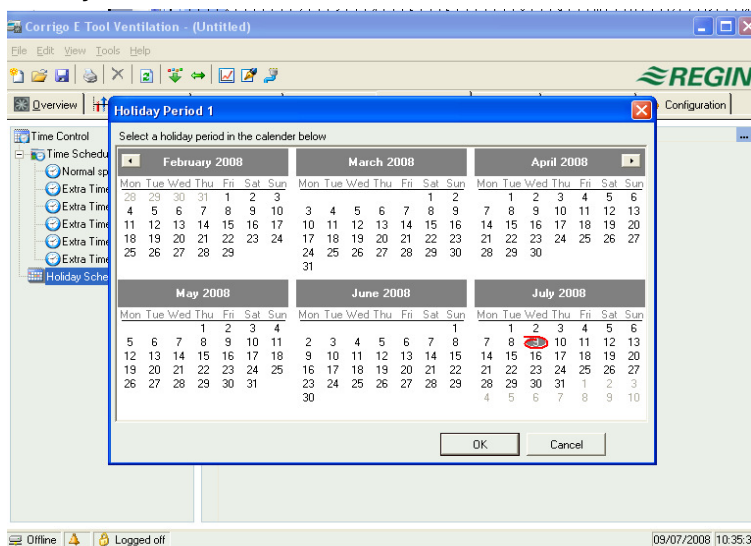
Up to 24 separate holiday periods can be configured. A holiday period can be anything from one day up to 365 consecutive days.

To create a holiday period, click on the button at the right hand 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, depress 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 E 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.

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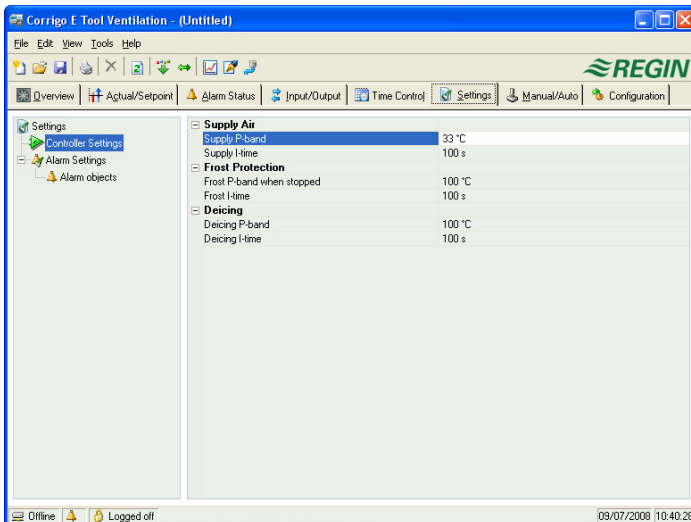
8.8 Settings

Controller settings

Setting of the control parameters.

Parameter setting-interval endpoint values and default value are displayed if you place the cursor over a parameter value.
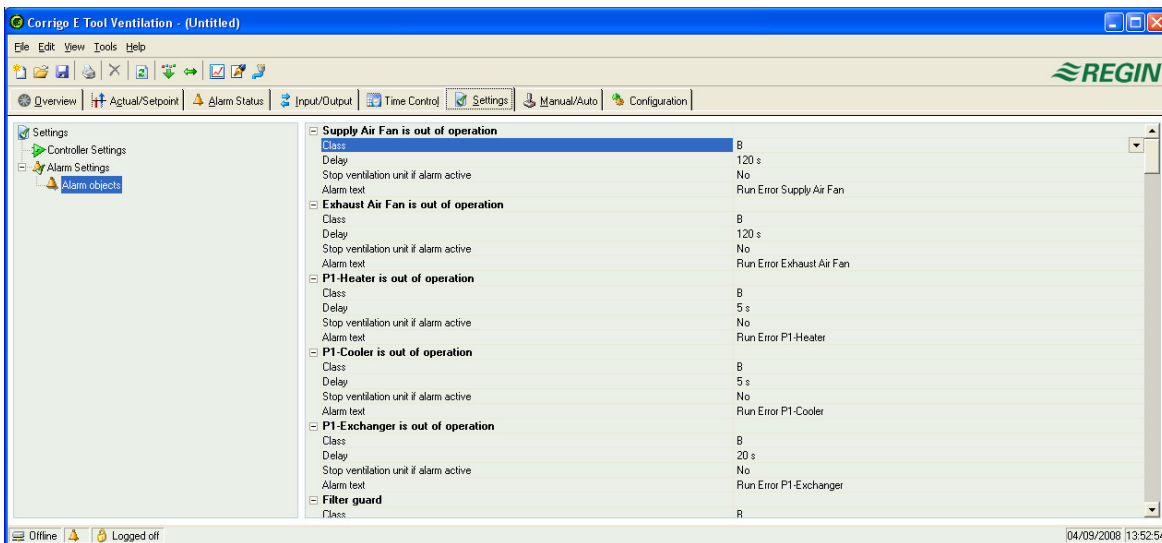
Changes must be downloaded to the controller in order to take effect.

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 E toolbar or the E tool menu.

Alarm settings / alarm objects

Setting of alarm parameters.

These settings can also be made in the Alarm status folder. Se the section on Alarm status above.

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

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

C alarms are internal only.

Alarm text in Corrigo

The alarm text that is displayed in the Corrigo on activated alarm is shown in the row Alarm text. This text can be changed, but only via E tool. (NB At the moment, this only applies to Ventilation and Heating. Boiler does not have changeable texts).
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 goes over the 19th position, the whole word will be moved to the second row. To avoid this you can add a hyphen in the 19th position, thereafter space and then the rest of the word.
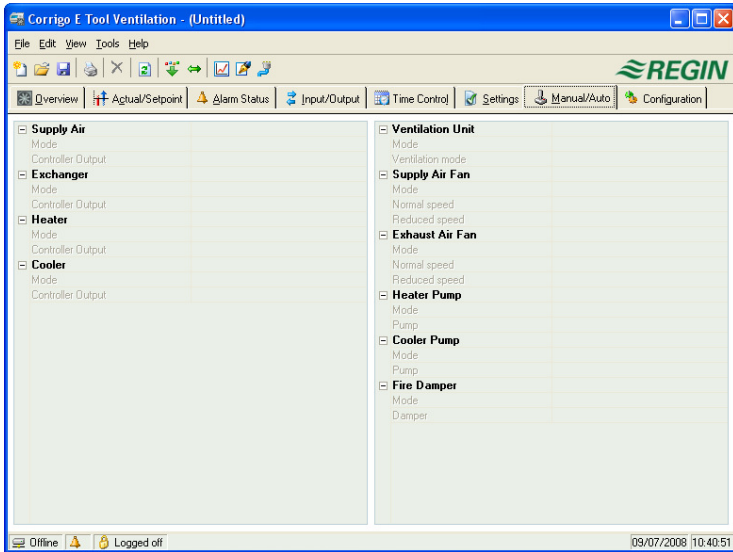
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Example: "Sensor error Relative Humidity supply air" consists of 40 characters, but since the third word goes over the 19th position, the following will be shown in the display:

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

However, if you change the text to: "Sensor error RH supply air", you will get:

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

8.9 Manual / Auto

In this menu you can take manual command of most controller functions. Very 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.

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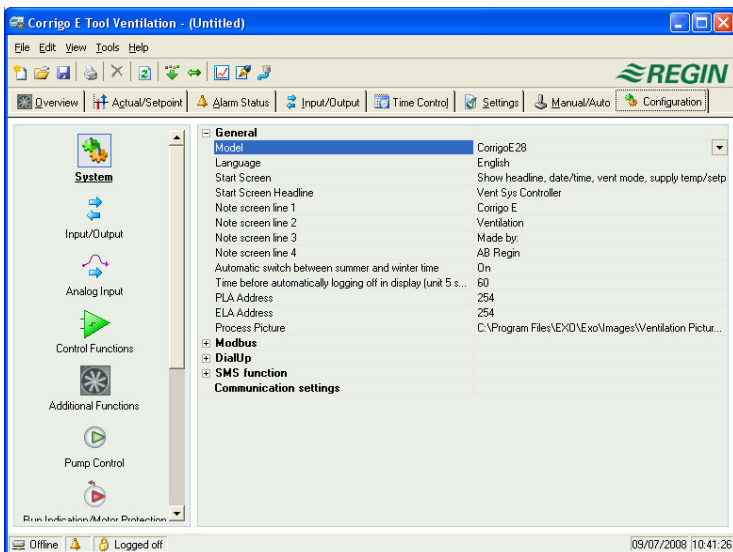
This folder contains all the configuration parameters for the Corrigo. Since the contents are very diverse, the folder has been divided into sub-folders. These are accessed by clicking on the buttons in the left-hand button-list. For detailed information on these, please see the manual for the controller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

9. Expansion units

From version 3.0, one/two expansion units can be connected to Corrigo E. This requires a controller with two ports. Any Corrigo E model can be used as expansion unit. However, since the display will not show anything, a Corrigo E without display is normally selected.

Set "Function port 2" to "Expansion units" and choose under Configuration/System which controllers you want to connect. Connect them thereafter to the computer. Depending on what has been configured, "Initiate Expansion unit 1" and/or "Initiate Expansion unit 2" will be shown under Tools. This initiation function is used for Corrigo E models which are not factory loaded with version 3.0.

For controllers that are factory loaded with version 3.0, you can select "Expansion unit 1" or "Expansion unit 2" under Application choices in the controller. In this case, E tool is not required to set the controller as an expansion unit.
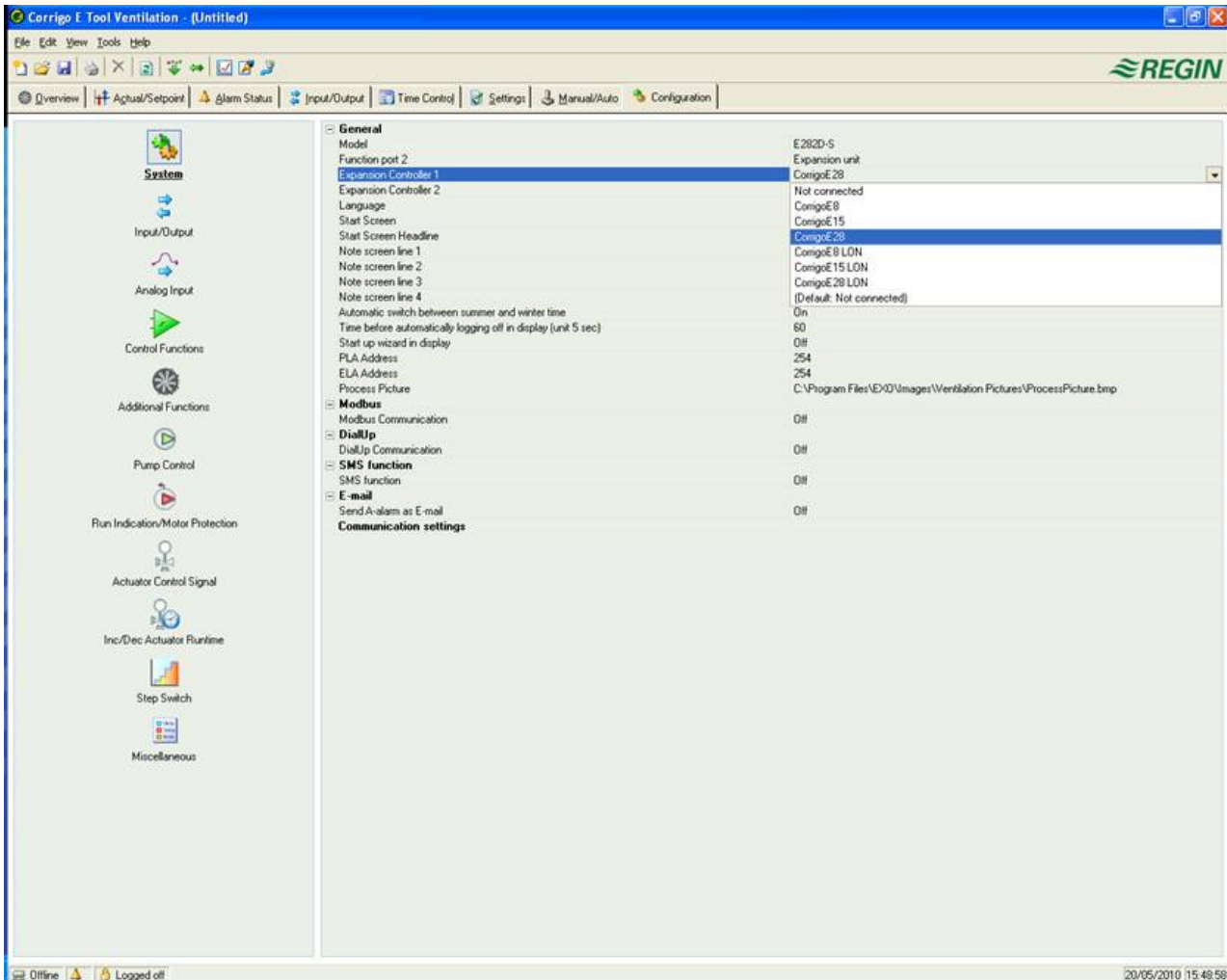
After initiating the expansion controllers and configuring the program, all Corrigo E units are connected. Then the master unit is connected to the computer via port 1 for the configuration to be loaded. The controller is configured in the same way as described in chapter 8.

10. Updating Corrigo E

E tool should always be updated with the latest program revision. If you are using the latest revision of E tool and connect it to a Corrigo E with an older program revision, E tool will give a warning and offer two alternatives.

One alternative is to temporarily downgrade E tool to a revision corresponding to the revision in the controller. All the settings in the controller will remain intact and the controller will keep its revision.

The other alternative is to upgrade the controller to the same revision as E tool. This will cause the Corrigo-unit to temporarily stop working. Any previous settings will be permanently lost.

Take the following actions to avoid having to configure again:

1. Start E tool and connect it to the controller. When asked, choose to downgrade E tool to the controller's revision.
2. Select Synchronize all parameters in the menu Tools. Then select Update tools. E tool should now contain an exact copy of the configuration in the controller. Select Save as in the menu File and save the configuration under a suitable name.
3. Close E tool. Then open it again and choose to reload the controller with a new revision.
4. After reloading, open the saved configuration file, synchronize all parameters and the select Update the controller. The controller should now have the latest revision and be configured as it was before the upgrade. Make sure that the settings of the parameters that were not available in the old revision have suitable values.

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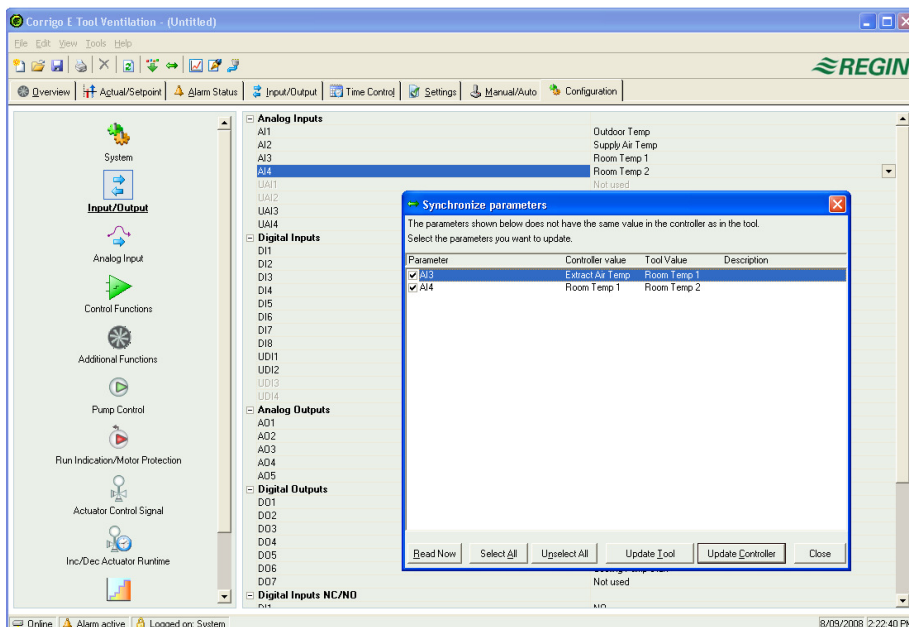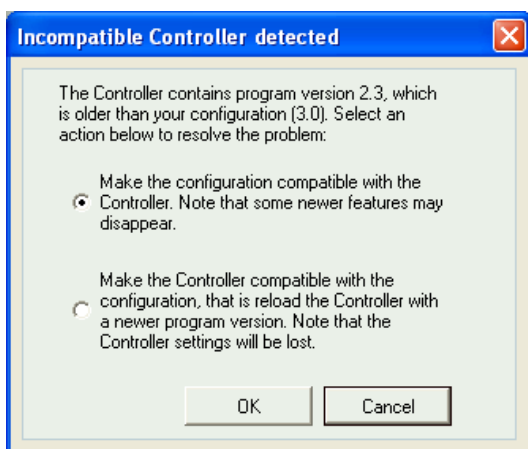
11. TCP/IP – network terms

11.1 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.

11.2 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, which makes 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 `exohuvuddator.regin.se` 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 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.

11.3 DHCP, fixed and dynamic addresses

Static and dynamic

An equipment can have manually configured IP settings, a so-called static IP address, or they may receive a dynamic IP address from a special computer, a so-called DHCP server, on the subnet.

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.

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11.4 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 Albcatton for Private Internets [Online document], [cited Nov 29 2005], Available HTTP: http://www.ietf.org/rfc/rfc1918.txt

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 on RFC3330, Special-use, IPv4 addresses, http://www.ietf.org/rfc/rfc3330.txt

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 EXO4 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.

11.5 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 ÉXO4 work station from his home, from the service vehicle or similar.

12. Corrigo Web (only E tool Ventilation and Heating)

See chapter 11 for explanations of the terms used in this chapter.

12.1 Connection

The controller must be connected to a static, white IP address. The following connection methods have been tested for Corrigo Web:

1. Connection directly to an ADSL/cable modem
2. Connection to a router, which in turn is connected to an ADSL/cable modem

Corrigo Web has not been tested with all Internet suppliers.

If the Corrigo 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. Then it must find the Corrigo, either by sending an IP address to the controller or by giving the Corrigo's MAC address. Thereafter, all incoming traffic on Ports 80 and 26486 should be NAT routed to the Corrigo's black IP address. See the router manual for this.

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

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

A Corrigo E can handle max. 5 connections from E tool, EXO4 and Internet Explorer at a time.

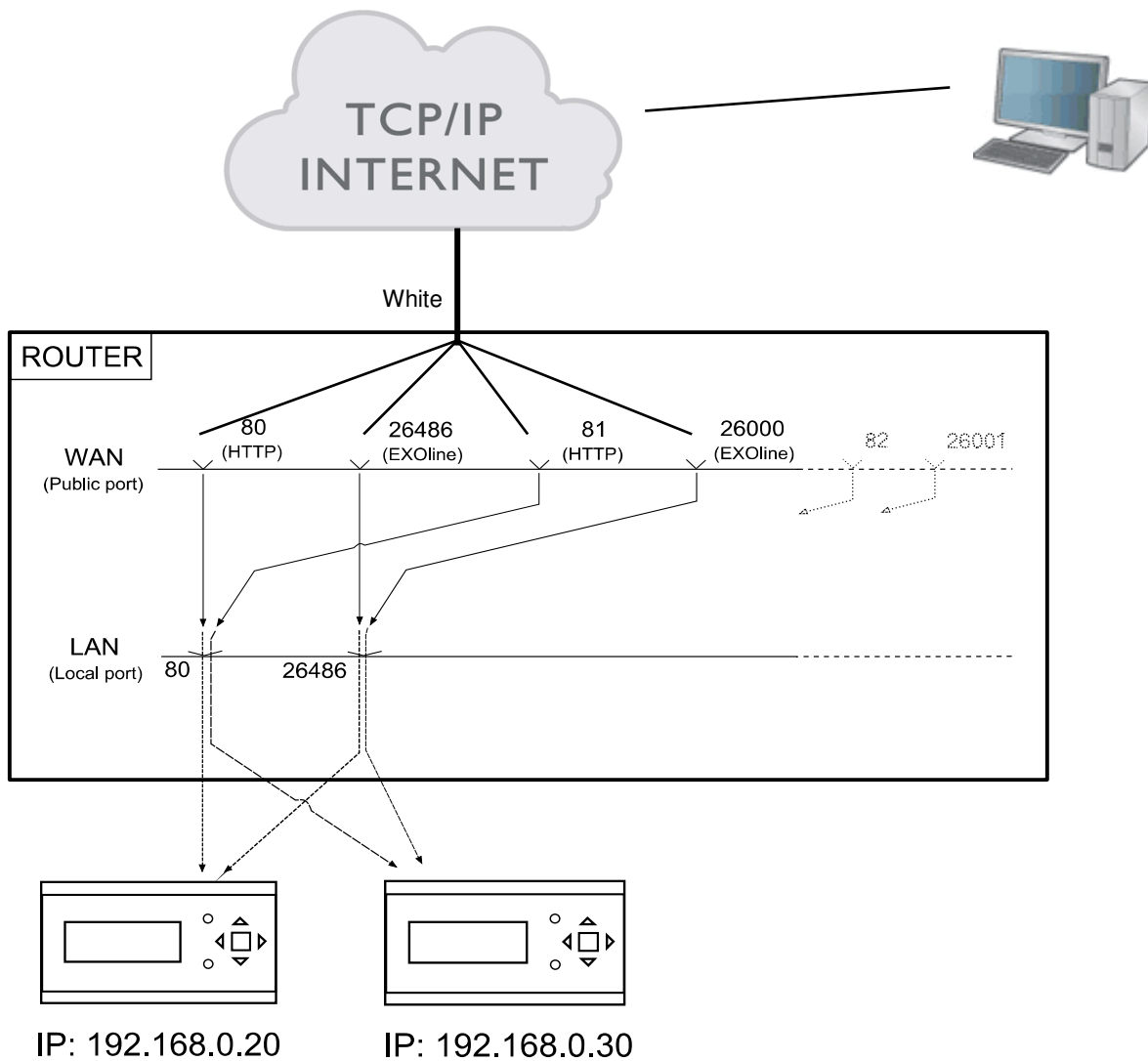## 12.2 Two or more Corrigo Web behind the same router

Two or more Corrigo Web can be connected behind one router, if the communication routes are defined to the router. This is known as Port Forwarding or NAT routing, as mentioned previously. 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 Corrigo, the communication port must be set to EXOline. This setting is made in *Configuration/System/ Web-site*. For example, you can set the port to 26000 instead of 26486.
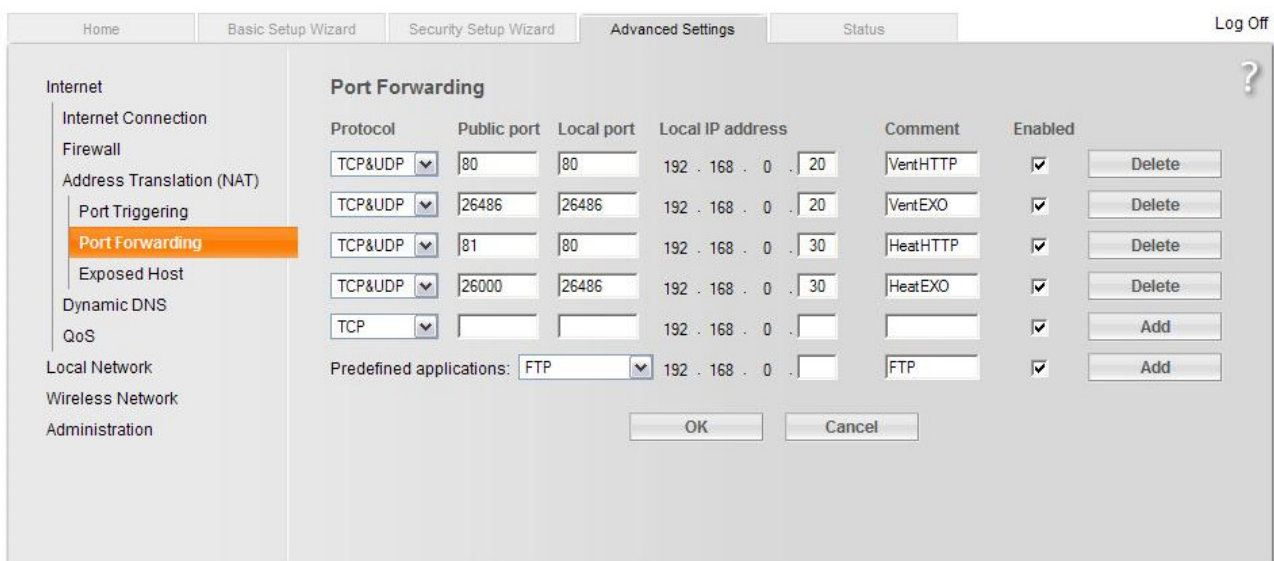

Then go to *Tools/Load Web-site to the Controller* to load the unit with the new setting. If using a third Corrigo, it can for example be set to communicate EXOline on port 26001.

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

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White

ROUTER

WAN (Public port)

80 (HTTP)   26486 (EXOline)   81 (HTTP)   26000 (EXOline)   82   26001

LAN (Local port)   80   26486

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 Corrigo 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.

| Home | Basic Setup Wizard | Security Setup Wizard | Advanced Settings | Status | | Log Off |

Port Forwarding

	Protocol	Public port	Local port	Local IP address	Comment	Enabled	
	TCP&UDP	80	80	192 . 168 . 0 . 20	VentHTTP	☑	Delete
	TCP&UDP	26486	26486	192 . 168 . 0 . 20	VentEXO	☑	Delete
	TCP&UDP	81	80	192 . 168 . 0 . 30	HeatHTTP	☑	Delete
	TCP&UDP	26000	26486	192 . 168 . 0 . 30	HeatEXO	☑	Delete
	TCP			192 . 168 . 0 .		☑	Add
Predefined applications:	FTP			192 . 168 . 0 .	FTP	☑	Add

Internet
  Internet Connection
  Firewall
  Address Translation (NAT)
    Port Triggering
    Port Forwarding
    Exposed Host
  Dynamic DNS
  QoS
Local Network
Wireless Network
Administration

OK   Cancel

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12.3 Configuration of the webservers

As before, all configuration of the controller parameters takes place via E tool or directly in the display. No configuration can be done via the webserver. For configuration of the controller, see the previous chapters in this manual or the manuals for Corrigo E heating and ventilation respectively.

If the configuration of the controller's parameters is changed, the website is automatically downloaded to the webserver. 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 Corrigo, 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 Corrigo.

After the program has found the correct Corrigo, select it and press OK.

Then press on the button **TCP/IP, WEB-site and E-mail settings**.

In this box, the following settings can be made:

IP settings

Here you choose if the Corrigo should have a static IP address or if 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 Corrigo can be connected to a DNS name, for example: DNS name: Corrigoweb, Domain: regin.se. The controller's IP address will then be connected to the DNS name **Corrigoweb.regin.se**.

Encrypted communication

The encryption is used to prevent other users in the TCP/IP network from connecting to the Corrigo via E tool.

The password is only used when you want to reach the Corrigo via E tool. If you loose the password, the controller must be cleansed and reloaded.

Web user login passwords

The passwords to log on to the website. Guests have permission to view all values. Operators are authorised to view and change all values.

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 (Start menu → Run → cmd) 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.

Set TCP/IP settings

After the above settings have been made, you download the settings to the TCP/IP card in the Corrigo by pressing on this button.

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12.4 Settings for the website

In the sub-folder System/Website and E-mail in the Configuration folder, you can make the following settings for the website:

Headline Web-site
Here you can write a headline which should be shown on the first page when you surf to the Corrigo website.

Link, Heading
Up to four different links to small pdf files or other Internet sites can be added to the website. *Note: The total size of the pdf files and the process picture must not be over 150 kB.* Under *Link1, Heading* you write the heading for Link 1, under *Link2, Heading* you write the heading for Link 2 and so on. The heading must not contain any space. Instead of for example AB Regin, you must write AB_Regin. This is the default setting for Heading 4.

Link
Under Link 1 you write the address to the pdf file or Internet site.

Process picture
The picture that is chosen here will be shown in the Overview folder on the web. The picture should be in jpg format or similar because of the lack of storage space.

E-mail

Here you give the e-mail address to which an alarm should be sent, as well as the titel and subject of the message.

After making the above settings and downloading the settings to the TCP/IP card, the only thing that remains is to download all the settings to the webserver in the Corrigo. You do this by selecting Tools/Load Web-site to the Controller.
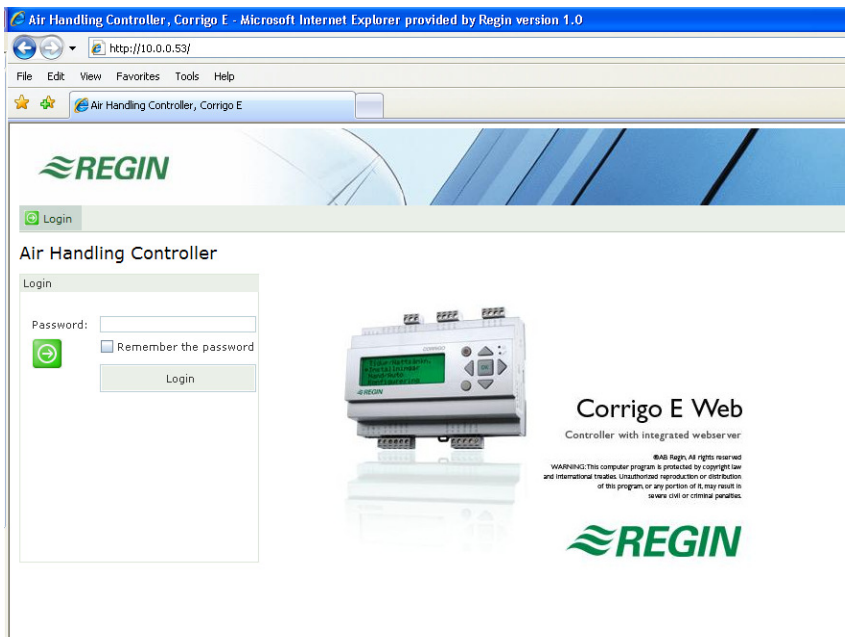
E tool Rev. H
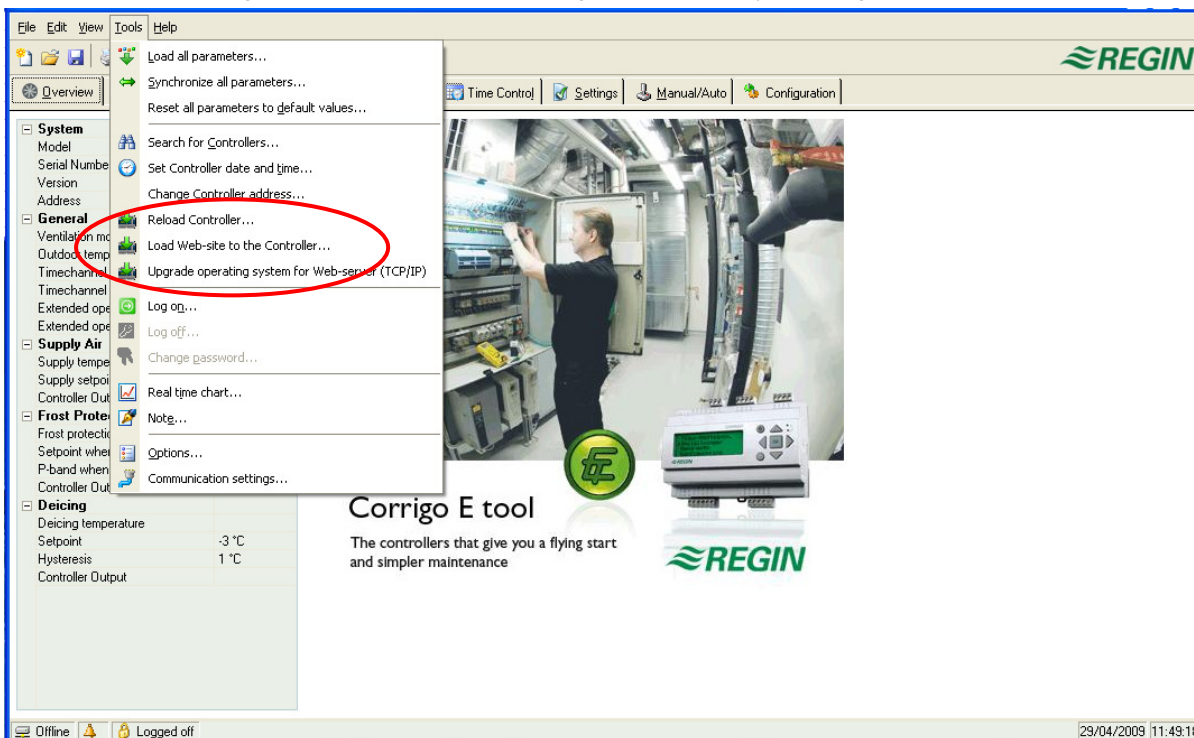
12.5 Log on to the website

This is how the login page for the Corrigo looks when it is published on the web.

In the box *Password*, you log on using the password you have entered under *TCP/IP, WEB-site and E-mail settings*.

12.6 Change values on the website

All values written in blue can be changed. As soon as a value has been changed and you have pressed Enter, the value is downloaded to the Corrigo.

Real time charts in Corrigo Web

A new feature from version 3.0 is the option to handle real time charts in the website. For information about the setting of this function, see *Real time charts* in section 6.4.

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13 Regin Building Access – Mobile application

13.1 Introduction

Regin Building Access is a general application for the operating system Android which can be used for an operator to access a Corrigo at a time via TCP/IP (via e.g. a mobile network or a Wi-Fi network). Once connected, you can view values, alarms, documents, etc. from the Corrigo in the form of lists.

The application is intended to be run on Android phones, however can also be run on Internet tablets. Regin Building Access is published on Android Market for simple downloading.

The application is available for Corrigo E Ventilation and Corrigo E Heating, however currently not for Corrigo E Boiler.

The Android application is free of charge and can either be downloaded from Android Market or ordered from Regin. To use the application, Corrigo E…-WEB must be connected to the Internet, or a local WiFi network (router with wireless communication).

The menu language is Swedish or English, in the future the application will also be available in other languages. If the phone language is Swedish, the menus will automatically be displayed in Swedish.

13.2 Start-up guide

The start-up guide is shown when starting the application. It is automatically displayed if a connection has not been added. The guide consists of a page with the following contents:
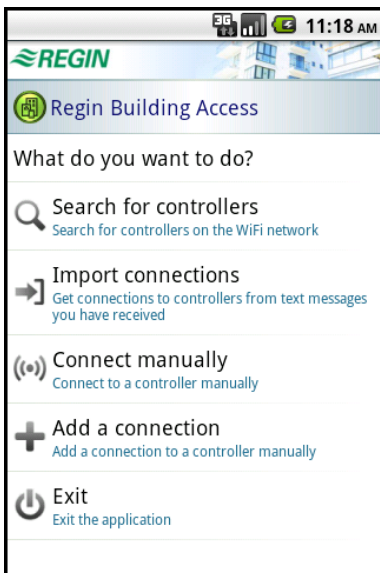
Search for controllers

Search for Corrigo controllers via the wireless network. All controllers that are found will be displayed in a list and you can choose to create a connection or connect directly.

Import connections

Import a ready-made connection received in an SMS from another phone.

Connect manually

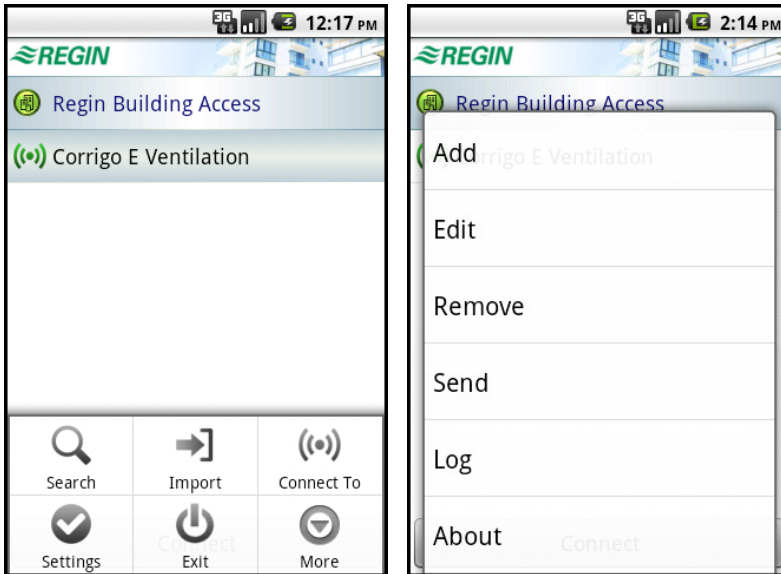Opens a dialogue box in which you can create a connection to a Corrigo, *without* saving a connection.

Add a connection

Opens a dialogue box in which you can create a new connection.

Exit

Exit the application.

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If you have already added a Corrigo and want to add another Corrigo, press the menu button on the mobile. The following page will be shown:

The buttons **Search**, **Import** and **Connect To** have the same function as described above.

Settings

Opens a dialogue box where you can make various general settings such as size, communication interval, start page, etc.

More

Opens a menu with the below options.

To view other properties, press **More >>**.

Add a connection

Opens a page where you can create a new connection (more detailed description in the section *The connections page*).

Edit

Opens an existing page in which you can edit the properties of the selected connection.

Remove

Remove the selected connection by answering yes to the question **Remove connection?**

Send

Opens a dialogue box from which you can send the selected connection in an SMS to another phone.

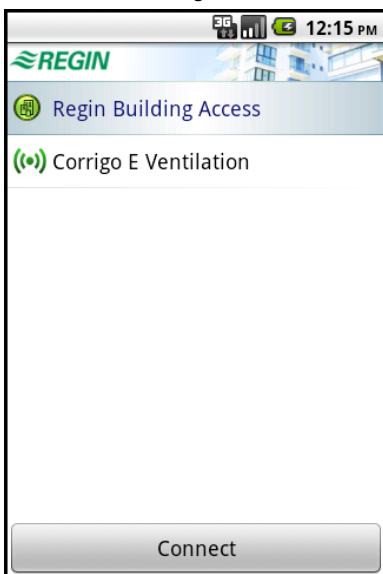**Log**

Opens a new page where you can view any errors.

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13.3 The connections page

This page contains a list of all added *connections* to Corrigo controllers. The connections are created and stored in the mobile.

To access a Corrigo, select a connection and press the **Connect** button.

The connections (and other settings) are stored in a local file in the device. Each connection has the following properties which are accessed by pressing the menu button, then **More** and **Edit**:
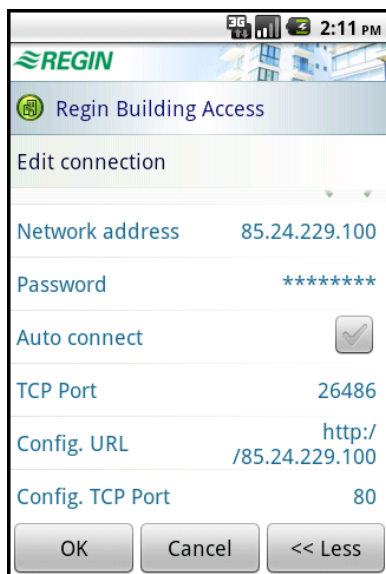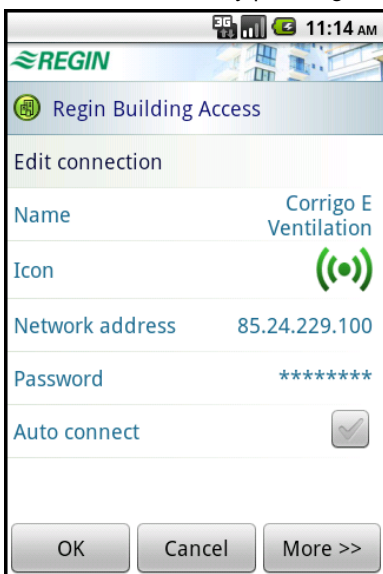
Name

The name of the connection as shown on the connections page.

Icon

The connection icon on the connections page. You can choose between a number of predefined icons included in the application.

Network address

The Corrigo network address (IP or DNS).

Password

Password for communication with the Corrigo.

Auto connect

Checkbox which indicates that the application should automatically connect to this Corrigo when started. If the box is already checked for another connection when checking it, it will automatically be unchecked for the other connection.

To view other properties, press **More >>**.

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TCP port

The TCP port number that should be used to communicate EXOline with the Corrigo. Default: 26486.

Config. URL

The network address or URL from which the configuration files are to be obtained. Default: The Corrigo network address.

Config. TCP port

The TCP port number that should be used to communicate HTTP with the Corrigo (in order to read configuration files). Default: 80.

13.4 User interface

The application is automatically adjusted to devices with different screen sizes. Some examples:

- Small mobile: 240*320 pixels, 2.6 inches, dot pitch: 0.153 mm
- Large mobile: 480*854 pixels, 4 inches, dot pitch: 0.078 mm
- Internet tablet: 800*480 pixels, 7 inches, dot pitch: 0.191 mm

Since the pixel density differs a great deal from one mobile to another, the application allows the user to set the text size, row height, etc. The structure of the application is then automatically adjusted to the available space.
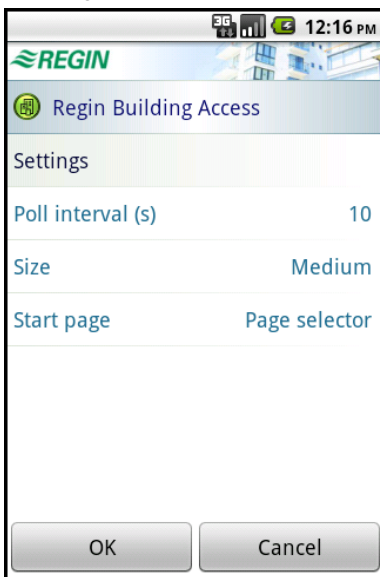
13.5 Page navigation

When you are connected, either the page selector or a page is displayed. By clicking on a row in the page selector, the page for this function will be shown. The strip at the top of each page displays the title of the Corrigo as well as the current page (and its icon). Click on the strip to open the page selector, click on it again to return to the page.
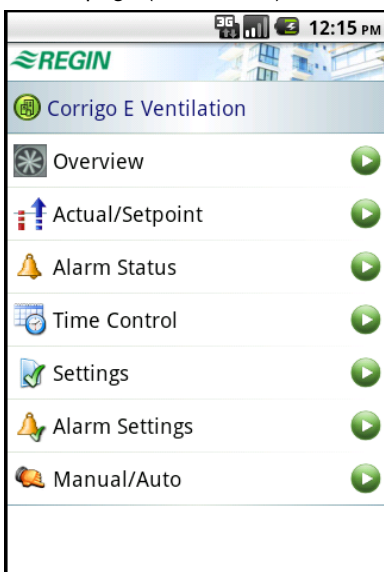
Page selector   *Overview page*

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REGIN

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