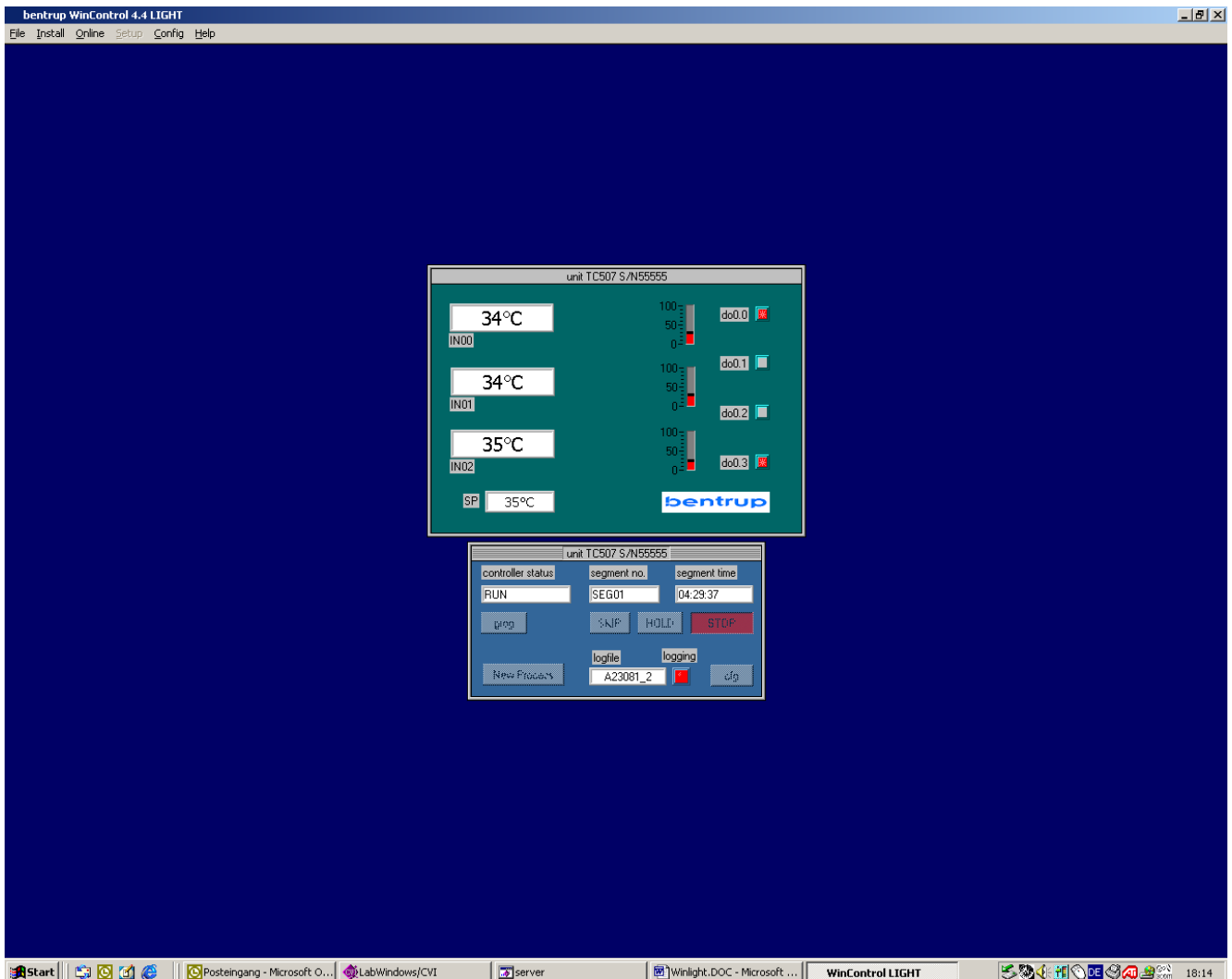


Process Visualization

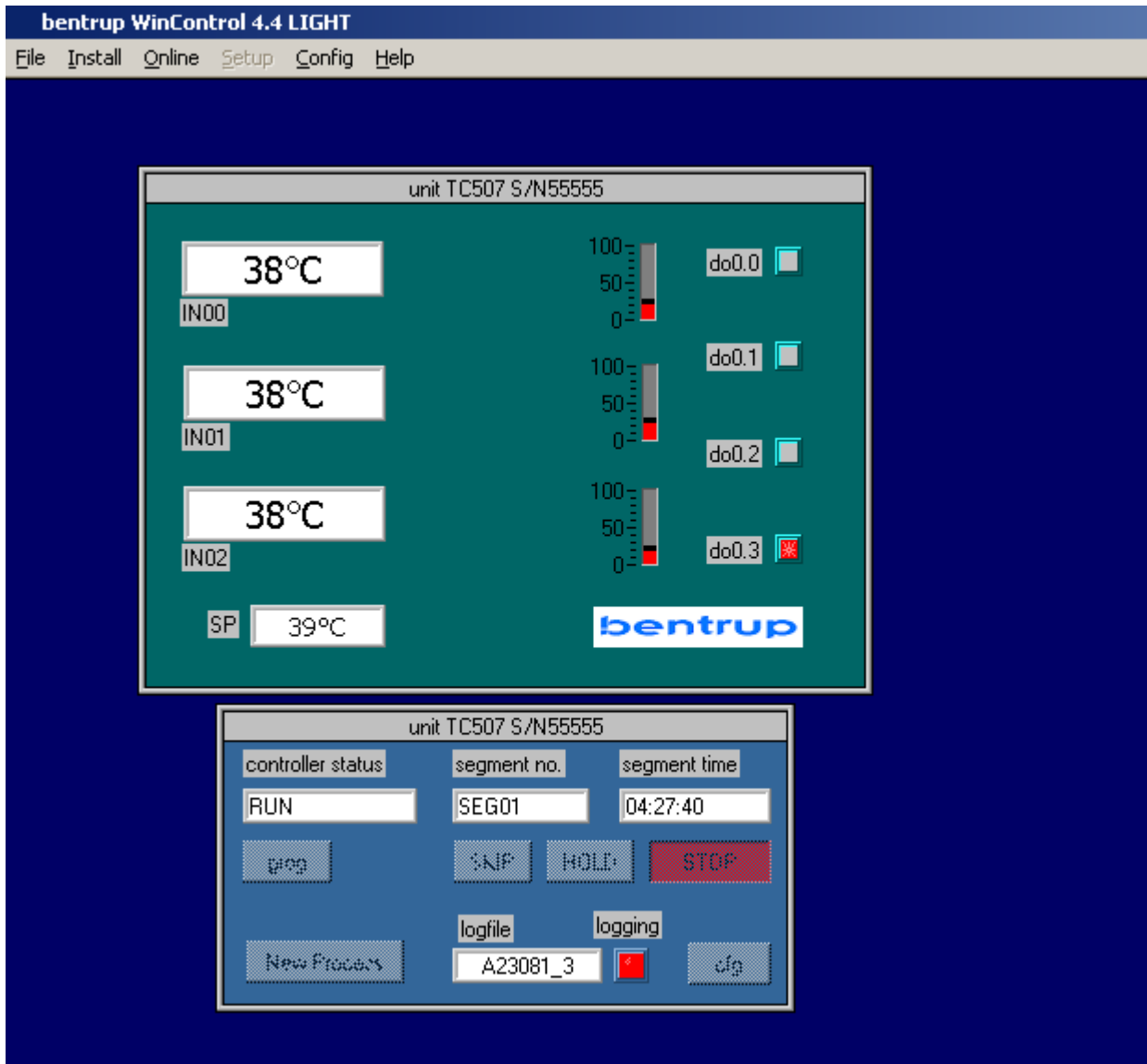


bentrup WinControl Light 4.4

free add-on software to visualize firing processes of bentrup TC500 family controllers fitted with RS232 under Windows 98 / NT / 2000

1.) General Informations

bentrup WinControl Light 4.4 is a very useful software tool to supervise, record and analyze your firing processes. On your Windows desktop according to your controllers configuration (resp. number of zones) a corresponding sketch of your bentrup controller is shown. This sketch reads continuously the actual process parameters. The picture belows shows a TC507 configured for 3 zone kiln:



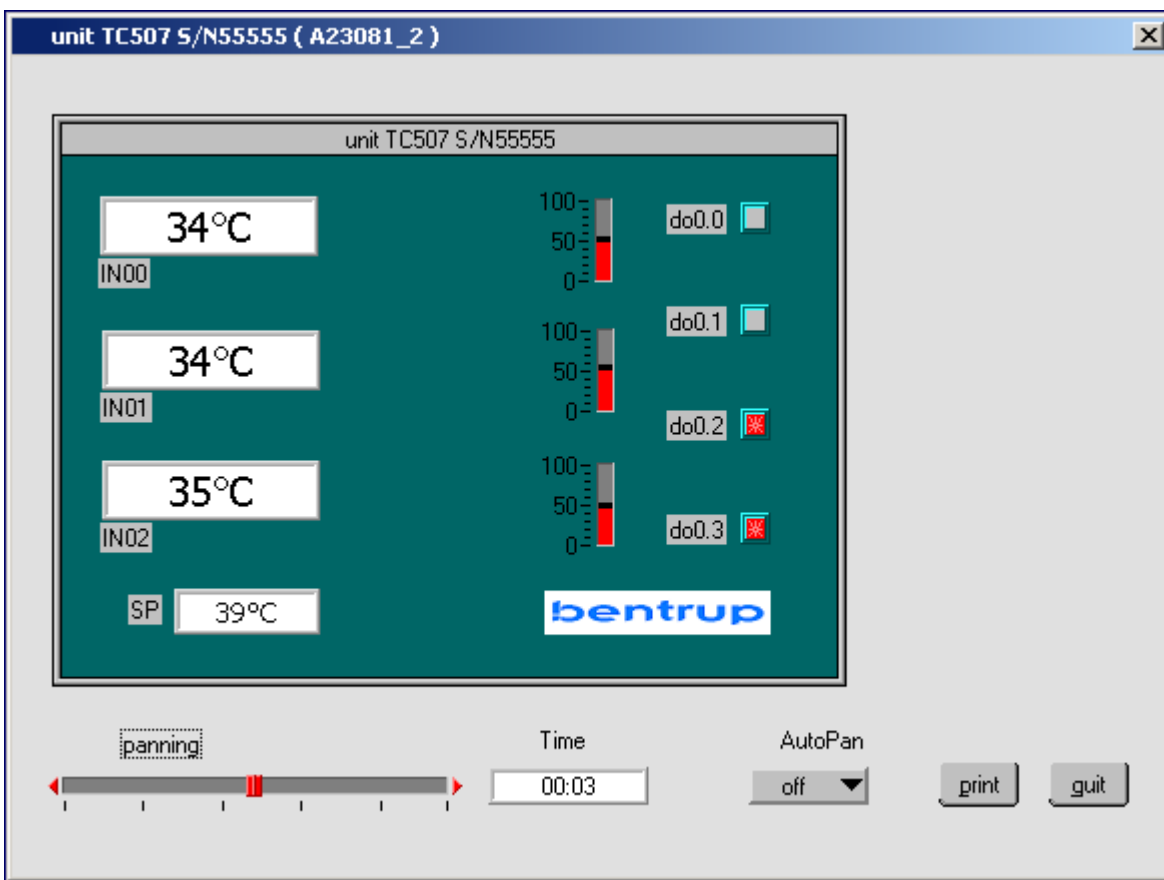
The upper panel shows the actual process parameters of the firing (temperatures of zones 1, 2 and 3 as well as the temperature setpoint). The red bars show the actual percentage of heating, the indicators do0.0 to do0.4 represent the current state of the control outputs. The headline reads the controller type and serial number (TC507 S/N 55555).

The lower panel reads the actual programme state. In this example the programme is running in segment 1, 4:27:40 time left in this segment. After you start the controller, the indicator “logging” becomes active indicating that the current process data are recorded in a file. The window “logfile” shows the filename which is assigned automatically as the following syntax (refer to the example):

"A23081_3": "A" means 1st unit, "23" as the day of the current month, "08" for the current month, "1" stands for the year (2001). The digit followed after the underline is a number that counts upwards to identify the files if more than one logfile is done per day ("_3").

After the firing is finished (or when pressing again "start stop" on the controller) the recording is finished and the file is now read for further analyzation. You can call up the data in 3 ways. You can either review them by showing the sketch as during on-line visualization (you can easily pan through, jump to any time-point or even auto-replay in real time or selectable factors up to x1000), or can show the process parameters (temperature, setpoint etc.) as a chart. Zooming, panning and printing is included of course. As the third possibility, you can get the brief data of a recording.

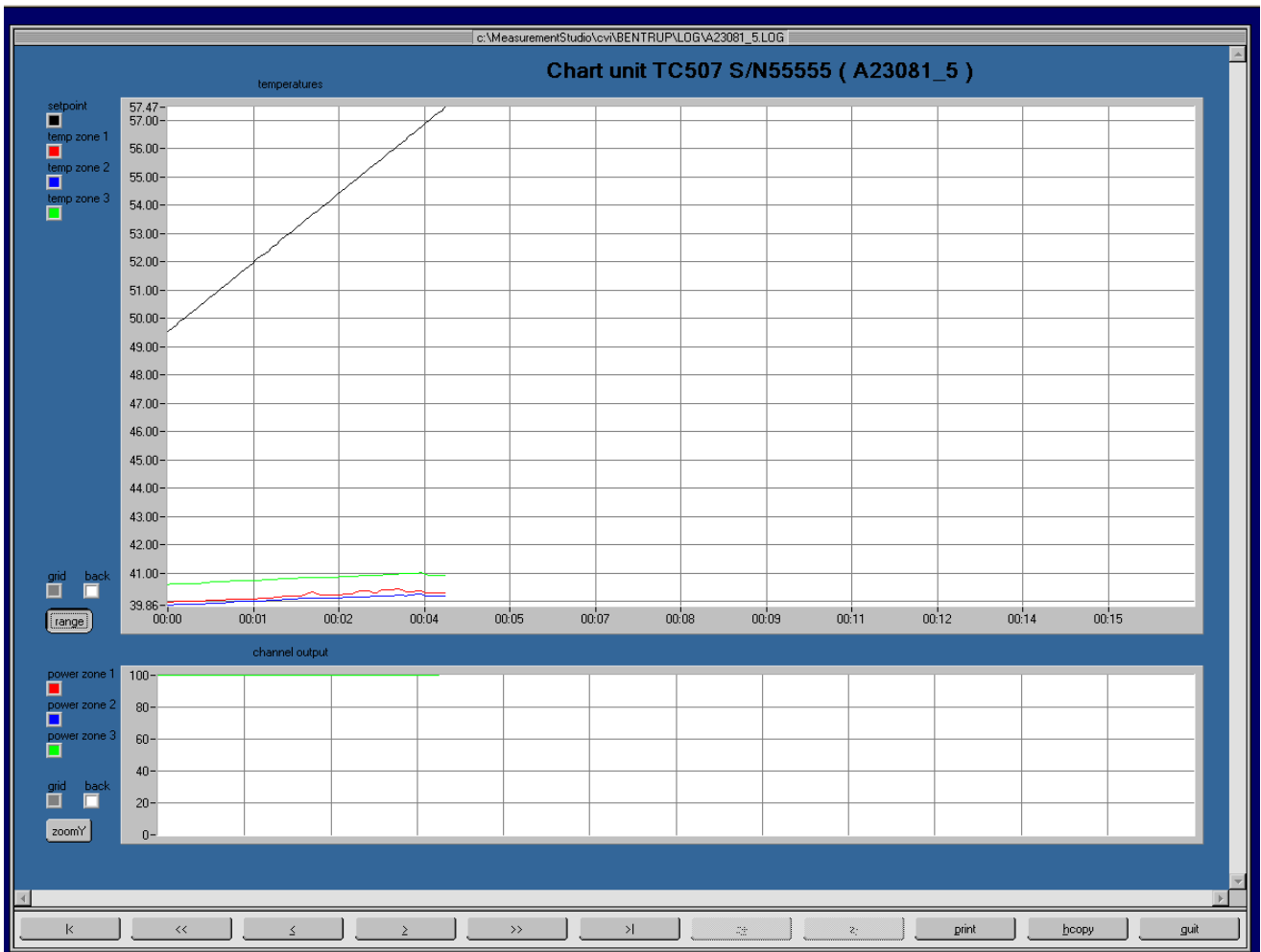
Option 1: Firing Data Display



This sketch reads the recorded data as they were during on-line visualization. You can call up each moment of the process by moving the horizontal slide with the mouse or you can enter directly the time at which you like to visualize the process. You can also step through the firing by clicking on the little arrow on the left and right hand side of the slice.

The AutoPan feature lets you automatically replay the process in real time or a selectable speed factor (up to x1000). A hardcopy can be done as well.

Option 2: Firing Chart Display

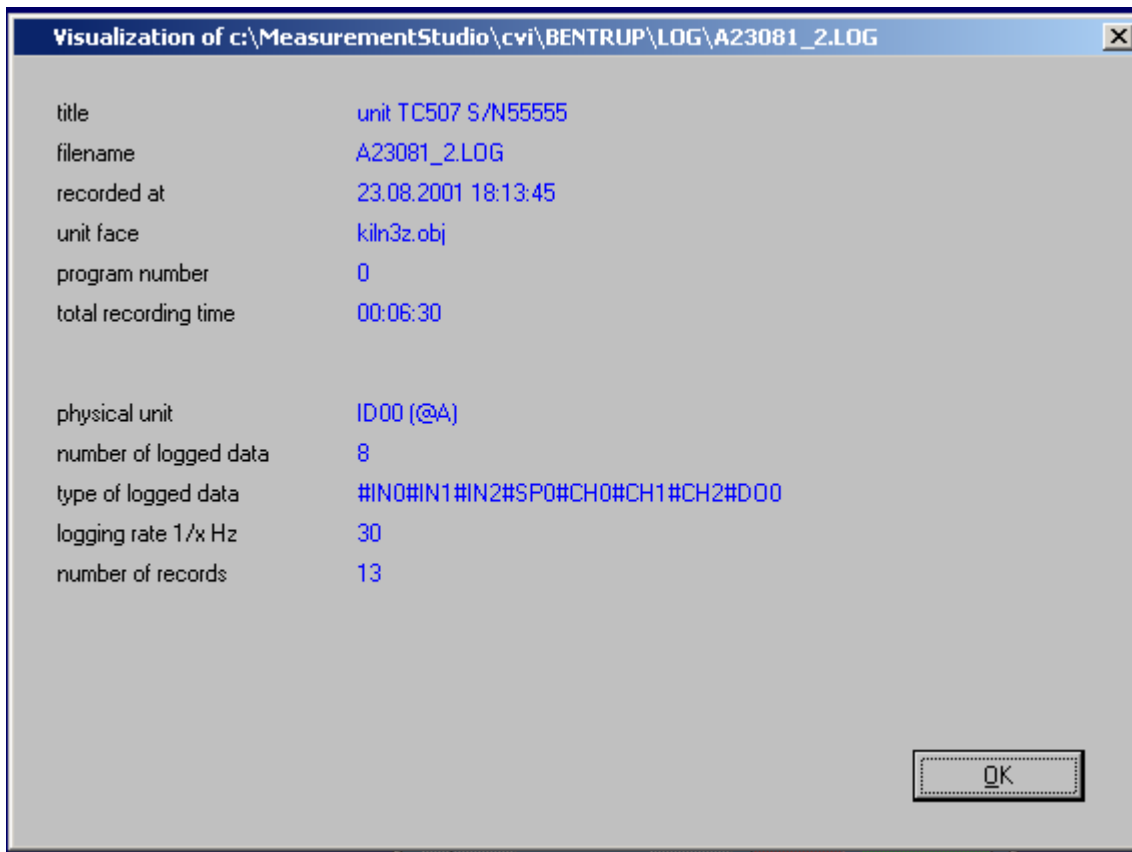


The process parameters (like temperature, setpoint etc.) can be displayed as a chart graphic. Up to 4 charts with up to 4 graphs each can be displayed. Panning and zooming in both dimensions making it easy to check the process in all details. Several printing features are included as well.

Note that you can vertically zoom the chart to its actual displayed values by pressing the “zoom Y” button. As well you can press on the little color references to change the color of each firing graph to better recognize each single graph.

The panning buttons on the bottom are to step through the entire firing process.

Option 3: General Process Informations



This screen gives you general informations about the selected firing resp. the selected file. These informations include time and date of recording, firing length, unit, programme etc. Also some technical informations are displayed.

2.1.) Linking the Controller to your Computer

To use WinControl with your controller make sure that you have ordered your TC500 family controller with a RS232 interface. If your TC500 family controller is not fitted with the RS232 interface by now you can simply purchase this extension; it comes as a kit together with the modified case part. Installation works simple as a “plug and play” solution and takes only a few minutes.

For industrial application a RS485 interface (for multiple bus members) is also available.

The bentrup TC500 family RS232 interface is designed to directly connect to a standard RS232C port. If you don't want to use the 3 m cable supplied with it you can use any other pure straight (1:1) 9 pole SUBD cable.

NOTE: A so called zero-modem-cable will not work although it will not cause any damage.

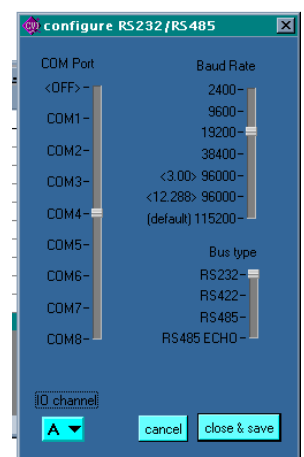
2. 2.) Installation of the Software

Start the installation shield by invoking SETUP.EXE as usual.. This starts the self-extraction and installation process. Follow the steps asked by the installation programme; just press <enter> if you are not sure with any of the settings. After successful completion, WinControl light has created the Programme Group WinControl with several files.

2. 3.) Setting up the FIELDBUS Server

The FIELDBUS server is the driver programme that manages the entire data communication between Windows and all bentrup units. Before you can start to work with WinControl, you must setup the FIELDBUS server successfully.

Double-click the FIELDBUS server icon. A small panel comes up, press config, a second popup appears as shown:



Adjust the values according to the communication hardware you use. Set the COM Port to the RS232 port where your bentrup unit is connected to. For the bentrup TC500 controller family set the Baud Rate to 38400.

When you have done all settings, press `close&save`. If you get an error message, try to track up the cause by changing the settings or ask you hardware dealer for assistance.

After you have finished the adjustments successfully, the light server will light up (as shown). The window `server action` and `status` are dimmed if you have set `LOG display` to Off as recommended.

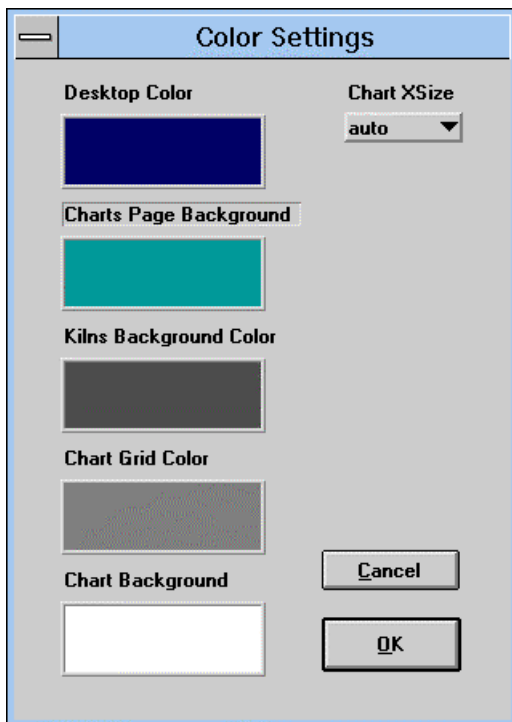
The FIELDBUS server software is background operating. After you have done the adjustments once, they will be saved permanently. The software WinControl loads the FIELDBUS server automatically on first power up.

2.2.) Setting up WinControl Light

Every time you start WinControl Light it will scan automatically the RS232 for any compatible bentrup unit. If a unit is found but not compatible an error message is generated. If no unit is found, check the cabling and the settings of the FIELDBUS (COM port selection, communication speed).

2.3.) Global Setting of WinControl Light

The menu Config allows you to adjust some parameters to your personal requirements:



Desktop Color
Adjustment of the desktop color.

Charts Page Background

When showing a firing chart, this adjusts the „paper background“ color.

Kilns Background Color

When showing firing data, this adjusts the „paper background“ color.

Chart Grid Color

When showing firing charts, this is the default grid color (can be changed during displaying)

Chart Background

When showing firing charts, this is the default chart background color (can be changed during displaying), in other words, the background color of the single graphs, ie. the area in each chart.

Chart X Size

When showing firing charts, this defines the horizontal size of the charts. `auto` sets the charts to screen size. If the horizontal size exceeds the screen range, Windows offers you horizontal scroll bars to show the entire chart.

3. 1.) Full Version of WinControl

WinControl light is a free add-on tool to be used on bentrup TC500 family controllers (TC503, TC505, TC507, TC8000, TC9000, TCD1, TCD2 etc.). It is designed to support our customers with a useful, easy to operate tool incorporating the most important features to supervise your firing.

However, for advanced users like industry, D & R or laboratory installations the full version of WinControl is recommended. WinControl Full Edition provides you with the following benefits:

- communicates with all advanced bentrup controllers (ie. also TC805, TC-S1, TC-M1 etc.)
- entire configuration process can be done quick and easy; you can load, edit, save configurations, print out configuration tables, download a configuration used on previous projects, edit parameters by directly entering them via the keyboard in a table, obtain an online help for each parameter
- entering programmes quick and easy; you can load, edit, save programmes, copy them to other controllers, save them in your files
- up to 32 controllers can be managed, also RS485 fieldbus installations etc.
- individual kiln faces (sketches) designed to your application can be loaded
- remote access via the internet (www): allows you to do all operations from any place around the world

3. 2.) WinConfig

For simple configuration of your TC805, TC-S1 or TC-M2 controller ask us for the free software WinConfig. To directly connect TC-S1 or TC-M2 (by default fitted with a RS485 interface) to the RS232C port of your PC a converter cable is available from bentrup at very reasonable costs.

Appendix A: Warranty, Copyright, Trademarks

Warranty

The media on which you receive bentrup software are warranted not to fail to execute programming instructions, due to defects in materials and workmanship, for a period of 90 days from date of shipment, as evidenced by receipts or other documentation. bentrup will, at its option, repair or replace software media that do not execute programming instructions if bentrup receives notice of such defects during the warranty period. bentrup does not warrant that the operation of the software shall be uninterrupted or error free.

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