s::can
liquid monitoring networks

Manual ana::pro

Version 5.3
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2   General

2.1   About this Manual

This manual explains – in addition to the s::can™ manual ana::lyte – the operation of the advanced software ana::pro. This manual explains, firstly, the start-up of the software in online and offline mode as well as the logon procedure of the user. The most important and most comprehensive section of this manual is a detailed description of the functions of the operating software ana::pro. This section contains all important information on different measuring modes of the s::can™ spectrometer probe. Furthermore all additional options – in comparison with the ana::lyte software – are explained. In further chapters information on the result files, a summary of all error messages and the s::can™ contact address can be found.

Please note: For proper initial operation of complete s::can™ measuring systems, the s::can™ manuals of controller (con::stat or PC / notebook with con::nect) as well as the connected measuring devices (spectro::lyser™, carbo::lyser™, nitro::lyser™, multi::lyser™, ammo::lyser and/or oxi::lyser) have to be consulted.

2.2   Guidelines for this Document

This document can also be found as PDF-file on the CD-ROM delivered with your s::can™ ana::pro operating software. All cross references in the text are marked in blue as follows: [Reference]. Each term in this document that is marked *italic and underlined*, can be found on the display of your controller or on your local computer when running the ana::pro software. These may e.g. be menu items, entries or buttons.

In spite of careful elaboration this manual may contain errors or incompleteness. s::can™ does not assume liability for errors or lost of data due to such faults in the manual.

The original manual is published in the German and the English language by s::can™. These original manuals serve as the reference in case discrepancies occur in versions of the manual after translation into third languages.

As the operating software ana::pro is based on the ana::lyte software, and because the basic functions of these two softwares are identical, this manual will refer to parts of the s::can™ manual ana::lyte repeatedly. Many of the common functions are described in the ana::lyte manual and will not be repeated here. This ana::lyte manual can also be found on the CR-ROM delivered with you s::can™ measuring system.

2.3   Used Terms in this Document

For a clear understanding of important terms used consistently throughout this manual, these terms are defined and explained in the paragraphs below.

The upper edge of the screen will always show the **menu bar** which contains various **menu items**. Clicking on one of the *menu items* either prompts a so-called **pull-down menu** with various **entries**, prompts the appearance of a new **screen,** a **dialogue window** or a **message**. The difference between a dialogue window and message is that dialogue windows require data input whereas messages only provide information or simple queries (e.g. asking you for confirmation of input). In some cases, *dialogue windows* and *messages* may also be cued when you click on an entry.

A **button** is a virtual operation element which you can activate/operated by a single mouse click.

A **selection list** will offer you a choice from among several options whereas a **text box** will present information which you cannot influence in any way. An **input box** will enable you to enter text or numerical values.

2.4 Author's Rights (Copyright) and Product Names

This manual and all information and figures contained therein are copyrighted. All rights (publishing, reproduction, printing, translation, storage) are reserved to s::can Messtechnik GmbH. Each reproduction or utilisation outside the permitted limits of the copyright law is not allowed without previous written consent of s::can Messtechnik GmbH.

The reproduction of product names, registered trade names, designation of good etc. in this manual does not imply that these names can be used by everyone; often these are registered trade marks, even if they are not marked as such.

2.5 Validity of this Document

This manual, at the time of its publication, is valid for the s::can™ operation software „ana::pro" Version 5.3 (Item no. s-03 in s::can™ price list); see the release date of this document printed on the top left of each page of this document. This manual describes the functions available in the operation software ana::pro when it is used on the "Administrator" access level. When used on the "User" access level, a reduced number of functions is available.

2.6 Licence, Product Updates, other

The manufacturer reserves the rights to implement, without prior notice, technical developments and modifications in the light of continuous product care.

Notes regarding the licence of the s::can™ operating software ana::pro please refer to section [4.3].

3   ana::pro – Technical Description

The ana::pro software was especially developed for the operation of all s::can™ spectrometer probes (spectro::lyser™, carbo::lyser™, nitro::lyser™ and multi::lyser™) in more complex applications. Furthermore it allows the operation of the s::can™ dissolved oxygen probe (oxi::lyser), the s::can™ ammonium probe (ammo::lyser) and other sensors distributed by s::can™ (e.g. pH, conductivity). The operating software ana::pro is used when a PC / notebook with a con::nect is used to control your s::can™ measuring system. The software can also be run on the con::stat, where it will run in addition to the operating software ana::lyte.

The tasks that can be performed with ana::pro include the operation of all connected s::can™ probes, control of the measuring and analysis processes, as well as the representation and storage of the results of the measurements. More specifically, ana::pro supports the following functions:

- **configuration of the complete s::can™ measuring system** (e.g. connected sensors, intervals for cleaning and measuring, noise reduction and displaying of measurement results)

- Periodical (automatic) or manual **transfer of data** from the connected sensors to the controller.

- Configuration and start-up / stop of use of s::can™ spectrometer probes in **logger mode** (i.e. the instrument runs without a controller connected and stores measurement values directly on the probe).

- **Visualisation** of all measurement results, in the shape of values, time series, and absorption spectra.

- Aid in the **interpretation of measurement** results through numerous functions, such as zoom in-/out, displaying of multiple spectra simultaneously, calculating and displaying turbidity compensated spectra and derivative spectra as well as comparing recent spectra to old spectra (Delta spectrometry).

- **Storage and archiving** of measurement results, including automatic data reduction. When installed on a con::stat, ana::pro supports the parameterisation of the circular memory of the controller and checks the available memory when storing data.

- The activation, parameterisation and **calibration** of all the single parameters available through the measuring probes connected to the controller.

- The parameterisation of the **interfaces for data transfer** (in case ana::pro runs on a con::stat, this will include digital and analogue outputs, as well as outputs to a file or a COM-Port).

- **Automatic verification** of the functionality of the complete s::can™ measuring system, automatic verification of the quality of the measurement results after each measurement and user controlled checks of single measuring probes.

- Parameterisation of the controller (con::stat or PC / Notebook).

- Possibility to work with measurement results when no measuring device is attached to the controller (**off-line** mode).

- All functionalities required for the **development of new calibrations**.

- Setting up of **users accounts** for individual users each with individual access rights.

4   ana::pro - Installation

The s::can™ software ana::pro is installed on commercial computers as described in the s::can™ manual ana::lyte – chapter 4 (ana::lyte - Installation). This chapter in the ana::lyte manual also contains information on the contents of the installation CD-ROM, the hardware requirements, as well as the data and the directory structure created by the software on hard disk of your local PC. In case you have acquired ana::pro together with a con::stat, the operation software will be installed on your controller before it is shipped out and the controller together with the software will be ready for use directly out of the box.

4.1   Starting the Programme

When powering up an s::can™ con::stat the operating software (ana::lyte) will start automatically. When ana::pro is also installed on the con::stat, the button *ana::pro* [*Figure 4.1*] will appear during the booting process. To start ana::pro, press this button before ana::lyte has finished booting.

ana::lyte is booting ....

ana::pro

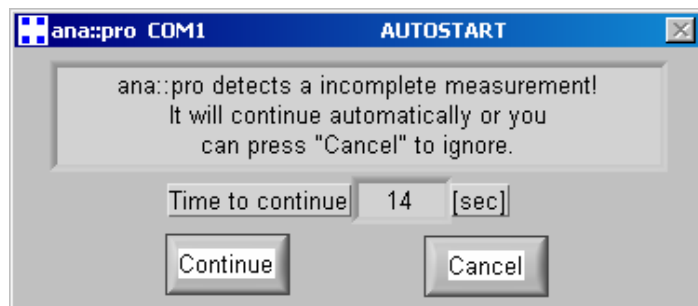*Figure 4.1: Button for starting ana::pro as seen during start-up of con::stat*

On a commercial **PC** ana::pro can be started by clicking on the appropriate icon on the desktop or via the entry ana::pro.exe in C:\ Programme \ s-can \ ana-pro5.x – just like any other regular software programme.

ana-pro V5.3

Once ana::pro has successfully booted, the user has to sign on (see section [4.2]) before measuring can begin.

4.1.1   Online

Once the software has been started, it will automatically try to make contact with an s::can™ spectrometer probe. When a probe is found, you will be informed of the serial number (see section [4.3]) of the connected probe and asked to sign on (see section [4.2]).

In case ana::pro was not terminated properly after a previous series of timer-controlled measurements

ana::pro COM1   AUTOSTART   ✕

ana::pro detects a incomplete measurement!
It will continue automatically or you
can press "Cancel" to ignore.

Time to continue   14   [sec]

Continue   Cancel

(*Automatic Mode* – see section [5.6]) – e.g. when the controller was simply switched off – a dialogue window will appear when you restart the programme. If you click on *Continue* (or wait for 20 seconds), the probe will continue the interrupted time series with the original settings. To prevent the instrument from restarting with the old setting, click on *Cancel*.

Figure 4.2: Dialogue window shown when re-starting ana::pro after interrupted measurement series

If ana::pro is unable to make contact with any s::can™ spectrometer probe, you will be informed via a dialogue window. The most common reason for failure to establish a connection is that there is no

connection between probe and controller, or no energy supply. In that case, please check all connections between spectrometer probe and controller as well as your energy supply. Once you have removed the cause, a mouse-click on *Log in* will result in ana::pro starting automatically.

Please note: For further details about starting ana::pro, as well as identifying and removing the causes of problems with link-up please refer to the s::can™ manual ana::lyte – section 4.6 (Starting the Measuring Process / Start of the Programme).

4.1.2 Offline

With the "offline mode", historical data can be analysed and used for calibration.

You can use the offline mode also when no measuring device is connected to the controller. When the offline mode is selected, you will be asked to select from a list the serial number of the spectrometer probe that was used for the recording of the measurements you want to analyse. When the desired serial number is not available, it can be added to the list using the option *Choose new S/N...* or by connecting the instrument to your controller and clicking on *ONLINE...* (see [Figure 4.3]).
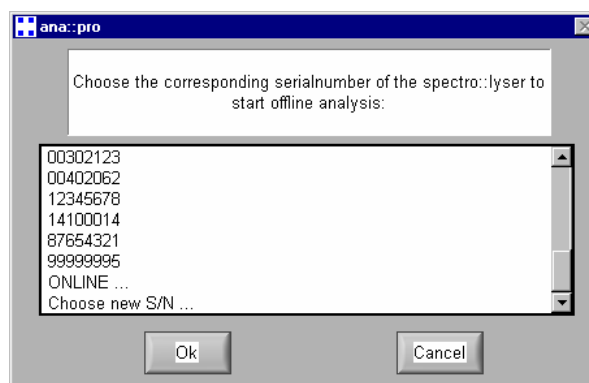

Figure 4.3: Dialogue window – Selection of serial number for offline mode

When you select *Choose new S/N...* the desired serial number (8 digits) must be entered first. Subsequently, the correct detector type must be selected by pressing the *UV* or *UV/Vis* buttons and the length of the measuring path must be chosen (see figures 4.4 and 4.5).
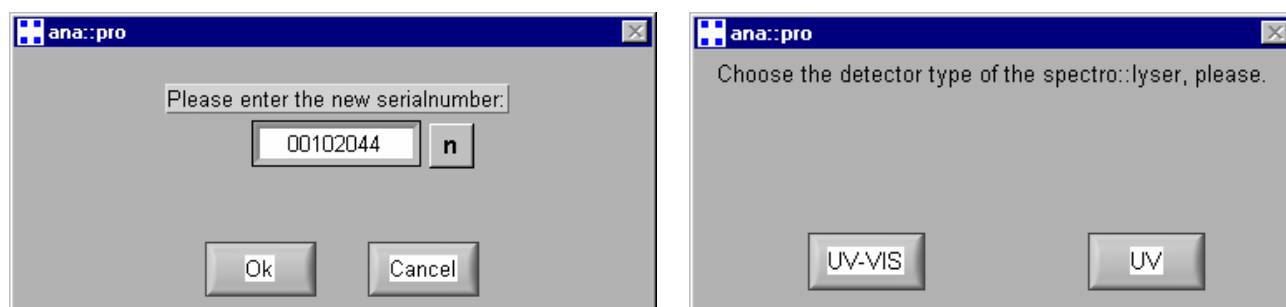
Figure 4.4: Dialogue window for entry of new serial number for offline data analysis
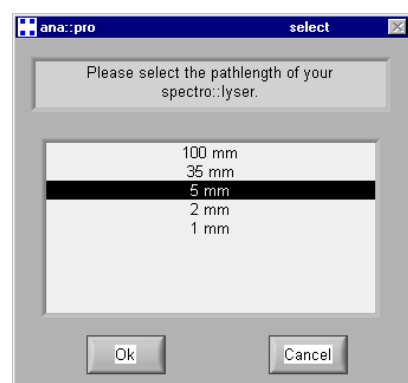
Finally, an s::canpoint must be selected (see s::can™ manual ana::lyte – section 6.4.10 – Global calibration => change s::canpoint…). The software is now ready to run in offline mode with the new serial number.

The addition of new serial numbers for offline use allows you to read in data from multiple probes on a single computer. This can be desired for centralised data evaluation, for example. Also, ana::pro can be run in offline mode on a computer that has never been connected to a s::can™ spectrometer probe.

Figure 4.5: Dialogue window for selection of path length

4.2   Signing on

The ana::pro software supports three different user levels which are characterised by different scopes of software functions available to the user. The three levels are _Administrator, Service_ and _User_, and can be selected from the selection list of the dialogue box that appears during start-up after a sensor has been found or the offline mode has been selected (see [_Figure 4.6_]).

As the _Administrator_ you will have access to all software functions related to measurements and control of the connected instrument (see section [5.2]). You will thus be able to adjust the instrument to the respective measuring task by individual settings. This type of work should only be done by persons who are familiar with the way the measuring system works. Even though the software was designed to be largely self-explanatory, incorrect settings may occur which will affect operations.
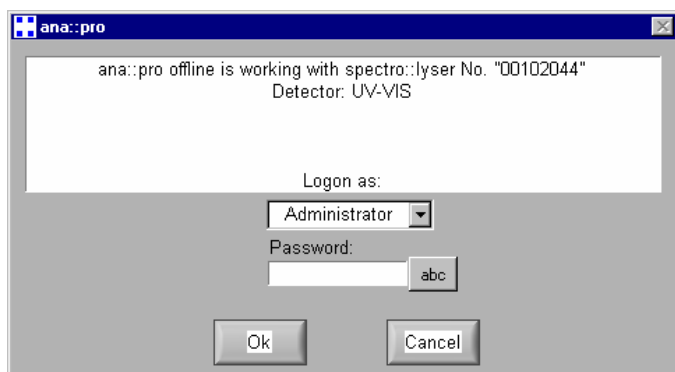
Figure 4.6: ana::pro sign on screen

Please note: This manual covers the entire range of functions available on the Administrator level.

The _User_ level is meant for day-to-day operations. The functions available at this level are the ones required for measuring only.

Please note: No passwords have been allocated to these two user levels during manufacturing. However, we recommend the assignment of passwords for reasons of security (see s::can™ manual ana::lyte section 6.5.6 – Service \ Controller \ Password).

The _Service_ level is for quality control and functional checks in the course of production and service and can only be accessed by s::can™ personnel or s::can™ sales partners.

Once you have chosen a user level and identified yourself by entering your password, the entire range of functions at the selected user level will be accessible to you.

4.3   Serial number s::can™ spectrometer probe / Licence

As soon as ana::pro makes contact with an s::can™ spectrometer probe, the serial number will be read in. This is a check on whether the software is licensed to be used with the instrument. This is to prevent the unauthorised use of ana::pro and the use of s::can™ spectrometer probes by unauthorised persons.

By purchasing ana::pro, you also purchase the licence to install it on any number of computers. Thus, there will be no problem in operating the s::can™ spectrometer probe via a stationary PC and several different notebooks alternatingly. The software licence conforms with the instruments you have purchased, i.e. no other spectrometer probe, no matter what type, can be operated under this licence. This also means that no unauthorised person can run your instruments using a different copy of ana::pro!

If you buy another s::can™ spectrometer probe later on, you will also get a new version of ana::pro for use with all the instruments you use. Should this be desired, please notify your s::can sales partner when ordering an additional instrument.

In case you own different versions of ana::pro and want to install them on the same computer, they should have different target paths. The target path will be set in file "ana-pro.ini" (e.g. Target path=c:\\s-canV5.0).

Please note: The file license.txt on the CD-ROM supplied contains the licensing terms and conditions for all the software required. They are deemed accepted when an s::can product is installed.

5   The ana::pro Measuring Process

5.1   General Notes

General information regarding the measuring process and the operation of the software can be found in the s::can™ manual ana::lyte – sections 5.1, 5.2 and 5.5.

5.2   Menu / Overview

Once s::can™ spectrometer probe has been identified and the user has signed on, the main menu of ana::pro will appear on screen [*Figure 5.1*]. From here, all software functions (e.g. starting a measuring process) can be accessed. Furthermore, you will always return to this menu when a function is ended or terminated. The following diagram in [*Figure 5.2*] presents on overview of the entire menu structure of ana::pro available on the administrator level.

Please note: At "User" level only functions indicated with a bold red frame in figure 5.2 are available.
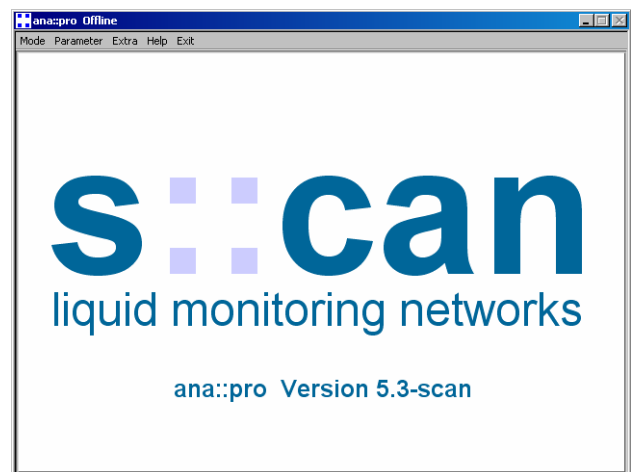

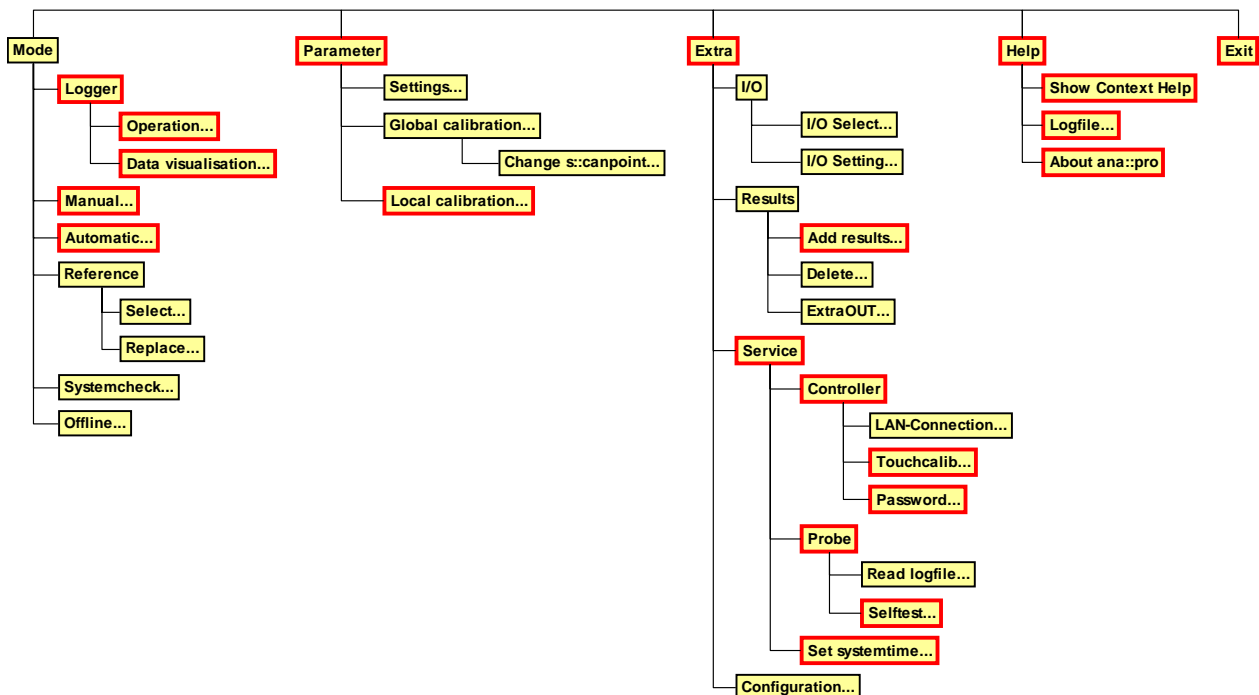*Figure 5.1: ana::pro screen after starting up*

Figure 5.2: Menu structure of ana::pro in online mode

By selecting a measuring mode (*Mode)* different operation modes of the s::can™ measuring system can be started:

- *Logger* - see section [5.4]

- *Manual...* - see section [5.5]

- *Automatic...* - see section [5.6]

- *Offline* - see section [5.8]

- *External* - see section [5.9]

Furthermore a reference measurement (see section [5.7] and s::can™ manual ana::lyte – section 6.2) and a function control (*Systemcheck…* see s::can™ manual ana::lyte – section 6.3) for the s::can™ spectrometer probe can be performed.

The menu item *Parameter* (see section [5.10]) makes it possible to check and change parameter settings (*Settings*), change or define a new s::canpoint (*Global calibration*) and carry out local calibration (*Local calibration...*). For a detailed description of these menu sub-items please refer to the s::can™ manual ana::lyte - section 6.4 (Parameter).

Over the menu item *Extra* the entries *I/O*, *Result*, *Service* und *Configuration...* are available. For output of the current reading various file types can be created or a string can be sent to a COM port (*ExtraOUT…*), the configuration of which is described in section [5.11.1]. In section [5.11.2] the possibility to change the computer name and the IP address is described. All other functions under the menu item *Extra* are described in more detail in section 6.5 (Extras) of the s::can™ manual "ana::lyte".

The menu item *Help* (see section [5.6.8]) offers three option: via the entry *About ana::pro...* all relevant information about the measuring system currently in use can be accessed (software version number, serial number of the probe, type and length of the measuring path, s::canpoint, global calibration, reference used). *Show Context Help* opens a window where information about operating elements is displayed as soon as the mouse pointer hovers over the area of interest (no mouse-click required). *Logfile…* provides the view of all internal entries of the logbook.

Exit terminates the ana::pro programme. The power supply of the controller should not be disconnected before ana::pro has been properly closed. For details of this function, please refer to the s::can™ manual ana::lyte, section 5.10 - Exit.

5.3 Back

Each respective measuring mode can be terminated over the menu item *Back*. After using *Back* you will return from the measuring screen to the ana::pro main menu. Before doing that, a dialogue window will appear in which you can confirm that you wish to save the readings (*Save file*) and you can also add your comments (*Remark*) which will be stored with the file. Clicking on the button *Without file* will result in the readings being discarded. By clicking on *Cancel* you will stay in the current measuring mode (see [*Figure 5.3*]). In case of *Save file* a user message will inform you about name and path of the result files (see section [6]).

Please note: Using *Back* while in logger mode will trigger a different sequence, see section [5.4].
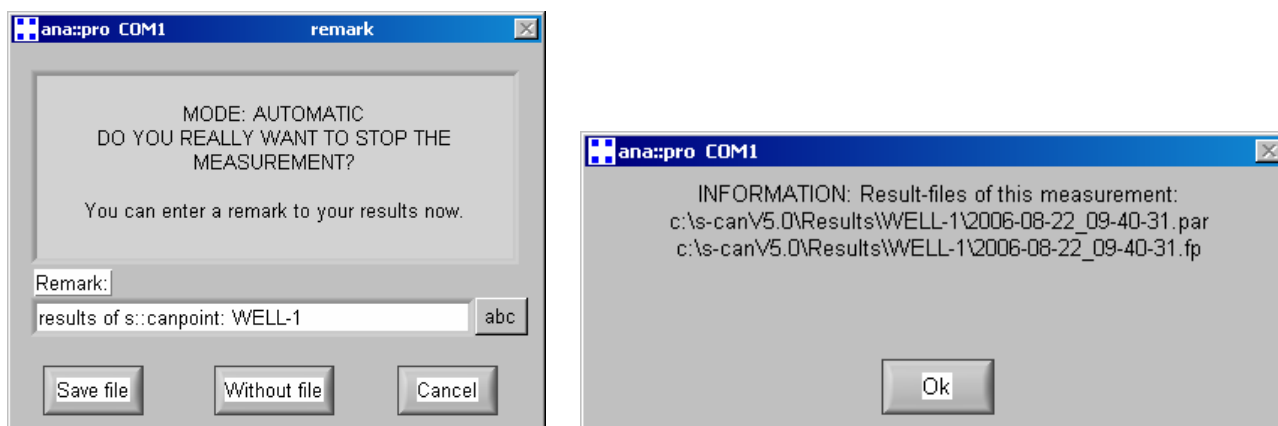
Figure 5.3: *Dialogue window when ending measuring process (left) and user message when ending measuring process with option Save file (right)*

5.4 Mode Logger

5.4.1 Starting up measurement series in logger mode

The s::can™ spectrometer probe can carry out timer-controlled measurements without the need of being attached to a controller. This is done in the logger mode. In this mode, the controller is solely needed to start the measurement series, to terminate it and to read out the data that are stored on the probe (*Logger / Operation...*). Of course, the s::can™ spectrometer probe will need a power supply (12V DC) in logger mode! If batteries are used, it is highly recommended to activate the sleep mode via *Extra / Configuration* (see s::can™ manual ana:lyte - section 6.5.10) in order to save energy and increase battery life-time.

If you select the *Logger / Operation* entry, the screen *Logger operation* will pop up [*Figure 5.4*]. When opening this screen, the controller system time (con::stat or Notebook / PC) will be transmitted to the s::can™ spectrometer probe. In "Administrator" mode you may skip this synchronisation process, in "User" mode you will be informed of the synchronisation process, but can not cancel it.

The *Logger operation* screen contains grey selection lists for settings on the left-hand side. Text boxes o the right-hand side display information about the system.

Figure 5.4: Screenshot of the Logger operation window prior to start of measurement in logger mode.

The **_Start_** button will start measuring in logger mode. Before starting, you must ensure all settings are properly made for the measurement series that is planned.

The selection list *Memory management* controls the way results are stored in the memory of the probe. It presents you with a choice of three alternatives:

- *Stop Time* – when selected, all results are logged to a point of time that can be freely selected. The point of time is defined via the *Stop time* input box.

- *Store till full* – all logger operations end automatically when the internal memory of the spectro::lyser is full.

- *circular* - Logger operations can only be stopped via the controller. Once the memory is full, the oldest existing data will gradually be overwritten by current ones.

Please note: In case *Stop time* is set, the *Start* button will only be visible if the selected stop time is a point in time later than the current time!

In the *Measurement interval [min]* selection list you can determine the interval, in minutes, at which measurements should be carried out. The shortest interval that can be selected is 1 minute.

The *Number of measurements between cleaning* selection list allows the use of cleaning in logger operations. The value 0, pre-set by s::can™, means operation without automatic cleaning. When a value larger than 0 is selected, additional input boxes will appear where all further cleaning settings can be input [*Figure 5.4*].

The text box *Max. no. of measurements* informs you of the maximum number of readings that can be stored in the s::can™ spectrometer probe.

The text box *Planned measurements* shows the number of planned measurements in case *Stop time* has been set. The current number of measurements carried out is shown in the text box *No. of measurement* and the current time under *System time*.

Please note: The s::can™ spectrometer probe will either store fingerprints (active "Fingerprint") or parameters (all active calibration and non spectral parameters). The default setting of storing fingerprints makes sense and is recommended by s::can™ for reasons of data safety and security but is not mandatory. Direct storage of only the parameters comes with the benefit of a reduced memory requirement. This setting is only possible for those calibration parameters using "Fingerprint" as spectral source (see s::can™ manual ana::lyte - section 6.4.2). Selection which data is stored is made over the menu item *Parameter / Settings*. The fingerprint will be stored only when *Fingerprint* is activated (see s::can™ manual ana::lyte, section 6.4.1).

Please note: The number of measurements that will be recorded after starting the logger mode and the calculated end of the measurement series (in case *stop time* or *store till full* is selected) is displayed on the right hand side of the screen. The maximum number of readings that can be stored will be approximately 1500 when complete fingerprints are saved, or about 30000 readings when only parameter readings are stored.

In the lower part of the *Logger operation* window, you will find information about the reference in use (*Reference*) and the measuring path (*Path*) as well as information on the system status.

When all the above settings have been checked and set according to the measurement planned, you can press the *Start* button to start the measurement.

After starting measurements in the logger mode, a message will inform you that it has been initiated successfully and telling you that you can now disconnect the s::can™ spectrometer probe from the controller. Furthermore, the *Start* button will be replaced by a *Stop* button (figure 5.5). Additionally, the buttons *Last results* and *Manual measurement* will become available in the *Logger operation* window. Further text boxes on the right-hand side of the screen will provide additional information concerning the ongoing logger operation (see also [*Figure 5.5*]):
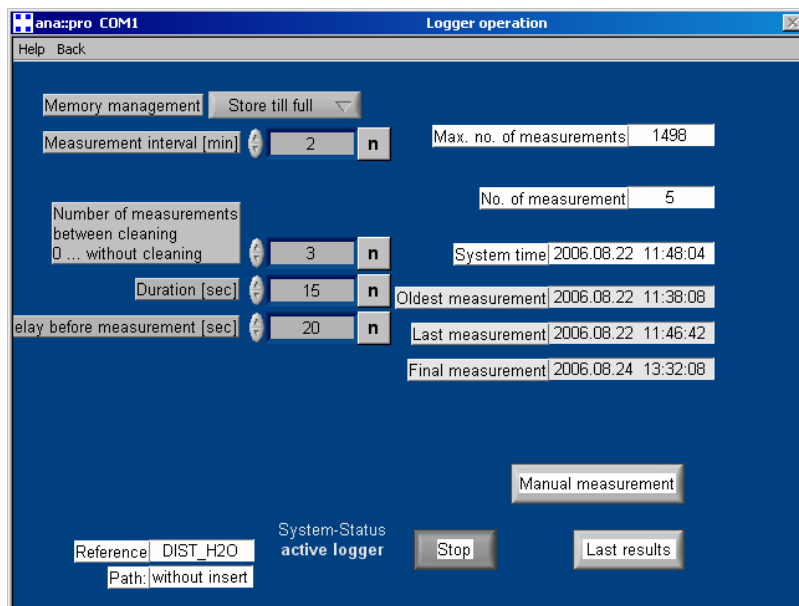
Figure 5.5: Screenshot of the logger operation window while measurements are running.

- *Oldest Measurement* - time when first reading of ongoing logger mode measurement series was stored

- *Last measurement* – time when most recent reading was stored

- *Final measurement* - when the *Store till full* or *Stop Time* is selected, this indicates the time of the last measurement that will be stored. When *Circular* is selected, the time of the first measurement that will overwrite an old reading is displayed.

A mouse click on the *Manual measurement* button will trigger an immediate measurement to be made, there will be no waiting for the current interval between measurements to pass. The reading is stored in the probe in the same file as the other results and the set interval will not be affected, meaning that the manual measurement will take place in addition to, and not in place of the next planned automatic measurement. For example; If a 10-minute interval has been set and the most recent measurement took place at 14:00 hours while a manual measurement is taken at 14:05 hours, the next measurement will still follow at 14:10 hours.

Please note: If it was not possible to carry out a measurement at the set interval – for example at 14:20 hours due to power failure at 14:12 hours - the measuring process will be started immediately when the problem has been removed - e.g. power is back on at 14:35 hours -. The time of the following measurement will now be calculated based on the time when measuring started again - e.g. next measurement at 14:45 hours.

By clicking on the *Last results*, the fingerprint of the latest measurement (or, if the latter has been de-activated, the parameters including quality features), the time of measuring, the probe status and some additional information will be displayed. This will not interrupt the Logger operation. In the window that opens, the *Read result* button can be used to transfer the results from the s::can™ spectrometer probe to the controller. A selection list *Result-Index* is also available in this window. This is set to the most recent logged reading when the window opens, but by reducing its number by one, the result measured before the last can be queried.

After returning to the *Logger operation* window by clicking on *Back* and closing ana::pro by clicking on *Exit*, you can disconnect the controller and the s::can™ spectrometer probe will continue to operate on its own (provided that the power supply is not disconnected). **In the event that the power supply is interrupted, the probe will continue to work in logger mode once the power is back on – saved results will not be lost!**

### 5.4.2 Connecting to a probe running in logger mode / Stopping logger mode

If you enter ana::pro with a spectro::lyser that is running in logger mode attached, you will automatically see the logger mode measuring screen once you have identified yourself.
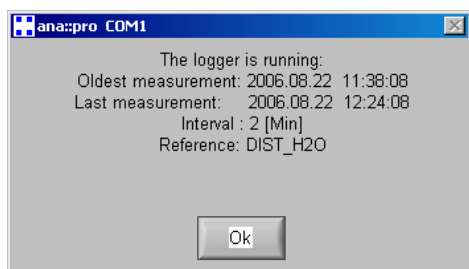
If you enter ongoing logger operations via *Logger* and *Operation* from the main menu, you will be informed of the actual status. A measurement series may be underway and a number of readings may be saved in the probe, or a series may have stopped and the most recent readings may be available for output, or no readings may be available.

Figure 5.6: User message when logger mode is running

If a measurement series is underway, you can stop logger operations by a single mouse-click on the *Stop*

button (figure 5.5). A user message will offer to transfer the data stored on the probe to the controller; to do so, confirm by clicking on the *Yes* button.
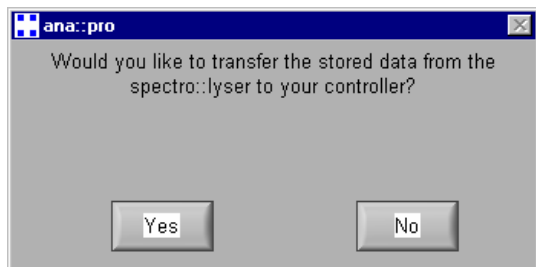
If the measurement series was stopped prior to establishing the connection between controller and spectro::lyser and readings are available on the probe, transfer can be started by clicking on *Data transfer*.

Figure 5.7: User message concerning data transfer from probe to controller
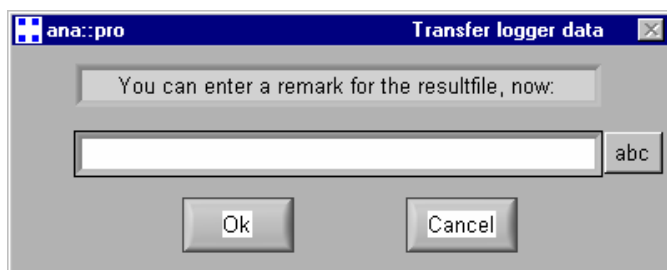
In an additional dialogue window, comments may be entered and will be saved along with the readings after confirmation by a click on *Ok*.

Figure 5.8: Dialogue window for entry of comment

A user message displays the progress of the data transfer. Another message will inform you about the file name and the path for saving (C:\ s::canV5.0 \ Results \ s::canpoint \ Logger \ YYMMDD-1). A dialogue window will pop up, offering you to view the data that have just been saved; the process of data analysis pertaining to data from logger mode operation is described in greater detail below (*Logger* / *Data analysis*).
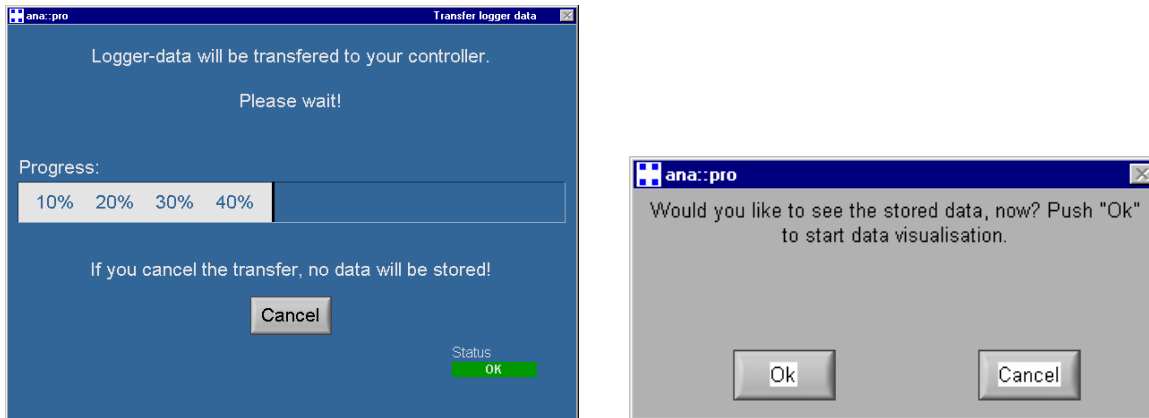
Figure 5.9:   User message concerning progress of data transfer (left) and dialogue window after successful data transfer to controller (right)

By clicking on the _Data transfer_ button in the measuring screen of the logger mode, readings stored on the probe can also be copied onto the controller later, as long as they are not deleted from the probe.

Before restarting logger operation, or before changing to a different measuring mode, all readings stored on the probe must be deleted. To do so, confirm the process in the dialogue windows that appears after you have clicked on the _Start_ button in the measuring screen or the menu item _Back_ (see [_Figure 5.10_]).
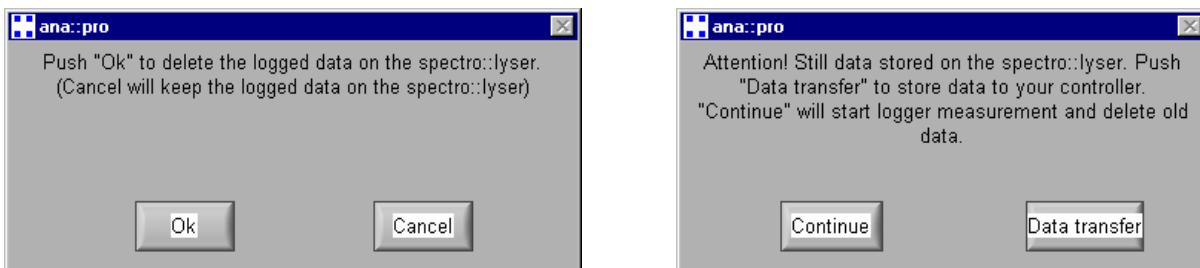
Figure 5.10: Dialogue windows when terminating (Back) or re-starting (Start) logger operations

5.4.3 Analysis of data from logger mode after transfer to controller

By selecting _Logger / Data visualisation..._ under the menu item _Mode_ in the main menu, you will get to the dialogue window _offline settings_. By clicking on the _select results..._ button, the window _available logger data_ will open, where all data sets transferred from the probe to the controller so far are listed. This window display the period during which the data were recorded (_from:_, _till:_) as well as any comment that may have been added while saving the data (_remark:_, see [_Figure 5.8_]).
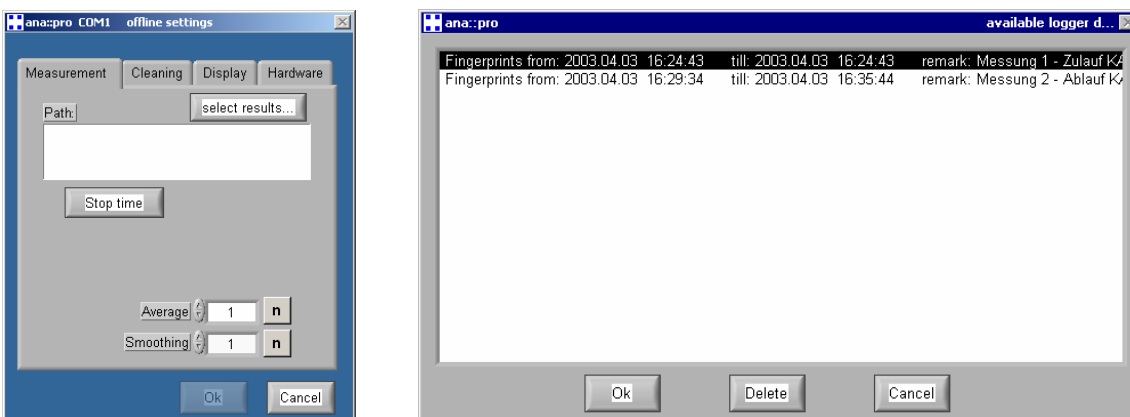
Figure 5.11: Dialogue window for the selection of data from logger mode for data analysis

Please note: Logger files must be in their original state (path, file name and content!) in order to be displayed in this window. For this reason, tampering with the subdirectory C:\ s-canV5.0 \ Results \ scanpoint \ Logger \ YYMMDD-1 may lead to the faulty execution of *Logger / Data visualisation...*.

After selection of a data set, you will be able to visualise and analyse data using all the functions as described in section 5.4 of the s::can™ manual ana::lyte and in section [5.6] of this manual.

5.5   Manual Measurement Mode

The *Manual* operating mode serves to trigger single measurements manually. Recommended applications are e.g. laboratory tests or basic tests using mobile measuring systems.

A measurement is triggered by pressing the *Start*: Clicking on it will immediately trigger off a measuring process – the button will disappear while the measurements are taken and re-appear when the process has been completed. While in manual mode, the menu item *Settings* allows the setting of *data reduction* and *smoothing* (register card *Measurement*), the configuration of the cleaning settings (*Cleaning*) and changing of the display- and Hardware settings (register card *Display* or *Hardware*, respectively). For details on these settings, please refer to section [5.6] of this manual. Visualisation of results as well as other functions work identical to those in the automatic mode, for details please see section [5.6] of the manual.

5.6   Mode Automatic

The mode for timer controlled measurements, the automatic mode, can be accessed by a single mouse-click on the entry *Automatic...* under the *Mode* menu item in the main menu, which will cause ana::pro to open the measuring screen. The following menu items will be available to the "Administrator" level whereas the functions framed in bold red will be accessible to a "User".

The *Automatic...* operating mode is largely identical with the fully automatic measuring programme in ana::lyte (see s::can™ manual ana::lyte – section 5.4 through to 5.10), which is why this section will be limited to indicating the differences.
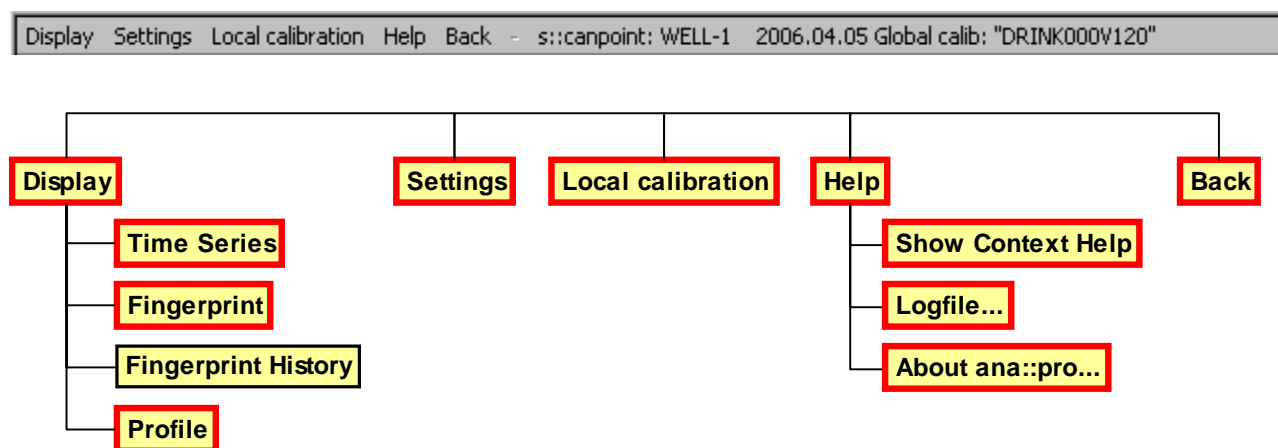

Figure 5.12: Measurement menu, Automatic operating mode

5.6.1 Display

When using ana::pro additional visualisation options will be available to you, thus allowing for a detailed examination of readings. The menu item _Display_ is used to switch from one screen display to the other. In addition to the options available in ana::lyte (_Time Series_ and _Fingerprint)_ the menu items _Fingerprint History_ and _Profile_ can be found here.

5.6.2 Display \ Time Series

In the _Time Series_ and _Profile_ screen displays the button _Clear display_ is available in the lower left-hand side of the screen. If you click on it – and confirm the following user message by clicking on _Yes_ – the current diagram will be deleted. However, this only applies to the temporary display of readings on screen, no stored data will be deleted!
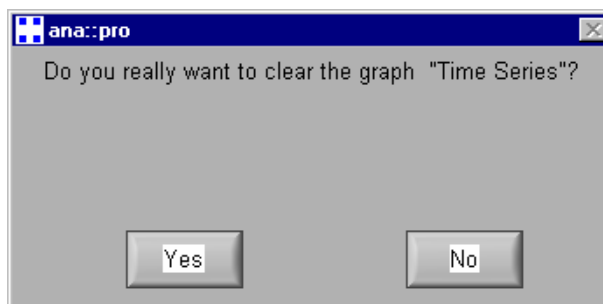
Figure 5.13: User message after clicking on Clear display

If the diagram display is not deleted via the _Clear display_ button and measurement mode is always closed via _Back_ with the _Save file_ option (see section [5.3]), the content of the diagram will continue to exist until

- you close ana::pro via the _Exit_ entry in the main menu or
- you change the s::canpoint (see s::can™ manual ana::lyte – chapter 6.4.10) or
- until the maximum RAM capacity has been exhausted (after about 50,000 measurements) or
- you push the button _Clear display_.

In this way, you can perform a visual comparison of subsequent series of measurements by starting measurements in sequence, even though the readings of each subsequent measuring series are stored in different files. The parameter names and units should not be changed amongst measurement series when such a comparison is to be performed.

Please note: The maximum RAM capacity can be set in the file _ana-pro.ini_, which is located in the same folder as ana-pro.exe (see section [4.1]). The default setting for PC use is _MaxMem_=40 (about 50.000 readings) and for con::stat _MaxMem_=30 (about 40.000 readings).

5.6.3 Display \ Fingerprint and delta spectrometry

The entry _Fingerprint_ in the _Display_ menu item will enable you to observe the absorbance spectrum of the current measurement. Additionally, the _Remember_ button available in ana::pro makes it possible to represent differential spectra: A mouse-click on the _Remember_ button will trigger the use of the actual spectrum as the basis for a comparative reading with all following measurements.
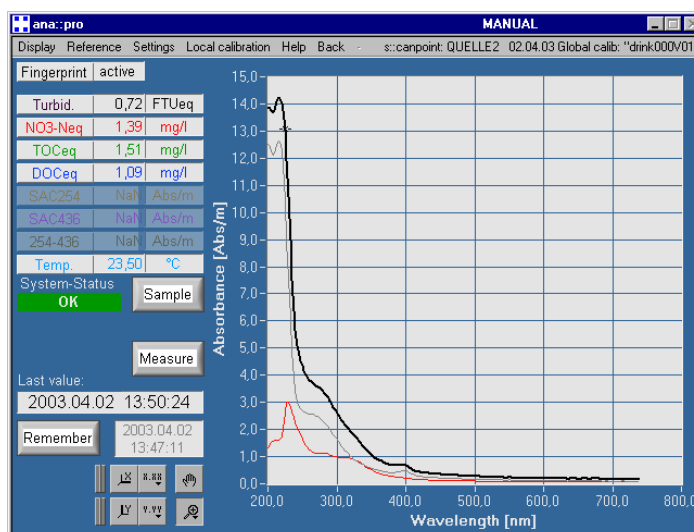
Figure 5.14: Measuring screen - Display Fingerprint (differential spectrometry)

By clicking on *Remember*, the actual fingerprint will be represented in light grey and will remain visible also when newer measurement results become available. The latest spectrum will be displayed in black, and the difference between the remembered spectrum and the actual one (the differential spectrum) will be displayed in red. The red differential spectrum is calculated by subtracting the grey fingerprint stored by clicking on *Remember* from the respective current black fingerprint. This will help you to easily observe relative changes in your measurement medium at any given time.

To the right of the *Remember* button, the date and time corresponding with the remembered fingerprint are displayed (see [*Figure 5.14*]).

5.6.4 Display \ Fingerprint History

Fingerprint History allows the displaying of the most recent absorbance spectra measured (up to a maximum

of 20). This enables you to observe qualitative changes in the medium over the entire wavelength range available. The age of the spectra is colour coded, as indicated by the legend on the right hand side of the screen.

The selection list *No. FP:* enables you to select the number of absorbance spectra that is simultaneously displayed in the graph.

The *Off-axis angle* sliding control in the left-hand lower corner can be used to control the parallel shifting with which the fingerprints are displayed with respect to each other.
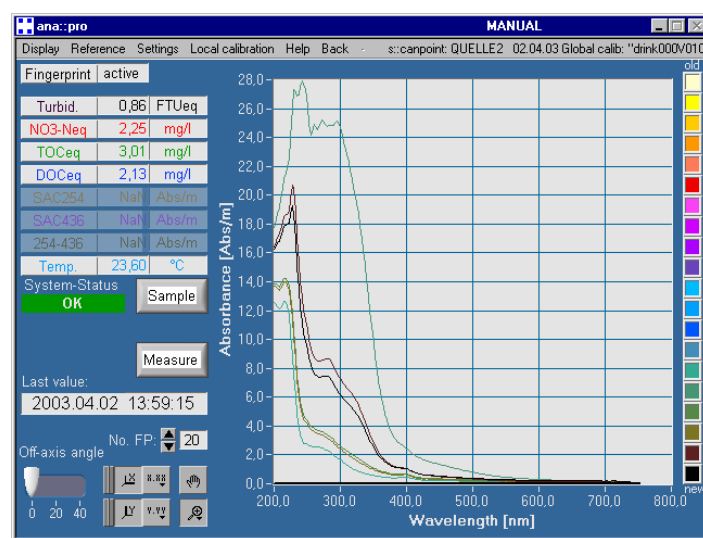
Figure 5.15: Measuring screen – Display Fingerprint History

5.6.5 Display \ Profile

As soon as a non-spectral parameter (e.g. pressure) has been activated, the option *Profile* will be available in the *Display* menu. This display option will represent the parameters measured as they relate to the non-spectral parameter, not as a time series. This way, changes in the water quality in ground water measuring points may e.g. be observed in relation to depth (pressure).

Please note: If more than one non-spectral parameter has been activated, the top non-spectral parameter on the list of parameters will be the y-axis in the *Profile* item of *Display*.
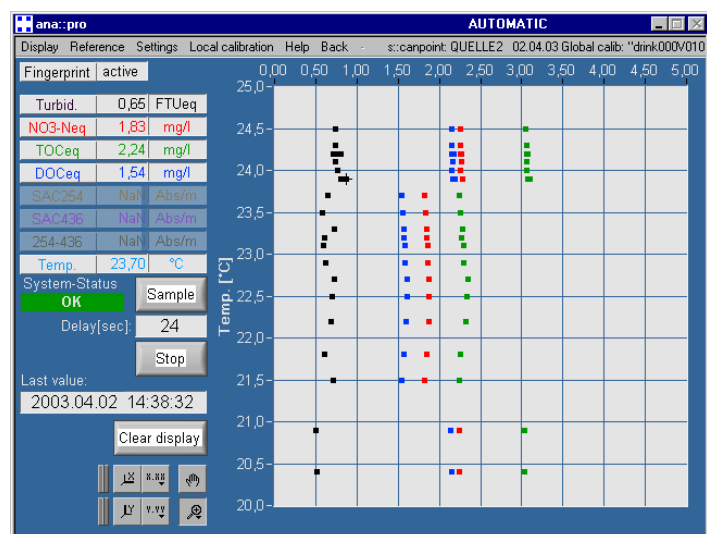
Figure 5.16: Measuring screen - Display Profile

5.6.6 Settings

In contrast to the ana::lyte measuring programme, the start and ending of a timer-controlled measurement series in ana::pro can either be triggered manually or pre-defined via the menu item *Settings / Measurement* in *Automatic Mode*.
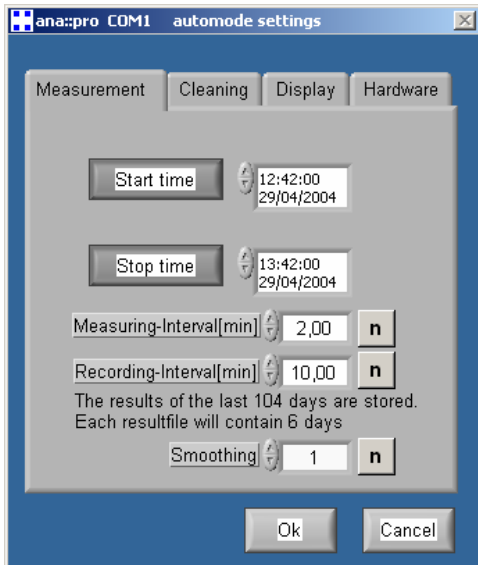
To start a measurement series you can either click on the *Start* button in the measuring screen or determine a starting time via the menu item *Settings* in the *Measurement* dialogue window by clicking on the *Start time* button. A single mouse-click on *Start time* will cue an input field where the desired time is entered in the format hh:mm:ss dd/mm/yyyy. To do so, you can use the respective arrows or your keyboard or the *abc* button. The finishing time of the measurement series can be determined via the *Stop time* button in the same manner. As long as the point of time for start and ending has not yet arrived, it can still be changed. Ongoing timer-controlled measurement series can be extended that way. When clicking on the *Start* button on the measuring screen, the actual starting time will be displayed in the *Settings* and can no longer be changed.

Figure 5.17: Dialogue window Automode settings.

Please note: If you enter a finishing time that is earlier than the starting time, the *Ok* button will vanish so that meaningless settings will be avoided.

Please note: For all other settings under the *Settings / Measurement* menu items as well as settings concerning *Cleaning*, *Display* and *Hardware* please refer to the s::can™ manual ana::lyte – section 5.6.1 through 5.6.4.

Please note: If the saving interval set is longer than the measuring interval, a new saving interval will become effective as from the confirmation of the user message (see [*Figure 5.13*]) i.e. the measurement following the mouse-click on *Yes* will be first in a new saving interval.

5.6.7 Local Calibration

Local calibration can be cued via the *Local calibration* menu item directly on the measuring screen or via the entry *Local Calibration* under *Parameter* in the main menu.

Please note: For a detailed description of local calibrations please refer to the s::can™ manual ana::lyte – section 5.7 and 5.8 (Local calibration).

Other than in ana::lyte, you have an additional option of using non-linear calibration functions in ana::pro. However, this will only be possible if you start the calibration of a parameter via the *Manual* button. The fully automatic process (*Auto*) will always use linear calibration only.

Please note: Using non-linear calibration functions will only make sense in exceptional cases, which is why s::can™ recommends to verify non-linear calibration with historical readings (mode offline) before applying the local calibration in on-line mode.

When selecting *non linear* in the list *Calibration type* the desired order of a calibration polynome can be entered in the input box *Polynomialorder* by using the arrows or keyboard. The number of available samples must be taken into account when making the selection: no algorithm will be in a position to turn e.g. two points into a well-defined quadratic equation! For this reason the number of calibration points must always exceed the power of the equation. If this is not the case, a user message will indicate this to you, and you either have to increase the number of samples or reduce the order of the calibration function. The remaining steps are identical with the procedure described in the s::can™ manual ana::lyte (section 5.7).

5.6.8 Help

The menu items *Show Context Help*, *Logfile...* and *About ana::pro...* are described in the s::can™ manual ana::lyte – section 5.9. The entry *advanced-mode...* is not available in ana::pro because all the settings described under that heading in ana::lyte are part of the ana::pro main menu.

5.7   Referencing Mode

The entry *Reference* under the menu item *Mode* will enable you to select a stored reference (*Select...*) or carry out a new reference measurement (*Replace....*).

5.7.1 Reference \ Select…

If you click on *Select...* a dialogue window will pop up, offering a list of currently stored reference measurements including their names and dates. For normal measurements without a shortening of the measuring path (configuration *without insert*) a maximum of four different reference measurements can be stored. The reference *DIST_H2O* should always be on 3rd position (Index=2).
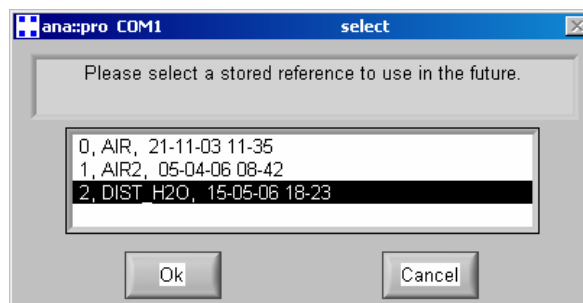
Figure 5.18: Dialogue window: Selection of reference (Select...)

Please note: The reference selected (usually DIST_H2O) will remain the s::can™ spectrometer probe setting until a different reference is chosen via *Select...*. Closing and restarting ana::pro or the controller will not affect this setting. The actual reference set can always be displayed by selecting menu item *Help / About ana::pro*. If only one reference is available, ana::pro will automatically select it.

Please note: Separate reference measurements are required for operations involving shortened measuring paths or cuvettes. Depending on the current measuring path configuration (*with insert* or *cuvette*) the respective correct reference measurement will be selected automatically (see s::can™ manual ana::lyte, section 6.5.10 – Configuration…).

5.7.2 Reference \ Replace…
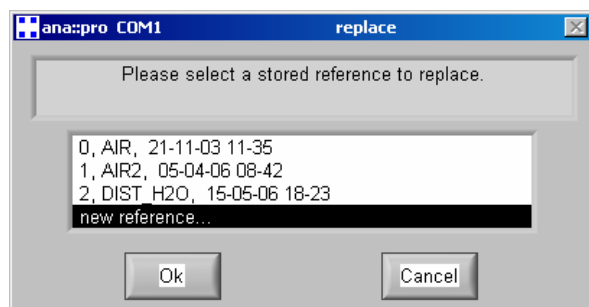
If you click on *Reference / Replace...* another dialogue window will pop up. In this window you can select an existing reference measurement to either delete it (by clicking on the *Delete* button) or re-measure it (*Ok*). At the lower end of the list, the entry *new reference...* will enable you to enter a reference measurement with a new name. The name can be input via a dialogue window.

Figure 5.19: Dialogue window: Replacement of reference (Replace...)

After confirming by clicking on the *Ok* button, the reference measurement will start automatically; a mouse-click on the *Cancel* button will stop the reference measurement.

Poor referencing (e.g. when the measuring windows have not been properly cleaned or there are traces of cleaning agents on the measuring windows) may reduce the quality of s::can™ spectrometer probe measurements.

For further details please refer to the s::can™ manual spectrometer probe.

5.8   Offline Mode

The operating mode *Offline* makes it possible to read in and analyse saved absorbance spectra (fingerprints). This opens up, amongst others, the following important possibilities:

- With the help of the graphical functions in ana::pro (zoom, scroll etc.) **striking features of absorbance spectra or developments over time** can be analysed in a better way than with common spreadsheet programmes. Reading in very large amounts of data is no problem, either.

- **Parameters** de-activated at the time of measuring or not yet determined **can be calculated retro-spectively** from historical result files (fingerprints) – e.g. alarm parameters.

- **Parameter values** can also be **calculated retrospectively using current local calibrations**.

- **Parameter values can be calculated once more on the basis of different global calibrations** (e.g. in case if operating errors).

- The **data quantities** contained in the result files can be **reduced or smoothed by the calculation of mean values**.

The Offline operating mode can be cued in the main menu as an entry in the menu item Mode, no matter if an s::can™ probe is linked with the computer or not (in the latter case, the only available entries will be Logger, Automatic and Offline). Via the entry Automatic s::can™ probes (e.g. oxi::lyser, ammo::lyser) can be operated even if no s::can™ spectrometer probe is linked with the controller.
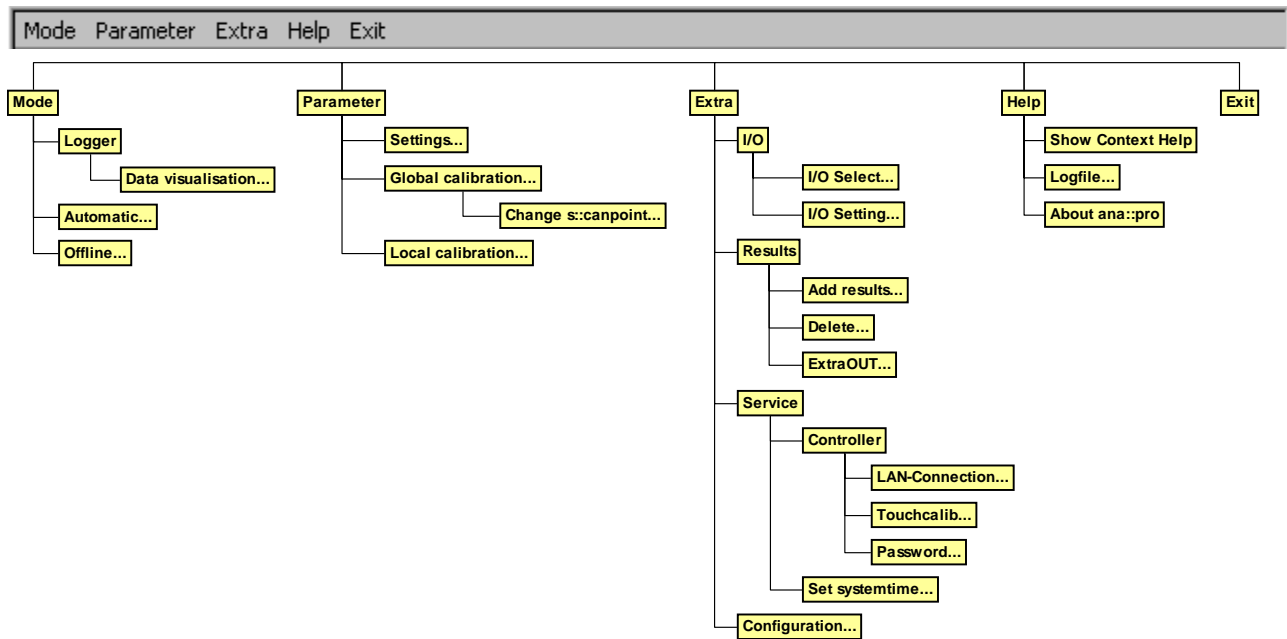
Figure 5.20: Menu structure of ana::pro in offline mode.

If no s::can™ spectrometer probe is linked with the controller, the first step is to select the desired serial number (see section [4.1.2]).

After selecting the entry *Offline...* in menu *Mode* a dialogue window *offline settings* will pop up. A mouse-click on *select FP-file...* will cue a further dialogue window showing you a selection of existing result files. This must be a fingerprint file (*.fp) in its original state. For this reason, tampering with the result file may lead to the faulty execution of *Offline* data analysis (see s::can™ manual ana::lyte - section 7.3 – The Content of Result Files). After confirming the selection by clicking on the *Open* button you will return to the dialogue window *offline settings* where the chosen result file including its path will be displayed in the text box *Path*.

Pushing the button *Stop time* enables you to set a measuring time at which the reading in of the result file will be stopped. If no *Stop time* is defined, the complete result file will be read in.

Please note: The *Stop time* refers to the time stamp of the measurement, which means the date and time stored in the result file.

Any value >1 entered via *Data reduction* will lead to a reduction in the number of readings shown and saved in offline data analysis (e.g. *Data reduction* = 3, each third value will be displayed and saved). The field *Smoothing* enables you to perform a moving average to your measurements (see s::can™ manual ana::lyte, section 5.6.1).

Clicking on the *Ok* button will take you back to the measuring screen in offline data analysis, *Cancel* will take you back to the main menu.
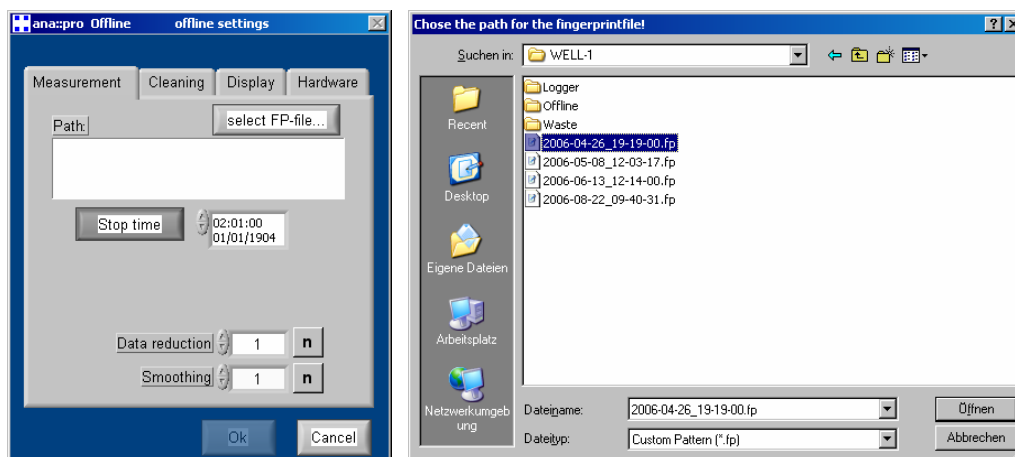
Figure 5.21: Dialogue window for selection of fingerprint files in offline mode

Please note: When reading in several result files, each must be selected separately and read in separately. Only when reading in of a file is complete, should the next result file be selected via *Settings*. For easier handling, the single result files can be transformed into one file using the function Extra / Results / Add results… (see s::can™ manual ana::lyte – section 6.5.3).

Please note: Result files from older versions of ana::pro (Para_FP_X.asw) can also be read in with ana::pro version 5.0. To do this, the file extension has to be changed from "asw" to "fp" first. In case of more files you can use the helpful MS-DOS command "rename *.asw to *.fp". All result files will be checked for the decimal separator symbol used on the relevant controller. Also the serial number of the probe will be checked.

Use of the measuring screen in offline mode is exactly the same as in *Automatic...* mode, the menu items are largely identical (see section [5.6]). The most important difference is found in the menu item *Settings*. It will take you back to the dialogue window *offline settings.* This is where you can change *Data reduction* and *Smoothing* while reading in data. Settings regarding the measuring process are deactivated in offline mode.

Reading in the absorbance spectra can be started by clicking on the *Start* button in the measuring screen and terminated or interrupted by clicking on the *Stop* button. A slider control below the *System-Status* display enables you to modify the speed of readings in the values.

Once the last fingerprint in the selected file has been reached, you may read in the same file once again by clicking on the *Start* button again or open another result file via *Settings*.

Please note: The offline readings will be stored in a single result file until you close the *Offline* operating mode via the menu item *Back*. The times saved in the result files are the times pertaining to the original file, not the times when the data were read in. The parameters of the new result files may contain different values in comparison with the original values due to different calibrations being activated during reading in, in offline mode. Likewise, when another mode of displaying the fingerprint is selected, the new fingerprint file created in offline mode will contain values different from those in the original file (see s::can manual ana::lyte section 6.4.5).

5.9   External Mode

If the s::can™ spectrometer probe is integrated into a complex measuring system, measuring can be started by means of an external trigger. This is e.g. the case with the station software moni::tool. For further information in this respect, please refer to the relevant documentations (s::can™ manual moni::tool).

The channel where the spectro::lyser is connected that should be activated by this external trigger can be set in the file "ana-pro.ini" over the entry: Ext-Trigger=… This file can be found in the same sub-directory as ana-pro.exe.

The following trigger values are possible (the channel where the spectro::lyser can be located):

[Execute]
Ext-Trigger=0:   no external trigger

[Execute]
Ext-Trigger=1:   external trigger channel 1 – operation only possible if probe's bus address = 1

[Execute]
Ext-Trigger=2:   external trigger channel 2 – operation only possible if probe's bus address = 2
                    (etc. until 9).

When the selected spectrometer probe is not found, the user message „…missing address…" will appear and ana::pro will not be able to execute the operation. Ana::pro will close and the appropriate probe must be connected.

Please note: The probe's bus address can be changed, but only via the ana::pro menu item *Extra \ Configuration* in user mode "Service".

5.9.1   Starting ana::pro in mode External

If an external trigger channel between 1 and 9 has been activated, automatic log-in will take place after connection with the s::can™ spectrometer probe has been established, followed by booting to a waiting position for link-up. The waiting position can only be interrupted by clicking on the *Cancel* button.
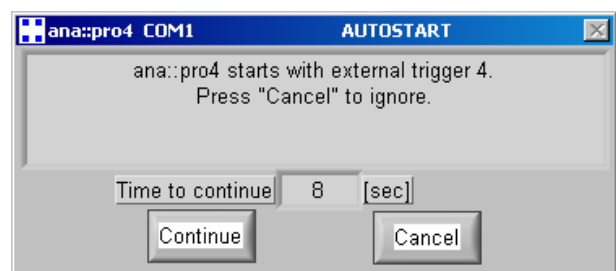
Figure 5.22: Dialogue window when starting ana::pro in external trigger mode

While ana::pro is in waiting position of the mode external, a TCP/IP connection can be established over another application. Ana::pro will remain in waiting position until a TCP/IP connection on the external trigger channel will be opened by the external application. The appropriate TCP/IP-port can be calculated as follows: Port = 6340 + external trigger channel (i.e. in case of ext. trigger channel = 1 the used port = 6341).

Figure 5.23: The waiting position and the trigger channel will be displayed in the task line of ana::pro

In case of an error during establishing of the connection, FAILURE (MI011) will be reported and the waiting position will be closed. The waiting position can also be ended by pushing the button „Manuel". You will then continue into the normal Manual measuring mode of ana::pro. Access to the External mode can only be re-

established by closing and restarting ana::pro. The display of the task line changes when selecting the manual mode as shown in figure 5.24.
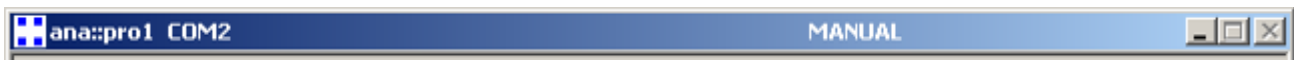
Figure 5.24: The manual measuring mode is displayed in the task line of ana::pro

If the TCP/IP-connection via the selected port is established successfully, the waiting position will also be left, but the probe remains in external measuring mode (figure 5.25).

Figure 5.25: Task line of ana::pro after successful start by external trigger channel 1

If the TCP/IP Port is closed by the external application, or if the TCP/IP connection is lost due to another cause, the mode External stops automatically and ana::pro will be closed.

5.9.2 Commands Available in External mode

The following commands can be transmitted by the external application:

Command: „01"   Starts a measurement and when finished the result will be sent back. If the duration of the measurement is longer then 51 seconds (incl. the activated cleaning and waiting time in ana::pro), no answer will be sent. If a longer measuring duration is required, due to cleaning, it is recommended to deactivate the cleaning in ana::pro and trigger the cleaning by the external application.

The answer (i.e. the measuring result) will be transmitted in the following form:

Index	name	type	range	remark
0	time stamp of measurement	char [14]	e.g.: "20041018220015"	format %Y%m%d%H%M%S, Y…year, m…month, d…day, H…hour, M…minute, S…sec.
1	separator	TAB		
2	probe ID	char [8]	e.g.: "00200415"	serial number
3	separator	TAB		
4	probe state	char	0,3,4,5	0…o.k., 3…Probe Misuse, 4…Warning, 5…Failure
5	parameter[8]			parameter1 till 8 (see below)
6	fingerprint[x]			all FP values (see below)
7	end sign	LF		line feed

The above named index 5 (parameter) is split up as follows:

index	name	type	range	remark
0	separator	TAB		
1	specification	char [n]	e.g.: NO3N [mg/l]	parameter [unit]
2	separator	TAB		
3	value	char [n]	e.g.: 12,345	
4	separator	TAB		
5	QM quality mark	char	10, 8, 0	10 … o.k. 8 … warning 0 … failure (value=NaN).

The above named index 6 (fingerprint) is split up as follows:

index	name	type	range	remark
0	separator	TAB		
1	wavelength		e.g.: 230,0	unit [nm]
2	separator	TAB		
3	value		x.xxxx	unit [abs/m]

Command: „03"   Switches on the cleaning (i.e. the cleaning valve is open). No answer will be sent back.

Command: „04"   Switches off the cleaning (i.e. the cleaning valve is closed). No answer will be sent back.

5.10 Parameter

The menu item *Parameter* in the main menu will give you several entries which have been described in detail in the s::can™ manual ana::lyte: *Settings...* (see section 6.4.1 – Settings), *Local calibration...* (see section 5.7 – Local Calibration) and *Global calibration* (see section 6.4.10 – Global Calibration / change s::canpoint).

5.11 Extra

Please note: The entries under the menu item *Extra* in the main menu (I/O, Results, Service und Configuration...) have been described in the s::can™ manual ana::lyte (section 6.5 – Extras).

One additional features in ana::pro submenu *Result* is the entry *ExtraOUT...* and another feature in submenu *Service / Controller* the entry *LAN-Connection*. Both are described below:

5.11.1 ExtraOUT

The entry *ExtraOUT...* makes it possible to transfer the actual reading to a file or to a COM-port. The format can be defined freely. Such flexibility can be very helpful in communication with other systems such as a database or central data capturing.

Please note: It is always the most recent reading for each parameter that is saved in the extra output file. The old readings will be overwritten by new readings. Readings are updated according to the recording interval set.

The dialogue window *Configuration extra outputfile* [*Figure 5.26*] will enable you to affect the appropriate settings.

In the selection list in the upper left hand corner, the nature of the output signal is selected (text file via *extra resultfile* or COM-Port by selecting *extra COM*). In the line below this selection list, you can enter the location where the file should be stored (*Target path*). The location can be entered directly or selected using the browser function, which is activated by clicking on the Folder symbol besides *Target Path*. When *etxra COM* is selected, an additional selection menu will become available, where the number of the COM-port can be selected.

After the nature of the output has been selected, the transferred data can be defined. The following can be set:

- Using *Delimiter* the separator used to separate results from different parameters into single columns can be defined.

- Using *Date/Timeformat* the format of the time stamp is stored with each measurement can be defined.

- When *System-Status* is activated, by checking the box to the right of this text, the current system status will be stored with every measurement
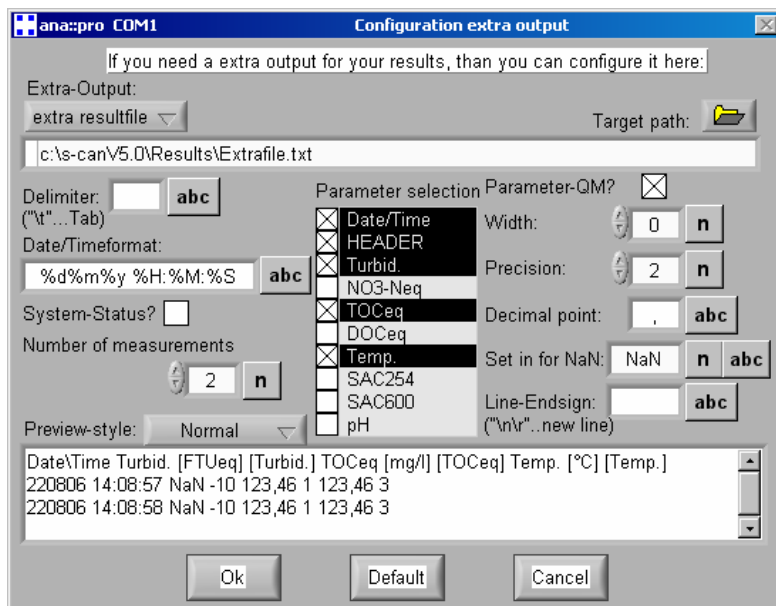
Figure 5.26: Dialogue window configuration of extra output file

- Over the entry *Number of measurements* it is defined how many measurement values are transferred, e.g. whether every single measurement is stored and transferred, or whether multiple measurements are collected before they are transferred.

- When the quality indicator (*Parameter-QM*) for each parameter should also be stored in the file or transferred over the COM-port, the box to the right of this text should be checked.

- In the field *Width* the length of the string that is stored can be defined. Width=0 indicates a string as short as possible. For other possibilities, please see the example below.

Width	Precision	Result	String
5	1	12,345678	012,3
5	1	1234,5678	1234,6

Besides *Precision* it is also possible to indicate the desired number of decimals to be used, and the definition of the decimal separator is possible using the entry *Decimal point*.

The function *Set in for NaN* allows the definition of the string that will be used in case a measurement value if NaN (Not a Number). Finally, under *Line-Endsign* one can define the symbol that will be used to signal the end of the text line.

At the bottom of the window, a preview of the output is available, and *Preview-style* allows the setting of how it is displayed. When *Ok* is pressed, the settings are stored and one returns to the main menu of ana::pro, using *Default* the values pre-set by s::can™ are selected.

5.11.2 LAN-Connection

Using the menu item *Extra / Service / Controller / LAN-Connection* the name of the controller (computer name) and the IP Address of the controller can be changed. The default values for a con::stat with product number D-313 are: computer name con-stat and IP address 192.168.0.12).

This change in the computer name can be set in the register tab *Computername* (figure 5.27) and must be confirmed with the button *Write*. _Under the tab *IP-Settings* the IP-Address can be set.
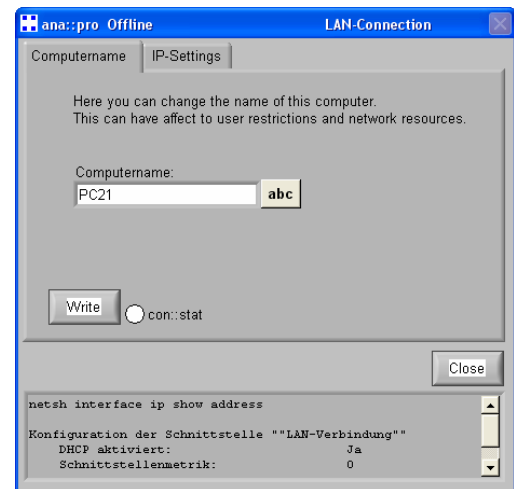
Figure 5.27: Dialogue window LAN-Connection

After selecting this menu item, the corresponding window will be displayed with a brief delay, as the computer will search for the current IP-address. When found, it will be displayed in the upper right hand corner of the screen. The default setting an IP address for Ethernet RJ45 (Index=0) connection, and an IP address for a GSM Interface (Index=1) will be allocated.

In the middle of the window that opens after selecting *IP-Settings* the new address can be entered. To store these values on the controller, they must be confirmed over the button *Write*. When the controller is a con::stat of the type D-313, the checkbox *con-stat* has to be checked before the new values are written to the controller.

In case a DHCP Servers is used in the Local Area Network, the address can also be acquired automatically. When this is required, the checkbox *Get IP-address automatically* must be checked. In this case also, the new settings must be written to the controller by confirming them over the button *Write*.
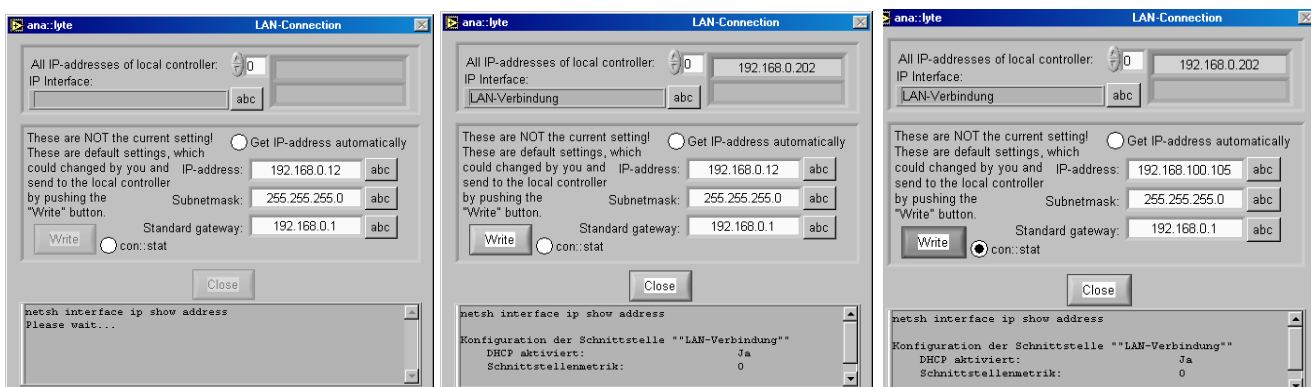
Figure 5.28: Dialogue window after selecting menu item (left) after successful transfer of actual IP settings (middle) and after modification of IP settings (right)

In the lower part of the dialogue window *LAN connection* the commands and the corresponding answers from the s::can™ measuring system are displayed. For further details, please refer to the s::can™ manual con::stat.

6   ana::pro - Results

In terms of name, content, size and format of the result files (fingerprint and parameter files) correspond to those stored by the ana::lyte measuring programme. Please refer to the s::can™ manual ana::lyte – section 7 (ana::lyte – Results) for further information. The present manual will only contain additional information.

6.1   The Result Filing System

While measuring is underway, all results will be temporarily saved in the controller in the directory C:\s-canV5.0\Results\scanpoint. When the current measuring process is terminated via the menu item *Back* there are two options for proceeding further with the saved results.

When choosing the option ***Without file*** the files will be **deleted**. When choosing the option ***Save file*** the result files will be **stored**.

6.2   Logger Files

Logger files will first be saved on the spectrometer probe and only stored in the directory C:\s-canV5.0\Results\scanpoint\Logger\YYMMDD-X on the controller after data transfer (see section [5.3]). If several such transfer processes take place within one day, the continuous number at the end of the directory names will always increase. Logger files have the same format as fingerprint result files, or as parameter result files when only parameters are logged. When the function *Logger / Data visualisation* is executed, the result files will be saved in the same place as results from other measuring modes (provided that the function *Back* is closed by clicking on the option *Save file*).

6.3   Log Files

All the operating steps taken by the user and the resulting actions of the operating software are recorded in a separate log file ("ana-xxx.log") so that the causes of errors or operating problems as well as solutions can be identified if and when required. This file is saved in the subfolder C:\s-canV5.0\Results\Selftest\Log. It is a text file and therefore can to be opened with any editor.

7 Error Messages

The table below contains the most frequent error messages (E-Codes) you may be faced with as a user of s::can™ measuring systems. Advanced users will be able to solve most problems with help of this list. Moreover, please check the user messages you may get from your operating software, and use *Show Context Help...* (please refer to s::can™ manual ana::lyte). If you are unable to solve the problem please contact your s::can™ sales partner who will be glad to offer support.

Please note: In the table below „probe" refer to all s::can™ spectrometer probes. If information only refers to specific probe's types (e.g. spectro::lyser™, G-Serie) it is mentioned separately.

E-Code (type)	Error messages	Cause / What to do
IN		
IN000 (Error)	The current path is not vaild. ana::pro VX.X cannot run until you change the entry "Targetpath=" in your c:\programme\s-can\ana-xxx.ini file.	Entry Target-Path in file ana-xxx.ini not valid (impossible to create path). max. folder depth=10!
IN 006 (Error)	No serialnumber, ana::xxx could not continue.	No serial number chosen in offline mode. Check serial number (see section [4.3]).
IN 006A (Error)	You select no correct serialnumber!	Wrong serial number (8 digits) chosen in offline mode. Select or create correct serial number to which software is licensed (see section [4.3]).
IN 007 IN 007A (Error)	ana::xxx Version X.X(Package ana::xxx +xxx) could not continue with this probe, caused of wrong application / config version (X.X.X). Please upgrate your probe!	Firmware of detected probe is too old or too new to work with installed version of ana-xxx. Update of probe's firmware necessary.
IN 008 (Error)	The spectro::lyser has no serialnumber, maybe caused of low internal battery-level. Choose the correct S/N of the spectro::lyser connected now. (Contact your s::can agent if the problem still occurs)	Unable to read correct serial number from probe (online mode). Maybe internal buffer battery empty.
IN 009 (Error)	Error occured while restoring / reading (no file) "Konfig1". Program ends automatically.	Unable to restore probe's serial number (online mode). Operation with this probe is not possible.
IN 011 (Error)	The current version (Version 5.3a) could not continue. The current filesystem (C:\s-can) has no valid version number (Version 4.0). Please save the old filesystem manually and push "Remove" to remove the old filesystem. Push "Exit" to stop.	The actual folder structure doesn't match with the installed version of ana-xxx. The quoted folder (D:\scan) has to be renamed (e.g. D:\scan2) or a copy has to be made. Afterwards push button *Remove* to delete the folder by ana::xxx and go on.
IN 013 (Error)	ana::xxx detect a wrong spectro::lyser(XXXXXXX), please contact s::can!	The used version of ana::xxx is not unlocked for operating the probe. Please contact your s::can™ sales partner to get the necessary release
IN 014 IN 015 (Error)	Password is invalid. After 5 bad logons, program ends.	Wrong password used during login. Use correct password for selected operator level. Select other operator level. Note upper case and lower case.

E-Code (type)	Error messages	Cause / What to do
IN 016 (Error)	It's not possible to read the waveleghts from the spectro::lyser. Please contact your s::can service. Ana::xxx could not continue.	Unable to read in wavelength array (online X-axis) from probe. Use other probe. Contact s::can™ sales partner.
IN 017 (Error)	It is not possible to read the configuration from the spectro::lyser. Push "From Backup" to restore settings from your local controller. Push "Cancel" to stop.	Unable to read in config. data from probe in online mode. Button *From Backup* reads in backup from controller; button *Default* (only for service) reads in default settings, button *Cancel* exits ana-xxx.
IN 018A (Warning)	Limited system selftest. Please use "save energy..." during reference.	Only for service: No energies are stored on probe. Only restricted selftest possible.
IN 019A (Warning)	It's recommended to make a new reference, cause of unknown exact optical limits! The current used optical limits will not show the real optical limits!	No boundary spectrum (maximum spectral measuring range) is stored on probe. The default values will be used (2,5 Abs for UV-Vis and 3 Abs for UV). Perform new reference measurement to calculate probe specific measuring range.
IN 019B (Warning)	The exact optical limits could not be determined (missing energy/noise values). The current used optical limits will not show the real optical limits!	Error occured while calculating boundary spectrum (commands are not working or factor in config2 is NaN or zero). The default values will be used (2,5 Abs for UV-Vis and 3 Abs for UV). Perform new reference measurement to calculate probe specific measuring range.
IN 020 (Warning)	Changing G.K.-Settings not possible. Referenz will be measured with the current G.K.-Settings. Please exit and try again, before start to measure a new referenz.	Only for service + spectro::lyser™: If G.K.-Settings cannot be switched to 20/5 flashes rule during start of reference measurement. Do not perform new reference measurement. Try to find reason for occurring problem.
IN 021 (Warning)	Restoring G.K.-Settings not possible. Please create a new s::canpoint with the original G.K "XXXXXXXXVXXX" to restore the settings.	Only for service + spectro::lyser™: If G.K.-Settings cannot be switched back after reference measurement. The global calibration REFERENZVXXX is still selected! Choose used G.K. manually. Try to find reason for occurring problem.
IN 022 (Warning)	Mode: Logger! Push "Exit" and use ana::pro to stop logger mode and save stored data from probe. Push "Stop Logger" to stop logger immediately and delete stored data from probe.	If probe in logger mode is operated with software ana::lyte. Button *Exit* stops ana::lyte, button *Stop Logger* stops logger mode and deletes stored data. See s::can™ manual ana::lyte section [4.6.1] – Connecting s::can™ spectrometer probe in logger mode.
IN 022 (Error)	ana::lyte could not continue with this probe, caused of wrong mode (logger).	If during warning IN022 button *Stop Logger* was used but conversion doesn't work. If also after repetition stopping of logger mode doesn't work, try to stop logger mode with the same version of ana::pro which was used for starting the logger mode.
IN 031 (Warning)	For using the restore-function all logged data on the spectro::lyser must be removed.	Restore not possible because logger mode is active. Button *Remove data* stops logger mode and deletes stored readings, button *Exit* stops ana-xxx.

E-Code (type)	Error messages	Cause / What to do
N 031A (Warning)	With G-Serie no restore possible. Program ends.	For s::can™ spectrometer probes of type G-Serie no restore is possible. Contact s::can™ sales partner.
IN 032 (Error)	Removing logged data not possible. The spectro::lyser stays in logger-mode! Restore not possible. Program ends.	Unable to stop logger mode for restore. Contact s::can™ sales partner.
IN 037 (Error)	Configuration "Cover" could not write to the spectro::lyser. Program ends.	Unable to write cover on spectro::lyser™ during restore. Repeat restore procedure. Contact s::can™ sales partner.
IN 038 (Error)	Configuration "Cofing2" could not write to the spectro::lyser. Program ends.	Unable to write config. 2 on spectro::lyser™ during restore. Repeat restore procedure. Restore nochmals ausführen. Contact s::can™ sales partner.
IN 050 (Error)	Following global calibration are invalid: xxxxxxxxxxx Please correct manually. Contact your s::can agent if the problem still occurs.	Check of global calibration recognized missing settings. Delete wrong global calibration from controller and copy from installation-CD.
IN 051 (Error)	Following s::canpoints are invalid: xxxxxxxxx Please correct manually. Contact your s::can agent if the problem still occurs.	Check of s::canpoint recognized missing settings. Delete wrong s::canpoint and create new one.
IN 053 (Error)	Error occured by creating new s::canpoint settings.	During creation / selection of s::canpoint (copying of file) an error occured or not valid global calibration was selected. Repeat procedure, maybe select other (valid) global calibration.
IN 054 (Error)	Error occured by storing s::canpoint-name.	Unable to write new s::canpoint in file or on probe successfully. Repeat procedure.
IN 055 (Error)	No s::canpoint selected, ana::xxx cannot continue!	No s::canpoint was selected. Select existing s::canpoint or create new s::canpoint. See s::can™ manual ana::lyte section [6.4.10] – Global calibration => change s::canpoint...
IN 056A (Error)	The s::canpoint is not valid (old version). Please choose another one and delete this s::canpoint.	Selected s::canpoint not compatible (wrong version of G.K. Vxxx). Delete s::canpoint and create once again with same global calibration.
IN 056B (Error)	The s::canpoint is not for using with UV-VIS detector. Please choose another one.	Selected s::canpoint not compatible with global calibration (wrong probe's type UV or UV-Vis). Create new s::canpoint with suited global calibration. (Global calibrations for UV-probes must have „UV" and for UV-Vis probes must not have „UV" in it's name).
IN 056C (Fehler)	You working with G-Serie. You can only create a new s::canpoint. Please select "Create new s::canpoint...".	If an existing s::canpoint is selected with a spectrometer probe of type G-Serie from file. This function is not supported. Create a new s::canpoint.
IN 057 (Error)	Error occurred while deleting s::canpoint. Please delete them manually. CODE: XXXX	Error occurred during deleting s::canpoint. Delete s::canpoint manually from controller (s-canV5.0 \ Settings \ Local). See s::can™ manual ana::lyte section [4.5] – The s::can™ directory structure.

E-Code (type)	Error messages	Cause / What to do
IN 058 (Error)	No global calibration stored on attached probe. Please download at least one global calibration to create a new s::canpoint.	No global calibration is stored on probe. Global calibrations have to be downloaded on probe. See s::can™ manual section [6.4.10] – Global calibration => change s::canpoint...
IN 060 (Error)	Invalid s::canpoint. You have to choose another one.	Actually used s::canpoint on probe is not ok. Create new s::canpoint. Maybe download newer global calibration on probe. See s::can™ manual section [6.4.10] – Global calibration => change s::canpoint...
IN 061 (Warning)	Calibration coefficients for "Trübe" => Calculation is now Global are missing.	Calibration data for local calibration of displayed parameter are not available. The parameter's calibration was switched to global. A local calibration has to be done again.
IN 062 (Error)	It's not possible to write the s::canpoint to the spectro::lyser. Choose another s::canpoint. Contact your s::can agent if the problem still occurs.	Unable to write s::canpoint on probe completely. Create a new s::canpoint or select an existing one. See s::can™ manual ana::lyte section [6.4.10] – Global calibration => change s::canpoint...
IN 063 (Warning)	Nitrat benötigte Anzahl Punkte wurde auf das Minimum von X(7v3) Punkten gesetzt (Der Minimumwert ist vom Detektortyp abhängig).	Message only for service, logbook entry in case of other user. Value in G.K. is lower than minimum value. Create and use new version of G.K.
IN 065 (Warning)	The s::canpoint XXXXXX was incomplete. Following settings was created with default values: ….	The displayed s::canpoint settings couldn't be read. A default value will be used. If any of these settings will be used please contakt your s::can™ sales partner.
IN 066 (Error)	Invalid Probe settings. Maybe no parameter active. Contact your s::can agent if the problem still occurs.	Probe's measuring programs couldn't be changed to new s::canpoint. To be able to make measurements select another s::canpoint or create a new one.
IN 067 (Error)	Invalid probe detected (serial number changed). ana::xxx can not continue. Push "Ok" to exit and restart.	The serial number of the used probe will be checked continuously. If the serial number transferred from the probe is different to those when starting ana::xxx this message appears. It is not allowed to change the probe during operation! Stop ana::xxx, connect new probe and start ana::xxx.
IN 070 (Error)	Local calibration of *PARANAME* impossible. Invalid database, you need at least 100 valid results.	If not enough useful results are available for local calibration of an alarm parameter. Not useful results are = NaN or if all results are equal. Use longer / better time series for calibration.
IN 071 (Warning)	All results will be used. Date/time of values in *.par files is not upward.	If timestamp of the read in file is not upward when local calibrating an alarm parameter manually. Can happen especially when using files generated in offline mode because file names are different to timestamps of measurement.

E-Code (type)	Error messages	Cause / What to do
IN 072 (Error)	There are no current alarm parameter in your result files. Please check your result files.	The parameter files used for calibration of alarm parameters don't contain results fort he active parameters in the used s::canpoint. Check used s::canpoint. Use original parameter files for local calibration.
IN 080 (Warning)	Adding result file has stopped. File XXXXXXXX.xxx has different file head (S/N, Parameter name).	Unable to perform Extras \ Results \ Add results… because result files have different headers. Check whether serial number, parameter name and separator are equal in all result files.
IN 090 (Warning)	Commando netsh is not possible on this system(OS). Changing the LAN-Connection settings will not be possible.	During first command of Extra \ Service \ Controller \ LAN-Connection... (netsh interface ip show address) an error occured. Modifications of the LAN settings are not possible. Use the surface supplied by the operation system to change the LAN settings of your controller (Settings LAN-connection) or contact your network administrator.
EP 100 (Fehler)	Kalib.db not initialized. Local calibration _Pname_ not possible.	Unable to initialize local calibration (kalib.db) on spectrometer probes of type G-Serie. Can only happen to probes with firmware V0.8.o or older. Repeat and maybe update the firmware.
IN 100 (Error)	No sampling data stored. Local calibration impossible!	File kalib.db is not readable or empty when performing a local calibration on spectro::lyser™. You have to take samples before calibration. Push button sample and take a sample. See s::can™ manual ana::lyte Kapitel [5.7] – Local calibration.
IN 101 (Error)	The file Kalib.db is invalid. The file will moved to Kalib1.db.	During local calibration or sampling with spectro::lyser™ the selected file or he file kalib.db, respectively is faulty (content not compatible, header not o.k.). Use original file, dont edit file kalib.db. Old file kalib.db will be renamed automatically. Create new file by pushing button _Sample_. See s::can™ manual ana::lyte section [5.7] – Local calibration.
IN 102 (Warning)	More than 500 samples stored! 500 samples will be used for calibration only.	If the selected file kalib.db for local calibration of spectro::lyser™ contains more than 500 samples only the first 500 will be used. Delete not used samples.
LG		
LG 001 (Error)	Invalid settings, no measurements possible. Please change s::canpoint or create a new one to repair the settings.	When starting the logger mode probe responses that no measurements are possible with actual settings. Select another s::canpoint or create a new one.
LG 006	Error occurred while setting the probe into logger-mode. Loggermode is not possible. (Contact your s::can agent if the problem still occurs).	Operating mode logger not possible on probe. Use another probe, contact s::can™ sales partner.

E-Code (type)	Error messages	Cause / What to do
LG 009 (Error)	Error occurred while setting the probe into normal-mode. The spectro::lyser stays in logger-mode! (Contact your s::can agent if the problem still occurs)	Normal mode cannot be set on probe. Contact s::can™ sales partner.
MI		
MI 001 (Warning)	Defective s::canpoint interferes parameters listed below ! Please create a new s::canpoint and mind your manual. If the problem still occurs contact your s::can agent.	Unable to calculate calcualtion parameter with loaded factors (global calibration). Create new s::canpoint, maybe seloect another global calibration.
MI 002A (Warning)	Choosing the reference automatically is not possible, because of wrong filename or missing reference!	Unable to choose reference automatically. Select an existing reference from the list or perform a new reference measurement.
MI 002 (Warning)	Defective reference measurement interferes parameters listed below! Please check your reference measurement and mind your manual. If the problem still occurs contact your s::can agent.	Pixels, which will be used for calcualtion of parameters are missing in the stored reference. Perform a new reference measurement.
MI 006 (Error)	Not enough disk space using this configuration. Please change your configuration or delete results.	Check before starting the measurement reports too less memory on result hard disk for his configuration. Delete not used results / data from hard disk (*Delete*). Modify configuration (*Configuration*). See s::can™ manual ana::lyte section [6.5.4] – Results \ Delete or section [6.5.10] – Configuration, respectively.
MI 006A (Error)	Out of disk space. No more measurements possible. Please delete old results to free disk space on your local controller or exit.	Check before starting the measurement reports less than 100kB memory free on hard disk, on which folder result is situated. Delete not used results / data from hard disk (*Delete*). See s::can™ manual ana::lyte section [6.5.4] – Results \ Delete.
MI 007 (Warning)	Output-device failure while reset! Please check ICPCON modul. Please check power supply, connection cable, COM-Port, address and module type.	Error when reset the analogue or digital ICP-CON module. Check connection and settings of the module.
MI 008 (Warning)	Error occured while reset all mio-104 digital and analog Out! Please test mio-104!	Error when reset the MIO-104 (only when con::stat II). Restart measuring system, contact s::can™ sales partner.
MI 009 (Warning)	Extra outputfile: Targetfile could not be opened. Extra output disabled!	Specified path for result output (function Extra \ ExtraOUT) is invalid. Check output path and maybe modify. Check writing rights.
MI 010 (Error)	External trigger higher 9 is not possible. External trigger is deactive.	External trigger mode too high. Value possible between 1 and 8.
MI 011 (Error)	No TCP/IP-Connection to trigger source possible. Code: XXXXX . TCP/IP-Port closed. External trigger deactive.	Error on externen trigger mode.
MI 050 (Error)	New drive detected. Filesystem is incompatible. You have to disconnect this drive and format this drive by using "FAT" filesystem.	Automatic data transfer on USB stick not possible (file system incompatible, USB Stick defect). Use another USB stick, format USB stick to file system „FAT".

E-Code (type)	Error messages	Cause / What to do
MI 051 (Error)	New drive detected. Not enough disk space available on new drive (max. space =XXXX MB). You need at minimum XXXX MB space free on your new drive. It is impossible to copy all current files of s::canpoint "YYYYYYYY" to new drive!	Automatic data transfer on USB stick not possible (USB stick has too less memory capacity). Use USB stick with higher capacity.
MI 051 (Warning)	New drive detected. Not enough free diskspace available on new drive (free space =XXXX MB). You need at minimum XXXX MB space free on your new drive. To copy all current results of s::canpoint "YYYYYYYY", you have to delete all old files located on the new drive.	Automatic data transfer on USB stick not possible (USB stick has enough memory capacity but too less free memory). Remove USB stick and delete data or delete ALL data on the USB stick with button _Delete_.
MI 052 (Error)	Error occured while delete all old files located on the new drive. Copying all current results of s::canpoint "XXXXXXXX" was not finished successfully. You have to disconnect this drive now.	An error occured when trying to delete all old files from USB stick after having select _Delete_ at MI 051 (Warning). Data transfer not completed successfully. Remove USB stick and repeat procedure.
MI 053 (Error)	Copying all current results of s::canpoint "YYYYYYYY" was not finished successfully. You have to disconnect this drive now.	An error occured when trying to copy result files to USB stick. Data transfer not completed successfully. Remove USB stick and repeat procedure.
PC		
PC 001 (Error)	Push "Log In" and "Details" to check your protocol settings. Push "Exit" to stop ana::xxx. Maybe using several probes with the same address or a RS485 probe with a RS232 interface. Connect only one probe, be sure to have the right interface and reset your probe and push "Log in". Contact your s::can agent if the problem still occurs.	Protocol failure while first contact when checking connection settings (COM-port, probe's address). Check whether controller matches with connected probe (RS 232 or RS 485).
PC 002 (Error)	Push "Continue" to retry the last commando. Push "Exit" to stop ana::xxx. Maybe using several probes with the same address or a RS485 probe with a RS232 interface. Connect only one probe, be sure to have the right interface and reset your probe and push "Log in". Contact your s::can agent if the problem still occurs.	Protocol failure after first contact. Check probe's connection, check probe's cable, check power supply. Push button _Continue_.
PC 003 (Error)	Unknown COM-port. Please select another COM-port. Push "Log In" to retry. Push "Exit" to stop ana::xxx.	Visa reports unknown COM-port while first contact. Check on which COM-port the probe is connected. Set correct COM-port. COM-port must not be higher than 8. Push button _Log In_.
PC 004 (Error)	Unknown COM-port. Push "Continue" to retry the last commando. Push "Exit" to stop ana::xxx.	Visa reports unknown COM-port while first contact. Check probe's connection, check probe's cable, check power supply. Push button _Continue_.

E-Code (type)	Error messages	Cause / What to do
PC 005 (Error)	Used Com Port. The resource COM-port is valid, but ana::xxx cannot currently access it! Please be sure, that the COM-port is not used by another application or change COM-port. Push "Log In" to retry. Push "Exit" to stop ana::xxx.	Visa is unable to access valid COM-port while first contact. Check, whether COM-port will be used by other application. Maybe select another COM-port. Push button *Log In*.
PC 006 (Error)	Used Com Port. Push "Continue" to retry the last commando. Push "Exit" to stop ana::xxx.	Visa is unable to access valid COM-port while first contact. Check probe's connection, check probe's cable, check power supply. Push button *Continue*.
PC 007 (Error)	No spectro::lyser detected! Please check power-supply, connection cable and COM-port. Push "Log In" to retry. Push "Details" to check your protocol settings (Baudrate, Parity, Modbus). Push "Exit" to stop ana::xxx. Contact your s::can agent if the problem still occurs.	Timeout during fist contact (read). Check power supply, cable connection and COM-port. Push button *Log In*.
PC 008 (Error)	Connection to spectro::lyser lost. Please check power-supply and connection cable. Push "Continue" to retry the last commando. Push "Exit" to stop ana::xxx. Contact your s::can agent if the problem still occurs.	Timeout during read after first contact. Check power supply and cable connection. Push button *Continue*.
PC 009 (Error)	Communication failure. The given session or object reference is invalid. Please check have installed NI-VISA! Push "Exit" to stop ana::xxx.	Visa is not installed. Stop ana-xxx with button *Exit* and install NI-VISA on the controller from installtion-CD.
PC 010 (Error)	Communication failure. Unknow communication error! Please check power-supply, serial-connection and COM-port! Push "Log In" to retry. Push "Exit" to stop ana::xxx. Contact your s::can agent if the problem still occurs.	Visa: Other error during first contact. Check power supply, cable connection and COM-port. Push button *Log In*.
PC 011 (Error)	Communication failure. Unknow communication error! Please check power-supply, serial-connection and COM-port! Push "Continue" to retry the last commando. Push "Exit" to stop ana::xxx. Contact your s::can agent if the problem still occurs.	Visa: Other error after first contact. Check power supply, cable connection and COM-port. Push button *Continue*.
ST		
ST 001 (Error)	An error on your spectro::lyser occured while starting cleaning. Contact your s::can agent if the problem still occurs.	Command to start the cleaning was not responded by probe successfully. Check function of automatic cleaning. Contact s::can™ sales partner.
ST 001A (Error)	GK-Settings Interval-GK and Average-GK leads into a too long measuring-duration (more than 4 minutes and 30 seconds)! Measuring is not possible. Please set Interval-GK or Average-GK to a lower value. Contact your s::can agent if the problem still occurs.	Measuring procedure not possible because measuring duration is too long. Select another global calibration. Contact s::can™ sales partner.
ST 002 ST 002A (Warning)	An error on your device MIO-104 / I7066 (digital OUT) occured while start cleaning. Contact your s::can agent if the problem still occurs.	Switch on cleaning: At least one digital output is et to cleaning although no MIO-104 / I7066 is available as hardware. Check I/O settings. Contact s::can™ sales partner.

E-Code (type)	Error messages	Cause / What to do
ST 003 (Error)	Cleaning is still running because an error with your spectro::lyser occured while start measurement. Contact your s::can agent if the problem still occurs.	Command to stop the cleaning was not responded by probe successfully. Check function of automatic cleaning and maybe stop cleaning manually. Contact s::can™ sales partner.
ST 004 ST 004A Warning)	Cleaning is still running because an error on your device MIO-104 / I7066 (digital OUT) occured while stop cleaning. Contact your s::can agent if the problem still occurs.	Switch off cleaning: Module used to switch on cleaning (MIO-104 / I7066) is not available any more. Check function of automatic cleaning and maybe stop cleaning manually. Contact s::can™ sales partner.
ST 005 (Error)	An error on your spectro::lyser occured while start measurement. Please check all connections, disconnect and connect spectro::lyser. Contact your s::can agent if the problem still occurs.	Command to start measurement was not responded. Check all connections, disconnect and reconnect probe. Contact s::can™ sales partner.
ST 006 (Error)	An internal error occured while start measurement.	Command start measurement reports firmware error after first status query. Contact s::can™ sales partner.
ST 007 (Error)	An error on your spectro::lyser occured while read results. Please check all connections, disconnect and connect spectro::lyser. Contact your s::can agent if the problem still occurs.	Command send results was not responded (start of text). Check all connections, disconnect and reconnect probe. Repeat measuring process. Contact s::can™ sales partner.
ST 008 (Warning)	Warnflag "underflow" programno.: X	Warning flags for overflow or underflow iss et in result replay.
ST 009 ST 009A (Error)	An internal error occured while measurement (programresultat no.:X).	Internal probe's status not ok (result replay with status: circuit board not ok, firmware error or reading not ok). Contact s::can™ sales partner.
ST 010A ST 010B ST 011C (Error)	Defective probe compensation "(>OG), (<UG), (>STA)".Please contact your s::can agent!	Probe's compensation energy out of allowed variation (too high or too low) or no compensation energy stored on probe. Check readings for plausibility. Perform Systemcheck / Selftest. Send results to s::can™ sales partner.
ST 011A ST 011B (Error)	Defective probe compensation v energy (>63000). Please contact your s::can agent!	Defective compensation energy (>63000) defectice measuring energy (>63000) Probe's compensation energy out of allowed variation (too high or too low) or no compensation energy stored on probe. Check readings for plausibility. Perform Systemcheck / Selftest. Send results to s::can™ sales partner.
ST 011C (Error)	Defective probe energy (dark-noise=XXX). Please contact your s::can agent!	Dark noise out of allowed specification. Check readings for plausibility. Perform Systemcheck / Selftest. Send results to s::can™ sales partner.
ST 012 (Error)	Input-device failure! Please check input device MIO-104 (analog IN1). Contact your s::can agent if the problem still occurs.	Unable to read in Analog-IN values from MIO-104. Check analogue input. Contact s::can™ sales partner.

E-Code (type)	Error messages	Cause / What to do
ST 013 (Error)	Input-device failure! Please check all non-spectral analog IN ICPCON devices and it's connection to controller! Please mind your manuals! Contact your s::can agent if the problem still occurs.	At least one ICPCON modul for analog-IN cannot be addressed. Check analogue input module. Contact s::can™ sales partner.
ST 013B (Error)	Input-device failure! Please check all non-spectral devices and it's connection to controller! Please mind your manuals! Contact your s::can agent if the problem still occurs.	At least one device at Non-spectral parameter cannot be addressed. Check connected module / probes. Contact s::can™ sales partner.
ST 014L ST 014H (Warning)	Probe MISUSE: Medium temperature is out of warning-range (too low / too high).	Medium temperature close to specification limit. Adapt medium temperature.
ST 016L ST 016H (Warning)	Probe MISUSE: powersupply is out of warning-range(too low / too high).	Supply voltage close to specification limit. Check supply voltage.
ST 017L ST 017H (Error)	Probe MISUSE: Medium temperature is out of alarm-range (too low / too high).	Medium temperature out of specification limit. Take probe out of the medium immediately
ST 019L ST 019H (Error)	Probe MISUSE: powersupply is out of alarm-range. (too low / too high)	Supply voltage out of specification limit. Disconnect probe and check supply voltage immediately.
ST 020 (Warning)	Output-device failure! Please check output device MIO-104 (analog OUT 1, 2 and 3). Contact your s::can agent if the problem still occurs.	Unable to write analogue-OUT values to MIO-104 (only for con::stat II). Contact s::can™ sales partner.
ST 021 ST 021A (Warning)	Output-device failure! Please check output device MIO-104 / I7066 (digital OUT 1, 2, 3 and 4). Contact your s::can agent if the problem still occurs.	Unable to write digital-OUT values to MIO-104 / I7066. Contact s::can™ sales partner.
ST 022 (Warning)	Output-device failure! Please check ICPCON module I-7021adr.: 2 on com1 (code:-1073807339) I-7022adr.: 3 on com8 (code:-1073807339) Please check powersupplier, connection cable, COM-Port, address and module type.	At least one ICPCON-module unable to be addressed for analogue-OUT. Contact s::can™ sales partner.
ST 023 (Warning)	Extra Output failure! Code: XXXXXXXX	Error recognized on output COM-port using function Extra \ ExtraOut. Check COM-Port and settings. Contact s::can™ sales partner.
ST 050 (Error)	Timeout before answer send! Anwer is Status=Service.	Waiting for reply with external trigger lasts more than 51 seconds. Check settings of external trigger.
ST 051 (Warning)	Sampling was aborted automatically after 15 minutes!	Sampling was stopped after 15 minutes automatically. No reading stored in calibration database. Repeat sampling procedure and finish within 15 minutes.

8   Contact Address

Please do not hesitate to contact your local s::can™ sales partner or s::can™ if you have any questions:

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