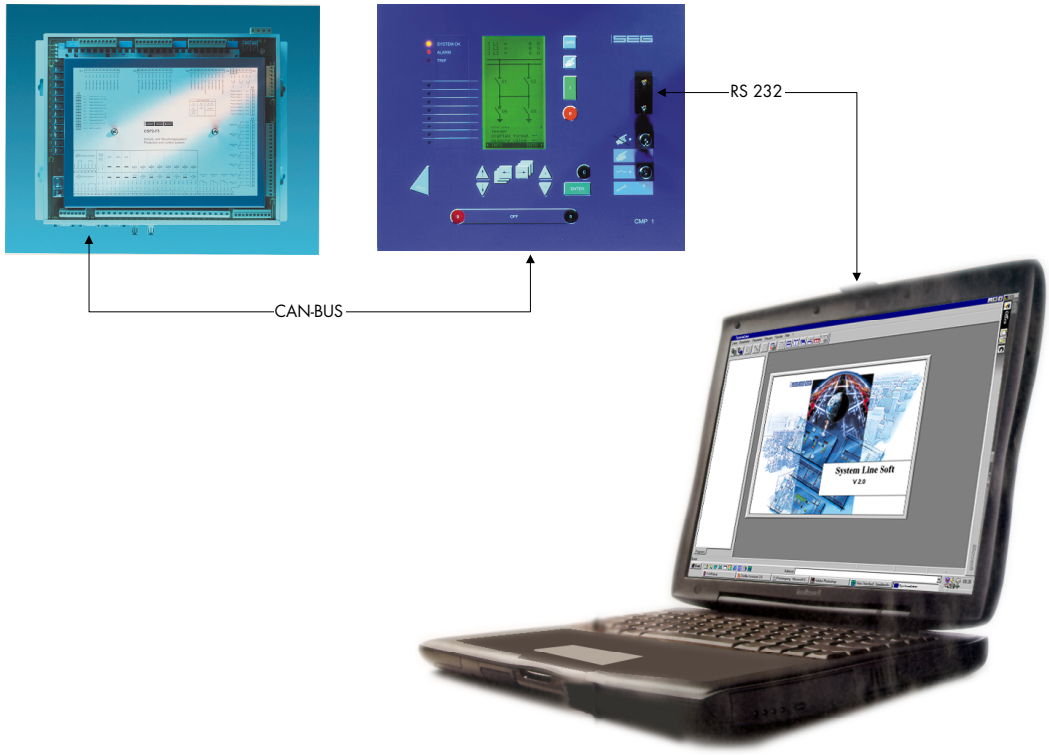
SLS 2.0 SYSTEM LINE SOFT
Parameter Setting and Evaluation



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1 Introduction

The »*SYSTEM LINE*« is a family of high-quality digital protection and control systems for medium-voltage applications. The devices of the »*SYSTEM LINE*« combine all benefits offered by today's digital technology.
As primary protection (line or busbar differential protection) or as complete, integrated field management system the »*SYSTEM LINE*« fulfils the most exacting requirements for modern, digital secondary technology.

The »*SYSTEM LINE*« not only supports the user by a great variety of easily selectable protection functions, but also integrates a large number of functions in one unit so that cost reduction potentials can be realised in planning, materials and installation. In addition to the consistent application of digital technology, the system features a high degree of availability, self-monitoring, flexibility as well as an ergonomically designed user interface.

Comfortable control and quick information of the operator take place via the separate operating unit *CMP* which is installed in the control cabinet door. Thanks to the soft keyboard (protection class IP54) the *CMP* can even be used in an environment with a high degree of pollution or dirt accumulation.

The base unit *CSP*, too, can be directly installed into the switchboard without any further auxiliary relays thanks to its robust and protected structure so that the wiring is reduced to a minimum. Isolated operation without the operating unit is just as possible as coupling of an external micro-processor via optical or electrical interfaces.

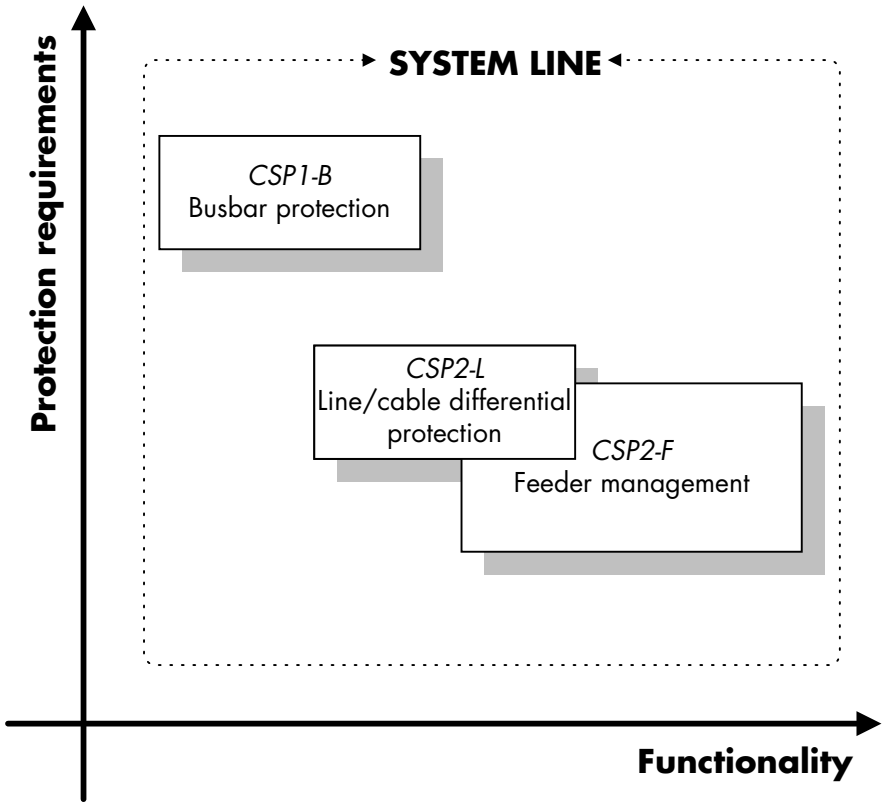


Figure 1.1: Range of »SYSTEM LINE« devices

The internal modular set-up of hardware and software permits flexible, need-oriented integration of extensions and customer requests.

2 Appliction Software System Line Soft

»*SYSTEM LINE SOFT*« permits simple, menu-controlled parameter setting and evaluation of the devices of the »*SYSTEM LINE*« (except *CSP1-B*). It facilitates operation and extents the functionality of the »*SYSTEM LINE*« (except *CSP1-B*). »*SYSTEM LINE SOFT*« utilises the possibilities offered by the digital protection technology such as communication and data storage to the full. Thanks to the windows-oriented user surface, the operator is intuitively familiar with the essential functions of the programme, with plausibility checks and password requests ensuring a maximum of safety at all times. Implemented assistance functions (in preparation) provide the user with online support for the most important programme functions. »*SYSTEM LINE SOFT*« permits projection and parameter setting of the device from the office.

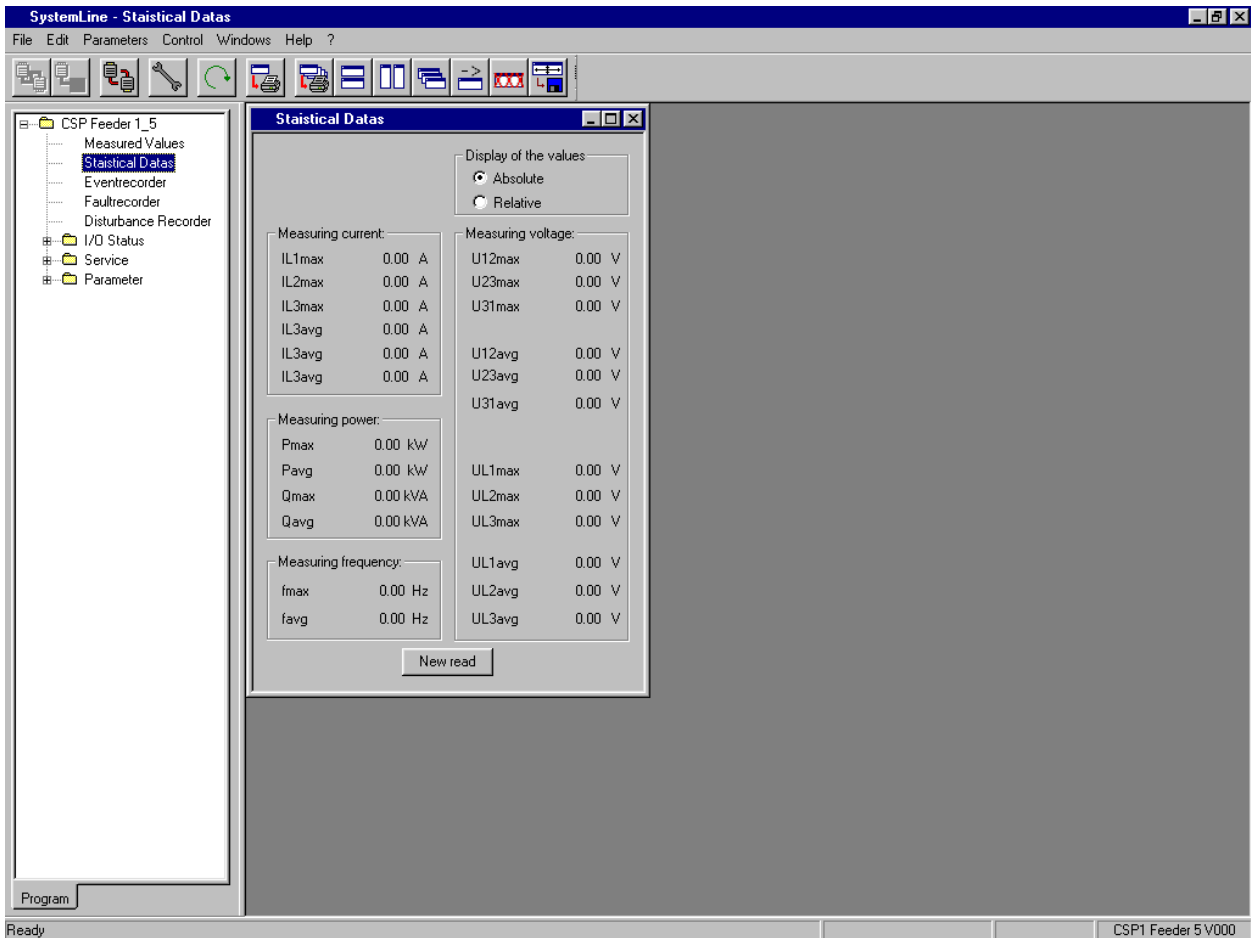


Figure 2.1: System Line Soft example: Statistical measuring values

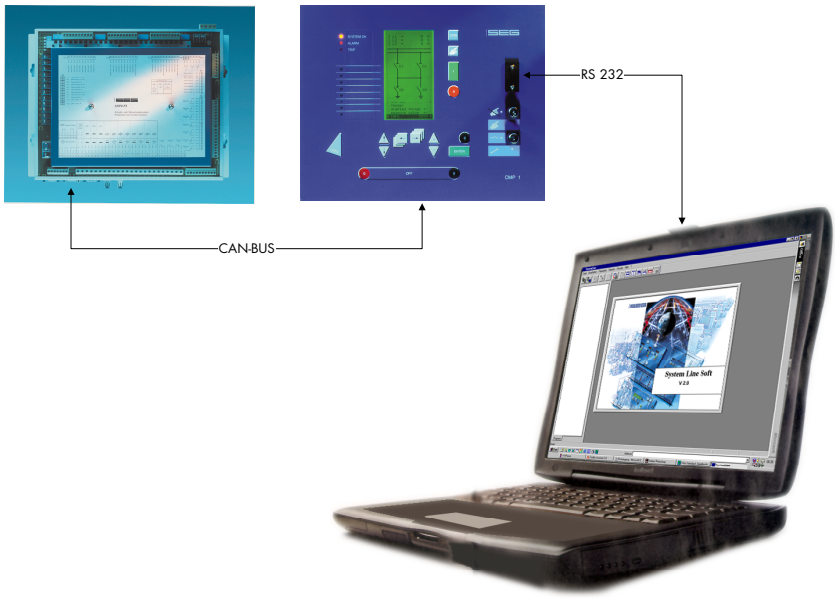
The »*SYSTEM LINE SOFT*« permits:

- Clear display of all measured values,
- simpler and faster operation of the »*SYSTEM LINE*«,
- user-friendly assistance functions (in preparation/refer to manual),
- ease of operation thanks to familiar Windows surface/windows technique
- comfortable storage of data on various storage media,
- various printing functions,
- good documentation possibilities by printing graphs (e.g. fault records*) and
- central application as analysing and parameter setting tool.

* = in preparation

3 Application of the SYSTEM LINE SOFT

The »System-Line-Soft« permits evaluation and parameter setting of the *CSP* series of devices.



Scope of functions and performance:

- windows technique with operating and status line,
- available for all devices of the »*SYSTEM-LINE*«,
- menu-guided, plausibility checks,
- Loading and storing of single line diagrams, incl. field interlocking.
- comprehensive assistance functions,
- Read-out, read-in and parameter setting of all data specific to the device,
- Archiving, editing such as copying or erasing sets of data,
- Read-out of messages and fault values,
- Cyclical read-out of measured values,
- Further processing of measured values (recording, display),
- Controlling possible* with SINGLE LINE display,
- Enquiry request to inputs and outputs (I/O status indicators)
- Commissioning support (e.g. diff. and stab. values with DIFF), I/O status,
- Evaluation of disturbance records, curve displays, edit capacity, Test fault record trigger,
- Initatiation of test fault records,
- Synchronisation of time from the PC and
- Re-setting of counter and signal memories.

4 Installation

4.1 Hard- and software conditions

The »*SYSTEM LINE SOFT*« will run on any IBM-compatible PC with the operating systems Windows 95/98/ME or Windows NT/2000. Communication takes place via the RS232 interface or via the internal CAN-BUS. It permits operation by mouse (Windows standard/surface) and is equipped with window image / technology controlled by the user. The »*SYSTEM LINE SOFT*« is easy to install. The language (programme surface) of the »*SYSTEM LINE SOFT*« can be switched over between English and German at any time.

4.2 Installation of the SYSTEM LINE SOFT

Installation of the »*SYSTEM LINE SOFT*« is started via the Windows Explorer by a double click.

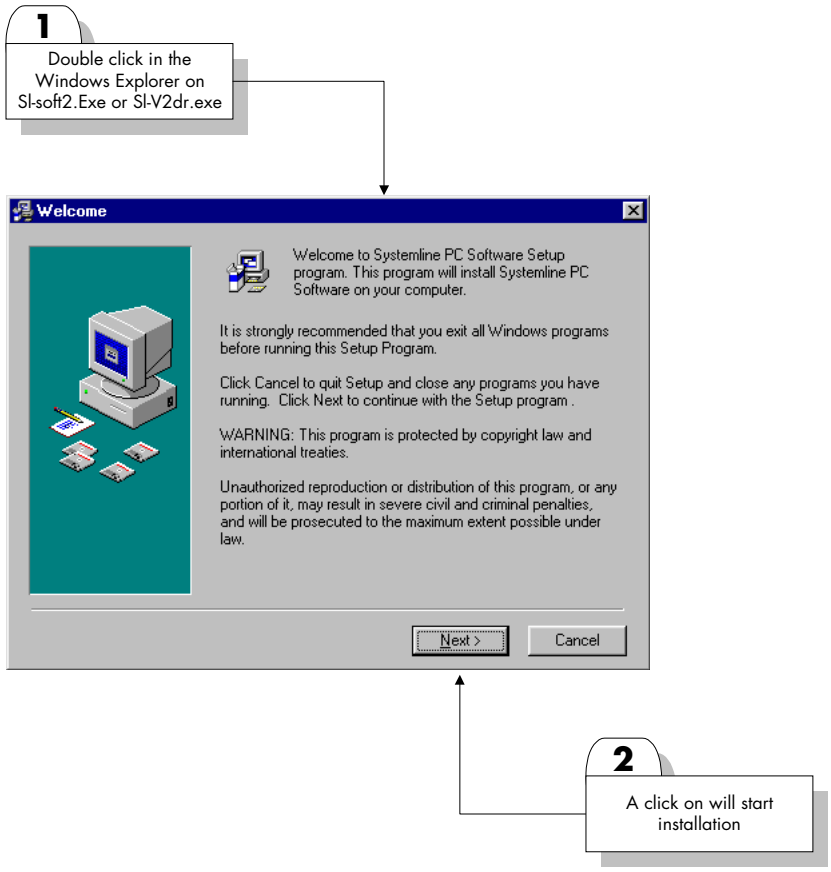


Figure 4.1: Installation of the SYSTEM LINE SOFT

Follow the instructions and questions of the installation menu.

In the next step the target directory for installation of the »*SYSTEM LINE SOFT*« is determined. In the next step the programme manager group must be defined in which the »*SYSTEM LINE SOFT*« is to be installed. In the next step a password has to be entered and confirmed (for parameter setting). A further mouse click will start the actual installation procedure and all required files will be copied into their target directories. (The »*SYSTEM LINE SOFT*« is now ready for operation)

5 De-installation

1. Possibility – uninstall via UNWISE.EXE

A double click (left hand mouse button) on the »UNWISE.EXE« file in the explorer will start the de-installation of the »*SYSTEM LINE SOFT*«. The file »UNWISE.EXE« is located in the same directory into which the »*SYSTEM LINE SOFT*« was installed. »Automatic De-installation« will de-install the »*SYSTEM LINE SOFT*« completely. User-defined de-installation permits partial de-installation of the »*SYSTEM LINE SOFT*«. A mouse click on the »Continue« button will start de-installation.

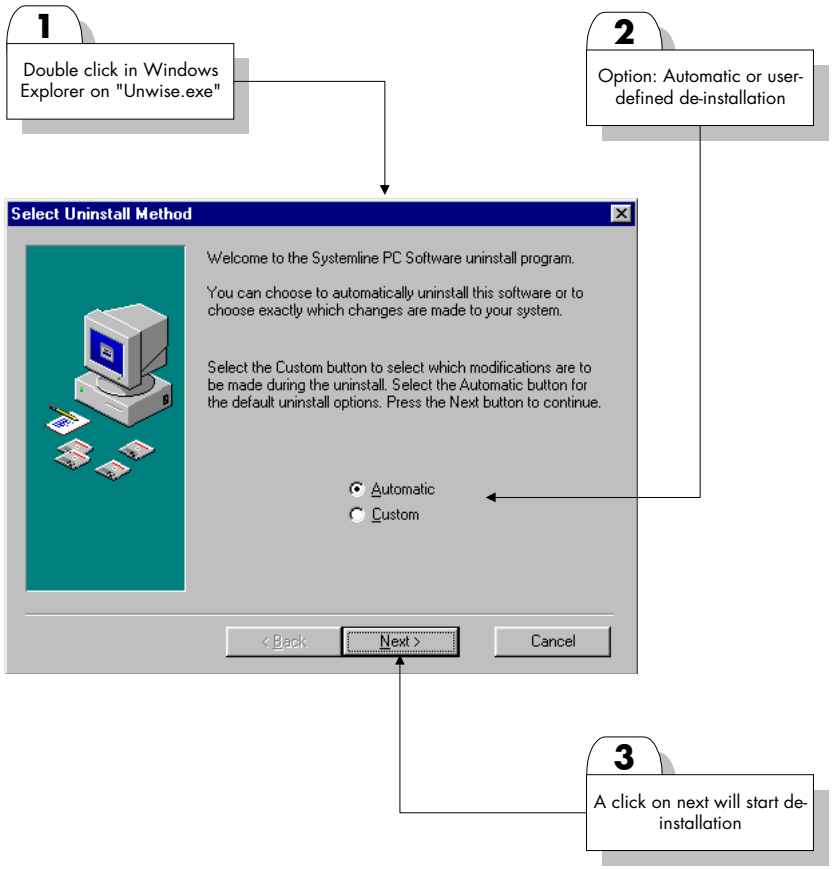


Figure 5.1: De-installation of the ***SYSTEM LINE SOFT***

2. Possibility – uninstall via system control

De-installation is started via »Start/Adjustments/System Control/Add/Remove«.

6 Required configurations

Communication between PC/Laptop and *CSP* can be realised via zero-modem cable (see 6.1.1) or via a modem.

After the »*SYSTEM LINE SOFT*« has been installed, it has to be configured once and a few settings have to be checked. For this purpose proceed as described in Chapters 6.1.3 and 6.1.4

Now start the »*SYSTEM LINE SOFT*« via »Start/Programmes/System LineV2/System Line V2«.

6.1.1 Starting the programme – communication via RS232

In order to achieve perfect functioning, the following steps must be carried out in the following order:

1. Bevore the »*SYSTEM LINE SOFT*« is started, the *CSP* must have been booted. This can be verified by the fact that the single line is shown in the *CMP* or by the relevant light emitting diode (System OK = green) of the *CSP*. After that the zero-modem cable connection between PC/Laptop and *CSP* must be established.

2. The active connection to the *CSP* (online mode) is established via the button

»Establish connection«.

3. The SEG_Comm_Server and the SEG_Serial_Server must have been started and correctly configured. If the tick for Autoconnect has been set in the SEG_Serial_Server, the other two servers are started automatically and shown as small icons at the bottom right of the task bar. (Configuration is shown in Chapters 6.1.3 and 6.1.4). Otherwise they will have to be started manually via Start/Programmes/SystemlineV2/Seg_Comm_Dispatcher« and/or. »Seg_Serial_Server«.

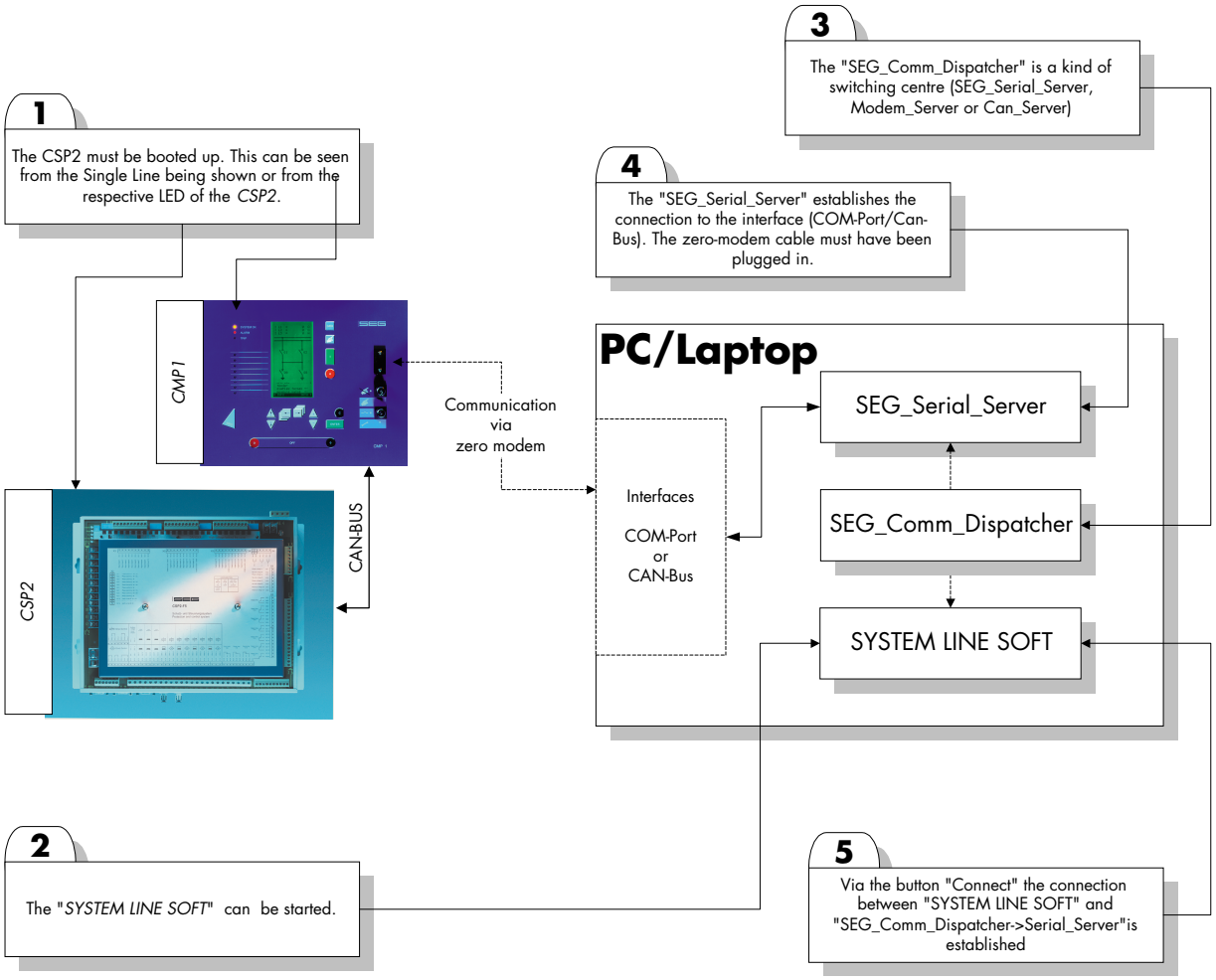


*Figure 6.1: Active connection between **SYSTEM LINE SOFT** and CSP2 via Zero-Modem Connection Modul*

6.1.2 Terminating the programme - communication via RS232

In order to finish the programme, the following steps must be carried out in this fixed order so that complications are avoided.

1. The active connection to the *CSP2* (online mode) is terminated via the button

»Interrupt connection« (refer to chapter »Surface structure«).

2. The »*SYSTEM LINE SOFT*« is closed.

3. First the window of the »*SEG_Comm_Dispatcher*« is maximised (double click on the small icon at the bottom right of the task bar). The dispatcher is closed via the button »**Exit**«.

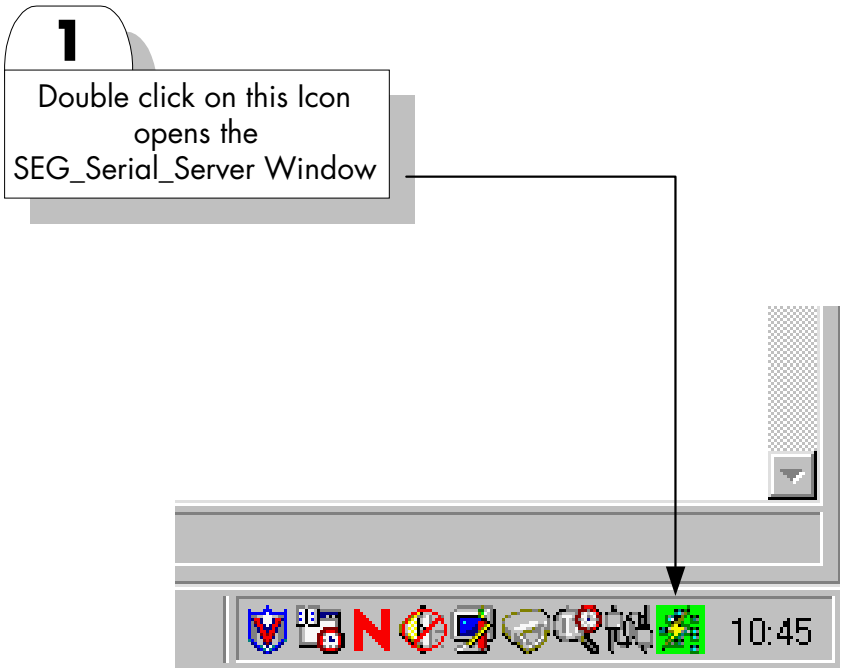


Figure 6.1: Icon of the SEG_Comm_Dispatchers

4. In the second step the window of the »*SEG_Serial_Server*« is maximised (double click on the small icon at the bottom right of the task bar).

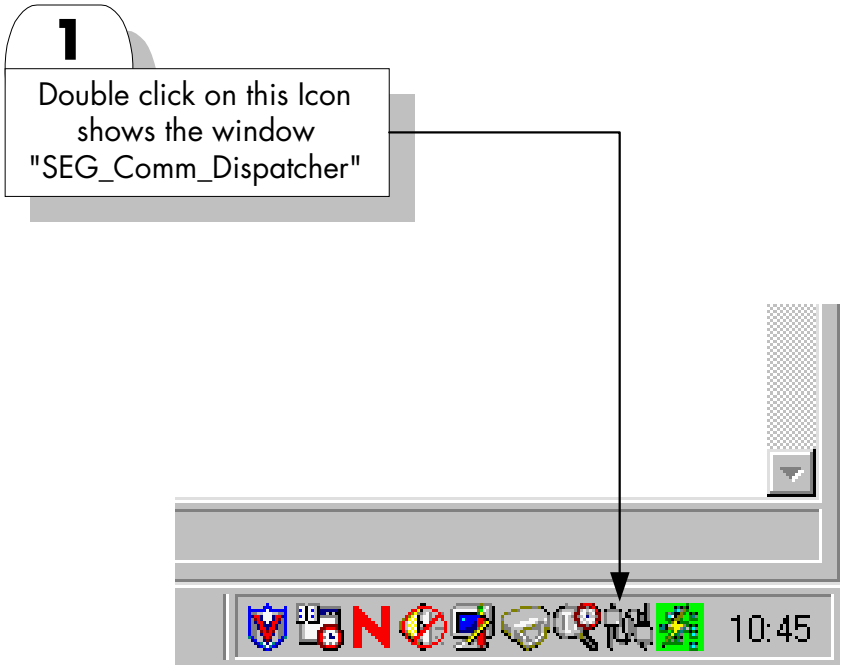


Figure 6.2: Icon of the SEG_Serial_Servers

Via the button »Disconnect« the connection is interrupted and then the module is closed by a mouse click on the »Exit« button. (The *CMP* returns from gateway mode to normal operating mode).

5. The zero-modem cable connection (RS232) must be disconnected.

6.1.3 Configuration of the SEG_Communication_Dispatcher

The »SEG Communication Dispatcher« is called up via »Start/Programmes/SystemLineV2«. Click on the button »Client Info« with the left hand mouse key. Check whether the icon before »Default mapping« in the left hand »Clients« window is the same as that in the right hand window marked »Serial«. If this is not the case, proceed as follows. Keeping the left hand mouse key depressed (drag & drop) pull from the left hand window »Client« the icon for »Default mapping« onto the icon »Serial« in the right hand window »Server«. The icon for »Default mapping« in the left hand window »Clients« will now show the same symbol as the icon for the selected server.
Confirm by mouse click on the button »Done«. To complete, click on the button »Exit«.

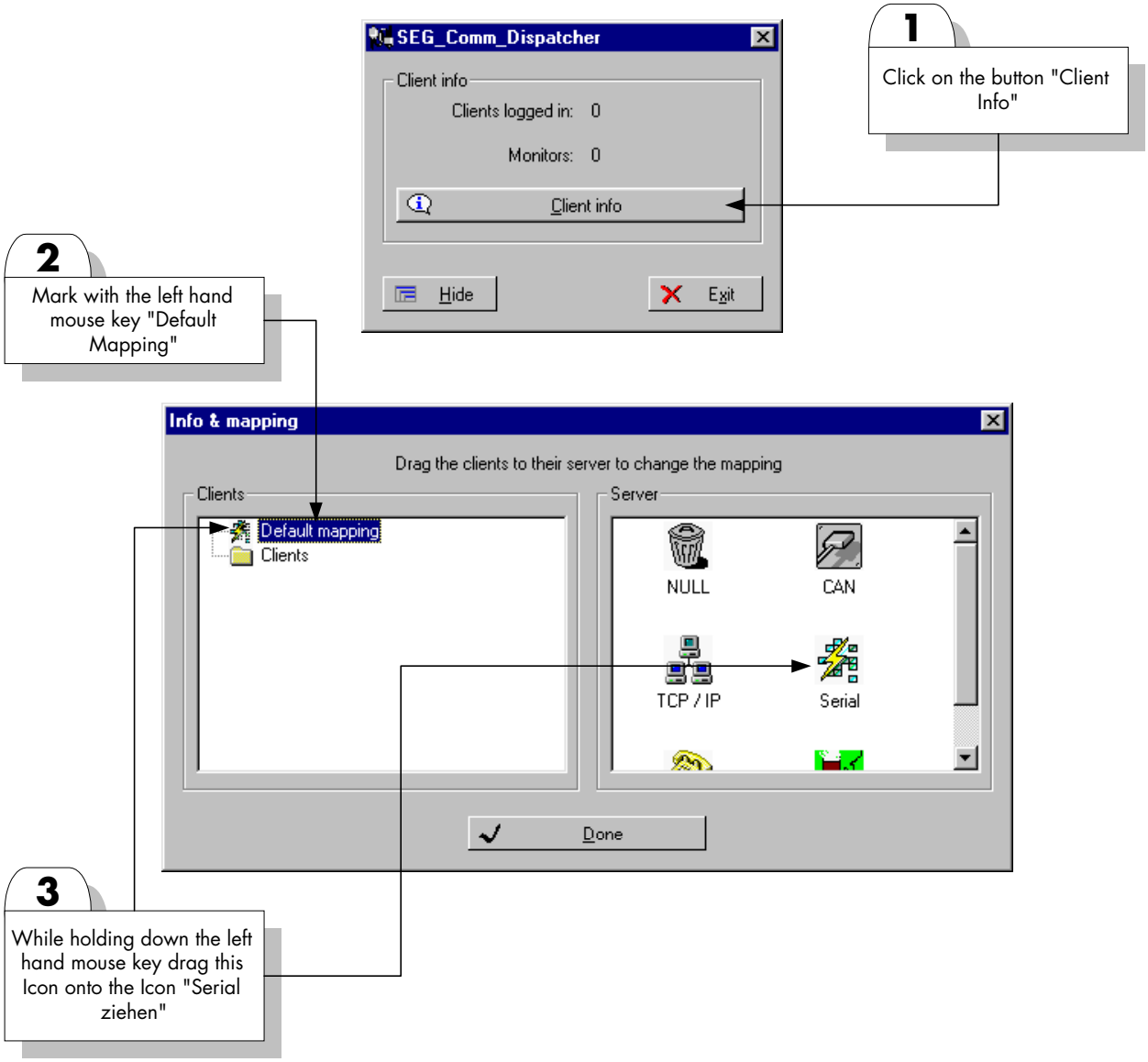


Figure 6.3: SEG_Comm_Dispatcher

6.1.4 Configuration of the SEG_Serial_Servers

Call up the »SEG_Serial_Server« via »Start/Programmes/SystemLineV2«. Now select the COM interface or the port to which you connected the zero-modem cable. Tick »Autoconnect«. If the function »Autoconnect« is activated, the SEG_Serial_Server required for communication will automatically set up the connection to the System Line unit in the background as soon as the button »Connection set-up« in the »*SYSTEM LINE SOFT*« is activated. Click on the »Exit« button.

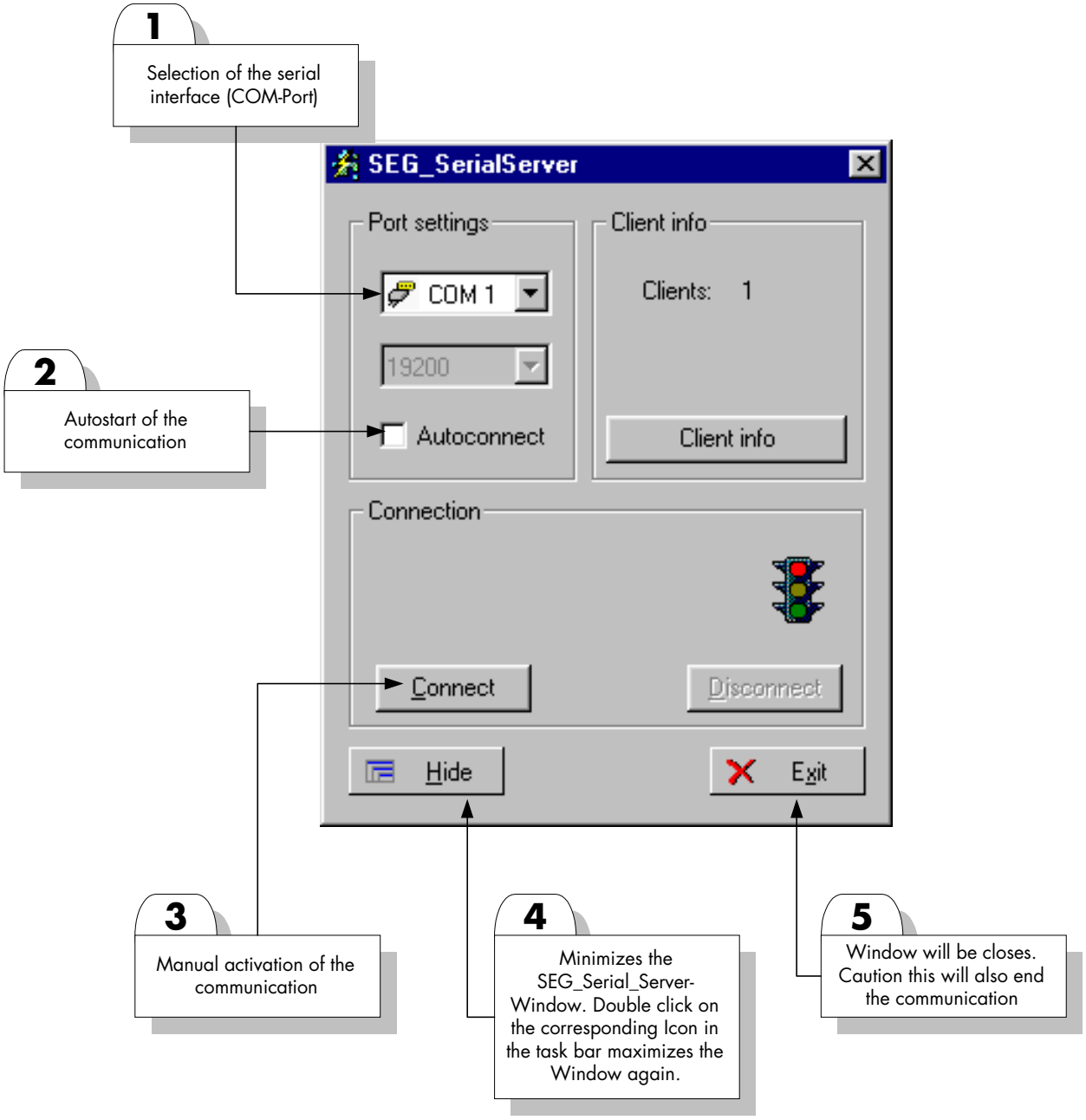


Figure 6.4: Configuration of the SEG_Serial_Server

7 Layout of the menu

The surface consists of five areas:

- Menu bar,
- Button bar,
- Tree structure,
- Operating area and
- Status bar.

A double click onto individual branches within the tree structure (refer to Figure 7.1) will open the relevant window in the operating area. It is possible to open several windows simultaneously. These can then be arranged as needed by using the menu »**window**« (for further details refer to Figure 7.1).
A mouse click on the relevant window will make any open window an »**active operating window**« (only one window can be the active operating window).

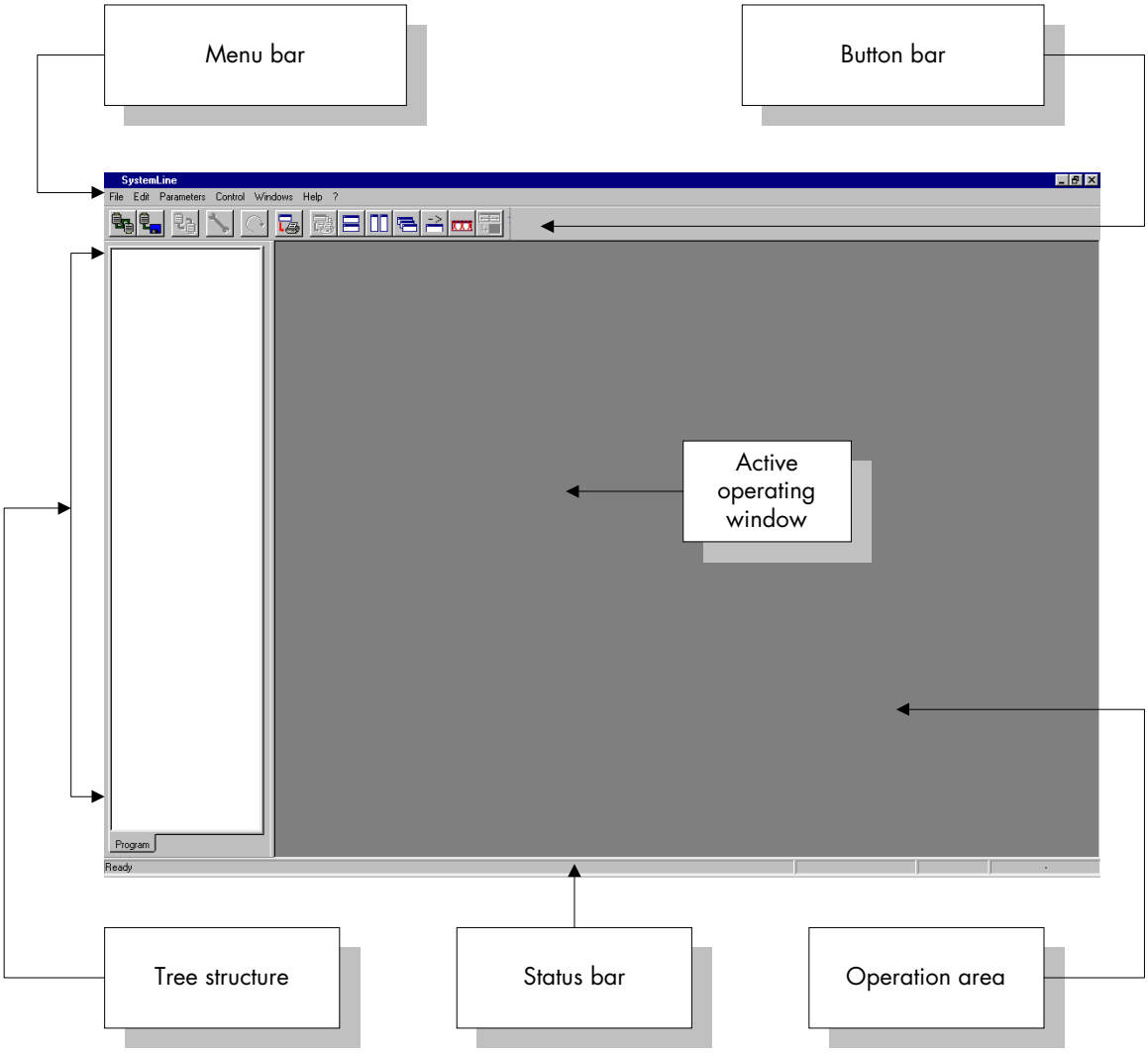


Figure 7.1: Surface of the SYSTEM LINE SOFT

Note:

The »*SYSTEM LINE SOFT*« has two operating modes:

- Parameter setting and
- Evaluation/data reading

The operating mode »**Parameter setting**« is only accessible via a previously fixed password.

7.1 The button bar

The button bar permits easy and fast access to the most important functions of the »*SYSTEM LINE SOFT*« by mouse click.

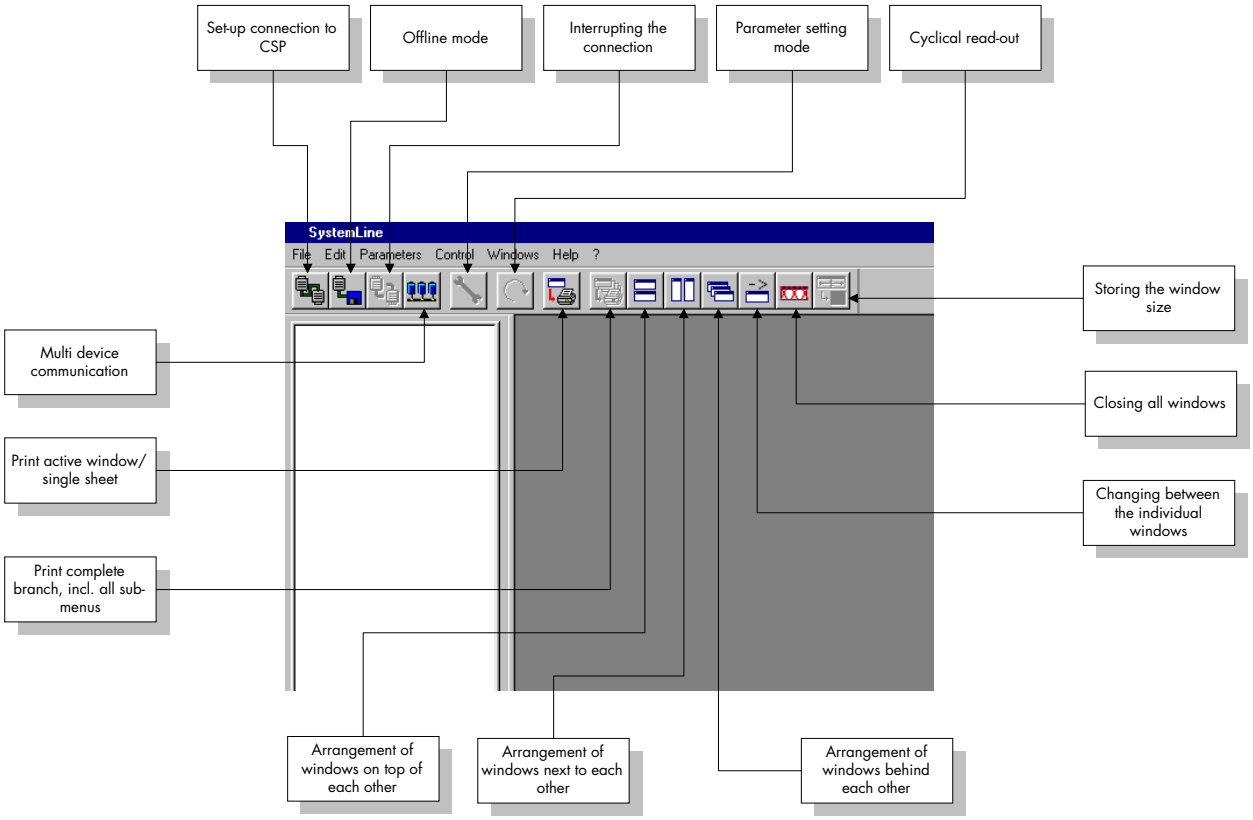


Figure 7.2: The button bar

7.2 Menu »File«

The menu item »Connect« serves to activate the online operation with the *CSP*. In addition, the printer can be activated or adjusted from here. The menu item »Settings« permits selection of the language for the surface, changing of the password and fixing target directories for copying of parameter sets.

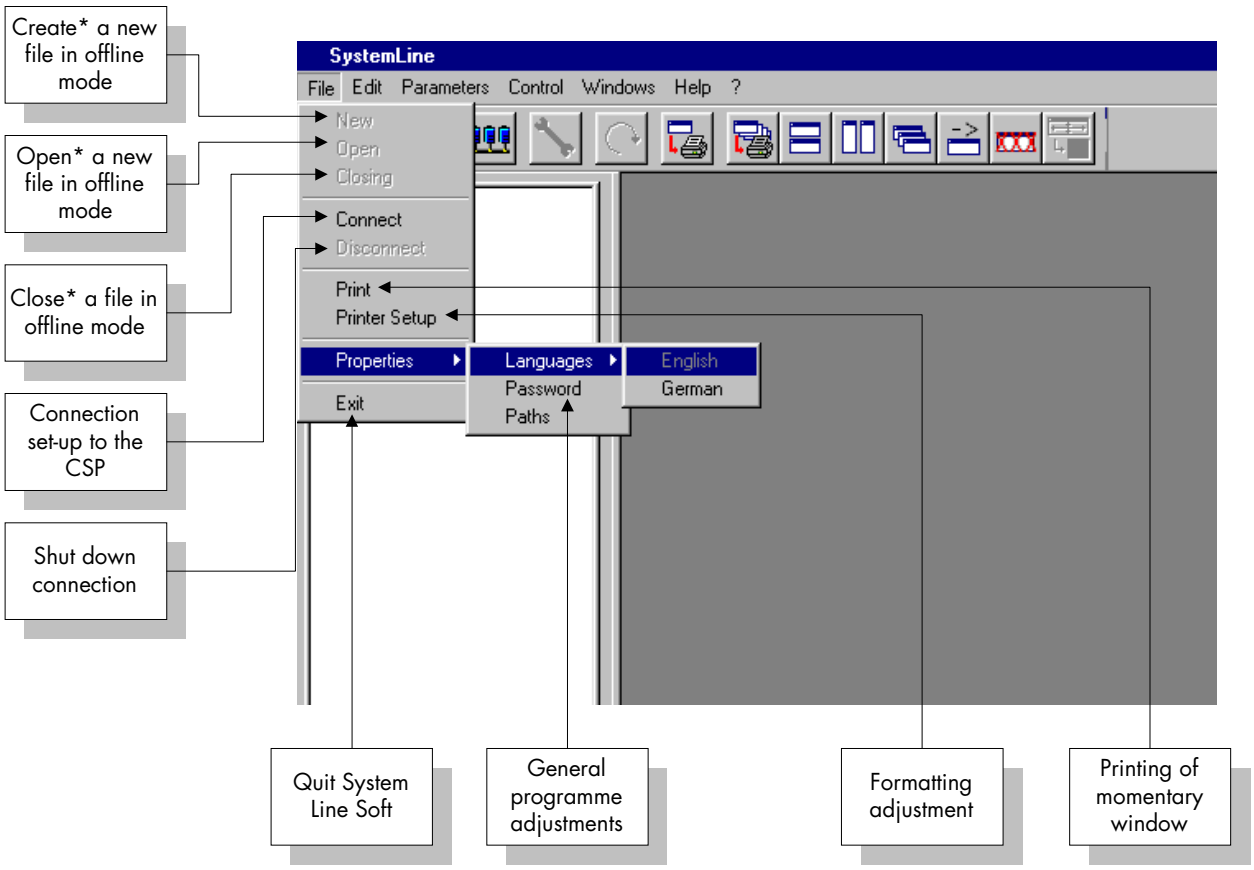


Figure 7.3: »File« menu

* = in preparation

7.2.1 Choosing the language for the user surface

It is possible to change the language for the user surface within the »*SYSTEM LINE SOFT*«. The changes will not become active until the »*SYSTEM LINE SOFT*« is restarted. The required adjustment possibility can be found in the menu »File/Adjustments«.

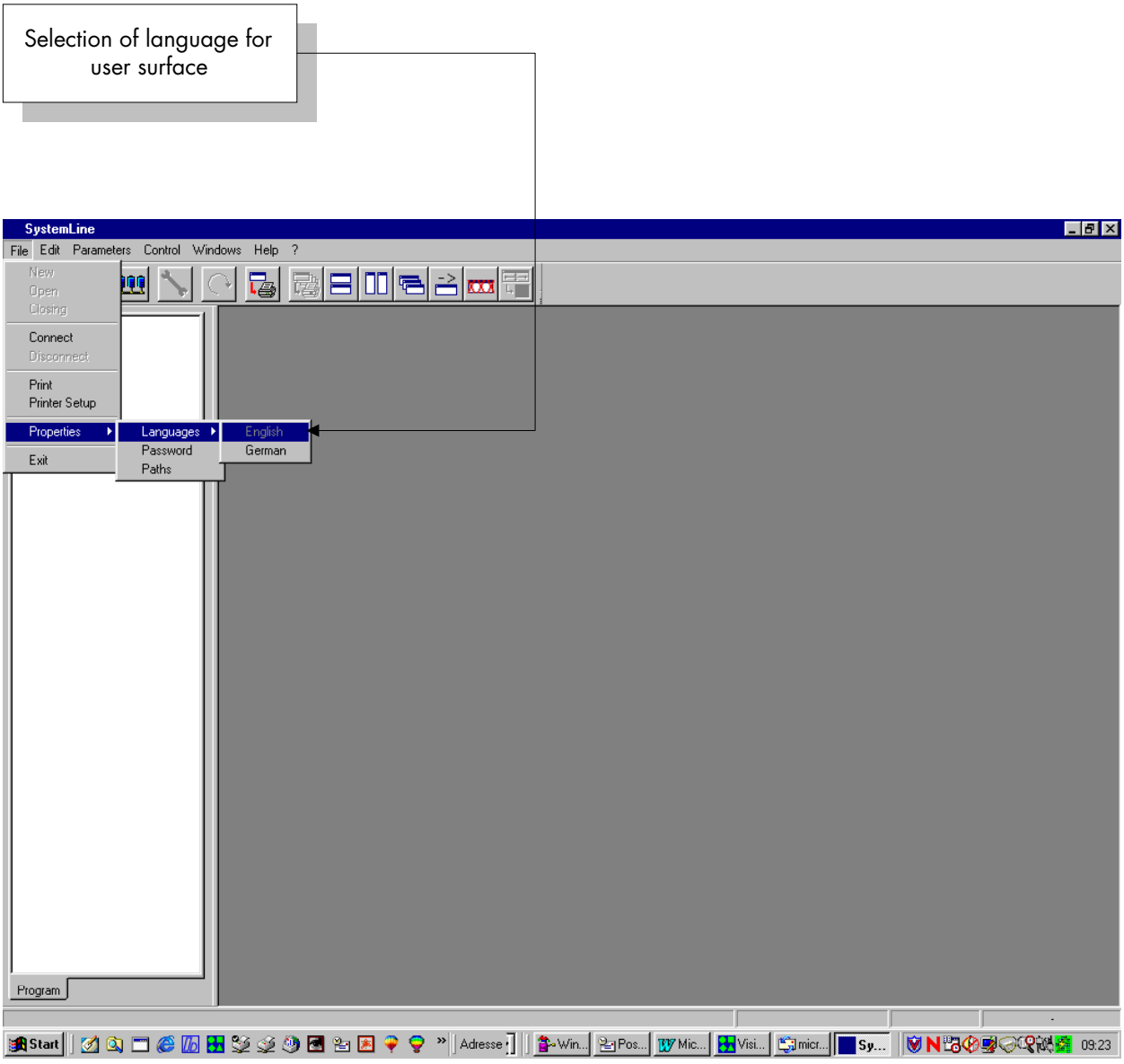


Figure 7.4: Changing the language

7.3 Menu »Edit«

The »Edit« menu permits starting of the optionally available data recorder (in preparation). By selecting one of the fault records from the list of the latest fault records it can be edited in the data recorder.

in preparation

Fig. 7.1: Menu »Edit«

7.4 Menu »Parameters«

In the menu »**Parameters**« it is possible to load and store parameter sets and single line diagrams or copy them, respectively. Parameter sets can be copied as follows:

- From the PC into the *CSP,*
- from the *CSP* to the PC and
- protective parameters within the *CSP* (e.g. Set 1 to Set 3 etc.).

Via the menu point »Single Line Diagram« it is possible to copy a single line diagram either

- from the *CSP* into the PC or
- from the PC into the *CSP**.

*= refer to chapter »Storing and loading single line diagrams«

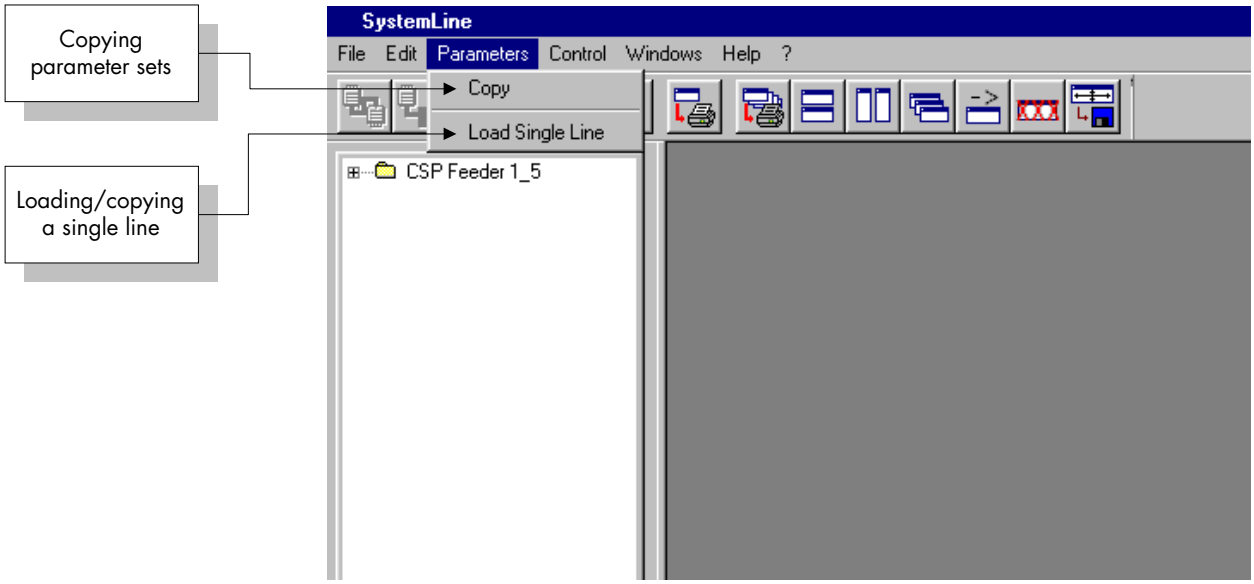


Figure 7.5: Menu Parameters

7.4.1 Copying a protective parameter set within the CSP

The »*SYSTEM LINE SOFT*« permits copying of an existing protective parameter set onto another one. For this purpose the item »Copy« must be selected in the »Parameters« menu. If protective parameter sets vary only slightly, this can simplify entering of the adjustment values considerably.

NOTE

Copying complete parameter sets is not equivalent to parameter setting.

Example: Protective parameter set 1 is copied onto parameter set 4.

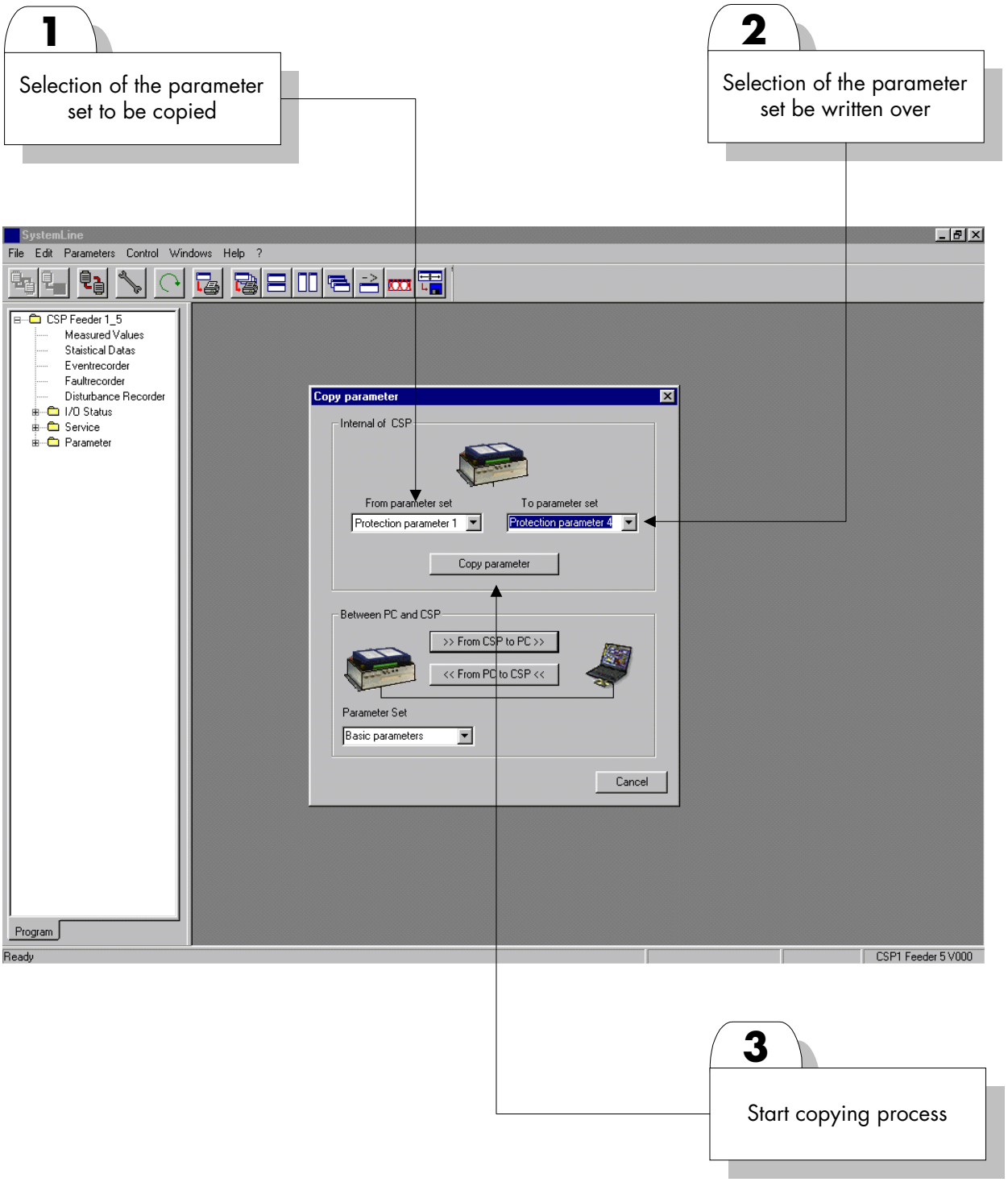


Figure 7.6: Copying protective parameter sets within the CSP

7.4.2 Storing and loading parameter sets

Both the »System Parameters« and the »**Protective Parameters**« can be stored on a PC and from there loaded into the ***CSP***. For this purpose the item »Copy« must be selected in the menu »Parameters«.

*Example: Copying the basic parameter set from the **CSP** to the PC.*

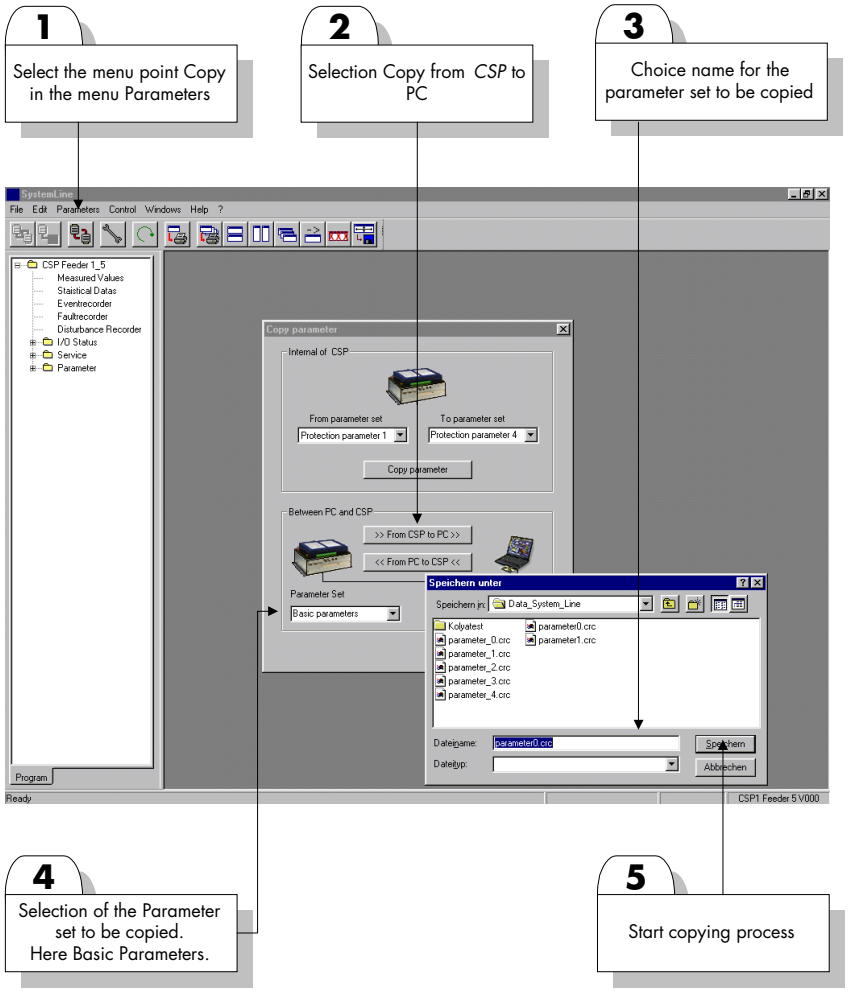


Figure 7.7: Storing CSP-PC

Note

If all parameter sets are copied from the ***CSP*** to the PC, the »***SYSTEM LINE SOFT***« automatically generates 5 files with the following suffixes:

- »**parameter**«_0.crc (System-Parameters)
- »**parameter**«_1.crc (Protection_Parameter_Set 1)
- »**parameter**«_2.crc (Protection_Parameter_Set 2)
- »**parameter**«_3.crc (Protection_Parameter_Set 3)
- »**parameter**«_4.crc (Protection_Parameter_Set 4)

The file name »**Parameter**« can be changed.

7.4.3 Storing and loading single line diagrams

Via the menu point »**Load single line diagram**« it is possible to copy a single line diagram either

- from the *CSP* into the PC or
- from the PC into the *CSP*.

In addition to the graph the file for the single line diagram also includes the configured internal field interlocking. The single line diagrams cover, in addition to the picture, the control system (with selectable and controllable switching devices) and the internal panel interlocking. The single line diagrams are prepared by SEG in accordance with the customer's requirements and are then made available to the customer upon delivery of the system. Should you wish any changes please contact SEG (see last page).

*Example: Storing a single line diagram from the **CSP** on the PC*

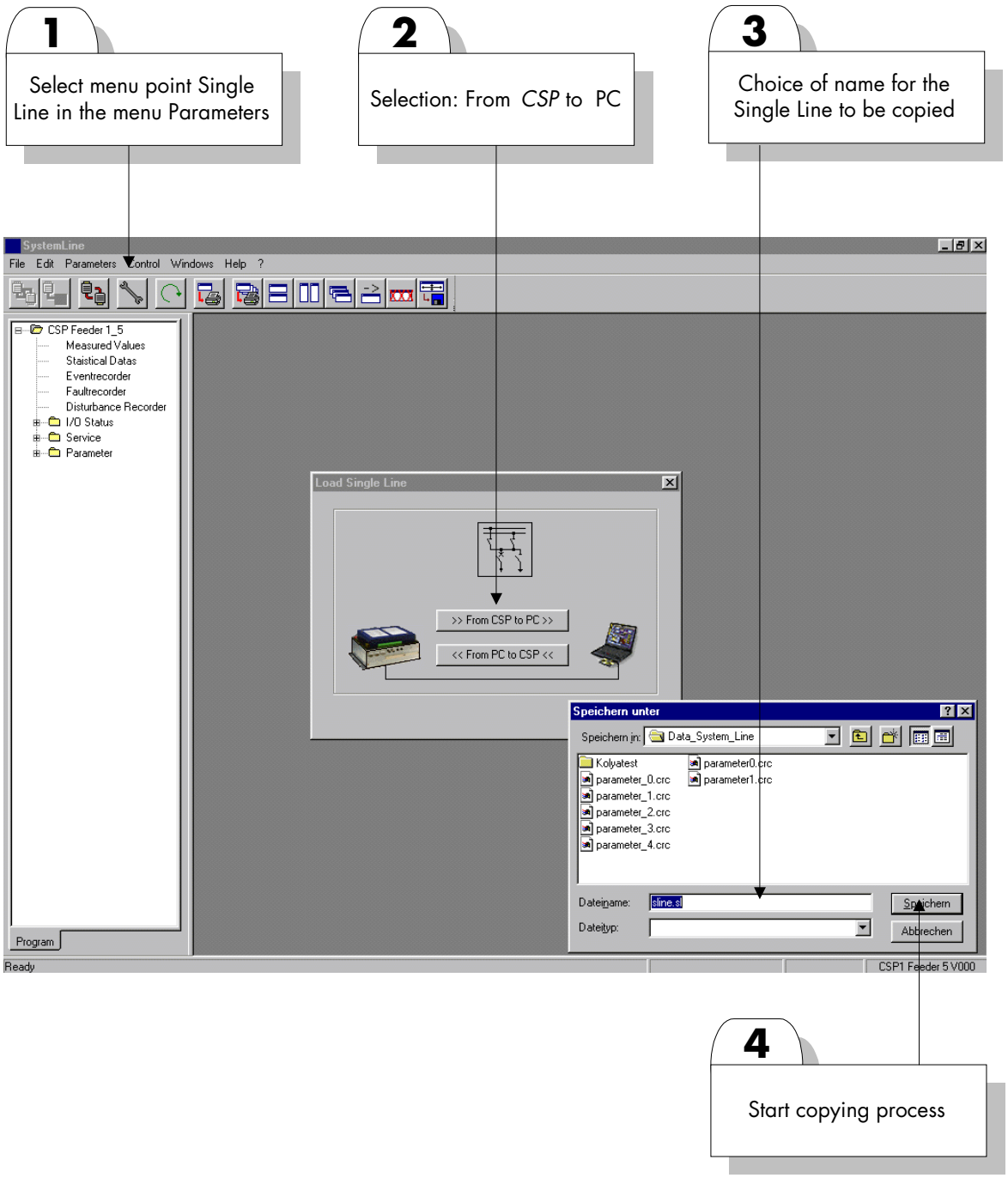


Figure 7.8: Example storing of a single line diagram CSP- PC

7.5 Menu »Control«

in preparation

7.6 Menu »Window«

In the »Window« menu the operator can adjust the arrangement of the pop-up operating windows individually. Size and position of the windows can be changed and stored. The individual functions are also available via the »Button bar«.

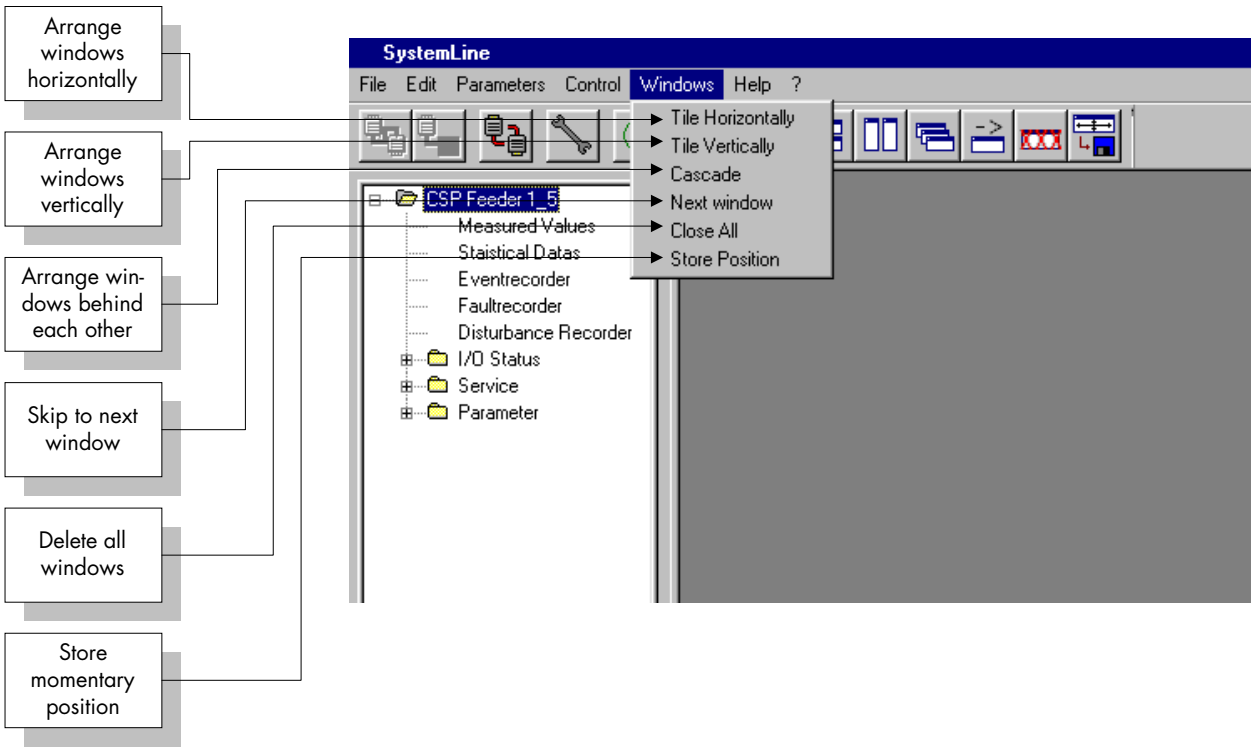


Figure 7.9: Menu »Window«

7.7 Menu »Help« (in preparation)

The »Help« menu provides numerous help functions for the programme and the applied help functions.

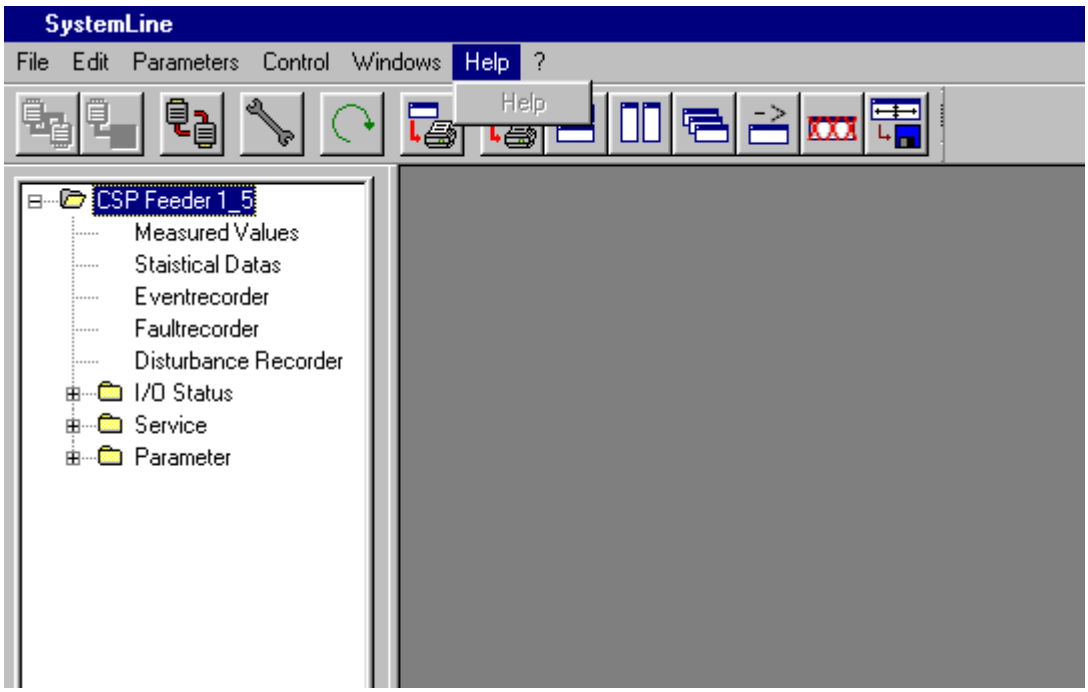


Figure 7.10: Menu »Help«

7.8 Menu »?«

In the menu »?« general information can be accessed. In addition to the programme version, connection diagrams (examples) can be called up (how is the *CSP* connected to the *CMP* etc.). In addition to the programme version, a diagram for the connection of a laptop to the *CSP/CMP* system can be called up.

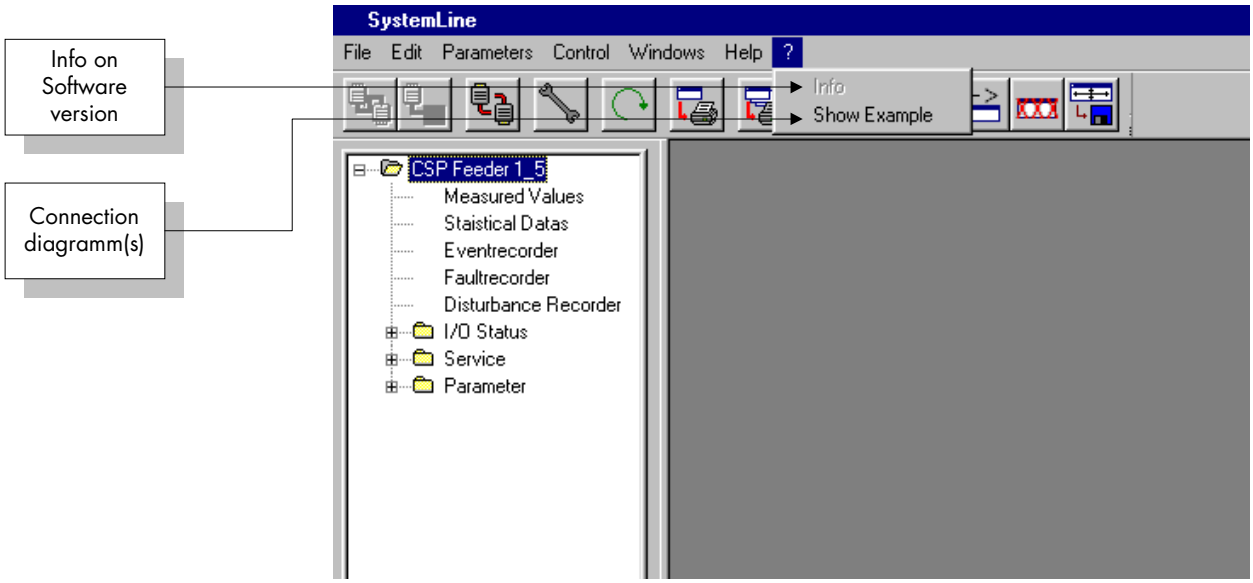


Figure 7.11: Menu »?«

8 The tree structure of the SYSTEM LINE SOFT

8.1 Measuring

The measured values of all »*SYSTEM LINE*« devices are displayed with adequate precision (fault < 1%). Momentary measured values can be read out via the »*SYSTEM LINE SOFT*« directly at the PC either as individual value or cyclically. The measured values can be shown alternatively as absolute or as relative values.

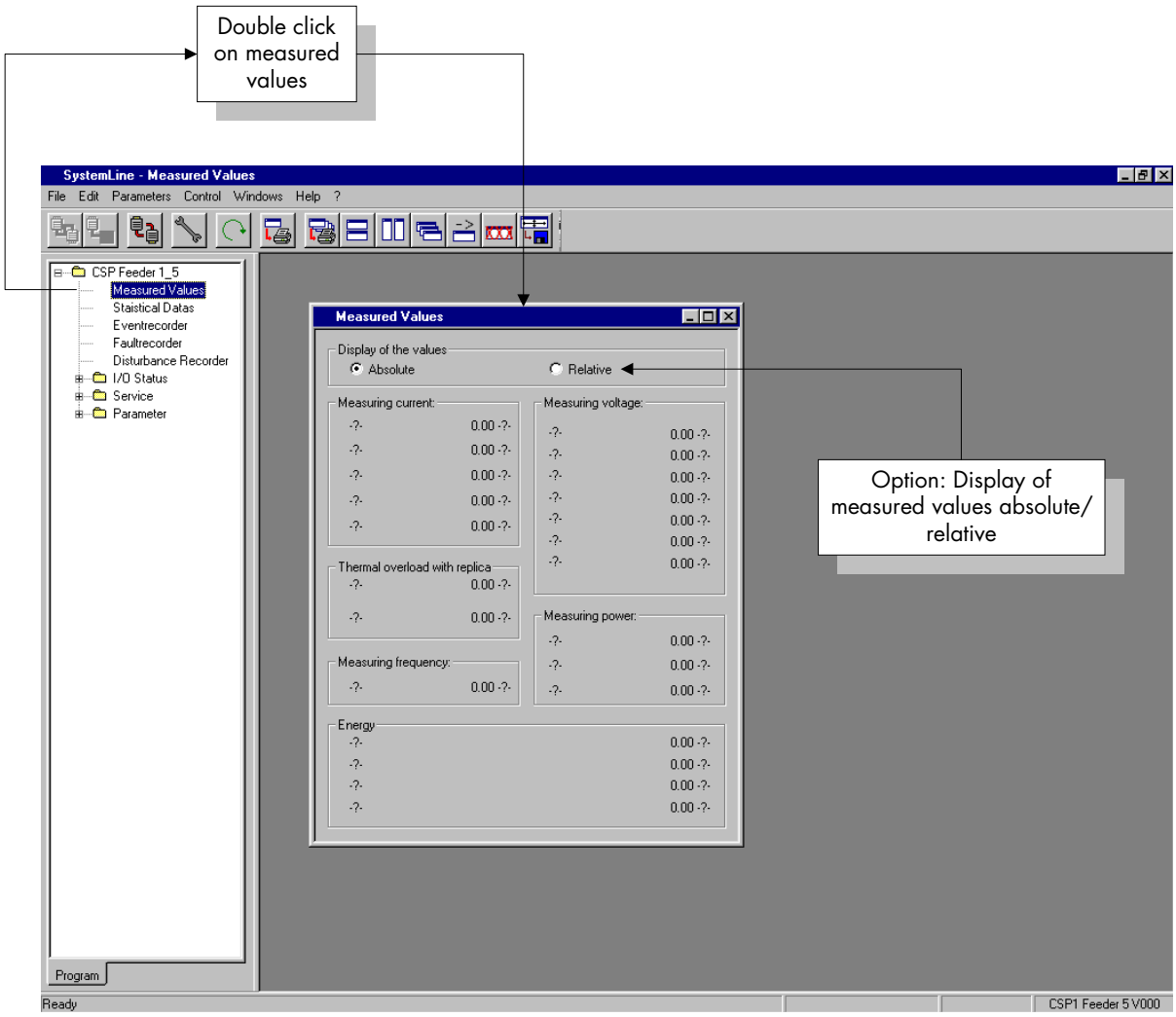


Figure 8.1: Measured values

Continuous display of measured values
A mouse click on the button »*Cyclic measured value display*«

will continuously display updated measuring values as soon as the response times and the activity periods of the *CSP* permit this process (2-5s).

8.2 Statistics

The »*SYSTEM LINE SOFT*« permits the display of the statistical values (maximum and average values) which are formed in the devices of the »*SYSTEM LINE*« from the relevant measured values. These measured quantities (mean and maximum values) are then available for further analysis.

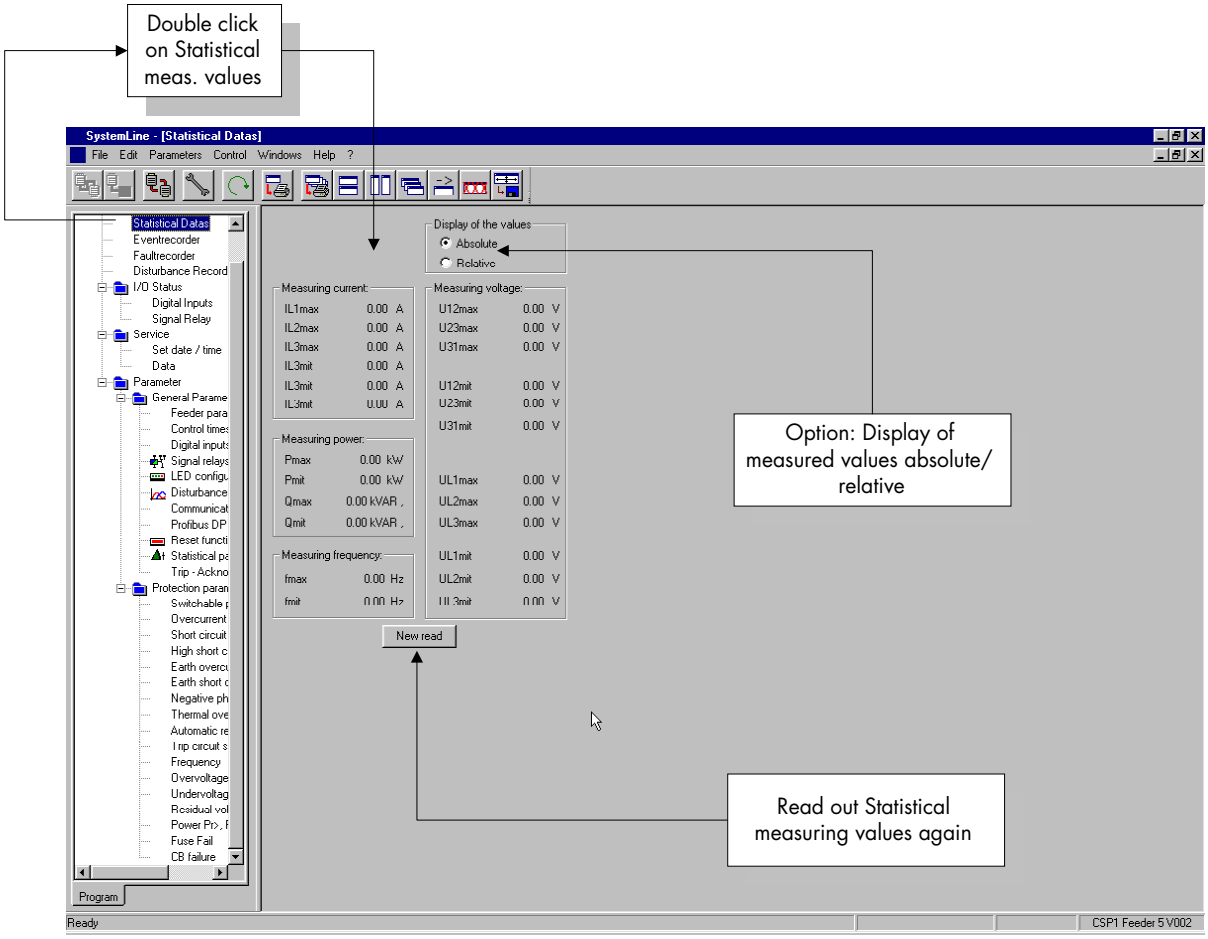


Figure 8.2: Statistics

8.3 Event recorder

The events failure-safe stored in the devices of the »*SYSTEM LINE*« can be read and printed with the appertaining date and time. The display of the past 50 events covers protection, control and parameter-setting events.

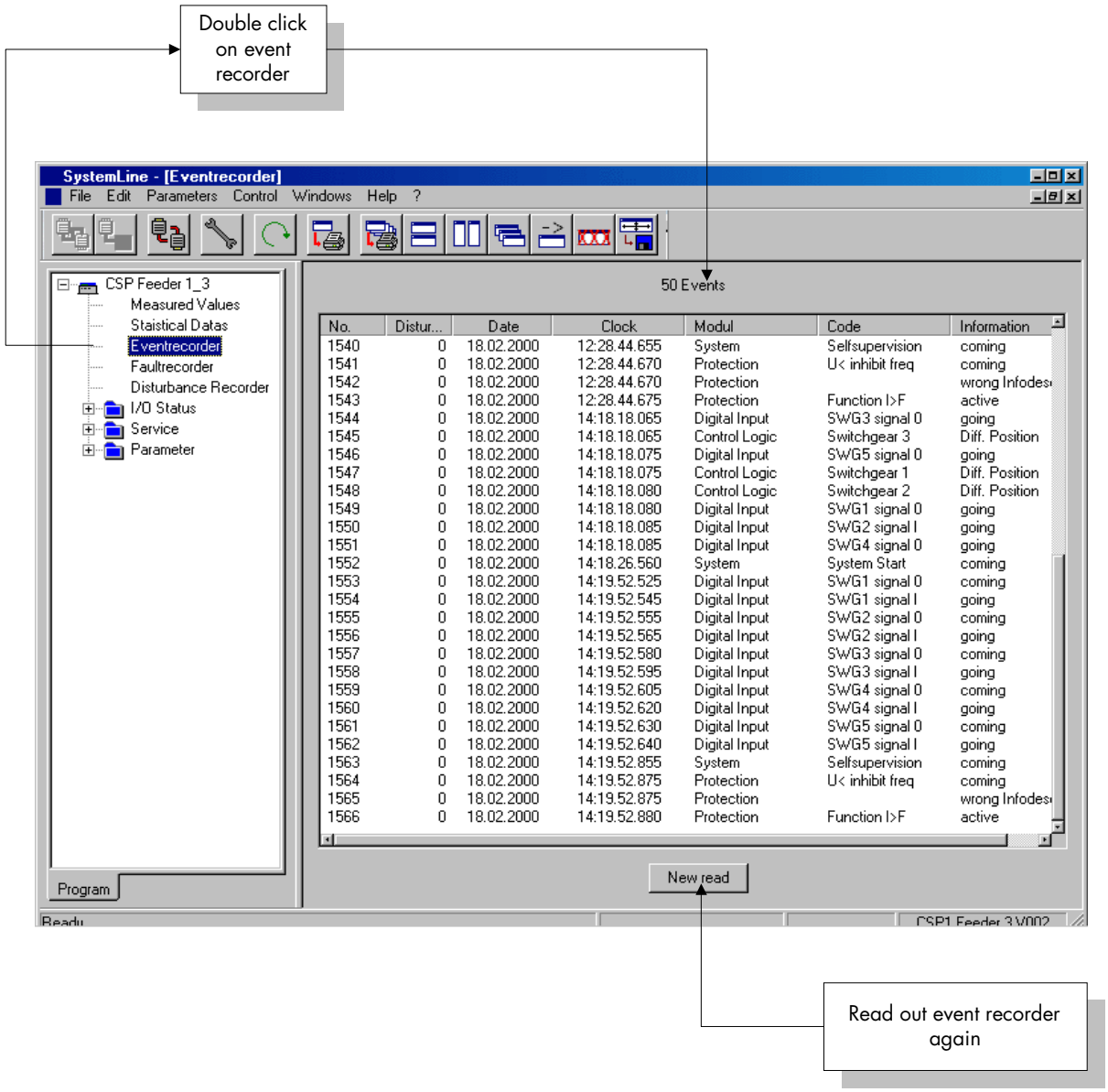


Figure 8.3: Event recorder

8.4 Fault recorder

The fault recorder stores the measured values which have lead to tripping. The latest 5 faults are stored failure-safe.

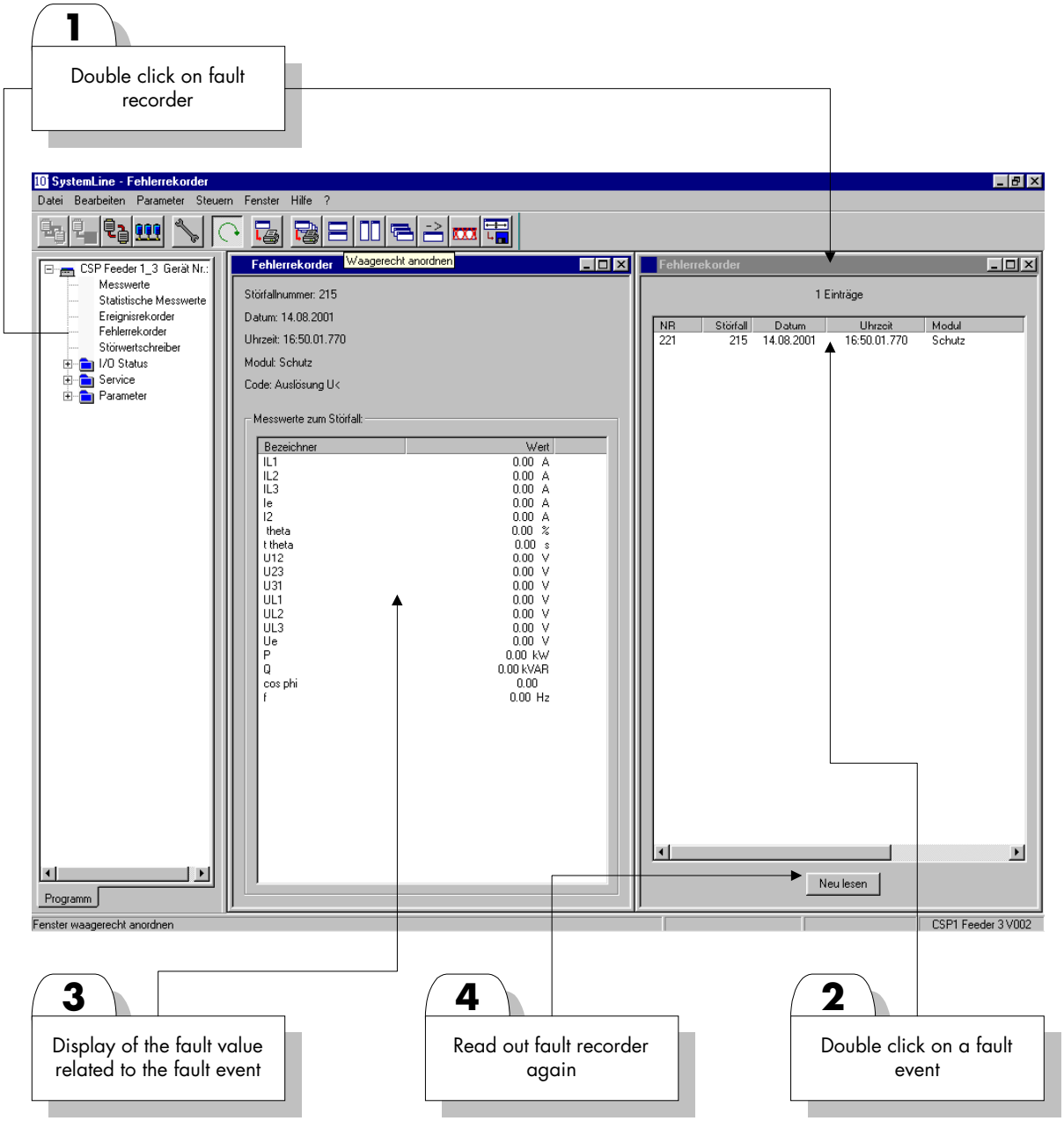


Figure 8.4: Fault recorder

For every entry in the fault recorder an appertaining fault record file is generated which can be evaluated via the data recorder.

8.5 Disturbance recorder (data visualisation)

The disturbance records stored in the *CSP* are displayed in the file (file name, size) with the extension .DSB.

Simply by marking (drag & drop), these files can be copied into any directory on the PC. After transmission of the file, a simple double click makes visualisation of the disturbance records possible if a data recorder is installed. The »Status« indicates whether a disturbance record is being stored in the *CSP*. With the button »Trigger« it is possible to cause a test disturbance record in the *CSP*.

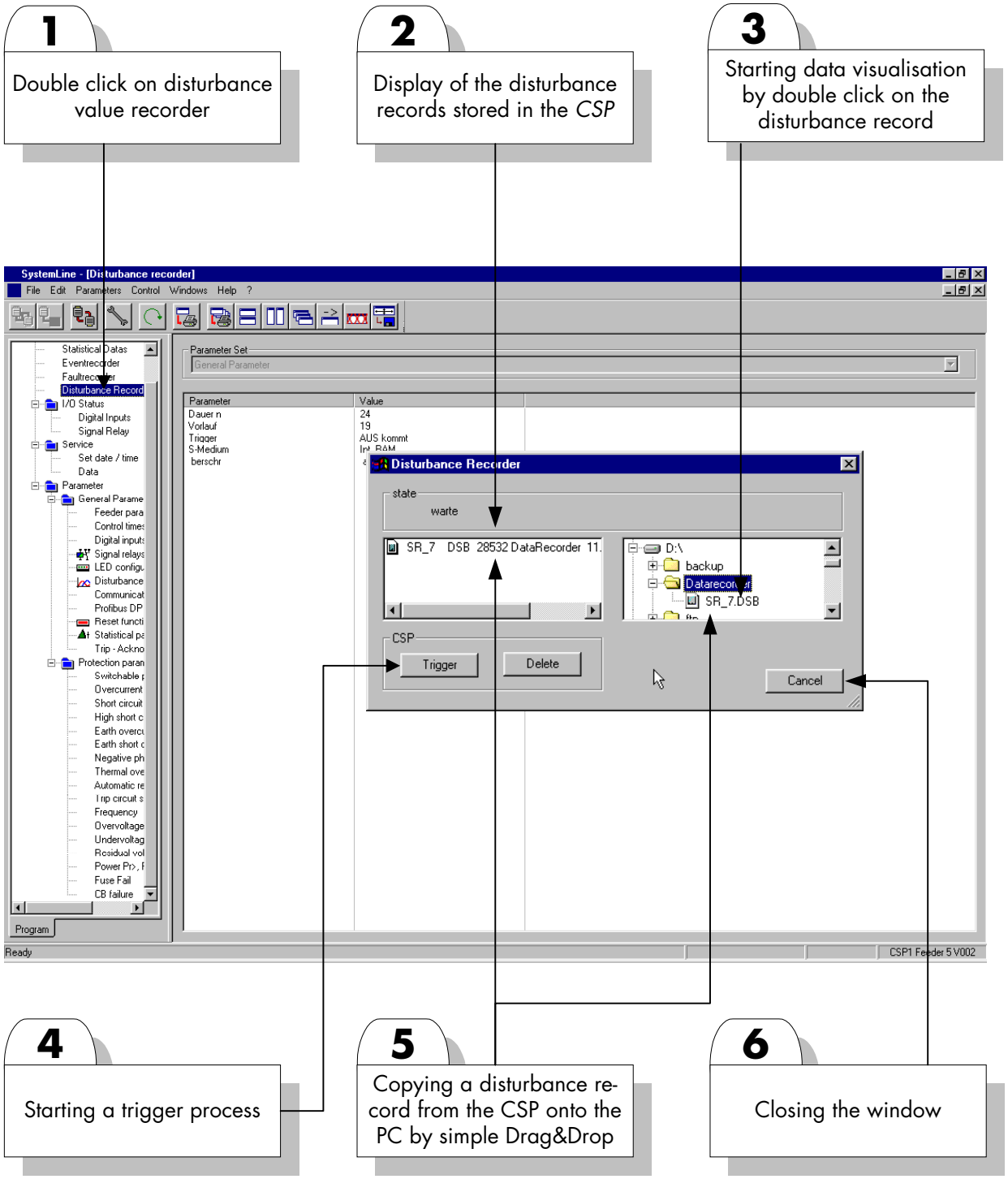


Figure 8.5: Copying fault records - starting the fault recorder

8.6 I/O-Status

By way of the I/O-Status it is possible to display the momentary status of all digital inputs and outputs. For example, the wiring can easily be checked during installation or commissioning work. The assignment of the digital inputs is shown with the configured function.

8.6.1 Digital inputs

Cyclical readout
A mouse click on the button »*Cyclic measured value display*«

will continuously show the momentary status of the digital inputs as soon as the response times and the activity periods of the *CSP* permit this (2-5s).

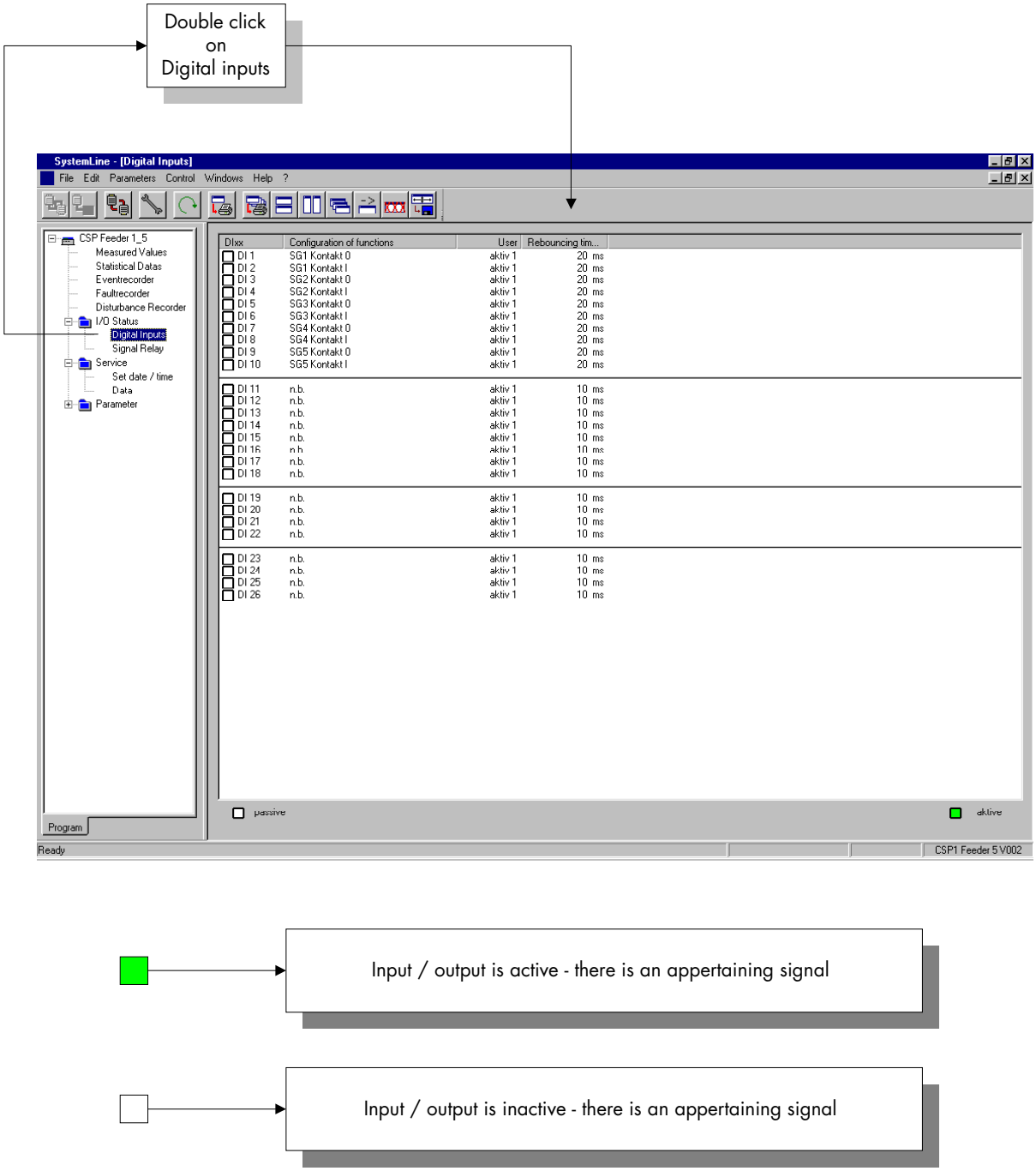


Figure 8.6: Digital inputs

8.6.2 Signal relays

The configuration of the signal relays is displayed in the form of a tree structure. Each signal relay can be configured for up to 16 output functions. These output functions are displayed in the form of a list of choices (refer to Chapter: Example 3: Signal relay configur

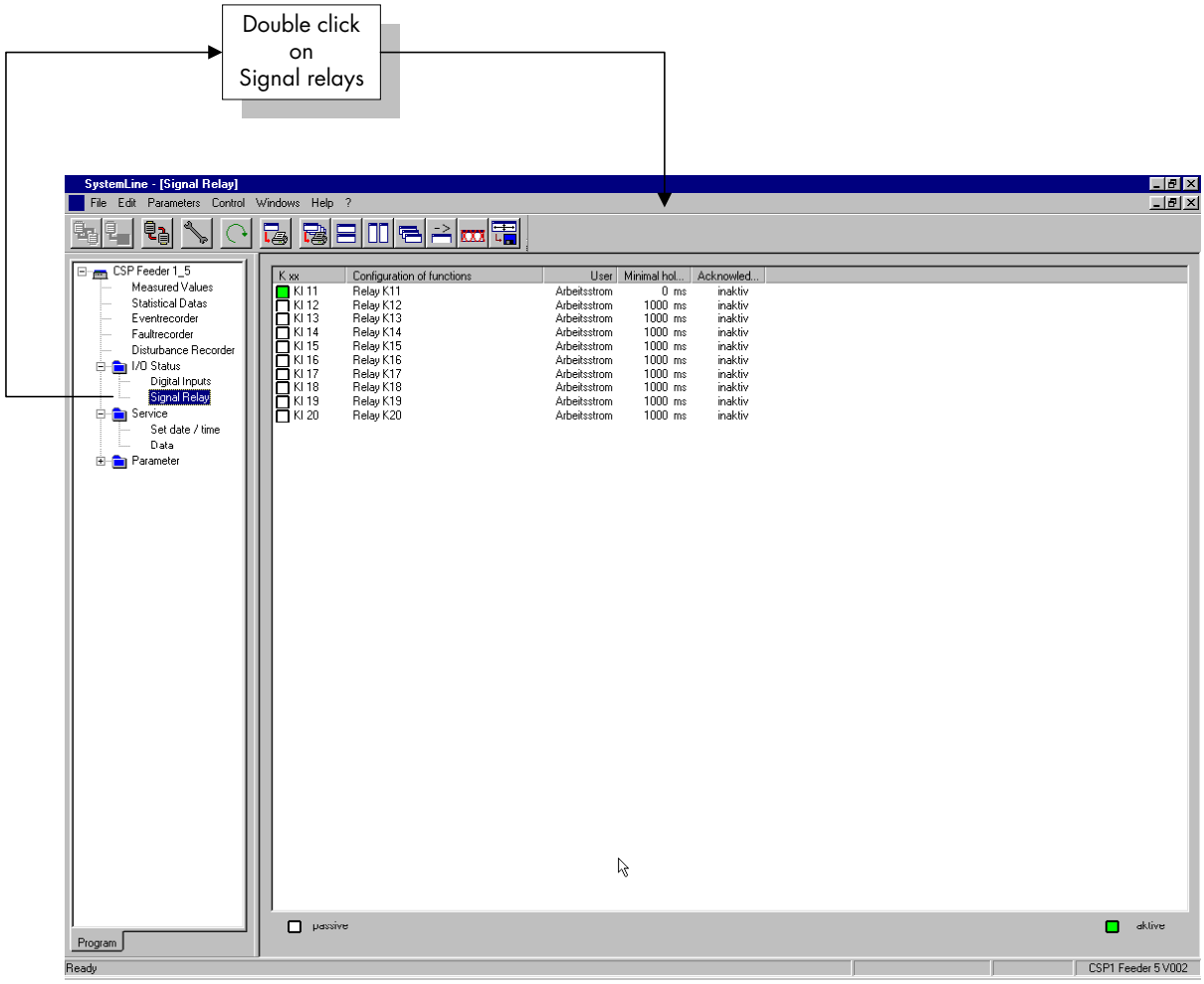


Figure 8.7: Signal relays

8.6.3 Service

The menu »Service« shows the code of the version, counting functions, date and time. Date and time of the *CSP* can be synchronised to the date and/or time of the PC. For this purpose the relevant menu »Service« must first be opened by a double click on »Set Date/ time«. By means of a mouse click on »Synchronise Date/Time« the date and time from the PC are taken over. *CSP* devices which are connected via the IEC protocol will be synchronised automatically by the control system.

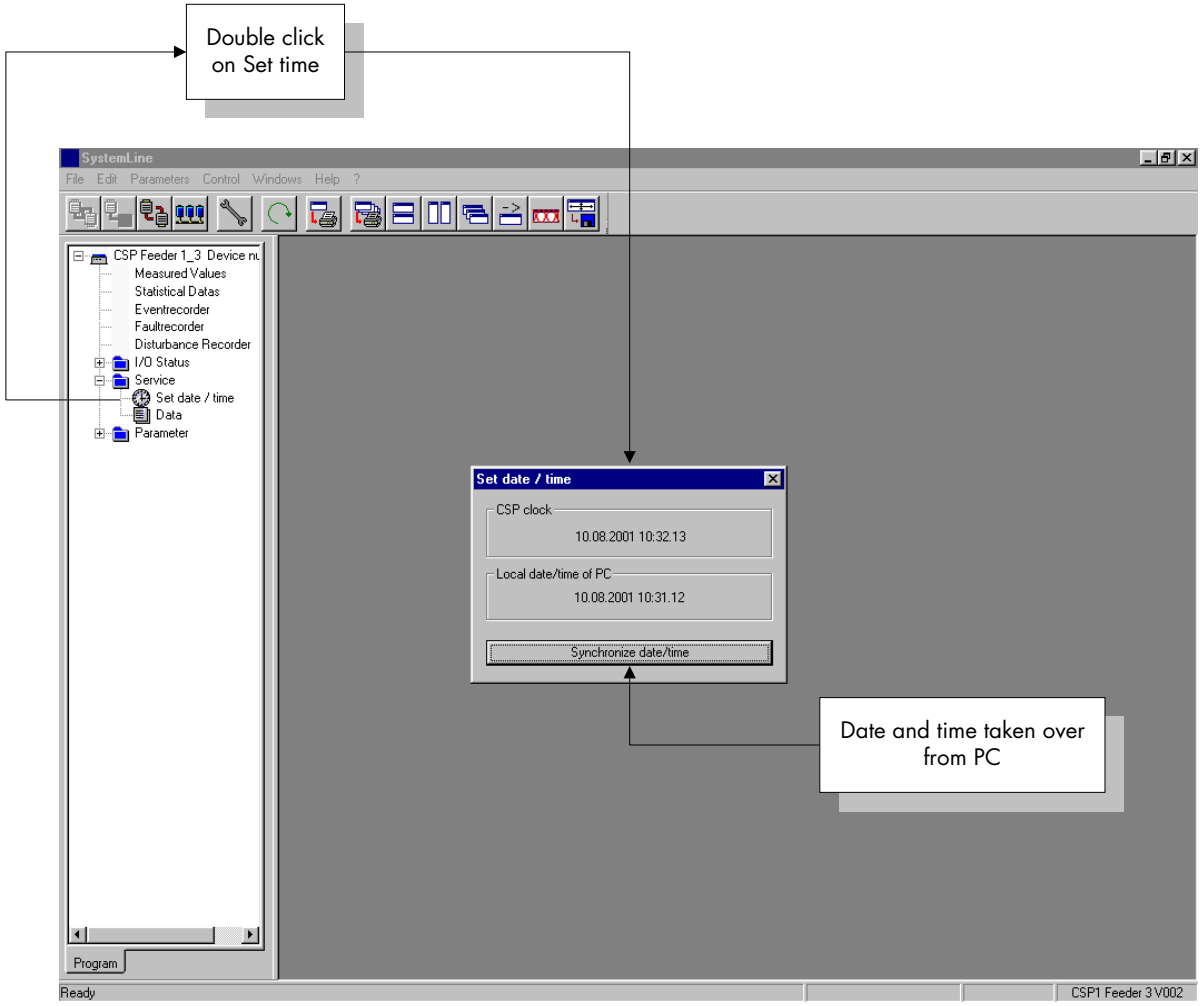


Figure 8.8: Synchronising the time

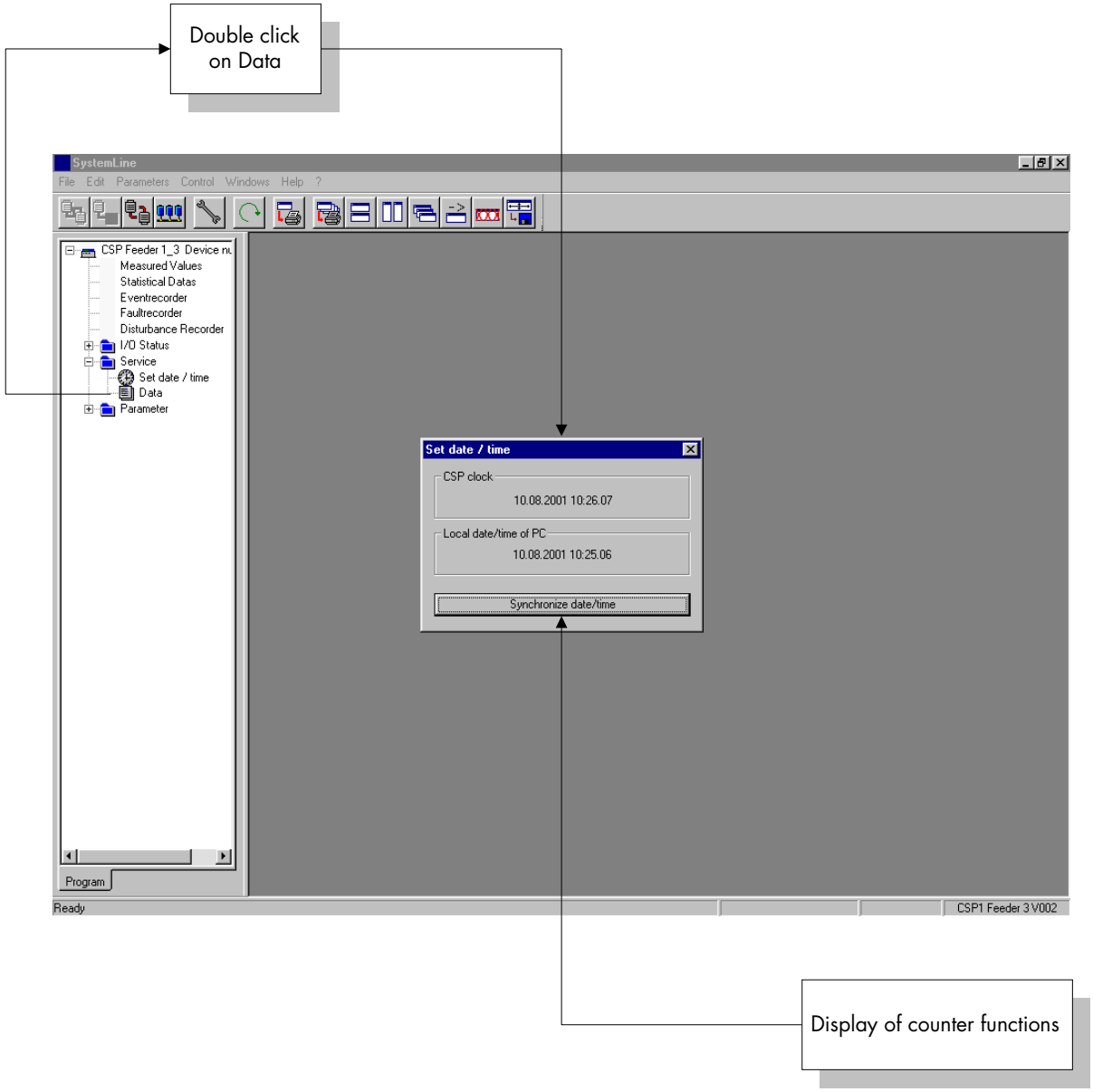


Figure 8.9: Service-Data

8.6.4 Self-test

in preparation

9 Parameter setting

We differentiate between system parameters and protection parameters.

System parameters include:

- Field parameters,
- Control times,
- Interlocking,
- Digital inputs,
- Signal relays,
- LED configuration,
- Fault recorder,
- IEC 870-5-130,
- Profibus DP,
- CAN device number,
- Reset function,
- Statistical parameters and
- Trip acknowledgement.

The protection parameters consist of 4 parameter sets and it is possible to switch over between them (see 9.4). The individual parameter setting possibilities can be found in the relevant manuals of the »*SYSTEM LINE*«. At this time a few examples are only to show the principle of parameter setting.

Note

- Changes in the protective parameter sets (1-4) which are made during the parameter setting mode are taken over immediately. It is not necessary to restart the *CSP*. After changes in the basic parameter set the *CSP* is automatically restarted in order to take over the performed parameter setting.

Caution

- If no changes are made for 10 minutes in the parameter setting mode all previsouly made changes are cancelled unless the parameter setting mode was left correctly.

9.1 Example 1: Changing the rated frequency (system parameter)

The rated frequency is to be changed from 50 to 60 Hz. The procedure is as follows: A mouse click on the button

will start the »Parameter setting mode«.

Note

Only after this button is clicked again will the parameter setting mode be closed and the changes will be taken over and stored by the system.

After the parameters have been selected which are to be changed (here system parameter) and the password fixed during programme installation has been entered, it is possible to open the relevant »branch« in the window »Tree structure« with a double click.

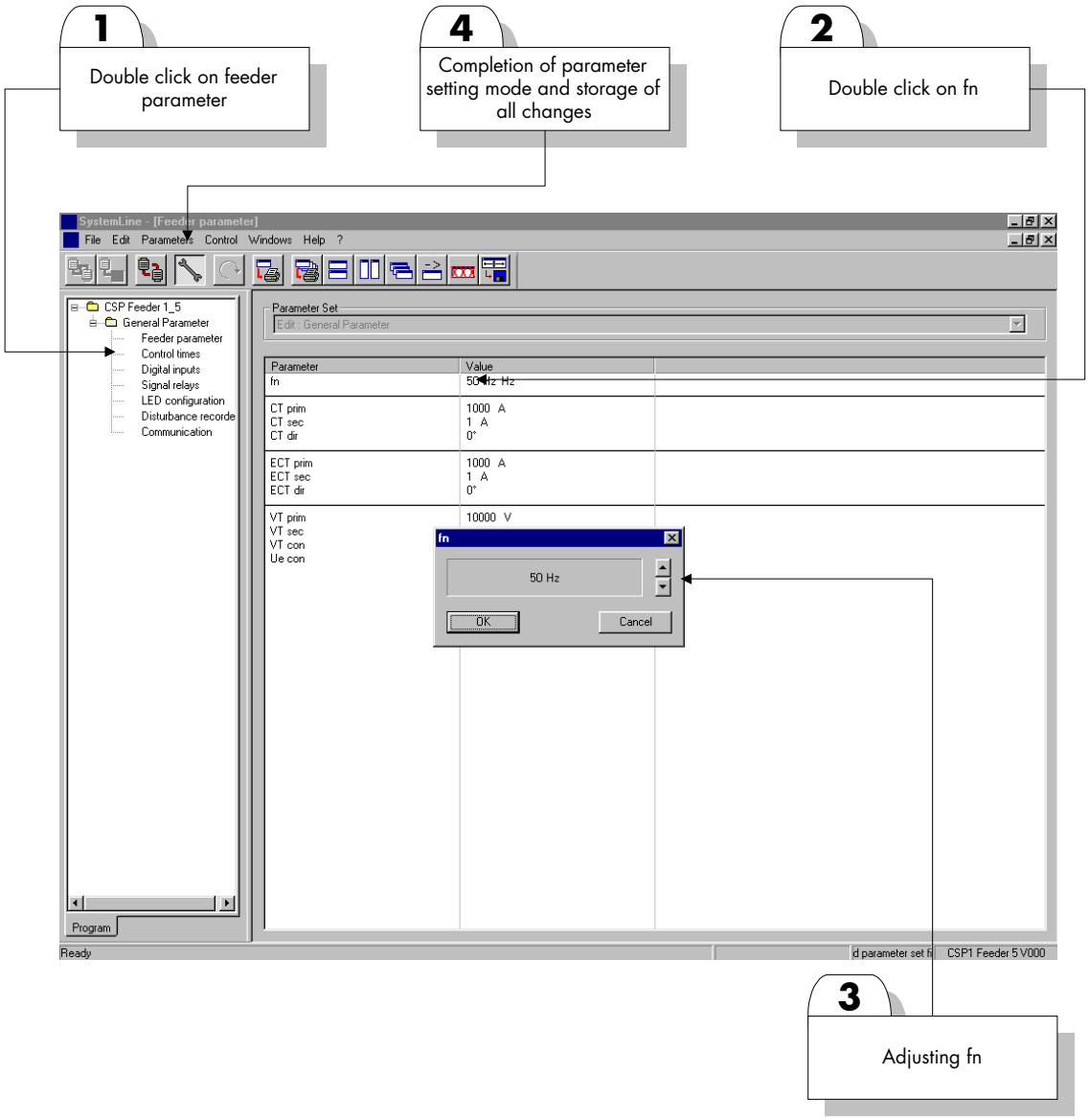


Figure 9.1: Example - Changing the rated frequency

All further steps required can be seen from Figure 9.1.

9.2 Example 2: Activating the C.B. failure protection

The »C.B. failure protection« is to be activated. This requires the following procedure: A mouse click on the button

will start the »Parameter Setting Mode«.

Note

Only after this button is clicked again will the parameter setting mode be closed and the changes will be taken over and stored by the system.

After the parameters have been selected which are to be changed (here protective parameter set X) and the password fixed during programme installation has been entered, it is possible to open the relevant »branch« in the window »Tree structure« with a double click.

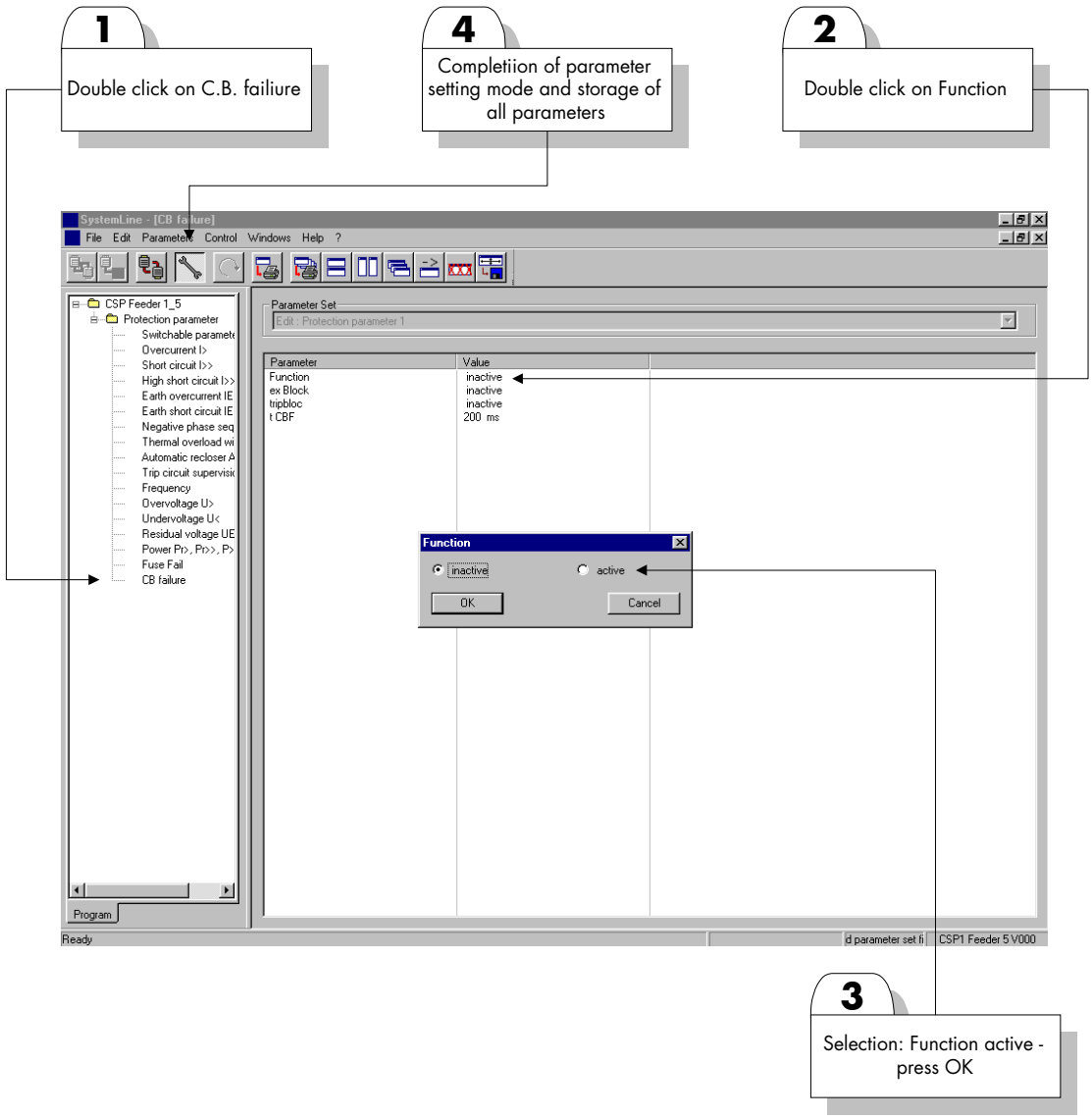


Figure 9.2: Example – Activating the C.B. failure protection

All further steps required can be seen from Figure 9.2.

9.3 Example 3: Signal relay configuration

For each output relay up to 16 output functions can be configured. These output functions are displayed in the form of a list of choices.

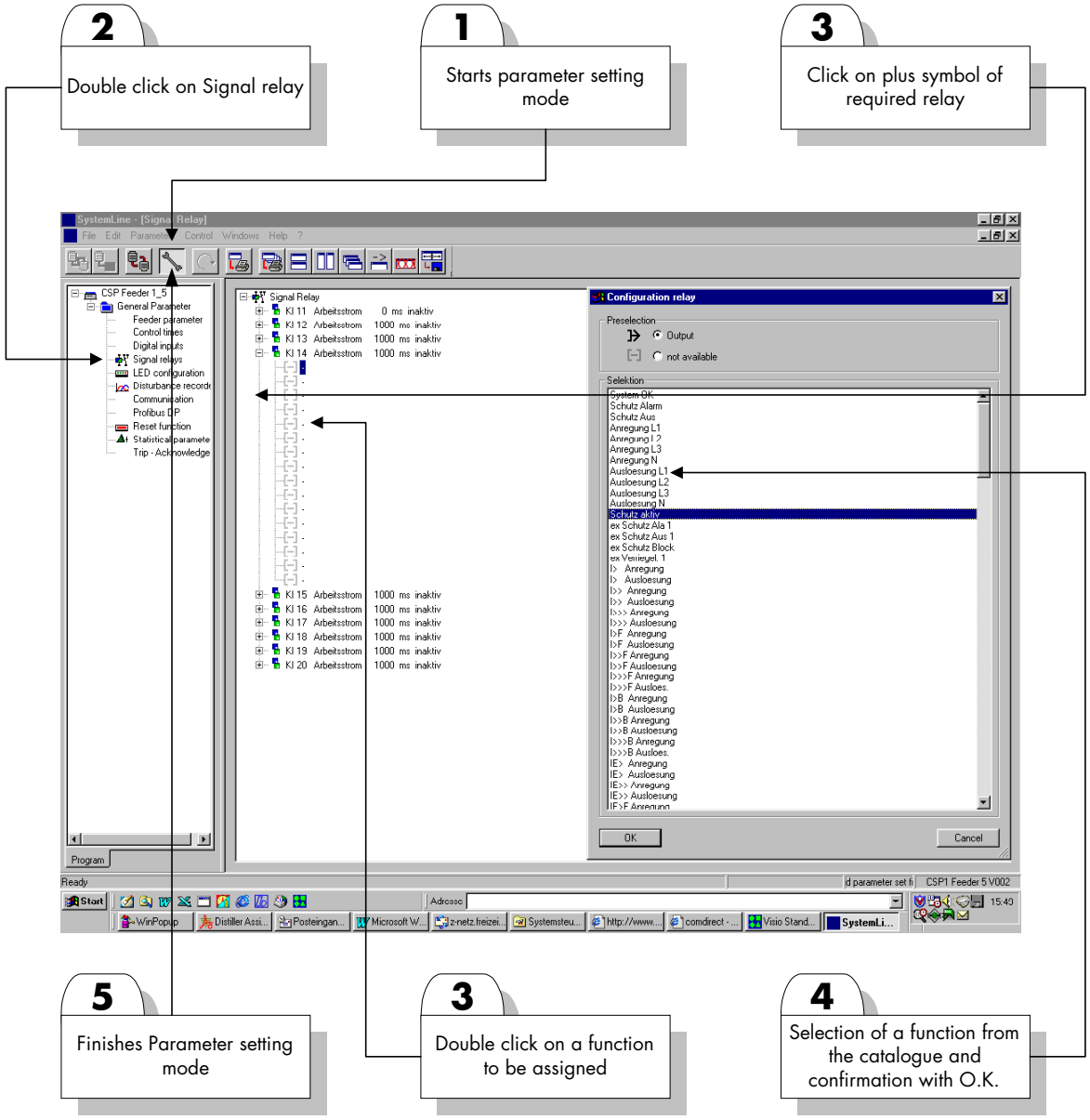


Figure 9.3: Relay configuration

9.4 Changing the protective parameter sets

A double click on »Switchable parameter sets« (within the tree structure) will open the relevant window (refer to Figure 9.4). After the pass word (fixed during installation) has been entered the following possible choices are available:

- The protective parameter set to which the switch-over is to take place (provided the adjustment is set to active)
- The selection »Mode« is used to determine whether:
    - A change of the protective parameter set is to be possible (mode = active).
    - A change of the protective parameter set is to be impossible (mode = inactive).
    - Switch-over is to be via a digital input (mode = per DI).
- If »Mode per DI« has been selected the protective parameter sets can be fixed which will be valid with active/inactive DI.

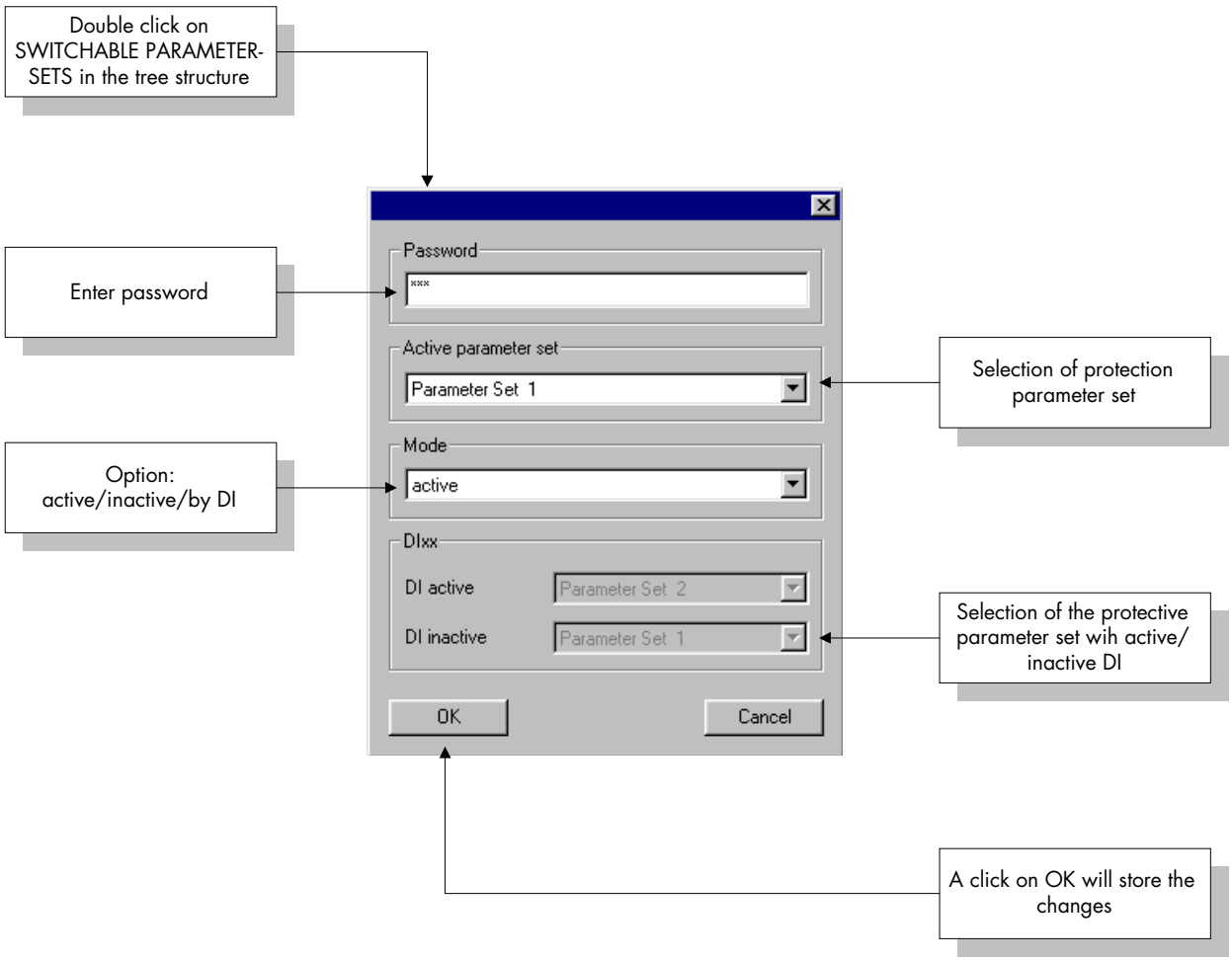


Figure 9.4: Changing the protective parameter set

10 Multi-Device Communication

The multi-unit communication offers the user the possibility to log into the individual *CSP* units of the chain by means of the »*SYSTEM LINE SOFT*« using an installed CAN-Bus line. It is possible to integrate up to 16 *CSP/CMP* systems into one CAN loop (chain). The PC/laptop merely needs to be connected to a *CMP* via the serial interface RS232. This makes operation from a central position possible. The serial interface of the *CMP* can be addressed from the PC/laptop either directly via a zero-modem cable

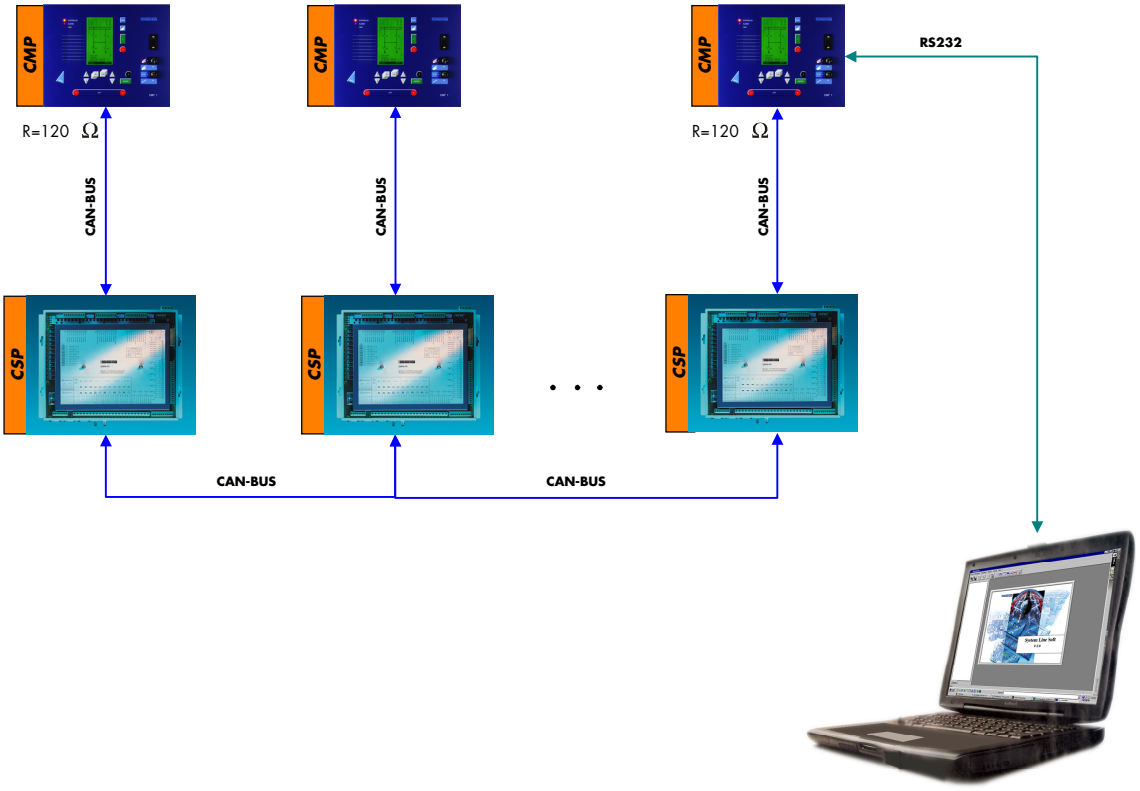


Figure 10.1: Multi-unit communication - RS232

or, in case of greater distances, by means of standard modems (using the telephone line) or also by means of fibre optic conductors (refer to next page).

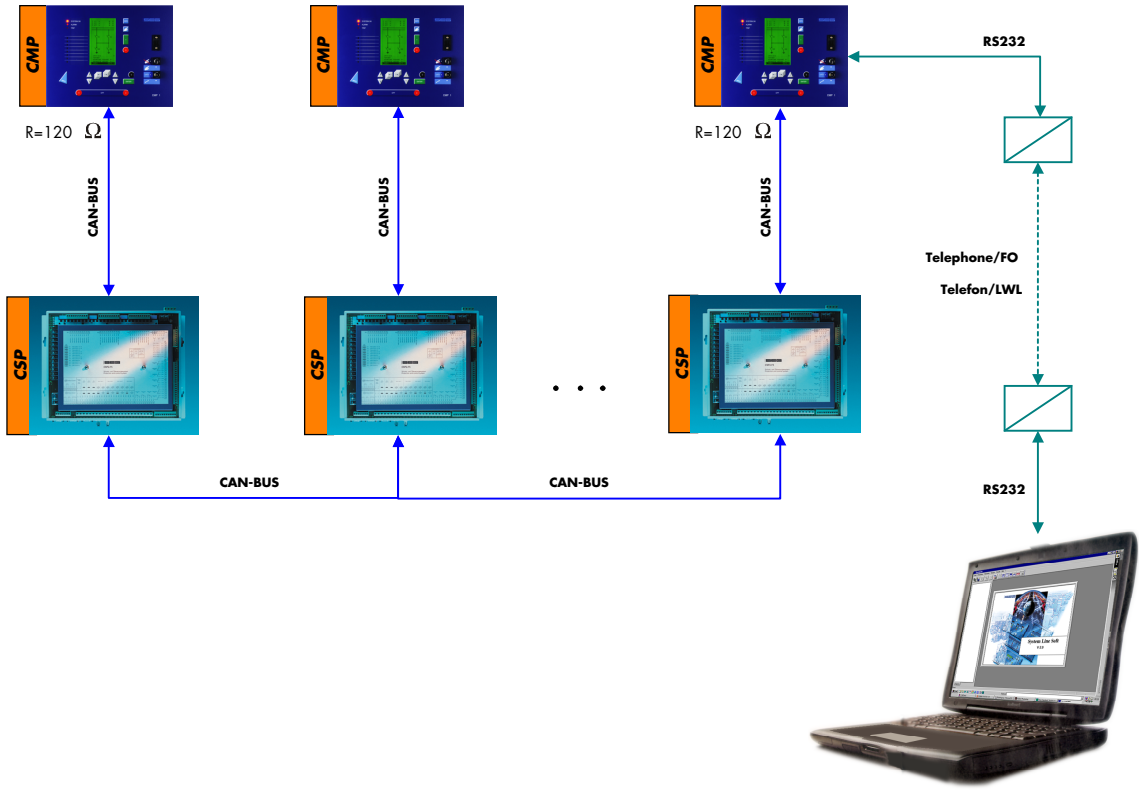


Figure 10.2: Multi-unit communication – Telephone/fibre optic conductor

10.1 Technical Requirements

10.1.1 CAN Bus line

Prerequisite for multi-unit communication is the setting up of a CAN Bus line. For this purpose the second CAN interfaces of the *CSP* units are connected to the respective CAN cables. In this context care must be taken that the Can Bus may only be finished off with a 120 Ω resistance at the start and at the end (see Figure 10.1). It is possible to connect a maximum of 16 *CSP* systems. The maximum permissible cable length of the CAN bus line amounts to approx. 100 m, incl. the flat-webbed wires leading to the *CMP* units.

10.1.2 Configuration of the CMP units

In order to be able to take the multi-unit communication into operation, the *CMP* must be made »bus compatible«, i.e. the parameter »Bus« must be set to »ja/yes«.

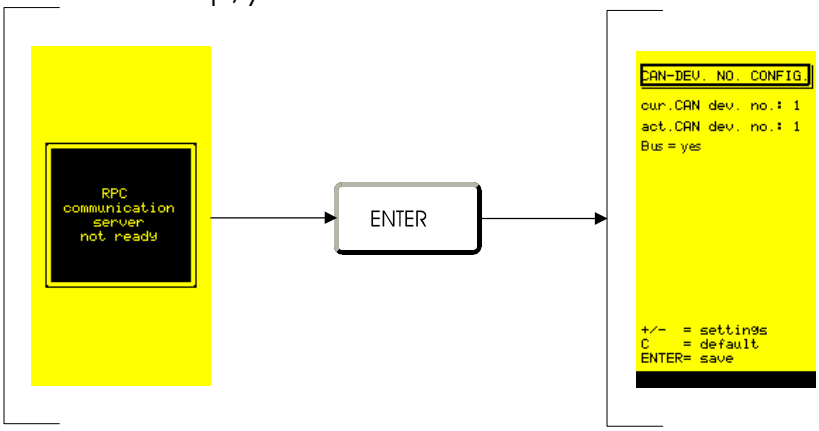


Figure 10.3: Multi-unit communication – Settings in the CMP

10.1.3 Configuration of the *CSP* units

Communication of the PC/laptop can always only be established to one single *CSP.* This makes it necessary to label the *CSP* units with different CAN identification numbers »CAN Device No.«. These numbers are set in the menu »Parameters\Communication\CAN-Bus« (parameter »CAN Device No.«).

Note

When assigning the CAN device numbers, care must be taken that each number (ID) is only allocated once! In the event that the CAN bus line involves less than 16 *CSP/CMP* systems it is not absolutely necessary to start with the number »1«; but it is only possible to assign numbers between »1« and »16«!

As a rule, one *CMP* is connected to each *CSP* so that the parameter »single *CMP*« must be set to »no« (refer to Figure 10.4).

10.2 Commissioning of the multi-unit communication system

- The CAN Bus must be installed properly. The parameters of all *CMP*s must be set correctly.
- Before the transitory CAN Bus is connected (between the *CSP* units) all *CSP* base units must be connected to the respective *CMP* operating and display units by means of the supplied standard CAN cable.
- The *CSP/CMP* systems must be connected to the supply voltage.
- The »System OK« LEDs must all emit a green light at the *CSP*s and the *CMP*s.
- At the *CMP*s the key switches must be brought into the position »Parameter setting«.
- The »CAN Device No.« is adjusted in the menu »DATA/Communication/CAN« (of the *CSP*) (see Figure 10.4). By pressing the »Enter« key and then »Arrow« right the settings of the unit are taken over. The systems then boot again. During commissioning it must be ensured that each system (*CSP* and *CMP*) is assigned a different »CAN Device No.« (standard setting »1«) and that the correct cables are used.

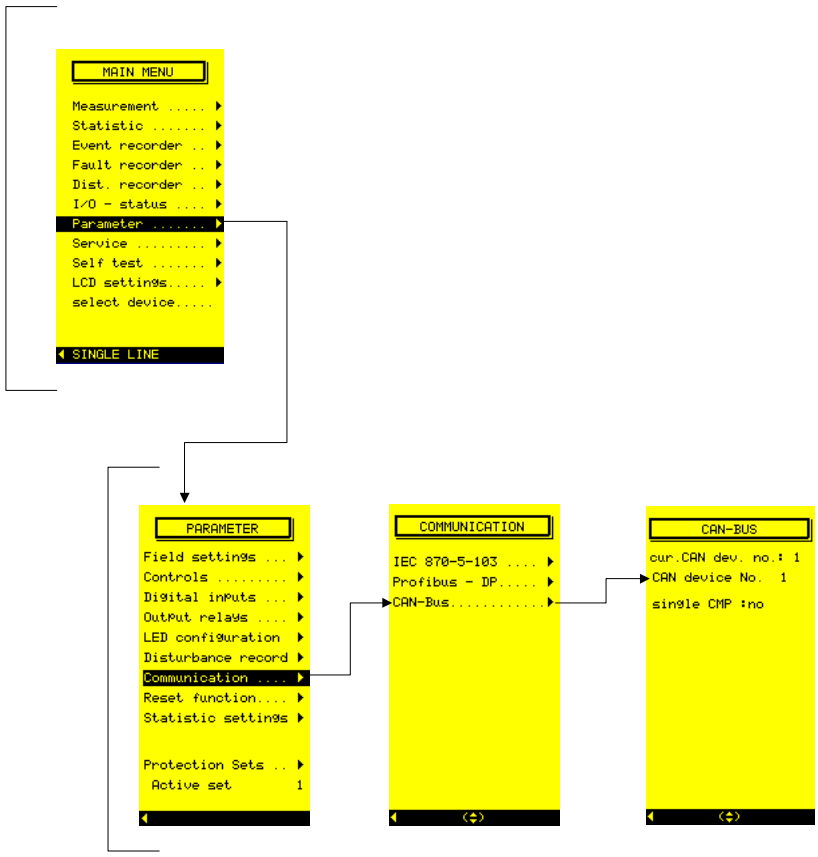


Figure 10.4: Multi-unit communication – Settings in the CSP

- Once it has been ensured that all systems have a different »CAN Device No.« the CAN Bus can be connected between the systems and a PC can be connected to *CMP* via the RS232.

10.3 Replacing a CSP or a CMP

In the event that a *CSP/CMP* system fails due to a technical defect (has to be replaced) the following measures must be taken:

Note

The respective system must be de-coupled from the »complete CAN BUS« connection (down all units)

10.3.1 Replacing a CMP

Note

Make a note of the »CAN Device No.« before taking the *CMP* out so this number can be set immediately when the new *CMP* is installed.

After a *CMP* has been replaced, the respective CAN connection *CSP-CMP* is established again as follows:

- The key switches of the replacement *CMP* must be in the position »Parameter setting«.
- Connect the *CSP/CMP* system to the supply voltage. Operate the »Enter« key on the *CMP.*
- The *CMP* display will show the menu »PARAMODE CAN_DEVICE_NO.« Wait until the *CSP* has also been booted. (Indicated by the green light of the »System Ok« diode).
- Now set the appropriate »CAN Device No.« which was written down before the unit was taken out. If the ID number is not known, increase the number until the communication works (the green »System OK« LED on the *CMP* must be alight). The window CAN_KOM must now be set to active. Then press the »Enter« key and the »arrow right« key to store the parameters.
- The system will now boot. If communication between the *CSP* and the *CMP* works properly and it has been ensured that the set »CAN Device No.« has not yet been assigned, the system can be connected to the global CAN-BUS again.

10.3.2 Replacing a CSP

Note

Make a note of the »CAN Device No.« before taking the *CMP* out so this number can be set immediately when the new *CMP* is installed.

- De-couple the *CSP/CMP* system to be replaced from the CAN Bus Line.
- Replace the defective unit by a new one.
- Connect the *CMP* and the *CSP* by a cable finished off with 120 Ω resistances (standard cable, including terminal resistances).

After a *CSP* has been replaced the respective CAN connection *CSP/CMP* has to re-established.

- The key switch of the *CMP* must be in the position »Parameter setting«.
- The *CSP/CMP* system must be connected to the supply voltage. Press the »Enter« key at the *CMP* (refer to Figure 10.5). (In this menu the ID of the *CMP* is adjusted to that of the *CSP.*)
- The *CMP* display shows the menu »PARAMODE CAN_DEVICE_NO.« Now wait until the *CSP* has booted. (Indicated by the green light of the »System Ok« diode).
- Now set the »CAN Device No.« »1« (factory setting). The window CAN_KOM must now be on »active«. Then press the »Enter« key and the »Arrow right« key to store the parameters.
- The system will now boot. Communication between *CSP* and *CMP* must run properly. After booting – both »System OK« LEDs-*CMP* and *CSP* must emit a green light – the CAN Device No. which is assigned to this system (and which had been noted down beforehand) or which has not yet been assigned within the CAN Bus system (in the menu »Data/Communication« the ID (»CAN Device No.«) for *CSP* and *CMP* is converted) is adjusted in the menu DATA / Communication / CAN (see Figure 10.3).
  Then press the »Enter« key and the »Arrow right« key to store the parameters. The system will then boot again. Communication between the *CSP* and the *CMP* now runs via the set »CAN Device No.«. The system can now be connected to the global CAN Bus again.

10.4 Multi-unit communication via System Line Soft

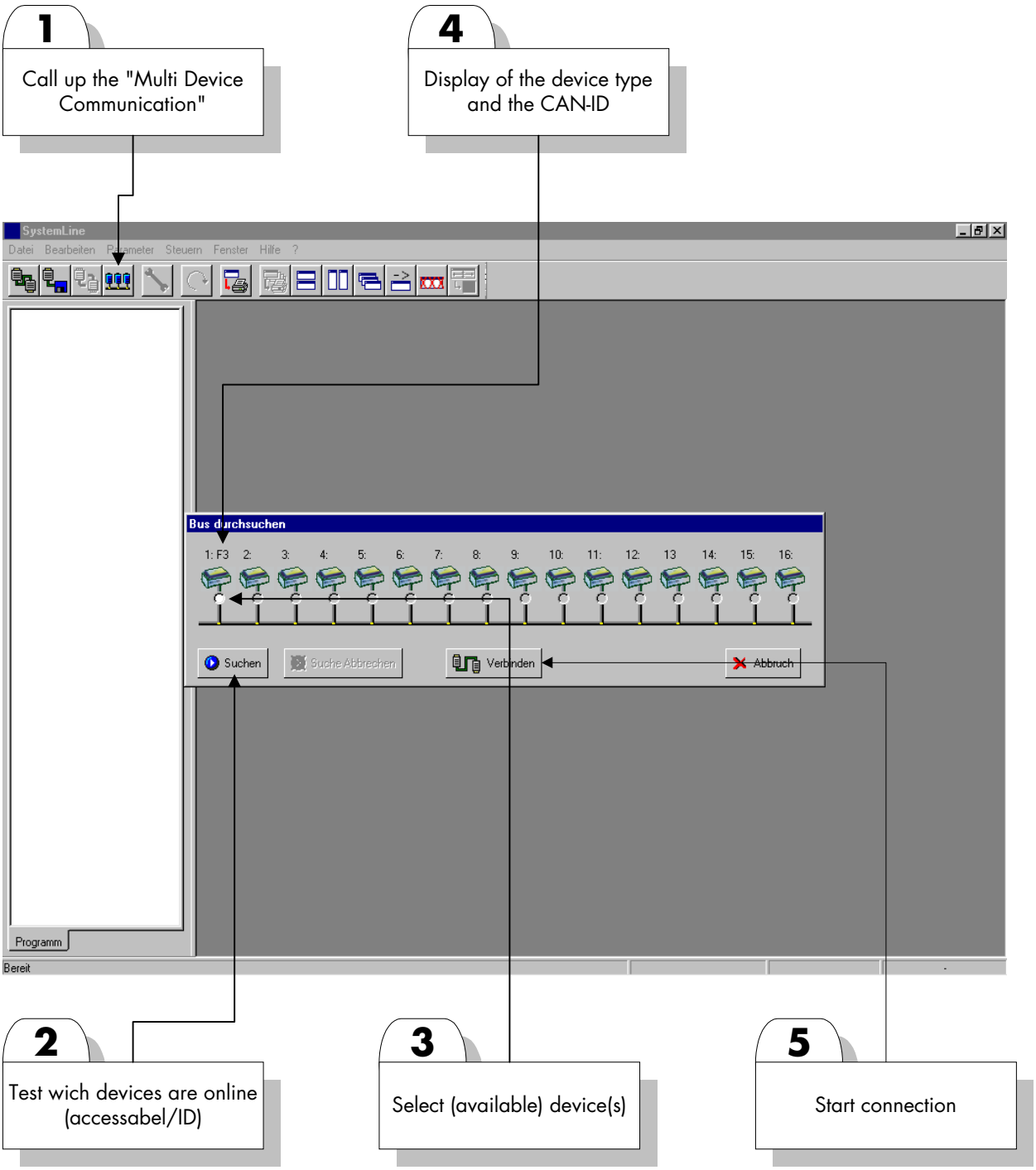


Figure 10.5:Multi-unit communication – Establishing the connection via SYSTEM LINE SOFT

11 Printing

The »*SYSTEM LINE SOFT*« permits both printing of a single active window and printing of a complete branch, incl. all sub-menus.

11.1 Preliminary printer settings

In [File > Prelim. printer settings] the formats of the header and footer as well as the standard text can be individually adjusted. In addition, the user has a description field at his disposal where he can enter remarks, for example.

11.2 Printing the active window

A click on the button

will print the active window.

11.3 Printing a complete branch inclusive of all submenus

A mouse click on the button

will print the momentary branch of the tree structure with all sub-windows.

12 Data recorder (optional)

12.1 Introduction

The data recorder is a universal tool for evaluation of fault value records, i.e. currents and voltages in case of a fault or at other times stipulated by the user. The data recorder evaluates the fault records stored in the individual protection devices. With this programme it is possible to visually display, process, store and print fault records in their chronological progress (as oscillographic curves) with the appertaining events (such as tripping, alarm, etc.). The data recorder offers the user:

- Analysis of the fault,
- detection of the faulty consumer,
- the reaction of the grid and
- the switch-off behaviour of the circuit breaker.

This information provides the user with the basis for the analysis of faults and weak points of his electrical equipment. On this basis it is possible, for example,

- to adjust or revise circuit breakers,
- to limit short circuit powers,
- to optimise transformers (capacity / u_K),
- to adjust converters (saturation behaviour).

12.2 Hard- and software prerequisites

The »*Data recorder*« will work on any IBM-compatible PC (as from i486) with the operating systems Windows 95/98/ME or Windows NT4/2000. It permits operation by mouse (Windows standard/surface) and has a user-guided window display / windowing.

12.3 Installation of the data recorder

The »*DATA RECORDER*« is automatically installed at the same time if the relevant »*SYSTEM LINE SOFT*«-version has been purchased

12.4 De-installation of the data recorder

The de-installation routine of the »*SYSTEM LINE SOFT*« automatically uninstalls the »*DATA RECORDER*« at the same time.

12.5 Structure of the menu of the data recorder

The data recorder is a universally applicable tool for displaying fault and system records (*Concycle*, *High Tech Line* and »*SYSTEM LINE*«). The files generally have the suffix *.dsb. For each device and for the various versions of the individual devices there is a separate driver (Import-DLL) which takes over reading in the file format which depends on the device. Each DLL then exports these data to the data recorder.

12.5.1 Layout of the surface of the data recorder

The surface consists of four areas:

- Menu bar,
- Button bar,
- Tree structure window and
- operating area.

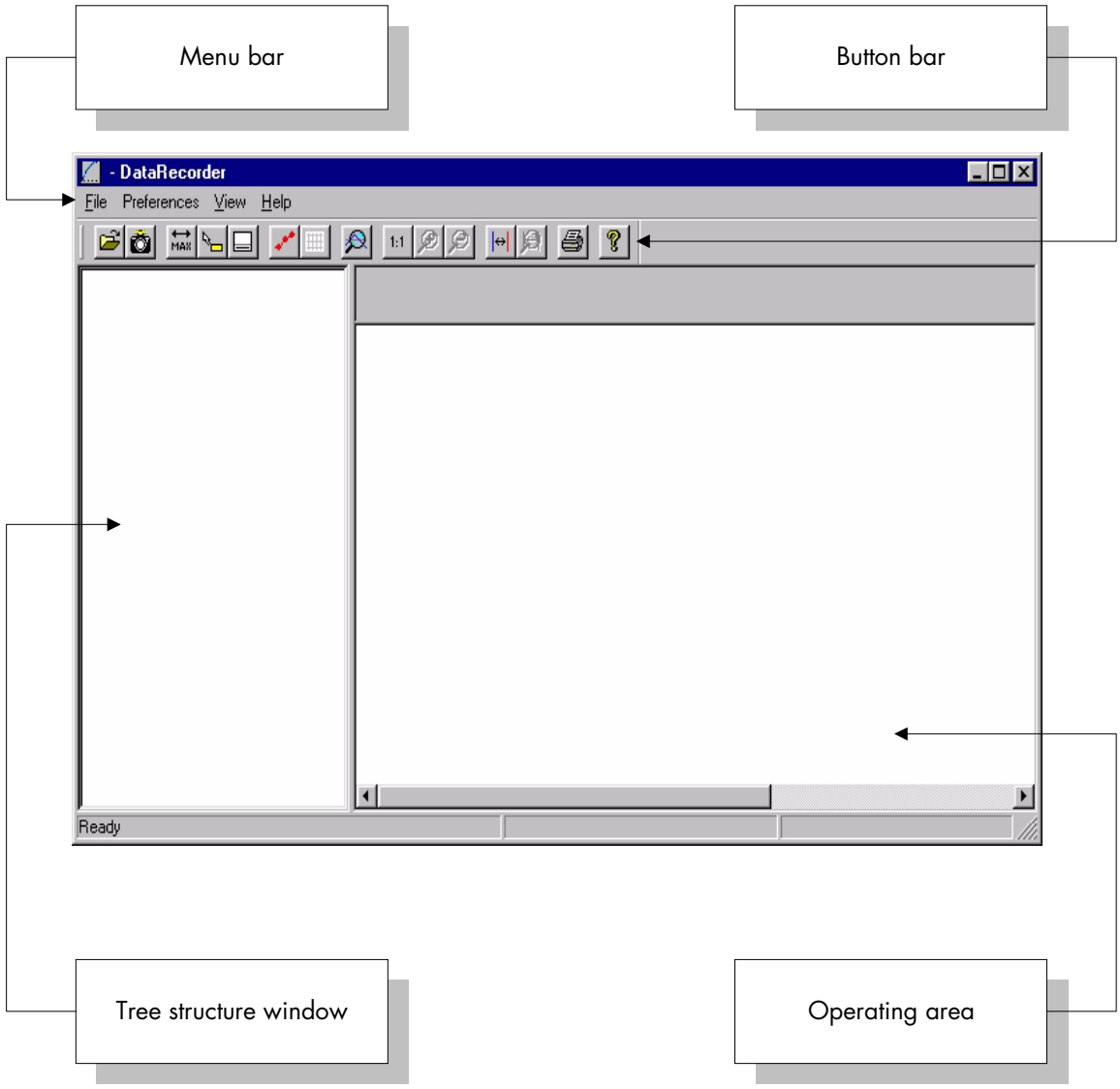


Figure 12.1: Surface of the data recorder

12.5.2 The button bar

The functions of the button bar are described in the figure »Button bar«. The button bar permits fast access to all important functions via mouse click. Above all, the button bar permits different options to be called up for display.

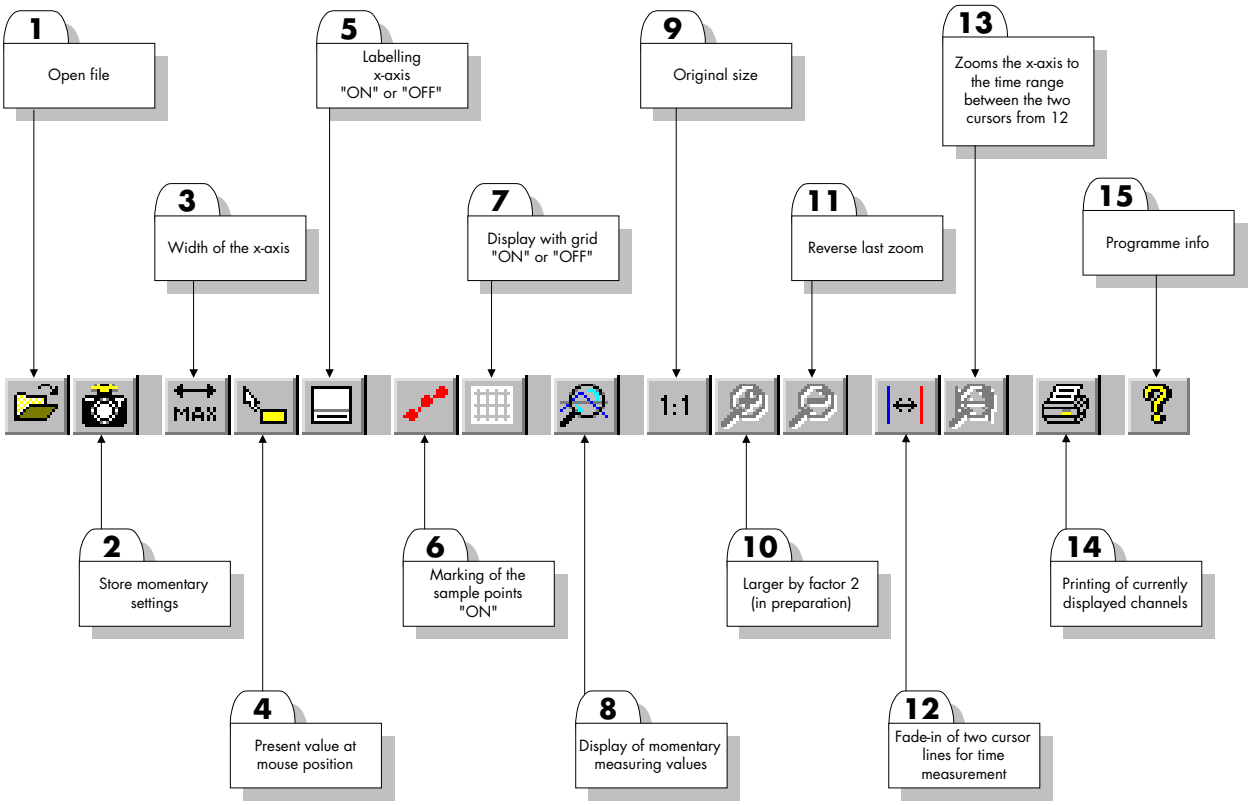


Figure 12.2:Button bar

1. Opening a file.
2. Store momentary settings of the loaded file. Depending on the preferences these settings will be automatically adopted again when the file is loaded.
3. The width of the x-axis depends on the window size and will be adjusted automatically if the window dimensions are changed. (If this option has not been chosen, this resolution can be set in the preferences in addition to others). Is deactivated automatically during zooming.
4. If the mouse is located within the display and this option has been activated, a small window will be displayed with all values relevant to the mouse position (if the mouse is not moved for about 1 second).
5. Switches the labelling of the x-axis on or off.
6. Switches the marking of the sample points on or off.
7. Display of the channels with or without grid.
8. Fades a cursor in. All measured values of the displayed channels are indicated in a measured-values window for the respective cursor position.
9. Switches back to display without zoom.
10 Zooms the display by the factor 2 (not realised yet).
11 Switches back to the next lower (previous) zoom stage.
12 Two cursor lines are faded in. With these it is possible to measure times.
13 Zooms the x-axis onto the time range between the two cursors from 12.
14. Prints the currently displayed channels.
15 Shows information about the programme.

12.5.3 Menu »File«

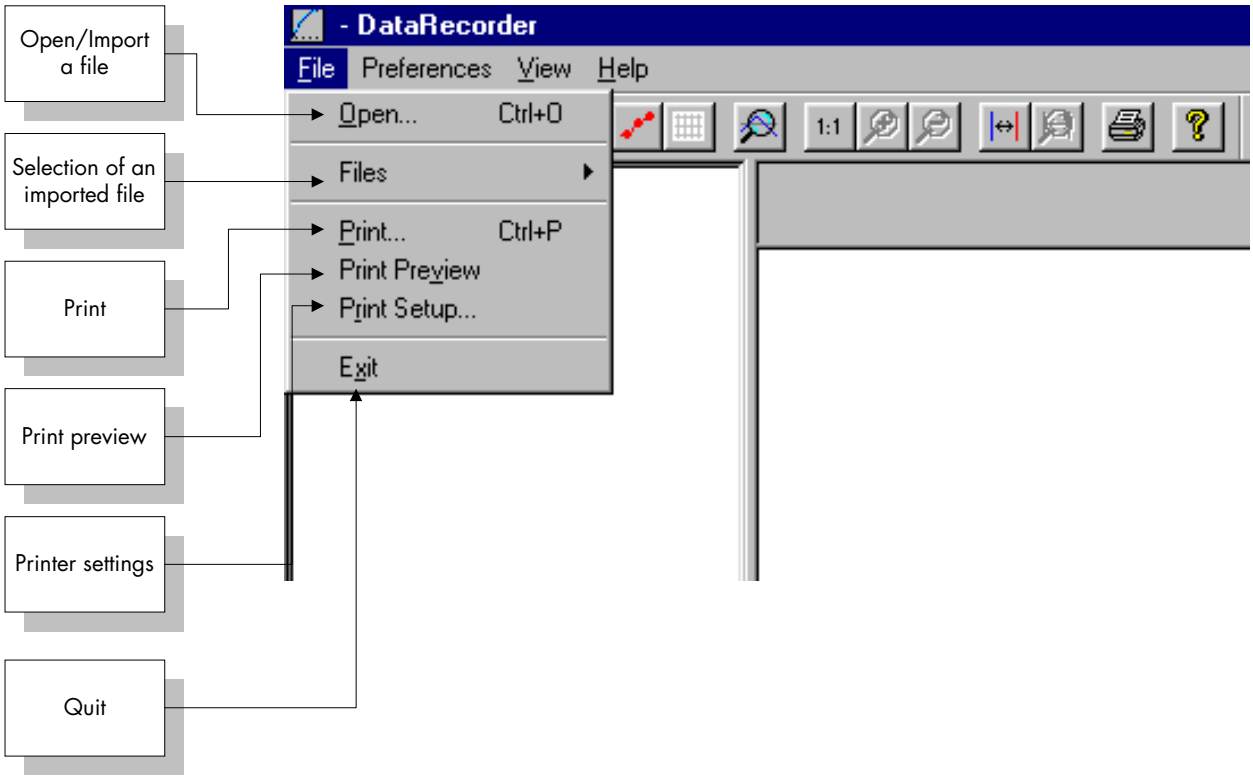


Figure 12.3: Menü »File«

12.5.3.1 File import (fault record)

A file is imported via File/Open or the Icon

On the basis of the file type (producer, device and internal version) the relevant DLL is reloaded. If the file has been loaded successfully, the following picture will show:

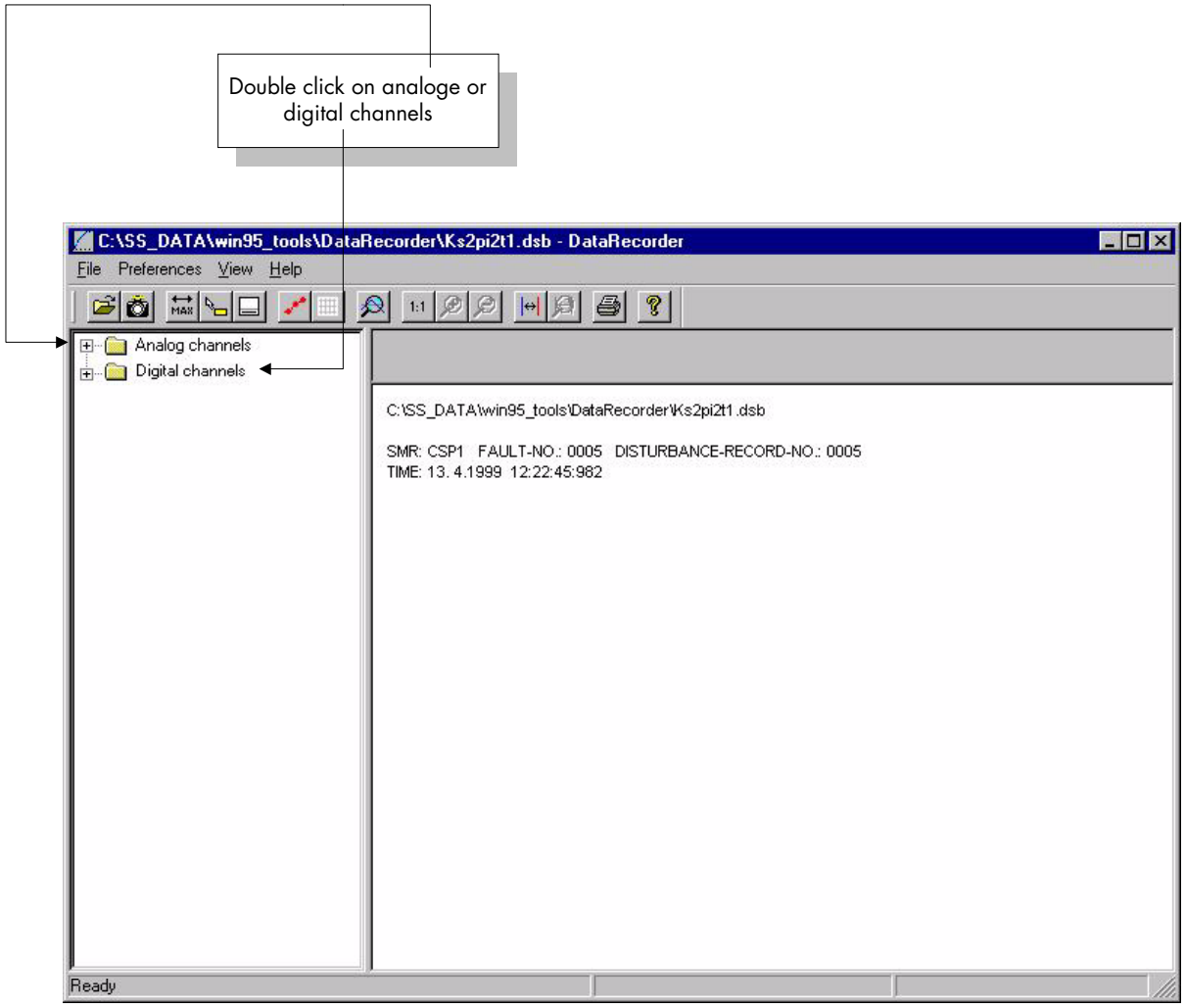


Figure 12.4: Opening the Channels

If one opens the analog or the digital channels, the view of the tree will fill up with the existing channels on the left hand side.

12.5.4 Menu »Preferences«

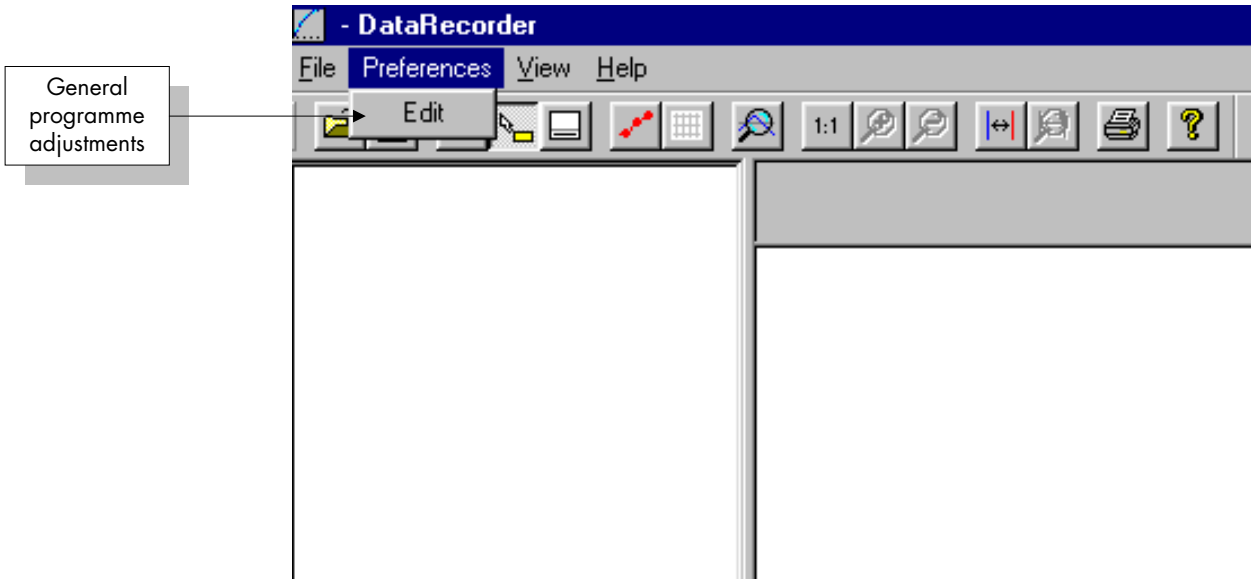


Figure 12.5: Menu »Preferences«

Some settings can be changed permanently. For this purpose call up »Edit« in the menu »Preferences«. These settings will be available again for follow-up programme starts (storage in the Windows Registry).

Display
Here the screen resolution can be adjusted for analogue channels. (The size of digital and logical channels depends on the font chosen for the display.)

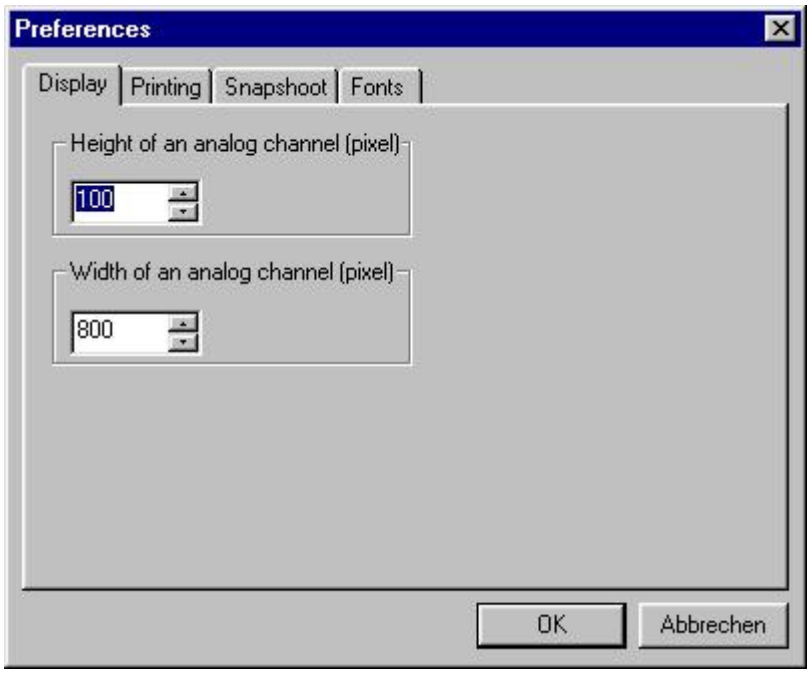


Figure 12.6: Adjustment of the display

Printing:
Here the printable range is fixed Here the margins for printing can be edited. Furthermore, the height of the »Analogue Channels« can be shown in mm.

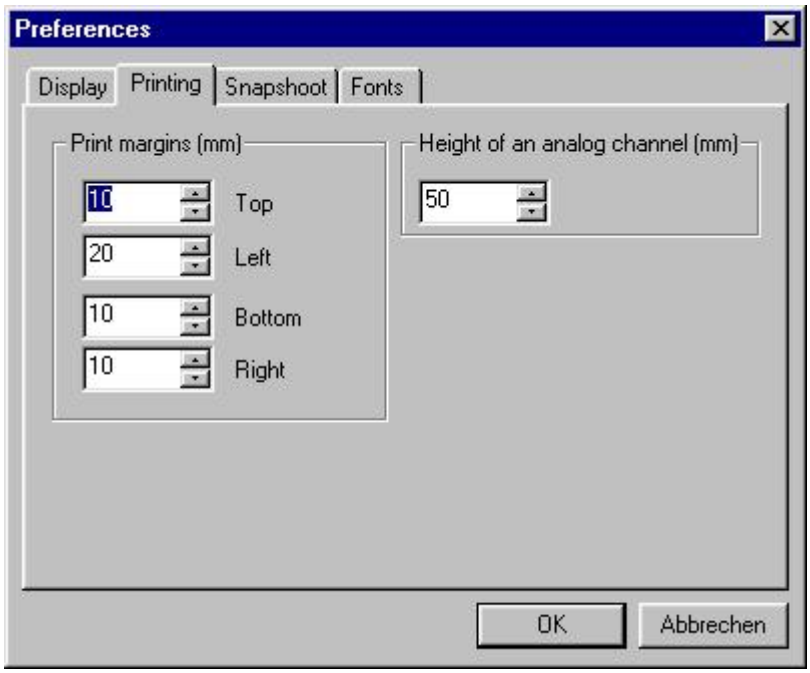


Figure 12.7: Adjustment Printer

Snapshot
Snapshot means the storage of the momentarily selected display parameters. A snapshot stores all displayed channels as well as their order. These are then available when the file is loaded again.

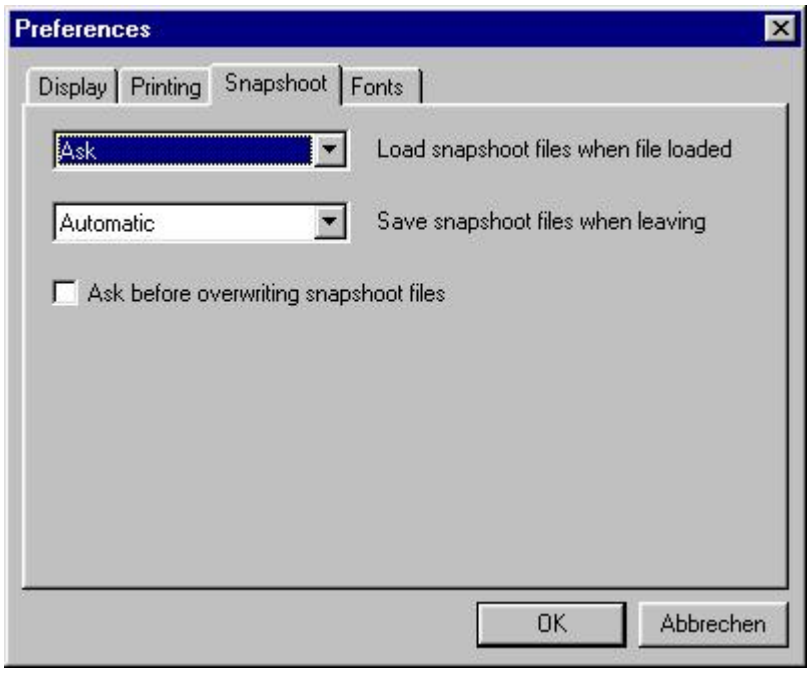


Figure 12.8:Adjustments Snapshot

Fonts
Here the fonts for display and printing are adjusted. The displayed height of the digital and logical channels is adjusted as a function of the chosen fonts.

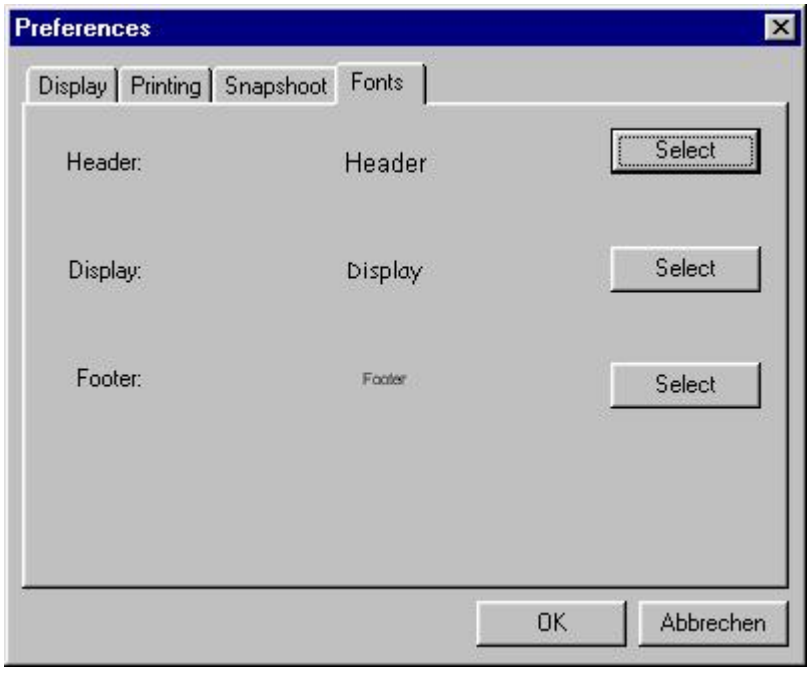


Figure 12.9: Adjusting the script (Fonts

12.5.5 Menu »View«

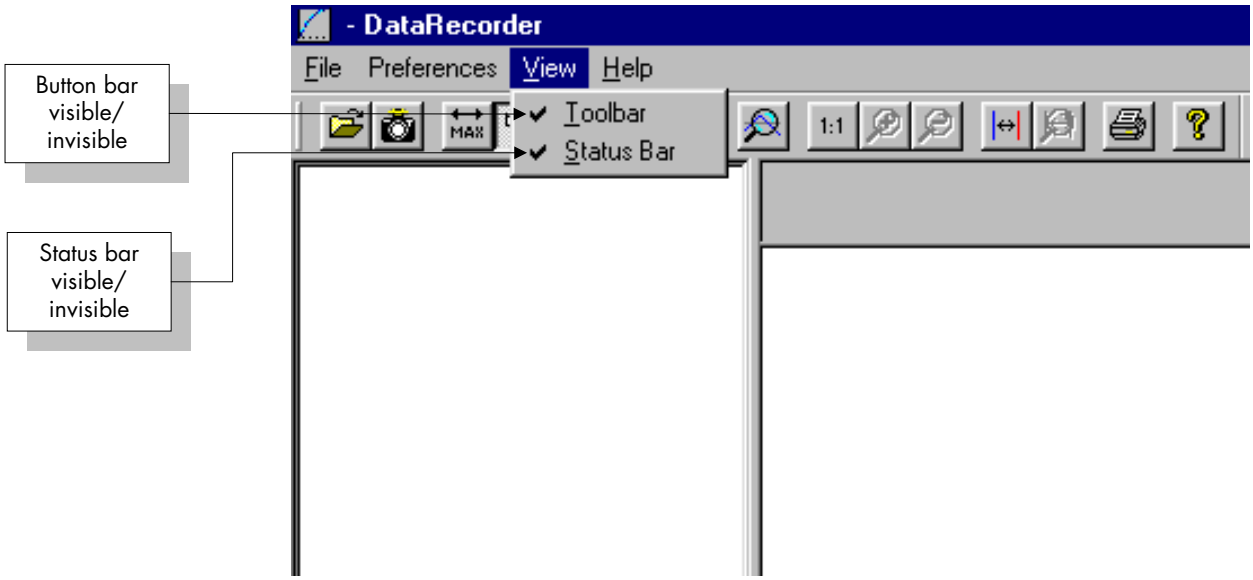


Figure 12.10: Menu »View«

12.6 Menu »Help«

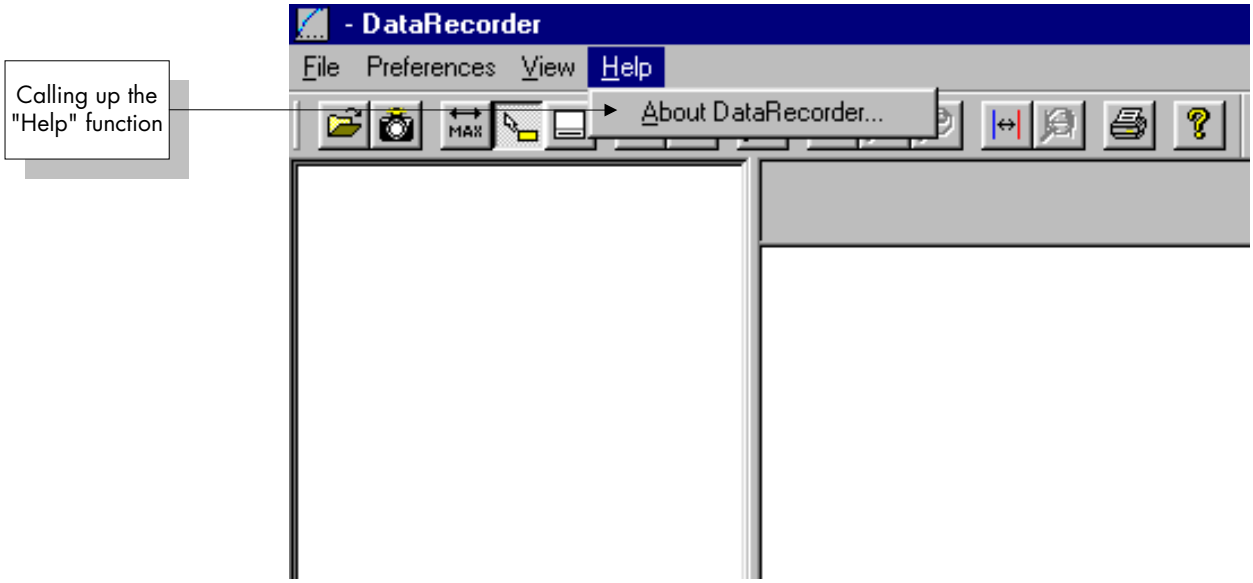


Figure 12.11: Menu »Help«

12.6.1 Starting the data recorder

After the data recorder is started it shows the following picture:

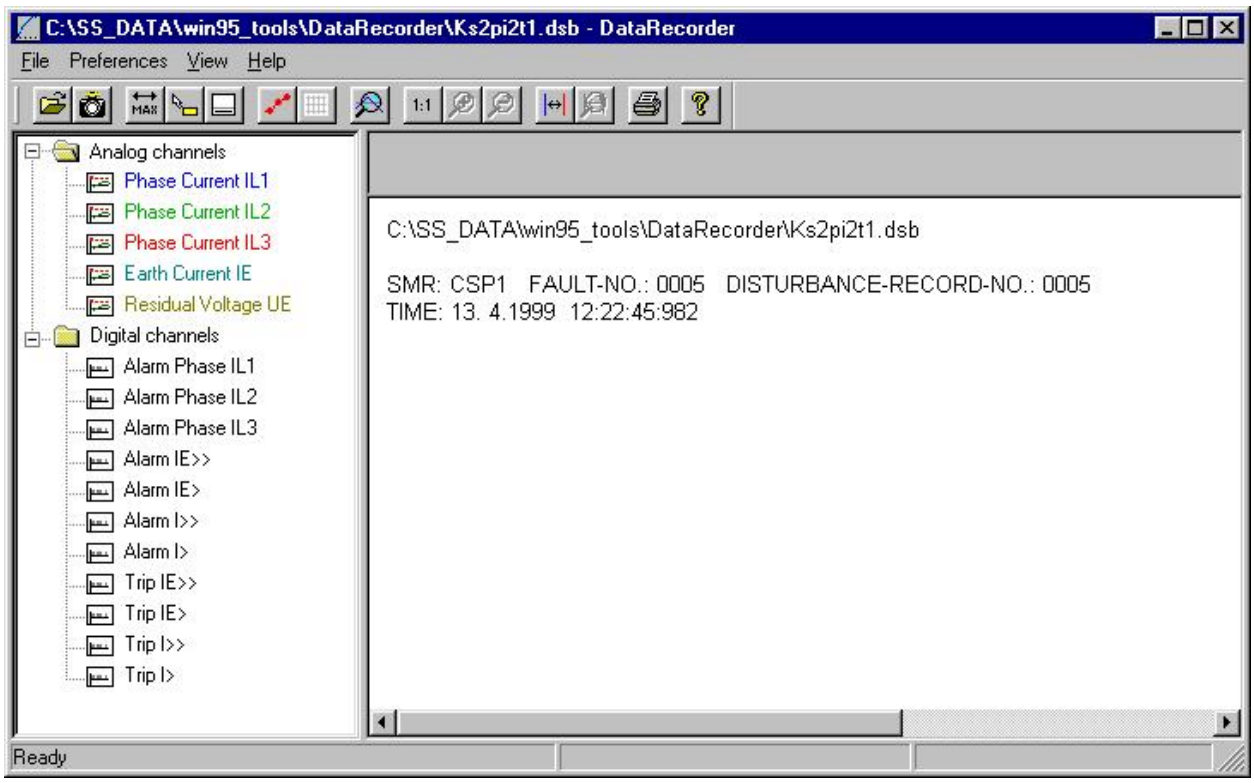


Figure 12.12: Fault record

12.7 The tree structure of the data recorder

12.7.1 Important information on the function of the mouse

- If the mouse is not moved inside the operating window, the appertaining sample number and time are shown. If the respective button is active, the measured values of the channel underneath the mouse will be displayed.
- If the mouse position gets near the cursors (Button bar 8 or 11) the pointer changes and these cursor lines can be shifted by keeping the left mouse button suppressed.
- If the left mouse button is pressed on a display, a section can be zoomed. If the mouse is moved while the left mouse button is being pressed, it is possible to fix the section to be zoomed. There are two cursors which indicate during marking whether this zoom rate is permissible. (Zoom OK, Zooming not possible as this would exceed the maximum resolution of 32.000 * 32.000 pixels.) Zooming can be aborted with the »ESC« key.
- If the right hand mouse key is pressed and the display is larger than the screen section, the mouse pointer changes into a hand. This way, the shown section can be shifted.

12.7.2 Adding channels to the operating window

The channels can be pulled from the tree structure into the operating area by Drag & Drop (pulling with left hand mouse key pressed down). During this procedure the mouse pointer changes and indicates whether this channel:

1. 

prepares a new display in this place,
2. 

is added to the existing display (only analogue channels can be combined),
3.  insertion is not possible in this position.

Insertion of channels is shown in the following figure:

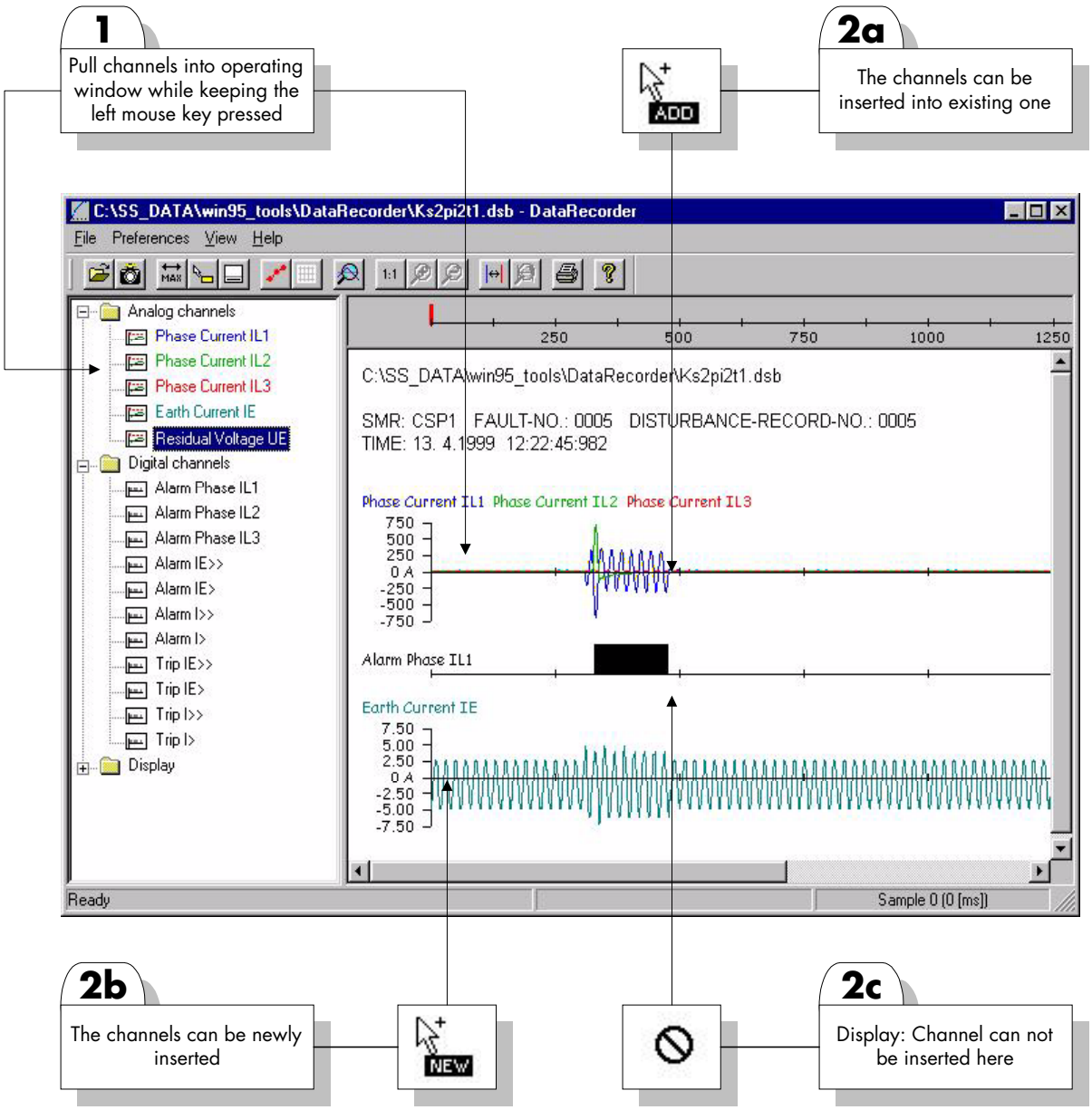


Figure 12.13: Insertion of channels

Further channels can be added by Drag & Drop.

12.7.3 Zoom

In order to produce detailed enlargements of curve courses, first select by means of the measuring cursors

(button bar: No. 12) the area (left and right) with suppressed mouse key. The area can then be enlarged by means of

(button bar No. 13).

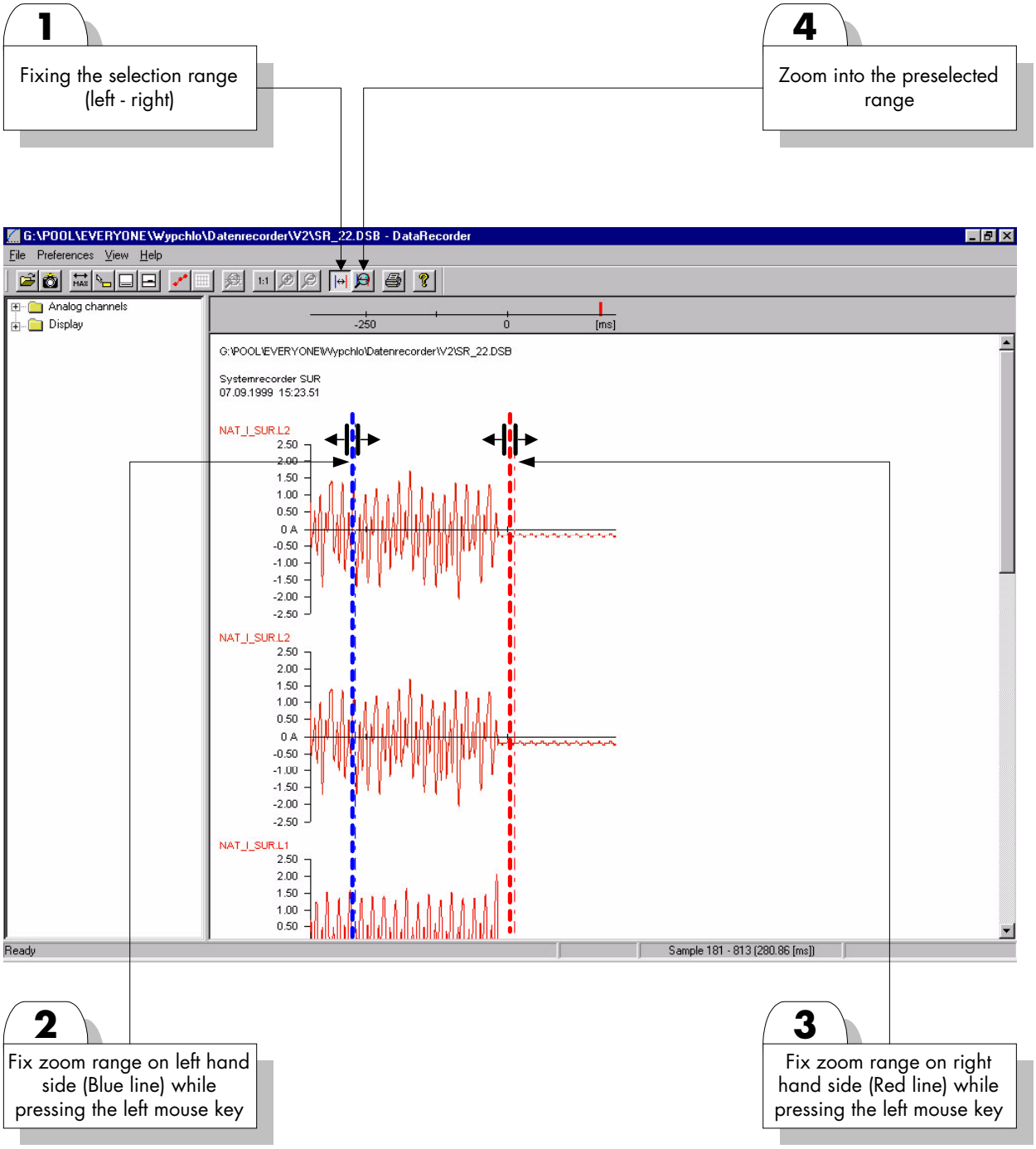


Figure 12.14: Zoom example

With this procedure it is possible, for example, to enlarge zero passages up to the greatest resolution and to analyse them.

Note

By means of button:

the measured value window is switched ON / OFF.

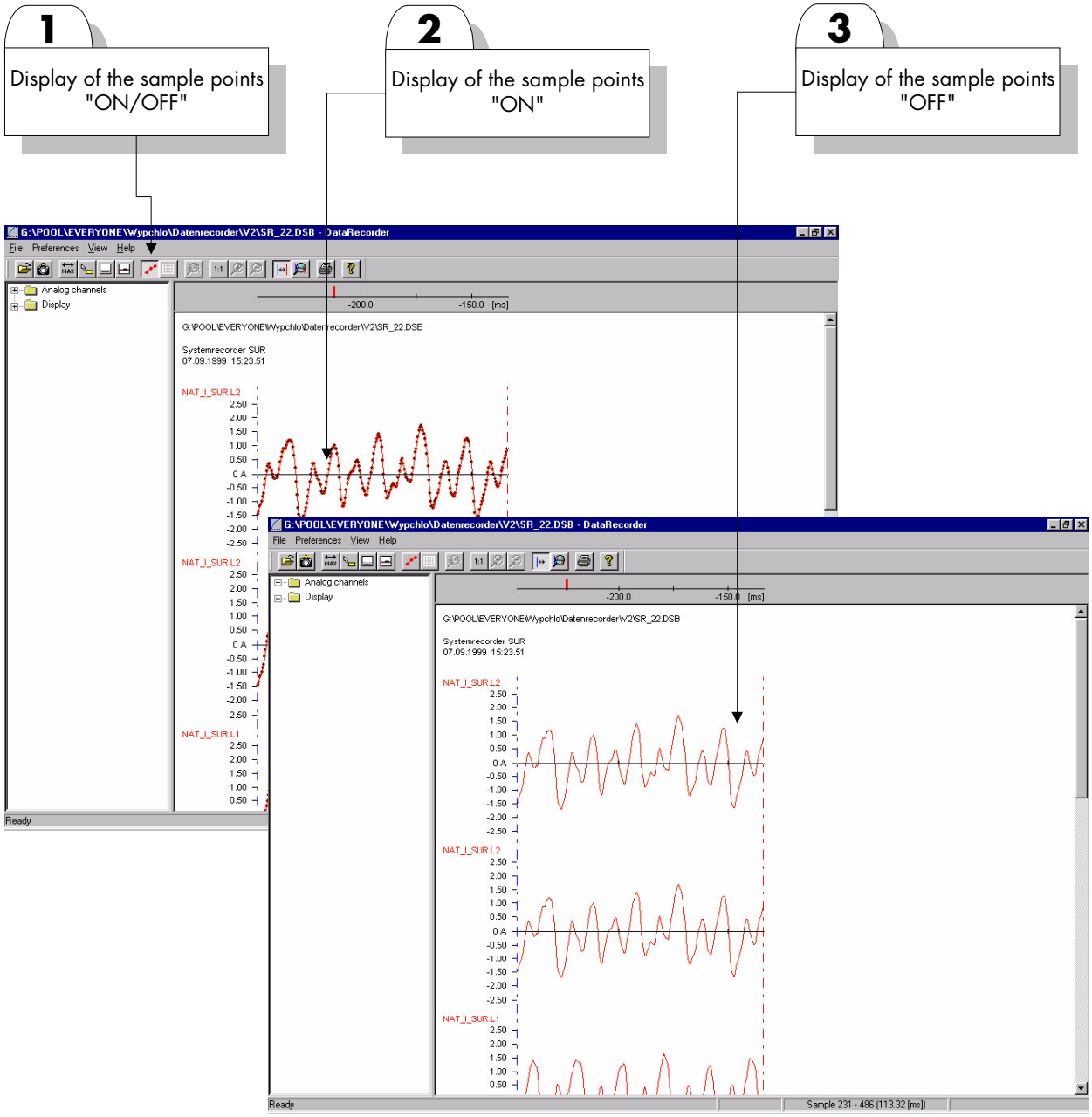


Figure 12.15: Display of sample points ON - OFF

Note

This button only displays the sample points (display only, no editing).

12.7.4 Removing channels from the operating window

In order to remove channels from the display, they are marked in the tree view under »Display« and removed with the »Delete«-key. Alternatively, the channels can be removed with the following procedure: First mark the channels with the right mouse key. Then call up the option »Remove« in the context menu which will have opened.

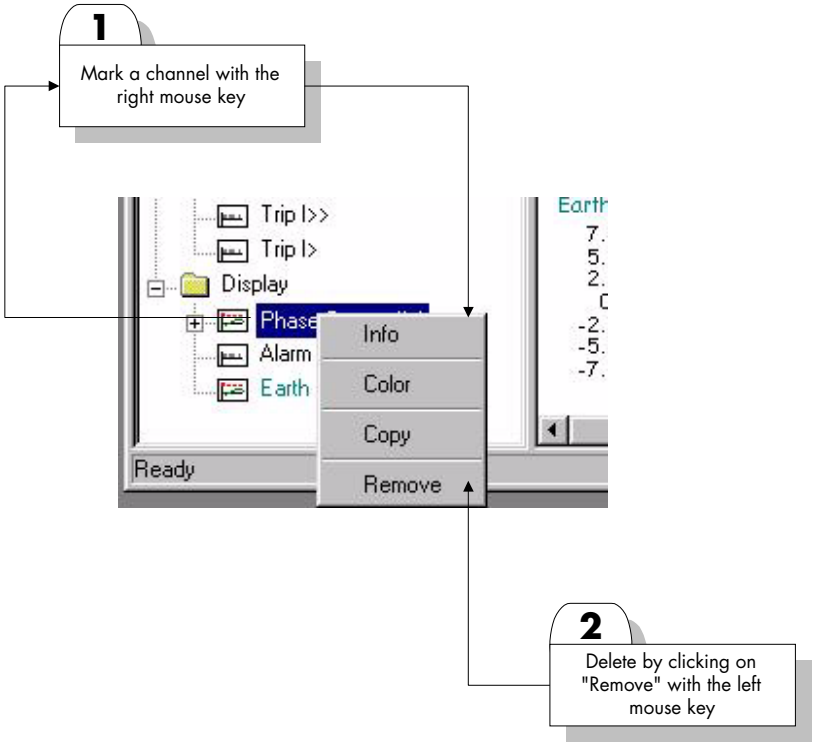


Figure 12.16: Removing a channel

12.7.5 Copying channels via the clipboard

Mark the required channel in the tree structure (display) with the right mouse key. The then opening context menu has the option »Copy« which offers the possibility of copying the curves into the clipboard and to then insert them into a document (Strg+V) with Word, for example. .

12.8 Display of the measured values on which the interpolated curve course is based

Mark the required channel in the tree structure (display).
Info will open a list which shows all measured points in the form of a table.

12.8.1 Changing the colour of the channel display

Mark the required channel in the tree structure (display).
With »Colour« the colour of the displayed curves can be changed.

12.8.2 Reading out the momentary values

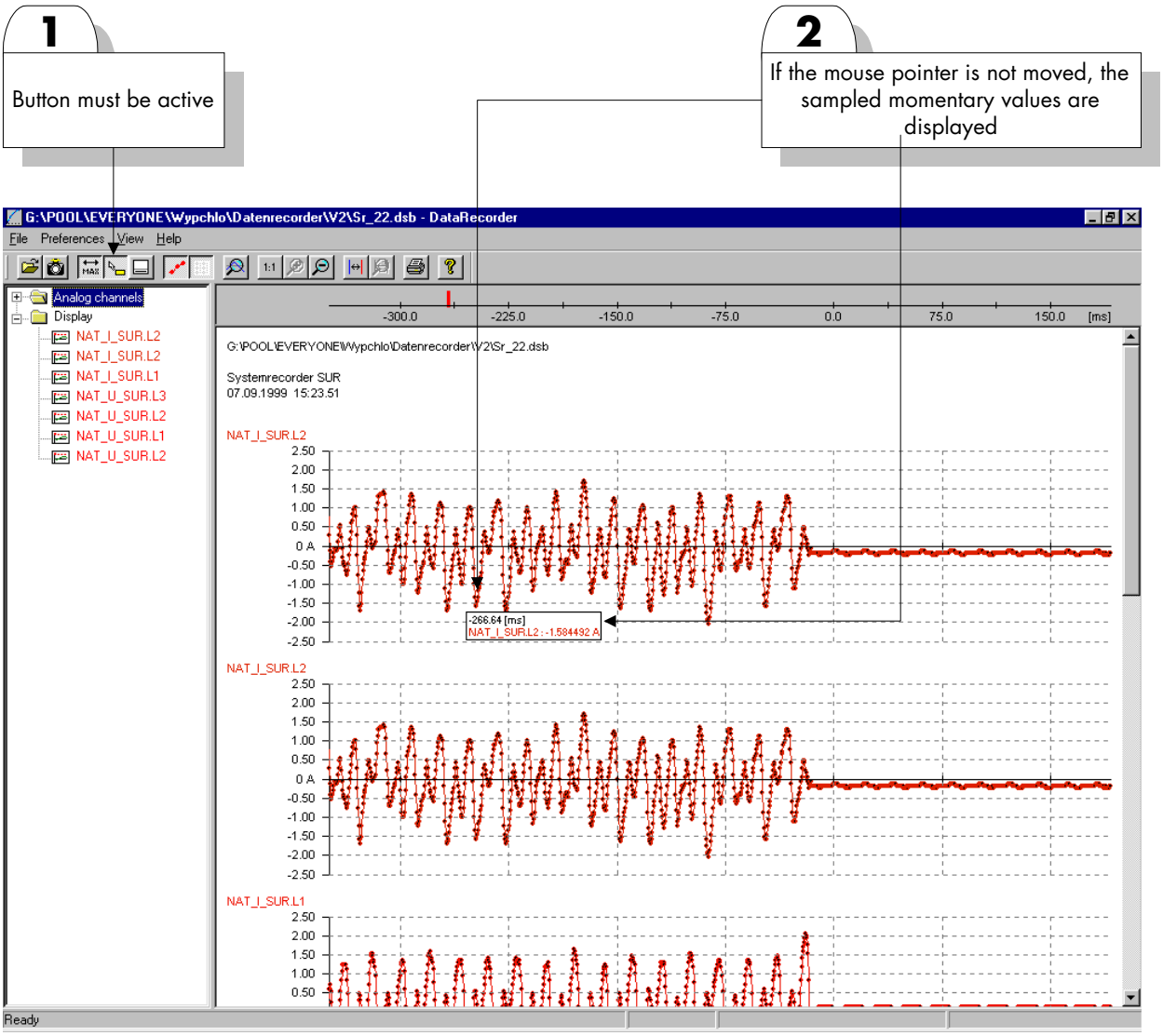


Figure 12.17: Reading out the momentary values

13 Appendix I (cable assignment RS 232)

For communication via zero-modem cable the following contacts must be occupied. In order to ensure trouble-free communication, the length of the zero-modem cable should not exceed 5 m.

Required occupancy of a 9-pole DSUB plug:

- 2 (receive data)
- 3 (transmit data)
- 5 (ground)

Figure 13.1: Example 1

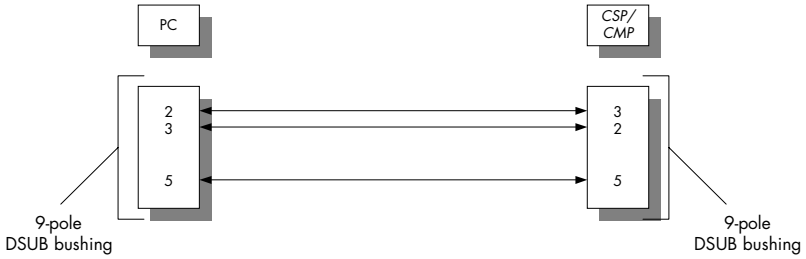


Figure 13.2: Cable occupancy 9-pole – 9-pole

Required occupancy of a 25-pole DSUB plug:

- 2 (receive data)
- 3 (transmit data)
- 7 (ground)

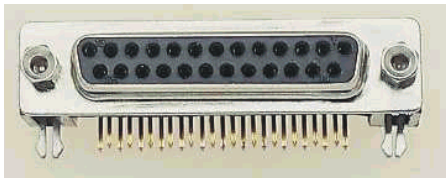


Figure 13.3: Example 2

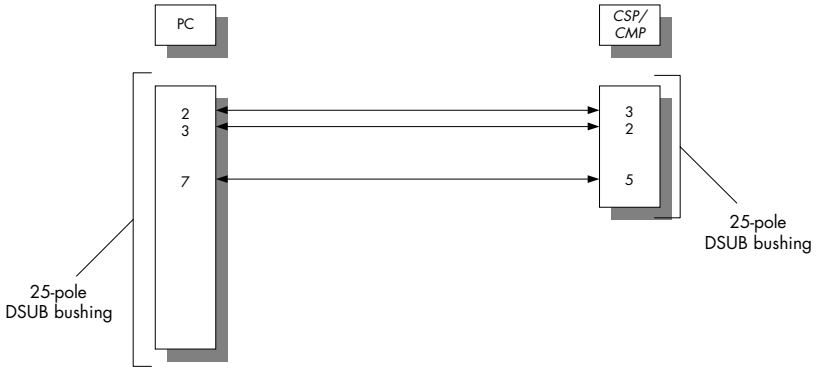


Figure 13.4: Cable occupancy 25-pole – 9-pole

14 Appendix II (communication links)

Point to point connection

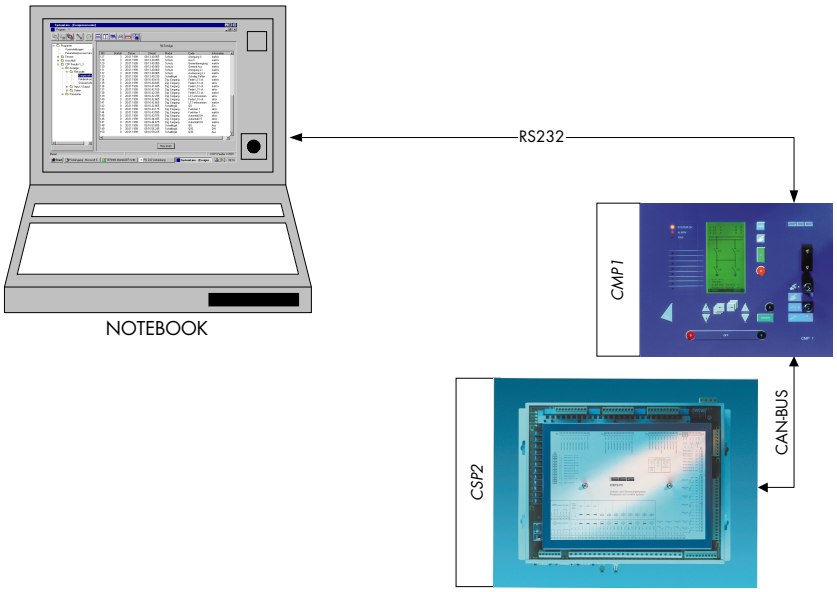


Figure 14.1: Point to point connection

Static Bus connection (in preparation)

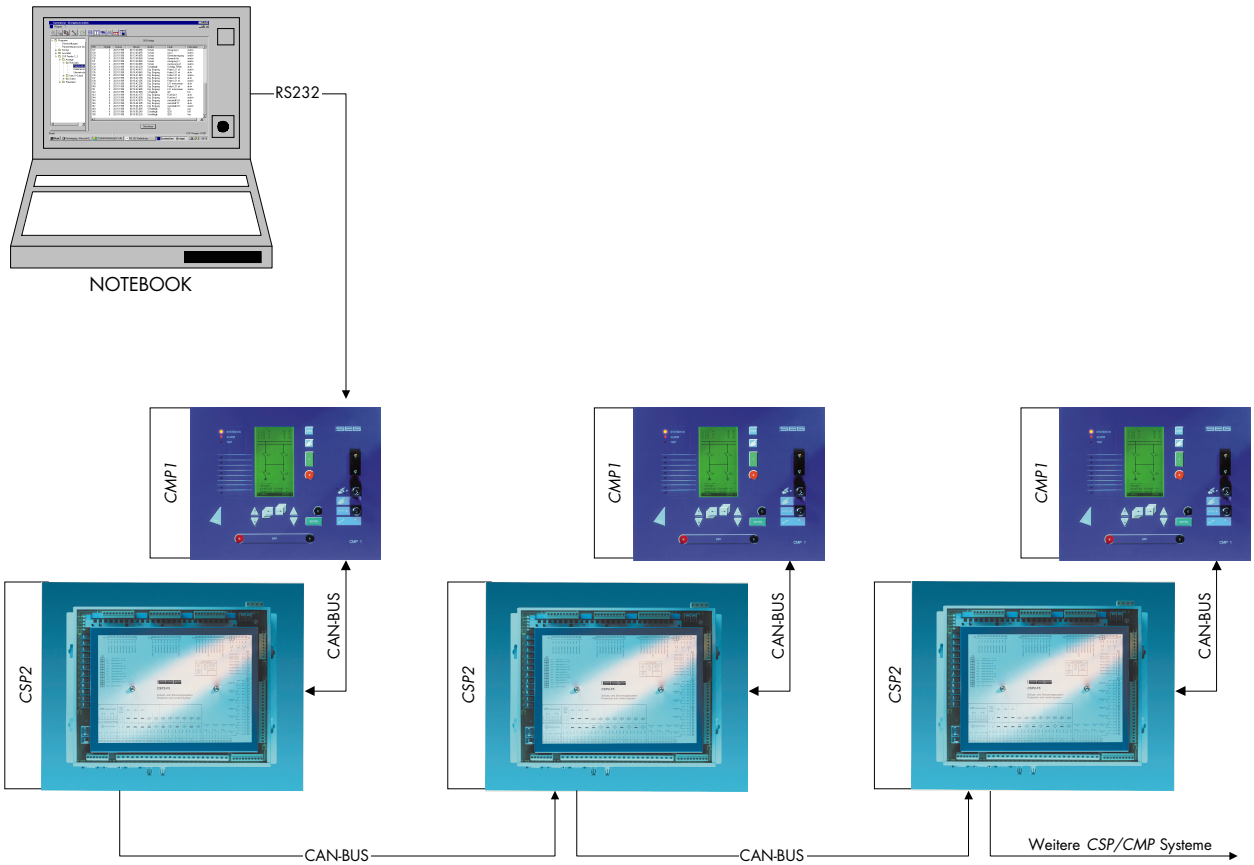


Figure 14.2:Static connection

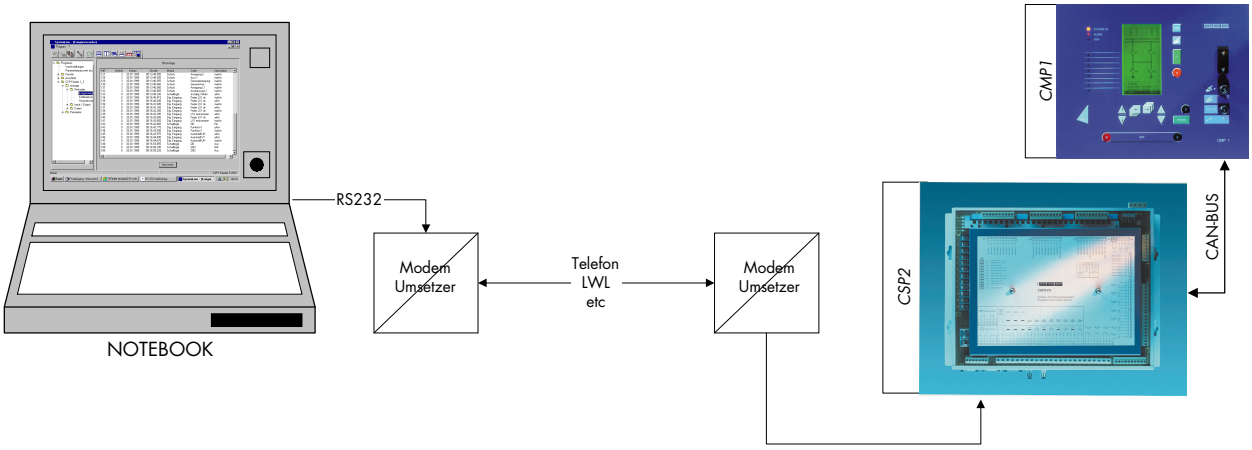


Figure 14.3: Connection across longer distances

15 Appendix III (trouble-shooting)

Mögliche Ursachen:

I) Incorrectly configured SEG_Serial_Server-Module

Solution

- Choose correct COM Port (see Chapter 6.1.4)
- Adjust correct Baud rate (19200 Baud)

II) Incorrectly configured SEG_Comm_Dispatcher

Solution

- Set »default mapping« to »Serial« (see Chapter 6.1.3)
- Adjust correct Baud rate (19200 Baud)

(for CAN communication only)

3. The »SEG_Serial_Server« was closed by mistake and is therefore no longer visible at the bottom right in the task bar

Solution

Restart module via »Start/Programmes/SystemlineV2/SEG_Serial_Server«.

4. Verbindung wurde abgebrochen

Lösung

- Restart the »SEG_Serial_Server«.
- Kabelverbindungen kontrollieren.

5. Login during ONLINE operation interrupted.

Possible causes may be:

- Wrong device type (e.g. only *CSP-F3* or *CSP-F5* was installedt/only »*SYSTEM LINE SOFT 1*«)

Solution

Retrofit correct type.

1. The programme cannot be started:

Are the path and the directory the same as those stated in the link?

Solution

Step 1: De-installation of the »*SYSTEM LINE SOFT*«.
Step 2: Re-installation of the »*SYSTEM LINE SOFT*«.

2. No build-up of the connection

Possible causes:

I) Incorrectly configured SEG_Serial_Server-Module

Solution

- Choose correct COM Port (see Chapter 6.1.4)
- Adjust correct Baud rate (19200 Baud)

II) Incorrectly configured SEG_Comm_Dispatcher

Solution

- Set »default mapping« to »Serial« (see Chapter 6.1.3)
- Adjust correct Baud rate (19200 Baud)

III) Wrong cable. The cable used is not a zero-modem cable but a serial one (frequent cause for faults because both cables look identical!).

Solution

Use of a zero-modem cable as per Appendix I (cable assignment).

IV) Wrong Port chosen at the *CSP* or CAN-BUS (for CAN communication only)

Solution

Check on and correction of the connections.

V) The »*SYSTEM LINE SOFT*» is used in an incorrect device version.

Solution:

For *CSP* devices with *CSP* software version 1) the »*SYSTEM LINE SOFT 1.0*» must be used. For *CSP2* devices and *CSP* devices which are already equipped with software version 2 , »*SYSTEM LINE SOFT 2.0*» must be used.

3. The »SEG_Serial_Server« was closed by mistake and is therefore no longer visible at the bottom right in the task bar

Solution

Restart module via »Start/Programmes/SystemlineV2/SEG_Serial_Server«.

4. *Connection was interrupted*

Solution

- Restart the »SEG_Serial_Server«.
- Check cable connections.

5. *Login during ONLINE operation interrupted.*

Possible causes may be:

- Wrong device type (e.g. only *CSP-F3* or *CSP-F5* was installedt/only »*SYSTEM LINE SOFT 1*«)

Solution

Retrofit correct type.

6. *Password is not accepted in the parameter setting mode*

The password is not accepted.

Solution

Check and enter password again (watch out for capital and small letters!).

Otherwise re-install »*SYSTEM LINE SOFT*«.

7. *Slow data transmission*

Possible cause:

Cyclical reading-out of measured values onstructs the transmission of other data.

Solution

Switch off cyclical read-out.

8. Wrong language

Solution

Select the correct operating language ***in the menu*** »File > Settings > Languages«.

9. Programme cannot be shut down

Possible cause:

When the programme was closed down it was not done in the order specified in the chapter »Shutting down the programme«.

10. In the copy mode no further windows can be opened.

Note:

Fading in of other operating areas is not permissible in the copy mode.

11. Copying is aborted

Possible causes:

I) A wrong file name was selected. (The file name already exists for a single parameter set (in the target directory) and now all parameter sets are to be copied)

Solution

Choose a new file name which has not yet been assigned.

II) If all parameters are selected, one parameter file is missing

III) Wrong version of the device. Check version and prepare file again.

12. Restart of the CSP after papameters or the single line have been copied

Note:

As the basic data have been changed the protection device must be newly booted in order to take over the changes

13. No printing upon print request.

Possible causes:

- Have the correct printer and the correct interface been chosen?
- Is the printer cable plugged in correctly?

14. Parameter changes were not taken over/stored.

Note

If no actions are carried out in the parameter setting mode for more than 10 minutes, all previous changes are discarded.

16 Order Key

System Line Soft (Parameter setting and analysis)

System Line Soft	***SL-SOFT2-***	**1**			
Application software to combined protection and control systems of the System Line (feeder protection and cable/line differential Language switching: german/english Standard (read-out data, parameter setting)					
Optional features					
Fault (disturbance) evaluation tool (data recorder)			**E**		
without			*		
„SL-Draw" [1]	(tool for configuration of single line diagram and interlockings at feeder level)		Extra charge	**D**	
without				*	
„SL-Logic" [1]	(tool for extended device configuration - PLC)			Extra charge	**L**
without					*

[1] probably available: beginning of 2. Quarter of 2002

This description is temporary. It is subject to continuous further revision without prior notice. In case of questions please contact:

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