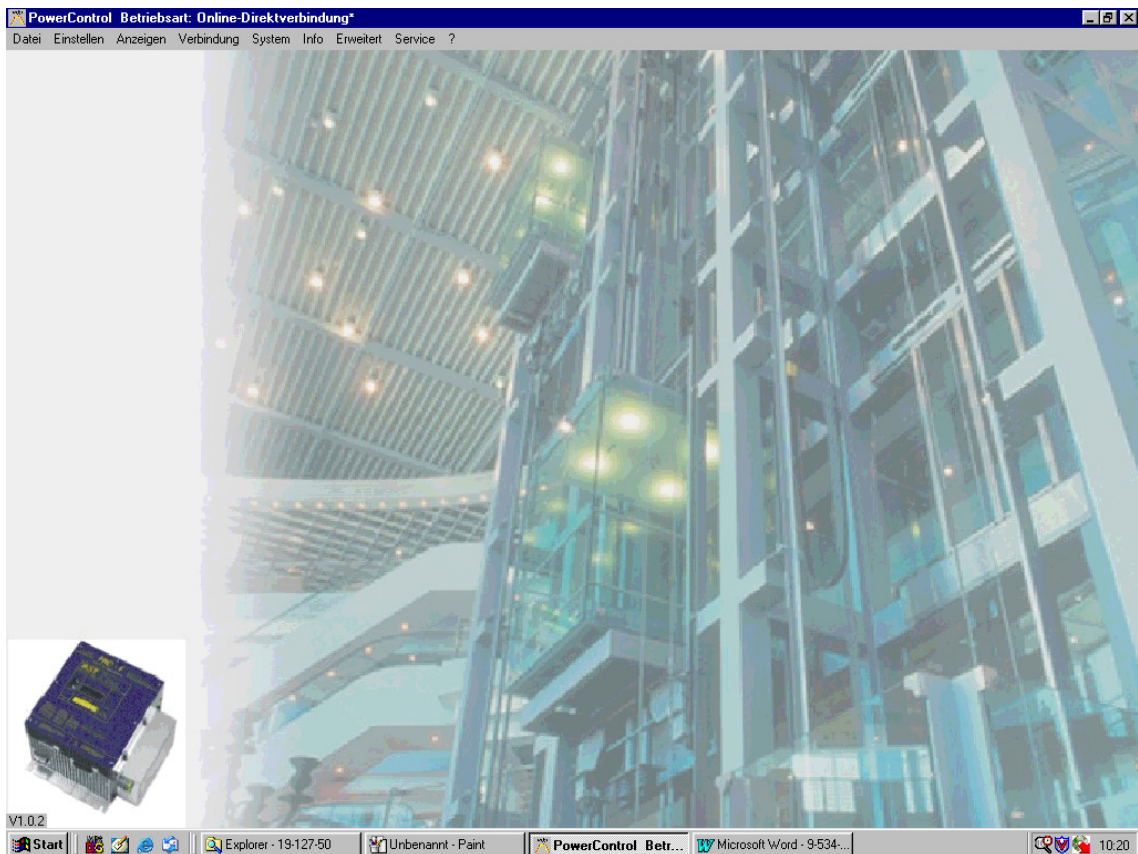


FRC-F

FRC-Q



PowerControl32

-

Program description

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PowerControl32

The *PowerControl32* software is a simple to use program for making optimal use of the all functions of the FRC-F and FRC-Q frequency converter series.

1 System requirements

- PC (or Laptop)
- 32-bit operating system: Windows 95, Windows 98, Windows 2000, Windows XP or Windows Vista
- Browser (e.g. Internet Explorer or Netscape Navigator) for displaying online help
- Min. 8 MB RAM
- Min. 10 MB of free disk space
- 1 free series interface and 1 null modem series connection cable or 1 free USB interface and 1 USB cable (type A - type B)

Note: With old VVVF devices no USB socket is present. Here the coupling is possible only with the serial interface.

2 Installing the software

The installation program will normally run automatically after inserting the CD if the software is supplied on a CD. If not, proceed as follows:

Start the program "**SETUP.EXE**". Use the Data Manager for this purpose (Explorer).

If you have downloaded the software from the Internet, proceed as follows:

- Unzip the data
- Then start the program "**SETUP.EXE**". Use the Data Manager for this purpose (Explorer).

The installation is controlled by the menu. Please follow the instructions on the screen.

At the end of the installation, a window will appear for selecting the language with which the program will start up for the first time. Click on the button next to the respective flag.



3 Programs

Two programs will be available after installation.



PowerControl32: Starting the PowerControl32 program

PowerControl32 SetLng: After starting this program, the language selection window appears which was already opened automatically on installation. When next started, PowerControl32 will start up in the language selected in this window. This language selection can be used to change the language if this was adjusted in PowerControl32 by mistake.

4 Starting the program



Start PowerControl32 via the “**Start**” ⇨ “**Programs**” ⇨ “**RST**” ⇨ “**PowerControl32**” menu or via the respective icon on the laptop’s desktop.



A start-up image appears on the screen while the program is loading its initialization data. The *PowerControl32* main menu appears after initialization.

5 Operating modes

PowerControl32 can be operated in four different modes. The operating mode can be switched via selecting the menu item “**Options**” ⇨ “**Operating mode PowerControl32**”. The actual operating mode is displayed at the top of the window. Each operating mode also has its own background image in order to avoid confusion.

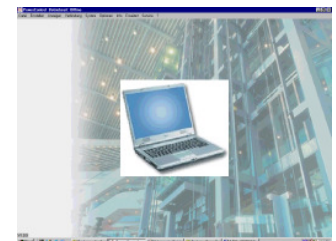
5.1 Direct online connection

This mode is used when connecting the frequency converter with a null modem cable directly to the laptop and has a frequency converter displayed in the middle of the background image.



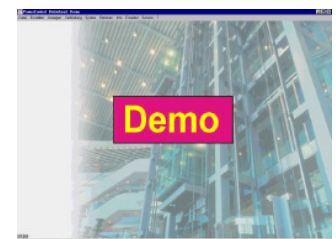
5.2 Offline

This mode is used for running the program without connecting a frequency converter, e.g., for printing saved parameters or drive curve and has a laptop displayed in the middle of the background image.



5.3 Demo

This mode can be used for demonstration purposes. The data displayed are downloaded from a demonstration data set. This operating mode has the word “**Demo**” displayed in the middle of the background image.

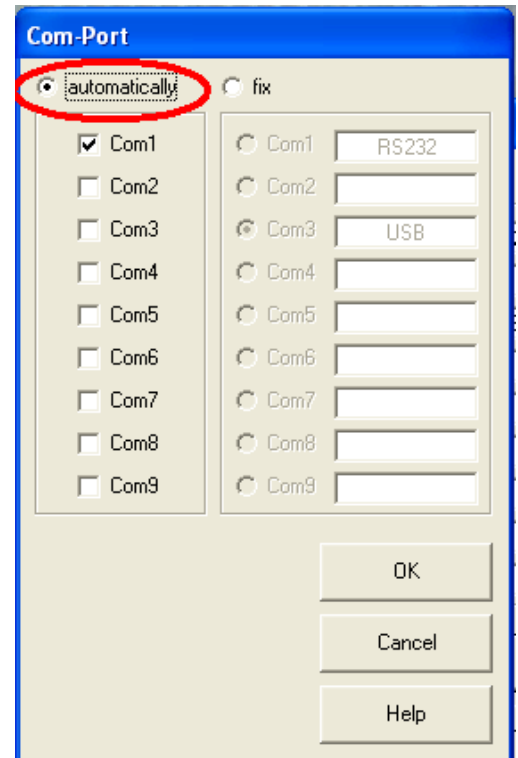


6 Telecommunications link

6.1 Com No. of series interface

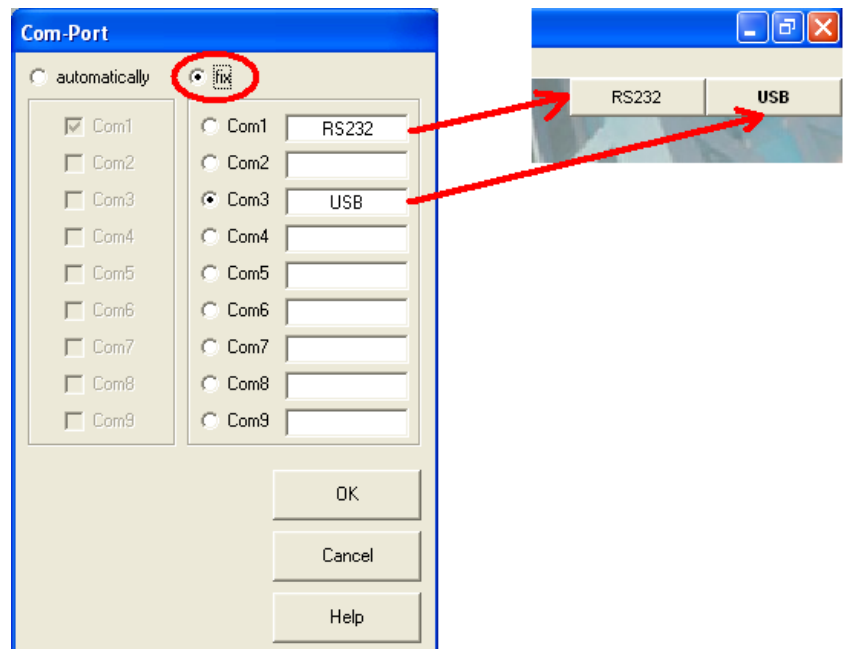
The interface for the direct link to the converter (via null modem cable or USB cable) is determined via the menu “Options” ⇒ “Select COM No.”

According to standard the option “automatically” is selected. Here the program searches for all approved interfaces for the VVVF. For technical reasons only COM1 is enabled for the search as a standard. If another one of this is needed, then this can be activated by clicking on it.



Optionally it is possible to adjust the interface firmly to a COM by clicking on “fix”.

If in the right field a text is entered, then in demo and online direct mode a button is shown for each defined text in the main window. Thereby fast switching of the interfaces is possible, e.g. if you use USB and RS232 cable depending upon application for the connection with the VVVF.



7 Installation of the USB driver

For exchanging data from PowerControl32 via USB cables, a special driver must be installed. The installation takes place dependent on the operating system.

7.1 USB driver for Windows 2000, Windows XP and Windows Vista

With Windows 2000, Windows XP and Windows Vista the USB driver is installed automatically when installing PowerControl 32. When the VVVF is connected to the laptop via the USB interface for the first time, the operating system automatically searches for the driver. The operating system indicates the condition to the search with a message. This usually happens automatically. As soon as the driver was found, the USB interface can exchange data with the VVVF.

7.2 USB driver for Windows 95 and Windows 98

With Windows 95 and Windows 98 an automatic installation of the drivers is not possible.

When the VVVF is connected to the laptop via the USB interface for the first time, the operating system will recognize this automatically.

The hardware wizard window will be opened. Click on button "Continue".

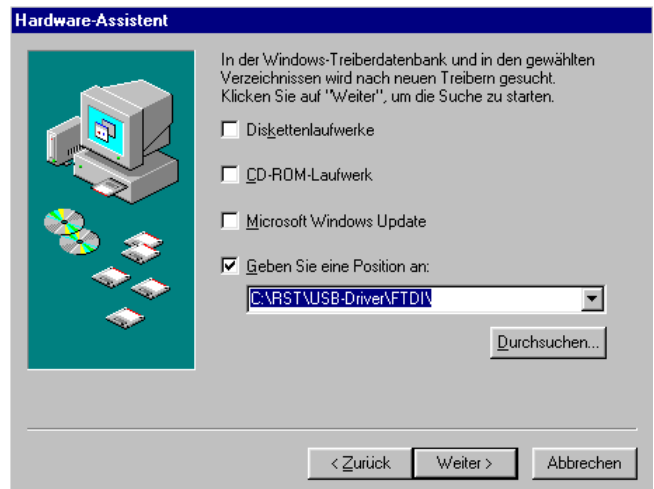


Select „Search for best drivers for the device“ and click on button “Continue”.

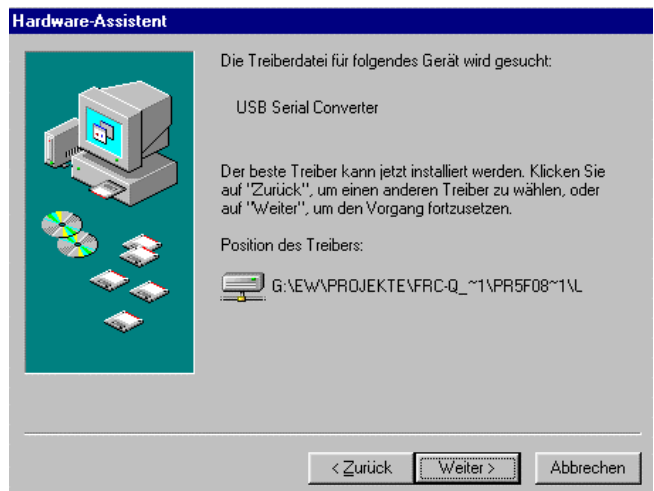


Now, enter the path where the USB driver is located. The driver is located in sub-directory "USB drivers" of the "PowerControl 32" software. Please select these.

Click on button „Continue“.



Click on button „Continue“.



Click on button „Continue“. Then, the system is updated automatically and the installation is complete.



7.3 Establishing a communications link

Before values from a converter linked to a laptop can be displayed and changed, the link has to be established after the appliances have been connected.

Go to the **“Connection”** menu and select **“Connect Freq. Converter”**.

8 Operating the program

8.1 General

The menu items and the parameters correspond as far as possible to those of the converter software. Only the specific functions of PowerControl32 are described here. For details on the individual parameters, please see the description of the converter.

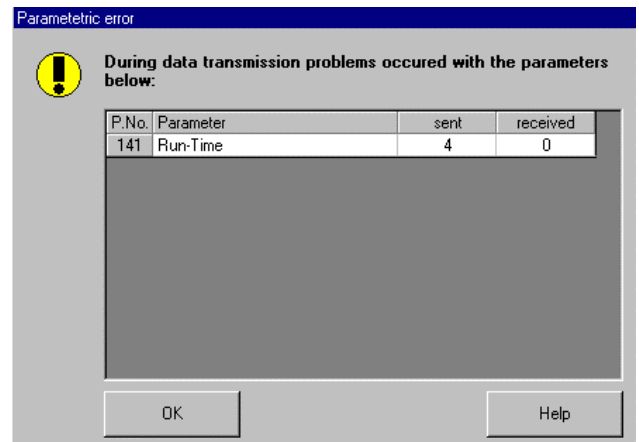
8.2 Changing the parameters

Confirm changes with **“Enter”** or by **clicking “OK”**, this will transfer the data to the converter, they will be read immediately once more and displayed for verification in the pop-up window.

To abort, press **“ESC”**. If you have not changed any data, close the window with **“Return”** or **“OK”**, without data transfer taking place.

If the converter does not accept the values, a window appears with the following information:

- Parameter name
- Value sent
- Value received from the converter

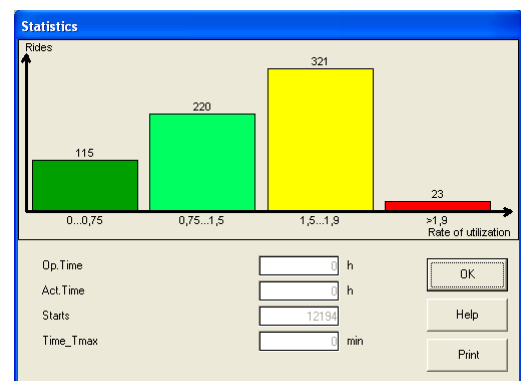


8.3 Display parameters

Parameter values that cannot be changed are displayed in a shade of light grey.

Parameters in the “Display” menu are constantly updated so that the values are displayed online.

The extent of utilization of the VVVF is displayed as a graphic. The extent of utilization parameters are not all implemented with older devices. Therefore with some devices only one bar is displayed.



8.4 Switching units

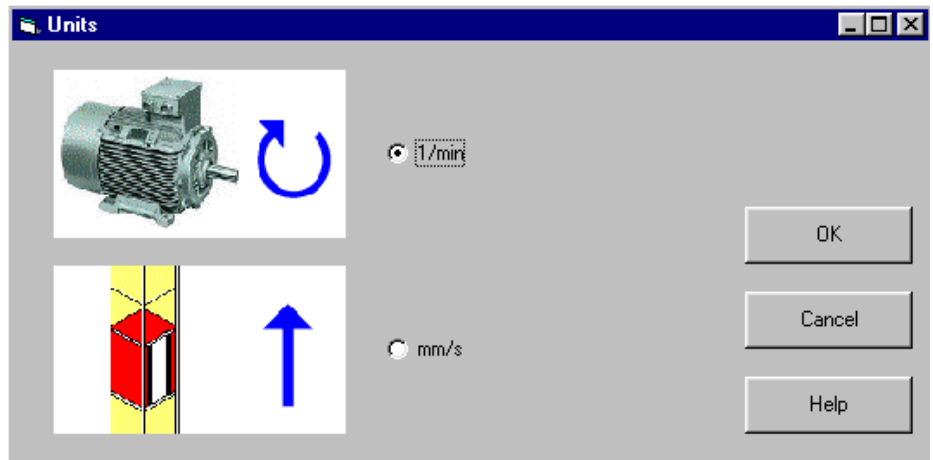
Some parameter units can be switched.

Parameter type	Standard unit	Optional unit
speeds	1/min (engine speed)	mm/s (cabin speed)
times/paths	ms (times)	mm (cabin's path)

It is necessary to enter equipment-specific data for optional device display.

- Gear ratio (multiplied by 100)
- Traction sheave diameter
- Suspension

It is possible to switch between "1/min" and "mm/s" via the menu "**System**" ⇒ "**Units**".



If the unit display is set to "mm/s", the three parameters required for the calculation will appear in the "**Setting**" ⇒ "**General settings**" window.

The system data must be entered here in order for the speeds and paths to be displayed correctly.

General settings (asynchronous)		
I_MOT	<input type="text" value="32"/>	A
U_MOT	<input type="text" value="400"/>	V
n_MOT	<input type="text" value="1350"/>	1/min
f_MOT	<input type="text" value="50"/>	Hz
cos(phi)	<input type="text" value="80"/>	%
Encoder	<input type="text" value="1024"/>	
Encoder type	<input type="text" value="Sin"/>	
Transmission (*100)	<input type="text" value="300"/>	
pull.diam.	<input type="text" value="440"/>	mm
Susp. dev.	<input type="text" value="2"/>	:1

8.5 Conversion program

Speeds are entered into the converter by default in “1/min” (motor speed). The conversion program in the PowerControl32 software can be used for converting the cabin speed into motor speed.

The conversion program is only used as an aid to calculation. The data entered here are not transmitted to the converter.

Press the button **“Calculating”** in the window **“Speeds”** or **“Starting jerk”**. In the open window, you can now click on the right-hand side to select conversion from “m/s” to “1/min” or from “1/min” to “m/s”.

Enter the plant data and requested speed or motor speed. The result will be displayed on the right-hand side immediately after entry. There is a special factor regarding the gear ratio.

Calculation of speed

Input parameter

n 1/min Motor speed

DD mm Diameter of the traction pulley

KZU Suspension

iW / Gear ratio

1/min => m/s

m/s => 1/min

Output parameter

VKN m/s Nominal speed of the cabin

OK Cancel Help

The gear ratio can be displayed as a fraction (e.g.: “52/53”). The denominator is to be set to 1 (e.g.: “41/1”) if whole numbers are entered instead of a fraction.

When leaving the window by pressing the “OK” button, the entries will be saved and made available next time the window is opened. The changed values will not be saved if the operation is cancelled with “Cancel”.

8.6 Error memory

The last 10 errors are displayed in the **“Display”** ⇒ **“Error stack”** menu.

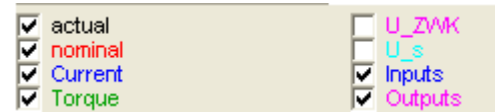
The status of the travel counter at the time of the malfunction will be displayed in the left-hand column. The error is displayed in text form in the right-hand column. If several errors occur at the same time, these will be listed and displayed.

	Ride No.	Error text	
Error 1 (oldest error)	<input type="text" value="0"/>	- no error	OK Print Help
Error 2	<input type="text" value="0"/>	- no error	
Error 3	<input type="text" value="0"/>	- no error	
Error 4	<input type="text" value="0"/>	- no error	
Error 5	<input type="text" value="0"/>	- no error	
Error 6	<input type="text" value="0"/>	- no error	
Error 7	<input type="text" value="0"/>	- no error	
Error 8	<input type="text" value="0"/>	- no error	
Error 9	<input type="text" value="0"/>	- no error	
Error 10 (latest error)	<input type="text" value="25689"/>	- Under-Voltage	

8.7 Drive curve window

The drive curves represent an online display of the operating status almost in real time (depending on the speed of your computer).

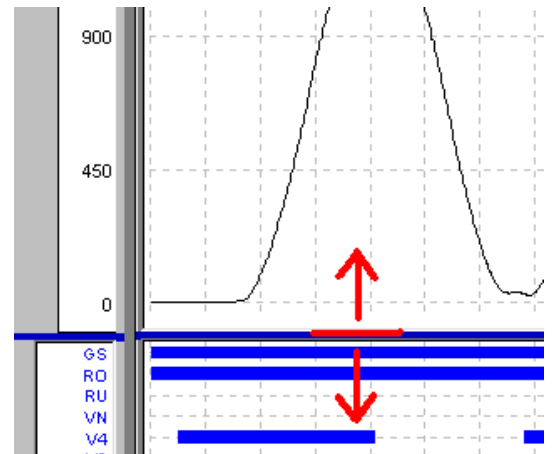
It is possible to select on the bottom left which data are displayed.



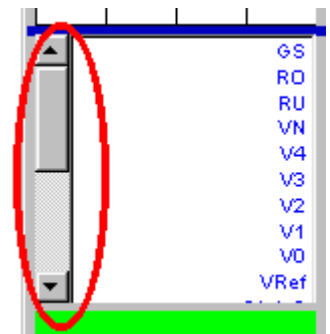
If analogue and digital values are displayed at the same time, the cycles are shown above and the digital signals are shown below.

The separation bar between analogue and digital values can be moved by:

- moving the mouse onto the separation bar
- clicking the left mouse button
- moving the bar with the mouse button depressed
- letting go of the mouse button

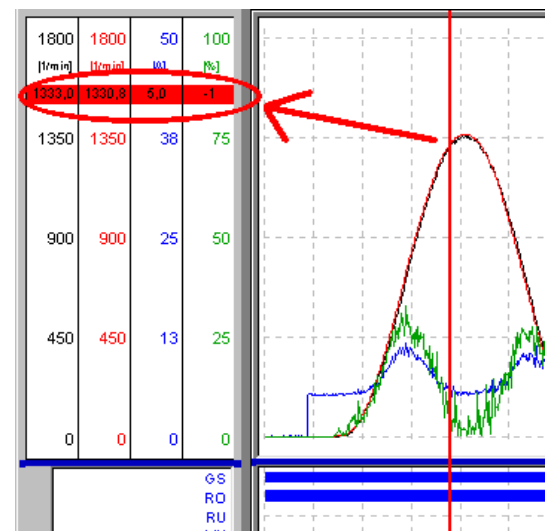


If the digital signals as regards height cannot all fit onto the screen, only some will be displayed. The signals displayed can be moved using the scroll bar on the left.



The cursor bar is reset by clicking the right mouse button in the analogue field. The analogue values with this cursor position will be displayed above in the scaling axle.

The cursor bar can be moved with the right mouse button to any position.

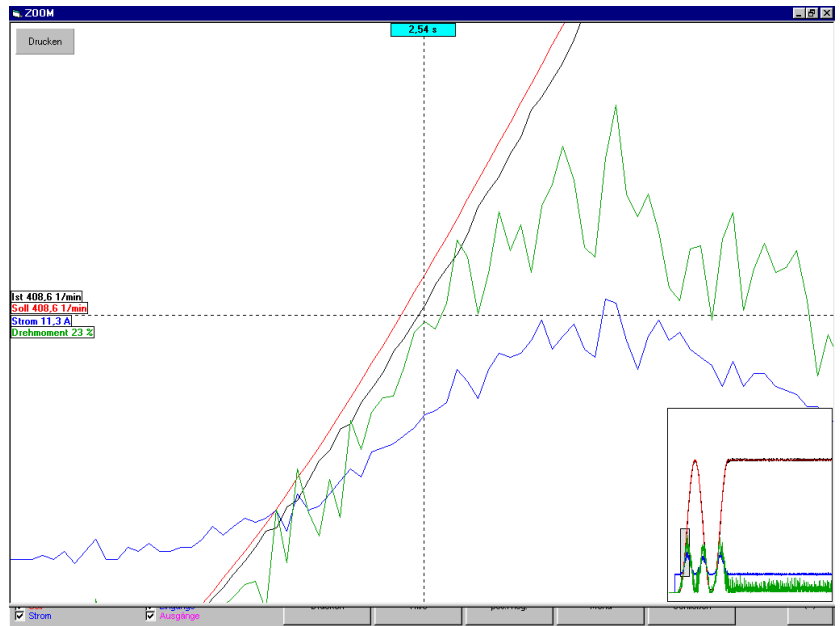


When the drive curve is displayed, it is possible to examine drive curve sections more closely by “zooming in” on the drive curve.

For this, press the left mouse button in the drive curve window and with the mouse button depressed, “pull” a rectangle over the desired area of the cycle. The section of the curve within the frame is increased as soon as the mouse button is released.

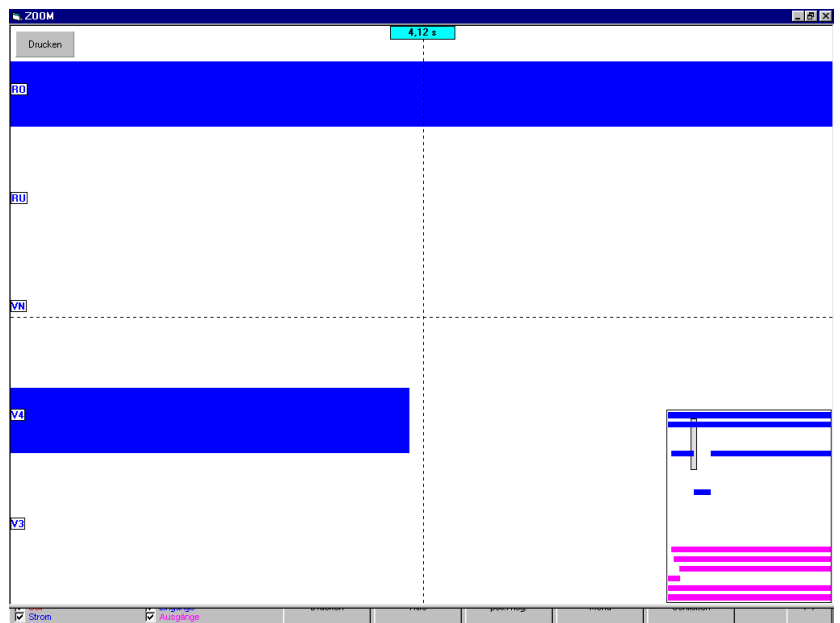
Current values are displayed on the left and upper axes.

A zoom overview display is shown in the bottom right. This can be used to show exactly where one is on the drive curve.



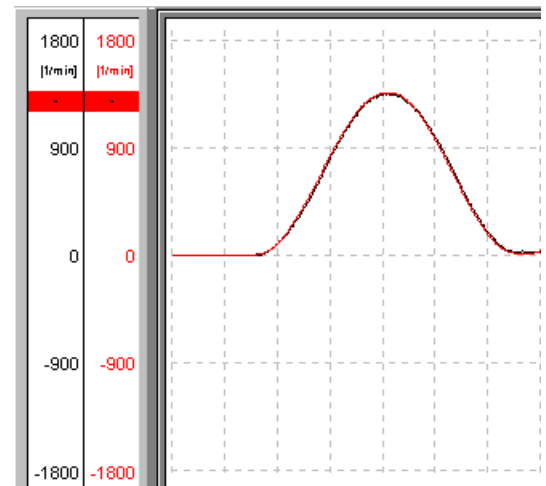
Zooming is also possible with digital signals.

The zoom window can be closed by pressing the “ESC” button.

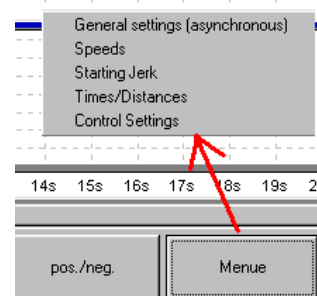


It is possible to switch between displaying the amount and a signed display (positive/negative) when displaying the curves. Switching is carried out by pressing the “*pos/neg*” or “*Amount*” button.

With the positive/negative display selected, the frequency with an upward movement is positive and negative with a downward movement. With this setting, it is possible, for example, to distinguish between the traction sheave rotating with or against on the drive curve.



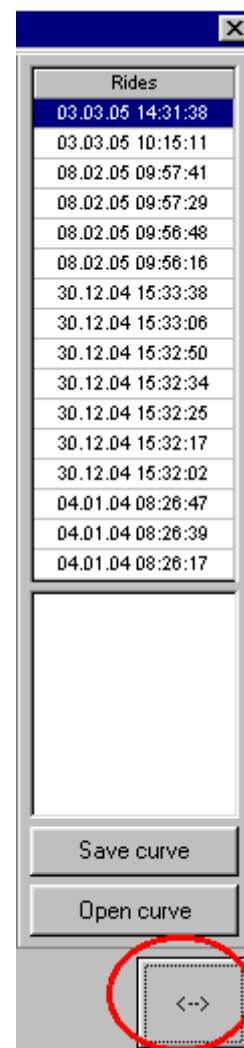
Parameters can be changed without closing the drive curve window by pressing the "menu" button.



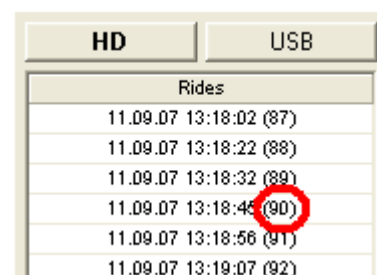
A special menu window can be opened and closed with the right button "<->". Here, the rides are listed by date and time.

In principle, the last 150 rides viewed with the PowerControl software are saved.

By clicking on a ride, it will be displayed on the screen immediately.



With new VVVF devices also the travel counter is shown in parentheses.



8.8 Service menu

The "Service" main menu is intended for use by staff of RST Elektronik GmbH only. For this reason most menus are password-protected. Parameters in menus, which are not protected by a password, also should not be changed without consultation with RST.

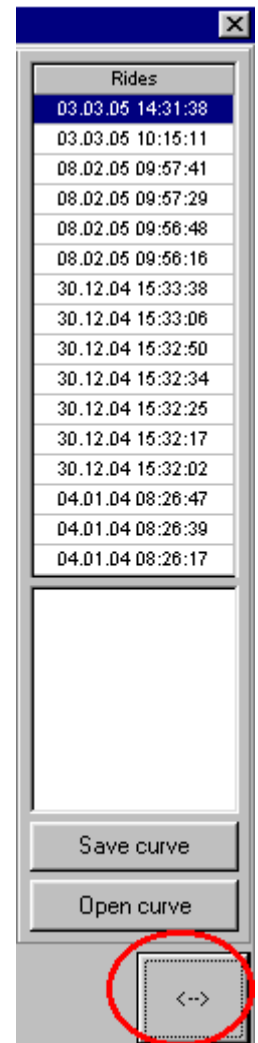
9 Saving and opening drive curves

9.1 Saving drive curves

By default, the last 150 rides displayed using PowerControl32 will be saved. These data are saved temporarily. If more than 150 rides take place, the last respective ride will be deleted. To permanently delete one of these rides, proceed as follows:

- Open the drive curve window ("**Display**" ⇒ "**Drive curve**")
- Click the right "<->" button. This will open a special window. The last rides viewed online are listed in this menu window by date and time.
- Click on the required ride. This will then be displayed on the screen.
- Text may be added to the ride in the white field below the rides. More details on the ride can be saved here.
- Click the "**Save curve**" button.
- Enter and confirm a data name in the next window.

The folder "Data" is used by default. If another is selected, this will be saved and used as a default path the next time the program is accessed.



9.2 Opening drive curves

To open saved drive curves with the "F32" suffix, proceed as follows:

- Set the operating mode to "Offline" ("**Options**" ⇒ "**Operating mode PowerControl32**").
- Open the drive curve window ("**Display**" ⇒ "**Drive curve**").
- The last rides viewed online are listed in the right-hand window by date and time. Click the "**Open curve**" button. Select the data. The opened drive curve and any additional text entered will be displayed.

Note: Drive curves saved using the old PowerControl software (with the "FKV"), cannot be opened using the new PowerControl32 software.

10 Saving the error memory

The error memory is automatically saved with the converter parameters. See chapter "Saving converter parameters".

11 Saving and sending complete data records

11.1 Saving converter parameters

To save all converter settings (including the error memory) onto the laptop, proceed as follows:

- Select the “Direct online connection” mode (“**Options**” ⇒ “**Operating mode PowerControl32**”).
- To create a connection, go to the menu “**Connection**” ⇒ “**Connect Freq. converter**”.
- Select the menu “**File**” ⇒ “**Save parameters as...**”
- The program will automatically retrieve all parameters from the connected converter.
- A window will appear in which additional information can be entered. The date and time will be preset by the program.
- Press the “continue...” button.

Plant / remarks	
Date:	04.04.2005
Time:	15:50:09
Plant No.:	X234
Place:	Oedheim
Remarks:	Test

- Enter and confirm a data name in the next window.

11.2 Sending converter parameters

To send data saved on the laptop to the converter, proceed as follows:

- Select the “Direct online connection” mode (“**Options**” ⇒ “**Operating mode PowerControl32**”).
- To create a connection, go to the menu “**Connection**” ⇒ “**Connect Freq. converter**”.
- Select the menu “**File**” ⇒ “**Open parameter**”.
- Enter and confirm a data set in the next window. Data sets saved using the old PowerControl software can also be opened. Select under “Data type” the entry “**Old parameter file (*.FRC)**”. These will then be automatically converted for the new program.

Load+send file	
Suchen in:	EMV-Geräteeinstellungen
File list:	EMV mit Asynchronmotor.P32 EMV mit Synchronmotor.P32 Test.P32
Dateiname:	
Dateityp:	Parameter file (*.P32)
	Parameter file (*.P32) Old parameter file (*.FRC)

- After selecting the data, a window will appear with the additional information saved. These cannot be changed when opening the data.
- Press the “continue...” button.

Plant / remarks	
Date:	04.04.2005
Time:	15:50:09
Plant No.:	X234
Place:	Oedheim
Remarks:	Test

- The question will be asked whether the data are to be sent. Confirm with “YES”.
- The data will be sent to the converter.

12 Sending update parameters

There is the possibility of sending only some of the data to the converter. This function is used to carry out some default settings (parameter settings for certain motor types) without changing all the data on the converter. The update data sets have the suffix "UPD".

The update data sets are available for downloading from our website:

www.rst-elektronik.de

To send update data on the laptop to the converter, proceed as follows:

- Select the "Direct online connection" mode ("**Options**" ⇒ "**Operating mode PowerControl32**").
- To create a connection, go to the menu "**Connection**" ⇒ "**Connect Freq. converter**".
- Select the menu "**File**" ⇒ "**Open update parameter**".
- Enter and confirm an update data set in the next window.
- The question will be asked whether the data are to be sent. Confirm with "YES".
- The update data will be sent to the converter.

13 Code numbers

There is the possibility of safeguarding the appliance's parameters from unauthorized changes by entering a code.

13.1 Allocating code numbers

If the appliance is not yet protected against changes by a code number, a code number can be allocated as follows:

1. Access the menu item "**System**" ⇒ "**Change code**".
2. Enter a code number (1...9999) and confirm with "**OK**". The code number "0" will not block the appliance.
3. The same code number must be entered again and confirmed. Enter the same number twice; this will only be accepted when the code number has been repeated.
4. The appliance will be blocked against parameter changes after the converter has been switched off and on again. This is also the case for the entry of a false code number in the menu "**System**" ⇒ "**Enter code**".

13.2 Changing code numbers

If the appliance already has a code number that you would like to change, proceed as follows:

Unblock the appliance by entering the old code number into menu "**System**" ⇒ "**Enter code**". The new code number can be entered after the appliance has been unblocked. Please proceed as per point 12.1 ("Allocating code numbers").

13.3 Deleting code numbers

If you wish to delete the code number, proceed as follows:

Unblock the appliance by entering the available code number into the menu "**System**" ⇒ "**Enter code**". Please enter "**0**" as the new code number after unblocking the appliance. When making the entry, proceed as per "**Allocating code numbers**".

14 Switching the language

The language in the menu and help texts can be switched via the menu item **“Options”** ⇨ **“Language PowerControl32”**. It will be possible to select the desired language from the open menu.

If you have mistakenly entered a language you do not understand, please proceed as follows:

1. Leave PowerControl32 by pressing **“ALT”** and **“F4”** simultaneously.
2. Start PowCntr Language32.
3. Select the desired language.

PowerControl32 will start in the required language next time it is started.

15 Printing function

15.1 Printing converter parameters

It is possible to print the entire settings of the frequency converter. Proceed as follows:

- Set the operating mode to “Offline” (**“Options”** ⇨ **“Operating mode PowerControl32”**).
- Select the menu **“File”** ⇨ **“Open parameter”**.
- Enter and confirm a data set in the next window.
- After selecting the data, a window will appear with the additional information saved. These cannot be changed when opening the data.
- Press the “continue...” button. The data have now been loaded.

Plant / remarks	
Date:	04.04.2005
Time:	15:50:09
Plant No.:	X234
Place:	Oedheim
Remarks:	Test

- Select the menu **“File”** ⇨ **“Print parameter”**. A print preview will appear automatically. The list of parameters will be printed by clicking the “Press” button.

15.2 Printing error memories

The contents of the error memory are contained in the converter parameters. The error memory can be printed as follows:

- Set the operating mode to “Off-line” (**“Options”** ⇨ **“Operating mode PowerControl32”**).
- Select the menu **“File”** ⇨ **“Open parameter”**.
- Enter and confirm a data set in the next window.
- After selecting the data, a window will appear with the additional information saved. These cannot be changed when opening the data.
- Press the “continue...” button. The data have now been loaded.

Plant / remarks	
Date:	04.04.2005
Time:	15:50:09
Plant No.:	X234
Place:	Oedheim
Remarks:	Test

- Select the menu **“Display”** ⇨ **“error stack”**.
- Click the “Press” button in the error memory window. A print preview will appear automatically. The list of parameters will be printed by clicking the “Press” button.

15.3 Printing drive curves

- Set the operating mode to “Off-line” (“Options” ⇒ “Operating mode PowerControl32”).
- Open the drive curve window (“Display” ⇒ “Drive curve”).
- The last rides viewed online are listed in the right-hand window by date and time. Click the “Open drive curve” button.
- Select and confirm a data set.
- The opened drive curve and any additional text entered will be displayed.
- Click the “Press” button in the drive curve window. A print preview will appear automatically. The respective section of the drive curve displayed on the screen will be printed by clicking the “Press” button. The printing function is also available in the zoom window by clicking the “Press” button.

16 Data from USB-Stick

There is a possibility to record travel curves from the VVVF on a USB stick and save parameter sets (USB host option PCB necessarily). These travel curves also can be displayed and saved with the PowerControl32 software. Opening parameter files from the stick also is possible.

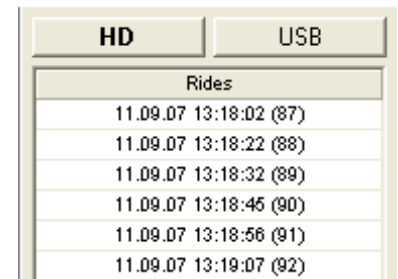
16.1 Open VVVF parameters from USB stick

Opening VVVF parameter sets from USB stick is exactly the same like from hard disc. You only have to select the appropriate drive of the stick. The extension of the parameter files is "PPP".

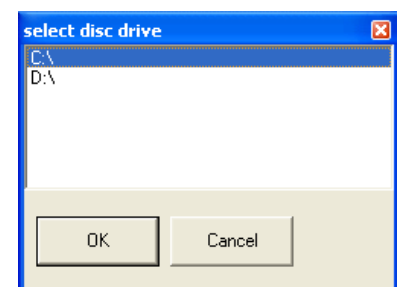
16.2 Open travel curve from USB stick

The selection takes place via clicking one of the upper buttons:

- Button "HD": last stored travel curves of the hard disc are listed. This also is the standard attitude when open the travel curve window.
 Button "USB": travel curves of the USB stick are listed



If several USB sticks with RST drive curve data are present, then a selection window of the drive discs appears. Select the suitable drive disc and confirm with "OK".



The file name is assigned automatically by the USB host with a sequential numbering. On the right side of the file name in the travels listing the travel counter is displayed. Thereby a direct allocation to error registrations can take place in the error memory.

The USB host option PCB stores the travel curve data in principle in the folder "RST_DATA.USB". **The name of the folder may not be renamed and must be located in the main path.**

If the data are copied on the hard disk, then the complete folder must be copied in the main folder, e.g.:

C: \ RST_DATA.USB

17 **Online help**

A browser will be opened that is linked in Windows with HTML data sets. Help can therefore only be displayed if a corresponding browser (e.g. Internet Explorer, Netscape Navigator, etc.) is installed on the PC/laptop.

There are no help buttons in most windows with adjustment and display parameters. When clicking this, the respective help to the window just opened will open automatically.

Via the menu "?", ⇒ "Help" a list of available help themes in the menu can be accessed. The individual help themes can also be displayed by clicking the respective links.

18 **Communication problems**

Communication problems between laptop/PC and converter are shown via a **TIMEOUT** display on the screen.

In this case, check and re-establish the series link between the computer and the converter or the converter and the modem.