

*tiamo*TM – Titration and more



Networked Titration Data System



Networked Titration Data System

02





Contents

• tiamo [™] points the way	04
• tiamo [™] at a glance	05
• Working with tiamo [™] – it's a pleasure	07
• tiamo [™] makes your work easier	08
• Modern data management ...	12
• ... that meets all your requirements	14
• Intelligent client-server solutions – certainly, with tiamo [™] multi	16
• Unlimited flexibility	18
• Further innovative features of tiamo [™]	21
• Audit with tiamo [™] – sure!	23
• Ordering information	26
• System requirements	27



*tiamo*TM points the way

*tiamo*TM – titration and more

*tiamo*TM is a control and database software for titrators and dosing devices as well as for complete laboratory automation, including client-server systems. The name *tiamo*TM stands for «titration and more» – *tiamo*TM can do more than just titrate. *tiamo*TM is a titration network (NTDS = Networked Titration Data System).

*tiamo*TM is the result of Metrohm's largest and most modern software project. With its numerous innovations, user friendliness and flexibility, *tiamo*TM has been the leading software package for titrations for several years now – now in its second version.

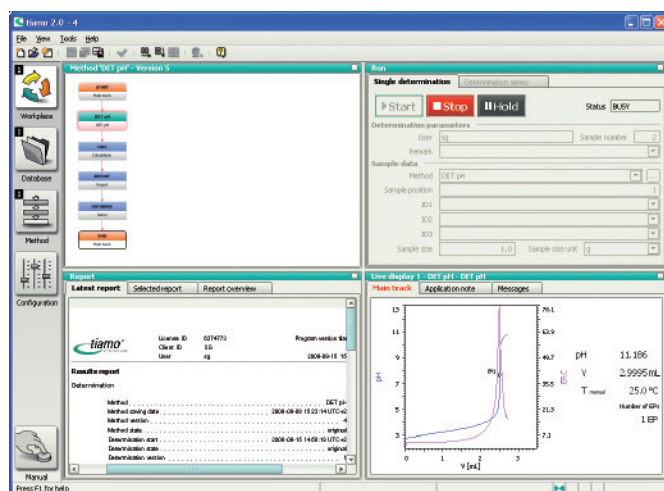
No language barriers

To make use of the benefits offered by *tiamo*TM, you don't need to know any foreign languages. *tiamo*TM is available in numerous language versions, including Chinese, Spanish, French, Italian, Japanese, Polish, Portuguese, Russian, Slovakian and traditional Chinese.

tiamoTM at a glance

tiamo™ is easy to use

- New, appealing software interface
- Freely configurable desktop thanks to new Layout Manager
- Powerful report generator
- Automatic database backup
- Graphical method editor
- Easy incorporation of instruments and accessories



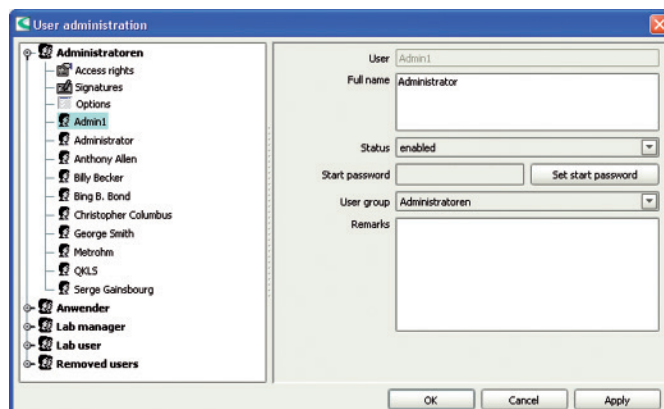
tiamoTM communicates

- Real client-server database software
- Real parallel titrations
- Data export in XML and other formats
- E-mail function for results and messages
- Extensive online help



***tiamo*TM overcomes boundaries**

- Central user administration
- Complete traceability of all results
- Extended method commands
- Developed and validated for cGxP
- E-mail functions for determination data and methods
- Numerous import and export functions



*tiamo*TM at a glance

06

The modern user interface makes it easy for you to familiarize yourself with *tiamo*TM. All the commands and controls are to be found where you expect them to be. Using the *tiamo*TM main symbol bar you can access the five program parts of *tiamo*TM directly and easily. Each

program part includes the menu and symbol bars for the specific workplace as well as the main window. Depending on how you have configured the access rights, these buttons may be visible or concealed for individual users.



Workplace

Workplace

- Up to four workplaces can be opened at the same time
- Here you start your methods – single determinations or series of determinations
- Here you manage your sample tables and sample classification tables
- Here you can change various titration parameters «live» even while the method is underway
- In the method window you can track the progress of your method in real time
- The determination reports are displayed here



Database

Database

- Up to four databases can be opened at the same time
- Here you manage your determination data
- Extensive possibilities for reprocessing and reporting your determinations
- Extensive search and filter functions as well as export and import functions
- Extensive information on the various determinations
- Both manual and automatic backup functions



Method

Method

- Up to nine methods can be opened at the same time and up to two methods can be displayed and processed at the same time
- Here you develop and manage your methods
- Extensive pool of method and calculation templates
- Extensive support functions for method development



Configuration

Configuration

- Includes the menu and symbol bars for the specific workplace as well as the main window, in which six sub-windows can be displayed
- Here you manage instruments, titrants/solutions, sensors and your common variable
- Here you configure all the non-method-specific settings
- For all units managed here, various monitoring functions and GLP test intervals can be set
- Here you configure the user administration, the security settings and the program administration



Manual

Manual

- Here you open the user interface of an external window for manual control of all implemented components (Titrandos, stirrers, pumps etc.)
- Extensive possibilities for direct operation without predefined instructions: direct measuring and dosing are just as possible as direct control of sample processors and remote interfaces

Working with *tiamo*TM – it's a pleasure

The information windows are in the center of the workplace. In the run window you can comfortably enter all the sample data, whether for a single sample or for complete sample series.

07

tiamoTM workplace with information windows

Information window for a single determination

Information window for a determination series

Method	Sampl...	ID1	ID2	ID3	Sample size	Sample size unit
1 DET pH	1	ID1	ID2	ID3	5.55	mg
2 DET pH	1	ID1	ID2	ID3	5.55	mg
3 DET pH	2	ID1	ID2	ID3	52.22	mg
4 DET pH	3	ID1	ID2	ID3	4.99	mg
5 DET pH	4	ID1	ID2	ID3	5.11	mg
6 DET pH	5	ID1	ID2	ID3	6.0	mg
7 DET pH	6	ID1	ID2	ID3	5.63	mg
8 DET pH	7	ID1	ID2	ID3	4.89	mg

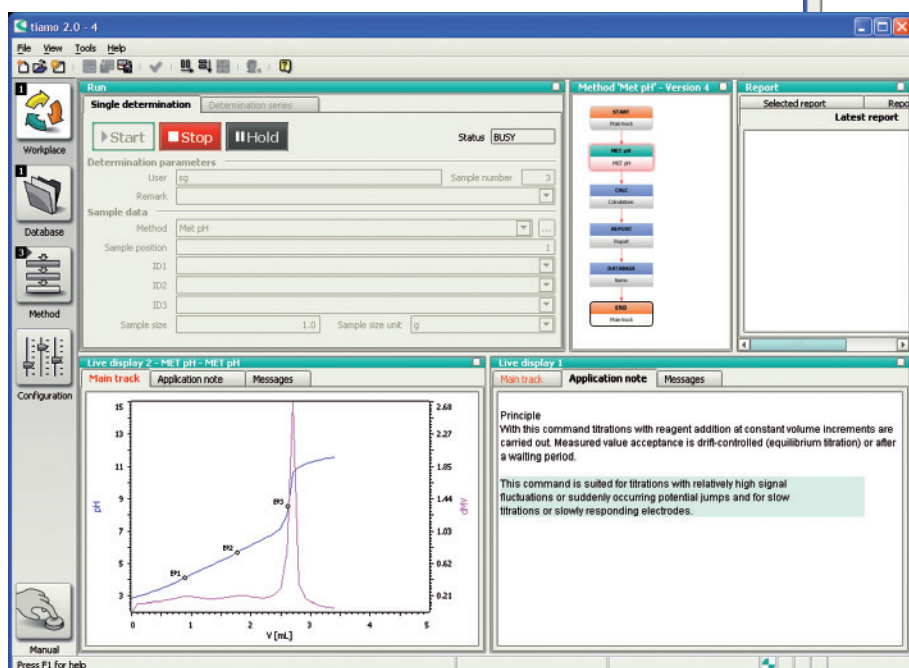
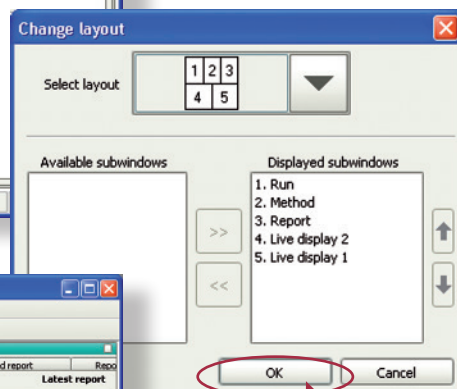
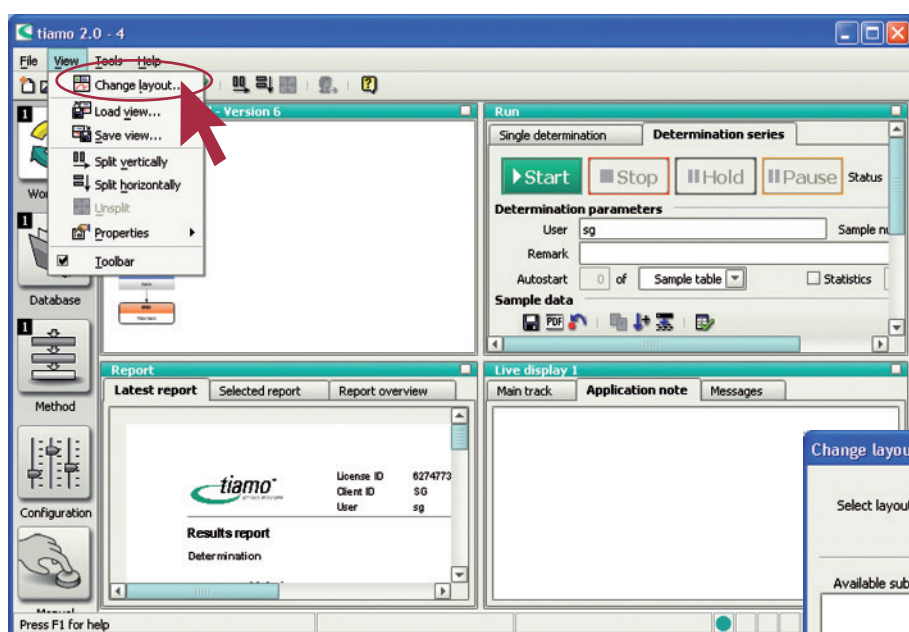
Information window for a determination series

*tiamo*TM makes your work easier

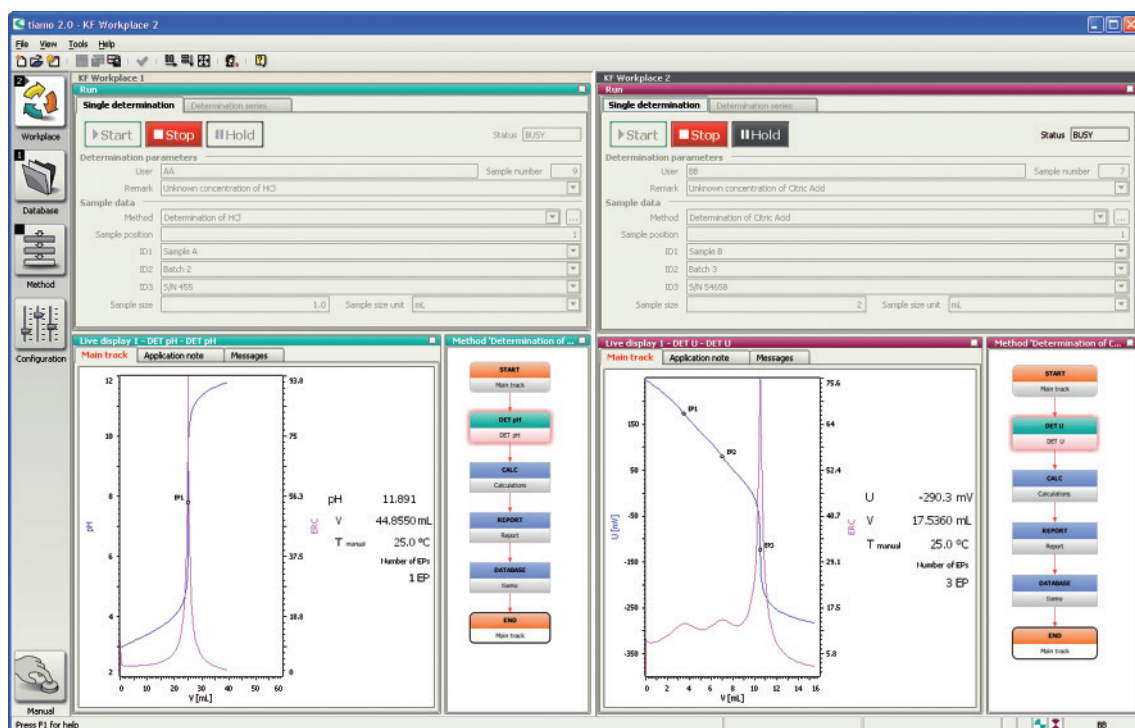
08

Layout Manager – a personal *tiamo*TM for each user

With the Layout Manager the user interface can be arranged so that each user only sees the windows that are necessary for the task at hand. This saves time; cluttered-up screens are now a thing of the past. You can freely define what information is to be shown in the windows.



With the Layout Manager you can adapt the user interface to your needs.



Efficient: working at two workplaces that are open at the same time.

Parallel titration: with **tiemo™** two titrations can be carried out at the same time on one Titrand, saving time and money.



Making four from one – parallel titrations

You can subdivide the user interface even further to create up to four independent workplaces. Thus, should the need arise, several titration systems can be controlled by one and the same PC – in parallel and, if necessary, by

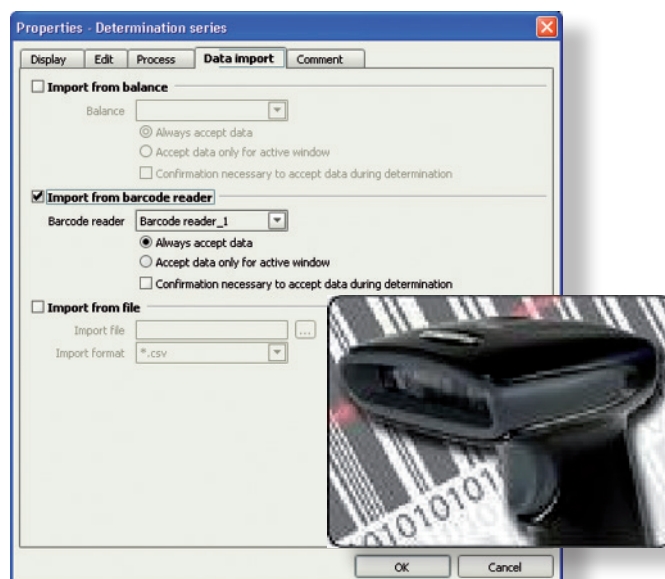
different users. But that is not all: not only are you able to titrate in parallel at several workplaces – two titrations or measurements can also be carried out in parallel within the same method.

*tiamo*TM spares you routine work

10

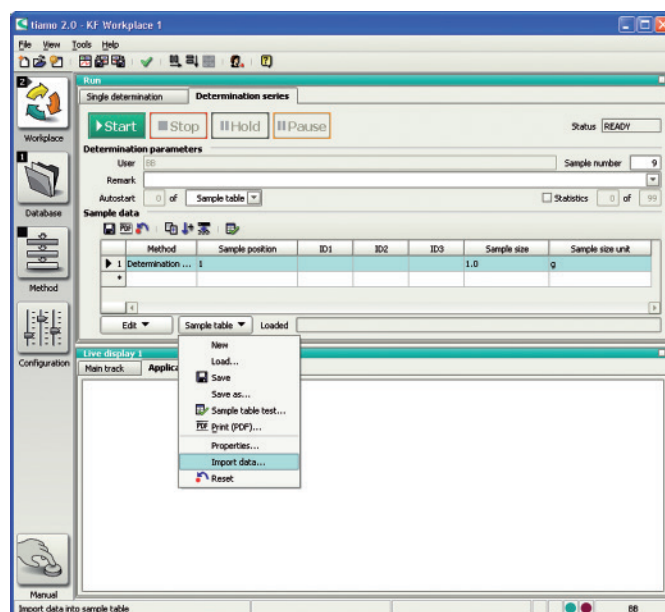
Practical text templates

Regardless of whether you enter sample data manually or use a barcode reader, *tiamo*TM will assist you in completing the sample table in either case. Repetitive identifications can be stored in text templates.



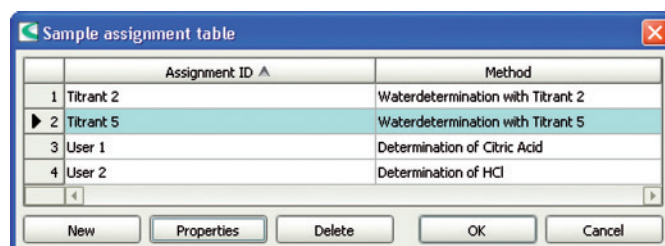
Direct import of sample tables

*tiamo*TM also takes care of sequential numbering and imports sample tables directly from your LIMS. Surprises in the operation of your sample changers are cannot happen, as *tiamo*TM checks the sample table for any incorrect weights.



Create links easily

You can use the sample assignment table to link sample numbers with methods. This makes your *tiamo*TM the easiest to operate routine system in your lab!



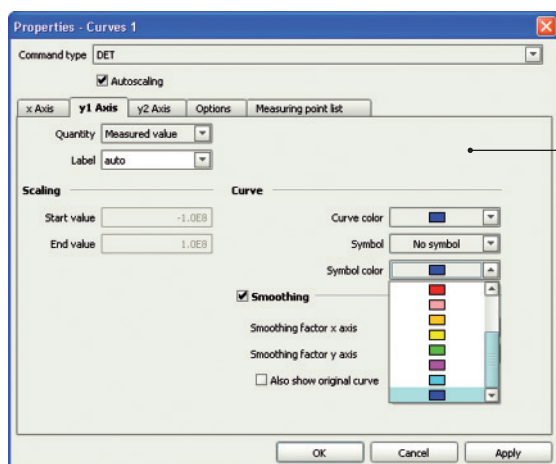


Modern data management ...

12

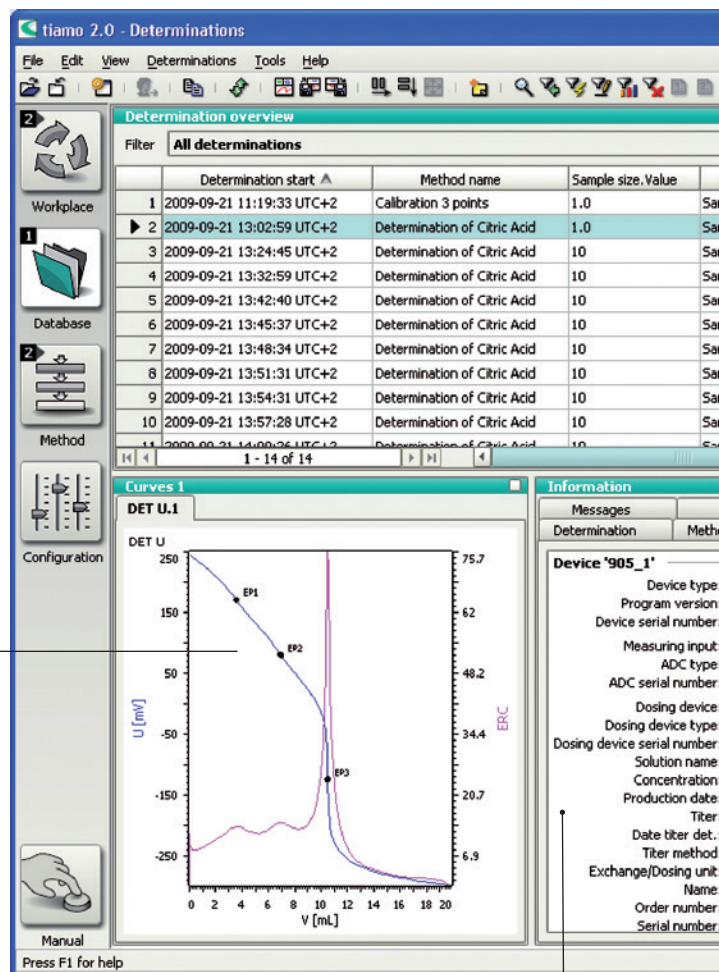
Manipulation-proof database

The **tiamo**™ database provides even more added value. Not only your determinations, but also all your settings, methods and user information are stored and are thereby protected reliably against manipulation and loss.



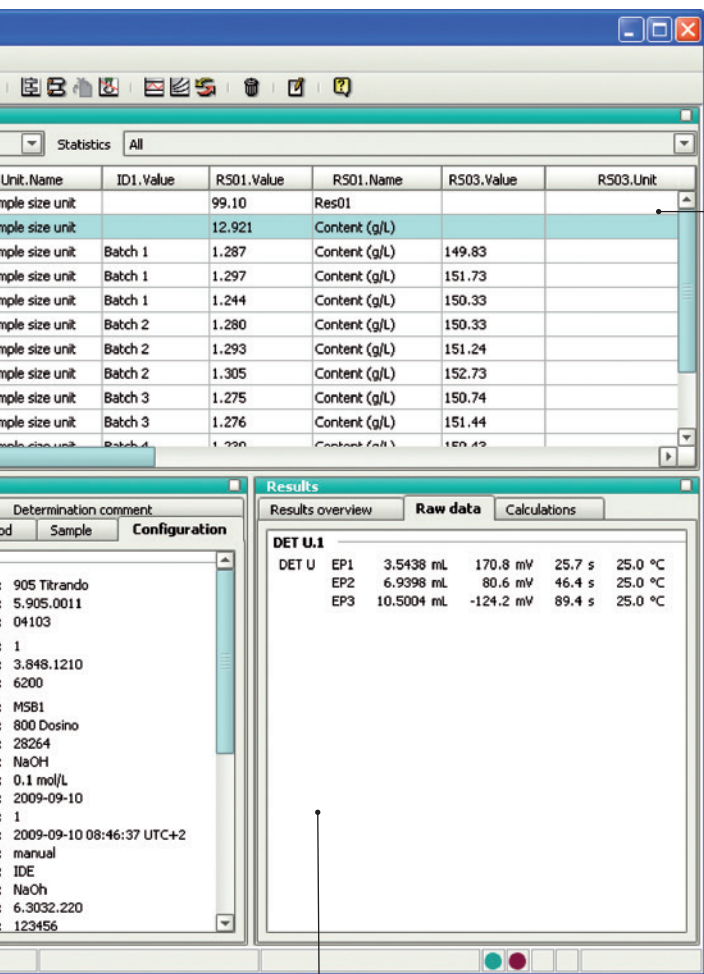
Curve window – watch the curve for each determination

tiamo™ shows the titration curve for each determination. The curve layout can be freely defined. A copy-and-paste command is all that is needed to include the titration curve in a Word document.



Total traceability

Who carried out a determination and when? What titrator was used? What alterations were made to the determination and by whom? All this is recorded permanently for each individual determination. The unique traceability of the **tiamo**™ system leaves no question unanswered.

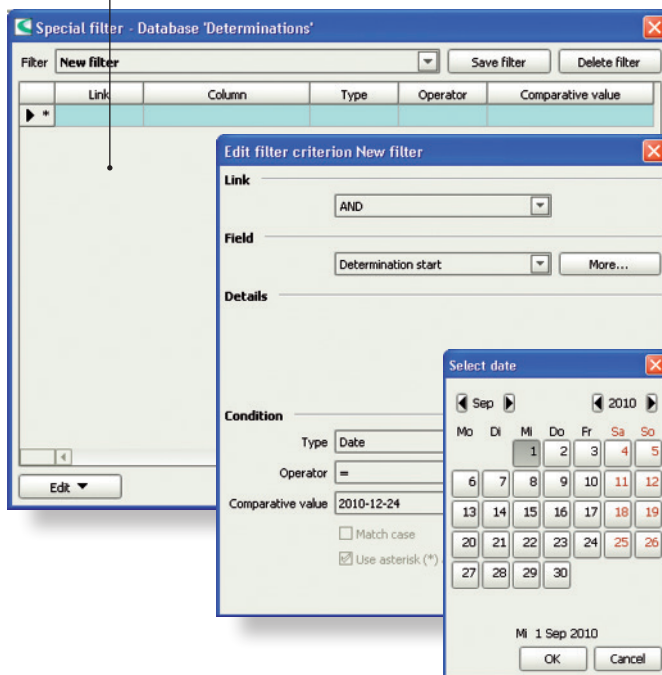


Immediately recognize what matters

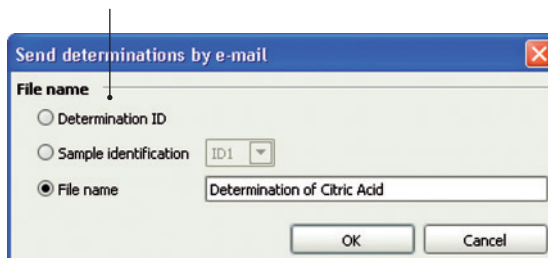
Get a quick overview in the results window. No long searching for the result – here you will find all the important raw data, results and calculation details in a nutshell.

Easy data management

Manage your data in the determination overview, where you can obtain the most important information about any sample in tabular and freely configurable form. Powerful search and filter tools provide support. Even a search for determinations by way of the serial number of individual instruments or dosing units is no problem for **tiamo**TM. Among thousands of titrations you are sure to find your own particular determination – in a matter of seconds.



If you wish to forward a result to your colleagues immediately, you can send it directly from the database by e-mail – without the hassle of prior saving and copying.



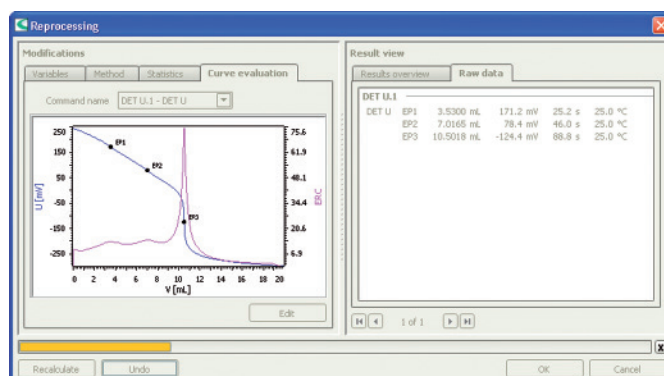
... that meets all your requirements

14



Determination reprocessing

Wrong sample weight? No problem. With the reprocessing function the sample weight can be quickly corrected or a calculation formula adapted. Endpoint not recognized correctly? **tiamo**™ can help here as well. Just have the curve re-evaluated.

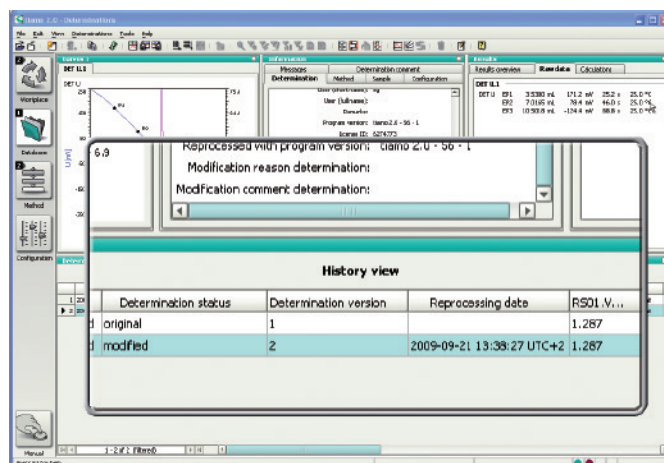


History

You do not have to worry about the documentation of your determinations. **tiamo**™ manages every single version of a determination. The history function keeps you informed. The original version can be restored at any time – even that of imported determinations.

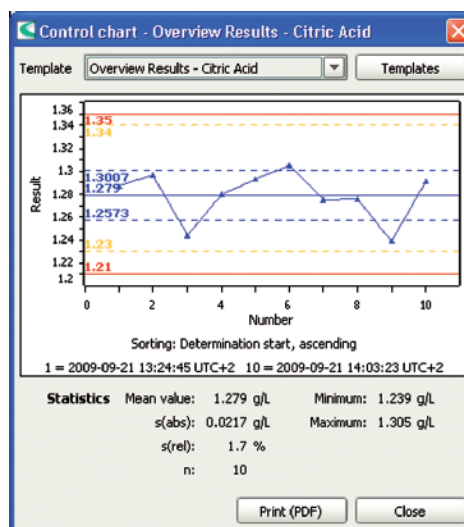
Signatures

You can add digital signatures to your determinations. **tiamo**™ offers signatures at two levels. As soon as a determination has been given a level 2 signature, the data are protected against any further alterations.



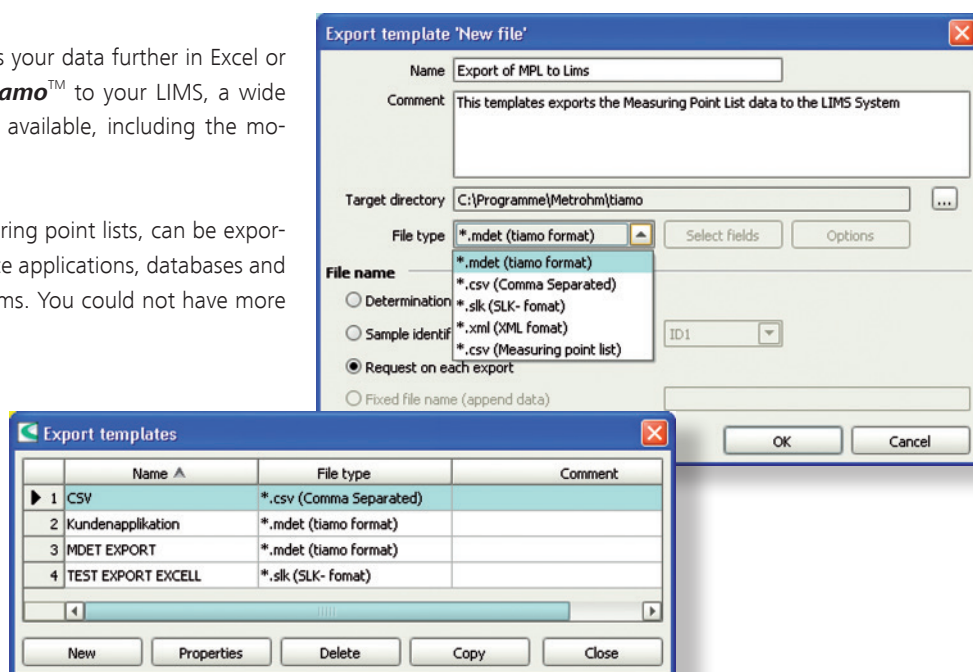
Control chart

tiamo™ can produce a control chart for your determinations at the touch of a button. Print it out, create a pdf document, or, using copy-and-paste, include it directly in another, e.g. MS Office, application.



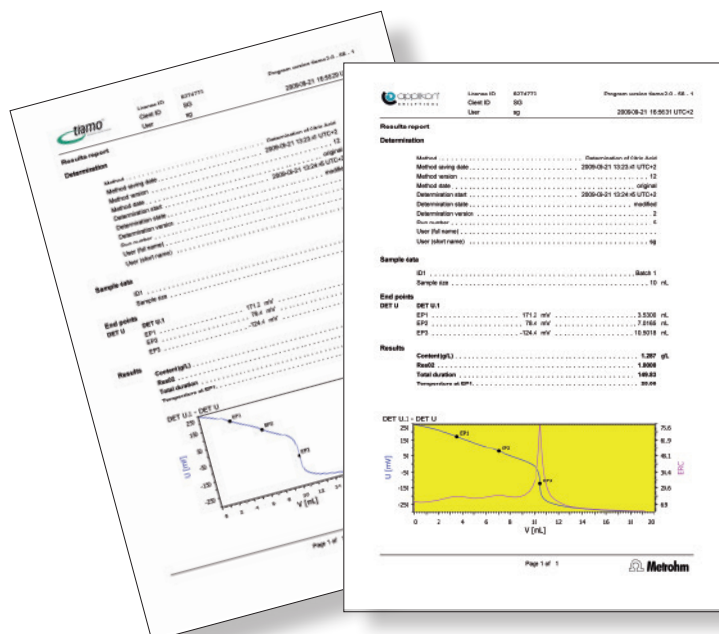
If you would like to process your data further in Excel or are planning to connect **tiamo™** to your LIMS, a wide range of export formats is available, including the modern XML format.

Your data, including measuring point lists, can be exported into all imaginable Office applications, databases and long-term archiving programs. You could not have more flexibility!



Report generator

The unique report generator allows you to customize the layout of your analytical reports just as you need it. To this end you can adapt one of the many report templates. There is no limit to what you can do; you can include any imaginable information in your **tiamo™** report. In order to generate an analysis report, you only need to mark the relevant determination in the database, select a report template and press «OK». You can also send your analytical reports directly and comfortably by e-mail!

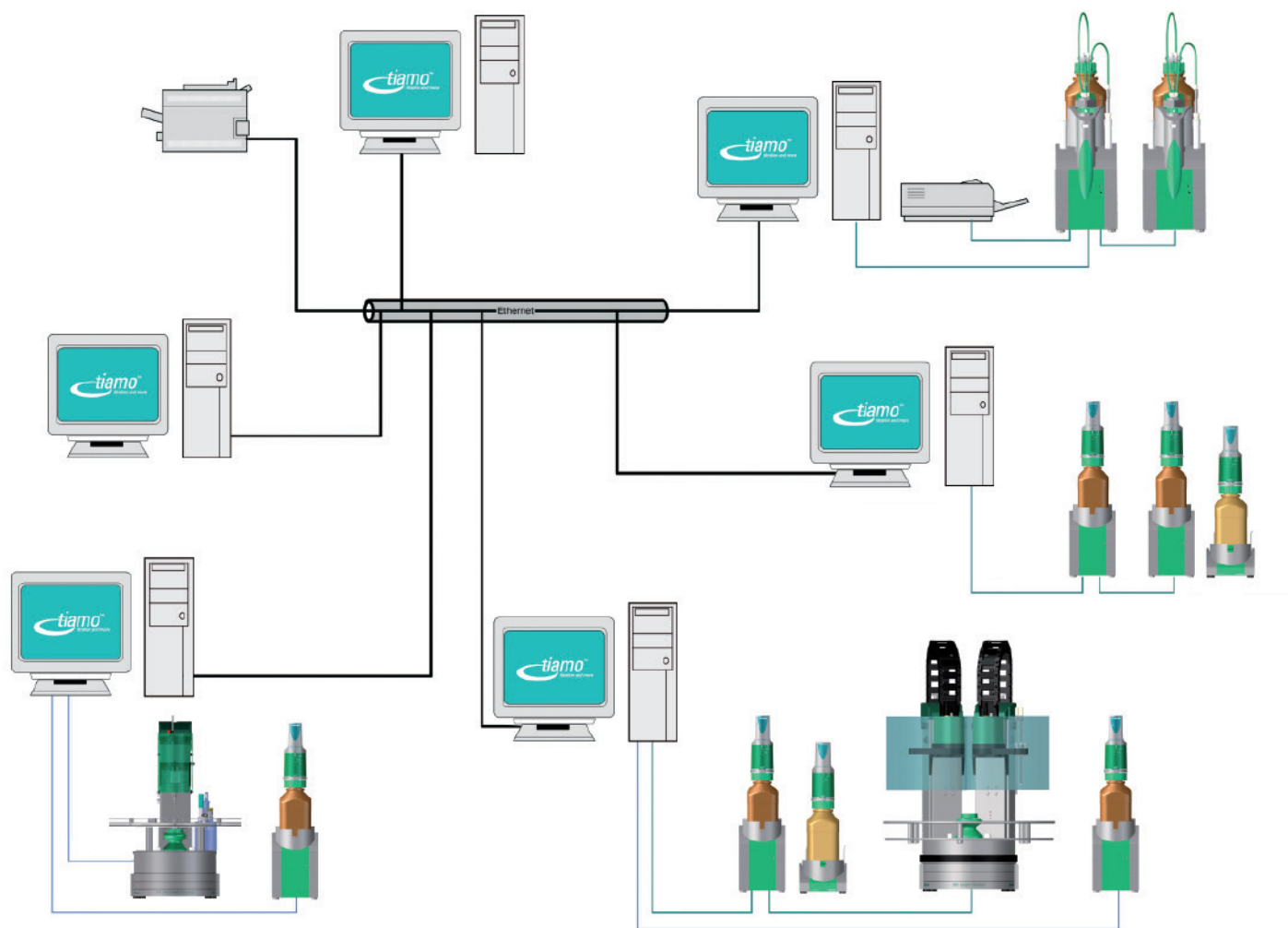


Intelligent client-server solutions – certainly, with *tiamo*TM multi

Client/server database

*tiamo*TM enables central data administration by way of the client-server option. Even if you have implemented *tiamo*TM to run a single workstation, you can upgrade the software into a client-server system at any time to meet increasing requirements.

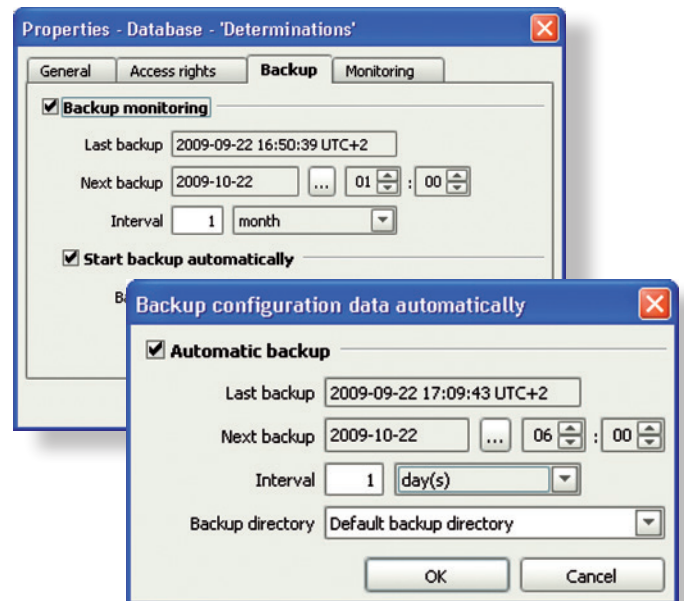
From now on you will administer your data centrally in your network – all determinations and methods will be stored on your server. They can be viewed and processed from all client PCs. Furthermore, all clients will access the same pool of methods.



Example of a client-server system comprising four lab workplaces and two office PCs

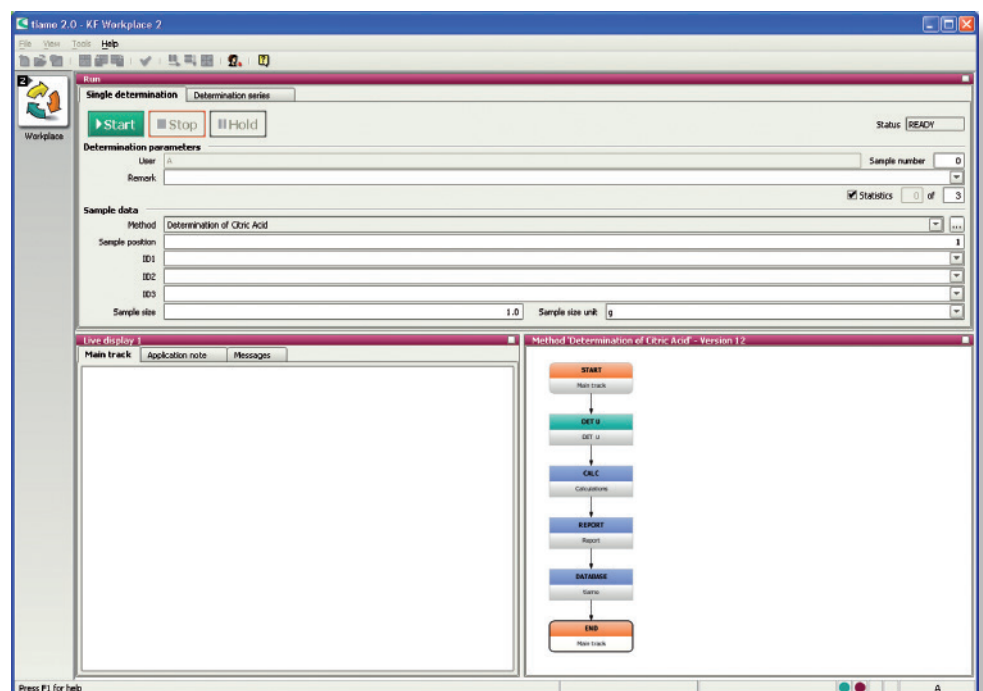
Data security

tiamo™ supports you in safeguarding your data. If you activate the automatic backup function, **tiamo™** will automatically make complete copies of all determinations and configurations. This means that if the worst comes to the worst you can recover all your settings, system configurations and determinations within a very short time.



Central control

Thanks to modern user administration, you determine which data and functions should be available to which individual users. Thus, it is possible to set up the simplest interfaces with the necessary minimum functions according to the employee's task and function as well as interfaces with unrestricted functioning of all program parts.



Customized interfaces: Example of a **tiamo™** workplace reduced to minimum functions

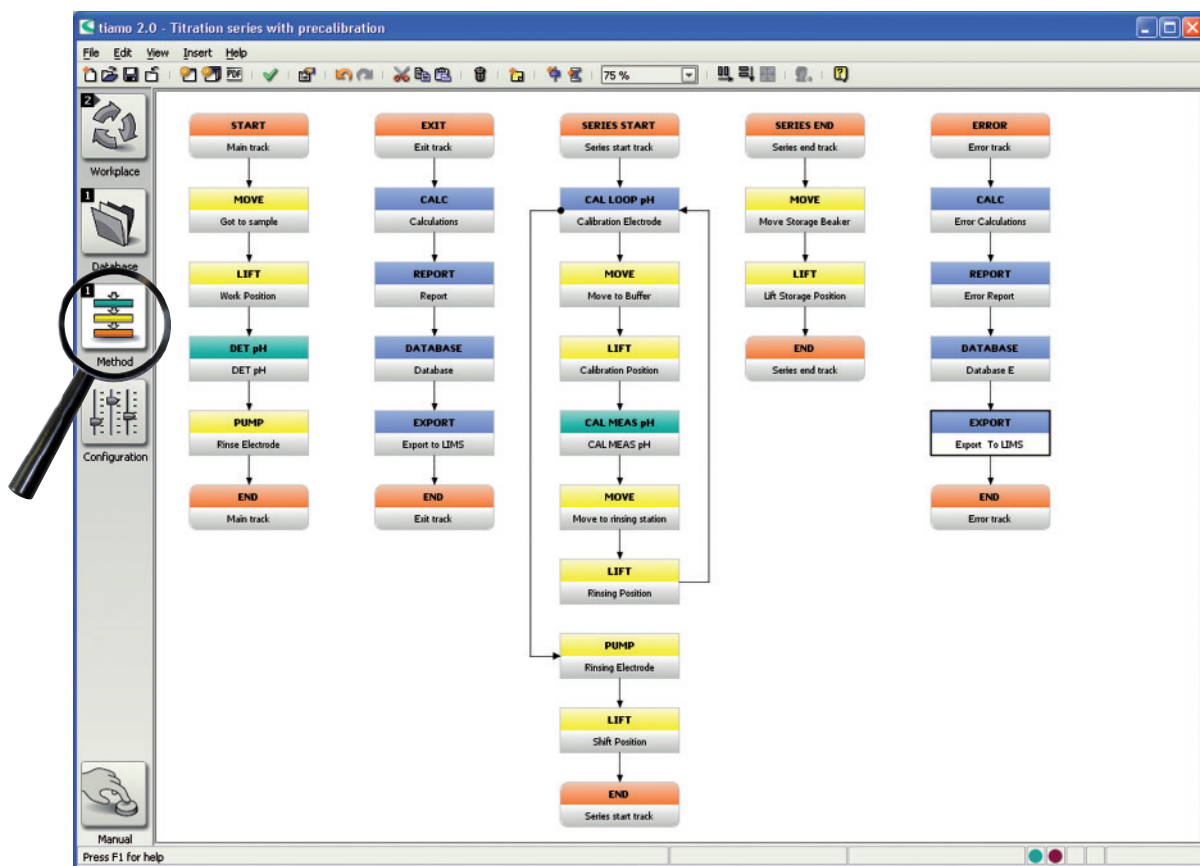
Unlimited flexibility

18

Flexibility is one of the main advantages of this software package. You can arrange measuring commands, titrations, queries, calculations, database entries, export instructions and sample changer commands in any sequential order you want – according to the motto: «nothing is impossible».

Method editor

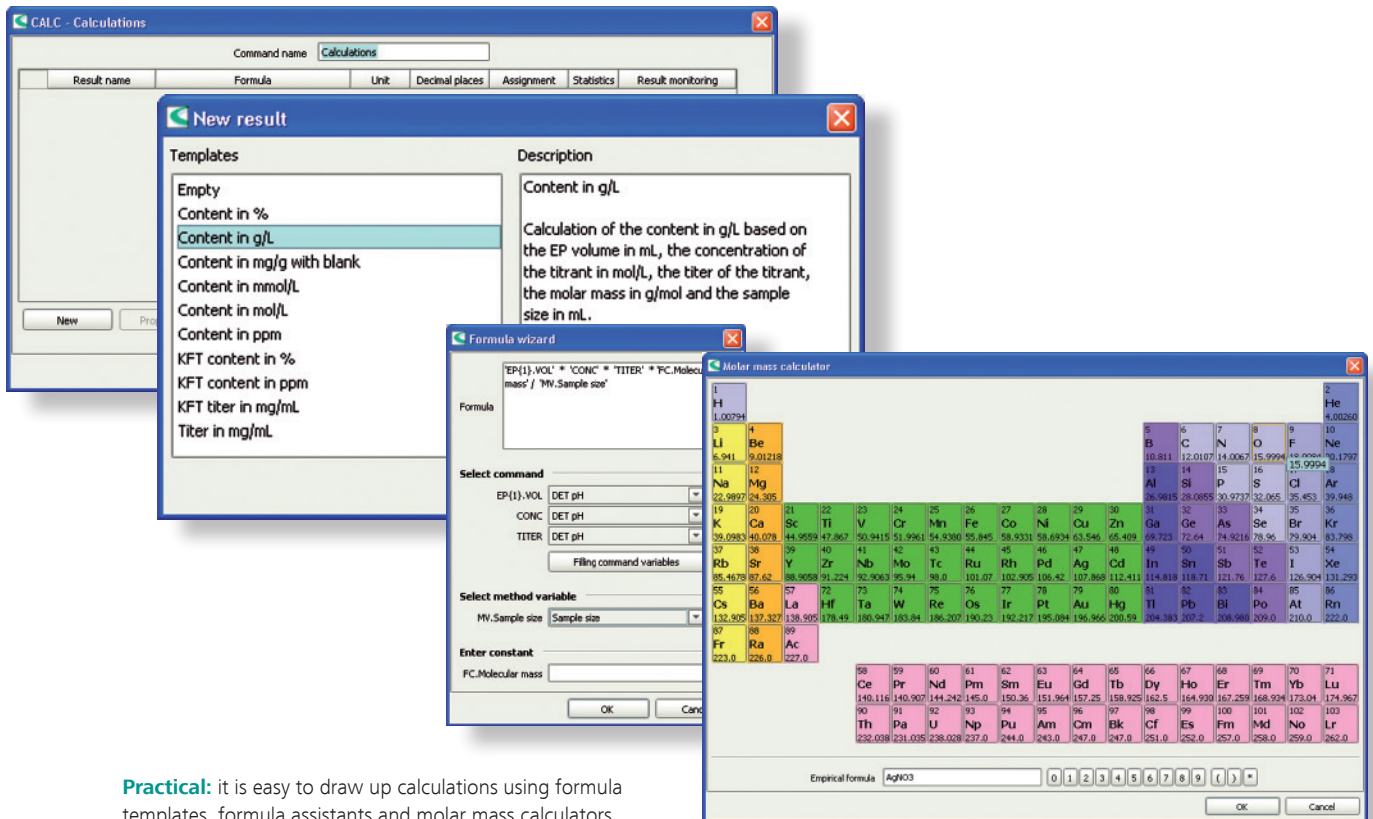
The block-by-block presentation of a method is clear and tidy. This makes operation perfectly easy. You just select what you need from the list of method templates provided, quickly insert a calculation template, add a report template and start the titration. It's as easy as that!



The Method Editor enables you to create methods quickly.

Quick access to details

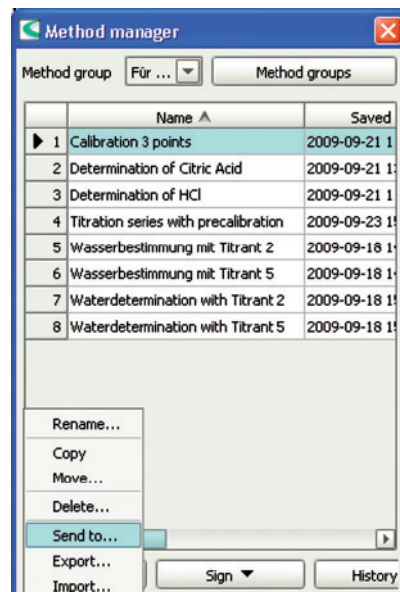
The detailed parameters can be accessed quickly with a double-click on the particular method block.



Practical: it is easy to draw up calculations using formula templates, formula assistants and molar mass calculators

Sending methods by e-mail

*tiamo*TM offers you the possibility to send a method directly from Method Management – e.g. to another laboratory. All that is needed is a click of the mouse and the method is ready for being sent in an e-mail template – without any prior exporting, saving and inserting.

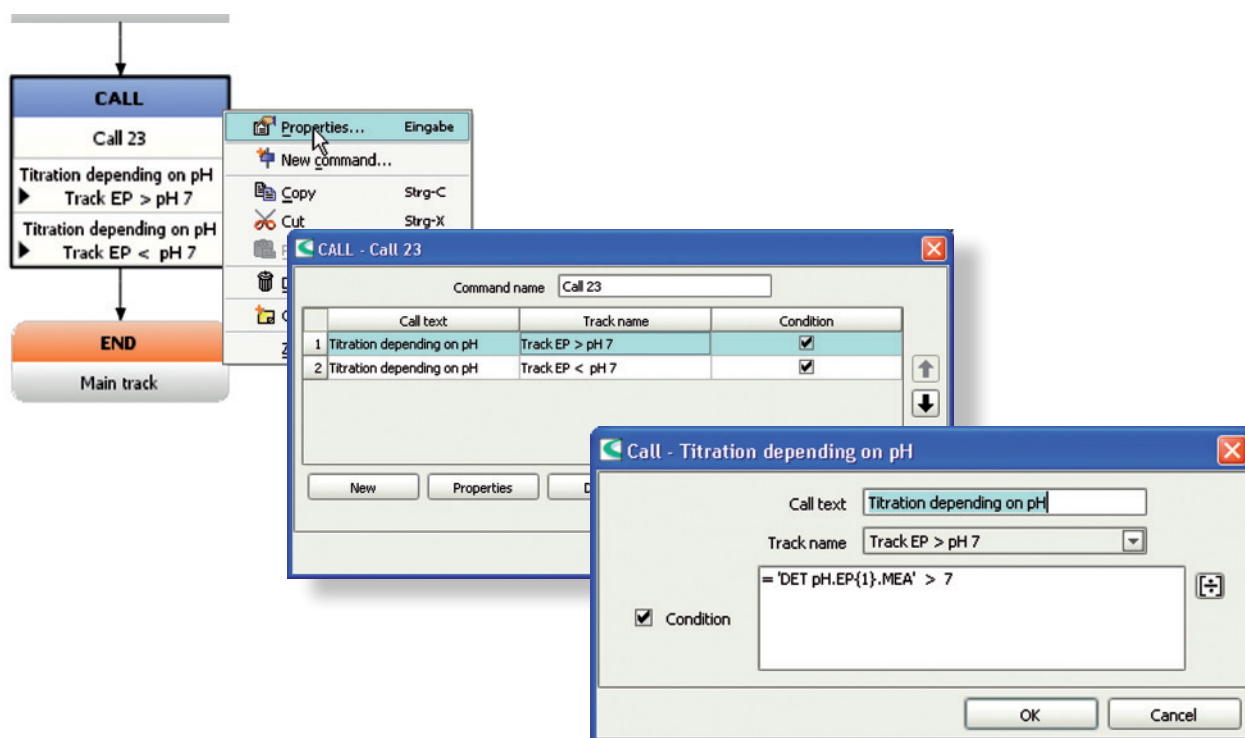


Titration and more

20

In addition to the commands that are necessary to control the measuring, dosing, titrating and automation devices, **tiamo**TM also lets you:

- show information on the screen to guide the user through a sample preparation procedure. Even hyper-links can be displayed here, so you can refer a user to documents such as a SOP
- ask for sample sizes and monitor the limits of results
- assign results to different databases.
- print out result reports and send them by e-mail.
- inform your colleagues automatically by e-mail about any disruptions in the titration system.
- program recurring sequences by combining program steps in SEQUENCE commands.
- program decision-making trees and branches by calling up individual program parts in dependence on defined conditions – with the CALL command this can be done easily: a program part is only executed, if a defined condition is met.



Decision-making trees and branches: a sub-program is called up by way of a call command in dependence on conditions, here the pH value

Further innovative features of *tiamo*™

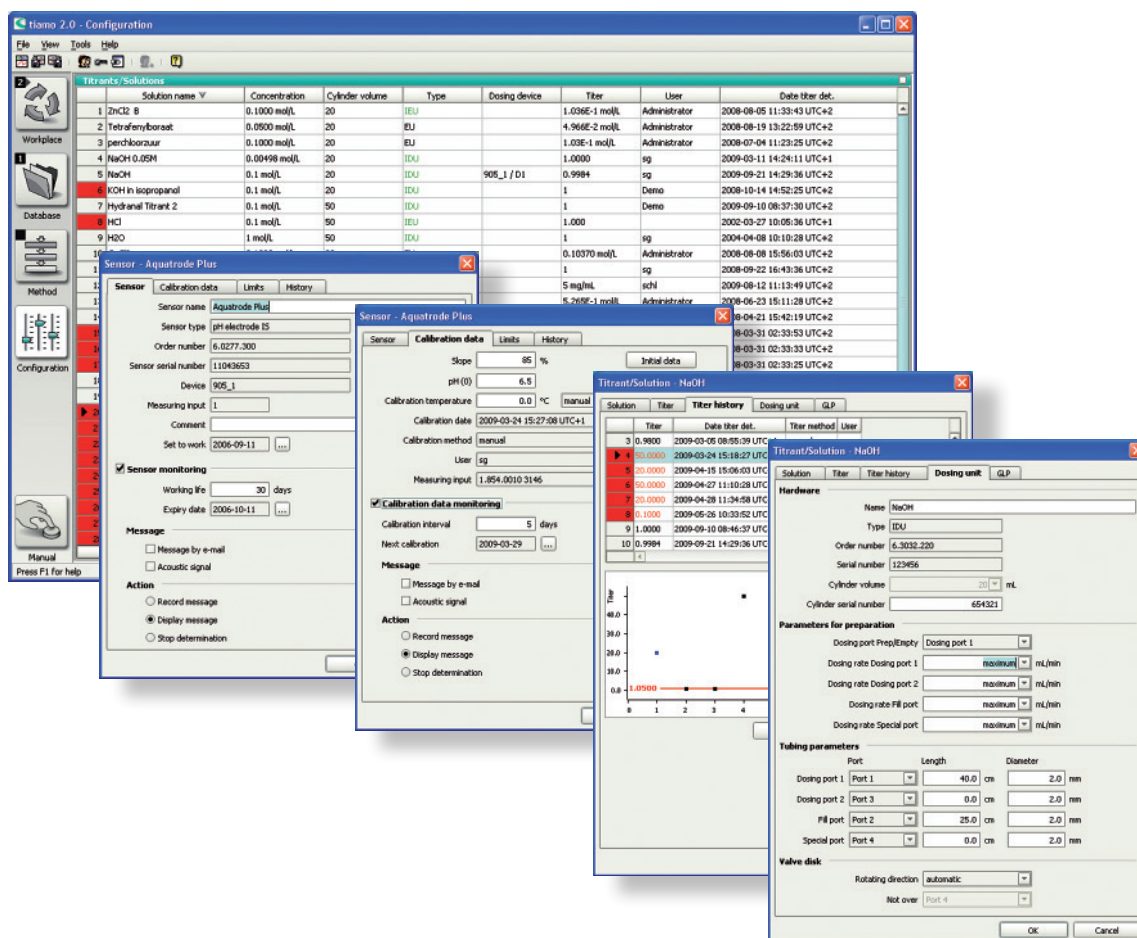
Configuration

All the *tiamo*™ settings are made in the configuration section.

Plug-and-play functionality

Our modern USB devices ensure that all connected instruments appear in the instrument window. Just plug them in and you are ready to go! All instrument data are read in automatically.

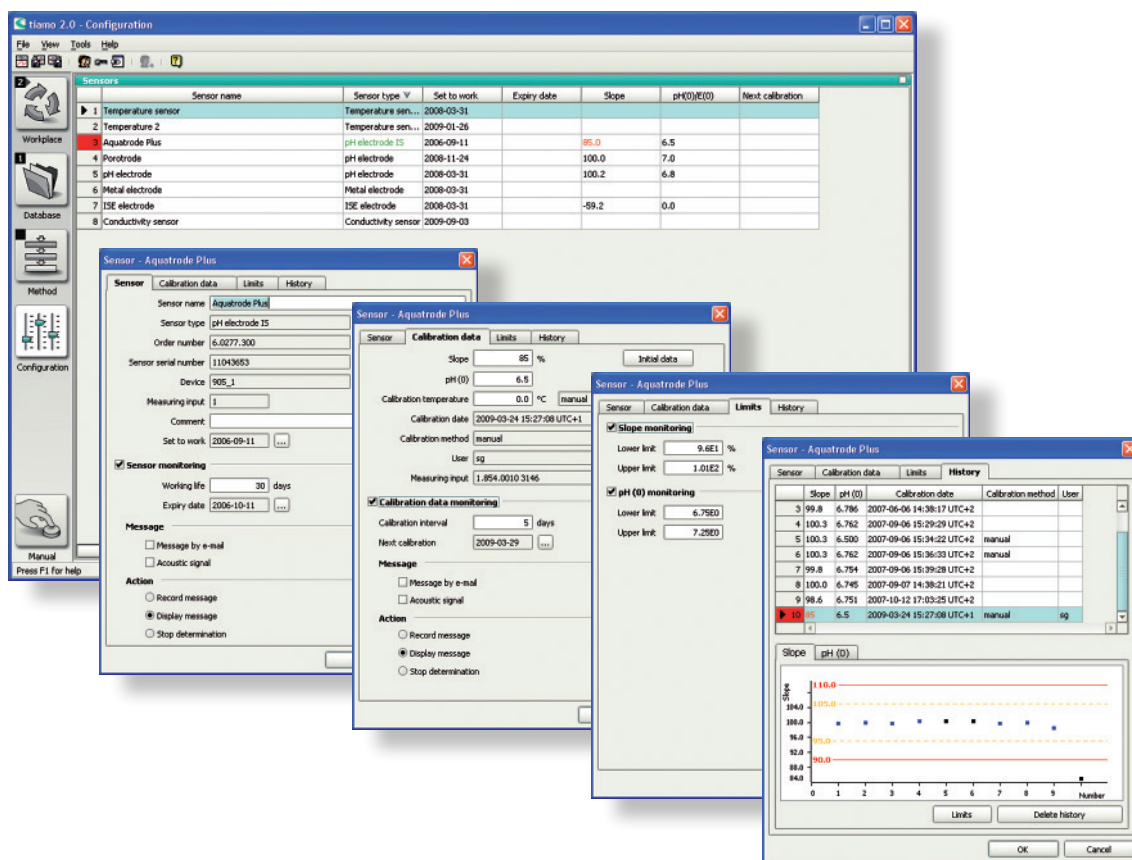
21



Simple organization of your titrants and solutions:

- In addition to the basic information, *tiamo*™ manages all the data required for traceability.
- *tiamo*™ even checks the working life and validity of titers for you.
- If you use our uniquely intelligent dosing systems with the new «Chip on board» technology, *tiamo*™ will prevent mix-ups.

Further innovative features of *tiamo*™



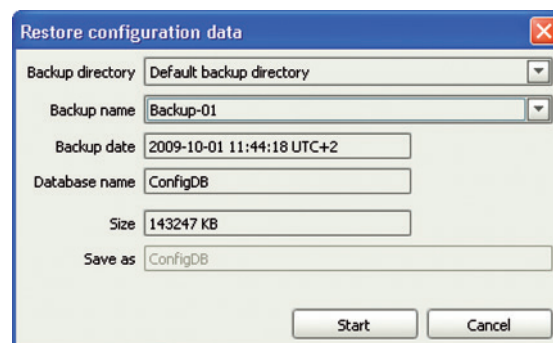
Sensor Organizer

tiamo™ also manages your sensors. Thus you can ensure that all calibration intervals are observed and only properly functioning electrodes are used. The calibration history of each sensor is saved to ensure complete traceability.

If you use our intelligent electrodes with the iConnect, then just connect the electrode to the module – that's all! All the data saved on the electrode can be viewed in *tiamo*™. There is no danger of any mix-ups!

Safely managed

If a computer crash should occur, your system will be quickly ready for use again because all your configuration settings, methods and determination databases are saved by an automatic backup.



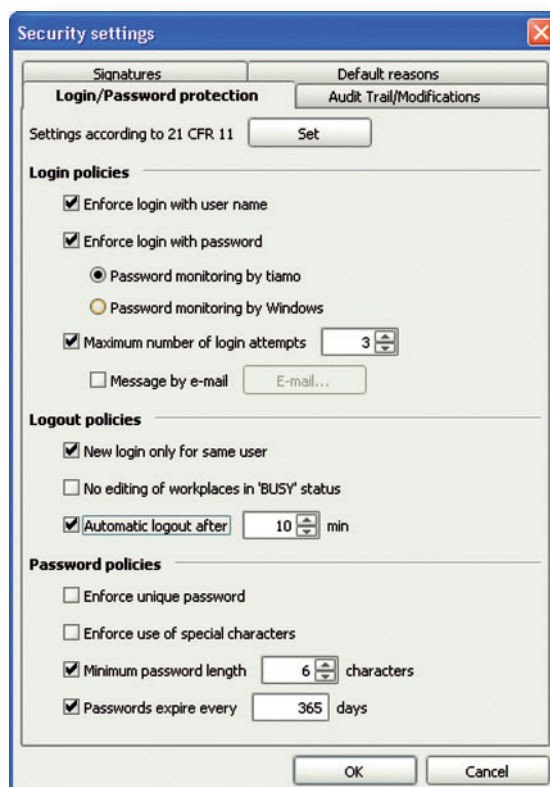
Audit with *tiamo*TM – sure!

*tiamo*TM guarantees data security

Whether GMP or GLP rules, FDA or other QM regulations pertaining to the security of electronic data or the requirement that all results are traceable – *tiamo*TM has been developed from the very start to meet all these requirements.

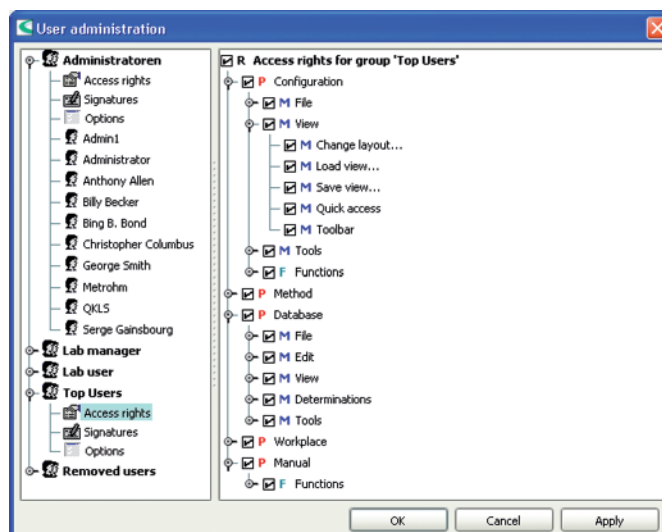
Security has priority

Protect your data with the comprehensive security functions of *tiamo*TM. Let *tiamo*TM or Windows monitor the passwords. Define the rules for assigning digital signatures and control access to your data.



User administration

Add new users to the list from your office computer – *tiamo*TM assists you in doing this. Arrange the access rights of each user in accordance with your company's security policy. *tiamo*TM sets no limits, but will convince you with its unique flexibility.



Audit with *tiamo*TM – sure!

24

Complete Audit Trail

Each action performed by a *tiamo*TM user is stored automatically in the Audit Trail. This means that you can obtain a detailed record of which employee performed what action at what point in time. Data for an audit can

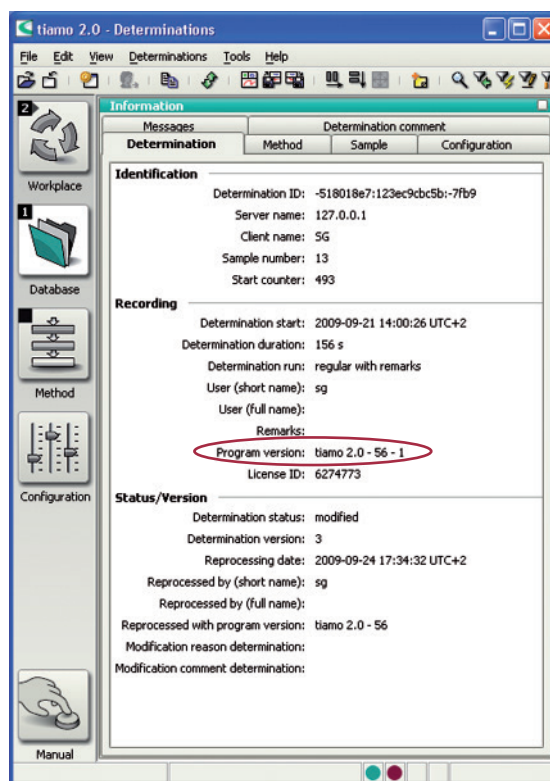
be prepared by pressing a button – from installation through to the last titration, from the start of the program through to the closing of the program.

tiamo 2.0 - Audit Trail - Local host								
File View Filter Tools Help								
Filter All entries								
	Type	Date	User	Full name	Client	Category	Action	
493		2009-09-21 13:24:45 UTC+2	sg		SG	Workplace	Determination started	Method: "Determination of Citric Acid"; Method version: "12";
494		2009-09-21 13:24:05 UTC+2	sg		SG	Workplace	Determination stopped	Method: "Determination of Citric Acid"; Method version: "12";
495		2009-09-21 13:23:51 UTC+2	sg		SG	Workplace	Determination started	Method: "Determination of Citric Acid"; Method version: "12";
496		2009-09-21 13:23:41 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of Citric Acid"; Version: "12"; Group: "F
497		2009-09-21 13:05:37 UTC+2	sg		SG	Workplace	Determination finished	Method: "Determination of Citric Acid"; Method version: "11";
498		2009-09-21 13:02:59 UTC+2	sg		SG	Workplace	Determination started	Method: "Determination of Citric Acid"; Method version: "11";
499		2009-09-21 13:02:56 UTC+2	sg		SG	Database	Determination deleted	Determination ID: "-456f6b9e:123dbeefalc:-7f84"; Determin
500		2009-09-21 13:02:26 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of Citric Acid"; Version: "11"; Group: "F
501		2009-09-21 13:01:11 UTC+2	sg		SG	Workplace	Determination finished	Method: "Determination of Citric Acid"; Method version: "9"; f
502		2009-09-21 12:59:17 UTC+2	sg		SG	Workplace	Parameter live modified	Method: "Determination of Citric Acid"; Method version: "9"; f
503		2009-09-21 12:58:57 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of Citric Acid"; Version: "10"; Group: "F
504		2009-09-21 12:58:31 UTC+2	sg		SG	Workplace	Determination started	Method: "Determination of Citric Acid"; Method version: "9"; f
505		2009-09-21 11:40:58 UTC+2	sg		SG	Workplace	Determination stopped	Method: "Determination of Citric Acid"; Method version: "9"; f
506		2009-09-21 11:40:51 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of HCl"; Version: "5"; Group: "Für den
507		2009-09-21 11:37:03 UTC+2	sg		SG	Workplace	Determination started	Method: "Determination of Citric Acid"; Method version: "9"; f
508		2009-09-21 11:36:55 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of Citric Acid"; Version: "9"; Group: "FC
509		2009-09-21 11:36:30 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of Citric Acid"; Version: "8"; Group: "FC
510		2009-09-21 11:36:05 UTC+2	sg		SG	Workplace	Start test error	Method: "Determination of Citric Acid"; Method version: "7"; f
511		2009-09-21 11:36:01 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of Citric Acid"; Version: "7"; Group: "FC
512		2009-09-21 11:35:34 UTC+2	sg		SG	Workplace	Start test error	Method: "Determination of Citric Acid"; Method version: "6"; f
513		2009-09-21 11:35:26 UTC+2	sg		SG	Configuration	Solution modified manu...	Solution: "Hydranal Titrant 5"; Parameter modified: "Solution
514		2009-09-21 11:33:10 UTC+2	sg		SG	Workplace	Start test error	Method: "Determination of Citric Acid"; Method version: "6"; f
515		2009-09-21 11:31:41 UTC+2	sg		SG	Methods	Method modified	Name: "Determination of Citric Acid"; Version: "6"; Group: "FC
516		2009-09-21 11:29:19 UTC+2	sg		SG	Login	Logged in	User: "sg";
517		2009-09-21 11:29:19 UTC+2	sg		SG	Program	Program started	Program: "tiamo 2.0"; Build: "56";
518		2009-09-21 11:28:33 UTC+2	AA	AA	SG	Program	Program finished	Program: "tiamo 2.0"; Build: "56";



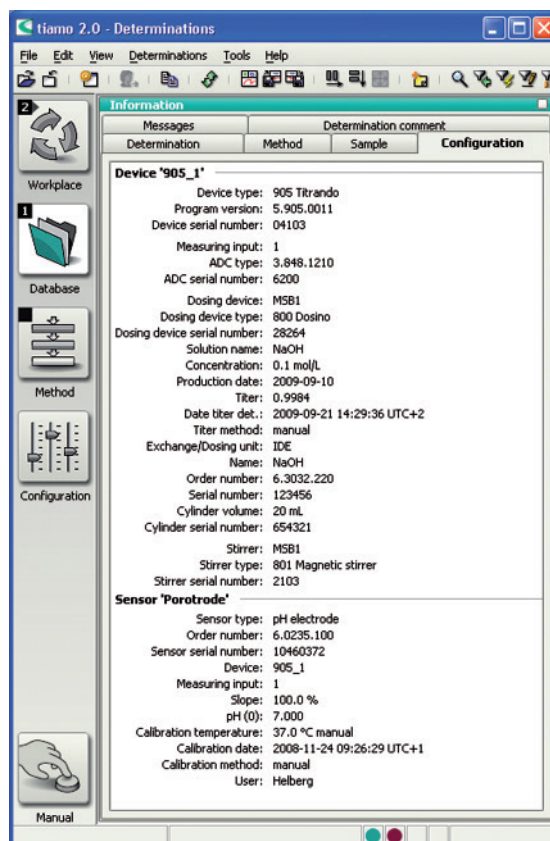
Version check

All data records are stored in **tiamo**™ together with their version. Protect your results against accidental or deliberate manipulation. Use the history function to show each version of your data. All alterations to electronic data are documented automatically – audits can no longer worry you.



Traceability

Be absolutely certain and place your confidence in the complete traceability of Metrohm software and hardware for your titrations. Each data record contains all the raw data necessary to ensure traceability. Unique in the world is the fact that each component used to generate the data is documented.



Ordering information

26

tiamo™ is available in three different versions and offers a suitable system for every application

	tiamo™ 2.x light	tiamo™ 2.x full	tiamo™ 2.x multi
Order number	The current order number can be found on our website.		
Max. number of devices per PC	2 ¹⁾	Unlimited	Unlimited
Supported devices	See ²⁾	See ²⁾	See ²⁾
Dialog languages	English, German ³⁾	English, German ³⁾	English, German ³⁾
Meets the requirements of FDA 21 CFR Part 11		•	•
User administration	•	•	•
Security policy		•	•
Audit Trail		•	•
Client-server support			•
Licenses	1	1	3
Additional licenses (optional)			• ⁴⁾
Data export to LIMS	•	•	•
Parallel titration		•	•
Upgrade available	•	•	

¹⁾ The limitation to two devices applies only for Metrohm devices (Titrino, Titrando, etc.); that means that balances and other generic (i.e. non-Metrohm) devices can be included without limitation.

²⁾	
Titrando	808, 809, 835, 836, 841, 842, 854, 856, 857, 867, 888, 890, 901, 902, 904, 905, 906, 907
Titrino	702, 716, 718, 719, 720, 721, 736, 751, 758, 784, 785, 794, 795, 798, 799
Measuring instruments	712, 856, 867
KF Coulometers	756, 831, 851, 852
Sample changers	730, 774, 778, 789, 814, 815, 855, 864, 874
Others	846, 859, balances, barcode reader, Avantes spectrometer ...

³⁾ Regular language updates in e.g. Chinese, French, Italian, Japanese, Polish, Portuguese, Russian, Slovakian, Spanish and Traditional Chinese

⁴⁾ The current order numbers can be found on our website www.metrohm.com
The licence code of the **tiamo™** multi version is required for ordering additional licenses!

License policy for the client-server version

Metrohm offers you a favorable license program. **tiamo™** multi uses runtime licenses, i.e. a license is only required for those **tiamo™** installations that are in use at the same time. In practice this means that you do not need to purchase a separate license for your office computer. When you have finished your measurements in the laboratory, you can continue to use **tiamo™** in your office without needing an additional license.

Regular updates!

tiamo™ is constantly being extended, updated and the latest generation of Metrohm instruments is always being incorporated. If you decide to use **tiamo™** you will continue to benefit from new and extended versions of our software in the future and will always be right up-to-date in titration analysis.

System requirements

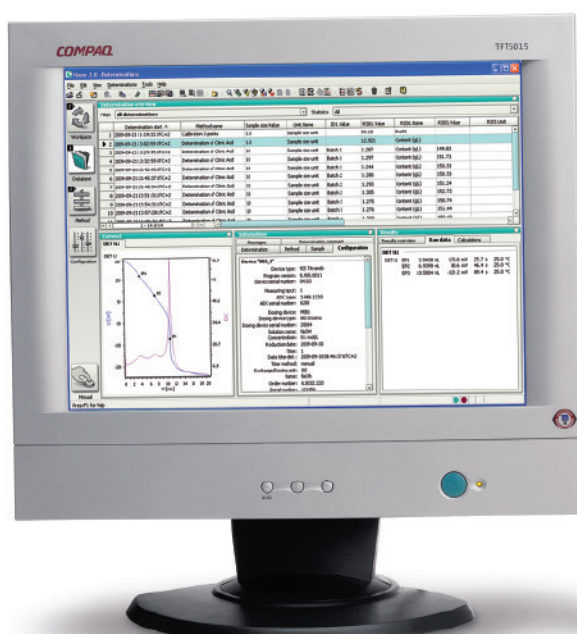
27

Minimum system requirements

Working memory	1 GB (Windows 2000/Windows XP) 2 GB (Windows Vista, Windows 7)
Free hard disk memory	1 GB for program
Free data memory	2 GB (for approx. 5000 determinations)
Operating system	32 bit version of: <ul style="list-style-type: none"> • Windows 2000 SP4 • Windows XP Professional SP2 • Windows Vista Business / Enterprise / Ultimate • Windows 7 Professional / Ultimate / Enterprise 64 bit version of: <ul style="list-style-type: none"> • Windows 7 Professional / Ultimate / Enterprise
USB interface	for devices with USB interface
Serial interface	for devices with RS232 interface

Additional system requirements for *tiamo*™ server

Data line	10 MBit/s, stable and permanent communication by means of TCP/IP
Operating system	32 bit version of: <ul style="list-style-type: none"> • Windows 2000 Server • Windows Server 2003 • Windows Server 2008 • Windows Server 2008 R2 64 bit version of: <ul style="list-style-type: none"> • Windows Server 2008 R2



www.metrohm.com
<http://tiamo.metrohm.com/>

