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miniClima *Manual miniClima Tool*

Topic: Complete instructions for the application, installation & usage of the respective software.

Valid for: miniClima Tool, Version 05.01

Contents

1 INTRODUCTION

The application "miniClima Tool" serves to monitor and control miniClima devices of series EBC10/11/12 and CTH.

The main features of the software are:

- ✔ Graphically displaying (a) the live and the historic data for the relative humidity (RH) and temperature (T) as measured by the RH/T sensors connected to the miniClima units and (b) the setpoints and alarm thresholds of the miniClima units.
- ✔ Indicating the alarm status of the monitored miniClima units.
- ✔ Storing (as csv files) of the RH/T datasets as provided by the miniCilma units.
- ✔ Printing the RH/T graphs.
- ✔ Changing the setpoints, alarm thresholds, hysteresis and storage intervals of the miniClima units.
- ✔ Logging (in text files) any alarms that occurred and any changes of settings that have been taken on the miniClima units.

miniClima Tool is designed for use with multiple miniClima units at the same time. Any miniClima unit in question may be connected to the computer by any of the available ways: Via RS232/USB port and/or via RS232/IP converter and an IP net to which the computer has access.

The software communicates with the miniClima units by means of a proprietary RS232 protocol, that can be transmitted over IP by means of RS232/IP converters if applicable. There exists no standard interface to other hardware or software systems.

2 INSTALLATION

2.1 Software installation

2.1.1 System requirements

- ✔ Windows XP, Windows Vista, Windows 7
- ✔ .NET4.0 or higher (if not available on your PC, .NET4.0 redistributable will be installed from the installation CD)
- ✔ Microsoft VC++ 2010 or higher (if not available on your PC, VC++ redistributable will be installed from the installation CD)

Run "Setup" from the installation CD and follow the instructions.

2.2 Hardware installation

miniClima Tool is designed for use with multiple miniClima units at the same time. The miniClima units can be connected to the computer either by RS232/USB, or by RS232/IP converter and an IP net to which the computer has access, or by a mixture of those options. RS232/IP converters are available both for LAN and WLAN.

2.2.1 Connecting via RS232/USB

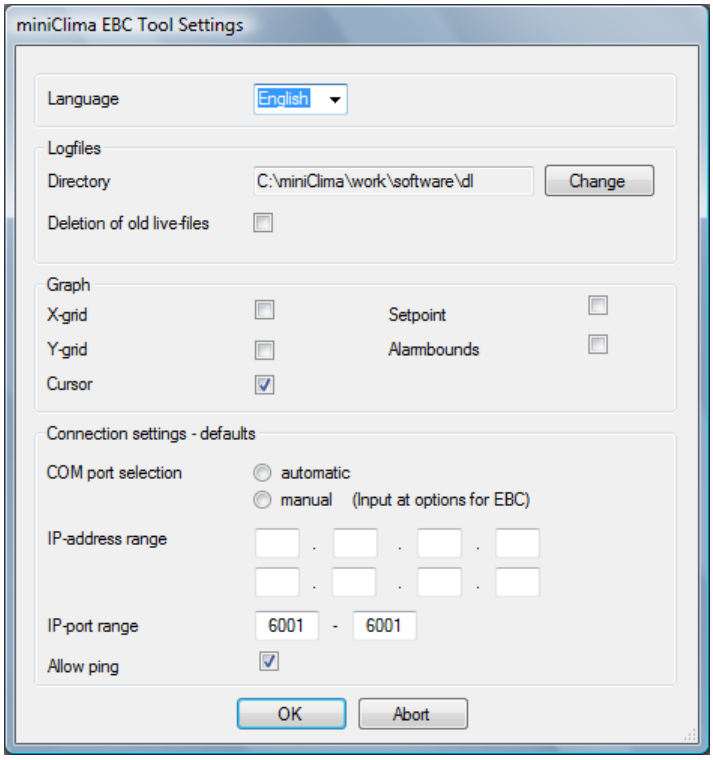
Interconnect the RS232 interface on the front of the miniClima unit, labelled "PC", with the RS232 interface on your computer. In case your computer does not feature an RS232 interface, an USB-to-Serial adapter can be used. A driver software for the adapter that can be ordered from us can be found on the setup CD.

2.2.2 Connecting via RS232/IP Converter

Interconnect the RS232 interface on the front of the miniClima unit, labelled "PC", with the RS232/IP converter. Details on how to connect and operate the RS232/IP converter are found in the manual “Manual_LC, WLC_en”.

3 FIRST STEPS

When started for the first time miniClima Tool will call up the program settings panel. You can open this panel at any later time (menu entry *Program/Settings)*. The following settings can be made here:



Language

Choose "English" or "German".

Logfiles

You may choose a different directory for storing the data and log files. You may further choose to have old live files (csv, log) deleted automatically after a defined number of days.

Graph

Selecting X-grid adds a horizontal grid to the graph.

Selecting Y-grid adds a vertical grid to the graph.

Selecting Cursor adds a cursor to the graph when the mouse is moved over it.

Selecting Setvalue adds the line for the set value to the graph.

Selecting Alarmbounds adds the lines for the alarm thresholds to the graph.

Connection settings - defaults

The connection settings for the miniClima units can be entered here. The entered values serve as defaults for newly opened unit windows. (Note: The connection parameters can later be changed individually for every connected unit.)

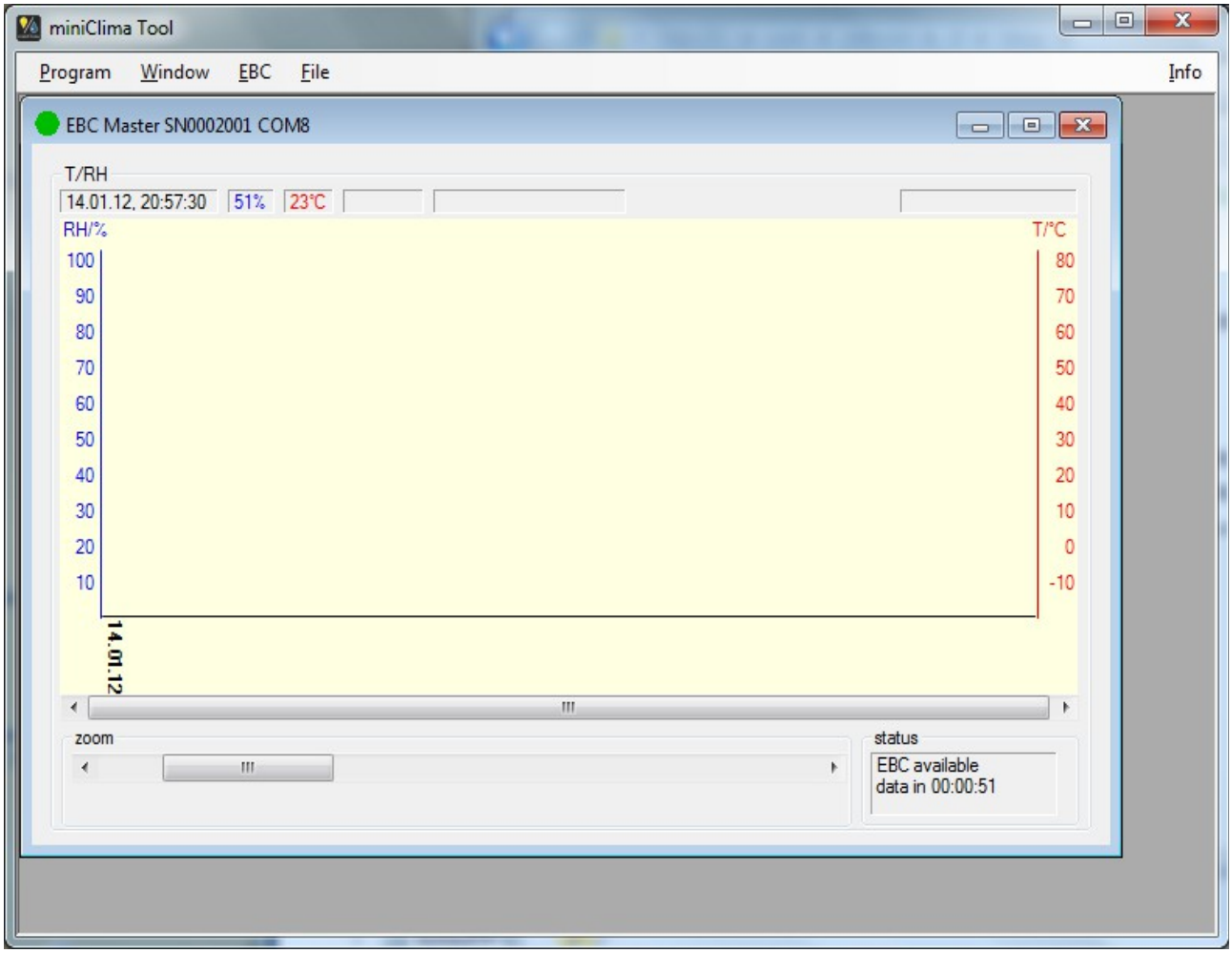
For miniClima units that shall be connected via RS232/USB to your computer: Choose as to whether the

COM port used for the connection to the unit will be selected automatically or manually. If you choose for an automatic search of the COM port, all COM ports are checked sequentially within each unit window. This search might lead to unexpected side effects if other devices are connected to any COM port. Therefore, in case you know the COM port for the connection to the miniClima unit, it is recommended to use manual selection and to enter the according port numbers within the unit windows.

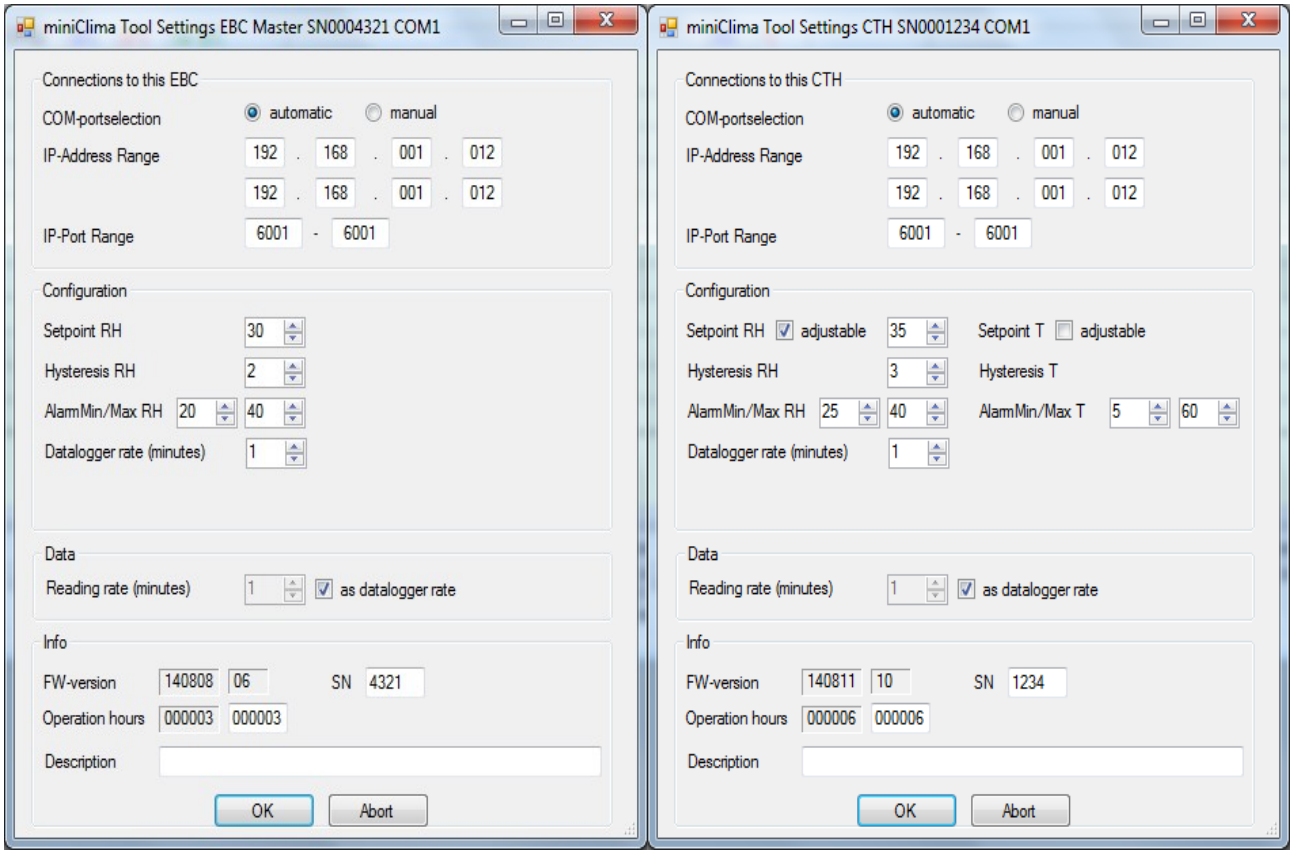
For miniClima units that are connected (via RS232/IP converter) to an IP net your computer has access to: The IP address and port ranges can be entered here. All combinations of IP addresses and port numbers within the given ranges will be checked sequentially within each unit window. This search might take some time, depending on the number of IP addresses/ports and depending on the possible other (non-miniClima units) clients within the given IP address/port ranges. In case only one IP address and port number is entered, only this combination will be checked. IP port is initialised with 6001, as this port is the default port of the RS232/IP converters we use.

Using pings will help in speeding up the search processes (if pings are not allowed in your IP network do make sure to uncheck this box, though). If you cannot connect to the miniClima units while having "Allow ping" ticked, the replies to the pings might take too long. Try again without pings.

As long as both COM port selection and IP address range are left blank the software will always show this panel when restarted. By closing the panel one unit window is going to be opened up. This window will immediately initiates an miniClima units search according to its settings.



These window-specific settings can be altered with menu enrty *EBC/Settings* or *CTH/Settings*:



Connections to this EBC/CTH

The parameters are at first taken from the defaults discussed above *(menu entry Program/Settings)* and can now be changed individually.

For a miniClima unit connected via RS232/USB to your computer, select whether the COM port of the connection shall be selected automatically or manually. If you choose for an automatic search of the COM port, all COM ports will be checked sequentially for this unit window. This search might cause unexpected side effects, if other devices are connected to any COM port. Therefore, if you know the number of the COM port for the connection to the miniClima unit, it is recommended to use manual selection and to enter the according port number.

For a miniClima unit connected via RS232/IP converter to the IP net your computer has access to, both the IP address range and the port range can be entered here. All IP address/port combinations within the given ranges shall be checked sequentially, to see whether the unit is connected to any of them. This search might take some time, depending on the number of IP addresses/ports within the ranges and also depending on possible other clients within the IP address/port ranges. If only one IP address/port is entered, only this combination will be checked.

Configuration

"Setpoint RH" shows the currently chosen RH-setpoint of the connected miniClima unit. It can be altered here - possible range: 15 through 85%RH. The two alarm RH thresholds are adjusted automatically with the setpoint RH. As soon as the new setpoint RH is confirmed by pressing the OK button it will come into effect in the miniClima unit. (Note: Changing the setpoint RH or the alarm RH thresholds for an EBC slave unit will cause a signal error, the EBC slave unit receiving these values from its EBC master unit. The alarm should disappear within some seconds.
For a CTH the humidity control can be activated or deactivated by selecting the checkbox “adjustable”.

“Hysteresis RH” shows the actual RH-hysteresis (available from FW version 111215 onwards). It is a symmetric value and by default is set to 2. The miniClima unit starts to dehumidify or humidify when the actual RH value differs from the setpoint RH by at least the value of the hysteresis. The hysteresis RH can be altered between 1 and 4. The hysteresis RH must be set for EBC master and EBC slave(s) seperately, it will not be forwarded from the EBC master to its slave(s).

"AlarmMin RH" shows the actual minimum alarm threshold of the connected unit. It can be set between 10%RH (lowest possible value) and 5 points below the "Setpoint RH" (highest possible value). As soon as the new minimum alarm RH is confirmed by pressing the OK button it will come into effect in the miniClima unit.

"AlarmMax RH" shows the actual maximum alarm threshold of the connected unit. It can be set between 5 points above "Setpoint RH" (lowest possible value) and 90%RH (highest possible value). As soon as the new maximum alarm RH is confirmed by pressing the OK button it will come into effect in the miniClima unit.

"Setpoint T" (only available for CTH) shows the currently chosen T-setpoint of the connected CTH. It can be altered here - possible range: 10 through 40°C. The two alarm T thresholds are adjusted automatically with the setpoint T. As soon as the new setpoint T is confirmed by pressing the OK button it will come into effect in the CTH.
The temperature control can be activated or deactivated by selecting the checkbox “adjustable”.

“Hysteresis T” (only available for CTH) shows the actual T-hysteresis. It is a symmetric value and by default is set to 2. The CTH starts to cool or heat when the actual T value differs from the setpoint T by at least the value of the hysteresis T. The hysteresis T can be altered between 1 and 4.

"AlarmMin T" (only available for CTH) shows the actual minimum T alarm threshold of the CTH. It can be set between 5°C (lowest possible value) and 5 points below the "Setpoint T" (highest possible value). As soon as

the new minimum alarm T is confirmed by pressing the OK button it will come into effect in the CTH.

"AlarmMax T" (only available for CTH) shows the actual maximum T alarm threshold of the connected CTH. It can be set between 5 points above "Setpoint T" (lowest possible value) and 60°C (highest possible value). As soon as the new maximum alarm T is confirmed by pressing the OK button it will come into effect in the CTH.

“Datalogger rate” shows the rate the RH/T values get stored within the built-in datalogger of the miniClima unit. The datalogger rate can be changed from 1 to 99 minutes. (Note: Changing this interval may take some seconds within the miniClima unit; please wait until the remaining time for receiving the next data shown in the status field decreases steadily again.)

Data

"Reading Rate" shows the rate the RH/T values are read out from the miniClima unit by miniClima Tool. By default it is set to the datalogger rate, but can be set differentially (available from FW version 111215 onwards).

Info

"FW-version" shows the firmware version of the processor of the miniClima unit.
"Operation hours" shows the actual operation hours of the miniClima unit.
In the field “Description” a user defined name can be assigned to the miniClima unit.

Alternatively the user-defined name can be entered in the file "miniClimaNames.txt"of the working directory, observing the following structure:

PNOxxx user-defined name
xxx is the processor number (PNO) of the EBC without leading '0'. The factory set value for the PNO number is 111.
or
SNxxxx user-defined name
xxxx is the serial number (SN) of the miniClima unit.

As soon as the user changes the field “Description” or changes the file and replaces the default PNO or SN value with the number of his actual miniClima unit, both the user-defined name and the correct PNO or SN will be shown in the title bar of the window. Note: Inadmissible font characters that might possibly have been used within the user-defined name will be replaced by blanks when displayed in the title bar.

4 USING THE MINICLIMA TOOL

4.1 Live data

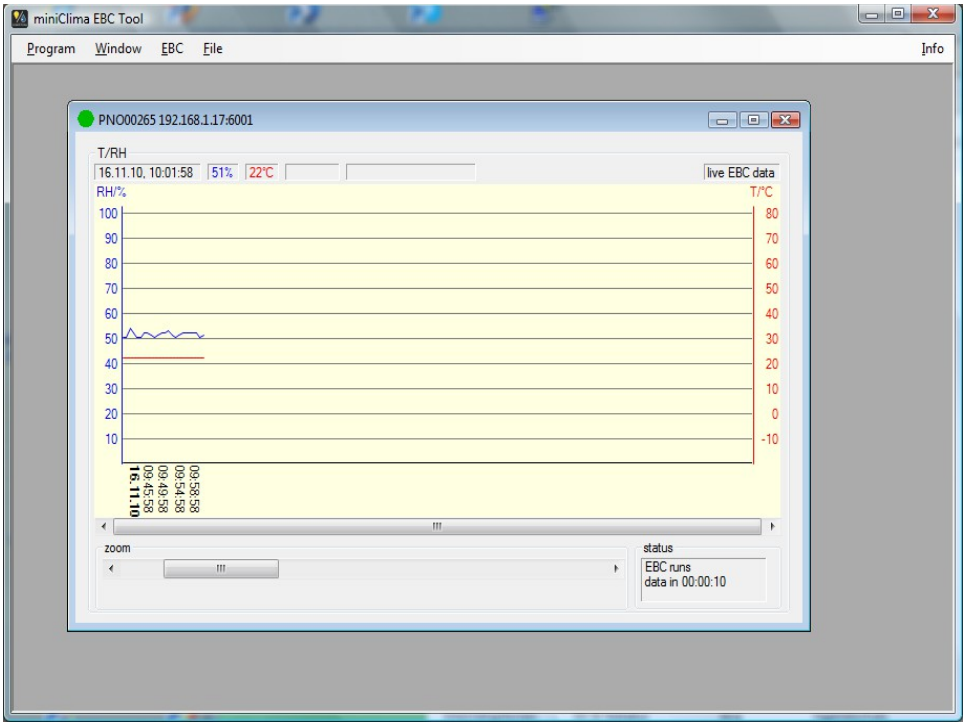
The software searches for a new miniClima unit every time a new unit window is opened via the menu entry *Window/New.* The search is always carried out according to the connection settings for this unit window, therefore, on a specified COM port, on all COM ports, on a specified IP address and port, or within the given IP address and port ranges.

Any miniClima unit plugged to the mains connection and connected to the computer in one of the above outlined ways is usually found within some seconds. (If not, please check chapter 5 on page 17.) The following individual data is found in the title bar of any unit window:

- ✔ The type of the miniClima unit (EBC or CTH) and respectively the function of the connected EBC (Master or Slave) (only from FW version 111215 onwards)
- ✔ The address and/or the port of the connection to the miniClima unit
- ✔ The serial number (Snxxxxx) of the miniClima unit (Note: Every EBC of FW version 111215 or later and every CTH has its serial number programmed into its processor)
  or the processor ("PNOxxxx") of the EBC (Note: Every EBC not built earlier than late November 2010 has a definite, individual ID programmed into its processor; the PNO is also noted on the EBC housing front)
- ✔ A green or red dot (red dots standing for broken connections to the miniClima units and/or alarms issued by the miniClima units)

The status of the connection to the miniClima unit is shown within the status field (bottom-right) of the unit window. Note: If an EBC slave unit is found, it may issue a signal error during the search algorithm. This alarm should disappear within some seconds. By default the data-source chosen for a new unit window is the live data according to the menu entry *unit/Datasource/live*.

Beginning with FW version 111215 the miniClima Tool fetches the RH and T values from the connected and running miniClima unit at the reading rate. With older FW versions the RH and T values are received from the connected and running EBC at the datalogger rate, set within the settings panel of the EBC window. As the EBC sends this data actively, it can take the time span of that chosen interval until the first dataset is actually received. The data will then be presented graphically and numerically. Note: If the miniClima unit is in standby mode no live data will be sent.



Additionally the data values are stored in a csv file in the log-directory. The name of this csv file is automatically chosen along the following system (if no user-defined name is available, it will be left out):

beginning with FW version 111215:
“<user-defined name > <miniClima unit type> <Master/Slave> SN000xxxx <COM port/IP-address-port>_live_yymmdd.csv".
myname EBC Master SN0002001 10.0.0.3-6002_live_101114.csv for an EBC master with serial number 2001 and IP address 10.0.0.3:6002 saved on November 14th, 2010
or
myname CTH SN0002001 10.0.0.3-6002_live_101114.csv for a CTH with serial number 2001 and IP address 10.0.0.3:6002 saved on November 14th, 2010.

The stored values respond to the following data (in this order):

date;time;T/°C;RH/%;set/%;alarmMin/%;alarmMax/%;time difference to previous entry/seconds
-so i.e.:
26.05.09;09:47:32;26;50;50;40;60;0;
26.05.09;09:48:32;26;50;50;40;60;59;
etc.

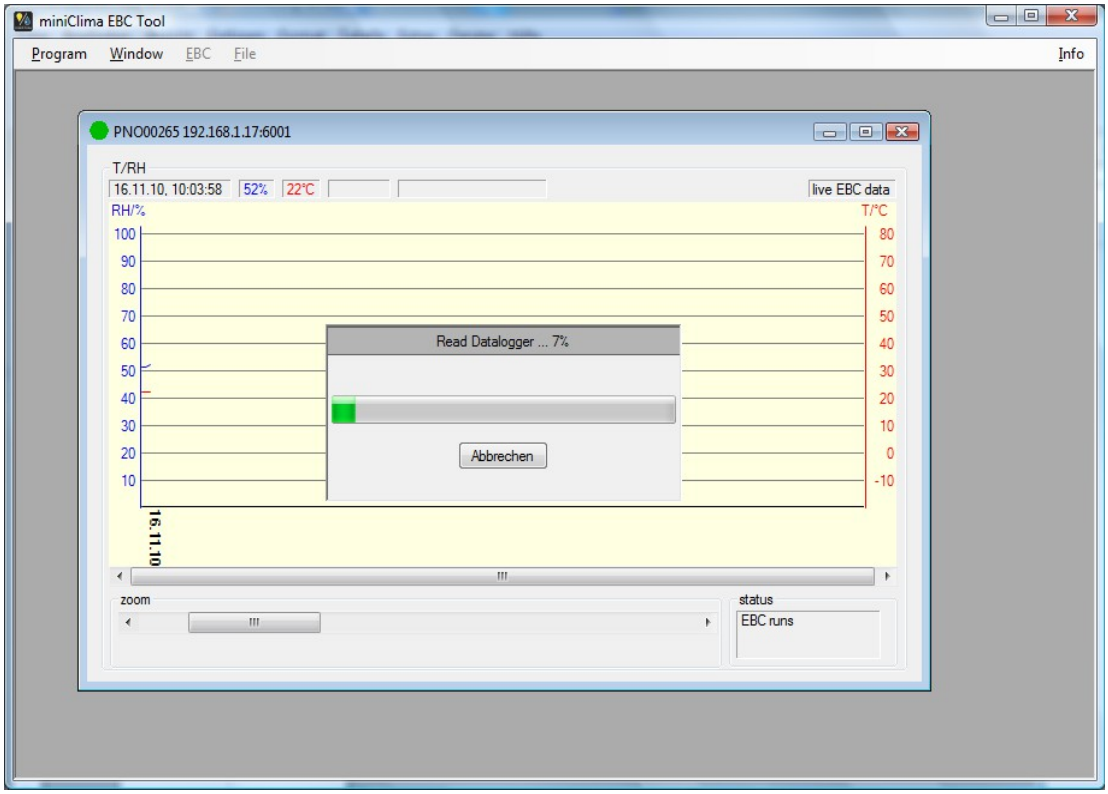
In case any set values on the miniClima unit are changed or in case of the occurrence of any alarm, the miniClima unit puts according data streams to the RS232 interface. The miniClima Tool stores this information in a text file named "<user-defined name > <miniClima unit type> <Master/Slave> SN000xxxx <COM port/IP-address-port>_live_yymmdd.log" in the log-directory.

A new pair of csv and log files is created every day. In the program settings panel you can chose for an automatic deletion of old such live-files in the log-directory.

4.2 Historic data

As long as a miniClima unit is switched on and an RH/T sensor is connected to it, it will automatically log the values for RH and T and store them on its intern datalogger. These data can be read out with the miniClima Tool. During the transfer of these historic data from the miniClima unit to your computer the unit will stop all other activities. Beginning with FW version 111215 the miniClima unit will go to standby mode while the datalogger is read out and start working again afterwards. (Note: If an EBC-slave unit is connected to that unit, it will loose its signal connection and issue a signal error. Therefore, it is recommended to switch the EBC chain into standby mode before reading out its historic data). All settings on the miniClima unit will be kept, even if the unit is unplugged.

By selecting the menu entry *unit/Datasource/historic* the software starts retrieving the historic data from the connected unit shown within the actual unit window. Naturally, as a precondition for this function, the connection to the unit must have been found by the miniClima Tool before (see further above). Retrieving of the data lasts for about two minutes, during which time span the unit will stop all other activities. It will restart with them immediately after all data has been transferred.

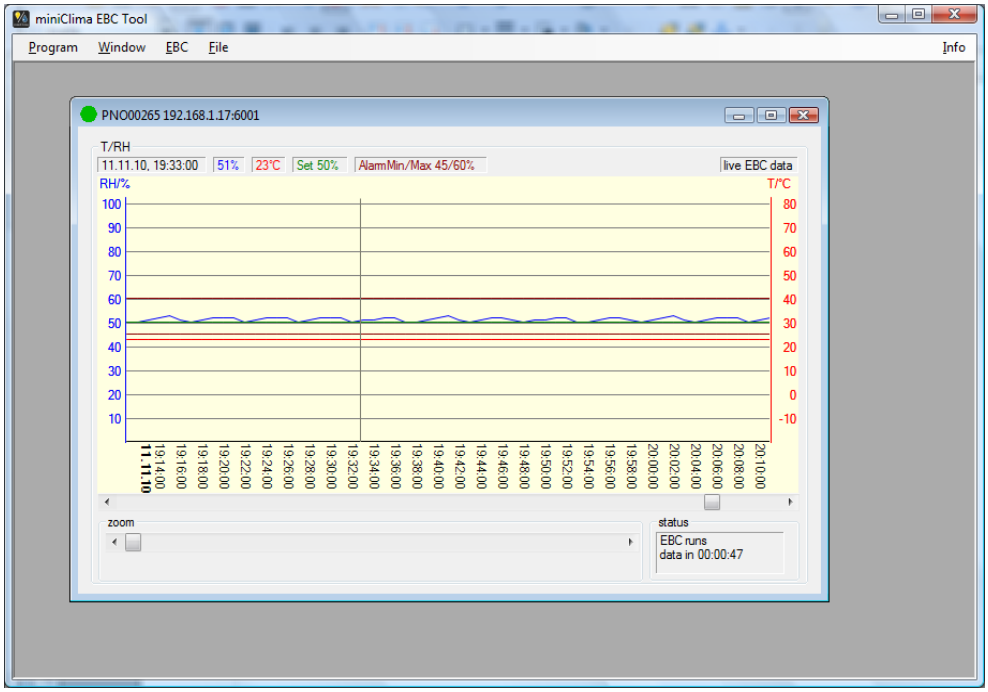


The data values are stored as a csv file in the log-directory. The csv file is named automatically along the same rules as the according live data files (“<user-defined name > <miniClima unit type> <Master/Slave> SN000xxxx <COM port/IP-address-port>_historic_yymmdd.csv"; see above).

One further log file is stored under the name “<user-defined name > <miniClima unit type> <Master/Slave> SN000xxxx <COM port/IP-address-port>_historic_yymmdd.log". This file contains all settings that have been changed on the unit as well as all alarms that occurred within the stored time-frame. The entries in the file are stored as they are received from the miniClima unit and may therefore be unsorted.

The whole byte-stream retrieved form the miniClima unit is stored as “<user-defined name > <miniClima unit type> <Master/Slave> SN000xxxx <COM port/IP-address-port>_historic_yymmdd.dmp" and can be evaluated by miniClima Schönbauer GmbH, if necessary.

After the readout has been completed the RH and T values will be displayed graphically.



4.3 Menu Entry Unit/Search

Selecting the menu entry *Search* restarts the search algorithm according to the connection settings of the active unit window. Note: If an EBC slave unit is found during the search algorithm, this may cause a signal error. This alarm should disappear within some seconds.

4.4 Menu Entry Unit/Start or Stop

Beginning with FW version 111215 the miniClima unit can be stopped or started by this menu entry.

4.5 Menu Entry Unit/Restart Recording

Selecting the menu entry */Restart Recording* clears the graph of the actual unit window.

4.6 Menu Entry Synchronize date/time with PC

The unit takes over date and time of the PC. The actual date and the actual time are shown in the status field on the right bottom.

4.7 General usage

4.7.1 Unit Window

The status field at the bottom-right indicates the status of the miniClima unit, its date and time, and any alarm message that might be active. In case of an active alarm the text will be highlighted in red and also a red dot replaces the green one in the title bar of the unit window. Note: Active alarms of newly found units are only shown after having received the next RH/T dataset. This can last up to the duration of the selected interval; if a newly found unit has issued a humidity or temperature alarm, this alarm is going to be reset by the search algorithm of the miniClima Tool. The alarm will come back again after 30 minutes given the setpoint hasn't been reached meanwhile.

The scrollbar underneath the RH/T graph can be used to scroll along and to zoom in and out of the graph.

The respective time, the RH and T values, the setpoint and alarm thresholds can all be seen on the top-left above the graph. Note: Setpoints and/or alarm thresholds that have been changed within the options panel will be updated with the next dataset coming from the miniClima unit.

Given the according selection in the program settings panel, you can have a cursor being displayed when moving the mouse over the graph. With this, the according time, RH and T values, the setpoint and the alarm thresholds will now be shown on top-left top above the graph. If the mouse is moved to leave the graph on the right or left side the cursor will disappear, if the mouse is moved to leave the graph on its top or its bottom, on the other hand, the cursor keeps its place and the graph freezes - even if new data arrives.

When the cursor is activated, a section of the graph can be selected and zoomed by clicking and draging with the mouse.

When selected within the program settings panel the setpoint, the alarm thresholds and a horizontal and/or vertical grid is added to the graph.

4.7.2 Menu Entry File

Use the menu entry *File/Save* to store the data of the actual unit window as a csv file. Additionally, formerly stored csv files can be re-opened within the actual unit window using the menu entry *File/Open*. Use the menu entry *File/Print* to print the graph of the actual unit window.

4.7.3 Menu Entry Program/Project

With the menu entry *Program/Project/Save* the settings of all currently open unit windows can be saved as

belonging to one project. Use *Program/Project/Load* to open such a whole project again in one go.

5 TROUBLESHOOTING

The miniClima unit cannot be found

- ✔ Check, whether the miniClima unit is connected to the RS232 interface of the computer (possibly by additionally using an USB-to-Serial adapter) or if it is connected to an RS232/IP converter that is part of an IP net your computer has access to.
- ✔ Check, whether the correct COM port or automatic COM port selection or the correct IP address/port ranges are selected within the settings panel of the unit window.
- ✔ Deselect "Allow ping" within the program settings panel, as possibly either ping is not allowed within your IP net, or the answers to the pings take too long.
- ✔ Switch off the miniClima unit and the RS232/IP converter, if available, then...
  ...close the software...
  ...reconnect the miniClima unit to the computer, if connected to a COM or USB port...
  ...switch on again the miniClima unit and the RS232/IP converter, if available...
  ...start the miniClima Tool again.
- ✔ If the miniClima unit is connected to a COM or USB port of your computer:
  Switch off your computer, then...
  ...pull the RS232 or USB cable from your computer...
  ...switch off the miniClima unit...
  ...switch on your computer...
  ...switch on the miniClima unit...
  ...as soon as your computer is up, plug on the RS232 or USB cable...
  ...start miniClima Tool.
- ✔ If none of this helps please do get in touch (see page 18).

No live data is shown

- ✔ The miniClima unit must be switched on - as long as it is in standby mode no live data is provided via the RS232 interface.
- ✔ Live data is sent from the miniClima unit using the interval set in the settings panel. It might take up to this time span until the first RH/T dataset is received by the software.

Signal error of an EBC slave unit shown by miniClima Tool

- ✔ If a slave EBC unit is found, it may issue a signal error during the search algorithm. This alarm should disappear within some seconds.

✔ Changing the setpoint or the alarm thresholds of an EBC slave unit causes a signal error, as the slave EBC receives these values from its master unit. The alarm should disappear within some seconds.

Signal error of a slave EBC during reading out the datalogger of its master EBC

✔ During the transfer of its historic data an EBC stops all other activities. If a slave unit is connected to that EBC, it will loose its signal connection and issue a signal error. Therefore, it is recommended to switch an EBC chain into standby mode before reading out the historic data.

Active alarms of newly found miniClima units are not shown in miniClima Tool

✔ Active alarms of newly found miniClima units are only shown after having received the next RH/T dataset. This can last up to the selected interval duration.
✔ If a newly found miniClima unit has issued a humidity or temperature alarm, this alarm will be reset by the search algorithm of the miniClima Tool. The alarm will come back again after 30 minutes, given the setpoint has not been reached meanwhile.

6 CONTACT

For any questions or suggestions please contact:

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