

DigiControl Model 9310

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Note:

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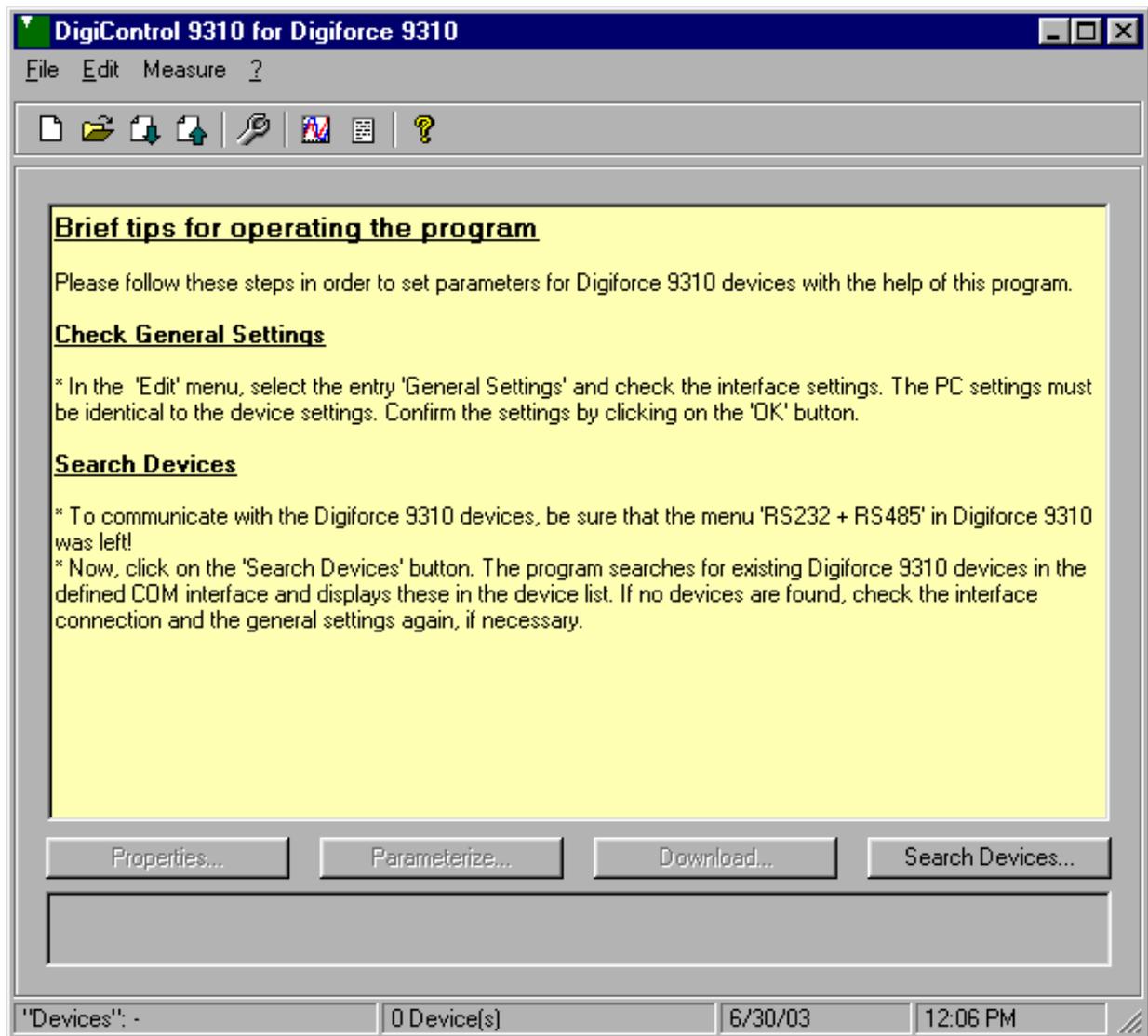
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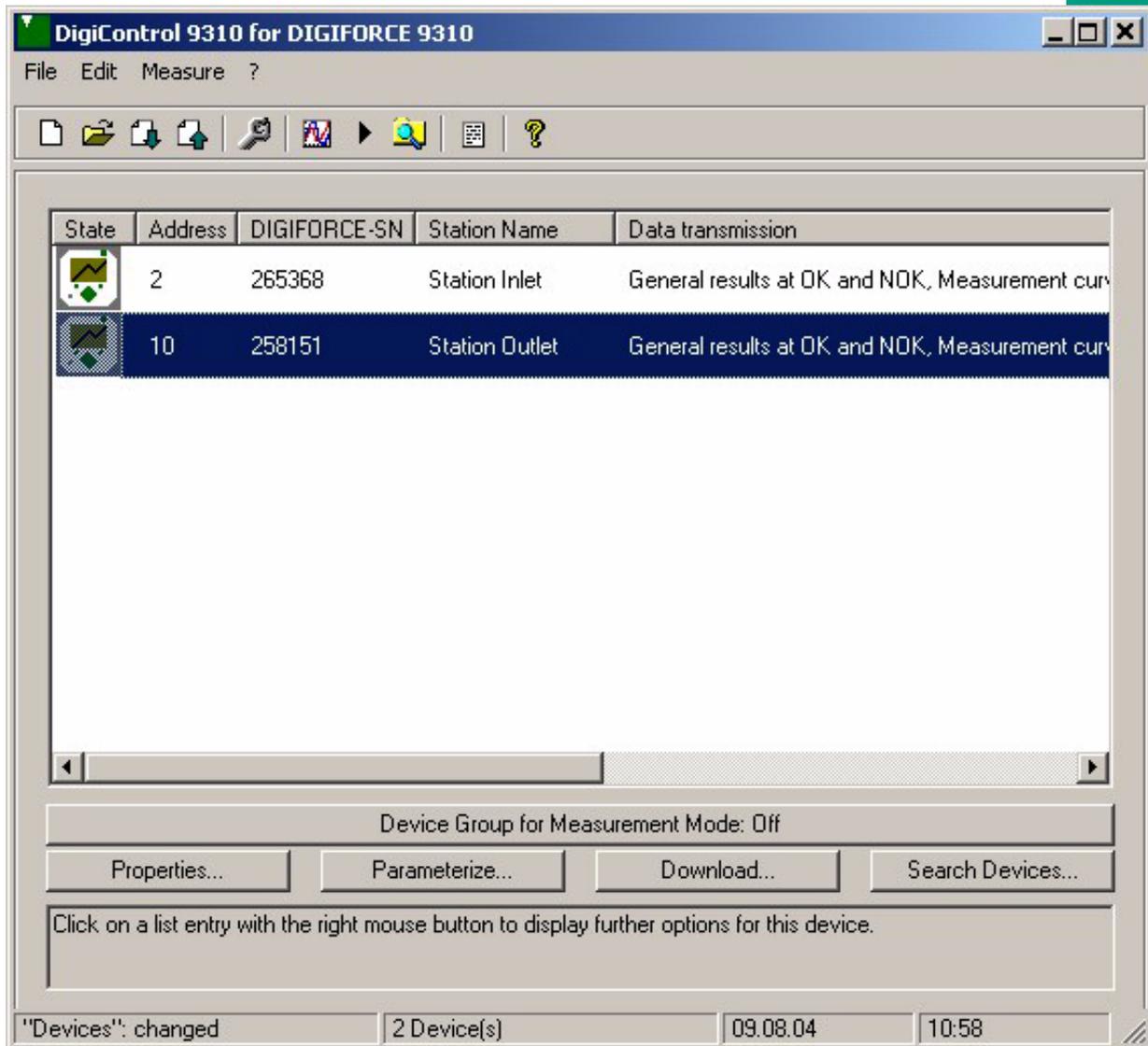
Device List



A DIGIFORCE 9310 device is identified as either a device or station.

The device list is only available after a Device Search has been carried out and DIGIFORCE 9310 have been found.

If you have connected several devices to your PC via a RS 485 converter, several stations will be listed in the device list following a device search.



You need to select the station with which you would like to work before executing any type of action. The corresponding station name or serial number will appear in the title bar of most dialog windows.



File Checksum (Digital Signature)

A File Checksum (Digital Signature) is a checksum of all parameters and data of the related file. This Digital Signature will be integrated in the created Backup-, Protocol or Statistic file and it gives information about a possible manipulation of the file after creation.

A file classified as manipulated if the parameter in the file were changed from hand and then saved.

Please note that a Digital Signature is present from the DigiControl version 2003.1.0.

Help version

This Windows online help documentation refers to the **DigiControl 9310** Version **V2004.5.0**.

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Creator: Thomas Meder / 03.12.2004

Contact manufacturer

If you have any questions regarding the *DigiControl 9310* or *DIGIFORCE 9310*, you can contact the manufacturer at the following address:



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Known Problems

Formatting / Calculating Error

In some operating systems the comma isn't supported by DigiControl 9310 as a Decimal Symbol. In these cases you get a message from DigiControl 9310 and you must change the Decimal Symbol from comma into point. Otherwise DigiControl 9310 does not work error free!

Graphic Representation Problem

The Font Size settings of the operating system must be adjustet to 'Small Fonts' or 'Large Fonts'. Please do not adjust a 'user-defined' or 'Other' Font Size otherwise some representation problems could appear.

In these cases you get a message from DigiControl 9310.

Problems with print-out of reports or protocols

For the print-out of all protocols and reports you need read/write access inside of the DigiControl 9310 installation directory. Please contact your system administrator if necessary.

Communication with DIGIFORCE 9310

There are two possibilities to communicate with the serial interface: RS 232 (connector at the front side of DIGIFORCE 9310) and RS 485 **Full Duplex** (rear side of DIGIFORCE 9310).

If you have some problems with the communication please read the FAQ.



Frequently Asked Questions (FAQ)

- **How can I copy measurement programs?**
Refer to the instructions on program copying.
- **Can I install and start multiple instances of the DigiControl 9310 on the same computer?**
The DigiControl 9310 can only be installed and run once on any computer.
- **Is the DigiControl 9310 compatible with older and newer DIGIFORCE 9310 devices / versions?**
DigiControl 9310 should be compatible to all device versions of DIGIFORCE 9310.
But if the DIGIFORCE 9310 software is newer than the DigiControl 9310 software and some new features were unknown, you must perform a DigiControl 9310 software update.
If you have some other problems please refer to our software support: Software@burster.de.
- **Why does DigiControl found no devices with the device search?**
 - Check if the interface cable is OK.
 - The stereo jack for the RS 232 connector at the front side is not a usually 3,5 mm stereo audio jack but it is a special. **Therefore you should use the original burster interface cable set!**
 - Eventually test all used wires of the interface cable.
 - Check if the interface settings of DigiControl and DIGIFORCE are identical.
 - Please make sure that you left the menu "RS232 + RS485" in the DIGIFORCE 9310 if you start to communicate with the device because a change of the interface settings is not active.
 - Is the selected Interface port (COM) installed and configured in the System Control of the PC?
 - *Is the selected Interface port (COM) already used by an other driver or device?*
In much cases synchronisation manager of PDA's or organizers are installed and active in the background!
 - Notes for the use of the RS 485 interface you can find here.
- **DigiControl 9310 should be compatible to all device versions of DIGIFORCE 9310.**

Find Devices

In order to use DigiControl 9310 online to work with DIGIFORCE 9310 devices, you first need to find and specify the devices. The interface (COM1 to COM4) that you have set up will be searched for the devices.

For this reason it is essential to pay attention to the interface default settings!

Please note that the existing device list is deleted during each device search. As a result, the new settings can only be adopted after the program has been exited!

In addition, please be sure that you have not activated the menu "RS232 + RS485" on the DIGIFORCE 9310 before starting the device search. Otherwise, the device settings will not yet be activated.

There are various options for searching the interface for devices:

Simple Device Search

In order to search for devices on the basis of interface parameters in DigiControl, simply click on the

Search Devices button



The progress bar indicates the status of your search.

If all existing devices appear in the list, you can **Cancel** the search before it is completed – the devices listed are not affected.

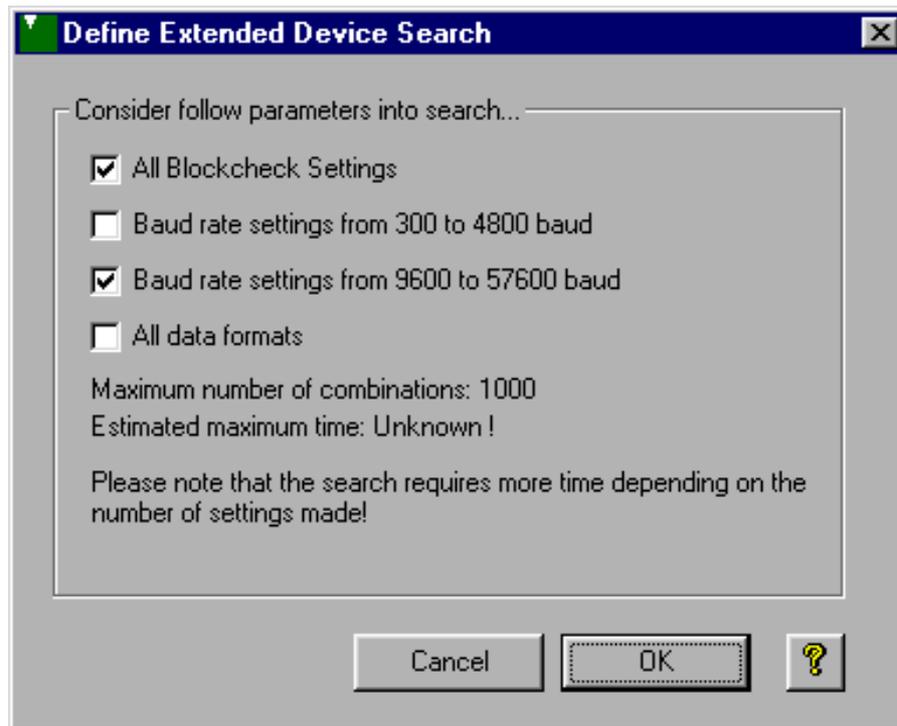
You will be informed of the number of devices found when the search is completed.



Extended Device Search

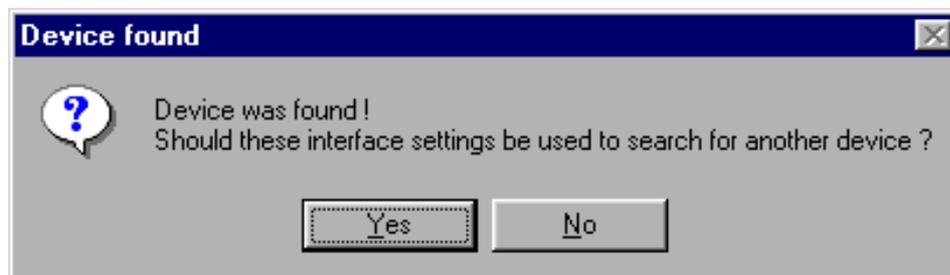
To start the extended device search, press the [ALT] button while clicking on the *Search Devices*

button . A selection dialog window appears in which you can define the extended device search before starting it:



It is possible to include the parameters **Baud rate settings**, **Blockcheck** On or Off and all **Data formats** to automatically search for the DIGIFORCE 9310.

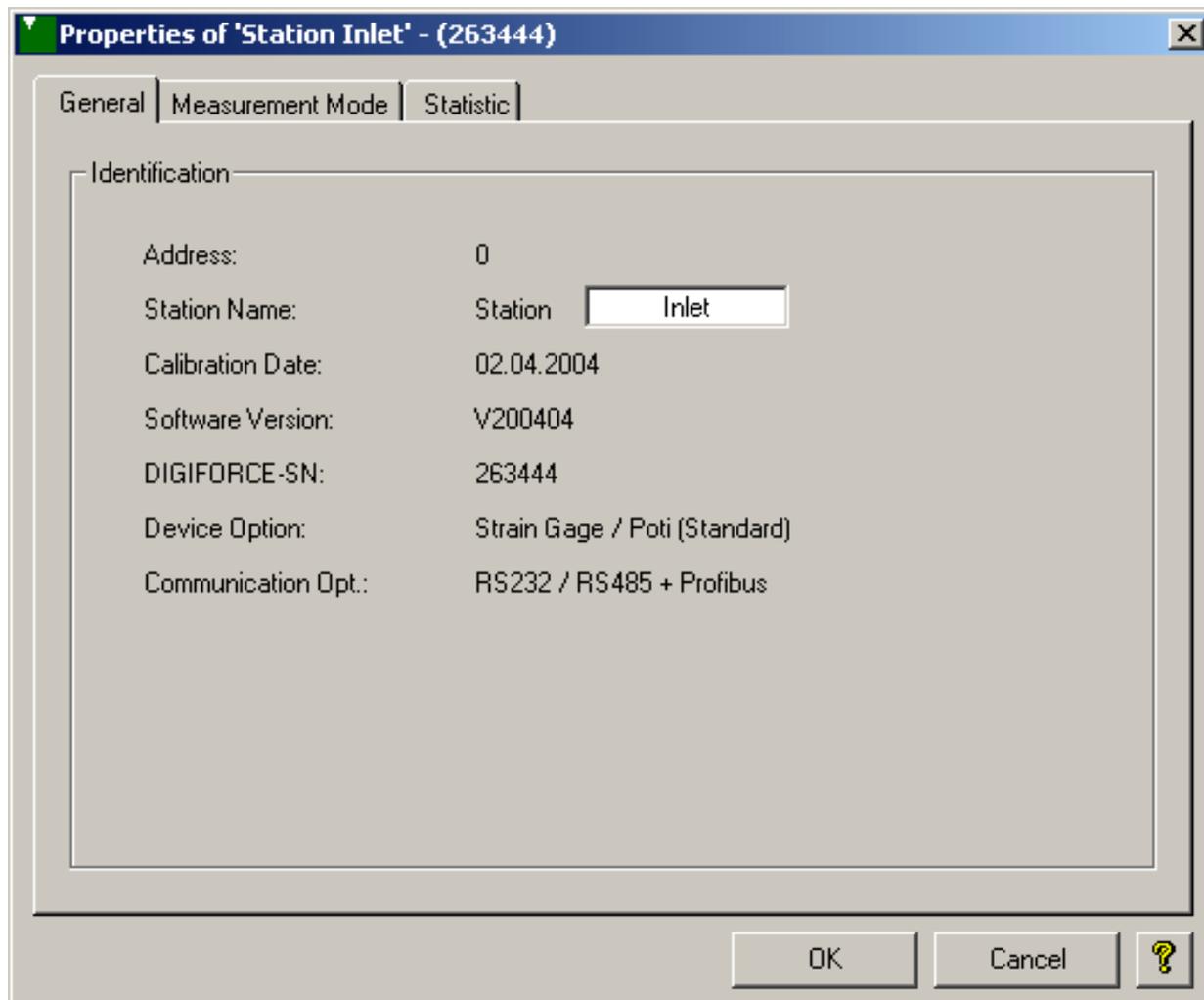
If a device is located, you have the option of searching for additional devices in this interface setting. To do this, confirm the following dialog window with **Yes** or click on **No** to select this as the only existing device:



Important note: Please note that there are up to 27,500 possibilities for the device search depending on the definition. As a result, the extended device search could take up to several days! Please limit the extended device search options as narrowly as possible.

Station Properties

[Double click a Station in the device list]



The station name, DIGIFORCE device serial number and DIGIFORCE 9310 software version (in parentheses) are displayed in the title bar of this dialog window.

General

Device-specific characteristics, such as the *Calibration Date*, *Software Version* and *Serial Number* of the DIGIFORCE 9310 are displayed in this dialog window.

In addition, you can change or adapt the name in the *Station Name* field to the format used for the DigiControl 9310. This Station Name is also copied in the DIGIFORCE 9310 device as the *Station Name*. The maximum length for the *Station Name* is 10 characters.

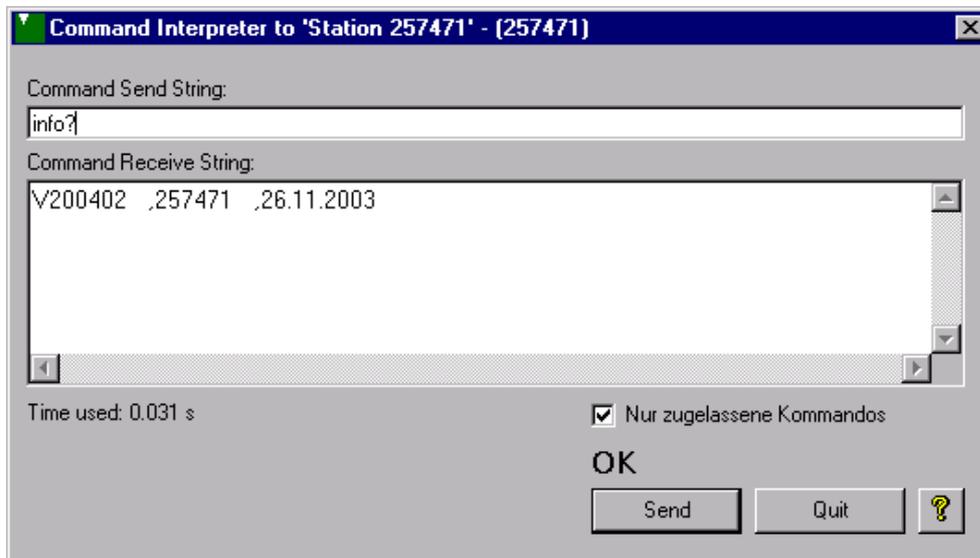
The *Address* cannot be changed. This is assigned individually in the device search.

Any changes to the Station Name will only be adopted if you click on the *OK* button – the *Cancel* button rejects any changes made in this dialog window!

Note: *If the plant calibration is not to be used in the DIGIFORCE 9310, the date in the Calibration Date field is highlighted in red and an additional note is displayed –DIGIFORCE 9310 should not be used in this condition!*

Command Interpreter

[Mark a Station in the device list -> Edit -> Command Interpreter]



This command interpreter makes it possible to send interface commands to the device as described in the DIGIFORCE 9310 manual.

This is practical if you create your own PC program and would like to test specific interface commands for functionality, for example.

In order to call up this dialog window, select a station from the device list. Now, follow the menu path: **'Edit' ->'Command Interpreter'**.

The station name and DIGIFORCE 9310 device serial number are displayed in the title bar of this dialog window.

With the option **Only accepted commands** you activate the DigiControl internal history table of all parameter commands to check the current command if it is valid.

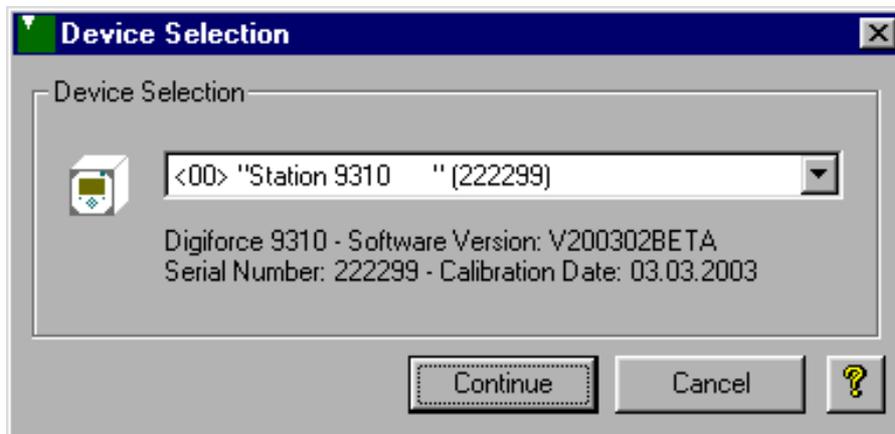
Now, for example, you can enter the command **INFO?** in the **Command Send String** field and click on the **Send** button. The device returns the current device information to the **Command Receive String** field.

Exit the dialog window by clicking on the **Quit** button.

Note: If the command string entered is invalid, contains invalid parameters or another error occurs, a message to this effect is displayed when you send the command string.



Device Selection



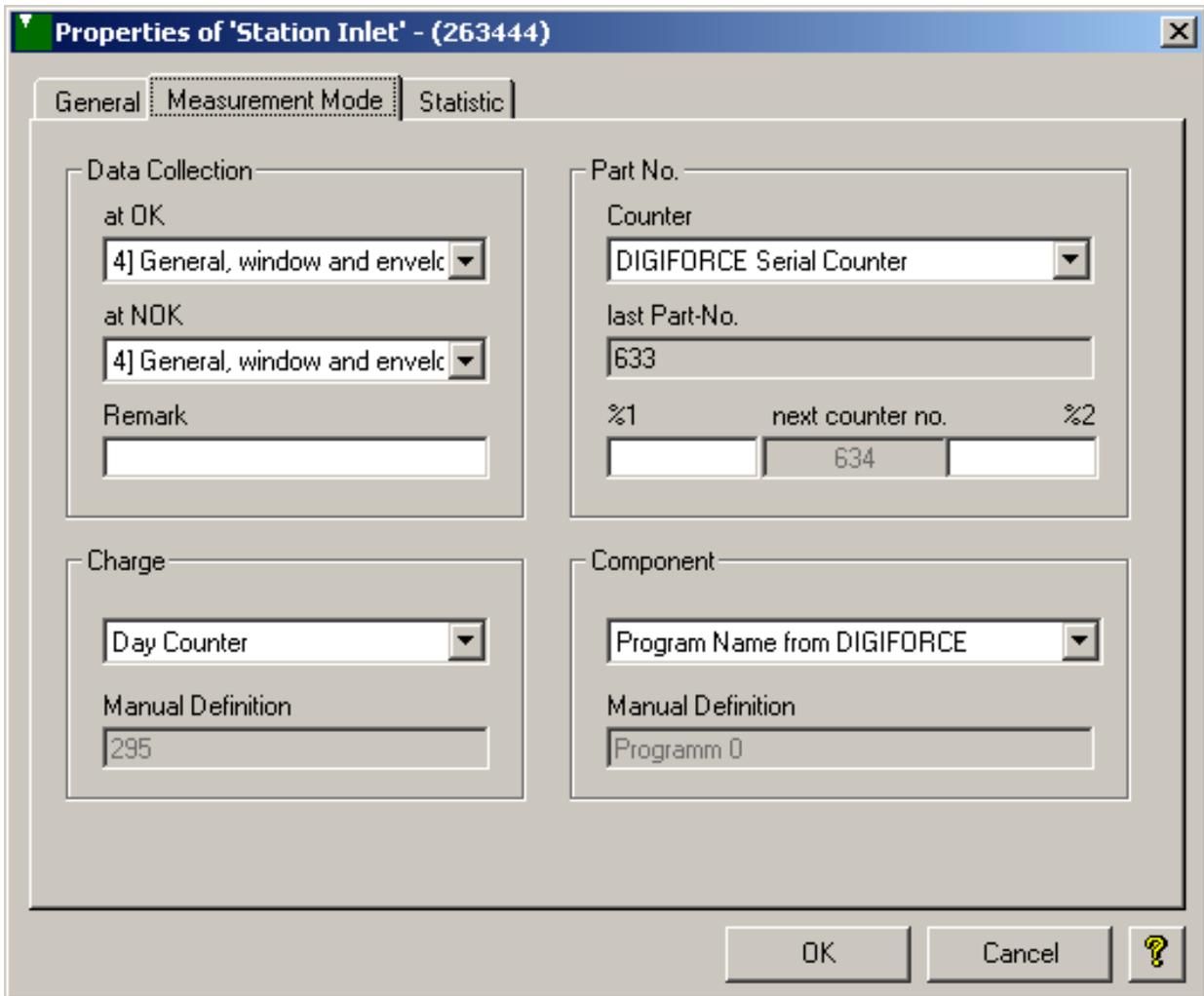
If device parameter processing was started offline from a backup parameter file or completely new and DIGIFORCE 9310 devices have already been entered as stations in the device list, you can select a station to transmit the parameters.

Please note that only the program or parameter currently processed is transmitted to the device. Existing device settings are erased in the process!

Select a device (if several devices are included in the list) and confirm your selection by clicking on the *Continue* button.

Measurement Mode

[Double click a Station in the device list -> Measurement Mode]



The screenshot shows a dialog box titled "Properties of 'Station Inlet' - (263444)" with three tabs: "General", "Measurement Mode" (selected), and "Statistic". The "Measurement Mode" tab contains the following fields:

- Data Collection:**
 - at OK: [4] General, window and envelc
 - at NOK: [4] General, window and envelc
 - Remark: [Empty text box]
- Part No.:**
 - Counter: DIGIFORCE Serial Counter
 - last Part-No.: 633
 - %1: [Empty text box]
 - next counter no.: 634
 - %2: [Empty text box]
- Charge:**
 - [Day Counter]
 - Manual Definition: 295
- Component:**
 - [Program Name from DIGIFORCE]
 - Manual Definition: Programm 0

At the bottom right, there are buttons for "OK", "Cancel", and a help icon (question mark).

Configure the properties for the measurement mode in this rubric.

Data Collection

Select what kind of data you really want to collect and transmit from DIGIFORCE – separately for evaluation result OK and NOK.

1) Only general results

With this settings only the general curve data and the common result will be transmitted.

2) General result and measurement curve

Transmission like 1], additional the measurement curve.

3) General, Window and Envelope results

Transmission like 1], however the settings and results of all active evaluation windows and the result of an active envelope (without envelope curve) will be transmitted.



4) General, Window and Envelope results; Measurement, Envelope and Trend curve

In this position additional to point 3) the measurment, an active envelope and trend curve will be transmitted. Certainly this uses the longest time for the data transmission.

***Important Note: Only transmitted measurement data can be processed at any time.
You should know this if you want analyse measurement data.***

Remark

Edit some Remark (max. 64 characters) which will be saved in each measurement protocol. This remark is visible at a Protocol printout.

Charge

You can select between a manual definition and an automatic, time based Charge identification.

Part-No.

The Part-No. exists of a counter id which is the DIGIFORCE counter or an other current counter. Optional an aphanumerical character block can be set to the fields %1 or %2 with a length of maximum 32 characters.

Last Part-No.

In this field you can see the last (spent) value of the part-No. which was used for the creation of a measurment protocol. You can edit this value by hand.

Next Counter No.

In this field the next value of the Part-No. which was used for the creation of the next measurement protocol will be showed. This value must be greather or equal than 0 and will be set to 1 if it is greather than 2147483647.

Component

You can select between program name of the current DIGIFORCE programm or a manual definition. However it is meaningfull to use an articulate component name to find and assign this component later.

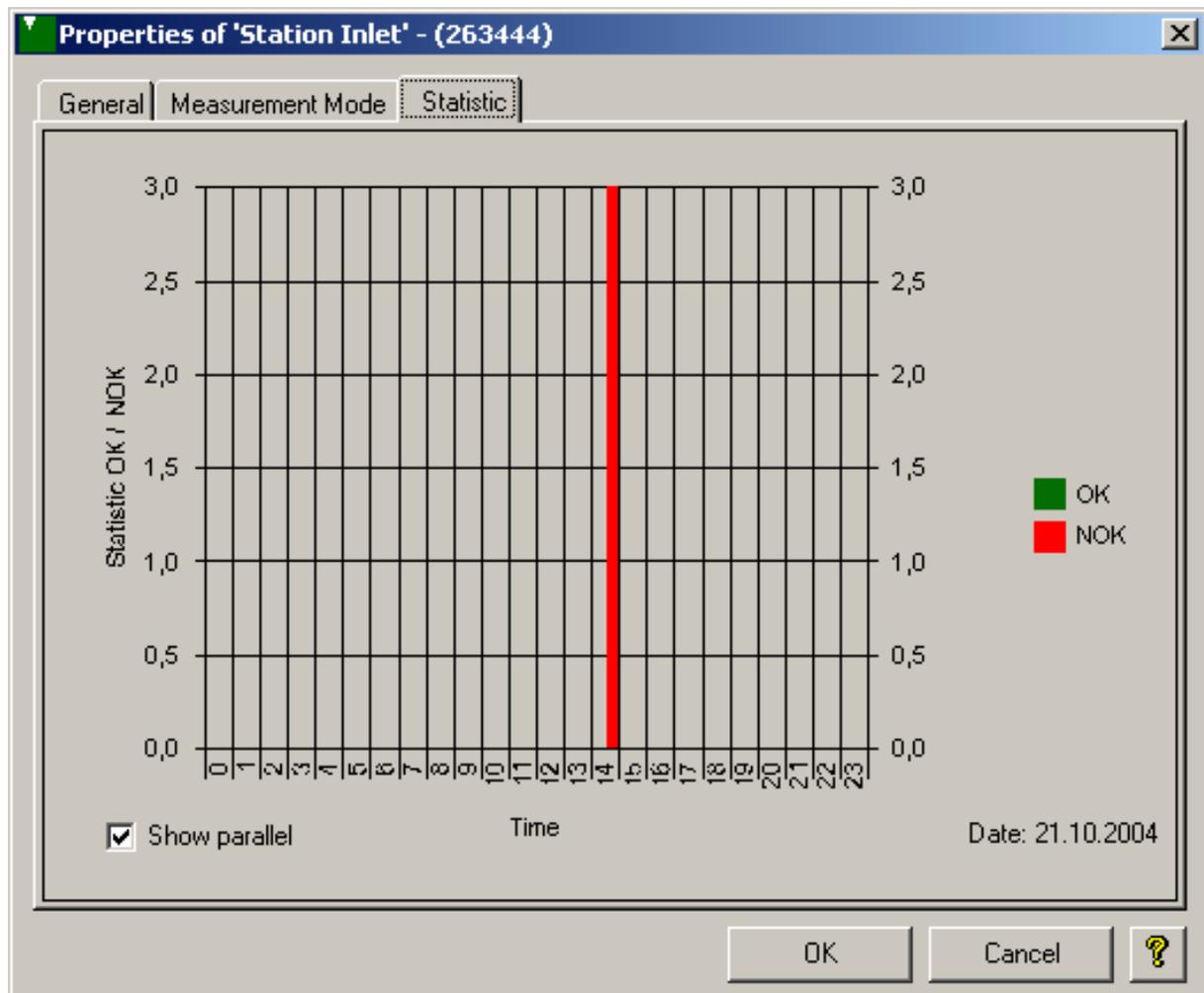
The maximum length of the manual component name is 32 characters.

Note: Active Device Group

If a device group is activated the properties Charge, Part-No. and Component Name refers from the device group for all devices.

Statistic

[Double click a Station in the device list -> Statistic]



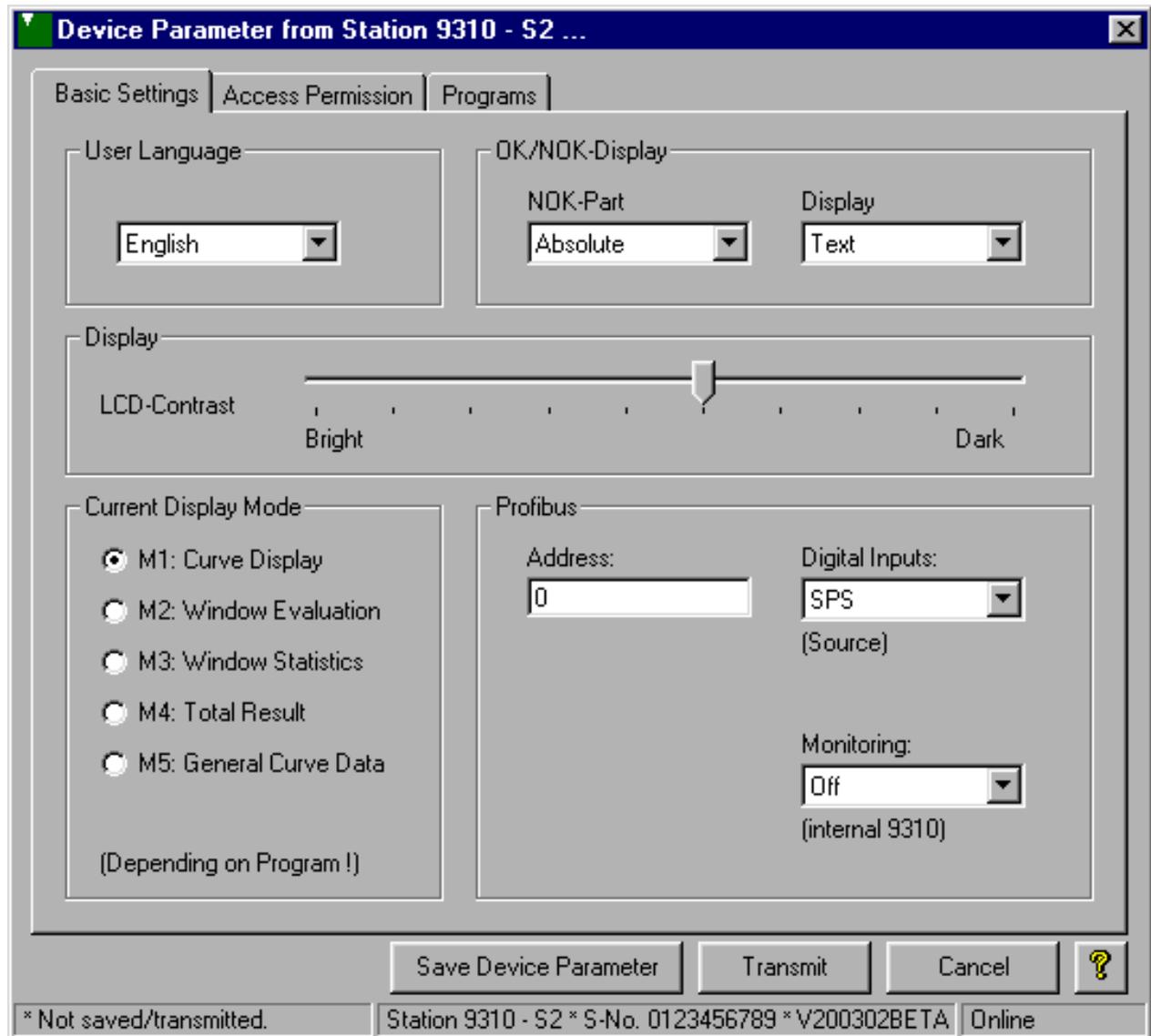
The OK / NOK Statistic for a complete day (24 hours) of the current selected device will be showed in the graphic.

At every new day the statistic begins from new if the measurement mode is active.

The presentation is optionally Parallel or Among each other.

Parameterize

[Parameterize (New, from File, online)]



You can create new parameterization files (File -> New), open them from a parameter file (backup) or read the parameters directly from the selected device online.

If you call up the Parameterize Dialog online the program names will be displayed at the program buttons with DIGIFORCE 9310 software version V200303 and higher.

You can switch between the following tab pages after calling up the Parameterize dialog window:

General Settings

The basic settings for the following parameters in DIGIFORCE 9310:

- User language
- OK/NOK display
- Display (LCD contrast)
- Current display mode
- Profibus settings (optional)

Access Permission

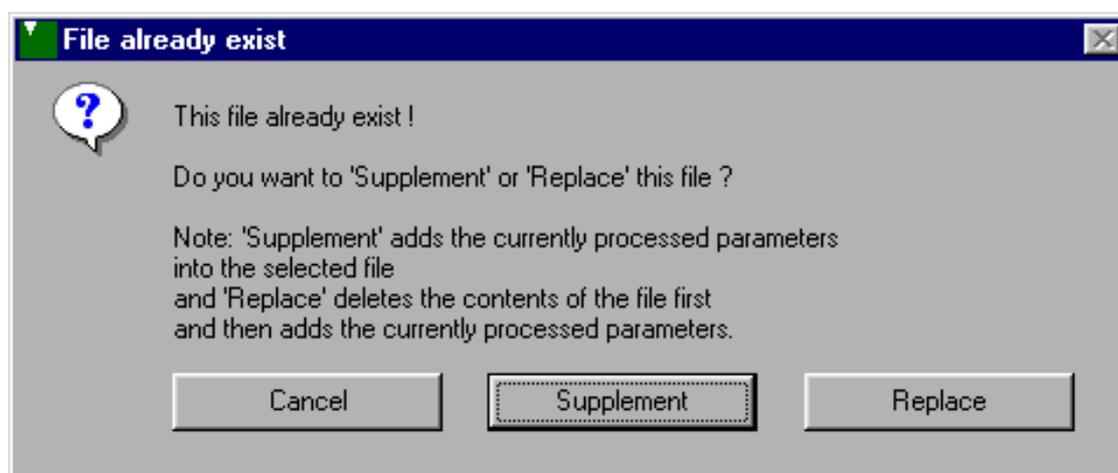
- Assignment of master and user passwords
- Protection activation
- Access levels for users

Programs

- Active program specification (0 –7)
- Selection of program to be processed (0 – 7)
- Copying of programs

Save Device Parameter

The data from all Parameterize dialog windows can be saved in a backup file. If the file already exists, you can add the parameters to the file 'Supplement' or 'Replace' the file completely (the file is deleted and a new one is created with these parameters):



Transmit

The data in all Parameterize dialog windows is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to first save the data, click on the **Save Device Parameter** or **Transmit** fields.

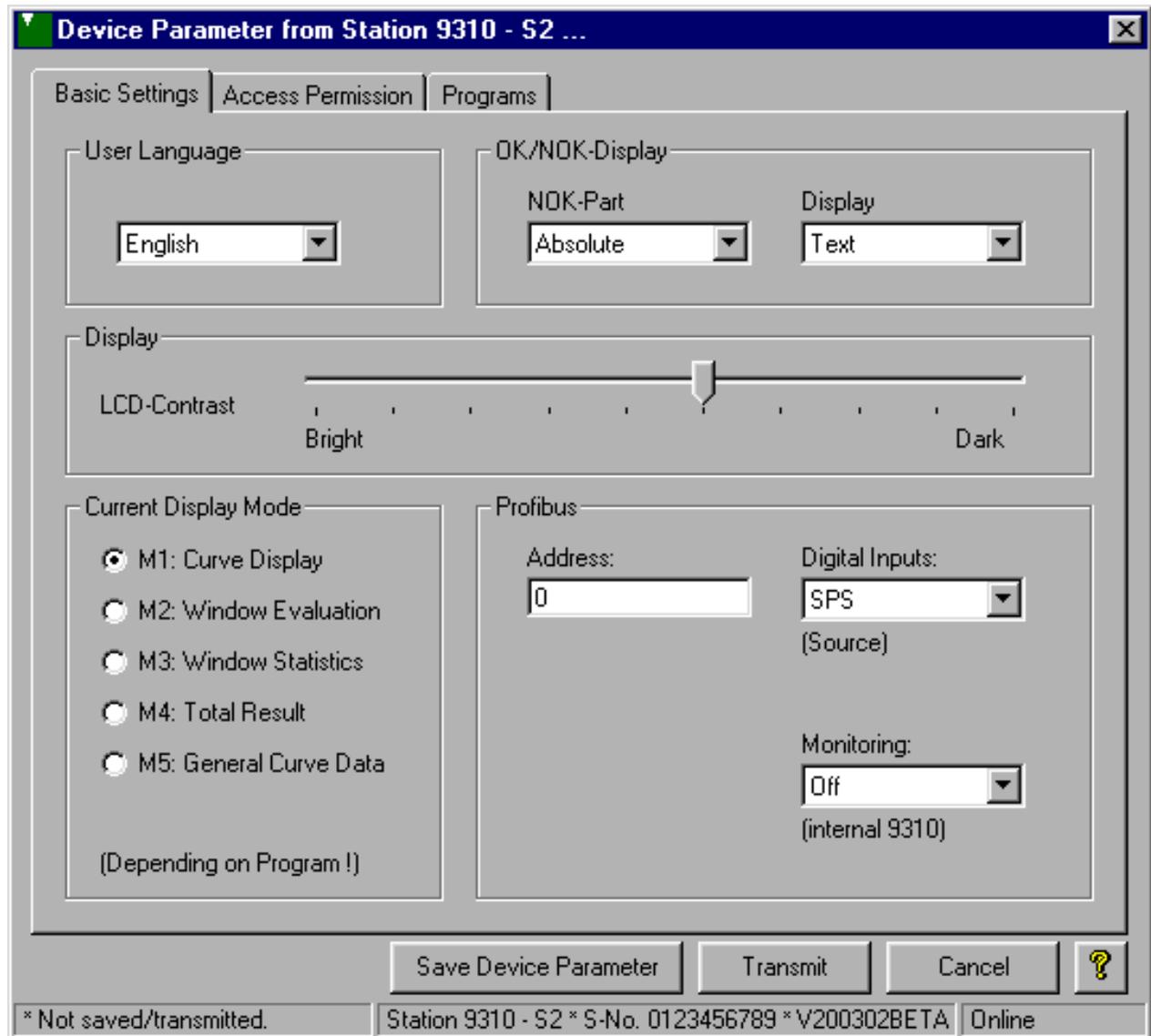
Note: As soon as you have changed at least one parameter in the **Parameterize dialog** the state was set to **not saved/transmitted**. You discard the changes if you cancel the Parameterize dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation. The **Parameterize dialog window** contains the following tab pages: **Basic Settings, Access Permission and Programs**.

The changes that you have made only become effective in the device if you click on the **Transmit** button in the **Parameterize dialog** or save the changes by clicking on the **Save Device Parameter** button.

Please note that the data of the **Parameterize dialog** (and not the program parameter of program 0 – 7!) is only saved or transmitted when these corresponding procedures are executed.

Basic Settings

[Parameterize (New, from File, online) -> Basic Settings]



Operation Language

Setting of the operation language used in the DIGIFORCE 9310.

OK/NOK Display

NOK Part: The NOK measurements can be displayed as a percentage value or absolute number of NOKs with respect to the overall measurements in the Total Result display mode.

Display: You can choose either a text (Text OK or NOK is displayed) or a "smiley face" for the Total Result evaluation display.

Display

LCD Contrast: Set the device display contrast using the variable bar. The input limits are between 0 (bright) and 9 (dark).

Current Display Mode

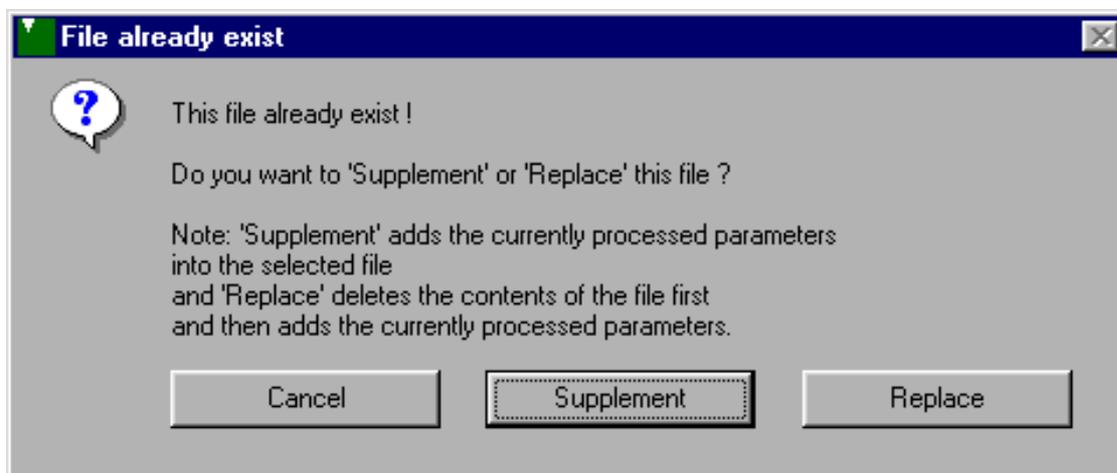
Specify which display mode is to be displayed when transmitting the settings. The requirement here is that the corresponding **Display Mode** is released (Programs – tab Presentation) in the **Active Program** (Parameterize Programs)

Profibus (optional)

Address: Adjust the profibus **address** (0-127) for the communication by profibus interface.
 Digital Inputs: Definition of the Digital Inputs. Choice between **SPS** or **Profibus**.
 Monitoring: Monitoring **On** or **Off**.

Save Device Parameter

The data from all Parameterize dialog windows can be saved in a backup file. If the file already exists, you can add the parameters to the file 'Supplement' or 'Replace' the file completely (the file is deleted and a new one is created with these parameters):



Transmit

The data in all Parameterize dialog windows is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to first save the data, click on the **Save Device Parameter** or **Transmit** fields.

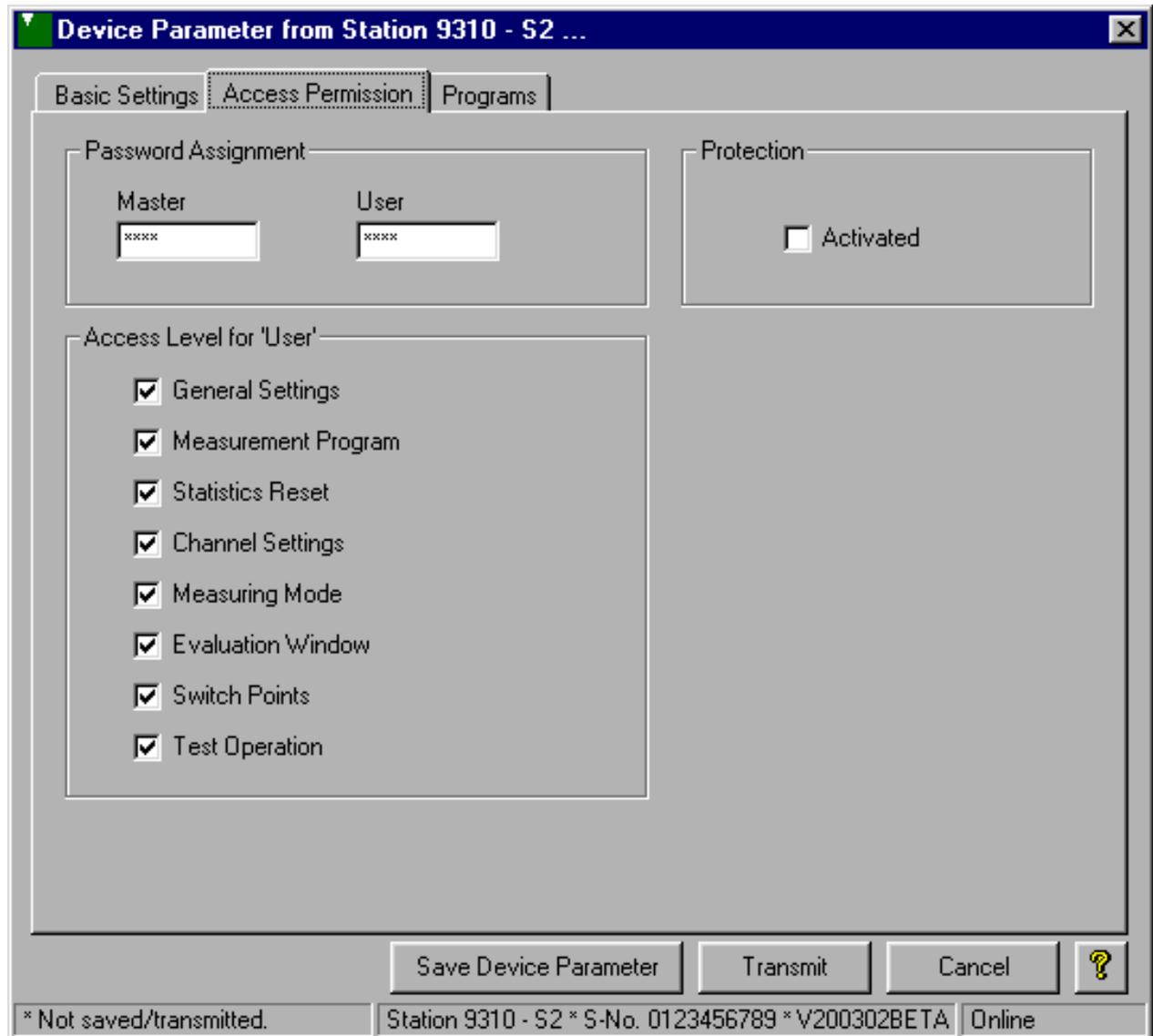
Note: As soon as you have changed at least one parameter in the **Parameterize dialog** the state was set to **not saved/transmitted**. You discard the changes if you cancel the Parameterize dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation). The **Parameterize dialog window** contains the following tab pages: **Basic Settings**, **Access Permission** and **Programs**.

The changes that you have made only become effective in the device if you click on the **Transmit** button in the **Parameterize dialog** or save the changes by clicking on the **Save Device Parameter** button.

Please note that the data of the Parameterize dialog (and not the program parameter of program 0 – 7!) is only **saved** or **transmitted** when these corresponding procedures are executed.

Access Permission

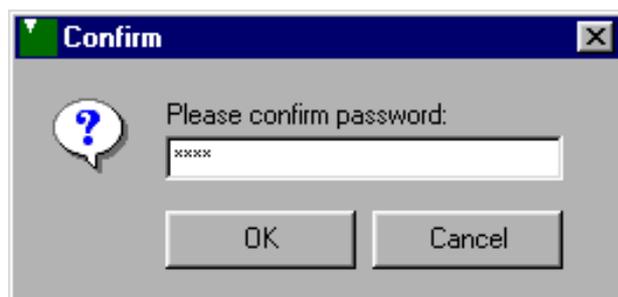
[Parameterize (New, from File, online) – Access Permission]



Password Assignment

You can assign the master and user passwords here. Only numeric values may be used when entering the password and the length is limited to 4 digits.

After you have entered a new password, confirm this by entering it again for security reasons.



The entered passwords are displayed with asterisks for security reasons. Please note that these are passwords for DIGIFORCE 9310 and are not the passwords for theDigiControl 9310 PC Software!

Protection

In order to activate the password protection in DIGIFORCE 9310, a checkmark must be placed in the option field *Activated*.

If you do not wish to have password, remove the checkmark from the *Activated* option field.

Access Level for ‘User‘

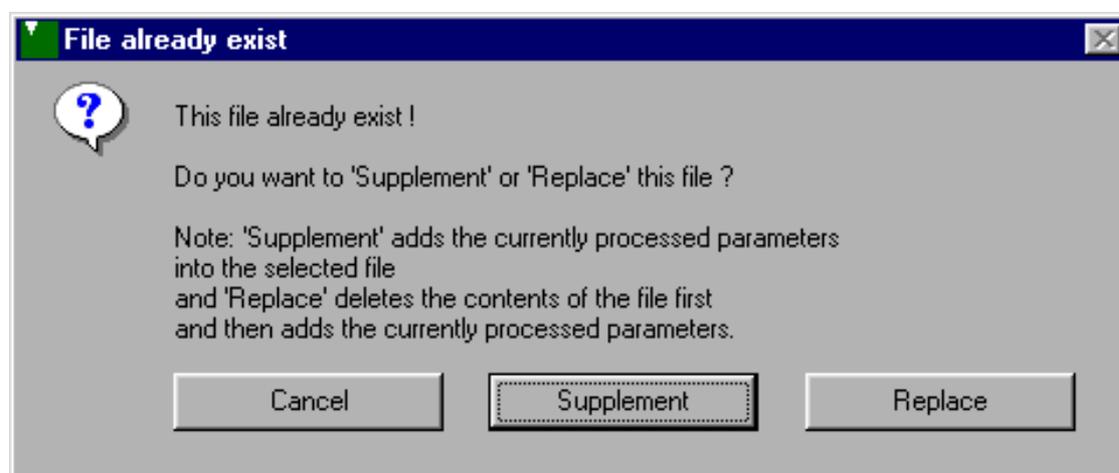
Use the option fields to specify the levels at which access *Protection* should be provided.

Please consult the DIGIFORCE 9310 for additional details regarding the individual access levels.

Please note that at least one access level needs to be activated!

Save Device Parameter

The data from all Parameterize dialog windows can be saved in a backup file. If the file already exists, you can add the parameters to the file ‘Supplement’ or ‘Replace’ the file completely (the file is deleted and a new one is created with these parameters):



Transmit

The data in all Parameterize dialog windows is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to first save the data, click on the *Save Device Parameter* or *Transmit* fields.

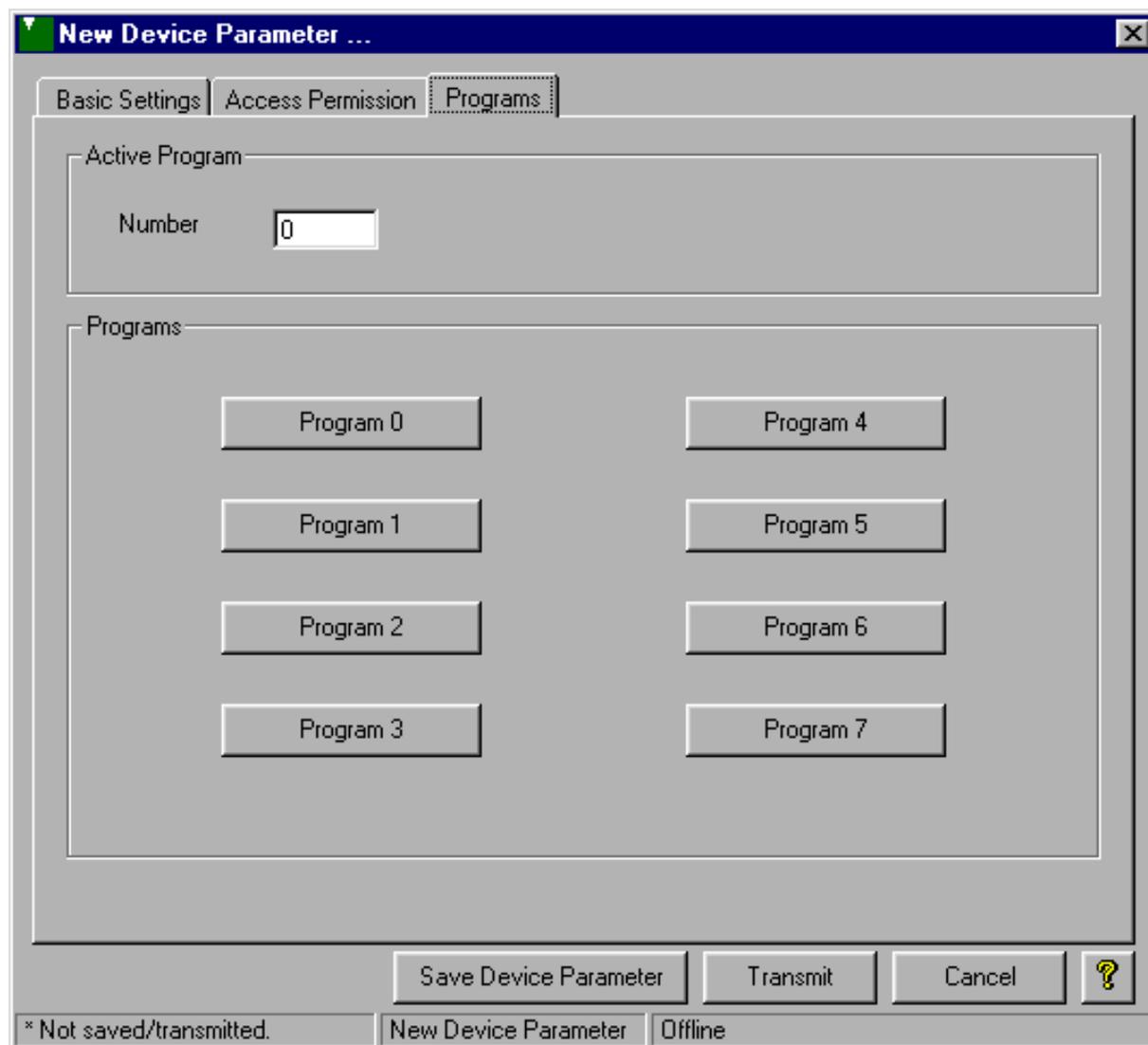
*Note: As soon as you have changed at least one parameter in the **Parameterize dialog** the state was set to **not saved/transmitted**. You discard the changes if you cancel the Parameterize dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation. The **Parameterize dialog window** contains the following tab pages: **Basic Settings**, **Access Permission** and **Programs**.*

*The changes that you have made only become effective in the device if you click on the **Transmit** button in the **Parameterize dialog** or save the changes by clicking on the **Save Device Parameter** button.*

*Please note that the data of the Parameterize dialog (and not the program parameter of program 0 – 7!) is only **saved** or **transmitted** when these corresponding procedures are executed.*

Programs

[Parameterize (New, from File, online) -> Programs]



Active Program

The displayed value corresponds to the measurement program active in DIGIFORCE 9310 when the dialog window is called up. If you would like to activate a different measurement program, enter the desired measurement program number (0 - 7) in this field.

Programs

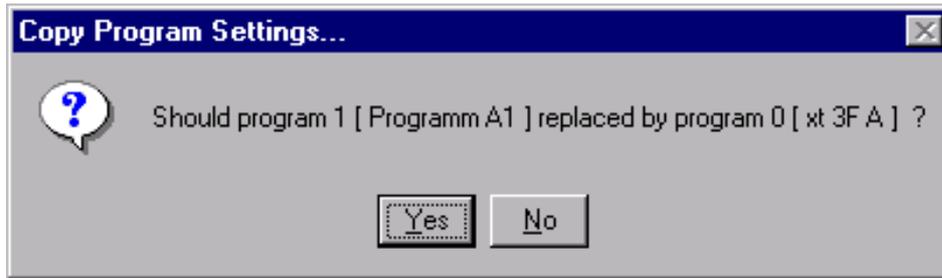
In order to process a measurement program, select the corresponding program number button.

If a DIGIFORCE 9310 is connected and you are working online with the device, the current program data for the selected program number are imported into the DigiControl 9310 and are displayed in the Program dialog window.

Copying programs

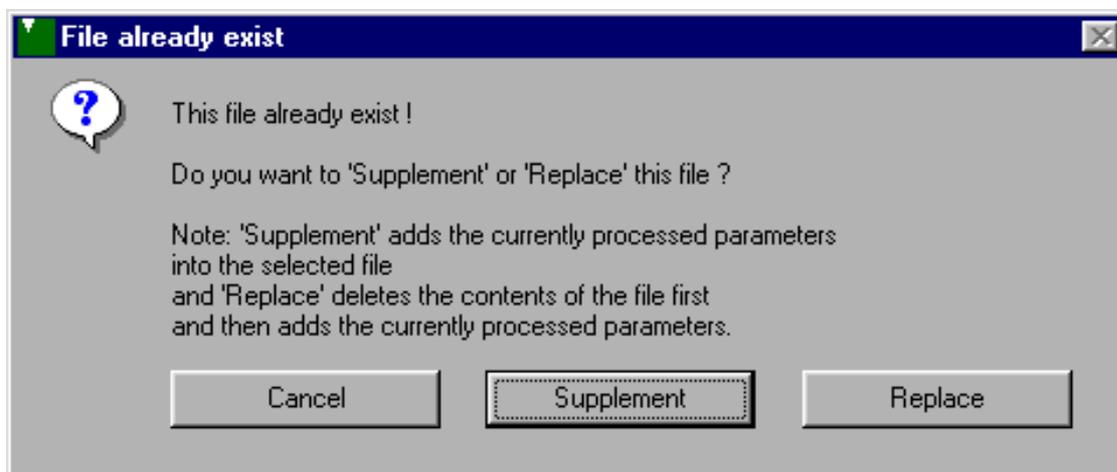
If you would like to copy measurement programs, click on the program button to be copied. Keep the mouse button pressed while you move the mouse cursor (Copy object) to the program button in which the program is to be copied.

This function is only available for online parameterization with a device.



Save Device Parameter

The data from all Parameterize dialog windows can be saved in a backup file. If the file already exists, you can add the parameters to the file 'Supplement' or 'Replace' the file completely (the file is deleted and a new one is created with these parameters):



Transmit

The data in all Parameterize dialog windows is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to first save the data, click on the **Save Device Parameter** or **Transmit** fields.

Note: As soon as you have changed at least one parameter in the **Parameterize dialog** the state was set to **not saved/transmitted**. You discard the changes if you cancel the Parameterize dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation. The **Parameterize dialog window** contains the following tab pages: **Basic Settings, Access Permission and Programs**.

The changes that you have made only become effective in the device if you click on the **Transmit** button in the **Parameterize dialog** or save the changes by clicking on the **Save Device Parameter** button.

Please note that the data of the Parameterize dialog (and not the program parameter of program 0 – 7!) is only **saved** or **transmitted** when these corresponding procedures are executed

Save Device Parameters

In order to save the changed parameters of a DIGIFORCE devices to a file, enter a unique name for the file in the File name field. The files are saved in text format and can therefore be viewed using a text editor.

The device parameters are always stored in the subdirectory (from DigiControl) **Param**. You can also select a different path to save the file by selecting **Change** in the same dialog and choosing the desired directory.

The file is stored in the selected directory when you click on the {Button Save.bmp} button.

Important notes: If you change device parameter from a Backup-File or save some device parameter into a Backup File, the Digital Signature of the Backup File possibly will be invalid!

Device Parameters

Basic Settings – Measurement Programs

Device parameters refer to the DIGIFORCE 9310 device settings.

These can be separated into the general settings, which are displayed in the Parameterize program dialog window, and the measurement programs (Program dialog window programs 0-7).

Both types of device parameters are created and processed separately. The programs are configured independently of each other (programs 0-7).

Download - Upload

All DIGIFORCE 9310 settings are saved to a backup file when downloading (DIGIFORCE 9310 -> Backup File).

When uploading, all settings are loaded from the backup file to the DIGIFORCE 9310.

Create New Device Parameters

You can create new device parameters offline by clicking on the  in the main dialog window or by following the menu path: **File** -> **New...**

When new device parameters are created, the general settings (which correspond to the settings for a new device) are loaded into each dialog window and are displayed.

You can **Change** and **Save** these parameters or **Transmit** them to the device.

Open Saved Device Parameters

You can load and process saved device parameters offline by clicking on the  in the main dialog window or by following the menu path: **File** -> **Open...**

When the file is opened, the parameters are loaded into the dialog windows and are displayed as they are saved in the file.

You can **Change** and **Save** these parameters or **Transmit** them to the device.

Parameterize

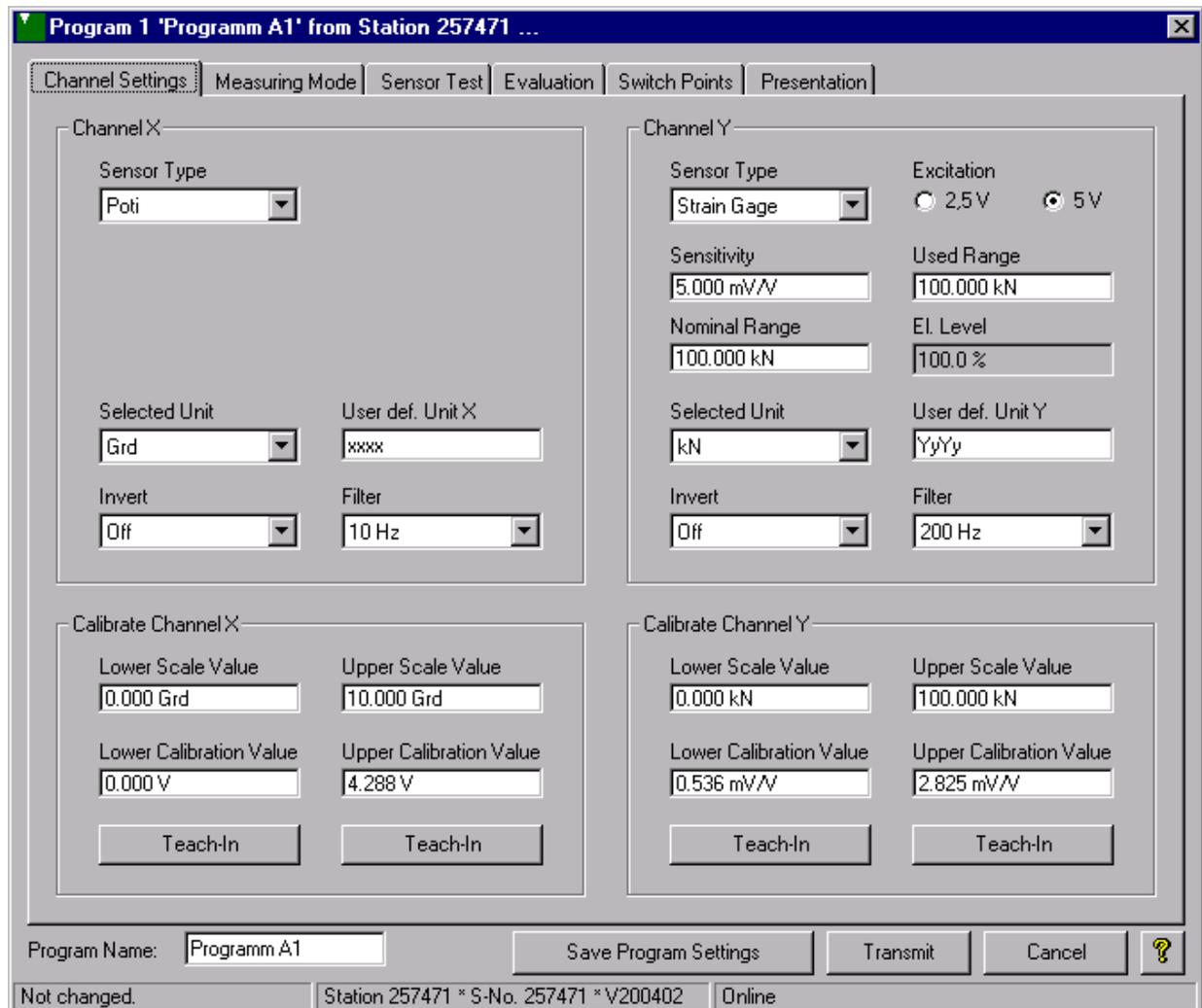
In order to process device parameters online, select the device in the device list and click on the **Parameterize** button. The basic parameters are then loaded.

You can access the parameters for the individual measurement programs in the Programs tab page.

You can **Change** and **Save** these parameters or **Transmit** them to the device.

Programs

[Parameterize Program (New, from File, online)]



You have the option of defining a maximum of 8 measurement programs (0-7) in DIGIFORCE 9310. Enter a name for the current measurement program in the Program Name field. You can only load, edit, save or transmit one measurement program at a time. The following tab pages are displayed in the Program dialog window:

Channel Settings

Setting and calibration of both measurement channels X and Y for the DIGIFORCE 9310.

Measuring Mode

Definition of measurement mode and accompanying parameters.

Sensor Test

Manual entry or teach-in of reference point and specification of tolerance values for both channels X and Y respectively.

Evaluation

Assignment of maximum 3 evaluation windows with their rating criteria and an envelope with Trend tracking curve.

Online measuring of current measurement curve with DIGIFORCE 9310 and optimisation of the evaluation window via graphic presentation.

In addition, you can save the measurement curve graphics, load them again offline without DIGIFORCE 9310 and change the evaluation window settings.

Switch Points

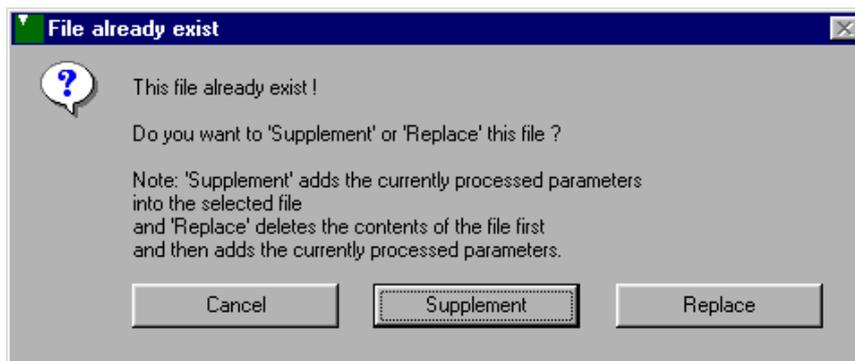
Setting of both switch points S1 and S2 as well as the accompanying parameters (channel, reference).

Presentation

Release of 5 program-specific measurement menus and Reduction of the Curve Values for the Production Measurement Mode (optional DigiControl 9310 version).

Save Device Parameter

The data in the measurement program currently being processed (the program number is displayed in the title bar) can be saved in a backup file. If the file already exists, you have the option of adding the data from this measurement program to the file ('supplement') or 'replace' the file (the file is deleted and a new one is created with this measurement program):



Transmit

The data in the measurement program currently being processed (the program number is displayed in the title bar) is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to save the data first, click on the **Save Device Parameter** or **Transmit** buttons.

Note: As soon as you have changed at least one parameter of the **Program dialog windows** (Channel Settings, Measuring Mode, Sensor Test, Evaluation Windows and Envelope, Switch Points or Presentation) the state was set to **not saved/transmitted**.

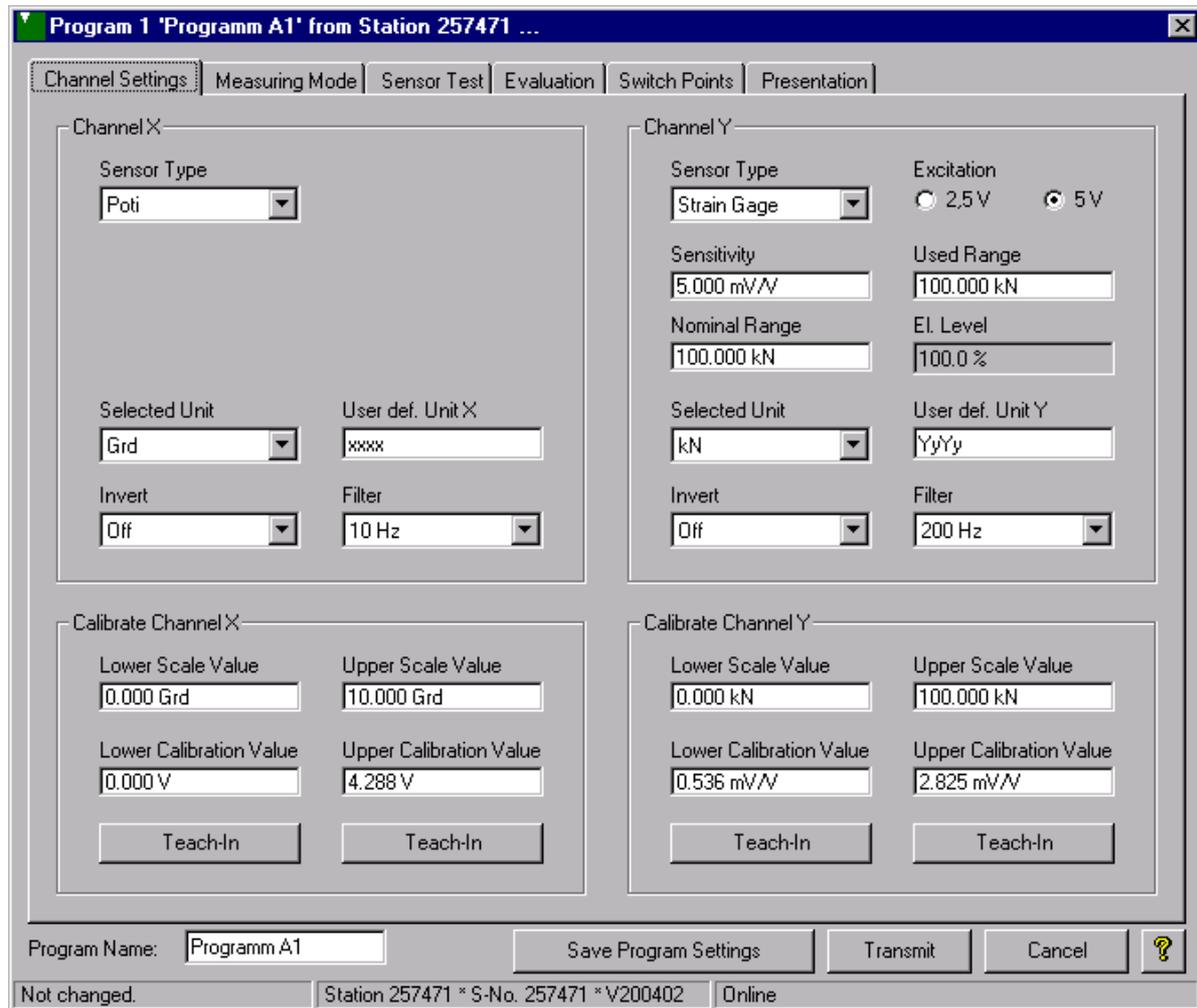
You discard the changes if you cancel the Program dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation).

The changes you have made with respect to the program currently being processed (0-7) are only transmitted to the device if you click on the **Transmit** button or save the changes using the **Save Device Parameter** button.

Please note that only the data in the Program dialog windows is saved or transmitted when these corresponding procedures are executed. These parameters are handled separately from the **Parameterize dialog window!**

Channel Settings X/Y

[Parameterize Program (New, from File, online) -> Channel Settings]



Sensor Type Channel X

Select the sensor type (*Standard Signal* or *Poti*) used for channel X.

Input Range Channel X

If *Standard Signal* was selected, you need to select the *Input Range* (5V or 10V) for channel X.

Sensor Type Channel Y

Select the sensor type (Standard Signal 5V or Strain Gage) used for channel Y.

Excitation Channel Y

If *Strain Gage* was selected, you need to set the sensor excitation for channel Y (2.5V or 5V).

Input Range Channel Y

For *Piezo* devices you can select a *Input Range* value (1 nC – 400 nC) for the Y channel.

El. Level

This *Piezo* device parameter is a combination of the *Upper Calibration Value* and the *Input Range*. This value is only a “pocket-calculator” function and on account of rounding differences it is possible that the value insignificant differ from the device value.

Selected Unit X/Y

You have the option of choosing between the specified units and the user-defined unit for each respective channel.

Enter the user-defined unit in the *User def. Unit X/Y* field. However, this entry is activated or selected in the *Selected Unit* field! This corresponds to the first entry in the list.

User def. Unit X/Y

Separate entry of an *user-defined unit* for each channel, which is then selected via the *Selected Unit X/Y* field.

Nominal Range Channel Y

If Strain Gage is entered, you can enter the *Nominal Range* of the sensor here. You can find this in the sensor data sheet. Please note that the *Nominal Range* must be greater than or equal to the *Used Range*!

Used Range Channel Y

If Strain Gage is entered, the used range of the sensor can be entered here. This is the sensor range that you actually use. Please note that the *End Value* must be greater than or equal to the *Used Range*!

Invert Channel X/Y

DIGIFORCE 9310 can only evaluate positive X and Y values. It may be the case that either the Y or X channel run in a negative direction for certain applications. The activation of the *Invert* function is only intended for such cases. This must be used with caution!

When the *Invert* function is activated, the measurement values of the respective channel are inverted.

Filter Channel X/Y

Definition of the device-internal software *Filter* in the DIGIFORCE 9310. Separate selection or deactivation of values listed between 5Hz and 400 Hz for each channel.

Lower/Upper Scale Value X/Y

Specification of the lower and upper *Scale Values* for the X and Y channels based on the sensor used. Please note that the *Lower Scale Value* must always be less than the *Upper Scale Value*!

Note: The *Lower Calibration value* is the sensor initial value at the *Lower Scale Value* – the *Upper Calibration Value* corresponds to the sensor initial value at the *Upper Scale Value*.

Lower / Upper Calibration Value X/Y

Entry of *Calibration Values* directly in the number fields if known. If you would like to carry out a teach-in directly online for the device, use the teach-in buttons displayed below the number fields.

Please note that the *Lower Calibration Value* must always be less than the *Upper Calibration Value*!

Note: The *Lower Calibration value* is the sensor initial value at the *Lower Scale Value* – the *Upper Calibration Value* corresponds to the sensor initial value at the *Upper Scale Value*.

Teach-In X/Y

If you set parameters for a DIGIFORCE 9310 online, you can use a teach-in for the Lower X, Upper X, Lower Y and Upper Y channels respectively.

The new teach-in values are displayed in the number fields after the teach-in has been carried out.

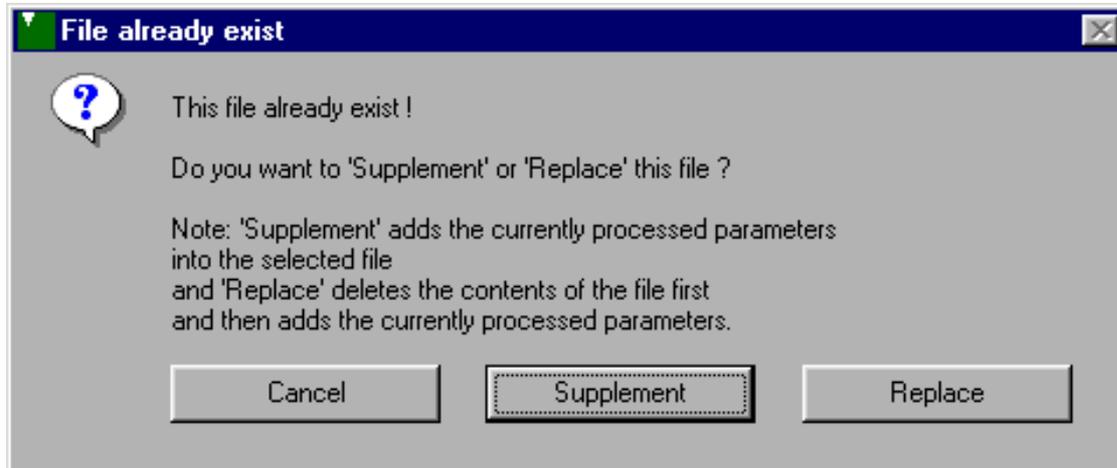
These values are first sent to the device after clicking on the *Transmit* button or are saved to a backup file after the *Save Device Parameter* button has been used.

Only Piezo version DIGIFORCE 9310: If you want to perform a Y-Channel Teach-In with a Piezo DIGIFORCE 9310 you must first teach the lower calibration value. By this step the charging amplifier of the DIGIFORCE 9310 will be discharged for a short time.

Only after the Teach-In of the lower calibration value the upper calibration value is possible to be taught.

Save Device Parameter

The data in the measurement program currently being processed (the program number is displayed in the title bar) can be saved in a backup file. If the file already exists, you have the option of adding the data from this measurement program to the file ('supplement') or 'replace' the file (the file is deleted and a new one is created with this measurement program):



Transmit

The data in the measurement program currently being processed (the program number is displayed in the title bar) is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to save the data first, click on the **Save Device Parameter** or **Transmit** buttons.

Note: As soon as you have changed at least one parameter of the **Program dialog windows** (Channel Settings, Measuring Mode, Sensor Test, Evaluation Windows and Envelope, Switch Points or Presentation) the state was set to **not saved/transmitted**.

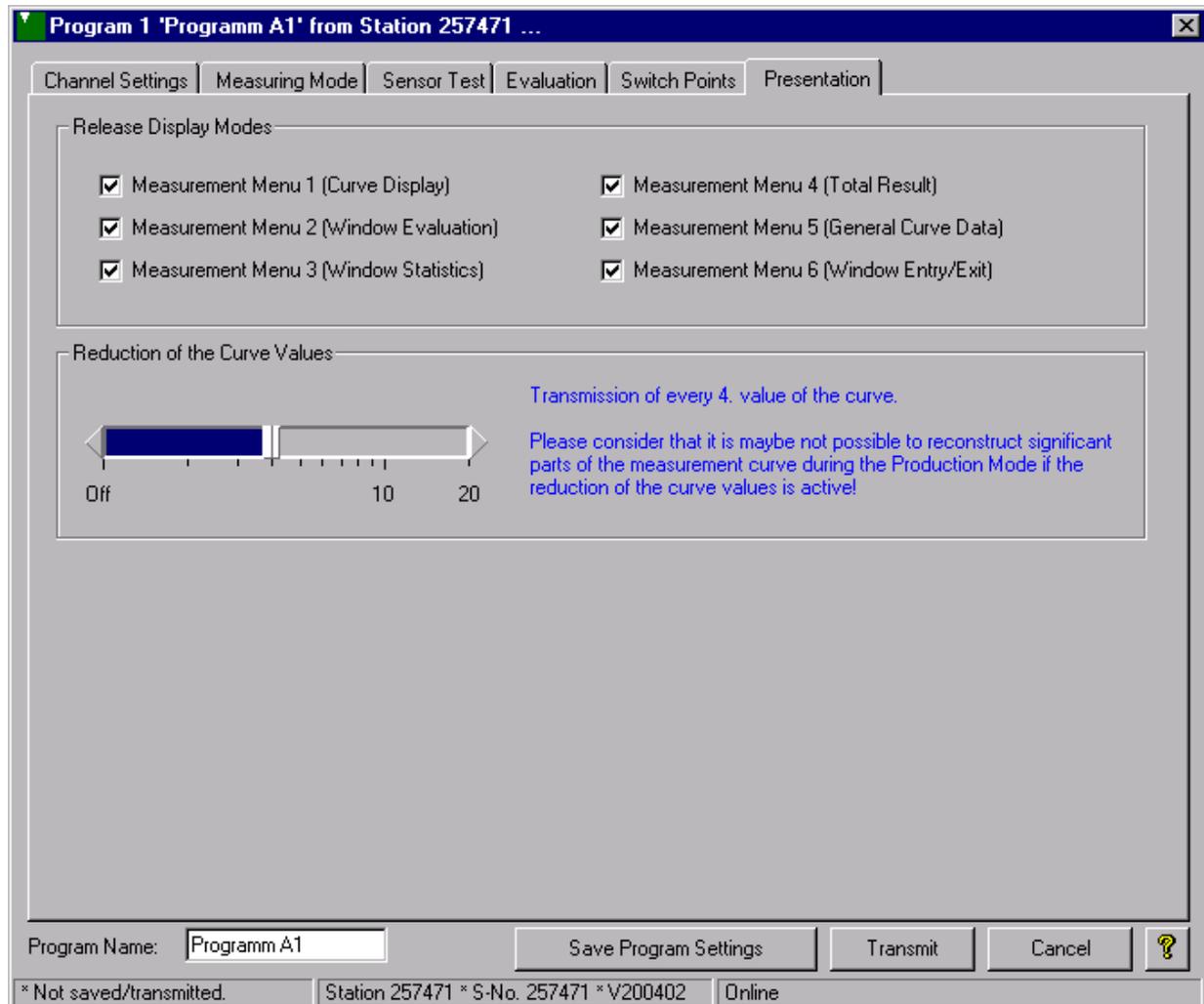
You discard the changes if you cancel the Program dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation).

The changes you have made with respect to the program currently being processed (0-7) are only transmitted to the device if you click on the **Transmit** button or save the changes using the **Save Device Parameter** button.

Please note that only the data in the Program dialog windows is saved or transmitted when these corresponding procedures are executed. These parameters are handled separately from the **Parameterize dialog window!**

Presentation

[Parameterize Program (New, from File, online) -> Presentation]



Release Display Modes

You can grant a release of *Display Modes* for specific menus to allow only a limit number of *Display Modes* to be selected from on the DIGIFORCE 9310. You can effect this release using the corresponding option fields. If a checkmark is displayed, the corresponding mode is activated and can be displayed.

Note: Please note that at least one *Display Mode* must be activated. Otherwise Menu 4 (Total Result) was released!

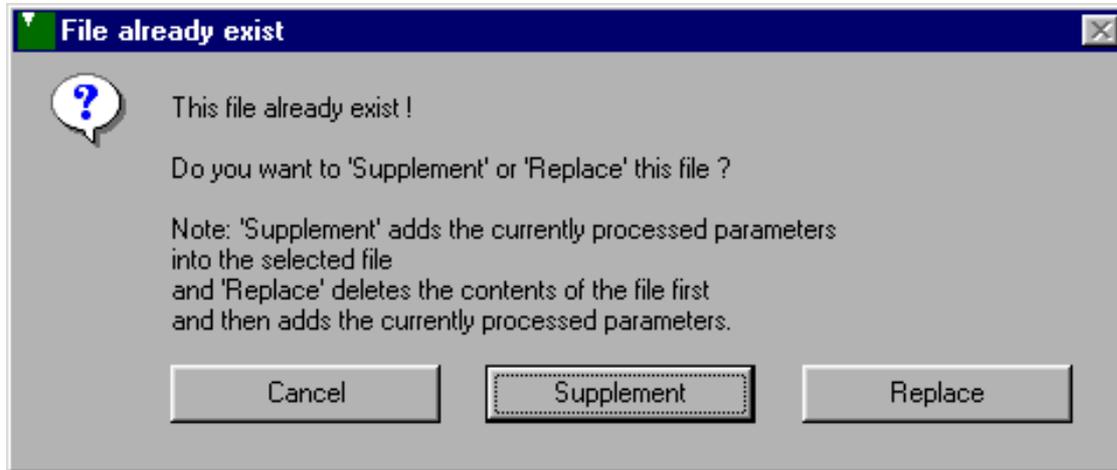
Reduction of the Curve Values

With help of this controller you can enforce a reduction of the curve values in the measurement production mode (as DigiControl 9310-P100). If this function is active only every X-th value pair of the measurement curve was transmitted from the device to DigiControl. Thus the transmission time of the measurement could be optimized for a faster production cycle.

But please note that it is not possible may be to show significant parts of the curve (like runaways or peaks)!

Save Device Parameter

The data in the measurement program currently being processed (the program number is displayed in the title bar) can be saved in a backup file. If the file already exists, you have the option of adding the data from this measurement program to the file ('supplement') or 'replace' the file (the file is deleted and a new one is created with this measurement program):



Transmit

The data in the measurement program currently being processed (the program number is displayed in the title bar) is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to save the data first, click on the **Save Device Parameter** or **Transmit** buttons.

Note: As soon as you have changed at least one parameter of the **Program dialog windows** (Channel Settings, Measuring Mode, Sensor Test, Evaluation Windows and Envelope, Switch Points or Presentation) the state was set to **not saved/transmitted**.

You discard the changes if you cancel the Program dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation).

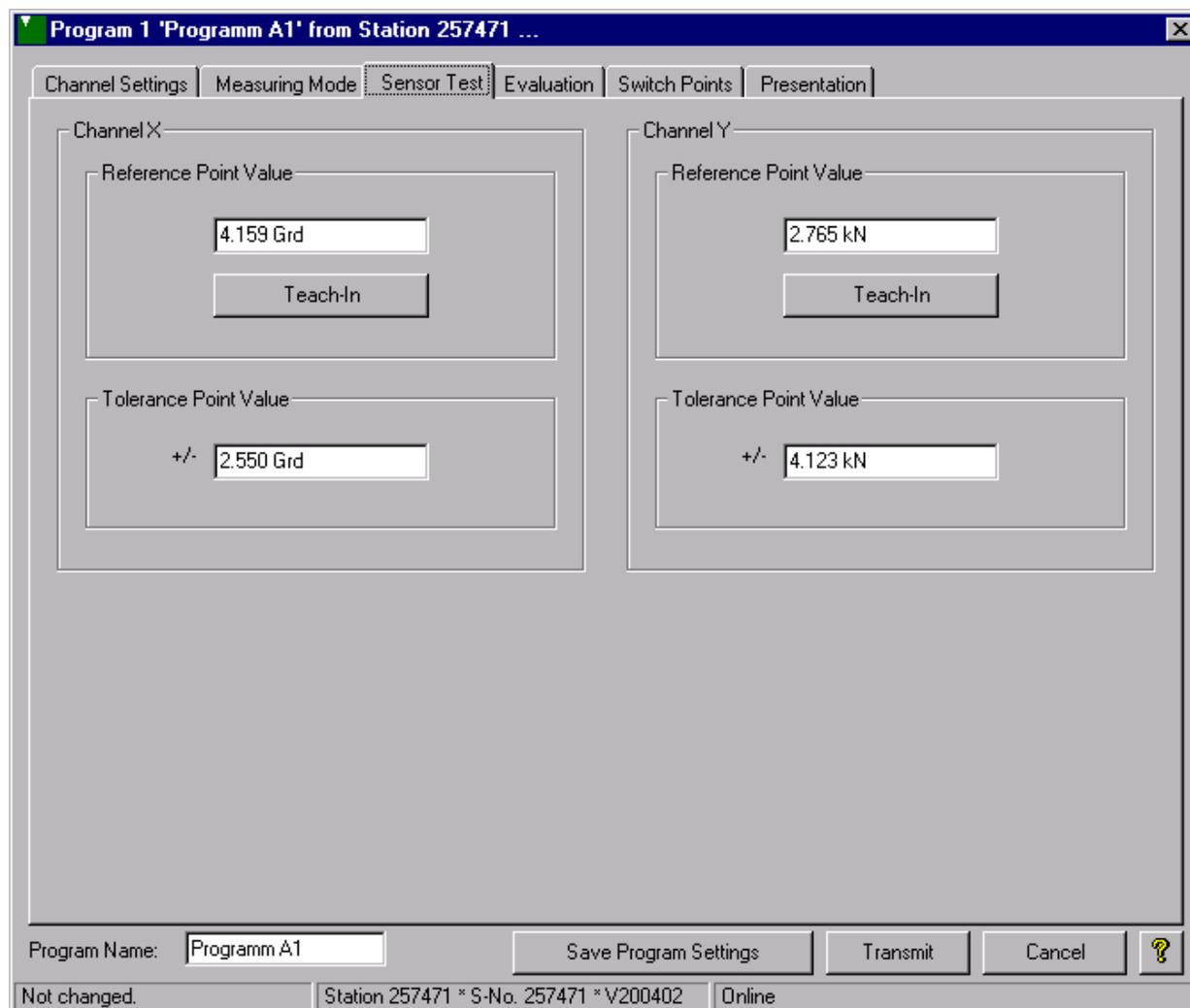
The changes you have made with respect to the program currently being processed (0-7) are only transmitted to the device if you click on the **Transmit** button or save the changes using the **Save Device Parameter** button.

Please note that only the data in the Program dialog windows is saved or transmitted when these corresponding procedures are executed. These parameters are handled separately from the **Parameterize dialog window!**

Sensor Test

[Parameterize Program (New, from File, online) -> Sensortest]

This function is available in DIGICONTROL 9310 firmware versions 200208 and higher!



You have the option of entering the **Reference Point** as well as the **Tolerance Point** values for channels X and Y respectively.

You can also set the **Reference Point** in the device using the teach-in function online.

Reference Point Value

Enter value in the number field.

Teach-In

Teach-In of the **Reference Point Value** online with the DIGIFORCE 9310 device for channels X and Y respectively.

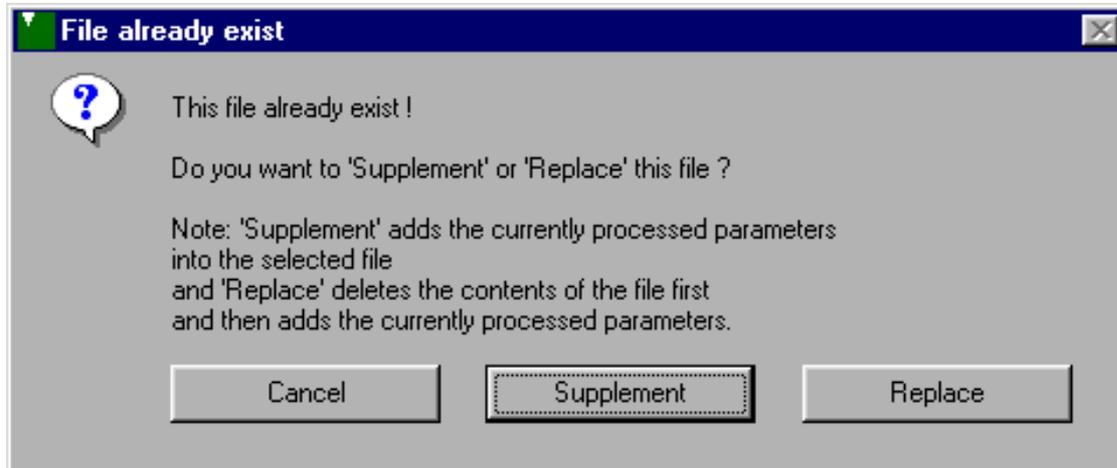
Note: The value is determined directly in DIGIFORCE 9310. The previous value remains in DIGIFORCE 9310. The new Teach-In value will take effect in the device only after the **Transmit** button has been activated.

Tolerance Point Value

You can enter the tolerance (+ / -) for the **Reference Point** for channels X and Y respectively.

Save Device Parameter

The data in the measurement program currently being processed (the program number is displayed in the title bar) can be saved in a backup file. If the file already exists, you have the option of adding the data from this measurement program to the file ('supplement') or 'replace' the file (the file is deleted and a new one is created with this measurement program):



Transmit

The data in the measurement program currently being processed (the program number is displayed in the title bar) is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to save the data first, click on the **Save Device Parameter** or **Transmit** buttons.

Note: As soon as you have changed at least one parameter of the **Program dialog windows** (Channel Settings, Measuring Mode, Sensor Test, Evaluation Windows and Envelope, Switch Points or Presentation) the state was set to **not saved/transmitted**.

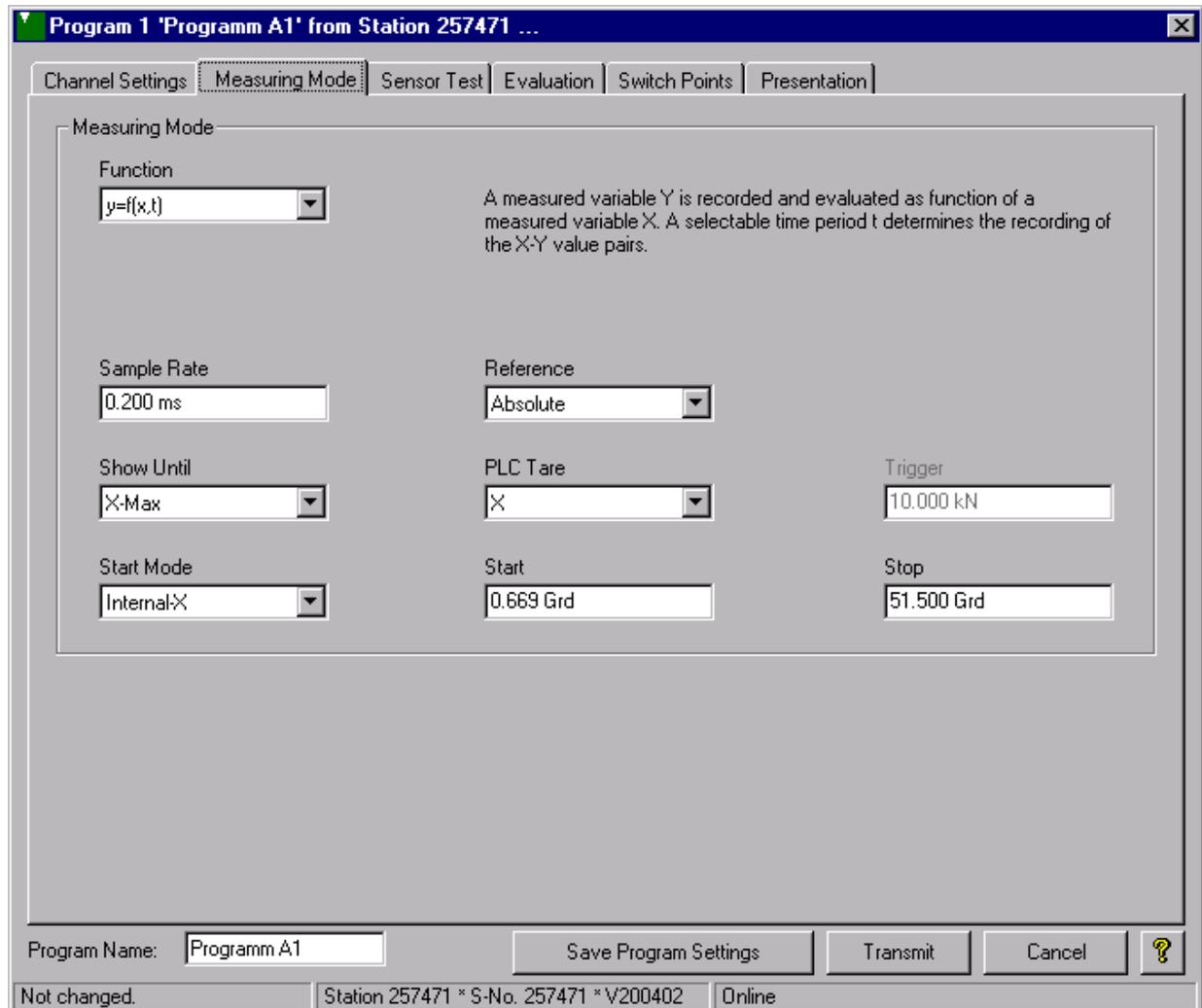
You discard the changes if you cancel the Program dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation).

The changes you have made with respect to the program currently being processed (0-7) are only transmitted to the device if you click on the **Transmit** button or save the changes using the **Save Device Parameter** button.

Please note that only the data in the Program dialog windows is saved or transmitted when these corresponding procedures are executed. These parameters are handled separately from the **Parameterize dialog window!**

Measuring Mode

[Parameterize Program (New, from File, online) -> Measuring Mode]



Function

Select from the **Functions** listed here. Please note that it may not be possible to set certain parameters depending on the **Function**. For this reason, it may have to be deactivated or reset.

Sample Rate

The **Sample Rate** can be assigned a value between 0.000 and 1000.0 for every **Function** $y=f(x)$. If $y=f(t)$ or $y=f(x,t)$ is selected instead, a value between 0.2 and 500.0 must be assigned. An assigned value that does not fall within this range will be reset when the **Function** is switched!

Reference

You have the choice between **Absolute**, **Trigger**, **Final Force** and **Block Window**.

Absolute refers to recording using the unchanged device measurement values.

Trigger (Y-Trigger) means that the X value is set to "0" when a pre-defined Y value has been reached.

Final Force means that the X value is set to "0" at the position of the last measurement point displayed.

Block Window means that the X value is set to "0" at the position at which the Y-min extends beyond the block window (even outside of the block window area).

The **Reference** selection also has an impact on the other program parameters. For example, the **Trigger** value can only be set if **Trigger** is also set as a reference.

Trigger

The **Trigger** value can only be set if the **Reference** is set to **Trigger**. Otherwise, this setting has no effect.

Show Until

Display until **X-Max** displays the maximum X with a maximum Y at the same time, if X is constant in this area.

The same applies to **Y-Max**: The maximum Y is displayed with the maximum X at the same time if Y is constant in this area.

PLC Tare

Specification of rate PLC interface tare function. You can select this from the list of options.

Start Mode

You can choose between external and internal here. The **Start** and **Stop** values must be defined for an internal start.

Start

Enter a numeric value at which the measurement should begin. This is only possible for an internal start!

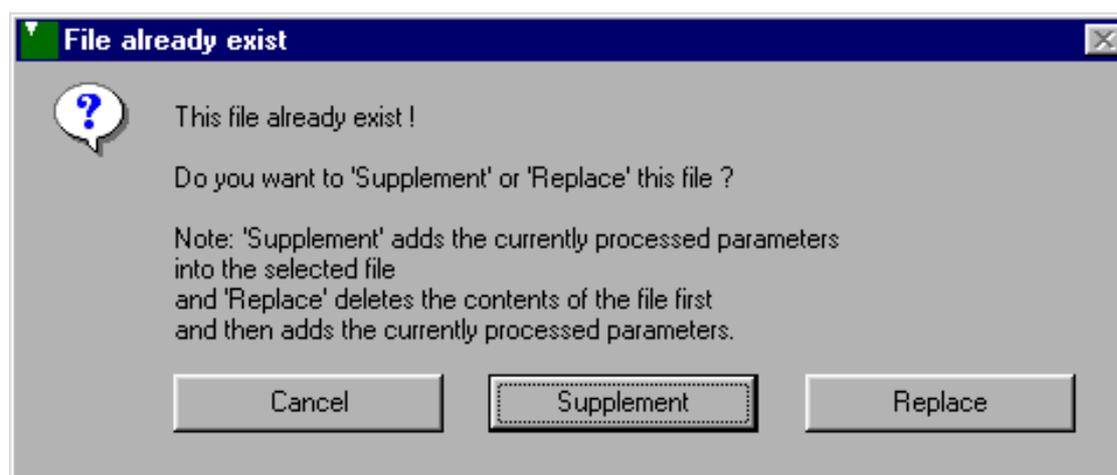
Stop

Enter a numeric value at which the measurement should be stopped. This is only possible for an internal start!

If this value is not reached, the measurement is stopped when the value falls below the start value.

Save Device Parameter

The data in the measurement program currently being processed (the program number is displayed in the title bar) can be saved in a backup file. If the file already exists, you have the option of adding the data from this measurement program to the file ('supplement') or 'replace' the file (the file is deleted and a new one is created with this measurement program):



Transmit

The data in the measurement program currently being processed (the program number is displayed in the title bar) is transmitted to the device following a confirmation prompt and the dialog window is closed.



Cancel

The dialog window is closed without any changes having been made to the device. If you would like to save the data first, click on the **Save Device Parameter** or **Transmit** buttons.

***Note:** As soon as you have changed at least one parameter of the **Program dialog windows** (Channel Settings, Measuring Mode, Sensor Test, Evaluation Windows and Envelope, Switch Points or Presentation) the state was set to **not saved/transmitted**.*

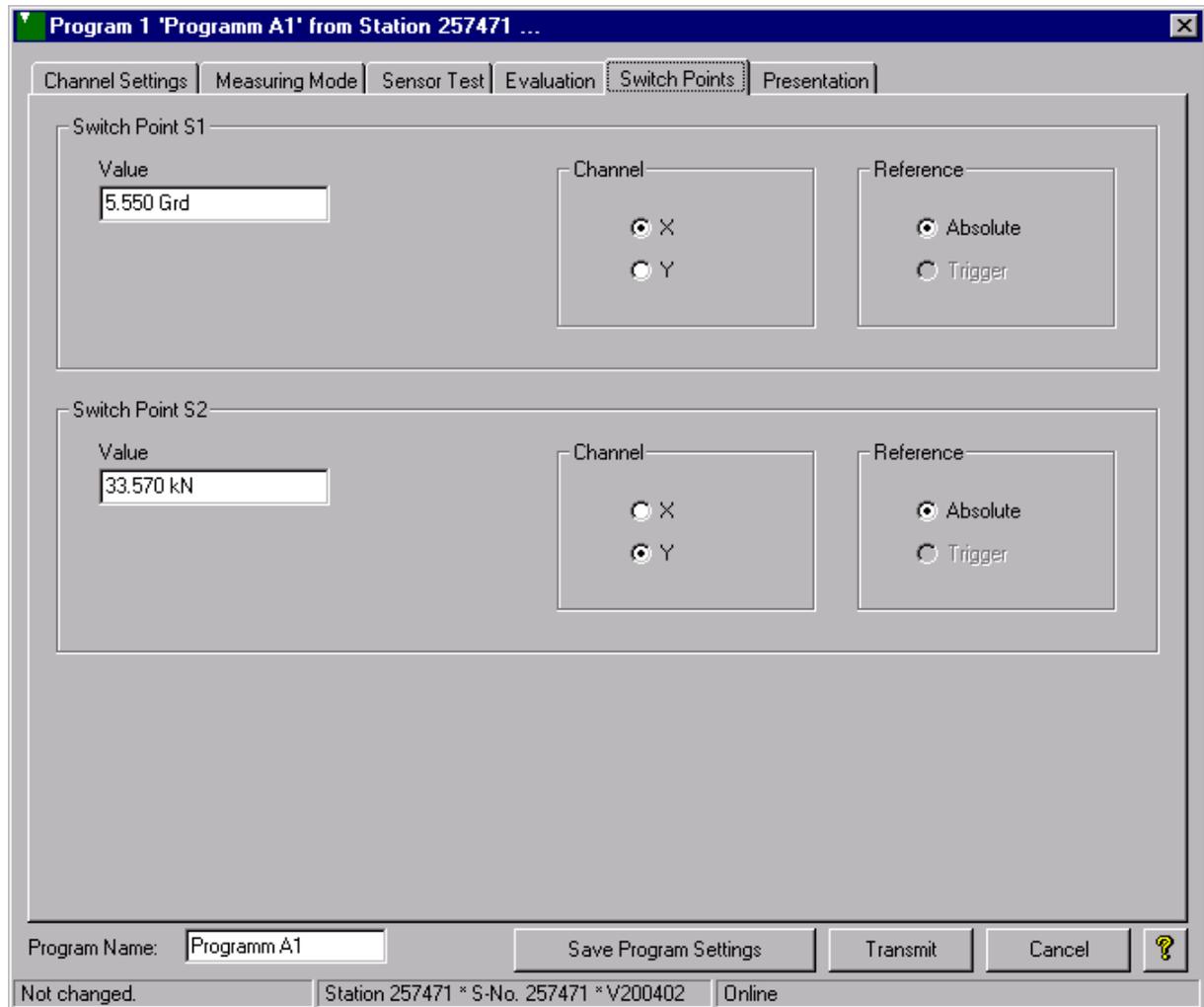
You discard the changes if you cancel the Program dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation).

*The changes you have made with respect to the program currently being processed (0-7) are only transmitted to the device if you click on the **Transmit** button or save the changes using the **Save Device Parameter** button.*

*Please note that only the data in the Program dialog windows is saved or transmitted when these corresponding procedures are executed. These parameters are handled separately from the **Parameterize dialog window!***

Switch Points

[Parameterize Program (New, from File, online) -> Switch Points]



Switch Points S1 and S2

You have the option of defining switch points, which set the corresponding PLC output signals.

Value

Enter the numeric values which need to be exceeded by the X or Y **Channel** measurement values in order to switch the logical signals. The switched signal remains activated until the switch point value is reached again.

Channel

Select the desired measurement **Channel** (X or Y) that is to be assigned to the corresponding switch output.

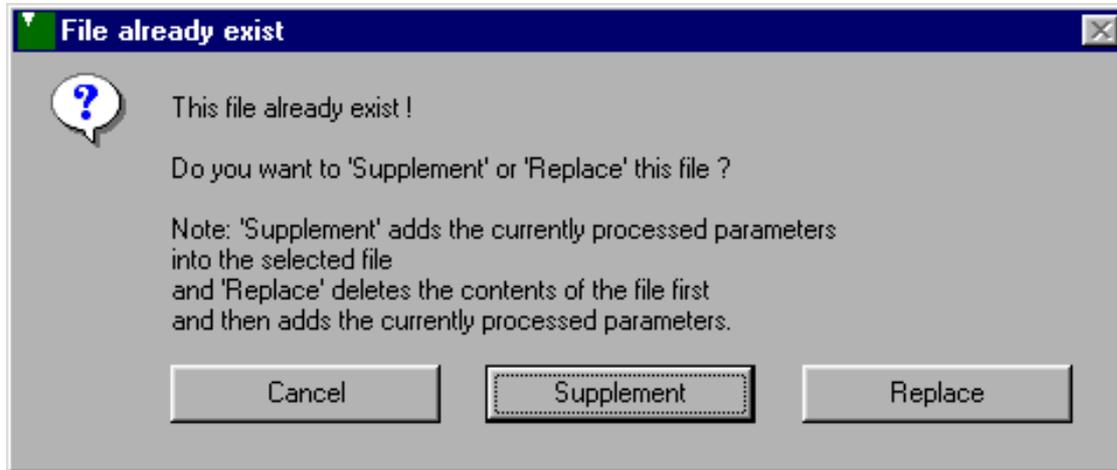
Reference

If the switch signal is assigned to channel X, the reference (zero) point needs to be selected for this switch signal. This is related to the absolute (calibrated) zero point or the trigger zero point.

If **Reference Trigger** is activated, the **Switch Points** only react after the start mode and trigger have been reached!

Save Device Parameter

The data in the measurement program currently being processed (the program number is displayed in the title bar) can be saved in a backup file. If the file already exists, you have the option of adding the data from this measurement program to the file ('supplement') or 'replace' the file (the file is deleted and a new one is created with this measurement program):



Transmit

The data in the measurement program currently being processed (the program number is displayed in the title bar) is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to save the data first, click on the **Save Device Parameter** or **Transmit** buttons.

Note: As soon as you have changed at least one parameter of the **Program dialog windows** (Channel Settings, Measuring Mode, Sensor Test, Evaluation Windows and Envelope, Switch Points or Presentation) the state was set to **not saved/transmitted**.

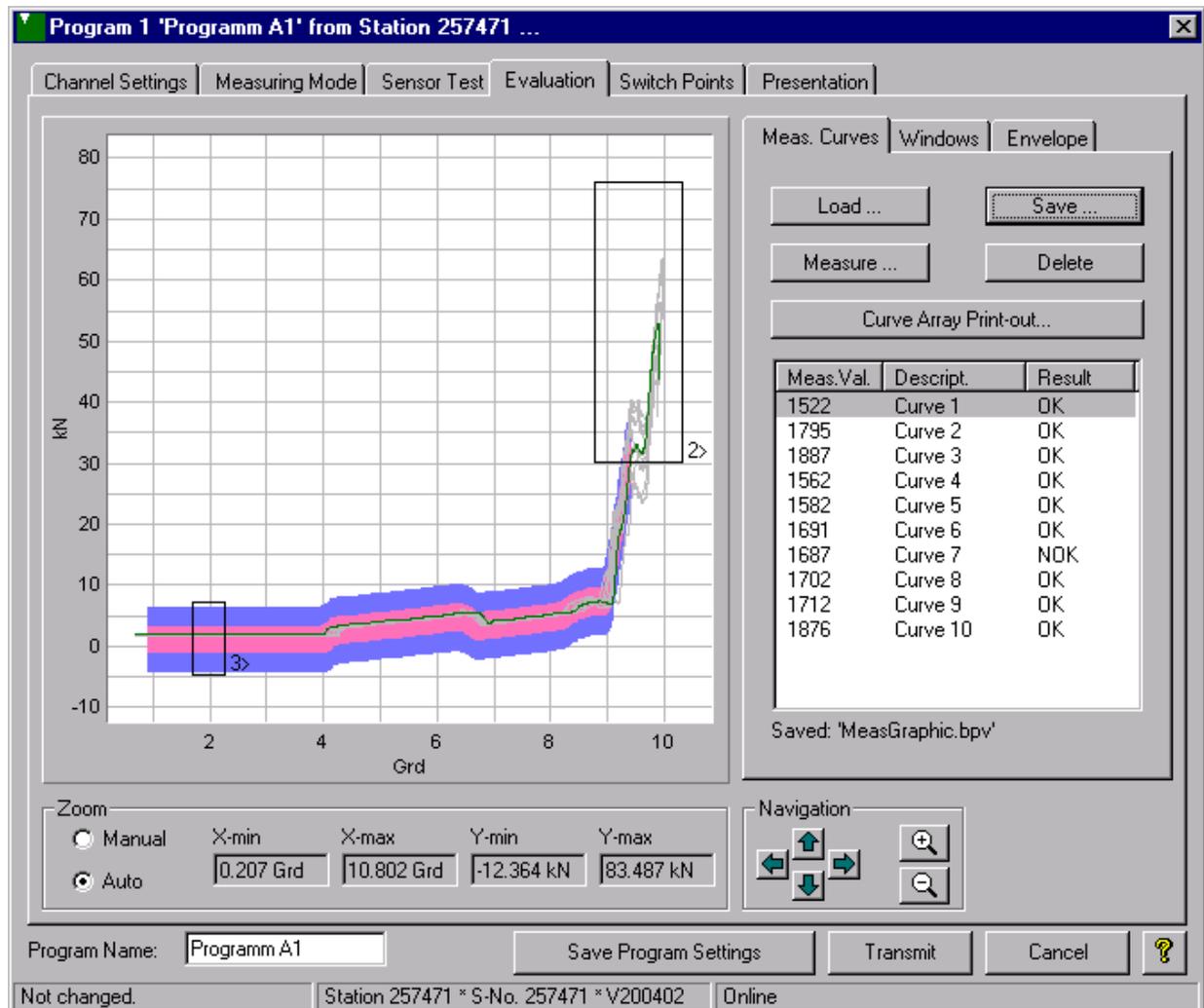
You discard the changes if you cancel the Program dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation).

The changes you have made with respect to the program currently being processed (0-7) are only transmitted to the device if you click on the **Transmit** button or save the changes using the **Save Device Parameter** button.

Please note that only the data in the Program dialog windows is saved or transmitted when these corresponding procedures are executed. These parameters are handled separately from the **Parameterize dialog window!**

Evaluation

[Parameterize Program (New, from File, online) -> Evaluation]



Measurement Curves

Measure

If you press the button *Measure* the dialog Measure (Teach-in Array of Curves) appears. There you can perform measurements with the device and the measurement curves were displayed in the graphic and listed in the measurement list.

The measurement curves are separately selectable and the selected curve was highlighted with the evaluation color. If some curves should not be displayed they could be deactivated.

In the Measure mode you can see the number of measurement values of the curves.

You can edit the number of displayed measurement curves in the General Settings – Presentation.

Note: Evaluation windows and envelope settings are parts of a measurement program.

An array of curves is helpful for positioning evaluation windows and creating an envelope.

Curve array files and measurement programs were saved separately but in most cases a curve array is only in cooperation with the associated measurement program meaningful.

Changes of the evaluation windows or the envelope are principle effective to the evaluation result if they are transmitted to the device.

Load / Save

It is possible to **save** an array of curves if they were Teached-in during Measuring. You can **load** this curve array file at any time.

Please note that the size of the file increases if you record several curves! Because of system requirements the loading and saving of curve arrays takes under Windows 95/98/Me/NT4.0 longer as under Windows 2000/XP.

Delete

Press the button **Delete** to delete all measurement curves in the list.

Curve Array Print-out

If you want to print-out a displayed curve array press the button Curve Array Print-out. The common printer dialogs appear.

Active

In the measurement list you can find the column Active. Only these measurements which are checked in column **Active** were actually used by following functions:

- **Save**
- **Curve Array Print-out...**
- **Envelope New...**

Window

Before assigning the **Type**, decide which number should be assigned to the corresponding window. To do this, click on a(n) (available) tab page (Window 1 – Window 3).

If this window has already been defined, all corresponding data is displayed and the window in the graph is illustrated in blue.

The following settings always affect the window number corresponding to the activated tab page.

Type

You can select from the following window types:

- Pass (P)
- Online (O)
- Block (B)

When the window type is activated, a start value is initiated in the lower part of the graph.

In order to deactivate a window, **"Off"** needs to be displayed for the **Type**. Otherwise, a **Type** was defined for this **Window**.

It is possible to specify criteria for each evaluation window (window coordinates, entry, exit. The evaluation is only considered OK if all defined criteria are met in the measurement. If one of the evaluations doesn't work, the window is evaluated at NOK.

Entry

Specify which side of the current evaluation window is to be the entry side.

If the actual entry side of the measurement curve does not correspond to that set in the **Entry** field, the evaluation for this window and the overall measurement is NOK.

The entry side can only be defined for the pass and block windows. The online window has a fixed definition.

Exit

Specify which side of the current evaluation window is to be the exit side.

If the actual exit side of a measurement curve does not correspond to that set in the **Exit** field, the evaluation for this window and the overall measurement is NOK.

The exit side can only be defined for a pass window. This is always right for the online window and there is no **Exit** for block windows.

Coordinates

To enter the exact window coordinates, simply enter the corresponding values in the number fields Xmin, Xmax, Ymin and Ymax. The window is initialised with a new value and is placed at the corresponding position in the graph after you press Enter or click on another data field.

Notes:

- If a max value is less than a min value, for example, the values are automatically switched upon confirmation (pressing the Enter button or entering another value field)!
- If the window values fall outside of the graph scale values, it may not be possible to see the window completely or at all. In this case, you can display the entire graph again by clicking on the **Auto** button.

Draw, move Windows...

You can draw evaluation windows within the coordinate field (graph), display the measurement curve while measuring and zoom.

You can execute the following functions directly using the mouse:

Shift evaluation window:

Click on the active window (blue) (only if tab **Window** is selected) with the mouse pointer and move it to a new position.

Change size of evaluation window:

Click on the active window (blue) (only if tab **Window** is selected) with the mouse pointer and on then on the little arrows to change the size.

Draw evaluation window:

Drawing with the right mouse button (only if tab **Window** is selected).

Capture zoom area:

Draw using left mouse button while keeping the [STRG] button pressed.

Envelope

If a measurement program with envelope settings were loaded or transmitted from DIGIFORCE you can see the envelope settings. To change this settings please press the button **Change**. Then the dialog Edit Envelope appears.

To create a **New** envelope you need an Array of Curves which is possible to Teach-in (Measure) or load from Curve Array File.

With the options **Show Envelope Curves** and **Show Trend Curves** you can display existend curves in the graphic.

But the real state of the envelope (On/Off) is independent from this options!

To change the display settings of the envelope please open the General Settings - Presentation or General Settings - Colors.

Zoom

The scaling of the measurement curves' graphic is meant by **Zoom**. You have the choice of **Manual** and **Auto**.

Manual

In mode **Manual Zoom** the scaling always stays constant, as it is preset in the number fields **X-min / X-max / Y-min / Y-max**.

Auto

In mode **Auto** the optimal display is demanded in which all active curves can be displayed in their completeness.

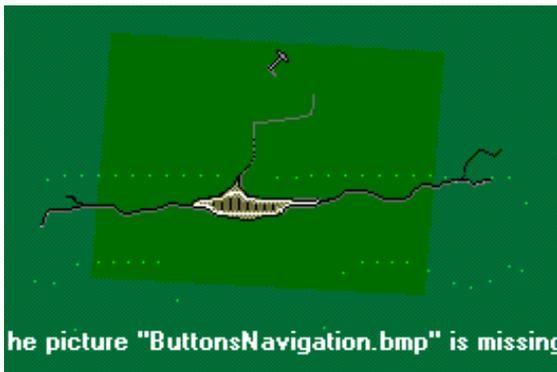
X-min / X-max / Y-min / Y-max

The present scaling of the graphic can be taken from this number field. These values may be edited manually with manual zoom.

Navigation

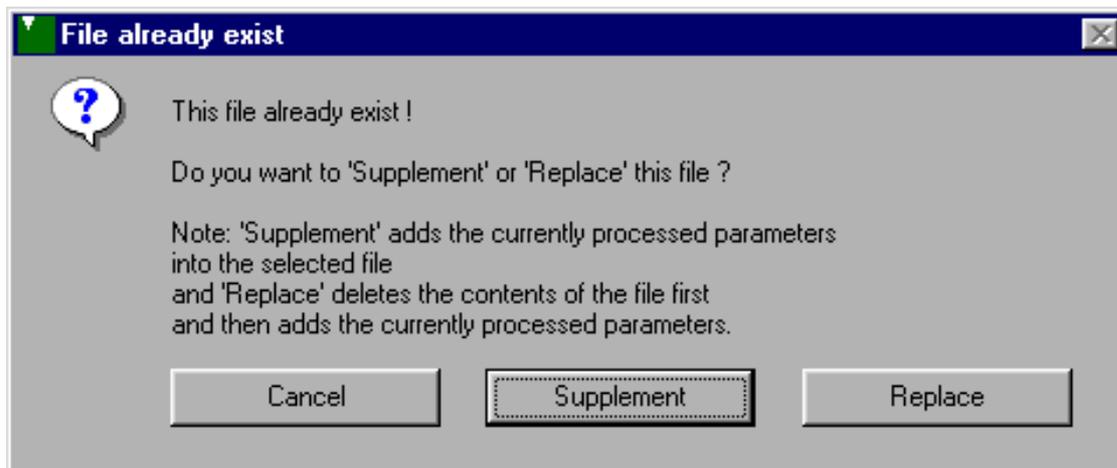
You can move within the measurement curve graphic by using the 4 cursor buttons (up, down, right, left) or the lens button in the navigation field.

The buttons represented a repeating key function:



Save Device Parameter

The data in the measurement program currently being processed (the program number is displayed in the title bar) can be saved in a backup file. If the file already exists, you have the option of adding the data from this measurement program to the file ('supplement') or 'replace' the file (the file is deleted and a new one is created with this measurement program):



Transmit

The data in the measurement program currently being processed (the program number is displayed in the title bar) is transmitted to the device following a confirmation prompt and the dialog window is closed.

Cancel

The dialog window is closed without any changes having been made to the device. If you would like to save the data first, click on the **Save Device Parameter** or **Transmit** buttons.

***Note:** As soon as you have changed at least one parameter of the **Program dialog windows** (Channel Settings, Measuring Mode, Sensor Test, Evaluation Windows and Envelope, Switch Points or Presentation) the state was set to **not saved/transmitted**.*

You discard the changes if you cancel the Program dialog (with accepting the security message which you can deactivate and if necessary activate in the General Settings – Presentation).

*The changes you have made with respect to the program currently being processed (0-7) are only transmitted to the device if you click on the **Transmit** button or save the changes using the **Save Device Parameter** button.*

*Please note that only the data in the Program dialog windows is saved or transmitted when these corresponding procedures are executed. These parameters are handled separately from the **Parameterize dialog window!***

Pass Window

The pass window is the most frequently used *Window Type*.

In this window type, the curve needs to run from the entry side to the exit side without passing through any of the other windows.

A maximum of 3 pass windows can be assigned per measurement program.

Online Window

The online window (also referred to as the "merge window") is specially designed for injection and joint operations. It checks to see that the joints are merged properly and not misaligned. In the former, this is accompanied by a sharp power increase in the merge area. This then exits the top of the merge window.

Online windows only check the positive run of the curve (from left to right).

A maximum of 1 online window per measurement program can be assigned.

Block Window

The *Block Window* monitors the block dimensions and strength of a compression connection, for example. The curve needs to enter in the specified *Entry* side for this *Window Type* (*Left, Right, Upper, Lower* except for *Don't care*), but may not exit the window!

In an OK case, the curve may not exit the window – for this reason, the *Exit* side cannot be specified. The block window only checks the positive run of the curve. As a result, the Pass direction cannot be set.

A maximum of 1 block window per measurement program can be assigned.

Offline / Online

Offline

Offline refers to the processing of device parameters from a backup file or newly created device parameters without having a DIGIFORCE 9310 connected at the time.

These device parameters can be saved again as a backup file after being processed. If at least one station is found in the device list, the parameters can also be directly transmitted to a station.

Online

Online refers to the reading of device parameters directly from a DIGIFORCE 9310. To do this, you need to select a station from the device list and use the context menu (right mouse button) or click on the *Parameterize* button to read the device parameters directly from the station.

These device parameters can be transmitted back to the same station after processing or can be saved as a backup file.

This saved backup file can be transmitted to the station of your choice using the upload function.

Teach-In

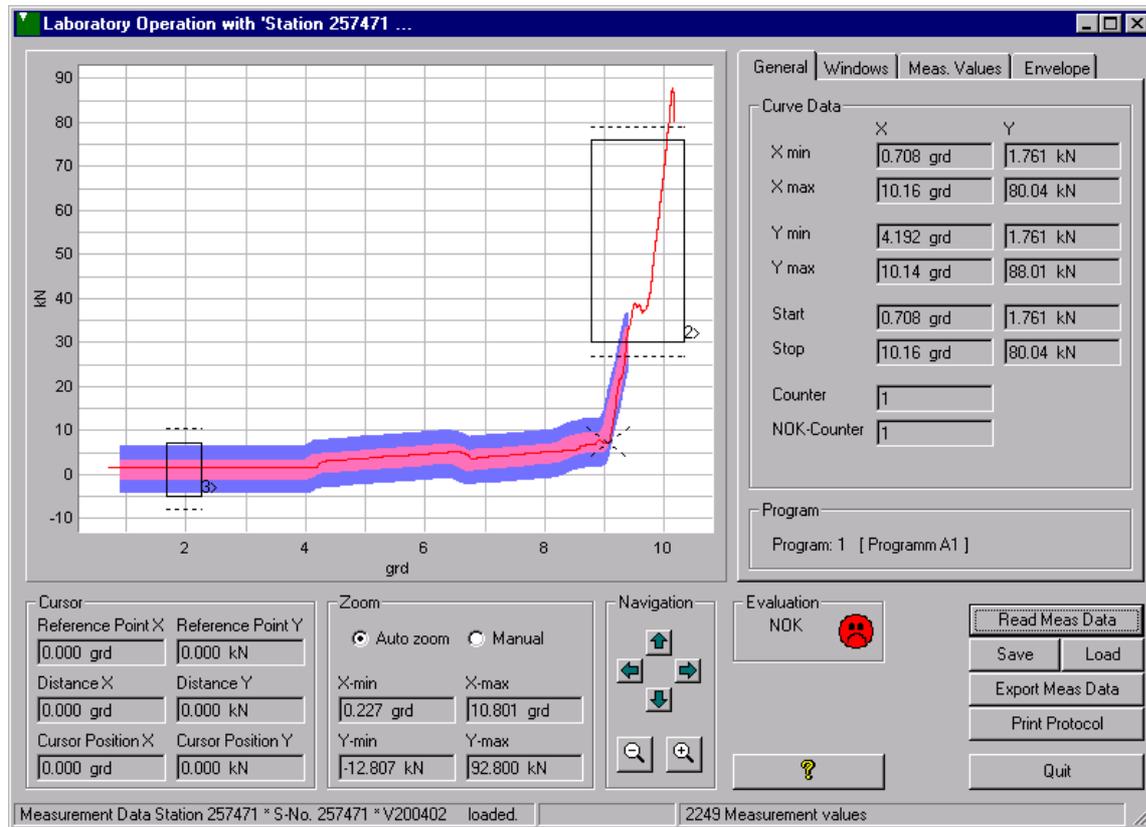
Teach-In refers to the "acclimation" or measuring of measurement data.

This function can be used in online operation for the lower and upper calibration values as well as the reference point (Sensor Test).

Follow the messages that are displayed while carrying out the *Teach-In*.

Laboratory Operation

[Measure -> Laboratory Operation]



You can access laboratory operations by selecting a station (if present) with which you would like to work online from the device list. Now, click on the  button or follow the menu path '*Measure*' -> '*Laboratory Operation*'.

You can read, display, measure, print and save the DIGIFORCE 9310 measurement data as a measurement or export file. This file you can reload at any other time.

Read Measurement Data

Click on the *Read Meas Data* button to retrieve measurement data.

If the device does not contain any measurement data, a message to this effect appears.

The reading of measurement data can take several minutes if the interface parameter are not set properly and if there is a large number of curve values.

As long as a data transfer is active a corresponding section *Data Transfer* appears.

Export Measurement Data

In order to save measurement data read from the DIGIFORCE 9310, click on the *Export Meas Data* button. The data is saved according to the format specified in the General Settings. Change these formats as necessary.

You can also specify the standard target directory for measurement files in the General Settings (Data Storage).

The measurement file names are a combination of the *date*, *time* and *serial number* of the DIGIFORCE 9310. In this way, the files can be clearly assigned.

Of course, you can rename files before saving them.

Save

You can save the displayed measurement data in some special, only for DigiControl 9310 readable format. For this please press button **Save**. With button **Load** you can display the measurement data you saved any time before.

A Digital Signature was integrated in every saved file. A Digital Signature gives information about a possible manipulation of the file.

You can also specify the standard target directory for measurement files in the General Settings (Data Storage).

Load

With button **Load** you can display the complete measurement data you stored any time before with button **Save**.

You can also specify the standard target directory for measurement files in the General Settings (Data Storage).

Print Protocol

Click on the **Print Protocol** button in order to print the current measurement on the printer installed in DigiControl.

The dialog for editing of additional informations of the measurement appears.

After confirmation with **Next** the printer selection dialog appears.

Further informations about the print preview pleas click here.

Evaluation

After the measurement values are read from the DIGIFORCE 9310, you will receive a note pertaining to the evaluation (OK/NOK/NIT). There are three formats available:

- **Smiley:** green (OK), red (NOK), red (NIT)
- **Text:** OK or NOK, NIT (NOK-Trend)
- **Measurement curve:** Colour can be set specific to the evaluation.

Signature

You can see any information of the Digital Signature state if no Signature was found or the Signature was invalid (for example by manipulation).

Please note that a Digital Signature is present from the DigiControl version 2003.1.0.

General

The minimum and maximum values (X/Y) for the current measurement are displayed in the Curve Data tab page.

Windows

If evaluation windows were defined for the current measurement program, the settings are displayed in the upper section and the results in the lower section.

If evaluation values doesn't exist in the reffering controls "n. a." appears.

Meas. Values

The individual curve measurement values are displayed in the Meas. Values tab page.

You can double-click on a measurement value list entry to trace individual measurement values in the measurement curve graphic. The reference cursor appears automatically – you can deactivate this using the right mouse button!

You can scroll through the curve values in the measurement value list using the up and down keys on the keyboard. The reference cursor follows the current respective value.

If you would like to switch the measurement curve display or adjust the colours, you can do this in the General Settings - Presentation section.

Envelope

If the current measurement program contains an active Envelope (from DIGIFORCE Firmware V200304) you can see an additional tab Envelope. If Trend tracking is active you can also find details about it.

Zoom

Zoom is meant the scaling of the measurement graphic. You can switch the Zoom mode to *Auto Zoom* or *Manual*.

Manual

If you want to edit the zoom coordinates by hand select *Manual* and enter the coordinates in the coordinate value fields X-min, X-max, Y-min and Y-max.

Auto Zoom

If the scaling of the measurement graphic should be executed automatically if you load a measurement file or read measurement data from device please set the control value to *Auto Zoom*.

You can perform an immediate auto zoom if you push the button *Auto Zoom*. This is independent of the zoom settings *Manual* or *Auto Zoom* (Note: in the position *Manual* the existend coordinate values get lost if necessary!).

X-min / X-max / Y-min / Y-max

You can always see the current scaling values in this coordinate value fields. In the manual Zoom mode you can edit this values by hand.

Cursors

Two cursors are available for measurement: a reference cursor and a position cursor. You can use these two measure the distances and points in the measurement curve graphic.

You can switch the cursor on or off as follows:

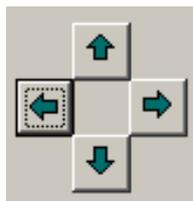
Reference cursor (Cursor 1): Click with right mouse button

Position cursor (Cursor 2): Click with left mouse button

You can adjust the Colors of the Cursors in the General Settings - Colors.

Navigation

You can move within the measurement curve graphic by using the 4 cursor buttons (up, down, right, left) or the lens button in the navigation field. The buttons represented a repeating key function:



Capture the zoomed area with the mouse

Keep the [STRG]-key pressed, while you mark the part of the graphic to be enlarged in rectangular form with the left mouse key. After you release the mouse key this part will be displayed close-up in the graphic.

Print-out Protocol

[Measure -> Laboratory Operation -> Print Protocol]

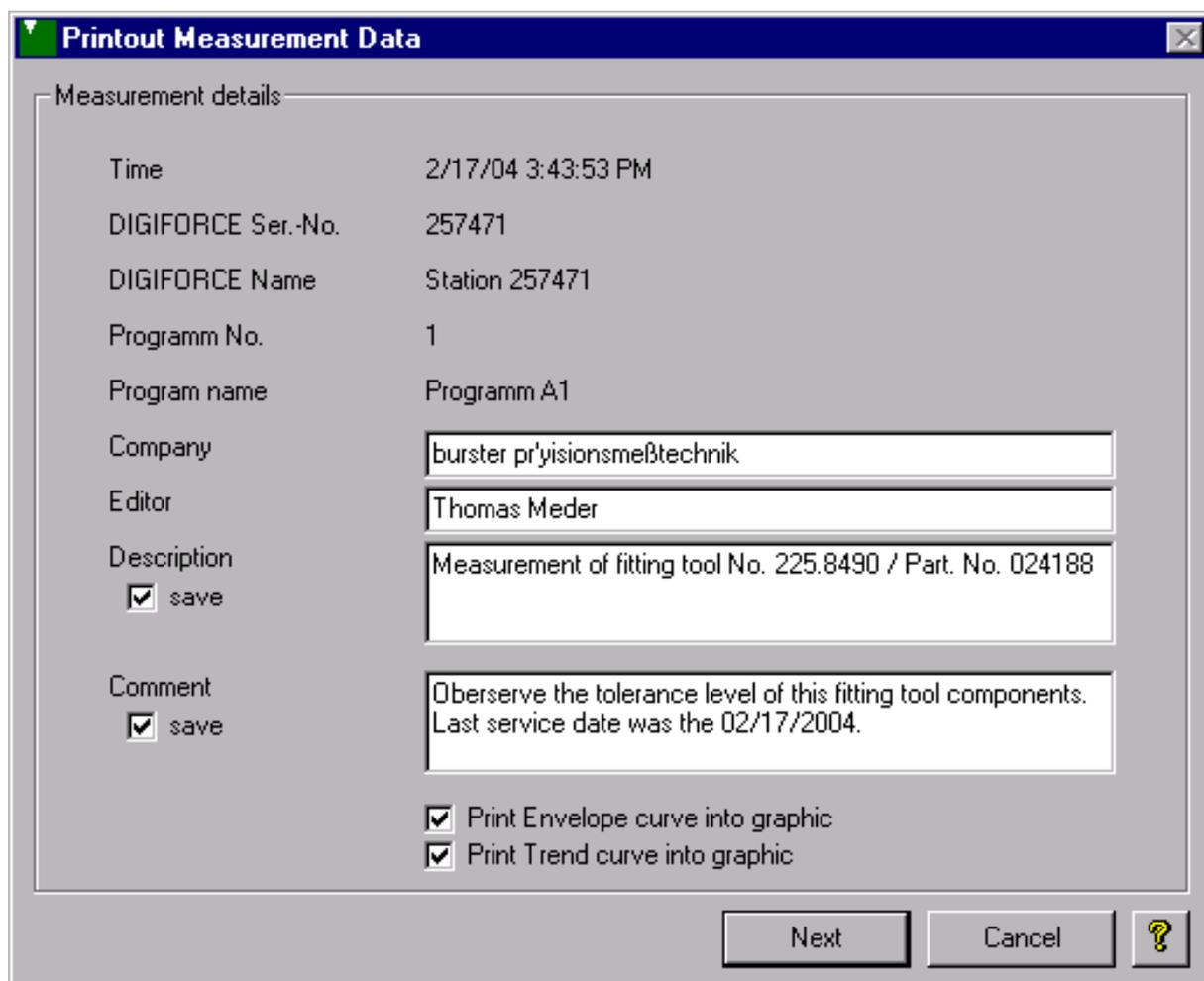
You can edit the following data before print-out:

- Company (changeable in User Information)
- Editor (changeable in User Information)
- Description (will be saved for the next print-out with option *save*)
- Remark (will be saved for the next print-out with option *save*)
- Print-out Envelope Curves in the graphic *
- Print-out Trend Curves in the graphic *

If you pressed the button Next the printer configuration dialog appears. There you can select if you want to:

- Preview
- Print
- Export to PFD

Further informations about the Preview you can find here.



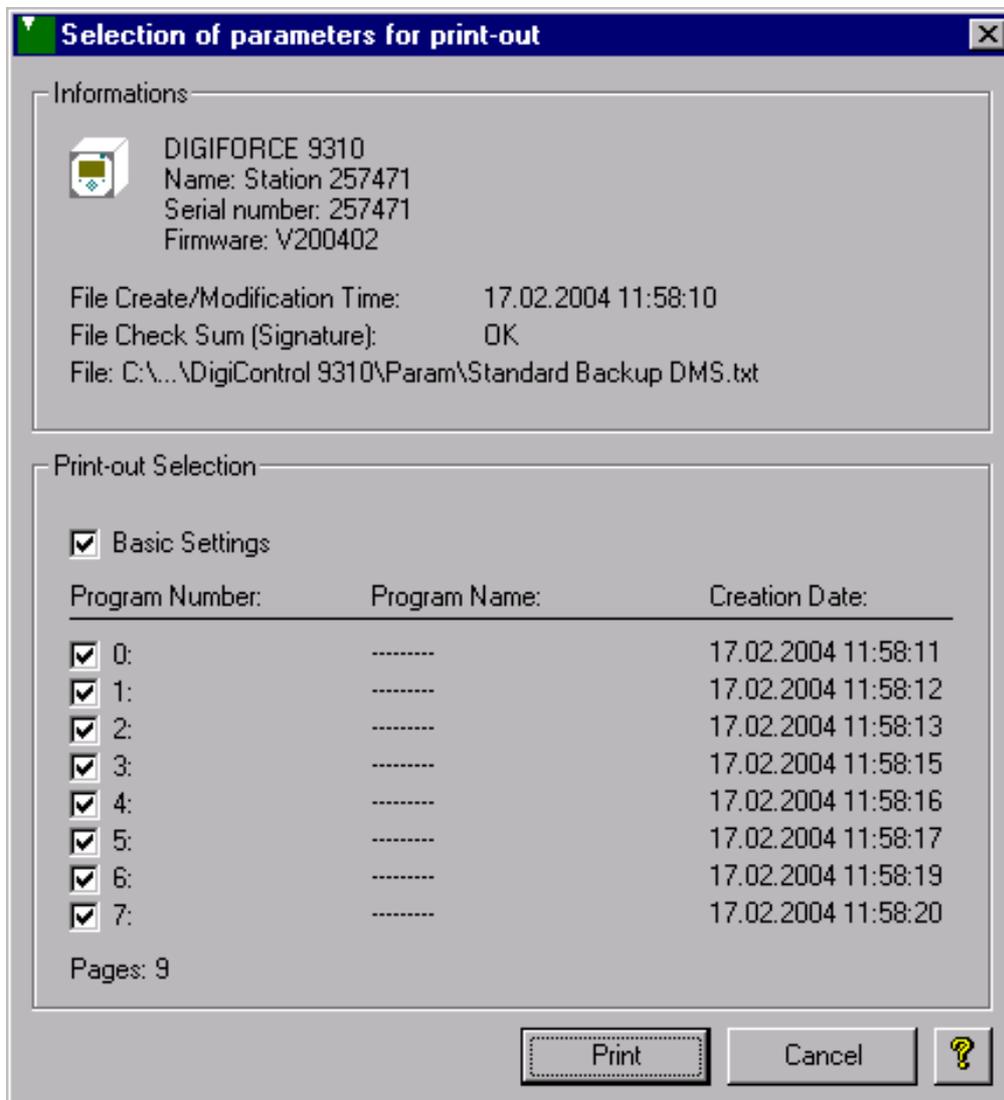
Measurement details	
Time	2/17/04 3:43:53 PM
DIGIFORCE Ser.-No.	257471
DIGIFORCE Name	Station 257471
Programm No.	1
Program name	Programm A1
Company	burster pr'yisionsmeßtechnik
Editor	Thomas Meder
Description	Measurement of fitting tool No. 225.8490 / Part. No. 024188
<input checked="" type="checkbox"/> save	
Comment	Observe the tolerance level of this fitting tool components. Last service date was the 02/17/2004.
<input checked="" type="checkbox"/> save	
<input checked="" type="checkbox"/> Print Envelope curve into graphic	
<input checked="" type="checkbox"/> Print Trend curve into graphic	

Next Cancel ?

* = Available from DIGIFORCE 9310 Firmware V200304

Selection of parameters for print-out

[Edit -> Parameter Print-out -> Load Parameter File -> ... -> Print]



You can decide which programs (**Program Number**) you would like to print out device parameters that you have loaded from a backup device parameter file. You can also print out the **Basic Settings**.

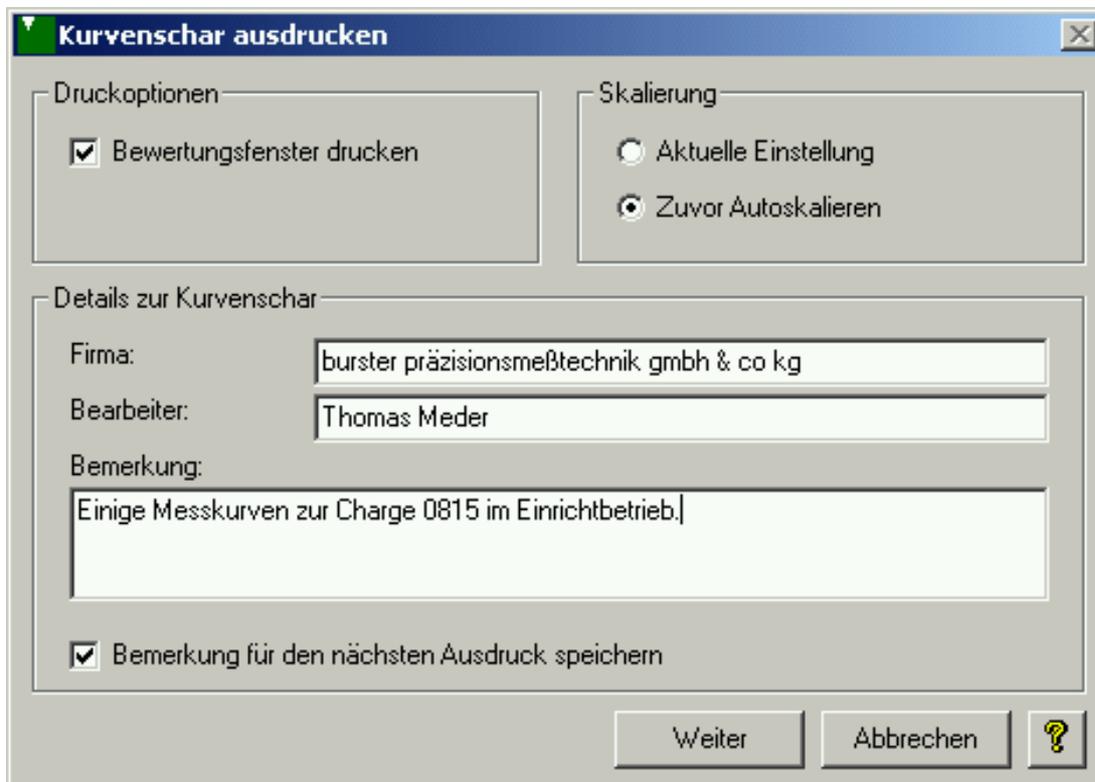
For the print-out you must select a printer in the General Settings – Printing.

After you have made your selection, confirm by clicking on the **OK** button.

Further informations about the Print Preview you can find [here](#).

Curve Array Print-out

[Parameterize Program (New, from File, online) -> Evaluation -> Curve Array Print-out]



Kurvenschar ausdrucken

Druckoptionen

Bewertungsfenster drucken

Skalierung

Aktuelle Einstellung

Zuvor Autoskalieren

Details zur Kurvenschar

Firma: burster präzisionsmeßtechnik gmbh & co kg

Bearbeiter: Thomas Meder

Bemerkung: Einige Messkurven zur Charge 0815 im Einrichtbetrieb.

Bemerkung für den nächsten Ausdruck speichern

Weiter Abbrechen ?

If you want to print-out an *Array of Curves* which you have ever Measured (Teach-in Array of Curves) please press the button **Curve Array Print-out** on the Evaluation Dialog.

Options for the print-out you can define at the General Settings.

Sample Preview:

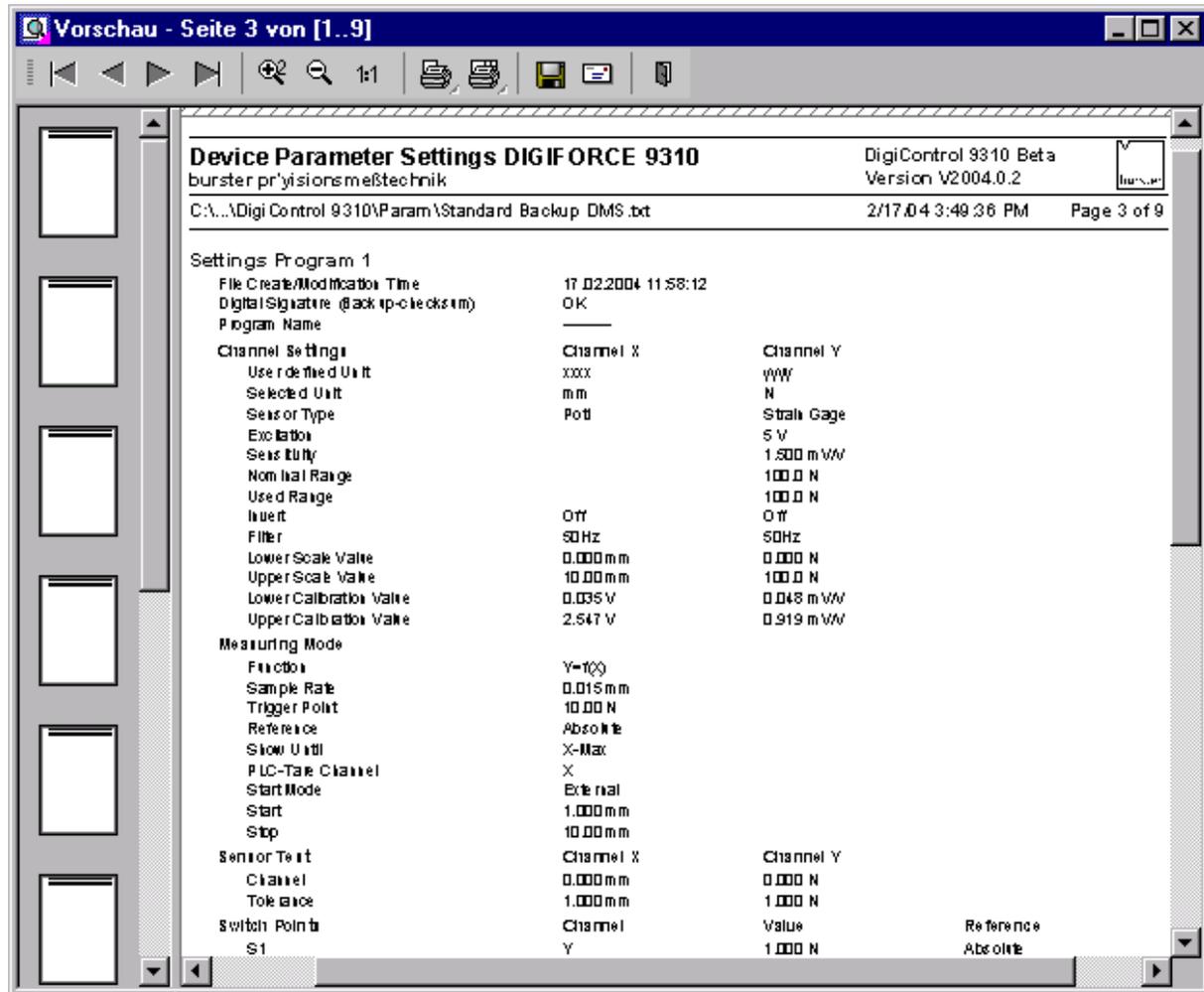
Thomas Meder
 burster prazisionstechnik gmbh & co kg Kurvenlogger DIGIFORCE 9310 DigiControl 9310 Beta
 Version 1.004.0.2
 C:\...DigiControl\9310\Graph\42004-02-12 a Einige Messungen und 19.02.2004 21:02:21 Seite 1



Bemerkung: Einige Messkurven zur Charge 0815 im Einrichtbetrieb.

Kurve	Bezeichnung	Messwerte	Ergebnis
1	Kurve 1	501	NIO
2	Messkurve 3	495	NIO
3	Eine der vielen Messkurven	502	NIO
4	Ausreisser beim einfadedeh	500	NIO
5	resefasdf	501	NIO
6	Kurve 6	497	NIO

Print Preview



If the Preview dialog for the Measurement Protocols, Device Parameter, Statistics or Array of Curves is active you can save this Preview directly as Preview File.

But this Preview File with the file extension *.LL could only be opened and displayed if DigiControl 9310 from version V2004.1.0 was installed on the system.

Normally the file size of this Preview Files was much more smaller than PDF files and they couldn't be changed or manipulated.

More Options at the Print Preview

Print current page...

If you want to print-out the currently displayed page press the button  with the left mouse button.

To select another printer or change the PC printer settings press the button  with the right mouse button. The printer configuration dialog appears.

Print all pages...

If you want to print-out all available pages press the button  with the left mouse button.

To select another printer or change the printer settings press the button  with the right mouse button. The printer configuration dialog appears.

Save As...

If you want to save the Preview as Preview File or as another file like PDF or graphic file press the button .

e-Mail (Send to...)

If you want to send the Preview as Preview File, PDF or graphic file per e-mail press the button . Then you can select the file type and with OK the system specified Mail program (if available) opened and the file attached to the e-mail.

Exit Preview

To quit the Preview please press the button .

Upload (Backup File -> DIGIFORCE)

[Mark a Station in the device list -> File -> Upload]

Use this function in order to transmit the DIGIFORCE settings saved to a device parameter backup file in **DigiControl** back to DIGIFORCE 9310.



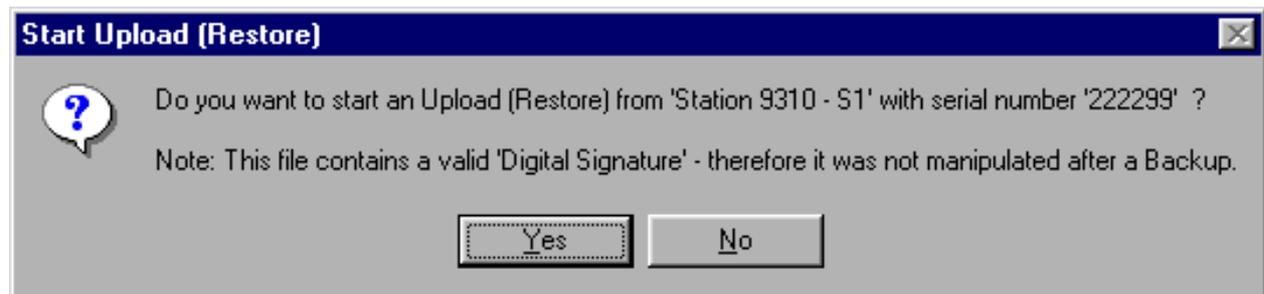
You can call up this function by activating the  button in the main dialog window or by selecting the entry **Upload** (Backup File -> DIGIFORCE) in the **File** main menu.

Select the backup file that you would like to send to the DIGIFORCE 9310.

The dialog always opens to the **DigiControl 9310** subdirectory **Param**. Select a file by **double-clicking** on it or click on **Open** to transmit the device parameters from the file to the device.

Before the selected parameter backup file will be transferred you get a message if the file contains a valid Digital Signature.

Please note that a Digital Signature is present from the DigiControl version 2003.1.0. Therefore you get a message that no Digital Signature was found if you have selected a backup file which was created with an older version of DigiControl 9310.



Download (DIGIFORCE -> Backup File)

[Mark a Station in the device list -> File -> Download]

Backup refers to the saving of all device settings for a selected DIGIFORCE 9310 to a device parameter backup file.

You can call up this function by activating the  button in the main dialog window or by selecting the entry **Download** (DIGIFORCE -> Backup File) in the **File** main menu..

Please note that you first need to select a device in the device list, the device must be connected to the interface and must be available. Otherwise, an error message will appear.

Select the path and name corresponding to the backup file that you would like to create using the selected DIGIFORCE 9310.

The dialog always opens to the **DigiControl 9310** subdirectory **\Param**. Select a file by **double-clicking** on it or click on the **Save** button to generate the device parameter backup file.

A Digital Signature was integrated in every parameter backup file. A Digital Signature gives information about a possible manipulation of the file.



Common Download (Download of all DIGIFORCE into a separate backup file)

[File -> Download of all DIGIFORCE into a separate backup file]

With a **Common Download** a backup file of every DIGIFORCE in the device list will be automatically created.

DigiControl checks all DIGIFORCE devices in the device list before the **Common Download** starts. They must be connected to the serial interface.

The **Common Download** was aborted with a message if some DIGIFORCE devices were not reachable.

Please perform always a new device search if you want to start the **Common Download** with different devices.

A separate directory will be created for the **Common Downloads** in the Device Parameter Storage Directory with the name „Common“.

In the „Common“ directory the performed **Common Downloads** were stored in a separate subdirectory with the following format:

<YYYY_MM_DD[-Index]>

If you perform more than one **Common Downloads** a day the Index increase.

A Digital Signature was integrated in every parameter backup file. A Digital Signature gives information about a possible manipulation of the file.

Common Upload (Upload one backup file into all DIGIFORCE)

[File -> Upload one backup file into all DIGIFORCE]

With a **Common Upload** one backup file was transmitted automatically into every DIGIFORCE which was listed in the device list.

DigiControl checks all DIGIFORCE devices in the device list before the **Common Upload** starts. They must be connected to the serial interface.

The **Common Upload** was aborted with a message if some DIGIFORCE devices were not reachable.

Please perform always a new device search if you want to start the **Common Upload** with different devices.

Please proceed with the **Common Upload** such as the simple Upload.



General Settings

[Edit -> General Settings]

You can select from the following topics as tab pages in the *General Settings* dialog window. You need to have the appropriate security authorisation in order to make any type of settings in the program.

Interfaces

Interface configuration specifications for communicating with the DIGIFORCE 9310

International

Settings for the following parameters:

- Program interface / Windows online help language
- Number formatting.

Security

- Password
- User information

Data Storage

Selections of the following program directories:

- Device parameter files path
- Measurement data path
- Laboratory Operation Protocol files path
- Curve Array files path
- Statistic files path

Backup

Take settings for Download and Upload of Backup files.

Output

Formatting specification for measurement export files. These can be processed further in Excel, for example.

Printing

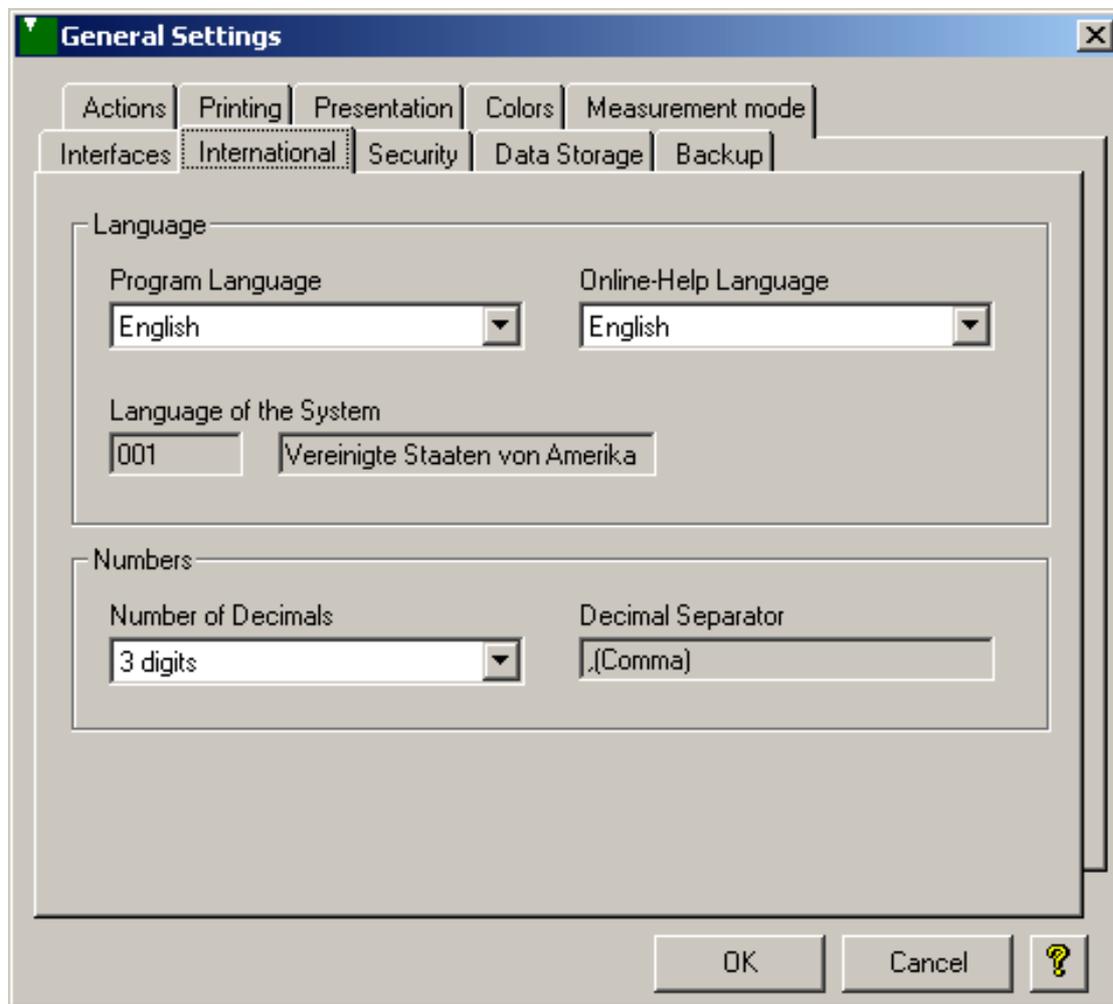
Setup of printing options.

Presentation

Options for graphical display and measurement curve line type selection.

International

[Edit -> General Settings -> International]



Language

You can select the Program Language as well as the Online-Help Language in the *International* tab page.

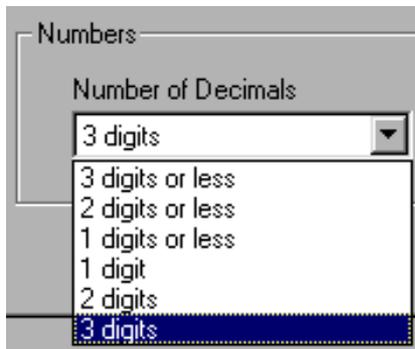
The country-specific setting (key number as well as description) of your Windows system is displayed for information purposes (*Language of the System*).

This location defines various system characteristics such as formatting settings, for example.

You can check this setting on your computer by clicking on the *Start* button and then: Settings -> System Setting -> Country Settings.

Numbers

The decimal setting that applies to the program can be specified in the *Number of Decimals* field. There are several options to choose from here.



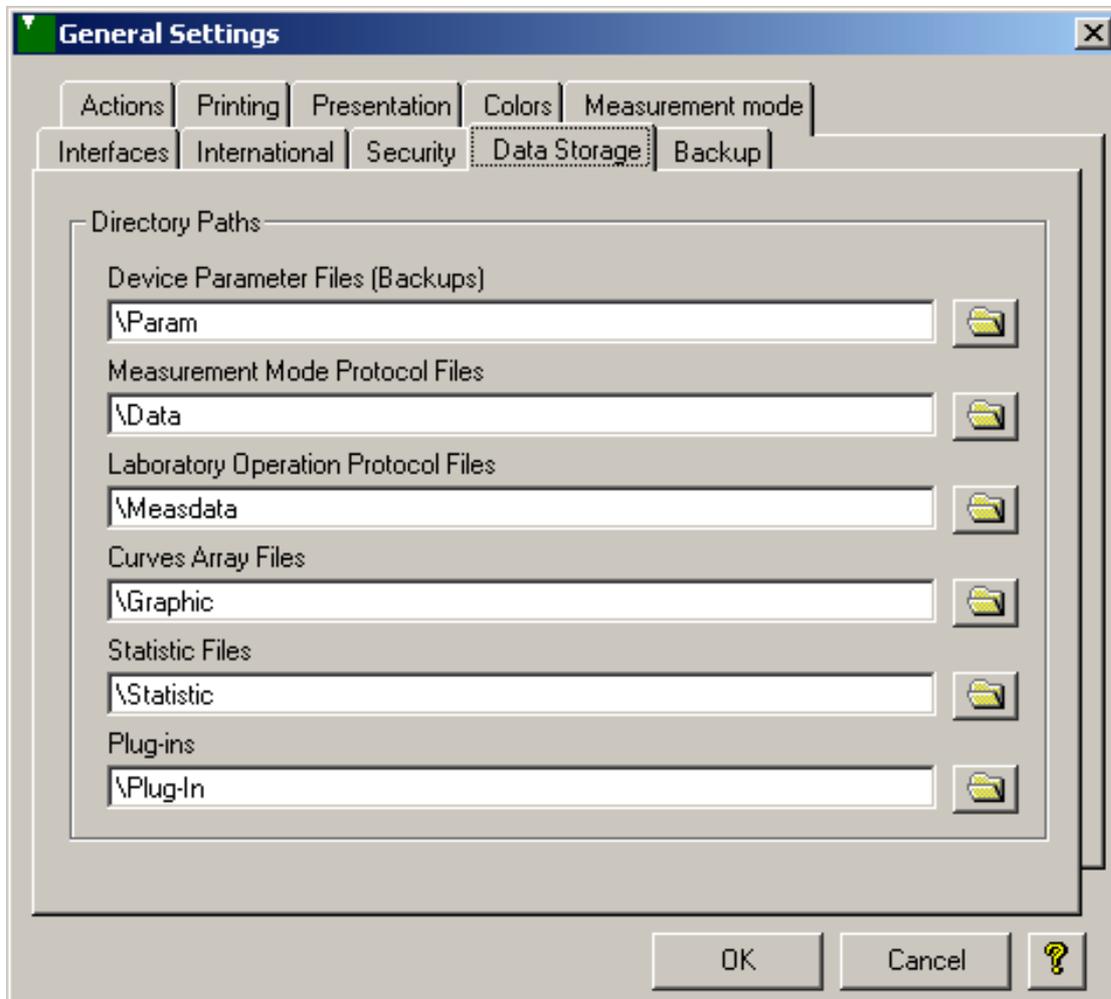
The *Decimal Separator* entry describes the system-based formatting setting used within the program.

Click on the **OK** button to adopt these settings in the program.

Data Storage

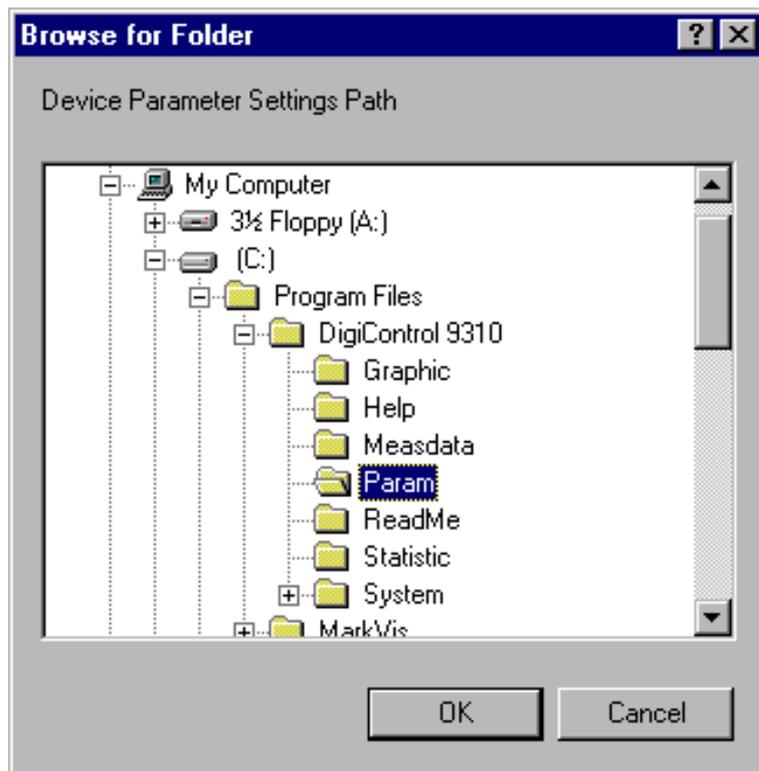
[Edit -> General Settings -> Storage]

In this dialog box, you select the standard directories for storing device parameters, measurement protocols, Statistic Files and Curve Array files.



You have the option of selecting a directory for each storage type.

To change the path, click on the **Change** button. A dialog box then appears in which the directory can be selected:



Of course, the selected directory can also be located on another drive, or on a different computer or server via the network.

Directories as well as saving options are available for the following storage types:

Device Parameter Settings

This directory contains all device parameter files that you can generate offline or with the connected DIGIFORCE 9310 devices.

The following information can also be specified here:

- Whether all programs (also unnamed programs) or only the unnamed programs are to be saved (*Save unnamed programs*).

Note: Please note that the Download time required is extended as a result of these options!

Measurement Data Export

The generated measurement protocols are stored as predefined measurement data files in this path. Please specify the data format of such files before creating them.

Laboratory Operation Protocols

The measurement protocol files in the laboratory operation mode are stored as special files in this path.

Curve Array Files

When parameterizing a program, you can use the Teach-in (Measure) function to generate Curve of Arrays. These can then be saved or loaded back into the program.

The start directory for these measurement curve graphics is specified here.



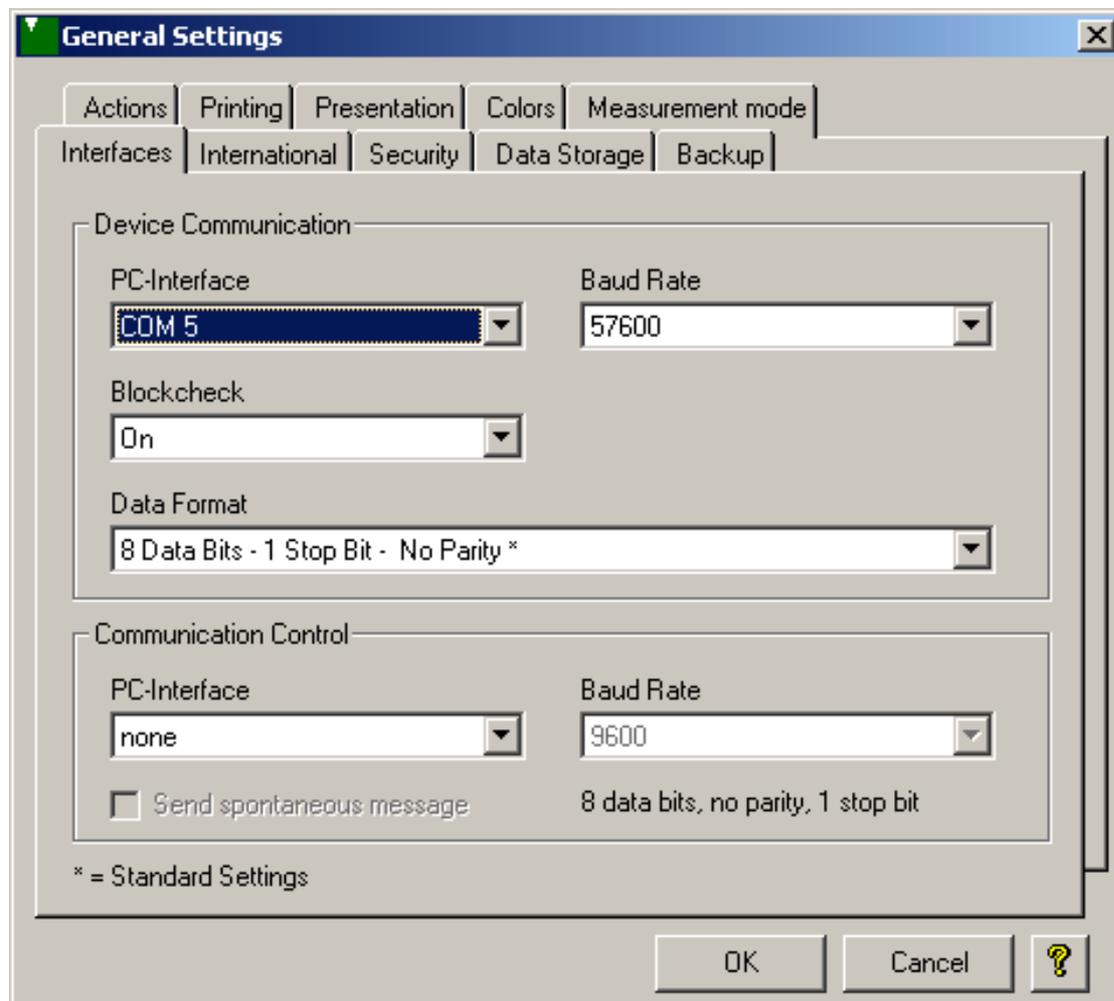
Statistic Files

This is the file path for the Statistic Files. These can then be saved or loaded back into the program.

Click on the **OK** button to adopt these settings in the program.

Interface

[Edit -> General Settings -> Interface]



Device Communication (DIGIFORCE 9310)

A physical connection between the interfaces of both components is required to permit communication between the PC program DigiControl 9310 and DIGIFORCE 9310.

Compare the DIGIFORCE 9310 settings to those of the DigiControl 9310 and adjust them correspondingly if necessary before establishing the connection.

Please be sure that you have not activated the menu "RS232 + RS485" on the DIGIFORCE 9310 before carrying out the device search. Otherwise, the device setting is not yet activated.

For more information, consult the DIGIFORCE 9310 operating manual.

PC Interface

Select the PC COM interface used to connect the DIGIFORCE 9310 devices. Depending on the operating system (Windows NT, Windows 2000...), these must already exist /be configured in the system.

Blockcheck

Activate the blockcheck to avoid transmission errors.

This setting is only possible for data formats with 8 databits.

Baud Rate

Choose 57600 baud to achieve the highest transmission rate.

Data Format

Data format setting for the interface connection used. Please remember that it is not possible to activate the blockcheck for any setting with 7 databits!

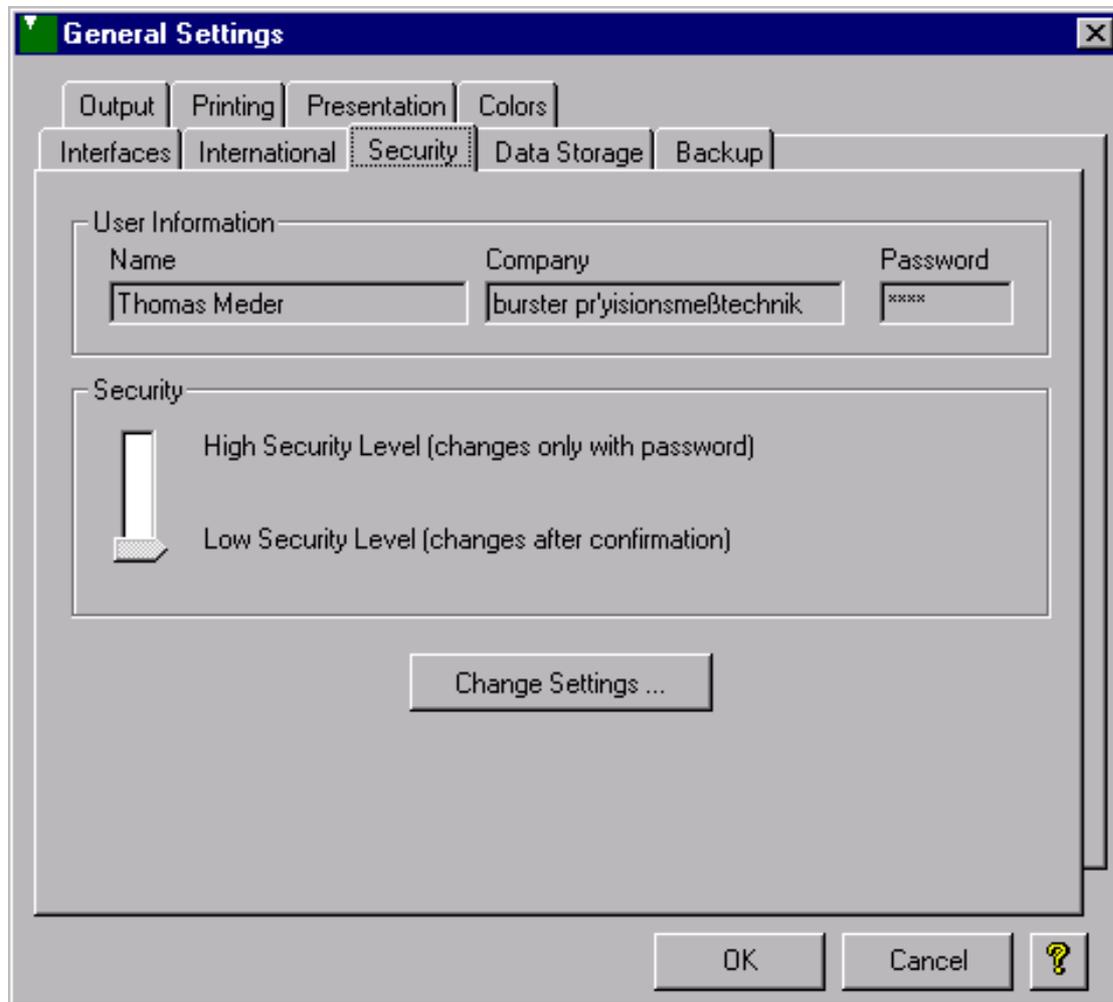
RS 485 Operation

Here you can find details for the RS 485 operation.

Note: The standard values set for the DIGIFORCE 9310 upon delivery are marked with a small star!

Security

[Edit -> General Settings -> Security]



It is possible to set two different security levels in order to adapt the program to the user environment. For example, it is possible to prevent the device from being reconfigured by selecting the highest security level. It is then necessary to enter a password in order to change device parameters. When setting up the device, it makes sense to select a lower security level (standard setting). In this way, it is possible to transmit all parameters from the program to the device and make changes where necessary.

Important note: The security level setting as well as the user information is user-specific and is stored under the respective user name on the PC!

This means that the security level for a user needs to be set while is logged on to the PC under his/her Windows logon name!

High Security Level (changes only with password)

You can make changes to the program or to device settings via the program only after entering the valid password.

Low Security Level (changes after confirmation)

If you have made a change, a confirmation prompt informing you of the possible consequences appears before the change is adopted. You can then decide whether you wish to execute the change or cancel the action.



It is not necessary to enter a password.

You will find additional information under the following points:

User information

Enter the information pertaining to the user or your company here.

Password

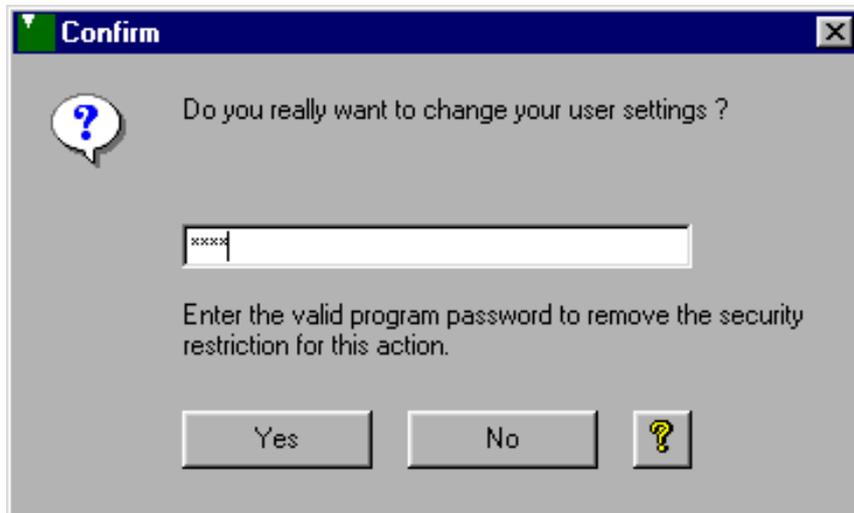
Information about entering and changing passwords (*Change Settings ...*).

Password

It is necessary to enter the valid password in order to make entries for *User*.

Enter Password

Click on the *Change Settings ...* button and enter the current password in the dialog box that appears.



The standard password following program installation is **1234**.

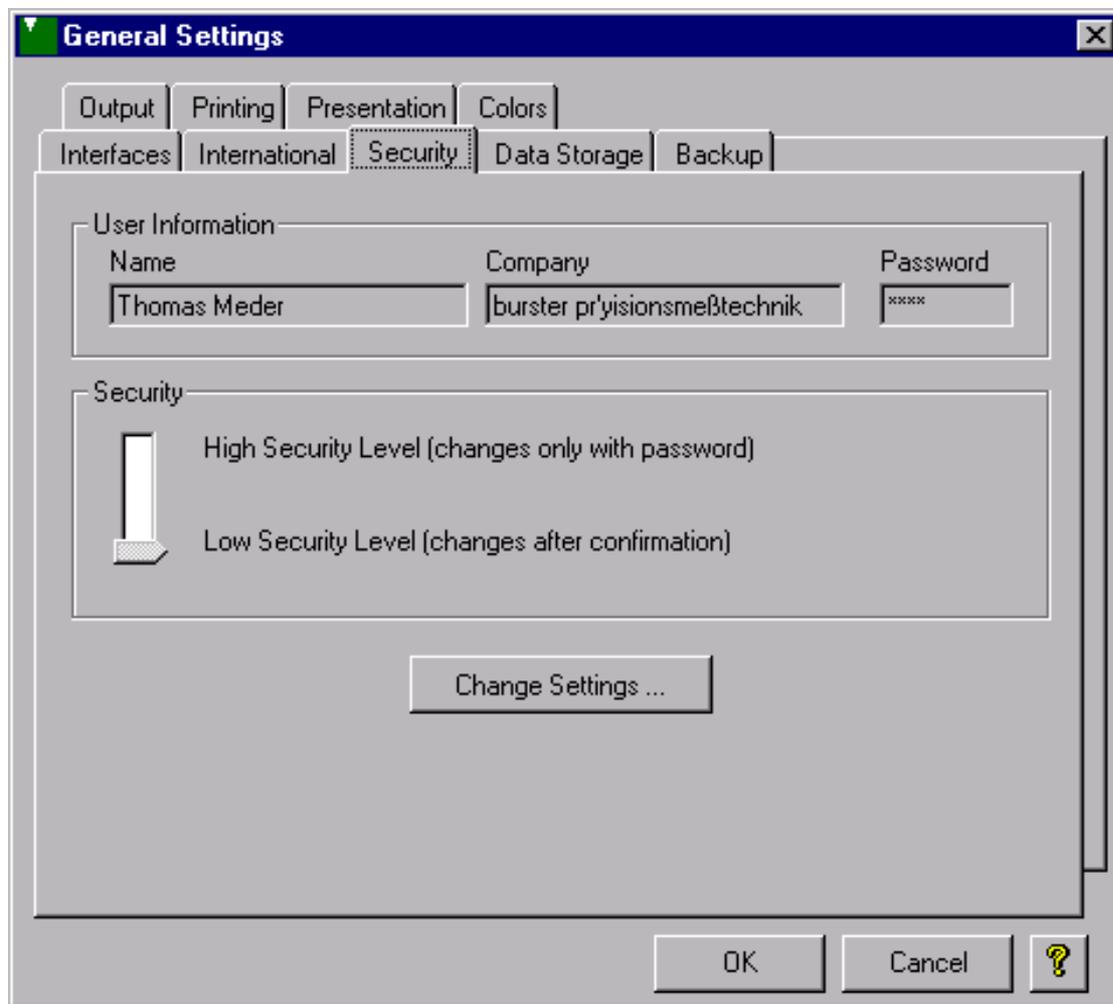
Change Password

To change the password, enter the password that is currently valid.

Now, select the Password field and enter the new password of your choice. The new password becomes valid after you confirm your selection by clicking on the *Yes* button.

User Information

[Edit -> General Settings -> Security]



In order to make changes to the *User Information* or *Security*, you first need to enter the program password.

Entries can now be made in the fields and you can edit the *User Information*.

Name

After you have entered the password, enter your name or the name of the inspector working with the program in this field.

Company

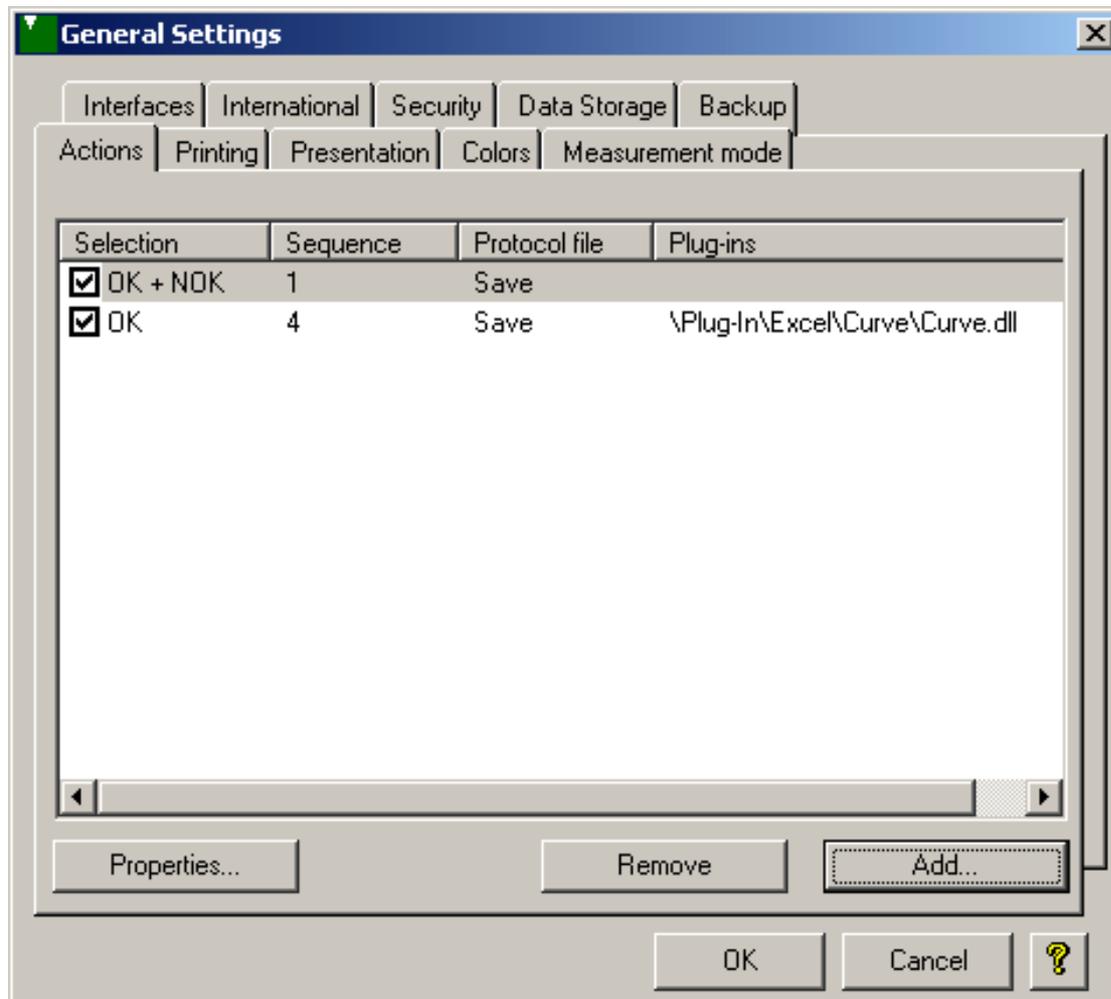
After you have entered the password, enter the name of your company in this field.

Password

You cannot see the password – only the number of characters you have entered. Only asterisks are displayed.

Actions

[Edit -> General Settings -> Actions]



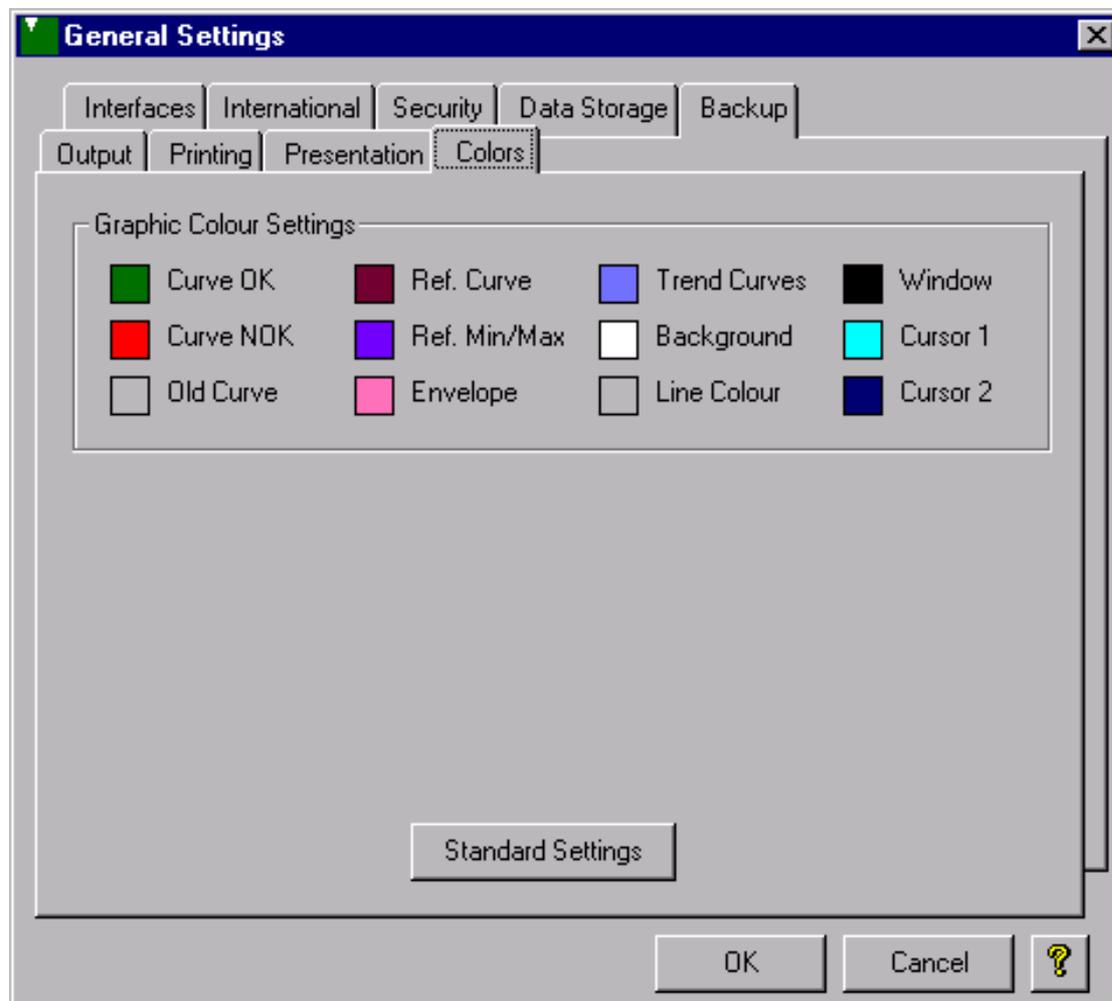
Under **Actions** Procedures will be defined which were executed after every measurement. Each entry in the list matches one action which optional was executed only at a especialy evaluation result or sequence.

With option **Selection** you can activated the Plug-In or deactivate for a special time.

With Properties the separate dialog Action Settings appears. There you can setup the action details.

Colors

[Edit -> General Settings -> Colors]



Colour Settings

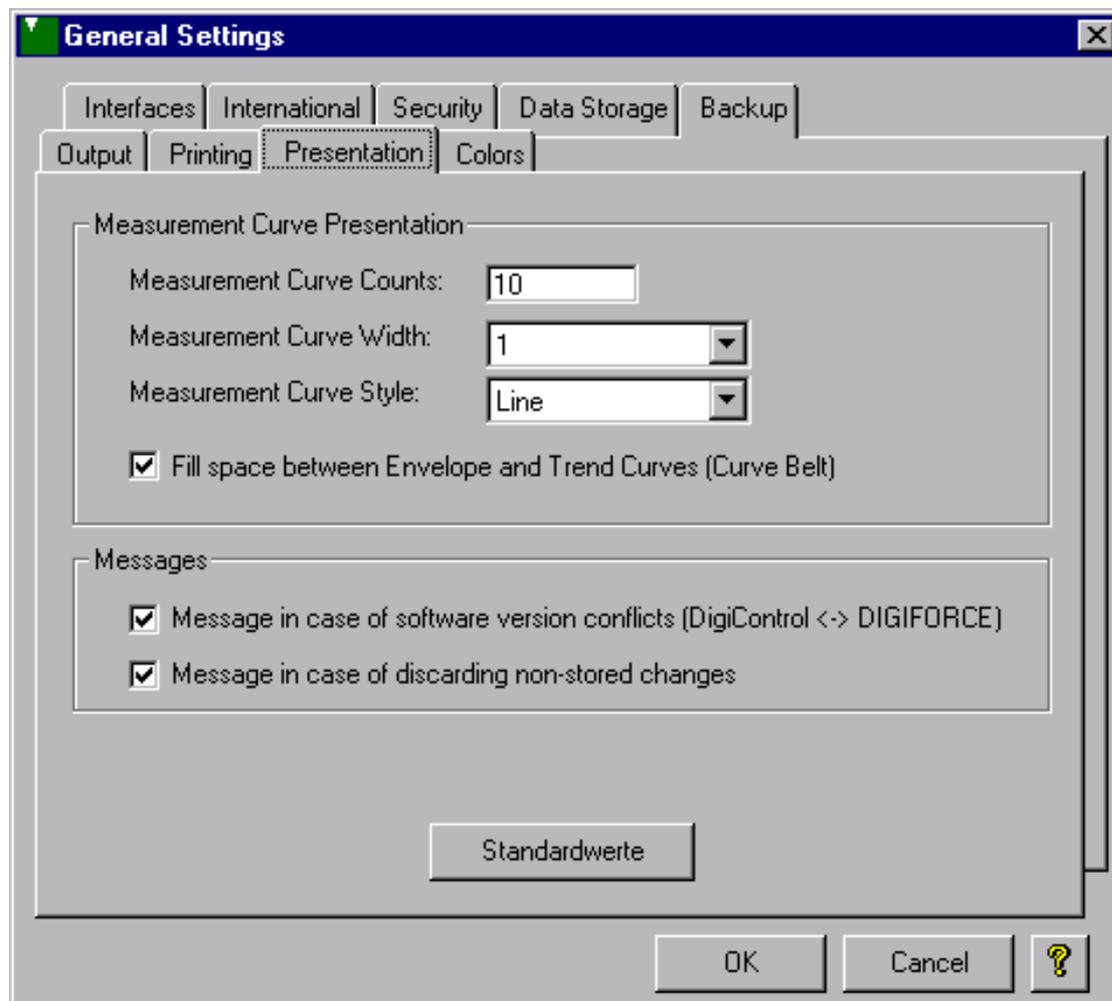
You can select the following colours for the presentation of measurement curve graphics:

- Measurement curve OK (valuation OK)
- Measurement curve NOK (valuation not OK)
- The old Measurement curves (only with option Array of Curves in Program-Measure)
- Reference cursor 1
- Position cursor 2
- Background
- Grid line colour
- Evaluation window
- Reference Curve
- Reference Min-/Max-Curves
- Envelope Curves
- Trend Tracking Curves

0 You can return to the original settings by clicking on the *Standard Settings* button.

Presentation

[Edit -> General Settings -> Presentation]



Measurement Curve Presentation

You can select *Line* or *Dots* in the *Measurement Curve Presentation* as well as the line width. This has the advantage in case you want to watch outliers, for example, but the line display influences the curve slope.

You can edit the value for option *Measure Curve Count Quantity* during Teach-in (Measure) from 0 to the maximum value. With a value >1 you receive a curve array when you Teach-in (Measure).

Messages

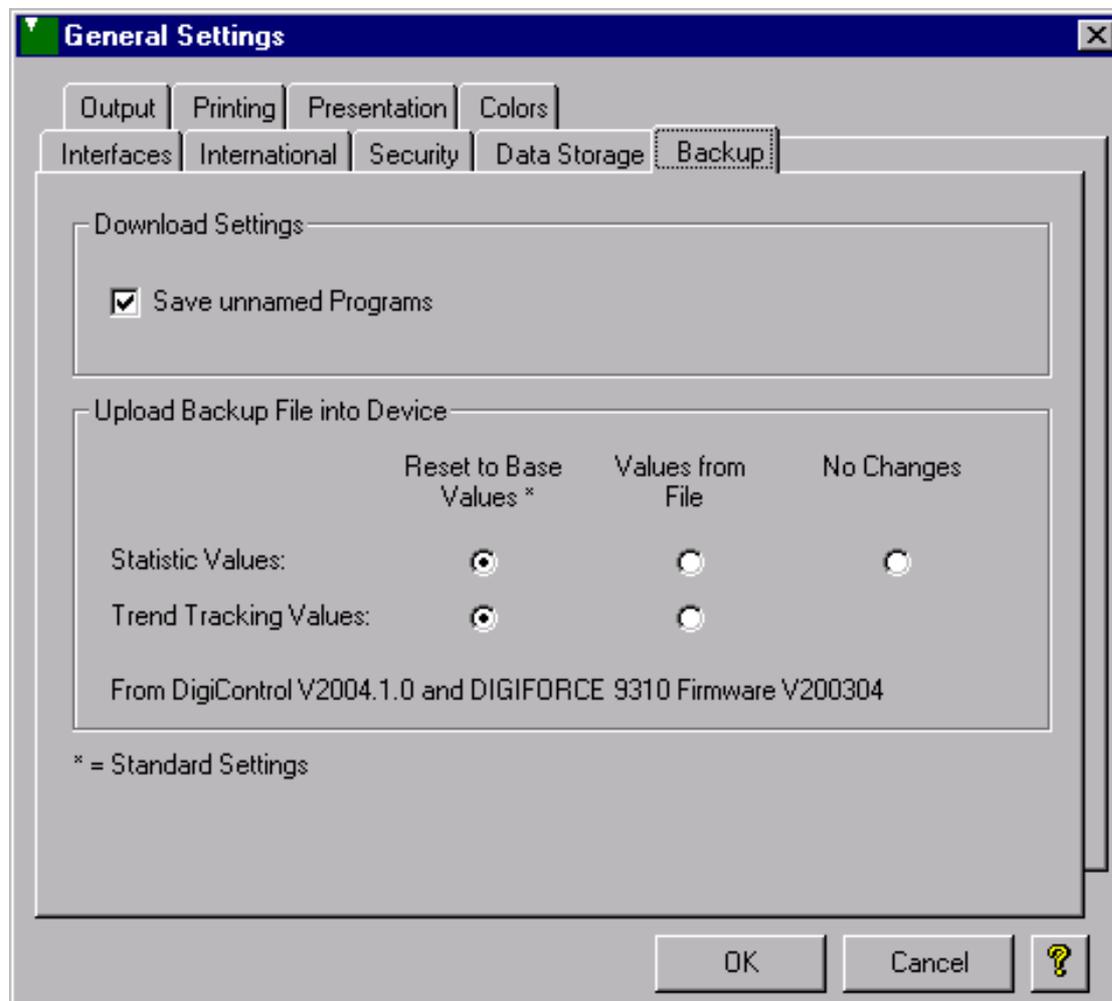
With this option you can activate the displaying of the following messages if necessary:

- Security message if DigiControl 9310 communicates with a device which have a newer software version and new commands and DigiControl 9310 didn't know all commands. In this case you should ask for an DigiControl 9310 update.
- Security message if you Cancel changes in the Parameterize or Program Dialog.

You can return to the original settings by clicking on the *Standard Settings* button.

Backup

[Edit -> General Settings -> Backup]



Download Settings

This setting decides whether all programs (also no named) or only the renamed programs should be saved during device backups (*Save no-named Programs*).

Note: Please acknowledge that the activation of this option prolongs the transfer time of a Downloads!

Upload Backup file into device (from DIGIFORCE firmware V200304)

Reset to Base (Reset)

During Upload of a backup file all Statistic Values were reset to the base values. Also the values for the trend tracking can be optionally reset if Trend is active.

Values from File

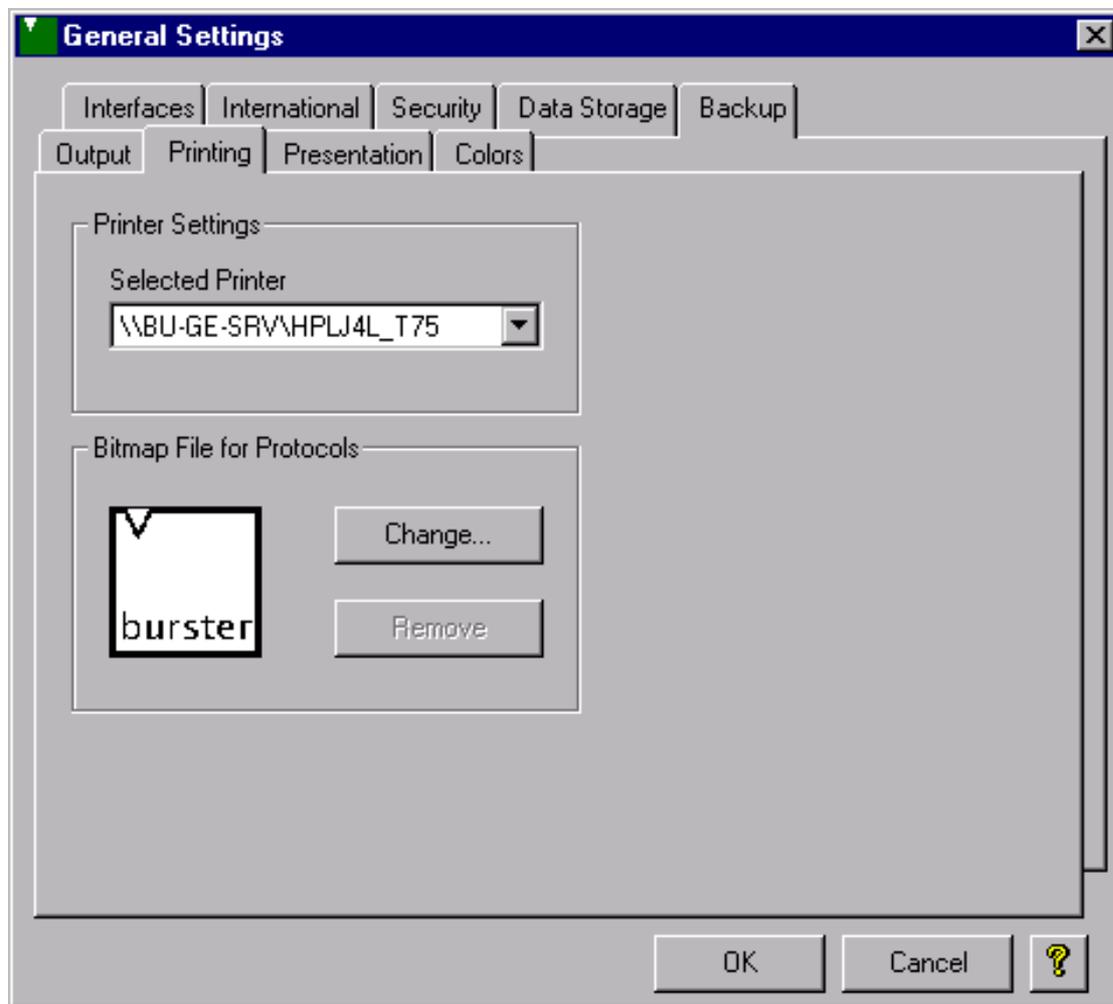
If statistical values are present in the backup file the complete statistics and trend tracking configuration (if active) can be transmitted to the replacement device. This feature is also useful for applications with more than 8 active measurement programs per DIGIFORCE®.

No Changes

The statistic of a DIGIFORCE® remains unchanged during the Upload of a backup file.

Printing

[Edit -> General Settings -> Printing]



Printer Settings

All systems printers are listed here. The standard setting is preset on the standard printer which is used for protocol printouts.

If you prefer to use a different printer for the DigiControl 9310 you should select it at this point.

Bitmap File for Protocols

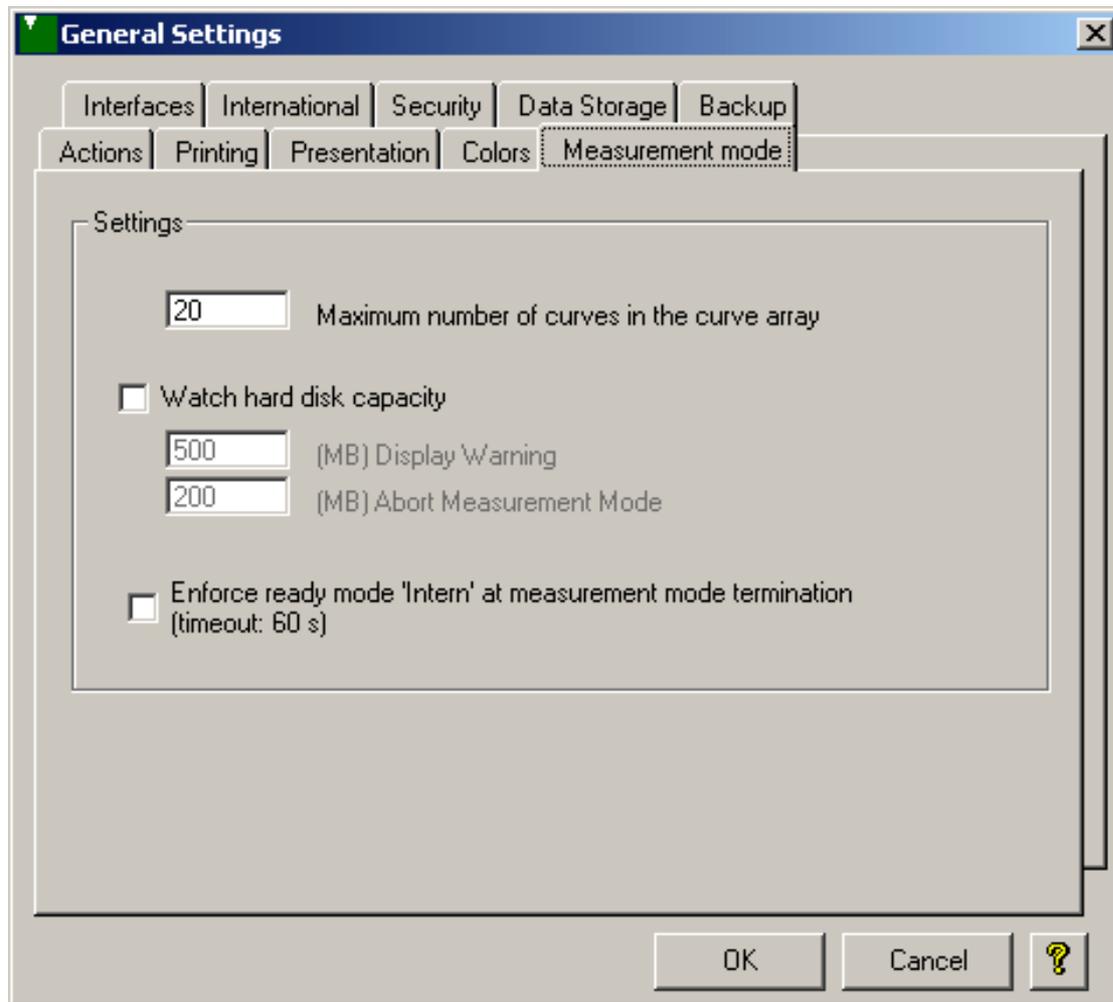
For printouts of Measurement Protocols, Statistic Files, Curve Array Files and Device Parameter Settings (Backup files) you may incorporate your own logo symbol on the documents.

Kindly select a bitmap file with adequate resolution with **Change**.

In case you **Remove** this later on, the standard burster logo is incorporated again.

Measurement Mode

[Edit -> General Settings -> Measurement Mode]



Settings

Maximum number of curves in the curve array

If the Details -> Last Measurement curve is active during the Measuring mode the number of curves is equal to this value. The value range is from 1 au to 100. But please note that the processing of several curves in the graphic needs more and more time. At time critical applications the number of curves should be very little.

Watch hard disk capacity

If you want to prevent a crash of your operating system because of an insufficient hard disk space you can edit the value for a warning message and the abortion of the measurement mode.

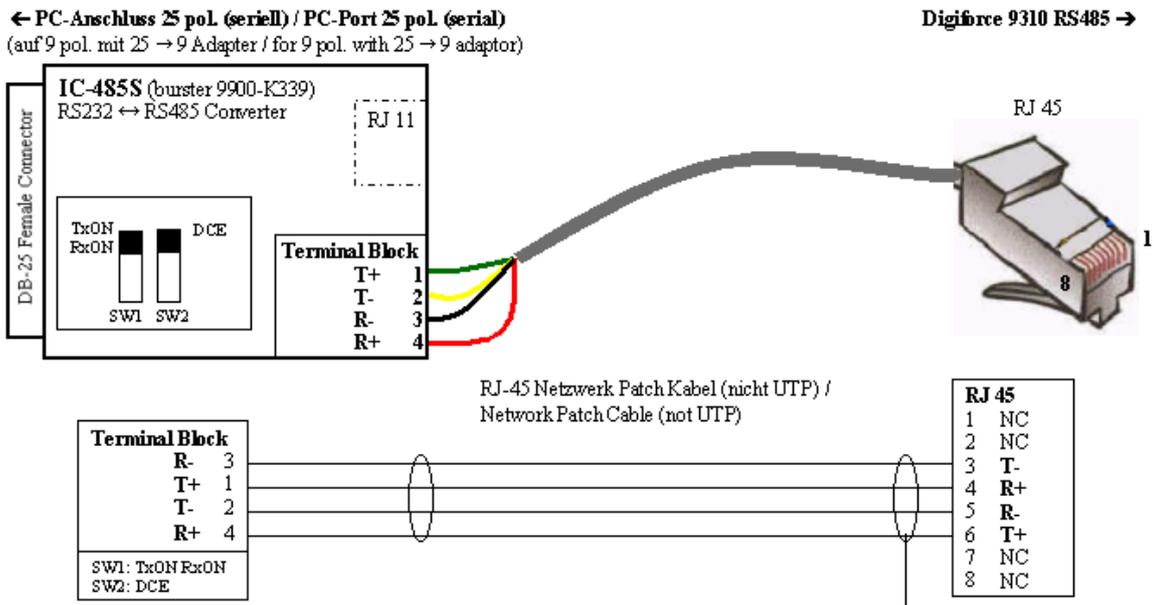
RS 485 Operation

You can connect several DIGIFORCE 9310 with help of appropriate connection wires and a RS 485 – RS 232 converter IC-485S (burster 9900-K339) to a computer interface.

Do only apply a 4 wire full duplex connection!

Use the following figure for wiring and for the converter setting:

Verdrahtungsschema Digiforce 9310 mit RS232 ↔ RS485 Umsetzer IC-485S /
Wiring Schema Digiforce 9310 with RS232 ↔ RS485 Converter IC-485S
 Punkt zu Punkt , 4-Draht Vollduplex / Point to point, 4-wire full duplex



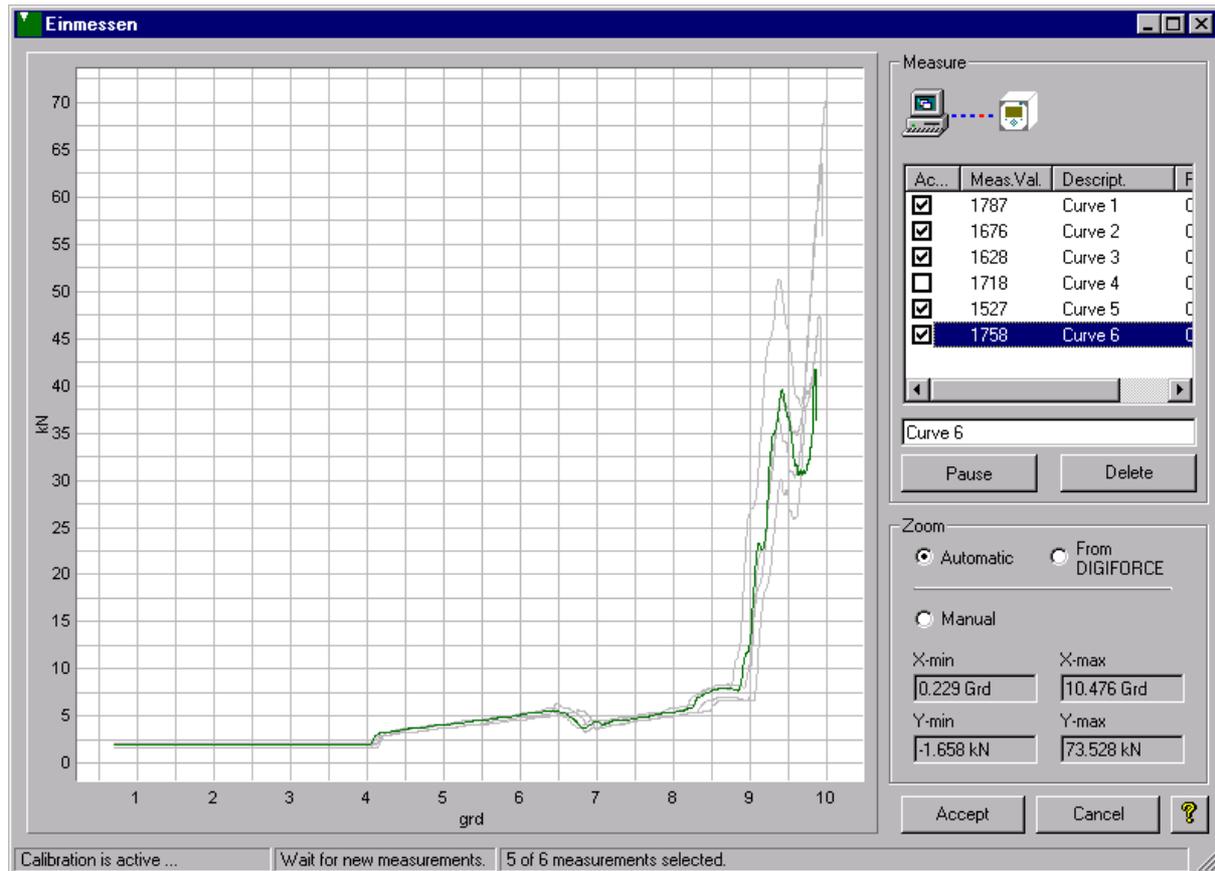
Measure (Teach-in Array of Curves)

The array of curves can be recorded for 20 measurements. The exact quantity of max. measurement curves can be set under General Settings – Presentation.

With the help of this array of curves, a new envelope could be generated, for example, or the evaluation windows could be placed. Furthermore, the curve array may be printed out.

The curve array can be saved to a file eventually and loaded again later on.

Please note: *During the curve array measurements the statistical counter of the DIGIFORCE® is deactivated.*



Measure

The animation of the above displayed graphic shows that measurement is active.

Active

The measurement curve is accepted for calculation in the dialog Parameterize Program if the related line is checked in the list. If the check box is deactivated, the measurement would be erased beforehand.

During the capture of measurement curves the resulting files are always recorded from top to bottom (until max. quantity of measurement curves is reached) and the previous curves are simply overwritten in the list. After this the checkbox is activated again.

Meas. Val.

Quantity of *Measurement Values* of the corresponding measurement in the list.

Description

To add a certain *Description* to a measurement curve you simply need to enter it in the text field positioned below the list. However please acknowledge that the corresponding measurement curve must be checked in the list.

Result

Display of the evaluation *result* of the corresponding measurement.

Pause

To halt the measurement mode for a short time and eventually effect changes in the configuration of the DIGIFORCE® the key *Pause* can be used. Additionally, this activates the statistics counter in the DIGIFORCE®.

Delete

Press this key to *delete* all measurement curve recordings in the list and to start a new.

Zoom

The scaling of the measurement curves' graphic is meant by *Zoom*. You have the choice of *Manual*, *Auto* and *from DIGIFORCE*.

Manual

In mode *Manual Zoom* the scaling always stays constant, as it is preset in the number fields *X-min / X-max / Y-min / Y-max*.

Auto

In mode *Auto* the optimal display is demanded in which all active curves can be displayed in their completeness.

From DIGIFORCE

Select this option if you intend to stay with the graphic resolution of the DIGIFORCE®.

X-min / X-max / Y-min / Y-max

The present scaling of the graphic can be taken from these number fields. In *Manual Zoom* these values are editable and can be changed directly by input manually.

Capture the zoomed area with the mouse

Keep the [STRG]-key pressed, while you mark the part of the graphic to be enlarged in rectangular form with the left mouse key. After you release the mouse key this part will be displayed close-up in the graphic.

Accept

To *Accept* the recorded measurement curves please press this key. Please note that the previously recorded curve array might be overwritten in the dialog Parameterize Program if these have not been saved, yet.

Cancel

If you want to neglect the captured measurement curves you have to push the button *Cancel*.

Envelope

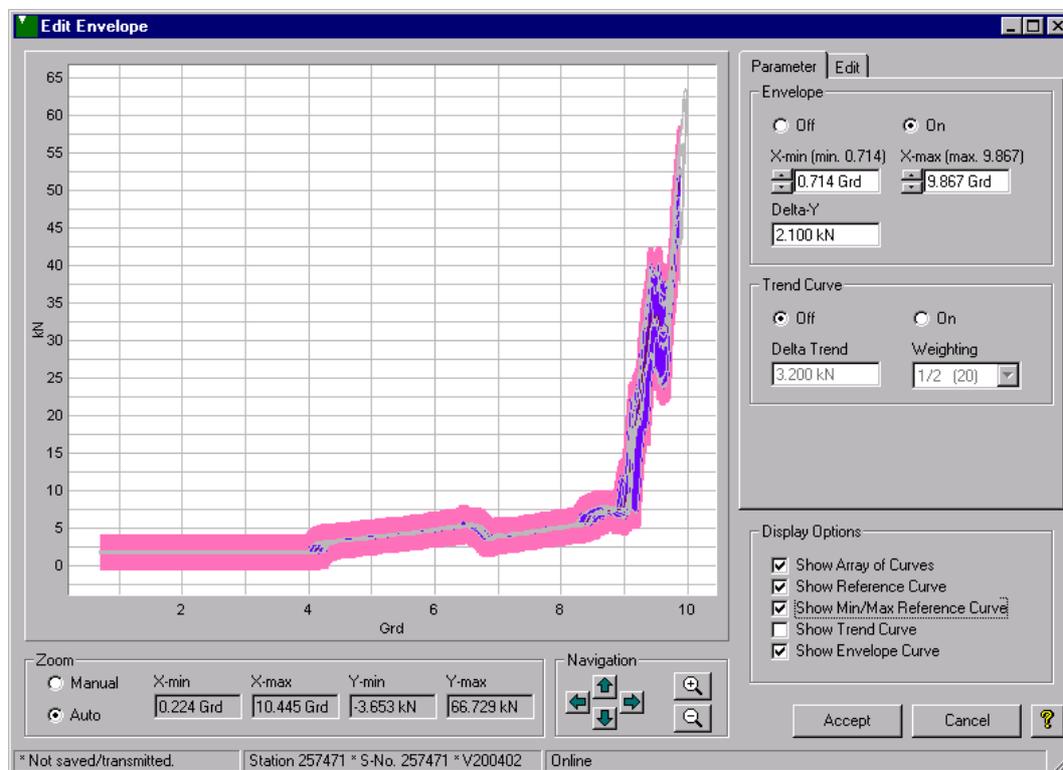
General

The envelope curve is an additional evaluation method. The measurement curve needs to run through the envelope curve band without passing the upper and lower limits in order to identify the produced as OK-part

Creation of an envelope curve:

The reference curves are created with the help of a bundle of measurement curves. This results in the calculation of a curve with averaged values which is to be considered as the actual reference curve, as well as a minimum and maximum reference curve which represents the positive and negative limit to the reference curve.

The Min-/Max-reference curves are wrapped by the envelope curve band. This can be widened by the Delta-Y value and by means of the X limits, the start and end value of the tolerance band can be determined.



Display options

It can be very helpful for clarity reasons to hide/display certain curve slopes while working on the envelope curve configuration. This is done with the display options. The configuration of the related curve colour can be done in General Settings – Colors can be done in the display menu; the way to display the curves (bold or style) can be done in GeneralSettings – Presentation.

Show Array of Curves

If you have set the dialog program parameters to load a curve bundle from a file or measure the same you may switch it invisible / visible.

Show Reference Curve

Select this option if the reference curve should be displayed.

Show Min/Max Reference Curves

The selection of this option decides whether the min/max reference curves was displayed or not. The display can be selected as curve line / curve band in the GeneralSettings – Presentation.

Show Envelope Curves

Select this option if the envelope curves should be displayed. The selection of display as curve line / curve band can be done in the GeneralSettings – Presentation.

Show Trend Curves

This option defines if the trend curves was displayed. The selection of display as curve line / curve band can be done in the GeneralSettings – Presentation.

Zoom

The zoom is equivalent to the scaling of the measurement curve graphic. A manual and automatic mode are offered.

Manual

The scaling that was configured in the *number fields X-min / X-max / Y-min / Y-max* when mode *Manual Zoom* is active.

Auto

The mode *Auto* results in an optimal display in which all active curve types are completely shown. Please note that in this mode the even with use of navigation the auto zoom is done with the changing of parameters.

X-min / X-max / Y-min / Y-max

The present scaling of the graphic can be taken from this number field. These values may be edited manually with manual zoom.

Capture the zoomed area with the mouse

Keep the [STRG]-key pressed, while you mark the part of the graphic to be enlarged in rectangular form with the left mouse key. After you release the mouse key this part will be displayed close-up in the graphic.

Navigation

The partial display and resolution of the graphic are changed with the help of navigation. When you keep the navigation key pressed the corresponding function is repeated until you release it.

Accept

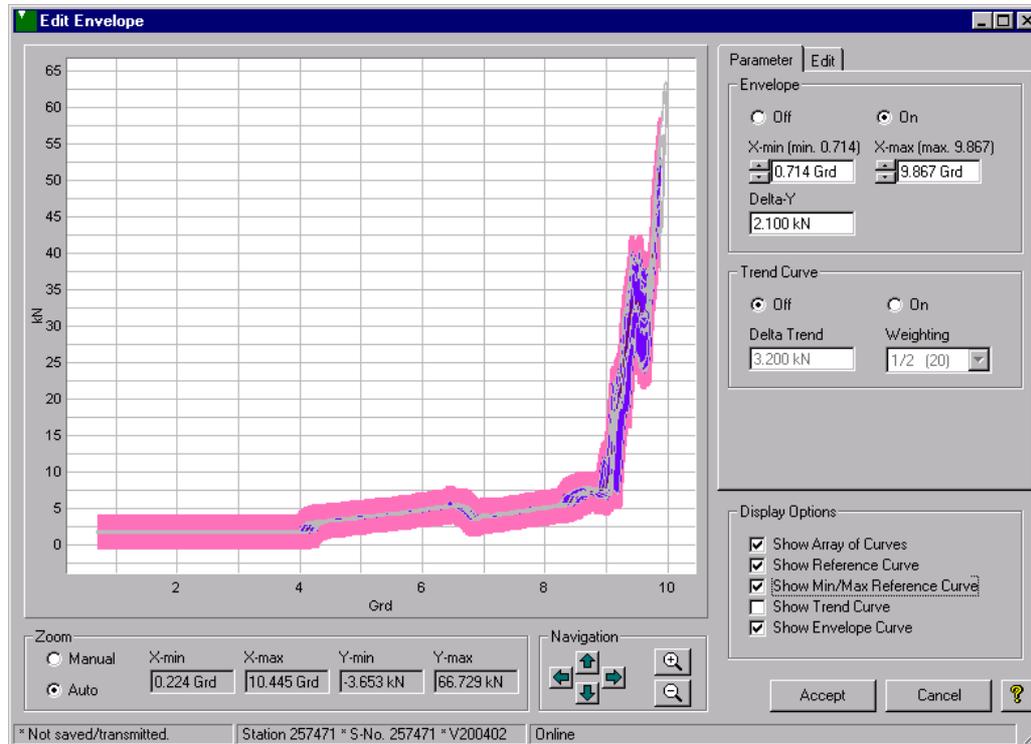
To *accept* the changes in the envelope curve configuration please press this key. IMPORTANT! These settings are transmitted to the device only after you press the key *accept* resp. *Save Program Settings* in the dialog Parameterize Programs!

Cancel

Press this key if you intend to reject the changes made in the envelope curve configuration. The previous program settings in the dialog Parameterize Programs are consequently restored.

Envelope Parameter

To learn more about the Envelope Evaluation please click [here](#).



Envelope

On / Off

Switch the Envelope function generally on or off at this control.

X-min / X-max

Determine the start and end of the envelope curve on the X-axis in this field. The limiting values which are not to be passed can be found under X-min and X-max in brackets.

Delta-Y

This value defines the Delta-Y value which is wrapped around the forward or backward moving curve of the curve.

Trend Curve

On / Off

Here you switch on / off the function Trend curve / Trend tracking.

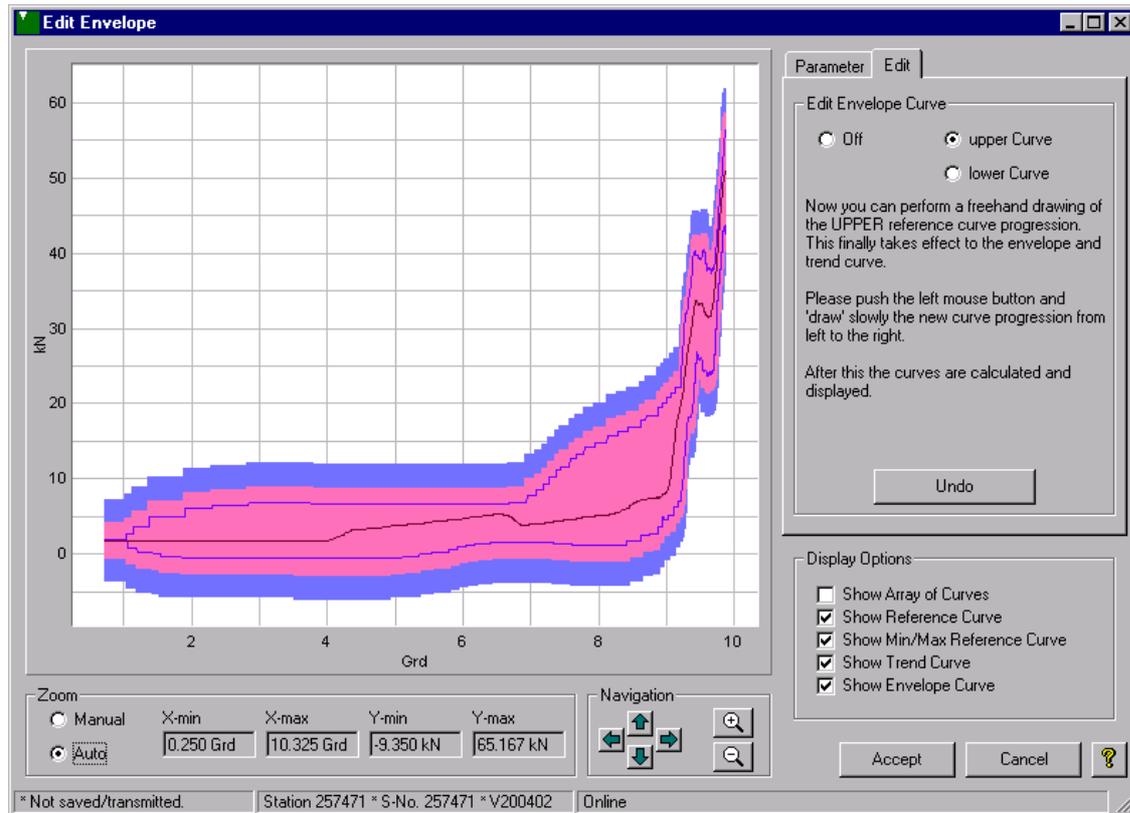
Delta Trend

The Delta Trend value indicates the distance from the envelope curve limits to the trend curve limits. These set trend limits must not be reached by the envelope curve in measurement mode – otherwise the measurement is valued as NOK with the trend function switched on.

Weighting

The weighting defines the influence of a measurement on the tracking of the envelope curve within the trend limits. A weighting of $\frac{1}{256}$ has the greatest and $\frac{1}{256}$ the smallest influence on the present measurement curve on the trend.

Edit Envelope



Edit Envelope

Off

You need to select the *upper curve* or *lower curve* in order to edit the envelope curve manually.

Upper curve

To edit the curve slope of the upper reference curve (max-reference curve) graphically you need to switch this option on. Then you may draw the required curve slope freehandedly while keeping the left mouse key pressed. You should proceed as *slow* as possible from *left to right* so that as many points as possible are captured for the calculations.

Important: Stay always above the reference curve since you are working on the upper (max-) reference curve!

Lower curve

To edit the curve slope of the lower reference curve (min-reference curve) graphically you need to switch this option on. Then you may draw the required curve slope freehandedly while keeping the left mouse key pressed. You should proceed as *slow* as possible from *left to right* so that as many points as possible are captured for the calculations.

Important: Stay always below the reference curve since you are working on the lower (min-) reference curve!

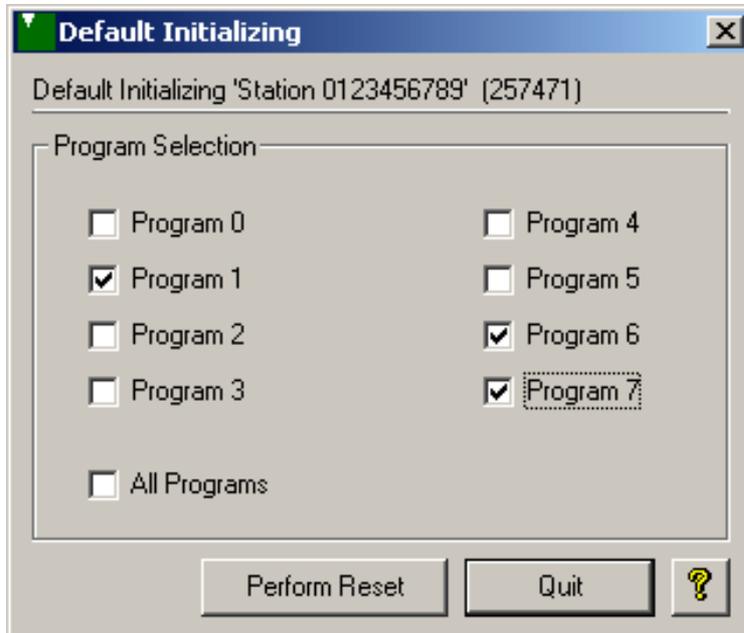
Undo

The graphical editing of the envelope curve can be undone pressing the key *Undo* in a maximum 10 steps.

Default Initializing

[Edit -> Default Initializing]

Select **Default Initializing** in the menu **Edit**. The following dialog opens up:



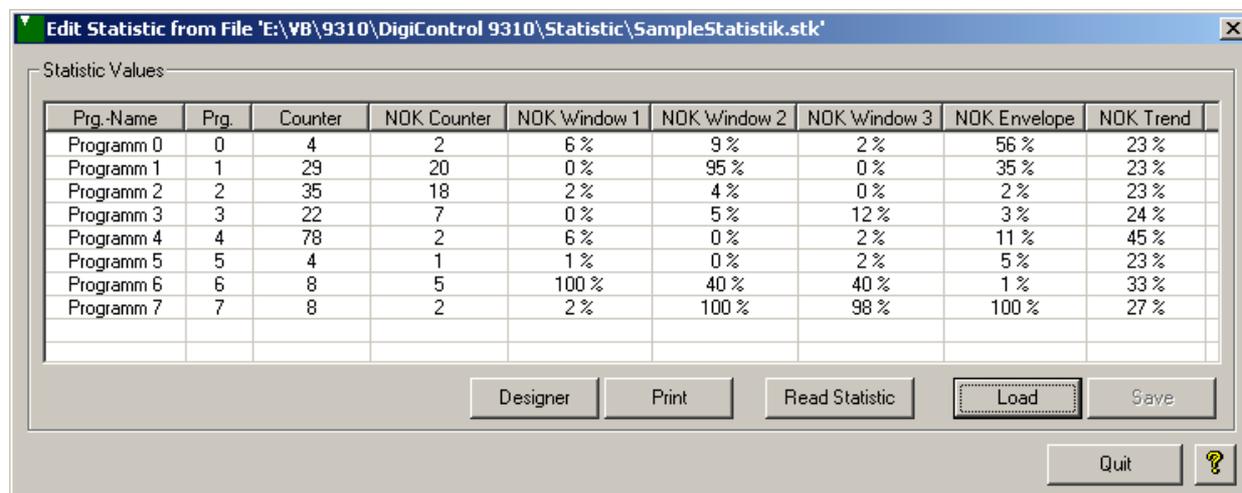
With **Default Initializing**, all parameters of the selected measurement program are reset. (Initialization of standard values). Then the program is in the original condition when delivered.

Important Note: Kindly acknowledge that the complete configuration of the selected measurement program is lost if you do the Default Initialization. Eventually you should create a Backup-Datei ahead of time.

Edit Statistic

[Edit -> Statistic]

Select **Statistic** in menu **Edit** – the following dialog will open up:



Read Statistic

Press this button in order to readout the statistics of all measurement programs of a DIGIFORCE®. According to the configuration of the measurement program you receive the available statistical data. These can be reset by Perform Reset.

Load

Statistical data that was previously saved to a statistics file can later on be loaded and e.g. printed out.

Save

Statistical data that was readout from the DIGIFORCE® previously can be saved under an editable statistic file and loaded again and printed, for example, at a later point in time.

Print

In order to print the statistical data, you need to read them out from the DIGIFORCE® or loaded from a statistics file. All available statistics data will be printed from the DIGIFORCE®:



Edit Statistic DIGIFORCE 9310

DigiControl 9310 Beta
Version V2004.1.0



E:\VB\9310\DigiControl 9310\Statistic\SampleStatistik.stk

23.02.2004 15:21:21

Page 1

DIGIFORCE 9310 Serial Number: 11111
 DIGIFORCE 9310 Name: Station 11111
 Record Date: 20.02.2004 08:00:00
 File Checksum (Digital Signature): OK

Prg.-Name	Prg.	Counter	NOK Counter	NOK Window1	NOK Window2	NOK Window3	NOK Envelope	NOK Trend
Programm0	0	4	2	6 %	9 %	2 %	56 %	23 %
Programm1	1	29	20	0 %	95 %	0 %	35 %	23 %
Programm2	2	35	18	2 %	4 %	0 %	2 %	23 %
Programm3	3	22	7	0 %	5 %	12 %	3 %	24 %
Programm4	4	78	2	6 %	0 %	2 %	11 %	45 %
Programm5	5	4	1	1 %	0 %	2 %	5 %	23 %
Programm6	6	8	5	100 %	40 %	40 %	1 %	33 %
Programm7	7	8	2	2 %	100 %	98 %	100 %	27 %

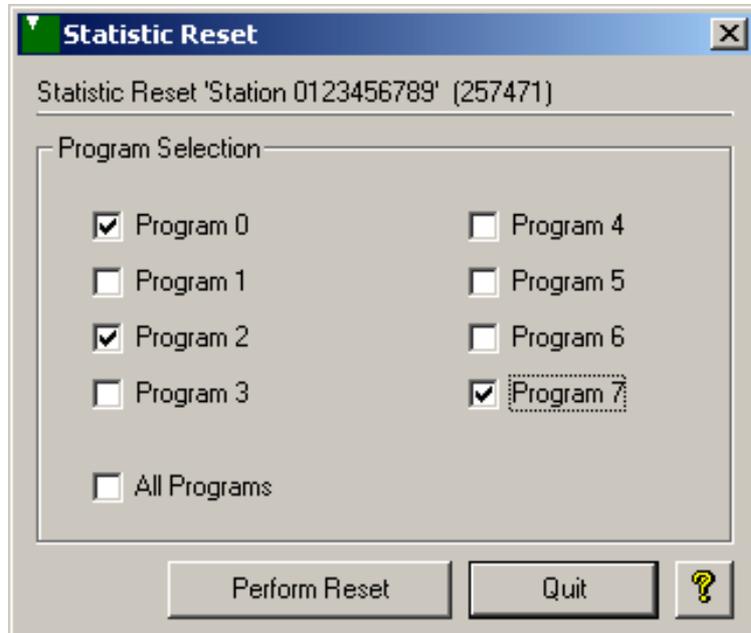
burster präzisionsmesstechnik gmbh & co kg - Talstr. 1-5 - D-76593 Gernsbach

Further information about Print Preview you get here.

Statistic Reset

[Edit -> Statistic Reset]

After selecting **Statistic Reset** in menu **Edit**, the following dialog will open up:



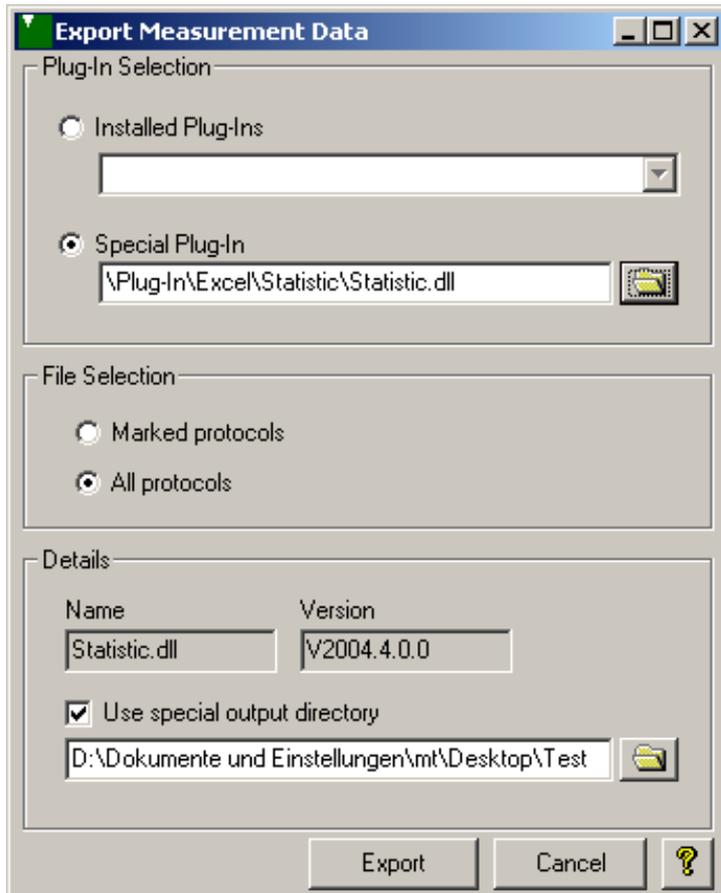
Every measurement program contains the following statistical data:

- Piece counter
- NOK-counter
- NOK window statistics for window 1 to 3
- NOK envelope curve statistics (from DIGIFORCE® firmware V200304)
- NOK Trend statistics (from DIGIFORCE firmware V200304)

The a.m. statistics data of the selected measurement programs will be reset to ,0' with a statistical reset.

Important note: Please acknowledge the fact that a **Reset** erases all statistical data of the selected measurement program! Kindly consider to create a Backup-File eventually, containing the complete device settings or save the present statistical data to a statistics file.

Export



It is possible to export measurement data immediately during measurements or later on into other formats such as Excel. For later transfer it is possible to select the measurement protocols by searching for specified criteria and then export only these ones. The corresponding plug-ins are to be used for this process.

Installed Plug-Ins

If you have already activated the Plug-Ins in the presettings then they will appear in the box „Installed Plug-Ins“. Select the right one for your requirements.

Special Plug-In

If you do not want to use the pre-installed Plug-Ins then please use the menu point „Special Plug-In“.

File Selection

To export only selected protocols please make your choice from the protocol list with the help of the left mouse button, the CTRL and SHIFT keys. For export please choose the option „**Marked protocols**“.

Only these selected measurement protocols are then exported.

If you wish to export all measurement protocols from the list then choose „**All protocols**“.

Details

Here you find the indications on the applied plug-ins such as e.g.: the *Name* or the *Version*.

For most Plug-Ins you may configure the content index of result files (e.g. Excel) by selecting the valid path in the menu „special output directory“.

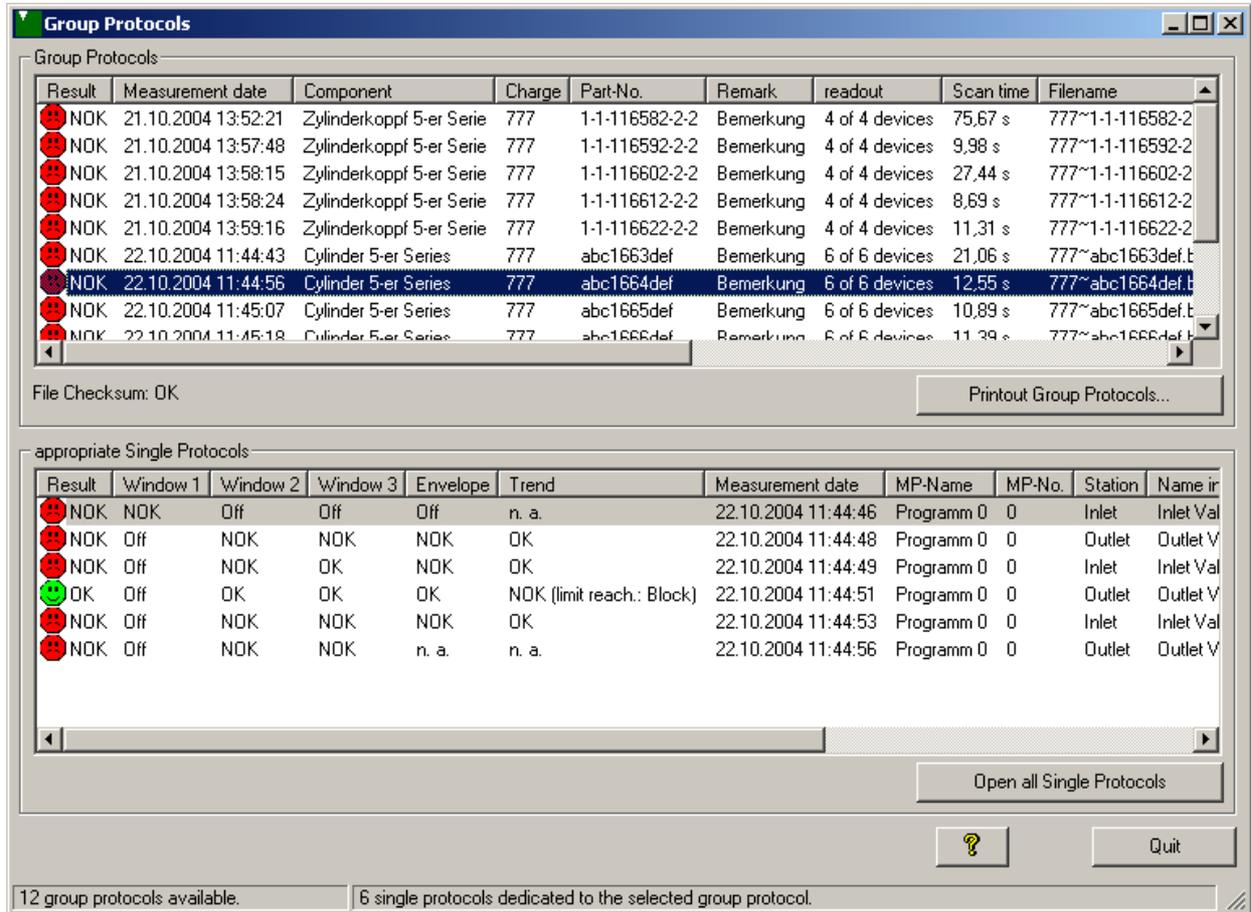
Complex plug-ins offer the possibility to effect a plug-in internal setup.

For further details please refer to Description of the plug-in interface.

Search Group Protocols

[Measure -> Search and edit Measurement Protocols -> Search Group Protocols]

In the upper part of the table, the opened group protocols are displayed. Every group protocol corresponds to minimum one and maximum 32 group members whose protocols are listed in the lower part of the table.



Result	Measurement date	Component	Charge	Part-No.	Remark	readout	Scan time	Filename
NOK	21.10.2004 13:52:21	Zylinderkopff 5-er Serie	777	1-1-116582-2-2	Bemerkung	4 of 4 devices	75,67 s	777~1-1-116582-2
NOK	21.10.2004 13:57:48	Zylinderkopff 5-er Serie	777	1-1-116592-2-2	Bemerkung	4 of 4 devices	9,98 s	777~1-1-116592-2
NOK	21.10.2004 13:58:15	Zylinderkopff 5-er Serie	777	1-1-116602-2-2	Bemerkung	4 of 4 devices	27,44 s	777~1-1-116602-2
NOK	21.10.2004 13:58:24	Zylinderkopff 5-er Serie	777	1-1-116612-2-2	Bemerkung	4 of 4 devices	8,69 s	777~1-1-116612-2
NOK	21.10.2004 13:59:16	Zylinderkopff 5-er Serie	777	1-1-116622-2-2	Bemerkung	4 of 4 devices	11,31 s	777~1-1-116622-2
NOK	22.10.2004 11:44:43	Cylinder 5-er Series	777	abc1663def	Bemerkung	6 of 6 devices	21,06 s	777~abc1663def.t
NOK	22.10.2004 11:44:56	Cylinder 5-er Series	777	abc1664def	Bemerkung	6 of 6 devices	12,55 s	777~abc1664def.t
NOK	22.10.2004 11:45:07	Cylinder 5-er Series	777	abc1665def	Bemerkung	6 of 6 devices	10,89 s	777~abc1665def.t
NOK	22.10.2004 11:45:18	Cylinder 5-er Series	777	abc1666def	Bemerkung	6 of 6 devices	11,39 s	777~abc1666def.t

Result	Window 1	Window 2	Window 3	Envelope	Trend	Measurement date	MP-Name	MP-No.	Station	Name in
NOK	NOK	Off	Off	Off	n. a.	22.10.2004 11:44:46	Programm 0	0	Inlet	Inlet Val
NOK	Off	NOK	NOK	NOK	OK	22.10.2004 11:44:48	Programm 0	0	Outlet	Outlet V
NOK	Off	NOK	OK	NOK	OK	22.10.2004 11:44:49	Programm 0	0	Inlet	Inlet Val
OK	Off	OK	OK	OK	NOK (limit reach.: Block)	22.10.2004 11:44:51	Programm 0	0	Outlet	Outlet V
NOK	Off	NOK	NOK	NOK	OK	22.10.2004 11:44:53	Programm 0	0	Inlet	Inlet Val
NOK	Off	NOK	NOK	n. a.	n. a.	22.10.2004 11:44:56	Programm 0	0	Outlet	Outlet V

For every marked (blue background) entry in the upper group protocol list the corresponding single protocols of all group members appear. These can be available as protocol files. However, only those protocol files can be opened (Open all single protocols) which actually have a file name in the column „file name“. If there is no entry in this column then the protocol files were not saved (refer to presettings Actions).

If a group protocol file has been manipulated later on then it becomes obvious with the entry „Data checksum NOK“ in the corresponding group protocol.

For printout of the group protocols as a list or single pages press the button **Printout group protocols...**

Print group protocols

[Open protocols -> Search for group protocols -> Open -> Print group protocols]

Selection

Prior to printing group protocols you have to decide if **All** (all in the list) or only **Selected** Protocols should be printed. This is done in the print dialog. For selection of protocols please use the usual Windows methods: Multiple group protocols can be marked at the same time by marking the first and the last protocol in a coherent list. Single protocols can be selected from non-coherent lists by keeping the CTRL-key pushed down.

Print Options

Page

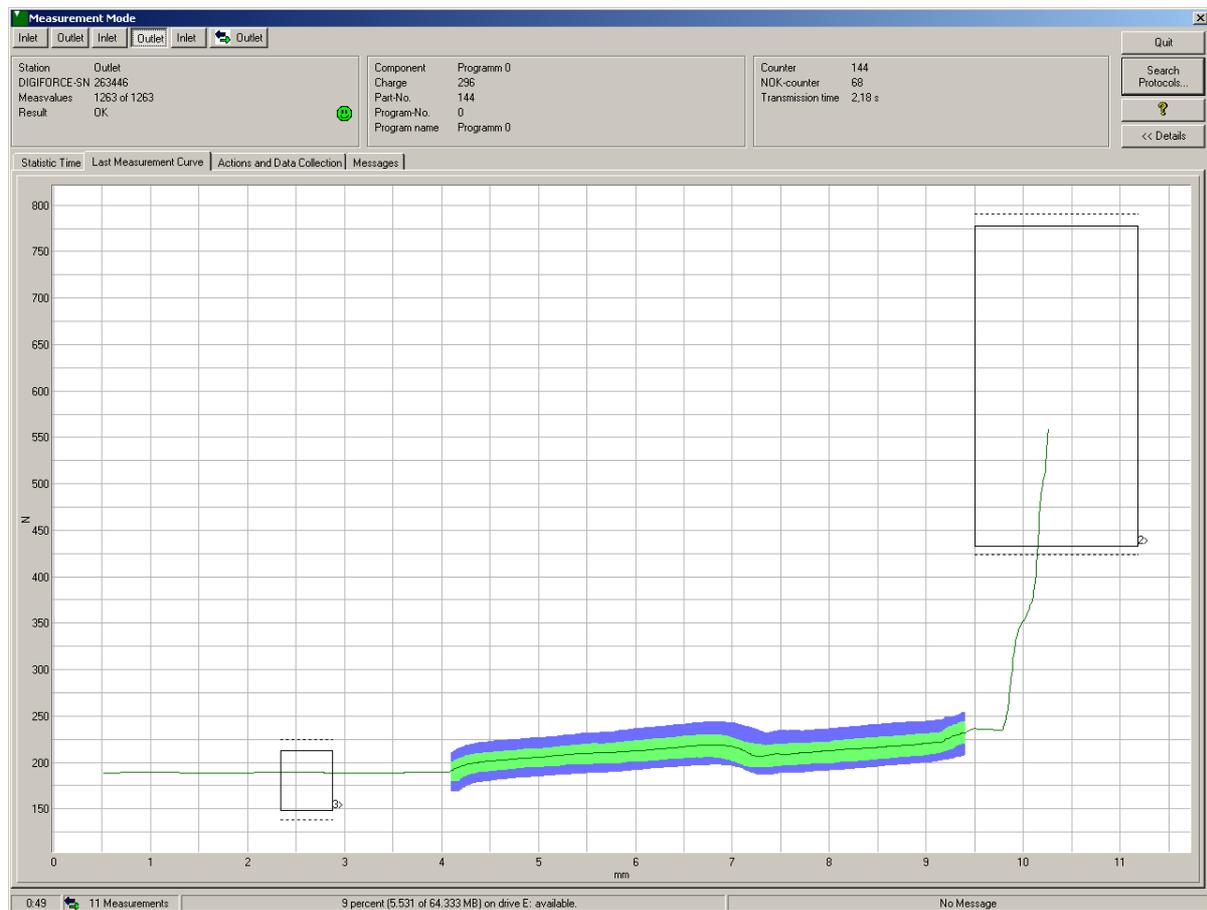
The group protocol is printed as a single page. The group's total result as well as the corresponding single results of the group members are listed therein. Optionally, the present worker's name and a description (not with the list) can be included. If this is not wanted by the user he must erase these fields.

List

An overview of the selected group protocols is printed in list form. On each protocol page there are max. 40 group results listed in 40 corresponding lines.

Start Measurement Mode

[Measure -> Start Measurement Mode]



Basically, there are two operation modes for measurement:

Simple measurement mode

All DIGIFORCE listed in the group list are asked for a new, valid measurement result in an ever-repeating slope. Every new measurement result may be transferred to the PC according to the definition of the parameters of a station, depending on the configuration, saved as per specific rules and eventually effective plug-ins.

Measurement mode with device group

The specifications of this operation mode is basically the same as for single measurement mode. However, one or more stations can form one device group and the overlapping group result needs to be displayed.

Details on this matter can be found at definition device group.

General

During the measurement mode you may choose the device whose measurement results (result, quantity measurement values, part no., etc.) you wish to display via the buttons displayed on the top of the menu.

Details

If the function *Details* is activated you will see the following tabs, depending on the operation mode:

StatisticTime (1)

An OK/NOK statistic is shown over a complete day (24 hours) for one station.

When a new day begins, the statistic starts anew during the measurement operation.

The display of the statistic bars can be *side by side* or *one upon the other*.

Statistics device group (2)

In this statistic, the OK/NOK-share of all group members of one device group is shown. Further information are available at **Device Group Statistic**.

Last measurement curve (1)+(2)

If the measurement curves are included for *data collection* for the corresponding station in the menu Properties -> Measmode you can see here the measurement curve(s) from this station.

Optionally, the creation of a curve bundle can be activated in General Settings -> Measmode.

However, please note that the graphical preparation, especially for the curve bundle, is an extra strain on the system and enlarges the time cycle for data transfer considerably.

Therefore, the function *last measurement curve* should only be activated for non-critical processes and test phases in relation to the processing time.

Actions and data capture(1)+(2)

Description of data capture informs about the data which is captured for the evaluation result, i.e. the data that is actually transferred from the device to the PC.

Action description informs about what happens to the previously captured data. For example, the execution of a concrete plug-in (e.g. EXCEL statistics) could be started, depending on the evaluation results. The pre-condition for this is always that *Action Protocol File* has been chosen.

Messages

Transfer errors or other important messages could be examples for information being listed in this table. The status line will inform you accordingly about the quantity of messages as well as a corresponding warning note.

Miscellaneous

- If you have the configuration software 9310-P101 you can test the program module production mode for maximum 3 minutes. It will be terminated automatically thereafter.
- The setting of all visible dialogs is saved when closing the program and restored when restarting it.

Important notes

- Please consider the Ready-Signale of all connected DIGIFORCEs during measurement mode!
Otherwise, an undefined start of the device caused by the PLC may lead to unwanted loss of data!
The data transfer is interrupted immediately upon START!

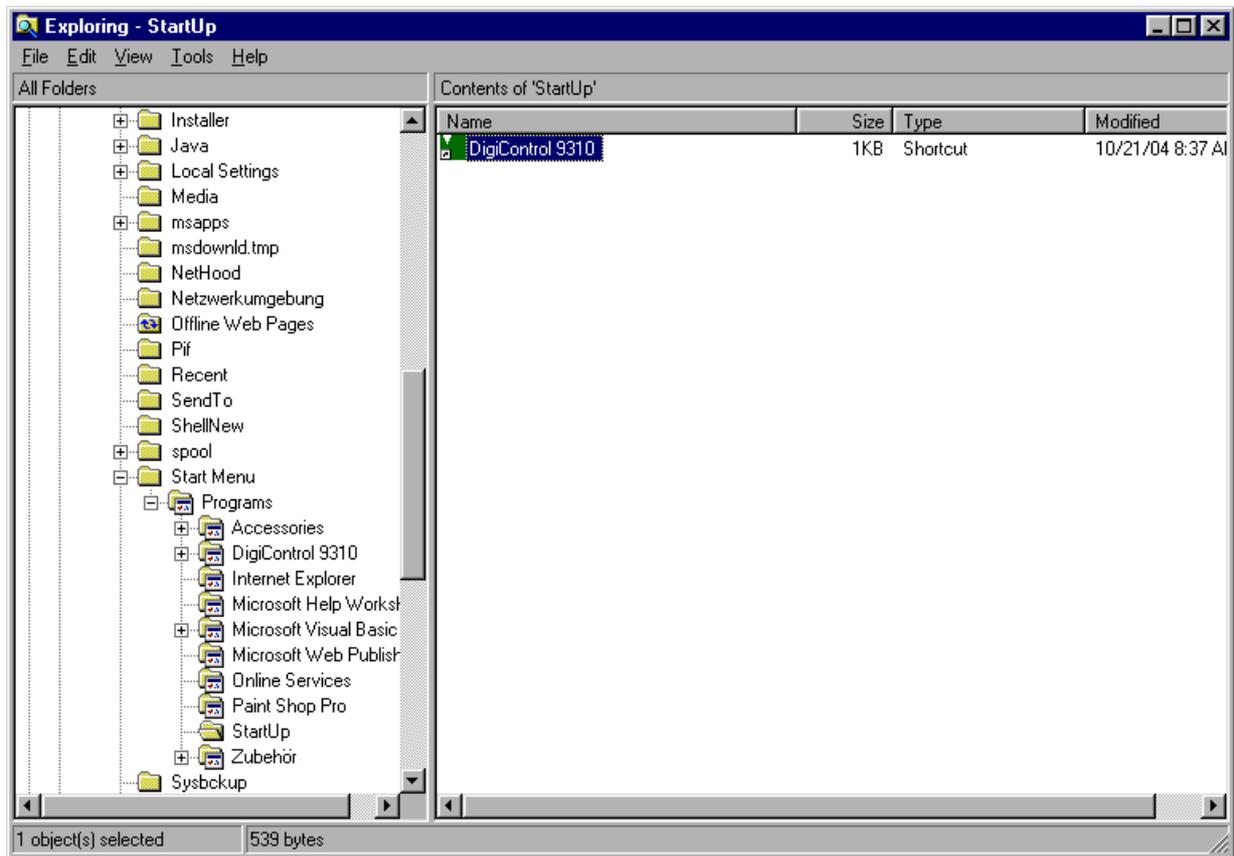
(1)= Device related

(2)= Group related

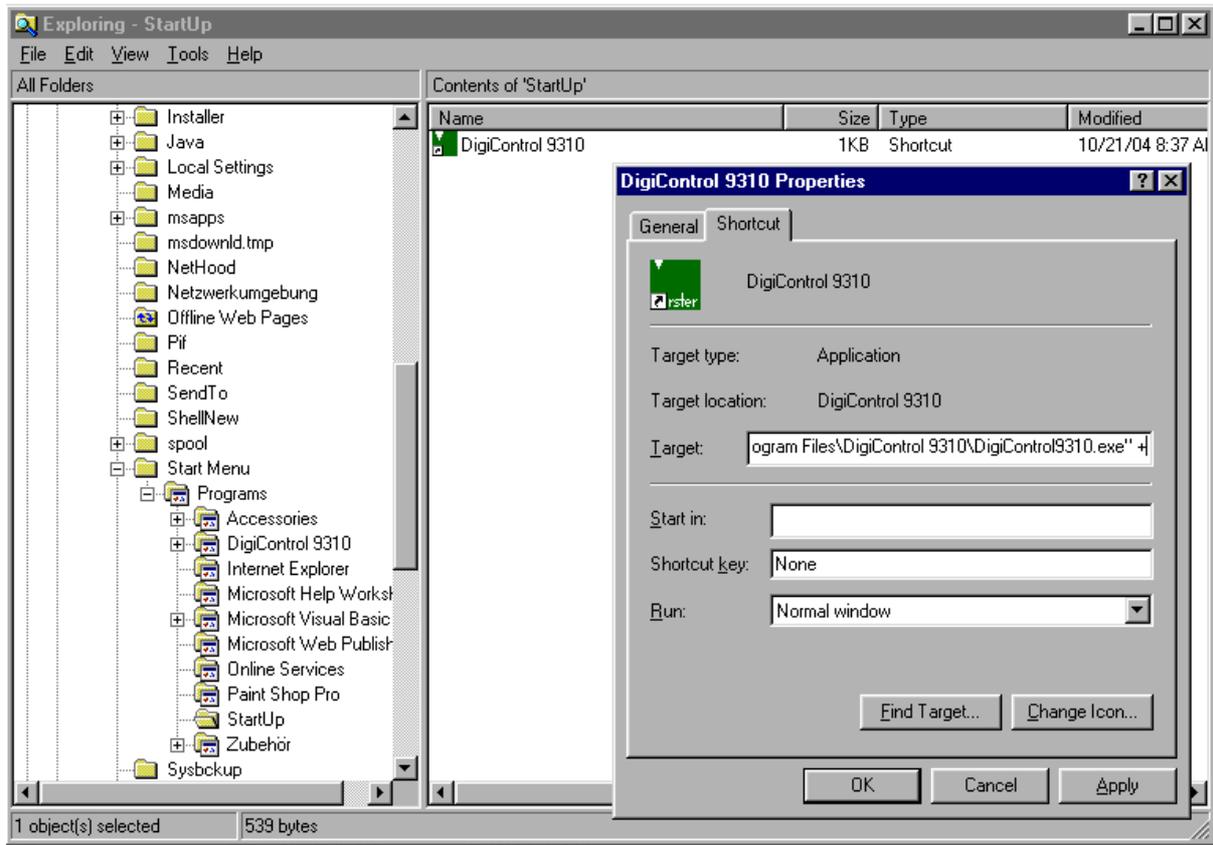
Automatic start of measurement mode

Follow the steps thereafter mentioned in order to set the DigiControl 9310 to measurement mode automatically upon start-up of the PC:

- Create a link of DigiControl 9310 in the autostart directory of the user profile in Windows:



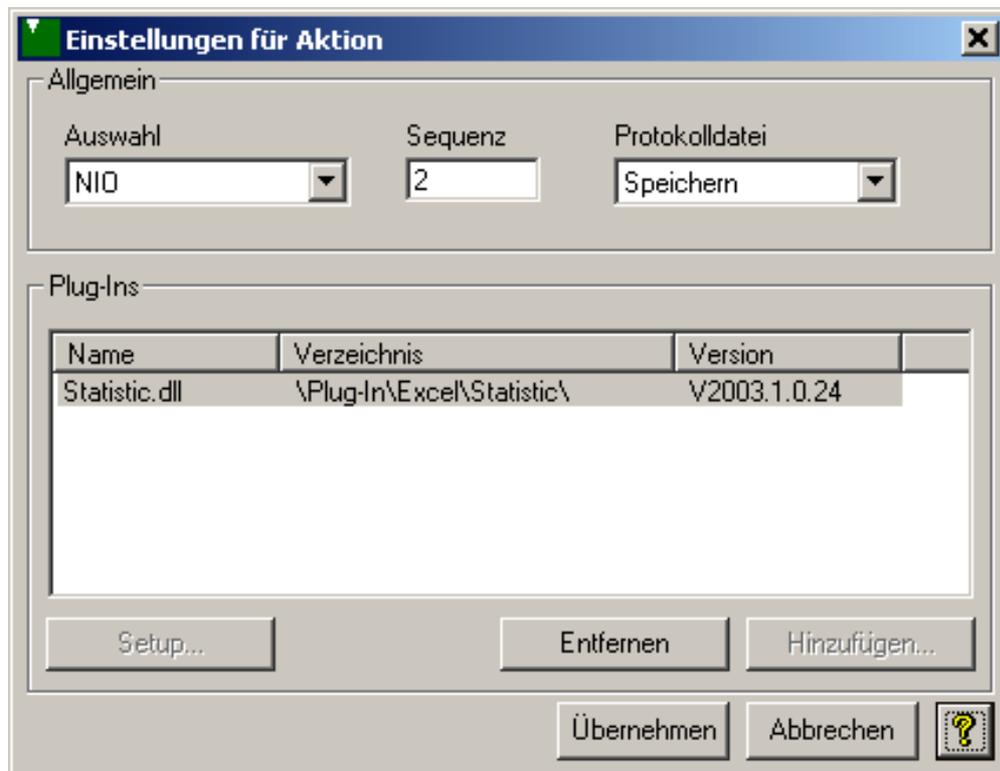
- Click the right mouse button on the link and select the settings. Edit the field „target“ by entering a blank sign and a plus sign after the high comma at the end of the link path.



After this change, the DigiControl will automatically be set to measurement mode when the autostart of the selected user is executed.

Action Settings

[Properties -> Actions -> Properties]



You have the possibility to save the transmitted measurement data and eventually work on it with the help of a Plug-In.

Add...

To add special plug-ins to the actions chosen in *General* you have to press *Add*. The following file selection dialog allows the selection of the suitable plug-ins.

Remove

Using this button will remove the entered Plug-In from the list again.

Selection

With the help of this button it is determined which evaluation result shall cause the selected action.

Sequence

The sequence indicates after how many measurements the selected action should be executed again.

Example:

Entry 1: Selection OK / Save Protocol file / Sequence = 5

Entry 2: Selection NOK / Save Protocol file / Sequence = 2

Entry 3: Selection OK / Save Protocol file / Sequence = 10 / Plug-In „Curve.dll“

This setting leads to the execution of entry 1 and 2 for the first OK measurement and entry 2 for the first NOK measurement result.

Therefore, the 6th OK measurement will start the action in entry 1 (i.e. 5 OK measurements later), the 3rd OK measurement starts the action in entry 2 (i.e. 2 OK measurements later) and the 11th measurement starts the action in entry 3 (i.e. 10 OK measurements later). Additionally, the Plug-In „Curve.dll“ is executed with activated entry 3.

Protocol file

The protocol file is activated for saving as standard since otherwise no recording of the measurement data could take place and further processing with Plug-Ins would not be possible!

Important note! Measurement data that are not recorded (and therefore are not present as protocols) cannot be processed (e.g. with a plug-in) later on, either. You should consider this in time if you plan to evaluate Measurement Data or make a measurement data export via Plug-In. Make the right configuration under Properties in measurement mode in order to transfer and record the correct measurement data!

Plug-Ins

Two Excel plug-ins are included in the scope of delivery.

Curve.dll

The measurement data of respectively **one** protocol file is saved to respectively **one** Excel file. Therein are included all measurement data which were actually recorded.

The Excel file is found in the same directory as the protocol file.

Under Properties you may select the measurement data to be transferred in the automatic measurement mode.

Statistic.dll

Significant data such as e.g. the curve's entry and exit values for the evaluation windows are saved to an Excel statistic file with the help of this plug-in. If the part or station change a new file will be produced! In each line there will be all the values recorded from DIGIFORCE which are related to one press-in process or one part. Every column is corresponding to one characteristic, e.g. the scattering of the block force could be watched for many thousand parts.

Plug-in interface description

The description of the plug-in interfaces is yet under process and will be part of a future release of DigiControl!

Ready-Mode

The need of documentation on measurement results for press-fitting and joint assembly processes becomes more apparent. This might be necessary only for the test operation period or must be done without a break for traceability and verification reasons. However, this requires securing of all measurement data. Otherwise, a manufactured part without a measurement protocol might be worthless!

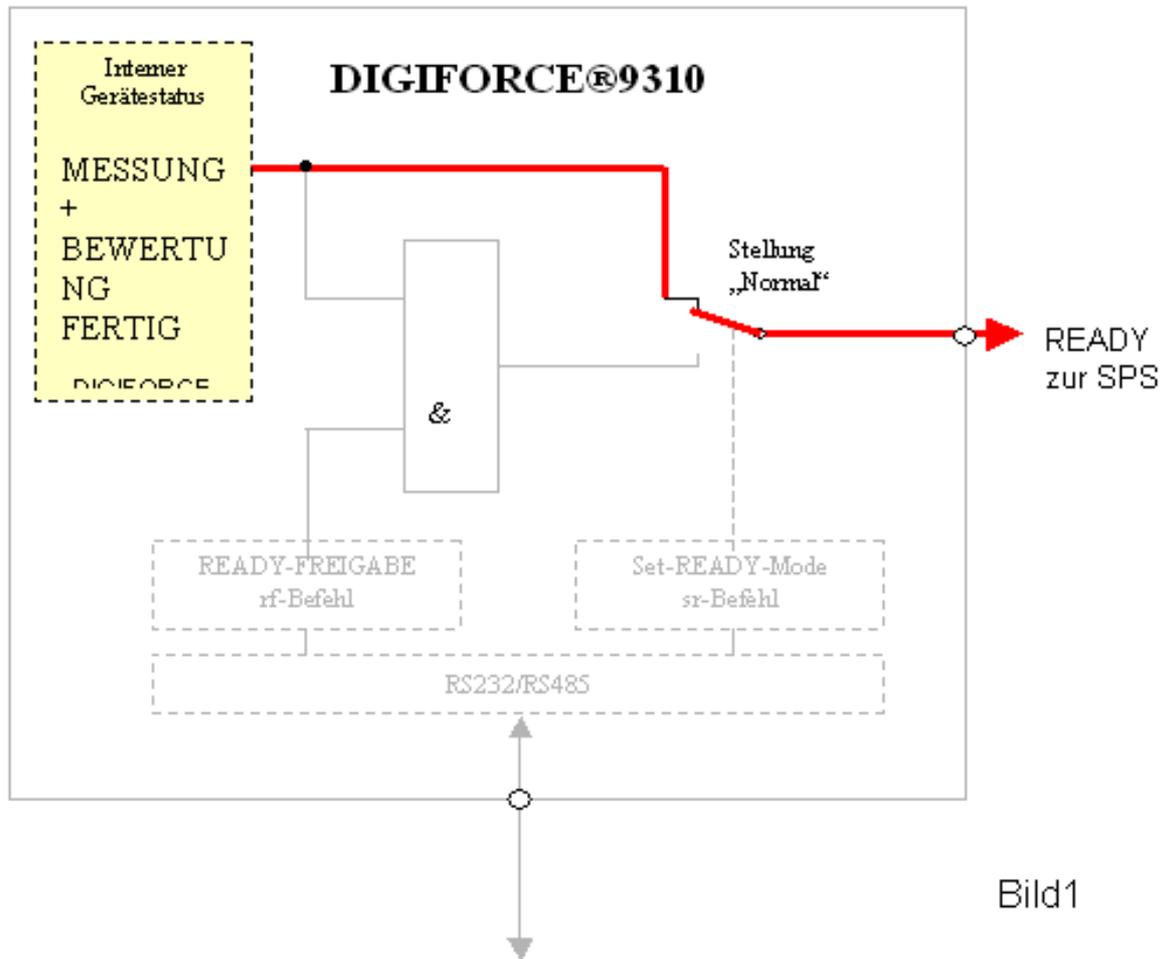
The DIGIFORCE® 9310 records only the measurement results of the preceding press-fit in process. If the device is started again these values will be overwritten by new values. The old values are lost irretrievably. For this reason, these values have to be transferred via the serial interface in the cycle break between the press-fit in processes. A restart of the DIGIFORCE must be avoided by all means during this period of time. How is this achieved? How does the system control know about the presently active data transfer and that no new press-fit in process must be started at this point?

The decisive criteria for this is the DIGIFORCE-signal READY. If READY=1 the next machine cycle can follow whereas with READY=0 the system must wait! Quite simple! READY is usually only effected by the status of the DIGIFORCE device. If READY=1, the device is finished with measurement and evaluation and ready for the next measurement process. If READY=0, the DIGIFORCE is still working on either MEASUREMENT or EVALUATION.

A special case, the so called READY-Mode=PC-CONTROLLED, makes READY depending on another condition. If DIGIFORCE is still in the process of DATA TRANSFER, then READY can remain at Zero until the Master (PC) has sent the command „fr“ (for READY release) to the DIGIFORCE (see pic. 1).

To give a more detailed view:

At the beginning, the DIGIFORCE is in the so called READY-Mode “NORMAL” (see pic. 1). The READY-Signal is solely controlled by the device status! The serial communication does not affect the signal at this point!



In order to transfer measurement data without any breaks or disturbances, the creation of the READY-Signal must be handled by the PC. The PC switches the DIGIFORCE to READY-Mode „PC-CONTROLLED“ by sending the command „sr“ (the „relay“ is in the lower position as in the scheme of pic. 2). READY is therefore depending on another condition which is called READY-Release. This is given by the PC only after receipt of all required data via the interface. Then it sends the command “rf” and thus releases the READY-Signal again. If the DIGIFORCE-Status allows it, READY will go to “1” now. The PLC can release the next machine cycle and START the DIGIFORCE anew.

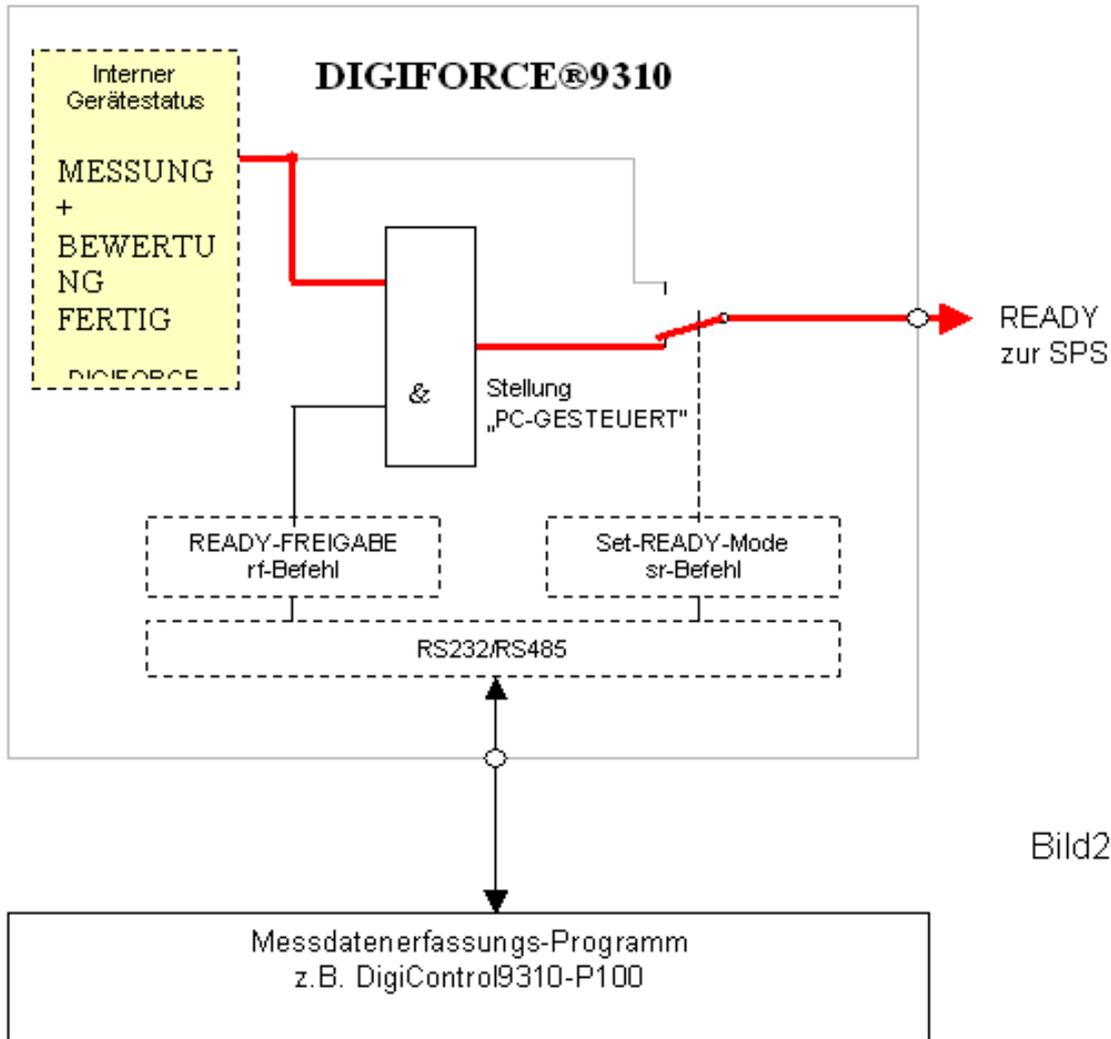


Bild2

DIGIFORCE is generally reset to READY-Mode „NORMAL“ and the READY-Release is reset to “0” with every power-up.

What would happen if the PC freezes?

It is an eligible question to ask what would happen if the PC freezes after having set the DIGIFORCE into the READY-Mode „PC-CONTROLLED“, but prior to the READY-Release with the rf-command, e.g. during the data transfer? Would the complete system freeze in consequence?

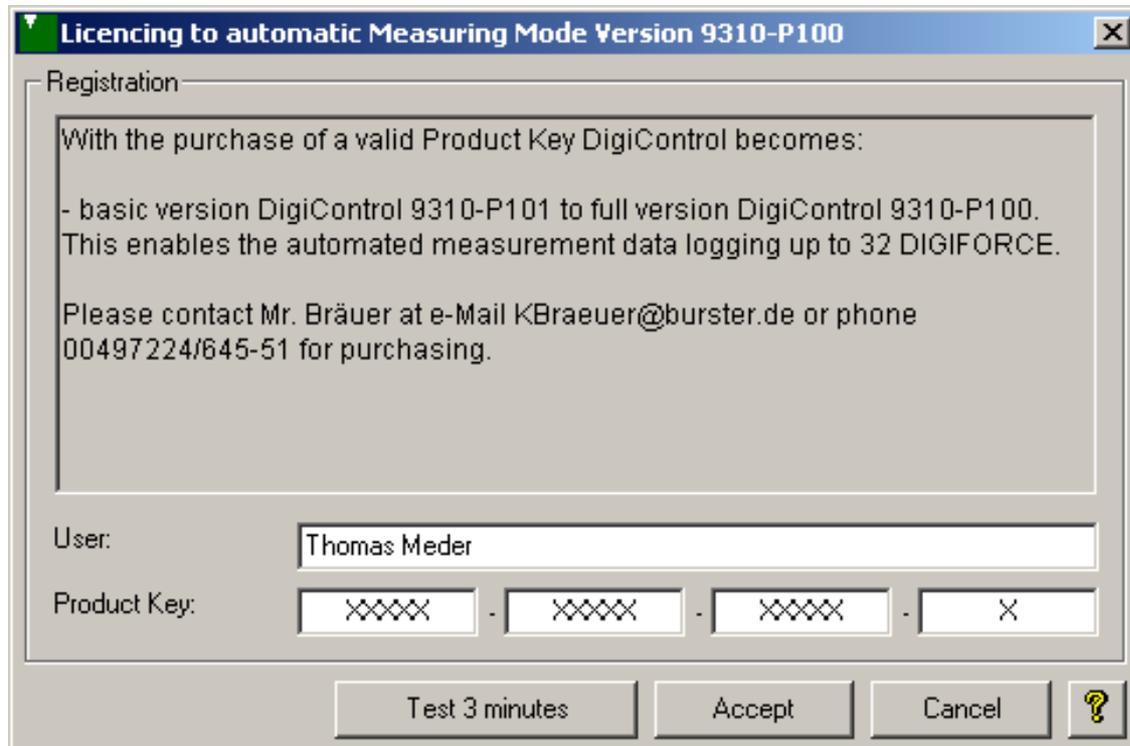
Not necessarily! However, if the PLC takes care only of the READY-Signal this would become true. The system goes down! The professional PLC-programmer would integrate a TIME-OUT or WATCHDOG into his programming to avoid such situations. When the time for READY has passed the system would go to “Fault” if the measurement data collection must be effected by all means. If the mass production is more important, the READY is ignored, the DIGIFORCE restarts and eventually sends a warning message! That’s it!

After the problem has been solved and the PC was restarted the active program forces the DIGIFORCE to go to READY-Mode „PC-CONTROLLED“ again.

The WINDOWS-software DigiControl 9310-P100 of burster supports the previously described READY-Mode!

Licencing 9310-P100

[Measure -> Start Measurement Mode...]



There are two software versions:

- 9310-P101** Basic software for configuration, backup and laboratory operation.
- 9310-P100** like 9310-P101 with automatic measurement mode in addition.

The automatic measurement mode can be tested in the basic software 9310-P101 for 3 minutes each time.

If you are in possession of the basic software 9310-P101, you may always upgrade to the full version 9310-P100. You would be sent a product key on which we will register you as authorized user. For questions on the upgrade please contact Mr. Bräuer at e-mail Klaus.Braeuer@burster.de or at direct extension +49-7224-645-51.

Support for the measurement mode will be given only if you are in possession of a valid product key.

User

Please enter the name on which the software shall be registered. Kindly inform us this name for support queries or as reference to the product key.

Product key

Please enter the 20 digit product key in the provided fields.

There is no differentiation between CAPITAL letters and small letters.

Kindly press the key *Accept* to confirm the product key and to release the version 9310-P100.

Test 3 minutes

If you are in possession of the basic software 9310-P101 you may test the automatic measurement mode for maximum 3 minutes.

Control communication

The DigiControl 9310 can be part of a **Control Communication** via the 2nd COM Interface. This might be necessary e.g. to start or stop the measurement mode or to switch from one measurement program to the next or even transfer complete device parameter files to a station. The implemented commands are described thereafter.

Please note the following information:

- The brackets </> only serve for segregation of the user and are not indicated.

Commands for an active device group:

Command	Command reference	Description
SRA <Note>	SetRemarkGroupA	To set the remarks on the device group
GRA	GetRemarkGroupA	To query remarks on the device group
SNA <counter number>	SetNumberSerialGroupA	To set new Part-No. counter numbers on the device group.
GNA	GetNumberSerialGroupA	To query the present Part-No. counter number from the device group
SP1A <Value>	SetParameter1GroupA	Set Part-No. %1 of the device group
GP1A	GetParameter1GroupA	Query Part-No. %1 of the device group
SP2A <Value>	SetParameter2GroupA	Set Part-No. %2 of the device group
GP2A	GetParameter2GroupA	Query Part-No. %2 of the device group
SBA <Value>	SetBatchGroupA	Sent and activate manual charge designation of device group
GBA	GetBatchGroupA	Query manual charge designation of device group
SCA <Value>	SetComponentNameGroupA	Set component name of the device group
GCA	GetComponentNameGroupA	Query component name of the device group

General commands:

Command	Command reference	Description
SM	SetMode	Set status on measurement mode
GM	GetMode	Query status of production mode
SP <Address> <MP-No.>	SetProgram	Switch measurement program of station *
GP <Address>	GetProgram	Query program number of station *
SN <Address> <Counter no.>	SetNumberSerial	Set new Part-No. counter number of station
GN <Address>	GetNumberSerial	Query present Part-No. counter number of station
SP1 <Address> <Value>	SetParameter1	Set Part-No. %1 of station
GP1 <Address>	GetParameter1	Query Part-No. %1 of station
SP2 <Address> <Value>	SetParameter2	Set Part-No. %2 of station
GP2 <Address>	GetParameter2	Query Part-No. %2 of station
SB <Address> <Charge>	SetBatch	Rename manual charge designation of station
GB <Address>	GetBatch	Query manual charge designation of station
SR <Address> <Remark>	SetRemark	Set remarks on station
GR <Address>	GetRemark	Query remarks on station
UF <Address> <Data path>	UploadFile	Transfer backup file to station *

* = This functions only may be executed if the measurement mode is not active!

Parameter of commands GM/SM:

Parameter value	Description
-1	Measurement mode off
0	Under process
1	Measurement mode on
2	Measurement mode stopped

Parameter spontaneous message:

Parameter value	Command reference	Description
@-1	DigiControlExit	DigiControl stopped
@0	DigiControlStartedStandard	DigiControl (standard) started
@1	DigiControlStartedPlus	DigiControl PLUS started
@2	UploadFileReady	Upload finished
@3 <Address program result>	MeasurementResultAvailable	Measurement result (Address, program and result)
@4	MeasurementStateOff	Switch off Measurement Mode
@5	MeasurementStatePaused	Measurement Mode paused
@6	MeasurementStateOn	Switch on Measurement Mode
@10	GroupResultAvailable	Group result available

Example of a PLC-control communication application

- Recording of measurement data with the production serial number supplied by a PLC with **DigiControl 9310** in automatic measurement mode:

MT / 12.08.2004

Speichern von Messdaten unter einer von der SPS vorgegebenen Teile-SN mit DigiControl 9310 im automatischen Messbetrieb

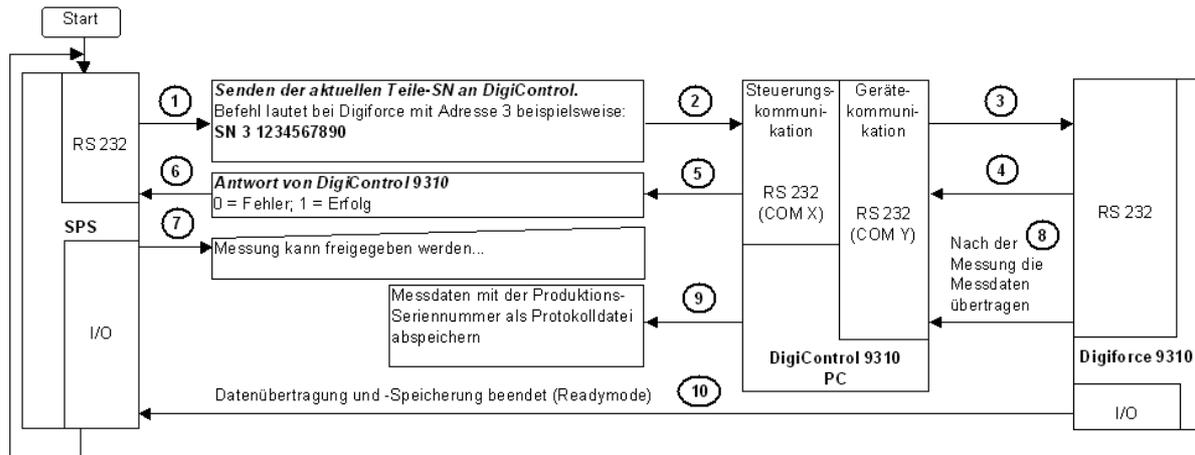
1.) Steuerekommunikation in DigiControl 9310 einstellen COM X

Voreinstellungen" -> "Schnittstellen" -> "Steuerekommunikation": **Schnittstelle** und **Baudrate** der SPS einstellen

2.) DigiControl 9310 Eigenschaften Messbetrieb definieren

Stations wählen "Eigenschaften" -> "Messbetrieb" -> "Teile-SN" -> "Zähler": "Fortlaufender Zähler" einstellen

Ablaufschema:



Search for protocols

[Measure -> Search and edit measurement protocols...]

There are the following ways to look for measurement protocols that have been generated with the automatic measurement mode:

Search measurement protocols with the assistant

Allows the automatic search for single measurement protocols with the help of filters such as e.g. evaluation result, measurement program, time, station name, etc. within the FILE data directory.

Search group protocols with the assistant

Allows the automatic search of group measurement protocols with the help of filters such as group result, date, charge, part-no. or component within the FILE data directory.

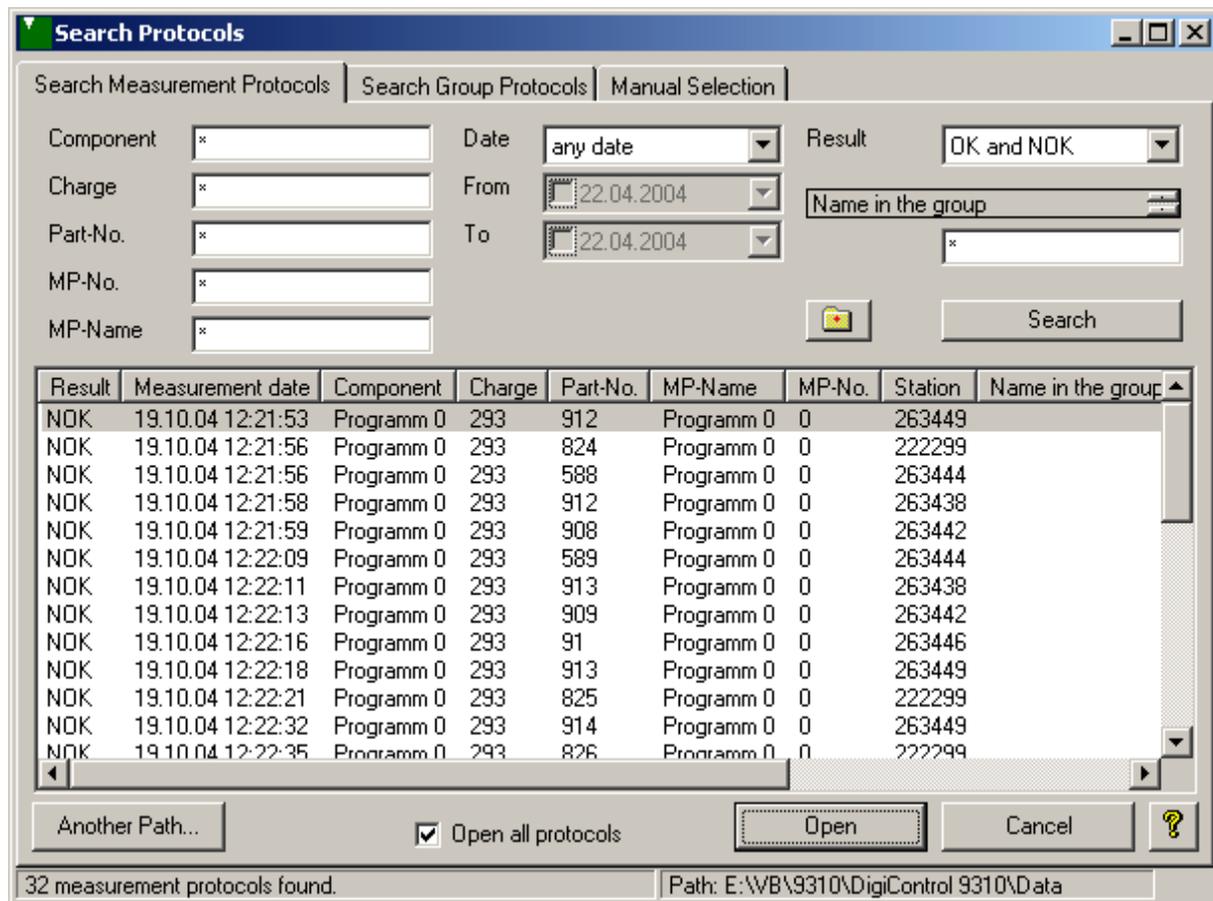
Manual selection of single measurement or group protocols

Listing of single and group measurement protocols in manually selected directories.

No filter can be set here.

Search Measurement Protocols

[Measure -> Search and edit Measurement Protocols-> Search Measurement Protocols]



Result	Measurement date	Component	Charge	Part-No.	MP-Name	MP-No.	Station	Name in the group
NOK	19.10.04 12:21:53	Programm 0	293	912	Programm 0	0	263449	
NOK	19.10.04 12:21:56	Programm 0	293	824	Programm 0	0	222299	
NOK	19.10.04 12:21:56	Programm 0	293	588	Programm 0	0	263444	
NOK	19.10.04 12:21:58	Programm 0	293	912	Programm 0	0	263438	
NOK	19.10.04 12:21:59	Programm 0	293	908	Programm 0	0	263442	
NOK	19.10.04 12:22:09	Programm 0	293	589	Programm 0	0	263444	
NOK	19.10.04 12:22:11	Programm 0	293	913	Programm 0	0	263438	
NOK	19.10.04 12:22:13	Programm 0	293	909	Programm 0	0	263442	
NOK	19.10.04 12:22:16	Programm 0	293	91	Programm 0	0	263446	
NOK	19.10.04 12:22:18	Programm 0	293	913	Programm 0	0	263449	
NOK	19.10.04 12:22:21	Programm 0	293	825	Programm 0	0	222299	
NOK	19.10.04 12:22:32	Programm 0	293	914	Programm 0	0	263449	
NOK	19.10.04 12:22:35	Programm 0	293	826	Programm 0	0	222299	

You search the single recorded measurement protocols that have been recorded during measurement mode with the following filter criteria with this function:

All parameters have the wildcard sign * as default setting which actually deactivates the filter. If the filter is only part of the complete reference you are looking for we recommend the use of the wildcard sign [*] in front and after the filter.

Component

The name for the component was determined in the Properties of station and specific protocols with this name can be found here. The component name should generally be identical with the name given to the corresponding measurement program. Try to use plausible designations to enable easier identification of the component later on.

Charge

The name of the charge was determined in the Properties of station and specific protocols with this name can be found here. A charge usually refers to a certain period in time.

Part-no.

Here you can search for specific part-numbers (Serial nos.). The Part-no. corresponds to a running counter which is synchronized to the charge or the component resp. is manually changed. In the easiest case, the counter refers to the pieces counter in the DIGIFORCE. Optional is the presetting for measurement mode where an additional parameter %1 resp. %2 can be placed before and after the counter number (e.g. in device list and *Properties Measurement Mode*). Please note that every counter number should exist only once since otherwise the protocols cannot be identified indisputable.

MP-No.

This parameter informs the used numerical measurement program in the DIGIFORCE 9310.

MP-Name

The measurement program name is usually identical to the component name. Plausible designations shall be preferred.

Date

Select the correct, predefined period of time. The time filter is deactivated and all measurement protocols are searched with the setting on „any date“.

All other entries include specific dates or periods of time for the search.

To define the date yourself you have to select a given date and set the parameter in front of date to “before” and “after” with the help of the date selection dialog which will appear when clicking on the corresponding field or simply overwrite the displayed date.

Result

To select only OK or NOK parts please choose the corresponding evaluation result. The default setting includes all measurement protocols, non-dependending of the evaluation result.

Station name / DIGIFORCE-SN / Name in the group

According to the necessary data hierarchy you may select various references to the corresponding DIGIFORCE.

- The most definite one is the parameter DIGIFORCE-SN. It corresponds to the unique serial number of the DIGIFORCE.

- If the DIGIFORCE(s) need to be exchanged during production (for whatever reason), the Serial Number of the station changes inevitably. Then the *Station name* must be used for the search. It has to be assigned to for every device change or after new installations of a DIGIFORCE as follows: After a double click on the corresponding DIGIFORCE in the device list you will reach the corresponding menu (see below!). Please enter now the correct station name. This is transmitted to the DIGIFORCE when exiting the menu and will appear under GENERAL SETTINGS -> INFO -> STATION.

- If you e.g. work only with one DIGIFORCE 9310 which appears twice in the group list then this DIGIFORCE will take care of controlling two different production processes. This could be distinguished by a different *Name in the group*.

Search

In order to start searching you have to press the button ***Search***.

During the search process a progress dialog appears in which the search can be stopped at any time.

The search results listed therein remain even if the search is interrupted.

Furthermore, the maximum quantity of measurement protocols is shown without recognition of the filter definition.

Another path

Please press ***Another path...*** in order to define another path for the search.

A dialog for directory selection appears. Please note, however, that it is always the DATA-file directory which is selected as directory and not a sub directory included therein, based on the program related data storage structure!

Standard path

To return to the default file directory please press the following button:



Open all protocols

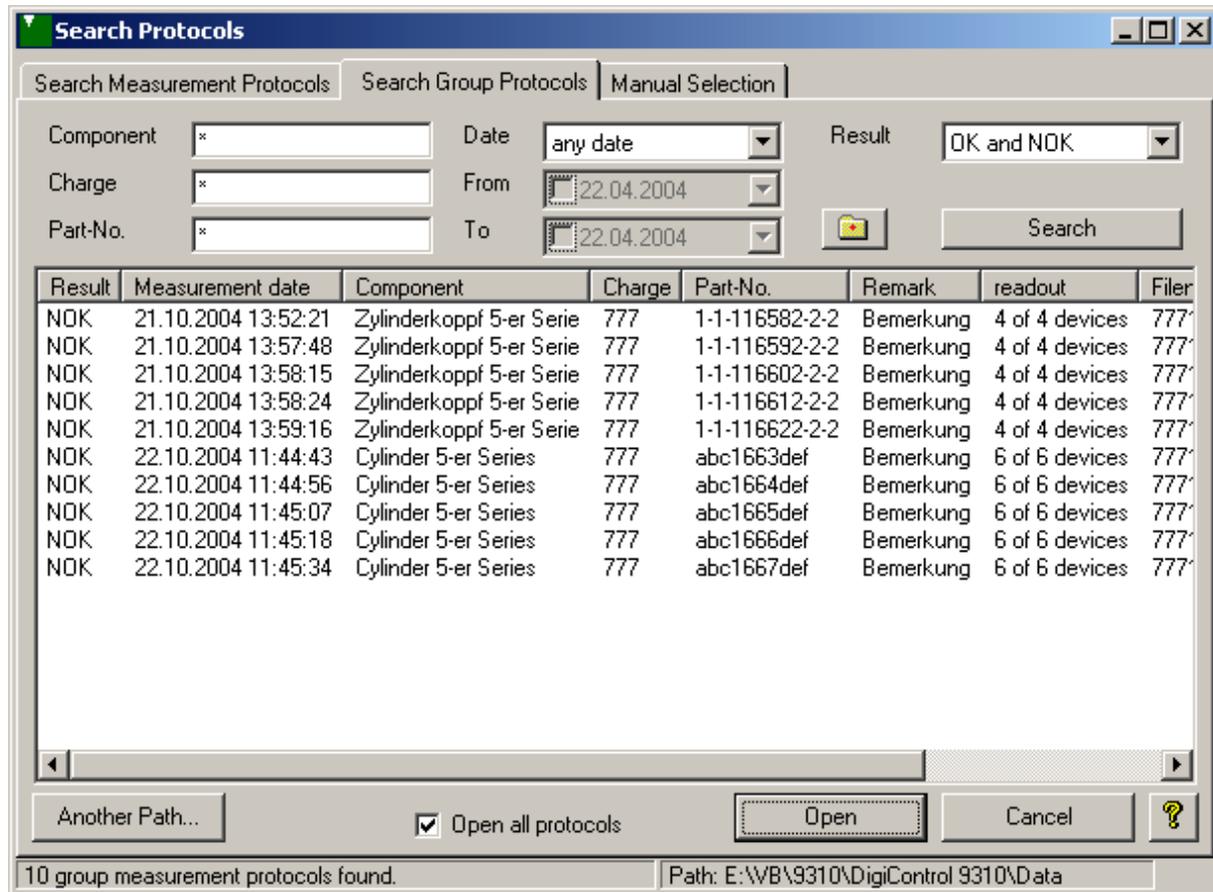
With an activated option all indicated measurement protocols are taken over into the dialog field whereas a deactivated option will cause containing of only the marked measurement protocols.

Sorting

In order to sort the listed measurement protocols after a search, simply click on the column top after which the list is supposed to be sorted.

Search Group Protocols

[Measure -> Search and edit Measurement Protocols-> Search Group Protocols]



Result	Measurement date	Component	Charge	Part-No.	Remark	readout	Filer
NOK	21.10.2004 13:52:21	Zylinderkopf 5-er Serie	777	1-1-116582-2-2	Bemerkung	4 of 4 devices	777
NOK	21.10.2004 13:57:48	Zylinderkopf 5-er Serie	777	1-1-116592-2-2	Bemerkung	4 of 4 devices	777
NOK	21.10.2004 13:58:15	Zylinderkopf 5-er Serie	777	1-1-116602-2-2	Bemerkung	4 of 4 devices	777
NOK	21.10.2004 13:58:24	Zylinderkopf 5-er Serie	777	1-1-116612-2-2	Bemerkung	4 of 4 devices	777
NOK	21.10.2004 13:59:16	Zylinderkopf 5-er Serie	777	1-1-116622-2-2	Bemerkung	4 of 4 devices	777
NOK	22.10.2004 11:44:43	Cylinder 5-er Series	777	abc1663def	Bemerkung	6 of 6 devices	777
NOK	22.10.2004 11:44:56	Cylinder 5-er Series	777	abc1664def	Bemerkung	6 of 6 devices	777
NOK	22.10.2004 11:45:07	Cylinder 5-er Series	777	abc1665def	Bemerkung	6 of 6 devices	777
NOK	22.10.2004 11:45:18	Cylinder 5-er Series	777	abc1666def	Bemerkung	6 of 6 devices	777
NOK	22.10.2004 11:45:34	Cylinder 5-er Series	777	abc1667def	Bemerkung	6 of 6 devices	777

This function allows you to find specific group measurement protocols recorded during measurement mode with the following search criteria.

All parameters have the wildcard sign * as default setting which actually deactivates the filter. If the filter is only part of the complete reference you are looking for we recommend the use of the wildcard sign [*] in front and after the filter.

Component

The name for the component was determined in the Properties of station and specific protocols with this name can be found here. The component name should generally be identical with the name given to the corresponding measurement program. Try to use plausible designations to enable easier identification of the component later on.

Charge

The name of the charge was determined in the Properties of station and specific protocols with this name can be found here. A charge usually refers to a certain period in time.

Part-no.

Here you can search for specific part-numbers (Serial nos.). The Part-no. corresponds to a running counter which is synchronized to the charge or the component resp. is manually changed. In the easiest case, the counter refers to the pieces counter in the DIGIFORCE. Optional is the presetting for measurement mode where an additional parameter %1 resp. %2 can be placed before and after the counter number (e.g. in device list and *Properties Measurement Mode*). Please note that every counter number should exist only once since otherwise the protocols cannot be identified indisputable.

Date

Select the correct, predefined period of time. The time filter is deactivated and all measurement protocols are searched with the setting on „any date“.

All other entries include specific dates or periods of time for the search.

To define the date yourself you have to select a given date and set the parameter in front of date to “before” and “after” with the help of the date selection dialog which will appear when clicking on the corresponding field or simply overwrite the displayed date.

From/To

To freely define a period of time please select the correct entry in the field *Date* in advance (except for „any date“) and set the parameter „From“ and „To“ with the help of the data selection dialog.

Result

To select only OK or NOK parts please choose the corresponding evaluation result. The default setting includes all measurement protocols, non-dependending of the evaluation result.

Search

In order to start searching you have to press the button **Search**.

During the search process a progress dialog appears in which the search can be stopped at any time.

The search results listed therein remain even if the search is interrupted.

Furthermore, the maximum quantity of measurement protocols is shown without recognition of the filter definition.

Another path

Please press **Another path...** in order to define another path for the search.

A dialog for directory selection appears. Please note, however, that it is always the DATA-file directory which is selected as directory and not a sub directory included therein, based on the program related data storage structure!

Standard path

To return to the default file directory please press the following button:



Open all protocols

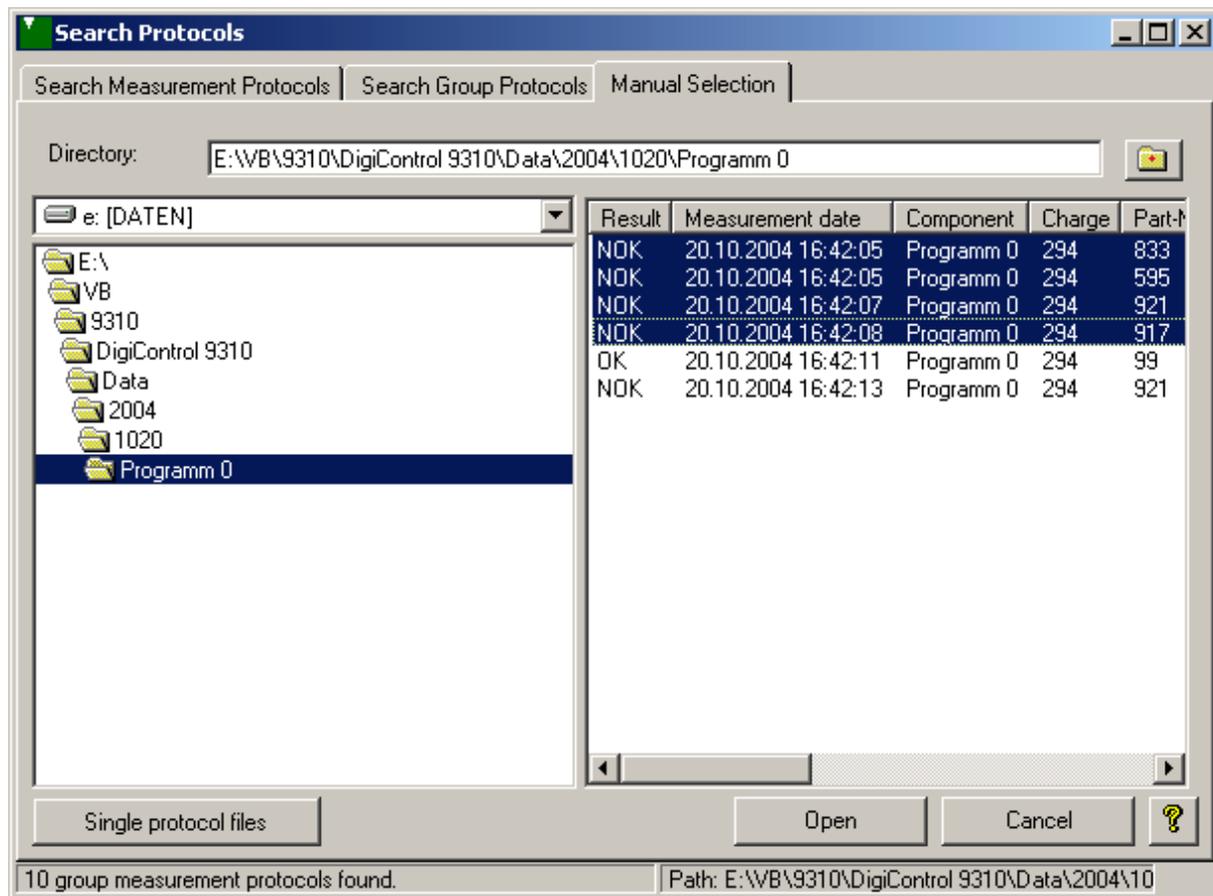
With an activated option all indicated measurement protocols are taken over into the dialog field whereas a deactivated option will cause containing of only the marked measurement protocols.

Sorting

In order to sort the listed measurement protocols after a search, simply click on the column top after which the list is supposed to be sorted.

Manual Selection

[Measure -> Search and edit Measurement Protocols -> Manual Selection]



Please select the button “Single protocol files“ / „Group protocol files“ for the correct protocol type for searching specific single or group measurement protocols manually.

Thereafter, please choose the directory used for the file search and navigate with double clicks (or by entering the complete directory path) to the required sub directory. All available protocols as per search criteria are listed on the right side.

Standard path

To return to the default file directory please press the following button:



Open

All marked protocols are taken over into the dialog.

Sorting

In order to sort the listed measurement protocols after a search, simply click on the column top after which the list is supposed to be sorted.

Protocols

[Measure -> Search and edit Measurement Protocols]

The screenshot displays the 'Protocols' software window. It features a table of measurement protocols, a graph of force (N) versus distance (mm), and several control panels for settings, evaluation, and cursor data.

Result	Measurement date	Component	Charge	Part-No.	MP-Nam
NOK	22.10.2004 11:44:34	Cylinder 5-er Series	777	abc1663def	Programr
OK	22.10.2004 11:44:38	Cylinder 5-er Series	777	abc1663def	Programr
NOK	22.10.2004 11:44:43	Cylinder 5-er Series	777	abc1663def	Programr
NOK	22.10.2004 11:44:48	Cylinder 5-er Series	777	abc1664def	Programr
OK	22.10.2004 11:44:51	Cylinder 5-er Series	777	abc1664def	Programr
NOK	22.10.2004 11:44:56	Cylinder 5-er Series	777	abc1664def	Programr
NOK	22.10.2004 11:44:59	Cylinder 5-er Series	777	abc1665def	Programr
OK	22.10.2004 11:45:02	Cylinder 5-er Series	777	abc1665def	Programr
NOK	22.10.2004 11:45:07	Cylinder 5-er Series	777	abc1665def	Programr
NOK	22.10.2004 11:45:10	Cylinder 5-er Series	777	abc1666def	Programr

The graph shows force (N) on the y-axis (0 to 600) and distance (mm) on the x-axis (0 to 10). The curve shows a relatively flat line around 200 N until approximately 9 mm, where it rises sharply to over 600 N.

Settings: Window Type Block

Entry/Exit	Bottom	-
Limit min	7,559 mm	86,19 N
Limit max	10,53 mm	117,8 N

Evaluation: NOK

Entry	0,000 mm	0,000 N
Exit	-	-
Block Value	10,34 mm	621,6 N
Minimum	7,562 mm	211,5 N
Maximum	10,33 mm	622,4 N
Statistic	99 %	

Cursor

Reference point X/Y	0,000 mm	0,000 N
Distance X/Y	0,000 mm	0,000 N
Cursor position X/Y	10,696 mm	341,818 N

Zoom

Auto	X-min/max	0,018 mm	11,031 mm
Manual	Y-min/max	-39,734 N	656,340 N

Buttons: Bundle Curves, Export..., Tip, Print..., Quit.

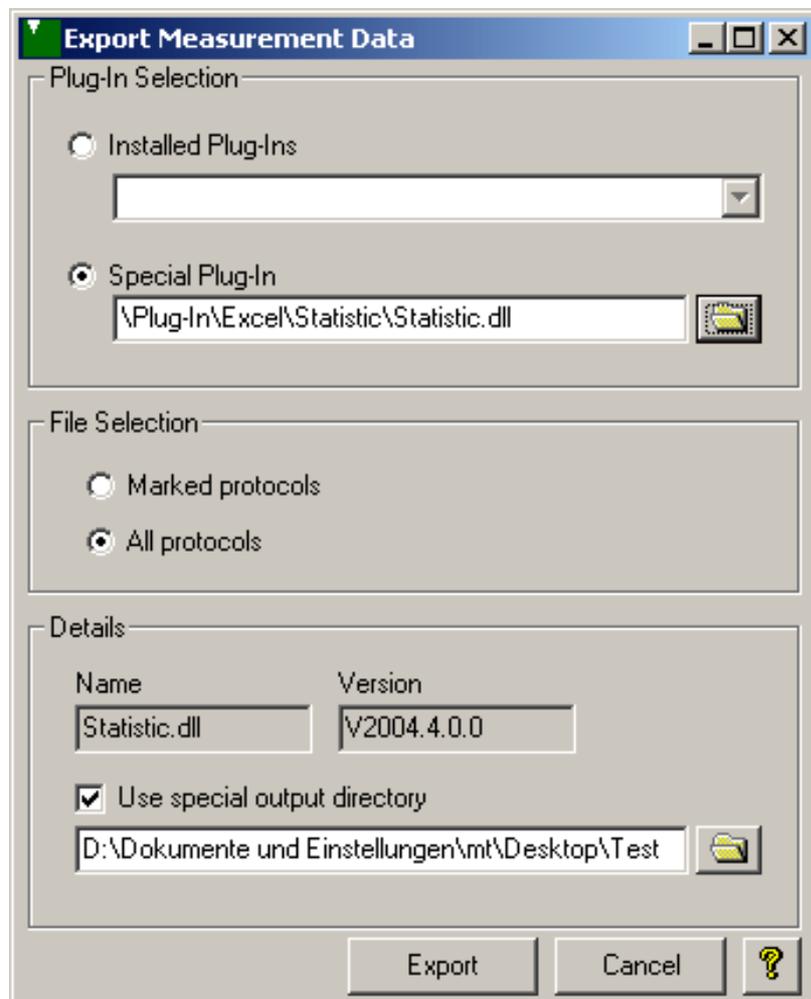
Status bar: 15 measurement protocols loaded. 14 bundled measurement curves. 1286 of 1286 meas values.

The measurement data that has been generated in the automatic measurement mode can be opened, displayed and measured, the measurement curves can be bundled or protocols may be printed in this menu.

The listed entries in every line of this table refer to on measurement protocol each. These can be sorted in the list by any criteria, just click on the corresponding column top. The functions *Export...* and *Print...* are executed in the order as listed in the table!

Export...

Press the button *Export...* to export measurement data from the listed protocols, e.g. in the Excel file. The Export Measurement Data dialog appears.



Please select the required Plug-in . Pressing the key *Export...* releases the export process. Kindly select in advance if you wish to export *Marked protocols* only or *All protocols*. The corresponding EXCEL-files can later be found in the directory Data.

Print...

Press the key *Print...* in order to print out single or multiple protocols as list, one page protocol or curve bundle. The Printout protocols dialog appears.

General

Here you may see the minimum and maximum values (X/Y) of the presently opened measurement file as well as the program name.

Windows

If the present measurement program includes evaluation windows then their parameters are informed in the upper and the window results in the lower area. If no evaluation results are available then „n.a.“ appears.

Meas. Values

The single measurement values of the curve are informed under *Meas. Values*.

To follow-up single *Measurement Curve Values* on the measurement curve graphic you have the choice to make a double click on the measurement values listed on the right. A reference cursor appears – the right mouse button switches this cursor off again!

The curve values can be scrolled up and down in this list with the help of the up and down keys on your keyboard – the reference cursor always follows the present value.

If you would like to change the Measurement Curve Presentation or adjust the Graphic Colour Settings then please do so in the General Settings.

Envelope

If the selected measurement program includes an active Envelope (starting from DIGIFORCE® firmware V200304) then the additional register card Envelope is displayed.

If the tendency *alls Trendnachführung aktiviert ist*, sind zusätzliche Angaben hier ebenfalls ersichtlich.

Extras

Here you will find the main information on the protocol file and its origin.

Among other things, the user is informed if an error occurred during measurement and which measurement data is contained in this file.

Zoom

The Zoom stands for the scaling of the Measurement Curve Graphic. You may select *Manual* and *Auto* for setting of the zoom.

Manual

The scaling which was set in the *number fields X-min / X-max / Y-min / Y-max* always stays the same in mode *Manual Zoom*.

Auto

The optimal display is found automatically in the mode *Auto* in which all active curve types can be displayed completely.

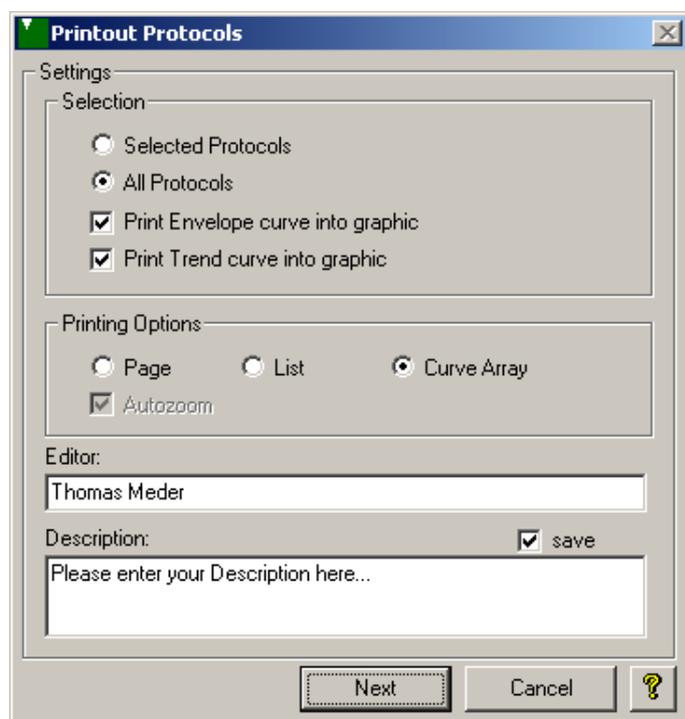
Please note that the zoom is always automatic in this mode for a change in parameters, even when you use the navigation.

How to use the graphic

Press the button *Tip* to find out more about how to use and work with the graphic. You will find information about zoom, enlargement of ranges, shifting the graphic, etc.

Printout Protocols

[Measure -> Search and edit Measurement Protocols -> Search Protocols -> Open -> Printout Protocols]



Selection

Selected Protocols If you wish to select more than one protocol at once, please mark the first and the last protocol in the list with the left mouse button while keeping the SHIFT key pressed down. With the STRG-key and the left mouse button you may select single protocols.

All Protocols Selects all protocols from the list.

Printing Options

Page

A separate protocol page with the given results is generated for every measurement process.

List

An overview of all selected protocols is printed in form of a list. Each line corresponds to one measurement process. There are maximum 40 lines on every protocol page.

Curve array

All marked measurement processes are displayed as curve array. The condition is that the protocol files actually contain measurement curves and that these were not excluded from data transfer by menu change. This function only makes sense if the data for the measurement curve derive all from one source and it has to be the same DIGIFORCE used with the same measurement program and the same settings. For this reason the source of the data is always indicated.

Print Envelope and Trend curve into graphic

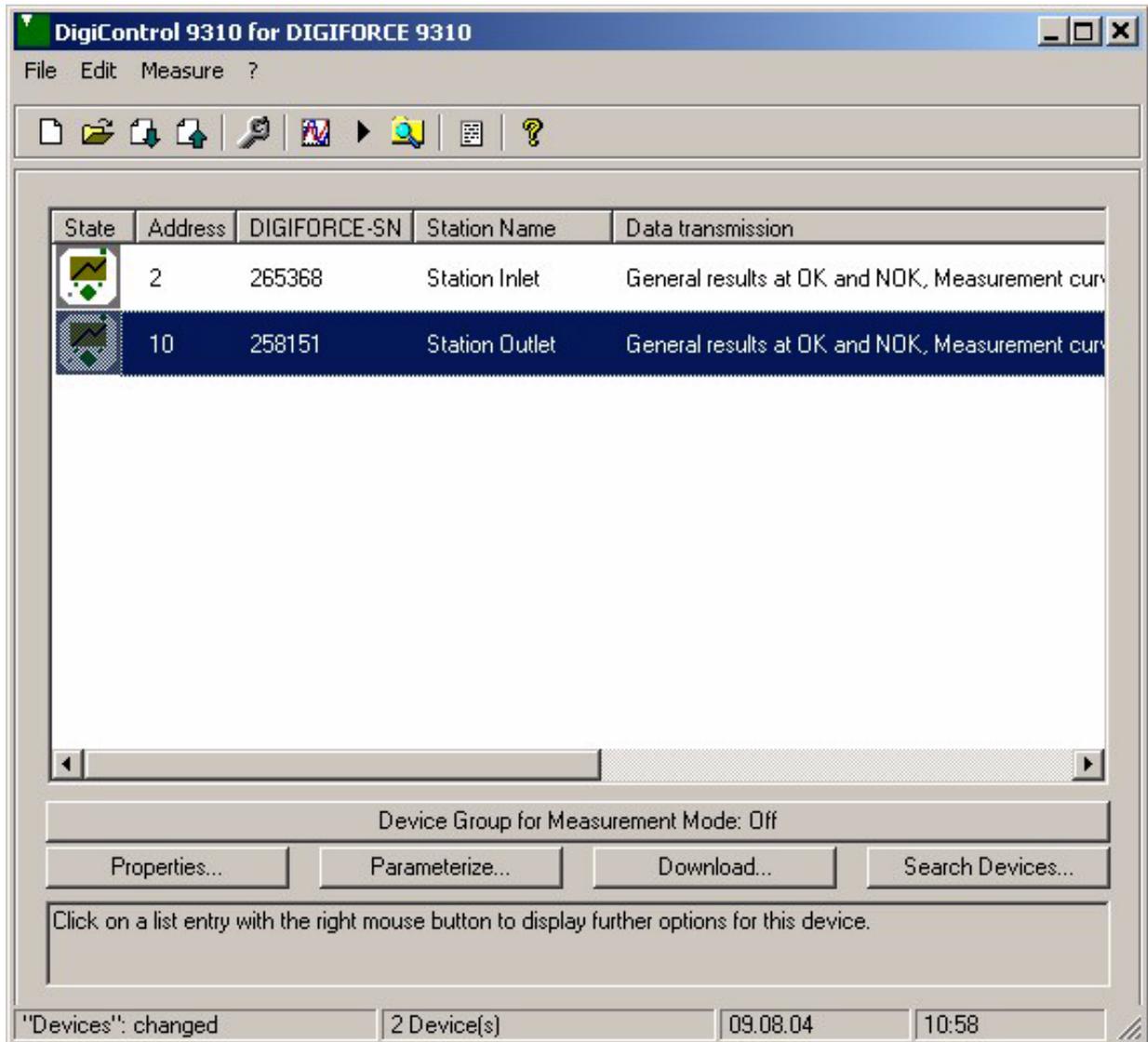
If the first marked measurement protocol contains an envelope curve the activation of this option results in printout of the Envelope and/or Trend curve into the graphic (not applicable for lists).

As an option, the present user and an individual description can be printed on every protocol (not applicable for lists). If this is not required, these fields must be erased.

Definition Device Group

What is a Device Group and what advantages does that have for us?

Basically, you have to decide between a Device List and a Group List. First of all, the DIGIFORCEs found after using „Search Devices“ are listed in this Device List (list with the DIGIFORCE-symbols at the beginning of each line).



From here they are selected and taken into the Device Group List (via key „Device Group for Measurement Mode“ below the Device List).

Device Group Settings

Settings | Statistic | Device group active

Group List

Sequence	Address	DIGIFORCE...	Station	Name in the group
1	0	263444	Station Inlet	Inlet Valve Z1
2	1	263438	Station Outlet	Outlet Valve Z1
3	3	263442	Station Inlet	Inlet Valve Z2
4	4	263446	Station Outlet	Outlet Valve Z2
5	5	263449	Station Inlet	Inlet Valve Z3
6	32	222299	Station Outlet	Outlet Valve Z1

above all devices
 below one device

Add Remove Name in the group: Inlet Valve Z1

Create group protocol

Part No. Counter: Continuous Counter per Component

last Part-No.: abc1662def

%1: abc next counter no.: 1663 %2: def

Configuration

Component: Cylinder 5-er Series Charge: Manual Definition

Remark: Bemerkung Manual Definition Charge: 777

Readout Group: in Sequence any

Terminate group prematurely, if...
 a station results NOK
 new result in first station

Accept Cancel ?

Device group is active. Device group contains 6 devices.

In the practical process it might be necessary to capture all evaluation results of various singular operations on a part or element group together and save them to one common group protocol. For example, the press-fit in operations of all 8 valve seat rings of a cylinder head are included in one common protocol. To organize this, the DIGIFORCES involved in such press-fit in operations are selected and put into one group (see above). The readout of the data is done in the same order as the DIGIFORCES are listed in this group. In our example, there were 2 DIGIFORCES checking the 8 press-fitting operations on valve seat rings. The inlet and outlet ring are pressed in on each valve seat. A positioning unit places cylinder Z1 and Z4 under the press station in logical sequence. It may also be that one and the same DIGIFORCE checks all 8 press-fitting operations on this cylinder head successively. Then this device would be listed 8 times in the group list in the same sequence as the press-fit operations take place. Distinctions between these single results are possible with the parameter „Name in the group“!

A Device Group:

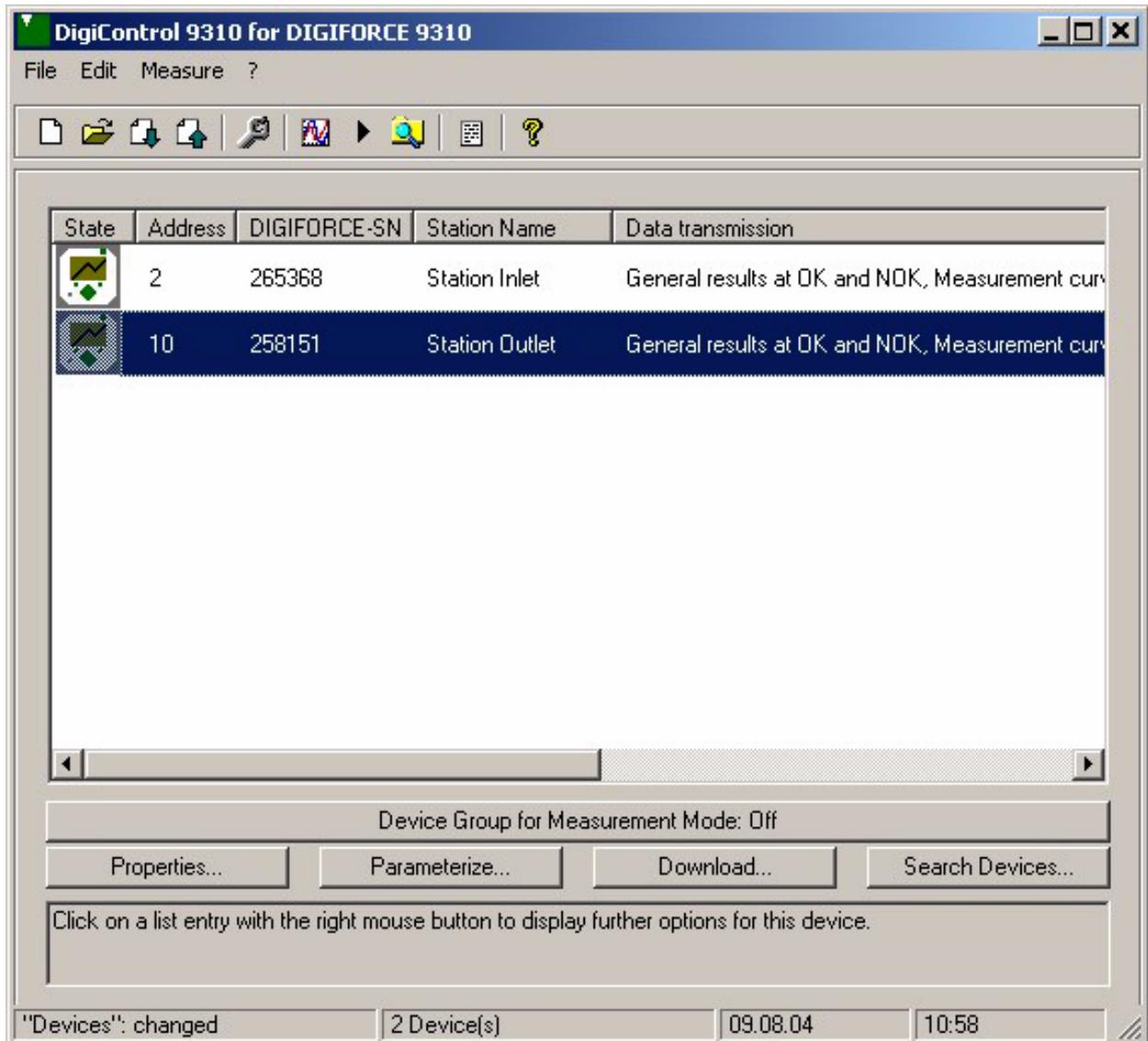
- consists of stations that are adapted from the present Device List with the function „Search devices“ or with „Reload Device List“.
- must consist of minimum one and maximum 32 stations resp. DIGIFORCES.
- can consist of one/multiple same/different stations. Going to extremes would have one station being listed 32 times in the Group List.
- can optimize speed for data acquisition by listing the group members in the same chronological order as the measurements were effected.
- delivers a common group result which corresponds to the summary of results of each single member. This group result can be saved to a separate protocol file or or printed out.
- creates a group statistic with the single evaluations of all participating group members during measurement.

Configurations on Device Group

[Search devices -> Device Group for Measurement Mode -> Settings]

Create a Device Group

Condition to create a Group List is that there are stations already listed in the Device List. This can be done by searching for a device or reloading a device list.



Choose if you wish to have **all devices** or only **one device** to the group list. If there are already devices in the list you may determine whether the following, unmarked devices should be listed **above** or **below** the marked line.

Device Group Settings

Settings | Statistic | Device group active

Group List

Sequence	Address	DIGIFORCE...	Station	Name in the group
1	0	263444	Station Inlet	Inlet Valve Z1
2	1	263438	Station Outlet	Outlet Valve Z1
3	3	263442	Station Inlet	Inlet Valve Z2
4	4	263446	Station Outlet	Outlet Valve Z2
5	5	263449	Station Inlet	Inlet Valve Z3
6	32	222299	Station Outlet	Outlet Valve Z1

above all devices
 below one device

Add Remove Name in the group:

Create group protocol

Part No.
 Counter
 last Part-No.
 %1 next counter no. %2

Configuration

Component Charge
 Remark Manual Definition Charge

Readout Group

in Sequence
 any

Terminate group prematurely, if...

a station results NOK
 new result in first station

Accept Cancel ?

Device group is active. Device group contains 6 devices.

A **name in the group** can be given to each inserted group. This name will serve later for differentiation during protocol evaluation. Therefore, it makes sense to choose a **name in the group** that describes the task of the related group device.

The default setting for the name is the serial number of the station with consecutive numbering.

The following screenshot shows you how to look for a **name in the group** „Inlet valve-Z3“, for example.

Search Protocols

Search Measurement Protocols | Search Group Protocols | Manual Selection

Component: * Date: today Result: OK and NOK

Charge: * From: 22.10.2004 Name in the group:

Part-No.: * To: 22.10.2004

MP-No.: *

MP-Name: *

Measurement date	Component	Charge	Part-No.	MP-Name	MP-No.	Station	Name in the group
10.2004 11:44:34	Cylinder 5-er Series	777	abc1663def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:44:38	Cylinder 5-er Series	777	abc1663def	Programm 0	0	Outlet	Outlet Valve Z2
10.2004 11:44:43	Cylinder 5-er Series	777	abc1663def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:44:48	Cylinder 5-er Series	777	abc1664def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:44:51	Cylinder 5-er Series	777	abc1664def	Programm 0	0	Outlet	Outlet Valve Z2
10.2004 11:44:56	Cylinder 5-er Series	777	abc1664def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:44:59	Cylinder 5-er Series	777	abc1665def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:45:02	Cylinder 5-er Series	777	abc1665def	Programm 0	0	Outlet	Outlet Valve Z2
10.2004 11:45:07	Cylinder 5-er Series	777	abc1665def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:45:10	Cylinder 5-er Series	777	abc1666def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:45:13	Cylinder 5-er Series	777	abc1666def	Programm 0	0	Outlet	Outlet Valve Z2
10.2004 11:45:18	Cylinder 5-er Series	777	abc1666def	Programm 0	0	Outlet	Outlet Valve Z1
10.2004 11:45:25	Cylinder 5-er Series	777	abc1667def	Programm 0	0	Outlet	Outlet Valve Z1

Another Path... Open all protocols

15 measurement protocols found. Path: E:\WB\9310\DigiControl 9310\Data

Create group protocols

After activation of the checkbox „Create group protocol“ you may create group protocols in addition to the single protocols. All single results for every group member are listed therein. This group protocol can later on be documented with a printout of list overview or separate protocol pages in report form.

Part serial no. counter

In order to identify the produced parts easily at a later time, the user can determine specific settings for the part serial no. counter.

Screenshot: Gruppenliste-D.jpg

Running counter per batch: If, for example, the batch „day counter“ is selected and you have the 235th day of the year then the part serial nos. would be 235 plus the continuous counter. This would be reset to 1 when the type of charge counter changes, e.g. from day counter to week counter.

Continuous counter per component: The Serial No. consists of the description entered in the field „Component name“ and the continuous counter. This is reset to 1 when the *component name* changes.

Continuous counter: The counter of the part serial no. adds 1 for every component result. When passing the maximum value of 2147483647 it is reset to 1.

%1 and %2: Optionally, firm parameters can be entered in this field that will not change during the measurement process. %1 is written before the counter and %2 after! This can be used to create specific alphanumeric combinations.

Configuration

Component name: Describes the complete component that is evaluated by the single results of the component group's parts. This field must be filled – otherwise, it will be initialized with „*Not Init*“!

Note: Can be entered optionally and is saved together with the group protocol. An example would be: Test batch after tool change (max. 30 signs)!

Batch: Selectable are the automatic batch counters „Day Counter“ (where the batch stands for the numerical day of the year), „Number of Week“ (corresponding to the week of the year) or the „*Manual Definition*“. The manual batch always stays the same.

Readout Group

In sequence: With this setting, the measurement results of all devices of the group list are read out in the preset sequence. It is furthermore possible to set stop criteria such as e.g. „a station sends the evaluation result NOK“ or “the first station in the group list sends a new result” for the transfer of NOK measurement results for reasons of time optimization with this feature

Any: With this setting, the group members are questioned for new measurement results in a reiteration circle. As soon as a group member has supplied new measurement data that are transferred, this group member is not approached any longer until the completion of the overall group result (exception: the device is the first member of the group list and the option “*finish the group ahead of time if there is a new result in the first station*” was chosen).

Terminate Group prematurely, if...

a station results NOK: It can be determined how to proceed if one of the group members signals NOK. If „Terminate Group prematurely, if a station results NOK“ was chosen then only the NOK-resulting device is read out and the group pass stops rightafter. This makes sense, e.g. if the part has to be scrapped even at a single NOK-result and if the press fitting of the other components would be inefficient. If the part should be processed, manually checked and worked on eventually in spite of the NOK result then the component group must be completely manufactured. In this case, all group members have to be completely pressed in and read out. Please pay attention to the READY-Mode of all DIGIFORCES! Only with READY=1, the station can be started for a new measurement.

New result in first station (only for „in Sequence“): The first device of the group list has supplied measurement results and later on holds new results within the same group cycle. This results in a start by the PLC even before the group cycle is completed, the group pass is stopped and the next part no. follows. The PLC decides the break-off of the group pass due to a NOK signal from one of the members by restart of the first group member!

Further hints

Group evaluation

The group result is OK only if all group members have the evaluation result OK. The group result is NOK if min. one group member sends out NOK or the group's results not completely readout. , e.g. due to the start of a new group pass.

Configurations „Remote control“ via control communication

Most configurations on the device group can be changed or readout via control communication. As a result, the part no. of every measurement can be set as a prefix in DigiControl by the PLC with serial interface.

Field sizes

The sizes of the changeable fields are defined as follows:

Part no. „%1“ / „%2“: each with max. 32 characters

Part no. counter: maximum value = 2147483647

Component name: 32 characters

Remark: 64 characters

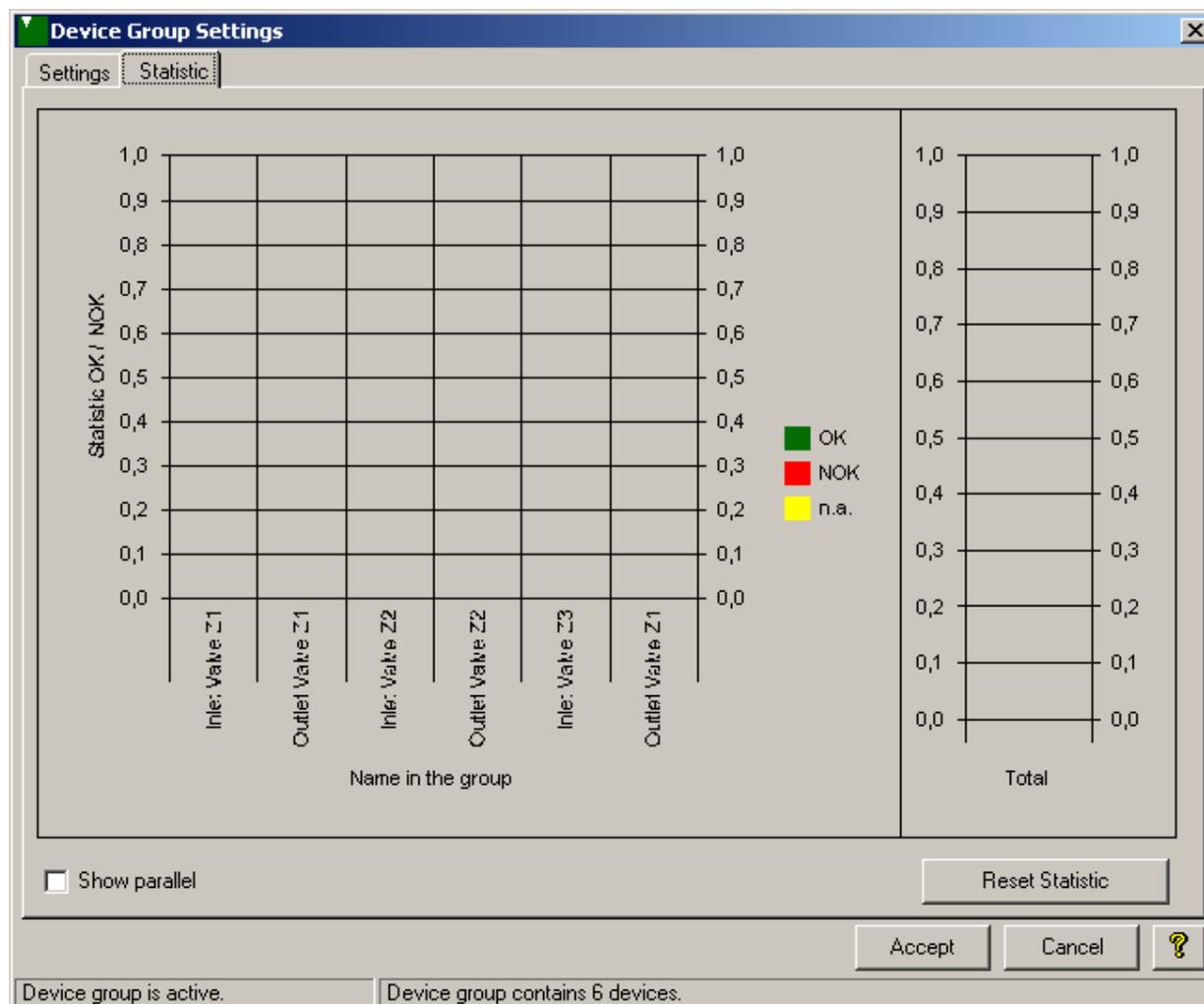
Manual definition charge: 32 characters

Important hint

To ensure the capture of all DIGIFORCE measurement results, the READY mode must be respected by all means. Only with READY=1 the station can be started for a new measurement.

Statistics on device group

[Search devices -> Device Group for Measurement Mode -> Statistic]



In the left part of the bar chart you have an overview of the OK/NOK-distribution of all group members listed in the group list. The display colors are classified as follows: OK = green, NOK = red and not available = yellow (for group „Terminate group prematurely, if...“).

The resulting bars can be positioned *linear* or *parallel* (see checkbox).

On the right you find the bar with the evaluation for the complete group. This bar is updated only if a group protocol is indeed requested. If the readout of the group members stops for whatever reason during the group cycle then the statistic is not updated!

The statistic of all group members and the total statistic is reset by **Reset Statistic**.

Important advice:

- „Search devices“ always causes a reset of the previous statistic!
- The group statistic and the configurations on the device group are saved/loaded whenever saving or loading the device file.

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