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Operating Manual

APT-COM™ 3 DataControlSystem

Basic Edition • Standard Edition • GLP Edition

Communication software
for temperature chambers and measurement instruments
from BINDER GmbH

BINDER GmbH

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Information regarding the operating manual

The following symbol marks important information. Please observe it in order to ensure optimum function of the system.

!	**Important note. Please observe.**

	Reference to further information.

This manual refers to the latest software version actual at the moment of the manual's publishing.

Due to continuous improvement of our software leading to frequent updates it is possible that the operation of your software, especially following an update download from the Internet, might differ from description in this manual. This includes the illustrations, especially the displayed version numbers that change with every update.

Nevertheless the operating manual remains valid until its subsequent issue.

In case of questions or any vagueness about software operation please consult our service dep.

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Feel free to e-mail us your suggestions.

GENERAL CONDITIONS
FOR SOFTWARE LICENSE CONTRACTS

of BINDER GmbH, Tuttlingen (Germany)

1. General Provisions / Conclusion of Contract

1.1 Object of this Contract is the granting of the usufructuary right for the “APT-COM”-software computer program (in different Editions: Basic, Standard or GLP), including the enclosed manual, additional hardware components as well as other material belonging to it (hereinafter together referred to as **Software**), which you have acquired from us or your BINDER dealer.

1.2 The right of use for the Software is granted with the conclusion of this license contract. To conclude this contract, you have to fill and sign the enclosed register card and subsequently mail the card to us. The software license contract between you and us shall be deemed concluded when we have received the register card.

1.3 The license granted to you covers the use of the Software at one work station on one PC (“single station license”). The simultaneous use of the Software on several computers is prohibited. The Software program is not network suitable in general.

Use of the CD-ROM shall only be permitted after filling the register card and mailing it to us!

1.4 **In case you should not agree to the provisions of this software license contract as laid down, you are not entitled to install or even use the Software. In this case you may return the Software to us or your BINDER dealer, depending from whom you purchased the Software, and the purchase price will be paid back. Nevertheless, refunds shall only be carried out when the seal of the CD-ROM cover is fully intact.**

2. Installation / Conditions for the Computer System

2.1 Installation of the software program as well as the additional hardware components may be carried out either by you or by one of our authorized service stations. In the latter case, your separate order is essential.

2.2 Before starting with the installation you have to make a backup copy of the PC.

We take no legal responsibility neither for wrongful application of the software program nor for the loss of data if the installation of the Software program and the additional hardware components (“plug-in board” and converter) has not been carried out according to the enclosed manual or by an authorized service station.

3. Hotline

With the conclusion of this software license contract, you may use our service-hotline at any time. We will endeavor to advice and support you in case of problems with the Software to the best of our possibilities.

Nonetheless, we will only pass on information via the hotline, if you are regularly registered as our licensee!

4. Updates

We will inform you about potential up-dates of the software program acquired by you. If you ask for it, we will deliver and install the up-dates at your cost.

These services also require that you are registered as our licensee.

5. Copyrights

5.1 You may copy our software program, insofar as the copying is essential for the rightful use of the program. The following reasons for copying shall be deemed essential: installation of the software program from the original data base to the mass storage device of the used hardware as well as the loading of the software program into the main memory.

5.2 Additionally, you are entitled to make a back up copy for the purpose of safeguarding. You may make and keep only one back up copy. You have to mark this back up copy as being a copy of the software program licensed to you.

5.3 Further copies, including the output of the program code through the printer as well as the photocopying of the manual, are strictly prohibited.

5.4 If you should change your hardware, you are obliged to delete the software program from the mass storage device of the hardware used so far. You are not allowed to use, keep available or simultaneously storage the software program on more than one hardware.

6. Decompilation and Change of Program

6.1 Decompilation and reverse engineering of the software program are strictly prohibited.

6.2 In general you are not allowed to remove the copy protection or similar protection devices. You may only remove the copy protection respectively similar protection devices if the protection device should interfere with or prevent trouble-free use of the software program and - additionally- if we should not eliminate the disruption within a reasonable time span after being asked by you. You bear the burden of proof that trouble-free use of the program is interfered with or prevented by the protection device.

6.3 It is strictly prohibited to change or remove serial numbers or other features by which the program can be identified.

6.4 When directly interfering with the APT-COM™ 3 files you will lose all warranty rights.

7. Sale and Lease

7.1 You are entitled to sell or give away free the software program including the manual and additional material permanently, presupposed that the person acquiring the program agrees that the conditions of this contract continue to be in force with respect to the acquiring person.

In case you should pass on the Software, you have to hand over to the new user all program copies, including the back up copy, or to destroy all copies not handed over. After the passing on of the Software you may not use the program any longer; you right of use lapses.

7.2 Nonetheless, you are not entitled to commercially lease the Software - including manual and the additional material - to a third party. You may borrow the Software (i.e. without receiving monies) to a third party if the borrower agrees that the conditions of this contract continue to be in force with respect to him and if you hand over all program copies including the back up copy to the borrower or if you destroy all copies not handed over to the borrower. For the time the borrower uses the Software, you may not use the software program yourself.

7.3 You may not surrender the Software to a third person if there is reasonable suspicion that the third person infringes the provisions of this contract, especially if it is suspected that the third person makes unlawful copies of the program.

8. Obligation of Information

In case you should sell the Software you are obliged to pass on to us the complete name and address of the purchaser in writing.

9. Warranty

9.1 All defects of the delivered Software will be repaired by us or our service stations if they occur within a time span of 12 months, starting with the date of purchase of the Software (the date of the dealer's invoice or our invoice shall be crucial).

Defects will only be repaired if you are regularly registered as being our customer (licensee).

The following cases shall be excluded from the guarantee: false program application caused by improper (not in accordance with the manual) installation of the Software program or the additional hardware components; if the defect is caused by an accident, or misuse or wrongful application of the program. We also do not warrant for any defects which are caused due to non-compliance of the hardware used by you or the use of an incompatible system driver of other hardware components.

You have no right to ask for repair at your premises.

9.2 If defects are covered by our guarantee, we are entitled - at our discretion - either to cost-free repair of the defect or to replace the defective part or program.

9.3 If the defect can not be repaired within a reasonable period of time or if repair or replacement should fail respectively come to nothing for whatever reasons, you are entitled at your discretion to ask for a price reduction or redhibition ("Wandelung") of the contract. Repair or replacement shall be regarded as failures not until we have had sufficient opportunity for repair or replacement or if repair or replacement are impossible or if there are justified doubts with respect to the success of repair or replacement or if repair or replacement are unreasonable.

10. Obligation to Inspect and Reprimand

10.1 You have to inspect the Software (including manual and additional material) within 10 work days after the installation of the Software program, especially with respect to the completeness of the documents as well as the functioning of the program operations as laid down in the manual.

All defects detected due to the inspection or which are detectable, have to be brought to our notice within additional 10 days in writing. Your reprimand has to contain a detailed description of the defect(s).

10.2 Defects not being detectable in the course of a regular inspection (as described above) have to be brought to our attention within 10 work days after their detection in writing; additionally, you have to strictly keep to our reprimand rules as described above.

10.3 In case you should not keep to the inspection and reprimand rules, the delivered Software shall be deemed approved by you regarding the respective defect.

You have to install the software program at the latest within 12 months after the purchase. If should you not keep to this deadline, we are not obliged to repair any defects.

11. Liability

11.1 We are liable for damages according to the statutes of the applicable law as long as we or our representatives or servants have acted with malice intent or gross negligence. If we have not acted with malice intent, our liability shall be restricted to such damages which are foreseeable and have typically be taken into account while dealing with surrender of software programs.

11.2 We also are responsible according to the applicable law if there is an infringement of an obligation which is especially important and essential for serving this contract's purpose (so called "Kardinalpflicht"). In those cases damages shall also be restricted to such which are foreseeable and have typically be taken into account while dealing with surrender of software programs.

11.3 Our liability for culpable infringement of life, body or health remains untouched; the same shall apply with respect for the compulsory liability according to the German Product Liability Statute ("Produkthaftungsgesetz").

11.4 All further liability is excluded.

12. Place of Jurisdiction and Applicable Law

12.1 Place of Jurisdiction for all disputes arising in connection with this license contract shall be at our domicile (Tuttlingen, Germany), presupposed that you are a "full merchant" in the sense of the German Commercial Statute (HGB)

12.2 This contract shall exclusively be construed under and governed by German substantial law, explicitly excluding the UN Convention on the International Sale of Goods ("Vienna Convention").

As of September 2002

Contents

1. Product description

1.1 Data structure on the APT-COM™ CD

APT-COM™ 3 DataControlSystem is delivered on CD. The APT-COM™ CD contains the following directories:

"APT-COM 3"

- This directory contains the self-unzipping file setup**.exe**. This file includes all files necessary for operating APT-COM™ 3 which are copied to a free-choice directory on the measurement computer which will be used to control the measurements. Furthermore included with the GLP Edition are all necessary files for running the monitoring software Watch Tool which can be copied to a free-choice directory on the same or a second computer (the monitoring computer) which will be used to supervise the measurements.

"APT-COM 2" (optional for chambers with RD2 controller)

- This directory contains the installation routines for APT-COM™ 2. The operating manual for APT-COM™ 2.01 is included in the "Manuals" directory.

"Adds"

- This directory contains installation programs to actualize the computer configuration. They can be used, if needed, to actualize the **MS Access database driver** and the **Internet Explorer**. Note: With the operating system Windows NT 4.0, the Internet Explorer functions as a service pack that updates the operating system and fixes possible bugs.
- If you prefer using another browser than the Internet Explorer 5.5 to view the html pages generated by APT-COM™ 3, you can copy one of the free browsers **Mozilla**, **Firefox**, or **Opera** also included in the Adds directory. But the Internet Explorer 5.5 should still be installed to update your system configuration.
- The file **W&T COMServer** driver is needed only with the optional use of the Ethernet/RS 422 converter (COM server Art. No. 8012-0380 (230V) / 8012-0405 (115V))
- In case you use the operating system Windows XP and want to operate several chambers with RS232 interface (see chap. 4.1.5), you will need the **Moxa XP driver** of the extension port and the interface test software **PCommLite** for XP (Moxa XP interface test software) which are both also included in this folder.

The directory "**BINDERInterfaceDocs**" provides all necessary information which you need in order to directly address BINDER units with your domestic software (LIMS). Please keep in mind that BINDER GmbH can not give any kind of support for software developers. The information and software (source code) are provided without warranty of any kind.

Further tools and utilities are included in the "Adds" directory.

"Manuals"

This directory contains following operating manuals (order no. in brackets) in pdf file format:

- APT-COM™ 3 DataControlSystem (German, English: 7001-0065, French, Spanish: 7001-0092)
- APT-COM™ 2.01 (Basic 7001-0042, Standard 7001-0039, GLP 7001-0025)
- Alarm Box AB 01 (7001-0038), Alarm Box AB 01 (E2) (7001-0133)
- Telephone dialling device TWG 01 (7001-0034)
- W&T interface converter RS 232 / RS 422 (7001-0101), W&T interface converter USB / RS 422 (7001-0168), W&T interface converter Ethernet / RS 422 (COM-Server) (7001-0068)
- CPU module installation (7001-0108)

Note: During APT-COM™ 3 installation, the APT-COM™ 3 operating manual is automatically copied to the APT-COM™ 3 folder on the measurement computer in order to be available there at any moment.

1.2 APT-COM™ 3 DataControlSystem Basic Edition, Standard Edition, GLP Edition overview

APT-COM™ 3 DataControlSystem Basic Edition

- Connection of 1 BINDER temperature chamber or measuring device with interface RS 232 or RS 422 to a PC
- Remote control of the connected temperature chamber
- Graphic recording of the controlled process parameter temperature, pressure, humidity or CO_2 or O_2 concentration
- Documentation of the controlled process parameter in a file protected against manipulation
- Documentation when exceeding an adjustable tolerance limit
- Documentation of all system interventions
- Simple password protection at start up
- Software lock for non-supervised running
- Manual output of measuring data in ASCII format to a printer or a spreadsheet file to handle them e.g. with table calculation programs. Data of any period can be selected.

APT-COM™ 3 DataControlSystem Standard Edition

All functions of Basic Edition, in addition:

- Central management of up to 40 connected units at the same time
- E-Mail notification for Limit over-/ under run using SMTP
- Time-directed automatic printouts (daily, weekly, monthly)
- http web server, i.e., measuring data are periodically presented as a homepage and can be viewed via a web browser
- Manual printout in HTML and E-Mail format

APT-COM™ 3 DataControlSystem GLP Edition

All functions of Standard Edition, in addition:

- Unlimited number of users with individual passwords
- GxP conformal password protection
- Suitable for in-system validation according to 21 GFR Part 11
- Central overview of all units in a control room function with “watch tool” via TCP/IP messages. Parallel security level by a second monitoring computer in the network with independent monitoring software
- Different rights for administrator and user
- Remote alarm over telephone net or/and e-mail. Documentation and remote alarms when passing limits or in case of communication problems. Various possibilities to transmit error messages via house alarm systems, the telephone net (optional dialling device TWG 01) and e-mails, and remote monitoring of all measurements via a web browser.
- Documentation of the measuring values in a file protected against manipulation according to GxP guideline
- Automatic backup system of measuring data and system configuration and of the automatic system protocol by backups to any network drive.
- Use of existing Ethernet network lines to connect the measuring computer to units with RS 422-interface by integrating one or more COM servers (optional module).
- Documentation of all system interventions with user name and Time Stamp as an important part of an Audit Trail next to the measuring data with entered comments

1.3 Performance specification APT-COM™ 3 DataControlSystem Basic Edition

Aim of APT-COM™ 3 DataControlSystem Basic Edition is simple data acquisition from a BINDER temperature chamber or measuring device and printing out the data graphically.

APT-COM™ 3 DataControlSystem Basic Edition permits bi-directional data communication and remote control of one APT.line™ temperature chamber of BINDER with RS 232, RS 422, or Ethernet interface by linking it to a computer. To connect a unit with RS232 interface, we recommend using APT-COM™ 2 (see chap. 4.1.1).

APT-COM™ 3 DataControlSystem Basic Edition permits to enter the set-point via computer, to set a tolerance bandwidth including documentation in case of exceeding the tolerance band limit, saving the measuring data in a manipulation-proof file, and the tabular and graphical output of the measurement data temperature, pressure, humidity, CO_2 or O_2 concentration to a to a printer or a spreadsheet file to handle them e.g. with table calculation programs. Data of any period can be selected. All system changes are documented in an automatically generated system protocol ("trace" file). Access to APT-COM™ 3 is secured by simple password protection; a lock function (Software lock) secures the unsupervised operation.

A temperature chamber with serial interface RS 232 can be directly connected to the computer. A temperature chamber with an RS 422 interface is connected via an interface converter RS 232 / RS 422 (Phoenix Art. No. 8012-0162 (230V) / 8012-0166 (115V) or W&T 8012-0556 (230V) / 8012-0557 (115V)) which can be directly plugged to one of the serial computer interfaces. For connection to a USB interface, the interface converter USB / RS 422 (Art. No. 8012-0665) is suitable. Alternatively connection is also possible via existing Ethernet networks. In this case the measurement computer communicates with a W&T COM server (Art. No. 8012-0380 (230V) / 8012-0405 (115V)) to which the chamber with RS 422 interface is connected. You can connect a temperature chamber with internal Ethernet interface directly to a computer with Ethernet board or to an existing Ethernet network.

1.4 Performance specification APT-COM™ 3 DataControlSystem Standard Edition

APT-COM™ 3 DataControlSystem Standard Edition permits bi-directional data communication and remote control of up to 30 APT.line™ temperature chambers of BINDER with RS 232, RS 422, or Ethernet interfaces by linking them to a computer. In addition, up to 10 more units with an Ethernet interface can be added to the network. To connect units with RS232 interface, we recommend using APT-COM™ 2 (see chap. 4.1.1). Connection is also possible via existing Ethernet networks. In this case the measurement computer communicates with a W&T COM server, to which the chambers with RS 422 interface are connected.

APT-COM™ 3 DataControlSystem Standard Edition permits the storing and the tabular and graphical output of the measurement data temperature, pressure, humidity, CO_2 or O_2 concentration, documentation of all system changes, generation of an automatic system protocol ("trace" file), programming of the controllers (will be implemented as separately available tool), adjustment of tolerance bandwidths, documentation in case of exceeding an adjustable tolerance band limit.

APT-COM™ 3 can generate a homepage that presents the course of all actual measurements. Remote control of all running measures is therefore possible from any location. Access to APT-COM™ 3 is secured by simple password protection; a lock function (Software lock) secures the unsupervised operation. The measuring and system data are saved in a manipulation-proof file.

Measurement data can be exported to a printer or a spreadsheet file to handle them e.g. with table calculation programs. Data of any period can be selected.

Single temperature chambers with serial printer interface RS 232 can directly be connected to a PC. Several of such chambers are connected via a control board which is added to the PC and a modular extendable CPU port module (Art. No. 8012-0159).

Single chambers with serial interface RS 422 can be connected via an interface converter RS 232 / RS 422 (Phoenix Art. No. 8012-0162 (230V) / 8012-0166 (115V) or W&T 8012-0556 (230V) / 8012-0557 (115V)), which can be plugged in to one of the serial ports of the PC. For connection to a USB interface,

the interface converter USB / RS 422 (Art. No. 8012-0665) is suitable.For connecting several of such chambers a modular extendable plug distributor (Art. No. 8012-0295) with 10 plug-in places is interposed. Alternatively connections are also possible via existing Ethernet networks.

In this case the measurement computer communicates with W&T COM servers (Art. No. 8012-0380 (230V) / 8012-0405 (115V)) to which several chambers with RS 422 interface can be connected via plug distributors. You can connect temperature chambers with internal Ethernet interface directly to a computer with Ethernet board or an to an existing Ethernet network.

Any combination of up to 30 temperature chambers with RS 232, RS 422, and Ethernet interfaces are possible. In addition, up to 10 more units with an Ethernet interface can be added to the network.

1.5 Performance specification APT-COM™ 3 DataControlSystem GLP Edition

APT-COM™ 3 DataControlSystem permits bi-directional data communication and remote control of up to 30 APT.line™ temperature chambers of BINDER with RS 232, RS 422, or Ethernet interfaces by linking them to a computer. In addition, up to 10 more units with an Ethernet interface can be added to the network. To connect units with RS232 interface, we recommend using APT-COM™ 2 (see chap. 4.1.1).

APT-COM™ 3 DataControlSystem permits the storing of data, automatic backup generation of measuring and system data, generation of an automatic system protocol ("trace" file) for the Audit Trail, programming of the controllers (will be implemented as separately available tool), adjustment of tolerance bandwidths, tabular and graphical output of the measurement data temperature, pressure, humidity CO_2 or O_2 concentration, remote alarm via e-mail of communication problems or leaving the tolerance bandwidth. APT-COM™ 3 can generate a homepage that presents the course of all actual measurements. Remote control of all running measures is therefore possible from any location. Access to APT-COM™ 3 is secured by the assignment of user names with an individual and secret password for each user name. The system configuration and measuring data are saved in an encrypted manipulation-proof database file according to the GLP/GMP guidelines. These functions can be validated and comply to the FDA requirements 21 CFR part 11.

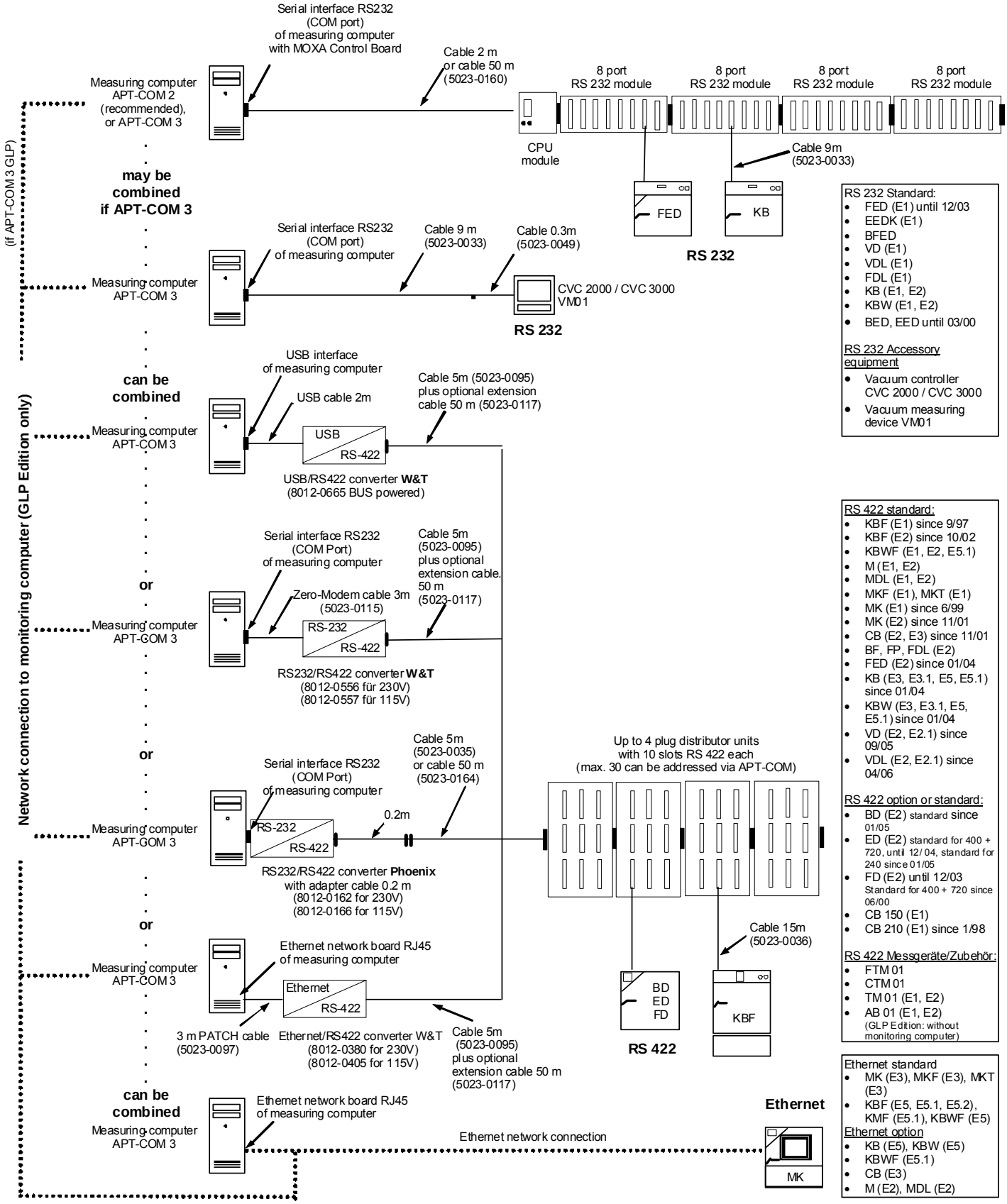
Additional monitoring functions can be activated as required. By installation of the independently running monitoring software "Watch Tool" (on APT-COM™ 3 GLP CD) on the same or a second computer the degree of system monitoring can be raised considerably. The monitoring software supervises the communication between the measurement computer and the connected temperature chamber and the respect of the individual limits. The BINDER Alarm Box AB01 (Art. No. 9052-0004) and the BINDER telephone dialling device TWG01 (Art. No. 9052-0005) can be connected in order to transmit alarm messages to a house alarm system or as voice mail via the telephone. The monitoring software "Watch Tool" is also able to send e-mails. These functions are not required to meet guideline 21 CFR 11. Making use of these functions needs communication be established between the measurement computer and other computers in the local network or even the internet. Depending on the user's security philosophy and resulting restrictions to local network and/or internet access the user has to decide whether or not to make use of these functions.

Single temperature chambers with serial printer interface RS 232 can directly be connected to the measuring computer. Several of such chambers are connected via a control board which is added to the PC and a modular extendable CPU port module (Art. No. 8012-0159).

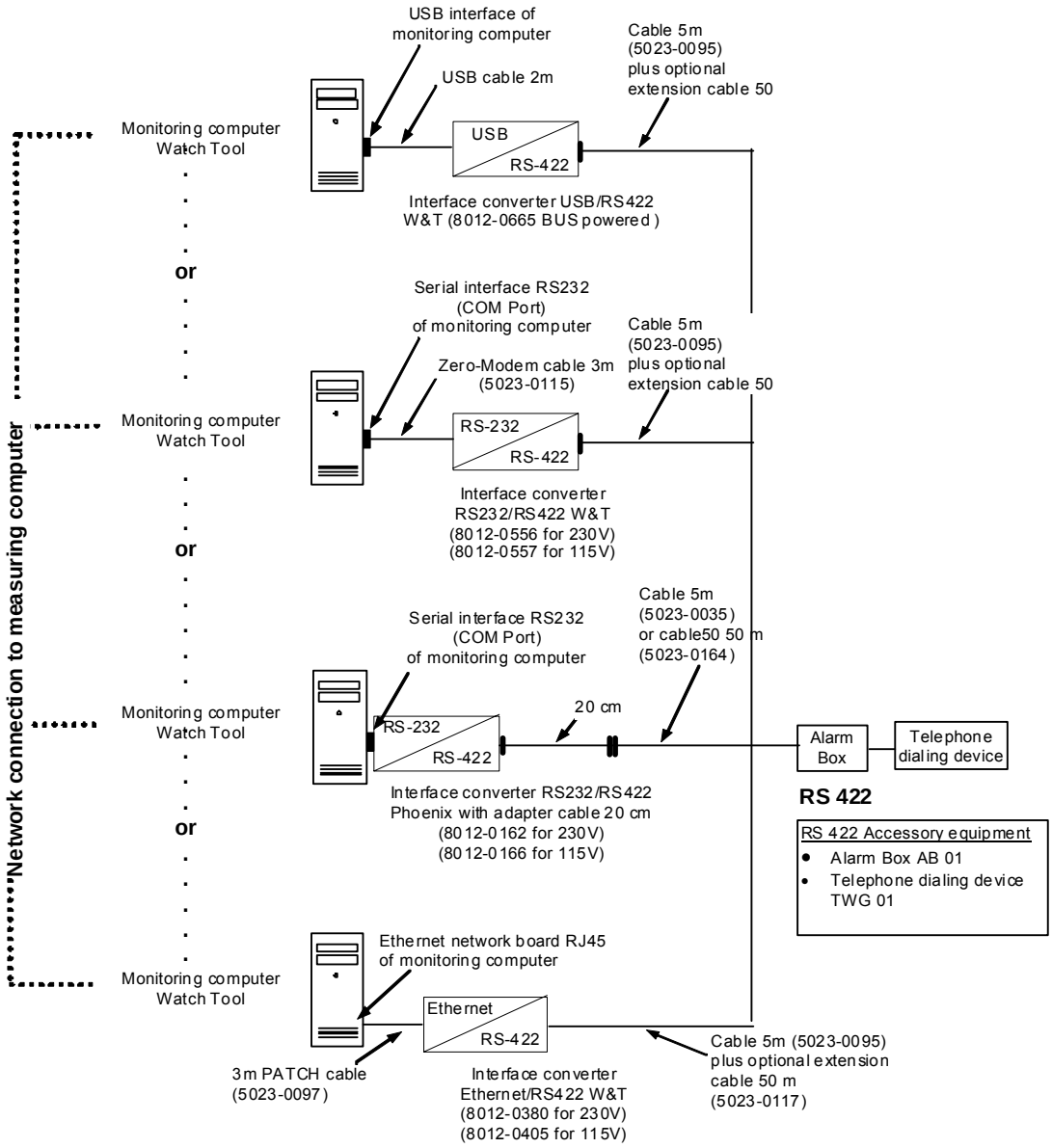
Single chambers with serial interface RS 422 can be connected via an interface converter RS 232 / RS 422 (Phoenix Art. No. 8012-0162 (230V) / 8012-0166 (115V) or W&T 8012-0556 (230V) / 8012-0557 (115V)) which can be plugged in to one of the serial ports of the PC. For connection to a USB interface, the interface converter USB / RS 422 (Art. No. 8012-0665) is suitable. For connecting several of such chambers a modular extendable plug distributor (Art. No. 8012-0295) with 10 plug-in places is interposed. Alternatively connections are also possible via existing Ethernet networks. In this case the measurement computer communicates with W&T COM servers (Art. No. 8012-0380 (230V) / 8012-0405 (115V)), to which several chambers with RS 422 interface can be connected via plug distributors. You can connect temperature chambers with internal Ethernet interface directly to a computer with Ethernet board or an to an existing Ethernet network.

Any combination of up to 30 temperature chambers with RS 232, RS 422, and Ethernet interfaces are possible. In addition, up to 10 more units with an Ethernet interface can be added to the network.

1.6 Network overview APT-COM™ 3 DataControlSystem Standard or GLP Edition



Network overview of the monitoring software « Watch Tool » on a second computer (option with GLP Edition)



1.7 Relation to previous APT-COM™ versions

APT-COM™ 3 DataControlSystem is no update of previous APT-COM™ 2 versions, but an entirely new program. Previous versions are not affected by the APT-COM™ 3 installation. The Program Editor allows importing programs from APT-COM™ 2 to APT-COM™ 3 DataControlSystem. Therefore users of previous versions have to keep the version in order to be able to handle the data. It is not possible to carry out measurement and chamber control of the same chambers or from the same computer using APT-COM™ 3 and a preceding APT-COM™ version simultaneously. For any questions regarding software improvement, please address aptcom3@binder-wold.com or visit www.binder-world.com.

Improvements compared to the software APT-COM™ 2

APT-COM™ 3 is a modern data acquisition system based on the LabVIEW™ Runtime Engine. LabVIEW™ is used in many laboratories as a standard for measuring data acquisition. The LabVIEW™ structure permits modular software extension allowing continuous improvement and extension. User-specific problem solutions or implementing of parts of the software into already existing LabVIEW™ systems become possible and are offers as a service by BINDER.

APT-COM™ 3 DataControlSystem file management is based on MS Access databases. These databases are secured by a password and provided with a 32-bit code of RSA Data Security Incorporated according to the Microsoft Access RC4 encrypting algorithm.

Following table gives an overview of the improvements:

What is new	Resulting improvements
LabVIEW™ based	Possibility of modular extensions and user-specific problem solving
Encrypted Access database	Standardized file format with high encoding level for easy file management and high manipulation-proofness
Distinction between administrator and user (GLP Edition)	Graduated user rights for system configuration and handling of controlling and data recording of individual temperature chambers
Individual password (GLP Edition)	Each user logs in with his own secret password and then has access only to the data generated by his own measurements. Attention: No multi user system!
Automatic system protocol	All changing of the system configuration is saved in a file with user name and time stamp. Also alarm messages and information messages given by the system are protocolled. The system protocol is saved in an encrypted database file and automatically secured by the backup function.
Comments on measuring data	Each running measurement can be manually commented at every moment. Modifications at the chambers as e.g., door opening, set-point modification, new charging, measurement interruption can be directly commented. The comments become invariable part of the raw data and are encoded and saved together with them. Together with the automatically generated system protocol this is an important part of the automatic and non-manipulable audit trail.
Parallel security level (GLP Edition)	A second computer connected to the measurement computer via a network serves to monitor with special monitoring software the correct communication between measurement computer and the connected chambers and the set limits for the recorded measuring data. This monitoring computer can transmit alarm messages via a house alarm system and a telephone dialling device (voice mail) and distribute e-mails.
Enlarged backup function (GLP Edition)	Not only the measuring value database is saved but also the database containing the automatic system protocol and all system setting active at the moment of backup. So it is always possible to reconstruct the system to its state at the moment of backup.
E-Mail service (Standard and GLP Edition)	The user can choose to be notified via e-mail and SMS about his ongoing measurements and receive notifying or alarm messages. For this you need an e-mail/SMS Gateway which can be provided by your e-mail provider. Please ask your provider about the conditions and any additional charges.
Web-server function (Standard and GLP Edition)	The APT-COM™ measurement computer can present the actual course of the measurements in a homepage. So the measurements can be monitored by other computers in the intranet as well as the internet via a web browser.

If you have any further wishes please do not hesitate to contact us.

We are always endeavored to improve our products guided by the wishes of our customers.

1.8 Deleting APT-COM™ 3 DataControlSystem from the hard disk

If needed, delete the folder “APT-COM 3” from the directory of your hard disc, e.g., “C:\Programs\APT-COM3“. The program is thus entirely deleted. It is not possible to delete the program via the Windows control panel because no entries in the Windows registry have been done during installation from CD.

2. Hardware and software requirements

2.1 Recommended system requirements

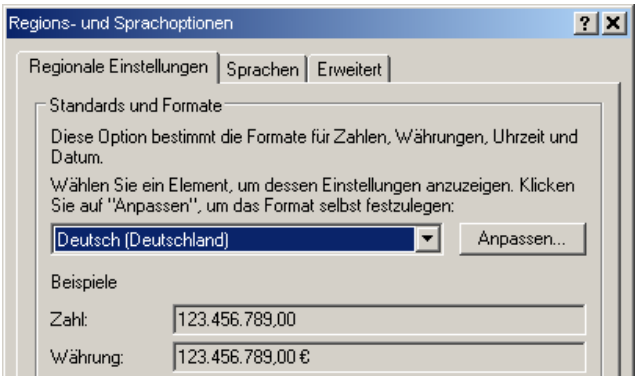
- Windows 2000, XP
- Intel Pentium 4 min. 2 GHz or similar AMD
- 512 MB RAM
- Network card 100 Mbit Ethernet
- Hard disk with at least 7200 rpm
- Graphic card with 16MB local RAM
- CD-ROM or DVD drive
- one free PCI slot with own interrupt (for optional COM-port extension)
- at least one free COM port with free interrupt
- 100 MB free hard disk memory (for program without measuring data)
- Screen resolution 1024x786, setting True color (32 bit)
- 19’’ tube monitor or similar TFT screen

These system requirements are recommended when using all features of APT-COM™ 3 DataControlSystem GLP Edition. For use of the Basic or Standard versions lower system requirements can be sufficient. If the system properties are not sufficient, the operating speed of APT-COM™ 3 will noticeably decrease.

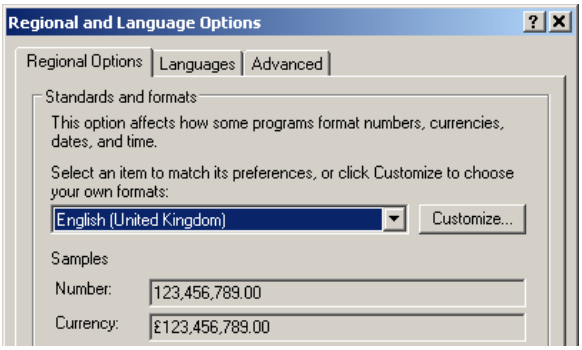
The operating systems Windows 95, 98, and ME are not suitable for operating APT-COM™ 3 DataControlSystem. You can operate APT-COM™ 3 versions lower than 3.02.021 with the operating system Windows NT 4.0 (Service Pack 6). If you like to use also versions from 3.02.021 on with Windows NT 4.0, please contact the BINDER Service. BINDER recommends using Windows 2000 with Service Pack 4 or Windows XP Professional from Service Pack 2 on.

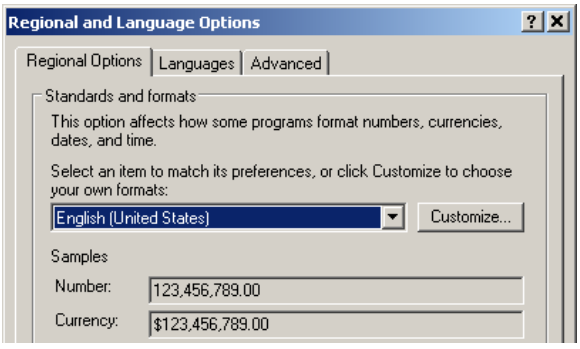
APT-COM™ 3 DataControlSystem has been tested with German and English operating systems. When operating it with operating systems of other languages, the BINDER GmbH excludes liability for correct function. If a system qualification has been performed using BINDER qualification documents, the correct function of APT-COM™ 3 DataControlSystem can be assumed even when using it with an operating system of a different language.

- When selecting German as the system language: Select setting **Deutsch (Deutschland)** in the Windows Control Panel.



- When selecting English as the system language: Select setting **English (United Kingdom)** or **English (United States)** in the Windows Control Panel.





APT-COM™ 3 scales in relation to the offered system capacity, i.e., you can increase operating speed, if necessary, by increasing system capacity (e.g. faster processor, more working memory).

Depending on any further installed software on your system, higher system requirements that the minimum requirements listed might be needed. Operating e.g., a virus scanner can remarkably decrease computer performance resulting in considerably lower processing speed of the APT-COM™ 3 processes. Having connected many (up to 40) temperature chambers, the actualization interval of 1 min might not be respected. For optimal use of all components with maximum speed, BINDER recommends a hardware configuration acc. to GxP (chap. 2.2).

APT-COM™ 3 DataControlSystem supports multicore systems. The software strongly scales with the number of cores in the system. When choosing a processor we therefore generally recommend using a multicore system as preferable compared to a single core system.

2.2 Additional system requirements for system validation according to GxP (GLP Edition)

- APT-COM™ 3 GLP Edition
- Only Windows 2000 or XP Professional with actual Service Pack and actual Microsoft patches
- Intel chipset
- Intel network card
- At least UDMA-66 hard disk with 7200 rpm or RAID1
- Intermission free power supply for all PC components, and the mains unit of the converter e.g. via special battery buffered power installation or buffer unit attached to the PC system (recommended).

Notes:

It is possible to install APT-COM™ 3 DataControlSystem on a network server. The resulting losses in security and speed need to be discussed and weighted by the customer in advance. A validation of the total system by BINDER is no more possible in this case.

The system requirements are given for the measurement computer with APT-COM™ 3 running as well as for the monitoring computer with the monitoring software Watch Tool running.

Verify if any network access restrictions exist for your computer. For installation of APT-COM-Software as well as for driver installation in case of a needed RS232 extension port you might need administrator rights.

! Important note to avoid data losses: To ensure complete data acquisition and continuation of program operation during and after a power failure, we recommend to connect the mains of PC and all hardware components to a break free battery buffered power feeding.

Each mains unit and the control board have an input power of less than 10 W.

BINDER excludes each liability for data overrun.

3. Addressing the chamber controllers

3.1 Addressing chambers with RS 232 interface

When connecting several temperature chambers with RS 232 interfaces via the CPU module, **no addressing** is required because the control board organizes the data exchange. Accordingly, just assign a device name during chamber configuration in APT-COM™ 3 (chap. 8.4).

Following chambers provide (regularly or optionally) an RS 232 interface:

BED until 03/00, BFD, BFED, EED until 03/00, EEDK, FED (E1) until 12/03, FDL, KB (E1), KB (E2), KBW (E1), KBW (E2), VD (E1), VDL (E1), VM 01, Vacuum controller CVC2000, CVC 3000.

To connect the vacuum controller with speed controlled vacuum pumping unit, respect the vacuum controller settings described in the original manual of the vacuum controller, and for CVC 2000 in chap. 16.5 of the VD operating manual.

3.2 Addressing chambers with RS 422 interface

Communication between all temperature chambers and the computer occurs via the same control- and recording lines. In order to enable APT-COM™ 3 to address all chambers specifically, you have to give all controllers a separate name and address. Addresses 1 to 30 are available. These addresses individually assigned at the chamber controller need to be entered in the APT-COM™ 3 chamber configuration menu (chap. 8.4). The factory setting of the unit address is 1.

Perform addressing of the chamber controller before connecting the chamber to the APT-COM computer.

Special case: Address No. 30 is reserved for the BINDER Alarm Box AB01.

DO NOT assign any address twice.

Up to max. 30 devices with RS422 interface can communicate with APT-COM™ 3.

Following chambers provide (regularly or optionally) an RS 422 interface:

AB 01 (E1, E2), BD (E2), BF, ED (E2), FD (E2) until 12/03, FED (E2), FP, CB 150 (E1), CB 210 (E1) since 01/98, CB (E2, E3), CTM 01, FTM 01, KB 23, KB (E3, E3.1, E5, E5.1), KBF (E1 since 9/97, E2, E3), KBW (E3, E3.1, E5, E5.1), KBWF (E1, E2, E5, E5.1), M (E1 since 06/99, E2), MDL (E1 since 06/99, E2), MK (E1 since 06/99, E2), MKF (E1), MKT (E1), TM 01 (E1, E2), VD (E2, E2.1), VDL (E2, E2.1).

The following points offer an overview how to address chambers with different controller types. For detailed instructions please refer to the operating manuals of the respective chamber.

3.2.1 Addressing the measuring device TM01 (E1) with controller dTron 8

NORMAL DISPLAY → 2 sec. PGM → AL 1 → 7 x PGM → Y.0 → 2 sec. PGM → C111 → 2 x PGM → C113 → with ← ↑ enter the desired unit address XX (XX03) → PGM → with EXIT back to Normal display.

3.2.2 Addressing the measuring device TM01 (E2) with controller dTron 308

NORMAL DISPLAY → PGM → OPr → ↑ → ConF → PGM → InP → ↑ → IntF → PGM → r422 → PGM → Prot → ↑ → Adr → PGM → with ← ↑ enter the desired unit address, wait 2 sec. → with 4 x EXIT back to Normal display.

3.2.3 Addressing chambers with D2 (DICON 1000) and PD2 (DICON 1001) controller, and the measuring device FTM 01

GRUNDSTELLUNG → 5 x Pgm (D2 controller) / 6 x Pgm (PD2 controller) → CONFIGURATION 2 → ENTER → CODE NO. 0000 → ENTER → with 3 x ↑ set CODE 0003 → ENTER → DISPLAY → 7 to 8 x Pgm → INTERFACE → ENTER → REPORT MODE → 2 x Pgm → INSTR.ADDR 1 → with ← ↑ enter the desired unit address → ENTER → with 3 x EXIT back to GRUNDSTELLUNG.

3.2.4 Addressing CO_2 incubators CB150/CB210 with PD2 controller, and the measuring device CTM01

Press down ← ↑ together for 10 sec → RECALIBRATION → 5 x W → INTERFACE → ENTER → REPORT MODE → 2 x W → INSTR.ADDR → with ← ↑ enter the desired unit address → ENTER → with 3 x EXIT back to GRUNDSTELLUNG.

3.2.5 Addressing chambers with R3 and R3.1 controller

Press down button X/W for approx. 5 seconds → The display alternately shows “unit” and the temperature unit → Press again button X/W → The display alternately shows “rASd” and the set-point gradient → Press again button X/W → The display alternately shows “Adr” and the actual setting of the unit address → Set the required address between 1 and 30 with arrow buttons. The set value is automatically adopted after 2 seconds.

3.2.6 Addressing chambers with MB1 controller

Normal Display → Hit button CONFIG → Menu “User-settings” → Select menu “Instrument data” → ENTER → Select “Address” → Enter a controller address (1 up to 30).

3.2.7 Addressing chambers with RD3 controller

Normal Display

Press down key [X/W] ↓ for 5 sec

Display 1 shows	e.g. 0000	
Display 2 shows	PROGRAM EDITOR	(you are in the program editor)

Press down key [X/W] ↓ for 5 sec

Display 1 shows	0000	
Display 2 shows	USER – LEVEL	(you are in the user level)

Hit program key [↻] ↓

Display 1 shows	0000	
Display 2 shows	UserCod? 0000	(enter user code, display flashes)

Enter the user code with arrow keys [▼][▲] ↓ e.g. **0001** (basic setting, or the valid code in case it has been previously changed in this menu). Value is displayed in both displays.

Automatically forward after 2 sec

↓

Display 1 shows	1	(actual address: 1)
Display 2 shows	Adress 1	(entry of unit address) (actual address: 1)

Enter the unit address with arrow keys [▼][▲] ↓ Address is displayed in both displays.

Hit key EXIT or wait for 120 sec. Controller returns to Normal Display.

3.3 Addressing chambers with an internal Ethernet interface

Following chambers regularly provide an internal Ethernet interface: KBF (E3, E5, E5.1), KBF-ICH (E3, E5, E5.1), KBF-LQC (E3, E5, E5.1), MK (E3) MKF (E2, E3), MKT (E3). Optional: CB (E3), M (E2), MDL (E2), MKT (E1), KB (E5, E5.1), KBW (E5, E5.1), KBF (E2), KBF-ICH (E2), KBF-LQC (E2), KBWF (E2, E5.1).

To connect chambers with the internal Ethernet interface, no RS422 addressing at the chamber controller is necessary. The RS422 address should be set to 1 (default setting). It must be identical in APT-COM™ 3 and in the chamber controller. The chamber is identified by APT-COM™ 3 by its MAC address in the network (chap. 8.4.1).

3.4 Integrating BINDER chambers with an internal Ethernet interface into an Ethernet network

3.4.1 Identification of the component in use

BINDER chambers with an internal Ethernet interface may contain two different components, which can be identified by the MAC address. The MAC address of a BINDER chamber is indicated on a sticker next to the Ethernet interface.

The first 6 digits of the MAC address identify the manufacturer (OUI = Organizational Unique Identifier):

- 00-20-4A xx-xx-xx stands for Lantronix
- 00-C0-3D-xx-xx-xx stands for W&T

Networking a chamber with the W&T component is described in the installation manual 7001-0068 for the W&T interface converter Ethernet-RS422 W&T. It is also included with the manuals on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

The following information applies only to chambers **with a Lantronix interface.**

To permit communication with the connected devices, assignment of an IP address is required. Depending on the type of the existing Ethernet network this can happen in several ways (chap. 3.4.2, 3.4.3).

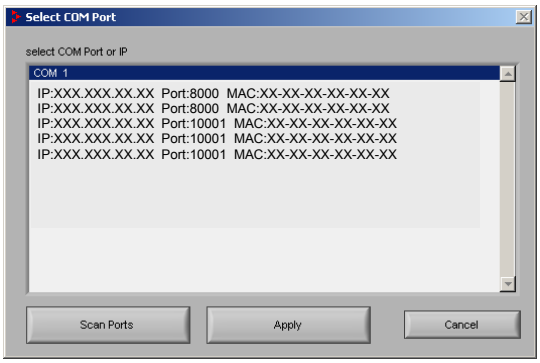
! Perform the following settings in agreement with the system administrator or have them done by the system administrator

3.4.2 Ethernet network with a DHCP server

The DHCP server automatically assigns a valid IP address to the BINDER chamber.

Procedure:

1. Connect the chamber to the Ethernet network
2. Switch on the chamber.
3. The IP address is automatically negotiated between the chamber and the DHCP server. No acting by the user is required. This operation may take a few minutes depending on the load of the DHCP server.
4. Following the successful address assignment (point 3) you can find the MAC address and the assigned IP address in APT-COM™ 3 in a selection list in the configuration menu “Chamber” (chap. 8.4) under “Select COM Port” when configuring the temperature chamber.



Advice for safe and stable operation:

It must be sure that the DHCP server always assigns the same IP address to the BINDER chamber. If the IP address changes during operation, communication between the chamber and APT-COM will be disturbed. Ask your system administrator who administers the DHCP server.

The system administrator usually has got the 2 following options:

1. Fix assignment of the IP address to the MAC address in the DHCP Server
2. One or several IP addresses are exempted from the automatic IP address assignment performed by the DHCP server, i.e., the server will not administer them any more. You can now fixedly assign these IP addresses to the MAC addresses with the **Lantronix DeviceInstaller** (chap. 3.4.4).

3.4.3 Ethernet network without a DHCP server

> **!** **The system administrator shall perform the following settings.**

1. Manual assignment of an IP address for the APT-COM™ 3 computer in its operating system. With Windows® this is done via the control panel.
2. Manual assignment of different IP addresses for each connected chamber. You can use the program **Lantronix DeviceInstaller** (chap. 3.4.4) included on the APT-COM™ 3 CD to assign the IP address. This is possible only for chambers with a Lantronix interface (for identification see chap. 3.4.1).

3.4.4 Configuration of the BINDER chamber with the Lantronix DeviceInstaller

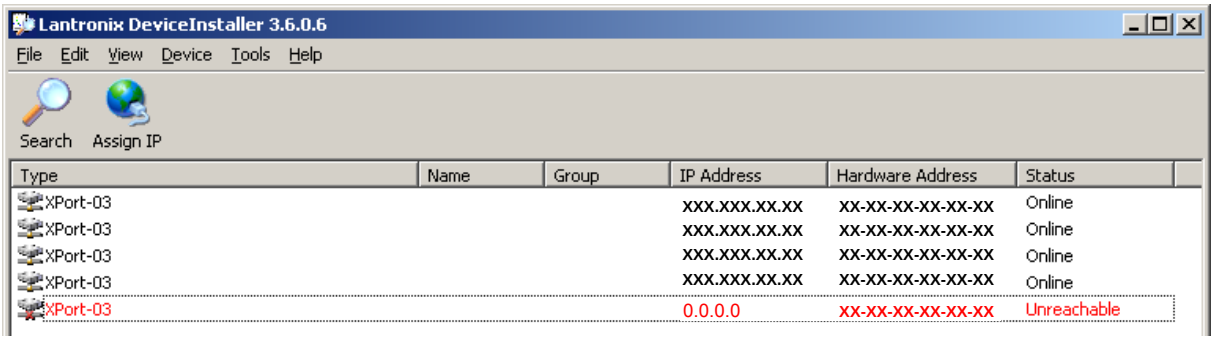
Note: DeviceInstaller needs the Microsoft Dotnet Framework. This program in English version is also included on the APT-COM™ 3 CD.

> **!** **Install Microsoft Framework 1.1 and Lantronix DeviceInstaller from the APT-COM™ 3 CD.**

Start DeviceInstaller.

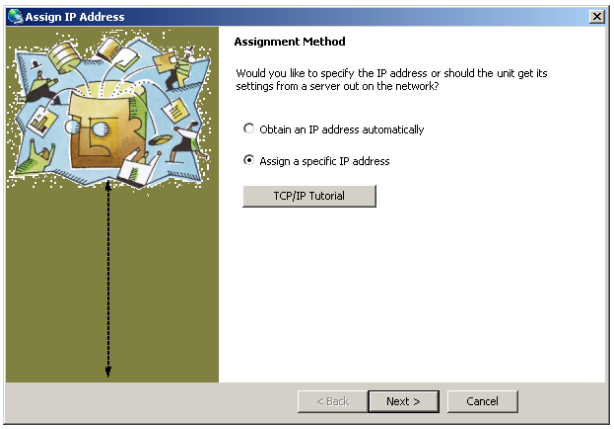
First, no chambers are visible. Hit button "**Search**" with the loupe symbol.

Now the detected interfaces are displayed and can be assigned to a chamber by their hardware addresses (MAC address). The MAC address sticks next to the chamber interface.



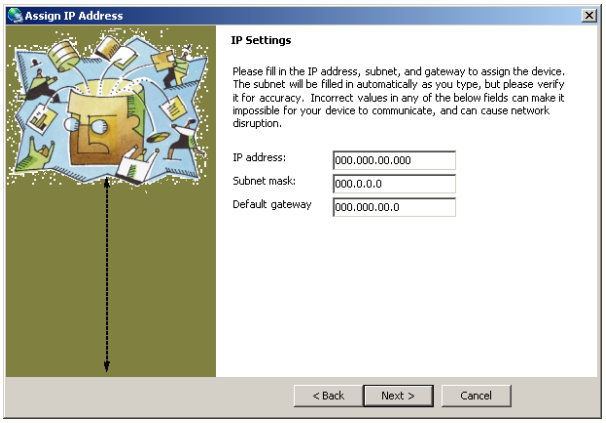
If the IP address is "0.0.0.0", or if an existing address shall be manually modified, mark the chamber and click on "**Assign-IP**".

Select the possibility “Assign a specific IP address” and click on “**Next**”.



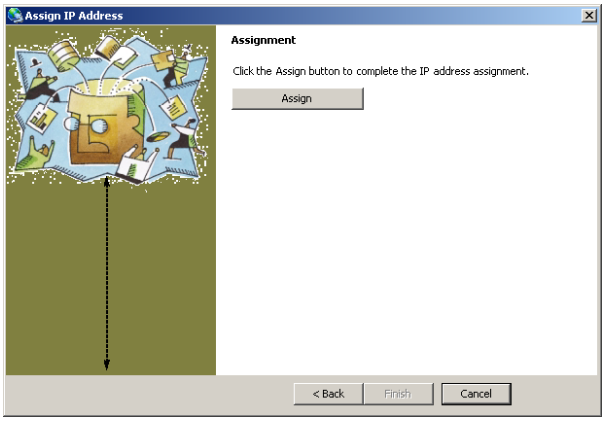
Assignment of a specific IP address

Enter the desired IP settings and hit “**Next**”.



Now click on “**Assign**”.

When the assignment is terminated, click on auf “**Finish**”.



Note down the IP address to make sure not to assign an address twice.

No further settings are required; factory settings are suitable for operating.

4. Connection and cross linking

! Switch off all temperature chambers and the computer and unplug all units from the mains before cross linking.

The type of connection of the chambers varies according to their number of temperature chambers and to their interfaces:

4.1 Connection and cross linking of chambers with RS 232 interface

4.1.1 Remarks to networking of chambers with RS 232 interface

Networking of temperature chambers with RD2 controller:

The world of computers is always developing and we at BINDER are continually attempting to harness the advantages offered by this technical progress for our systems. Modern computer now have new interfaces such as USB and Ethernet, whereas compatibility with classic interfaces such as the RS 232 is becoming more and more seldom. Chambers with RD2 controllers use this interface. As a result of the specified communication protocol with today's fast computers, however, we can no longer always guarantee perfect networking capability with APT-COM™ 3 DataControlSystem.

Networking of temperature chambers with RD2 controllers with APT-COM™ 3:

In the past, many chambers with RD2 controllers were successfully networked with APT-COM™ 3 DataControlSystem. These systems work perfectly, operating without any problems. There are communication difficulties with a few computers, however, despite the fact that the hardware requirements for the computers used have been met. The problem is attributable to a lack of support for the computer's RS 232 interface and RD2 controller protocol restrictions. Such cases have been known to result in incorrect set values being transmitted to the chamber, for example. These problems have occurred in only a handful of installations, however. In total, the chances are very high that communication with the APT-COM™ 3 will function perfectly.

The APT-COM™ 3 demo version can be used beforehand to test if communication between the computer and the RD2 controller functions perfectly or not. We recommend using APT-COM™ Version 2 for all computers which are unable to communicate perfectly with APT-COM™ 3. The appropriate APT-COM™ 2 version together with its operating instructions is available on the corresponding APT-COM™ 3 CD-ROM BASIC, STANDARD and GLP.

! You can install APT-COM™ 2 and APT-COM™ 3 on the same computer, but DO NOT operate them at the same time.

Networking of temperature chambers with RD2 controllers with APT-COM™ 2:

The necessary computer hardware requirements must be fulfilled when networking with APT-COM™ 2. The computer should be an older model in order to ensure perfect communication. A Pentium 2 computer using WINDOWS NT4 as an operating system is advisable here. WINDOWS XP demands high levels of computing capacity and therefore cannot be used. WINDOWS 2000 is generally not recommendable for use with APT-COM™ 2. Systems with Pentium 2 and 3 computers up to 800 MHz usually work, but faster systems do not.

In already existing networks we recommend maintaining the set-up with APT-COM™ 2. You can use the APT-COM™ 3 demo version to check if the systems function perfectly with APT-COM™ 3 before considering an upgrade.

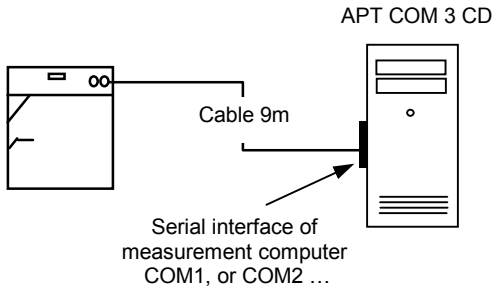
Replacing the RD2 controller by a controller with RS422 interface:

An alternative is for most cases replacing the chamber's RD2 controller with a R 3.1 or RD3 controller. The chamber then provides an RS 422 interface instead of the RS 232 interface, permitting seamless integration into a APT-COM™ 3 network. Please contact the BINDER service.

Networking of vacuum measuring device VM01or the vacuum controller CVC 2000 / CVC 3000:

You can connect the vacuum measuring device VM01 and the vacuum controller CVC 2000 without any problems to APT-COM™ 3. An additional adapter cable (5023-0049) is required. the vacuum controller CVC 3000 is connected via a Zero-Modem cable.

4.1.2 Connection of one single temperature chamber with RS 232 interface



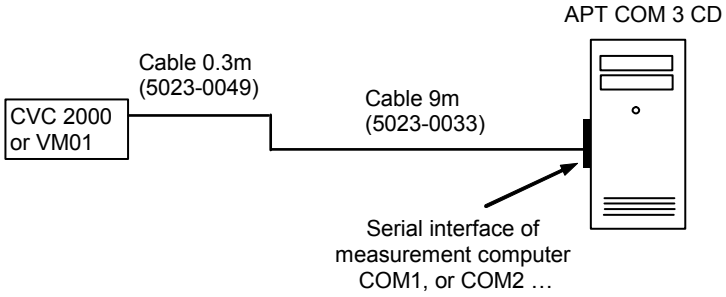
Required hardware: Standard RS 232 cable 9m (5023-0033)

Connection: From the terminal socket of the temperature chamber directly to one of the RS 232-interfaces of the PC.

In case the PC provides only one 9-pole RS 232 bushing, interpose the delivered standard adapter (25-pole pins to 9-pole bushing).

4.1.3 Connection of vacuum measuring device VM01 or the vacuum controller CVC 2000 with RS 232 interface

With VM01 and CVC 2000 you need to plug an adapter cable between the female end of the 9m cable and the 9pol SUB-D interface socket at the backside of the device. This adapter cable no. 5023-0049 is delivered with the pump system Type PC2002 Vario resp. with the VM01.

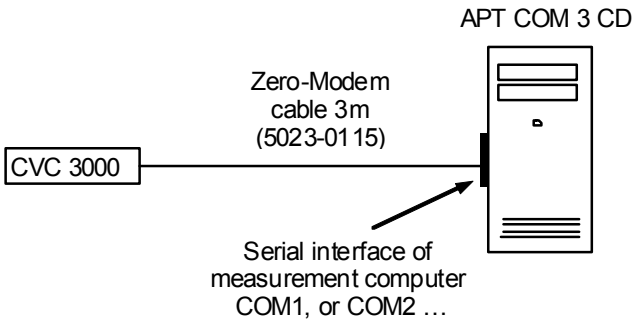


Required hardware: Standard RS 232 cable 9m (5023-0033), adapter cable 0.3m (5023-0049)

Connection: From the terminal socket of the VM01 or CVC 2000 via the 0.3m cable and the 9m cable to one of the RS 232-interfaces of the PC.

In case the PC provides only one 9-pole RS 232 bushing, interpose a standard adapter (25-pole pins to 9-pole bushing).

4.1.4 Connection of the vacuum controller CVC 3000 with RS 232 interface



Required hardware: Zero-Modem cable 3m (5023-0115)

Connection: From the terminal socket of the Pumpenstand PC3004 Vario via the Zero-Modem cable to one of the RS 232-interfaces of the PC.

In case the PC provides only one 9-pole RS 232 bushing, interpose a standard adapter (25-pole pins to 9-pole bushing).

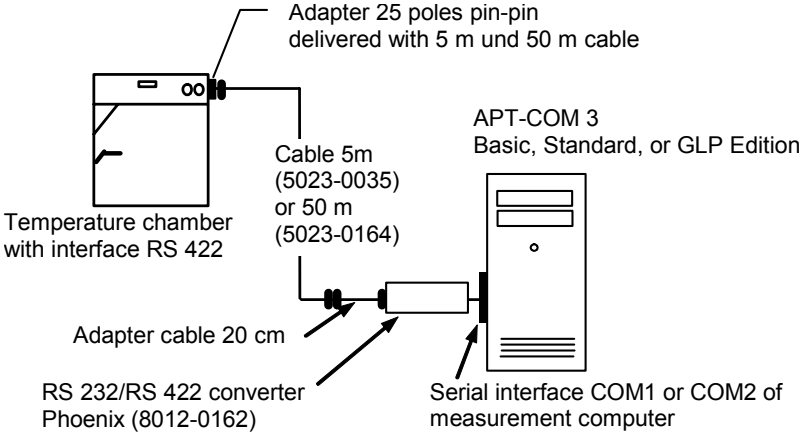
4.1.5 Cross linking of several temperature chambers with RS 232 interface (Standard and GLP Edition)

Any temperature chamber with RS 232 interface communicates with APT-COM™ 3 via an individual serial interface of the PC. Because PCs are generally equipped with only two serial interfaces maximum, usually named COM1 and COM2, and because of these interfaces are in most cases already used by other peripheral components, BINDER offers with the CPU module (8012-0159) a solution for expansion which can be modularly enlarged in groups of 8 ports. The advantage of this solution is that all connection cables are brought together on one central plug-in place and linked with the PC via one single cable only. In this way remote control up to a distance of 50m is possible without laying lots of cables. A plug-in card (Control Board) is included in the scope of delivery.

Networking is described in the installation manual 7001-0108 of the CPU module. This manual is also included on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

4.2 Connection one single temperature chamber with RS 422 interface

4.2.1 Connection via the Phoenix interface converter RS 232/RS 422

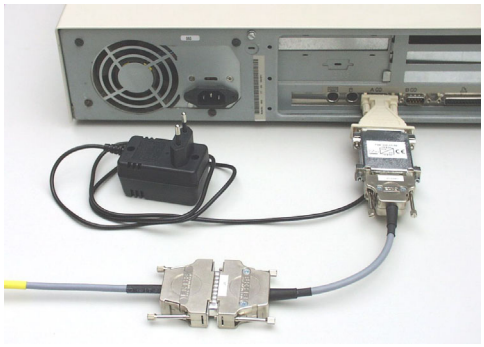


Required hardware: Set Phoenix interface converter RS 232/RS 422 (8012-0162) with mains unit, adapter cable 20 cm, adapter and 5 m cable. Optional: connection cable 50 m (8012-0164).

The Phoenix interface converter RS232 / RS 422 requires a male 25-pin sub-D socket at the computer. If there is only a 9 pin male socket present you can use the delivered adapter (25 pin male to 9 pin female).

Operate the interface converter always with the mains unit, which is supplied with.

Strictly keep the correct order of connection.

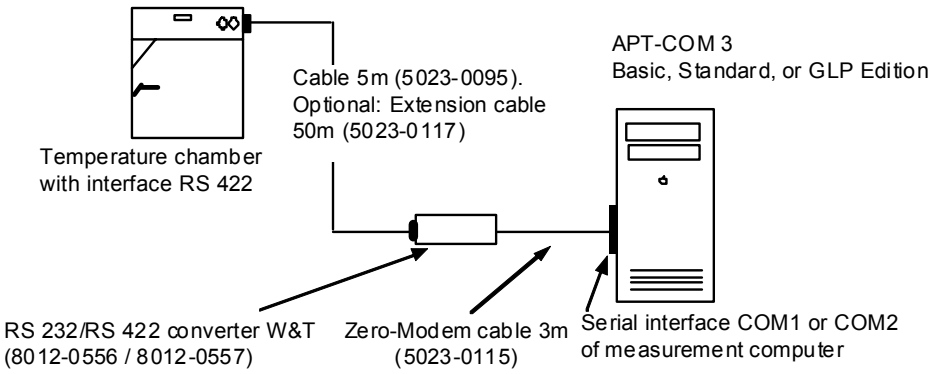


! Other orders of the cables and of the interface converter are not possible. Changed orders lead to communication errors "COM Error" and. "MOD Bus time out".

! Check for the correct voltage of the power supply for the mains unit of the interface converter. BINDER offers two different versions for 115V and 230V.

! Please check the setting of the small switch at the front of the interface converter: switch (DCE/DTE) in position DTE.

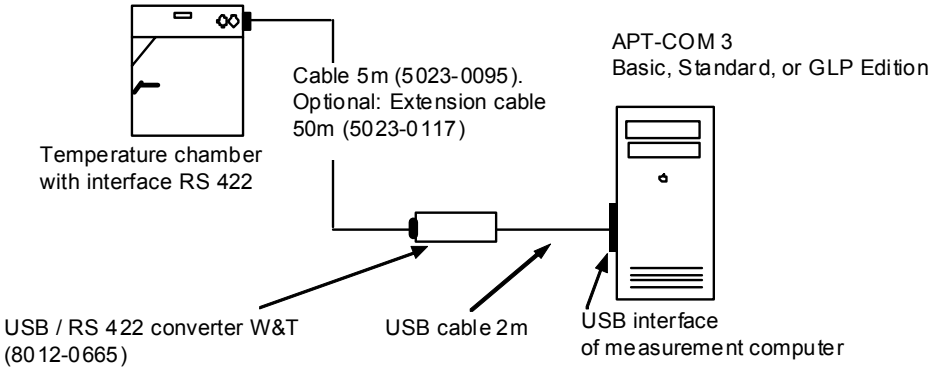
4.2.2 Connection via the W&T interface converter RS 232 / RS 422



Required hardware: Kit W&T interface converter RS 232 / RS 422 (8012-0556 (230V) / 8012-0557 (115V)) with adapter, Zero-Modem cable 3m (5023-0115), Connection cable 5m (5023-0095). Optional: extension cable 50m (5023-0117) for connection after the 5m cable.

For instruction to configure this type of connection, see the installation manual 7001-0101 for the W&T interface converter RS 232 / RS 422. It is also included with the manuals on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

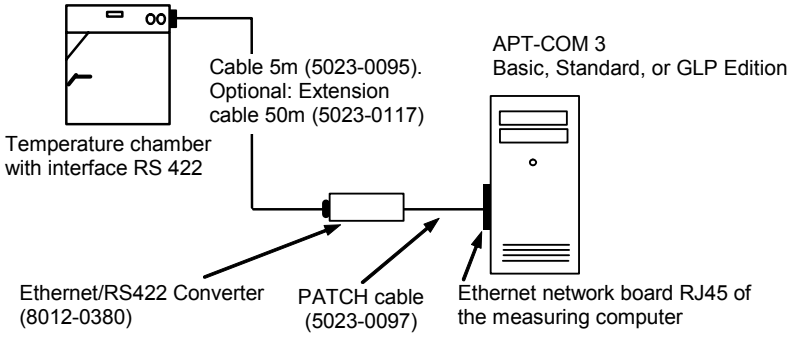
4.2.3 Connection via the W&T interface converter USB / RS 422



Required hardware: Kit W&T interface converter USB / RS 422 (8012-0665) with adapter, USB cable 2m, Connection cable 5m (5023-0095), W&T original driver CD. Optional: extension cable 50m (5023-0117) for connection after the 5m cable.

For instruction to configure this type of connection, see the installation manual 7001-0168 for the W&T interface converter USB / RS 422. It is also included with the manuals on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

4.2.4 Connection via the W&T interface converter Ethernet / RS 422



Required hardware: Kit W&T converter Ethernet/RS 422 with 5 m cable, mains unit, adapter and Patch cable (COM-Server Art. No. 8012-0380 (230V) / 8012-0405 (115V)). Optional: extension cable 50m (5023-0117) for connection after the 5m cable.

The connection to the Ethernet is carried out via an RJ45 CAT5/CAT6 cable. For the connection to the Ethernet additionally a HUB or a Crossover cable might be needed. Ask your system administrator for information.

For instruction to configure this type of connection, see the Ethernet/RS422 converter installation manual 7001-0068 coming with the COM server. It is also included with the manuals on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

4.3 Cross linking of several temperature chambers with RS 422 interface (Standard and GLP Edition)

Network overview APT-COM™ 3 DataControlSystem Standard, and GLP Editions see chap. 1.6.

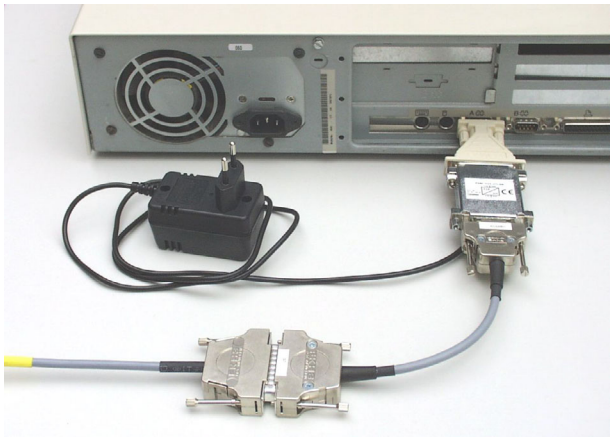
4.3.1 Connection via Phoenix interface converter RS 232 / RS 422 and plug distributor

Required hardware: Set Phoenix interface converter RS 232/RS 422 (8012-0162) with mains unit, adapter cable 20 cm, adapter and 5 m cable. Optional: connection cable 50 m (8012-0164). Modular extendable plug distributor (8012-0295). Several 15m cables (5023-0036) to the chamber interfaces.

The Phoenix interface converter RS 232/RS 422 requires a male 25-pin sub-D socket at the computer. If there is only a 9 pin male socket present you can use the delivered adapter (25 pin male to 9 pin female). The plug in places of the RS232 extension port (CPU module) can also be used.

Operate the interface converter always with the supplied mains unit.

Strictly keep the correct order of connection.



! Other orders of the cables and of the interface converter are not possible. Changed orders lead to communication errors “COM Error” and “MOD Bus time out”.

! Check for the correct voltage of the power supply for the mains unit of the interface converter. BINDER offers two different versions for 115V and 230V.

! Please check the setting of the small switch at the front of the interface converter: switch (DCE/DTE) in position DTE.

The same concerns the connection between the monitoring computer (see chap. 10) and the Alarm Box AB 01 (optional with APT-COM™ 3 GLP Edition).

4.3.2 Connection via W&T interface converter RS 232 / RS 422 and plug distributor

Required hardware: Kit W&T interface converter RS 232 / RS 422 (8012-0556 (230V) / 8012-0557 (115V)) with adapter, Zero-Modem cable 3m (5023-0115), Connection cable 5m (5023-0095). Modular extendable plug distributor (8012-0295). Several 15m cables (5023-0036) to the chamber interfaces.

For instruction to configure this type of connection, see the installation manual 7001-0101 for the W&T interface converter RS 232 / RS 422. It is included on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

The same concerns the connection between the monitoring computer (see chap. 10) and the Alarm Box AB 01 (optional with APT-COM™ 3 GLP Edition).

4.3.3 Connection via W&T interface converter USB / RS 422 and plug distributor

Required hardware: Kit W&T interface converter USB / RS 422 (8012-0665) with adapter, USB cable 2m, Connection cable 5m (5023-0095), W&T original driver CD. Modular extendable plug distributor (8012-0295). Several 15m cables (5023-0036) to the chamber interfaces.

For instruction to configure this type of connection, see the installation manual 7001-0168 for the W&T interface converter USB / RS 422. It is included on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

The same concerns the connection between the monitoring computer (see chap. 10) and the Alarm Box AB 01 (optional with APT-COM™ 3 GLP Edition).

4.3.4 Connection via W&T interface converter Ethernet / RS 422

Alternatively the connection between the measurement computer and the plug distributor can be performed via Ethernet.

Required hardware: Ethernet/RS422 converter (with 5 m cable, mains unit, adapter and patch cable, Art. No. 8012-0380 (230V) / 8012-0405 (115V)). The connection to the Ethernet is carried out via an RJ45 CAT5/CAT6 cable. For the connection to the Ethernet additionally a Switch or a Crossover cable might be needed. Ask your system administrator for information.

For instruction to configure this type of connection, see the Ethernet/RS422 converter installation manual 7001-0068 coming with the COM server. It is included on your APT-COM™ 3 CD and – like all BINDER operating manuals – can be ordered at the BINDER service (Tel. +49 (0) 7462-2005-555, Fax +49 (0) 7462-2005-93555).

The same concerns the connection between the monitoring computer (see chap. 10) and the Alarm Box AB 01 (optional with APT-COM™ 3 GLP Edition).

4.4 Remarks when using a 50m extension cable

The 50m cable 5023-0017 or 8012-0164 shall in principle be mounted before and not after the plug distributor. Mounting after the plug distributor causes modification in the characteristic wave impedance leading to reflexions in the bus system. If due to structural conditions the customer needs to install the 50m cable after the plug distributor, installing a repeater between the plug distributor and the 50m cable is required to guarantee safe and unimpaired operation. A repeater is an electronic device that receives a signal and retransmits it at a higher level and/or higher power, so that the signal can cover longer distances. BINDER offers the RS422 Repeater Art.no. 5021-0020 “RS422-Isolator Industry (230V)” with cable no. 5023-0111, tested in the system.

4.5 Cross linking of one temperature chamber (Basic-, Standard- und GLP-Edition) or several temperature chambers (Standard and GLP Edition) with an internal Ethernet interface

For chambers with MB1 controller, the RS422 interface is replaced regularly or optionally by an internal Ethernet interface. The additional RS422 interface is marked with the label “Service only” and shall only be used for Service purpose, i.e., not for connecting the unit to APT-COM 3.

The computer must be equipped with an Ethernet network board. Connection to the Ethernet is established via a RJ45 CAT5/CAT6 cable in analog manner to connecting a computer to the Ethernet. Please ask your system administrator. If there is no existent network, in case of questions please contact the BINDER service.

5. Installation of APT-COM™ 3 DataControlSystem

5.1 Security aspects and recommendations to be regarded prior to installation

Depending on the degree of use of APT-COM™ 3 the future APT-COM™ 3 administrator and the system administrator should agree on the security measures to be taken for the entire system prior to installation.

Regarding the choice of a suitable operating system and other system requirements, see chapter 2.

It is necessary to discuss the possibilities of communication offered by APT-COM™ 3 and possible resulting general security risks in order to be able to take the necessary preventive actions.

The following overview summarizes the properties and functionality of APT-COM™ 3 that are to be considered at this stage.

5. APT-COM™ 3 DataControlSystem is not “installed” but copied from the APT-COM™ 3 CD into any local directory on the computer the BINDER temperature chambers and measuring devices are connected to via its interfaces.

   There is no entry of APT-COM™ 3 to Windows system files. The only entry to the Windows registry database is an Active X component (NiReports.dll). This file enables the connection between APT-COM™ 3 and the selected Windows standard printer.

6. APT-COM™ 3 DataControlSystem can communicate with the BINDER temperature chambers and measuring devices via Ethernet, USB, or COM port (RS232). If the chamber is equipped with an RS422 interface, connection to the computer is established via an interface converter. Interface converters are available at BINDER.

7. APT-COM™ 3 DataControlSystem saves all measuring data together with system settings selected by the APT-COM™ administrator or a user to the MS Access database “measure.mdb“. This database is secured by a software-internal password and encrypted according to the Microsoft Access RC4 encryption algorithm with a 32-bit key of the RSA Data Security Incorporated. It is therefore impossible to open and edit the file in a readable manner by an editor.

8. If accordingly configured by the APT-COM™ administrator, APT-COM™ 3 DataControlSystem GLP Edition can periodically copy the measurement data and configuration settings database file to another directory (backup routine, see chap. 8.3). Backup directories can be created on all sort of storage medium to which the operating system has access and can create directory structures. Following creation by APT-COM™ 3 the backup directories can be manually copied to any data medium for security reasons.

   Backup copies are made from following files: see chap. 8.3.

9. APT-COM™ 3 DataControlSystem GLP Edition: Following functions are selectable by the APT-COM™ 3 administrator and not necessary for the basic functions of the APT-COM™ 3 DataControlSystem software.

   Measurement supervision carried out independently from APT-COM™ 3 and, if desired, from a different location is offered by the Watch Tool software. This program (Watch.exe) monitors from the same or a second network computer if the tolerance limits of each parameter of each measurement are respected, if the measurement computer on which APT-COM™ 3 is running is operating without any error, and if the communication between APT-COM™ 3 DataControlSystem and the connected BINDER chambers runs without any error.

   The “installation” of the Watch Tool to a second computer (monitoring computer) is also a copying process. No changes are made to the Windows registry database, except the afore-mentioned ActiveX-dll.

   If the Watch Tools is used, data from the measuring database “measure.mdb” of the measurement computer are read to the monitoring computer on which the Watch Tool is running. The only writing access of the monitoring computer to the measurement computer is the entry of the alarm delay time defined at the Watch Tool for each measurement to the measuring database.

10. If accordingly configured by the APT-COM™ 3 administrator APT-COM™ 3 DataControlSystem Standard and GLP Edition offer an e-mail service. APT-COM™ 3 communicates with the internals e-mail server (SMTP host) or with the SMTP host of an Internet provider.

    Depending on the configuration of the internal computer network, automatically generated e-Mails can be sent via Intranet and Internet. Port 25 is used. APT-COM™ 3 will not receive e-mails. Two types of e-mails can be configured and can be sent to different addresses (see chap. 9.2.1 and 9.2.2). The e-mail messages inform the receiver, depending on the selected configuration, about the measurement course, a leaving of tolerance limits, and error messages.

    The monitoring program Watch Tool also provides an e-mail service. Alarm messages are transmitted independently from APT-COM™ 3 to an e-mail address configured in the Watch Tool. The Watch Tool reads information about a modified configuration and about the measuring data, regulated by event.

11. If accordingly configured by the APT-COM™ 3 administrator APT-COM™ 3 DataControlSystem Standard and GLP Edition can generate a homepage, thus functioning as a proper web server. The homepage informs about the measurement course and provides links to HTML pages with a tabular and/or graphical display of the measuring data and accompanying information.

    With according sharing of the measuring computer allowed by the system administrator this homepage can be accessed via the local network or the Internet.

Resulting advice for installation:

- to 1. and 5.:

  When taking the record of APT-COM™ 3 and, with GLP Edition, Watch Tool installation, no system modifications except the Active X component need to be considered.

- to 2. and 5.:

  By using the monitoring software Watch Tool (GLP Edition) the existence of a wrong functioning can be automatically transmitted to staff qualified to remove the error cause, e.g., a service technician. Examples are communication errors between BINDER chambers and the measurement computer or between measurement and monitoring computer or a failure of the APT-COM™ 3 software or of the measurement computer. Other errors are possible wrong functions of the temperature chambers that lead to exceed the set tolerance limits.

  The information transfer is done by use of the e-mail system of the Watch Tools (chap. 10.2.4) or via the Alarm Box AB 01 (chap. 10.2.3).

- to 3.:

  During the measurements / the running of APT-COM™ 3 the database occupies further disk space. Measuring data are written into the database “measure.mdb“. This database is self-compressing; therefore its size can vary. The recording of a measuring value (for each measurement and each parameter) needs a space of about 2 KB uncompressed. It is recommended to use the compression tools Archiver (chap. 9.5, automatic start recommended) and Database Optimizer (chap. 9.6, around every 2 weeks).

- to 4.:

  The measurement computer should have access in the local network (intranet) to a server sufficiently protected according to the security requirements of the user in order to generate backup files (GLP Edition). Also local storage media (e.g., a second hard disk, USB-Stick) can be used. It must be possible for APT-COM™ 3 to generate directory structures and files on those media.

- to 5.:

  The TCP/IP Stack must be installed and configured on both computers (GLP Edition). Otherwise no parallel security level can be installed.

  APT-COM™ 3 should be installed to a separate partition of 2 GB free space minimum.

Sample calculation to estimate the required space:

Data for each recorded measuring value require about 2 KB. Thus for one single measuring value recorded every 15 minutes after one year 66,8 MB space are required. Concerning the GLP Edition keep in mind that the automatic backup function (chap. 8.3) can lead to a fast growth of used storage space.

- to 6. and 7.:

  If the e-mail and web server function of APT-COM™ 3 DataControlSystem Standard and GLP Edition are used, it is highly recommended to protect the measurement computer against unauthorized access via the intranet and the Internet. When connecting it to the Internet the system administrator should employ security measures as e.g., a firewall to assure that the measurement computer be situated behind the DMZ (de-militarized zone).

  It is generally recommended to assure protection of the computer against any influences from outside and to guarantee adequate network security.

5.2 Notes regarding continuous operation

For long-term applications the following hints are to be considered:

1. Windows and APT-COM™ 3 must be maintained. I.e., shut down and restart the computer about every 2 weeks. It is recommended to use the compression tools “Archiver” (chap. 9.5, automatic start recommended) and “Database Optimizer” (chap. 9.6, around every 2 weeks). Make sure that APT-COM™ 3 is shut down before using the Database Optimizer because otherwise APT-COM™ 3 can no more access the data.
2. Set the APT-COM™ 3 Restart function (chap. 8.6) to 2 days.
3. Install Windows with a minimized configuration. The processor load during measuring operation (i.e., APT-COM™ 3 running) should not lie above 10 %. Short-term loads up to 100%due to APT-COM™ 3 are usual.
4. APT-COM™ 3 may demand more than 256 MB RAM. Make sure that there is enough physical RAM,
5. APT-COM™ 3 can read and save in the database data up to 1 TByte. Thus after one year (running with 30 chambers at the measuring interval set to 1 minute) the database can reach more than 1 GByte. Make sure that the hard disk is of sufficient capacity.

5.3 Preparing the measurement computer with operating system Windows NT 4.0

You can operate APT-COM™ 3 versions lower than 3.02.021 with the operating system Windows NT 4.0 (Service Pack 6). If you like to use also versions from 3.02.021 on with Windows NT 4.0, please contact the BINDER Service. BINDER recommends using Windows 2000 with Service Pack 4 or Windows XP Professional from Service Pack 2 on.

In order to run the APT-COM™ 3 DataControlSystem software in a correct and optimized manner, previous to installation the following system updates should be done:

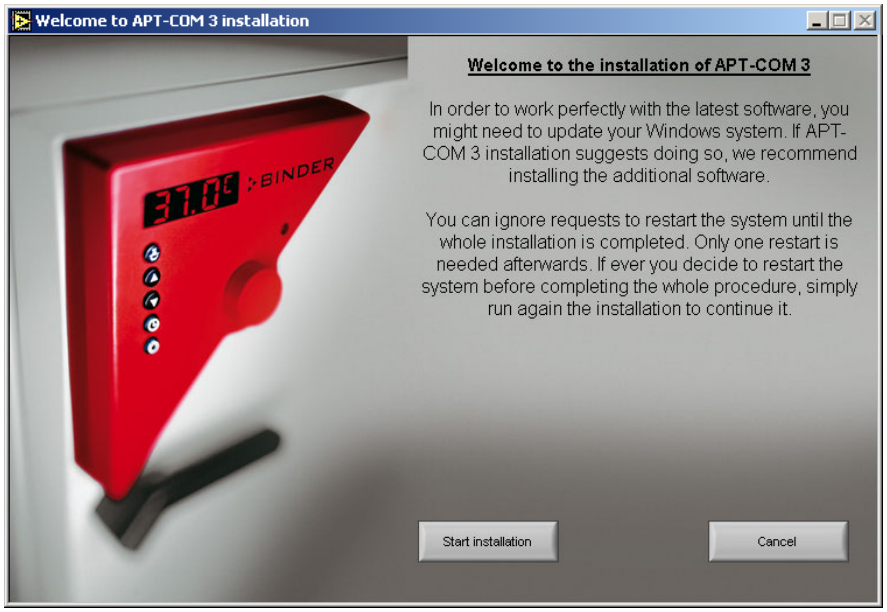
- Actualization of the MS Access database driver
- Actualization of the Microsoft Internet Explorer to version 5.5 or higher with the operating systems Windows 98, ME, NT 4.0

The necessary installation programs can be found on the APT-COM™ 3 CD in the “Adds” directory. Start the required exe file by double click. The actualization will automatically take place except if on your system already a higher version is installed.

5.4 Installation of APT-COM™ 3 DataControlSystem and update of components of the operating system

! Please make a system-backup of your entire system because the BINDER GmbH excludes all liability for any loss of data. During APT-COM™ 3 DataControlSystem installation the system administrator should be present.

Start your PC with possibly new installed hardware components. Insert the APT-COM™ CD in the CD drive of your computer. If the “Autostart” function of your computer has been inactivated, select on the CD the directory “**APT-COM3**” and start the file “**setup.exe**”. The following window opens up:

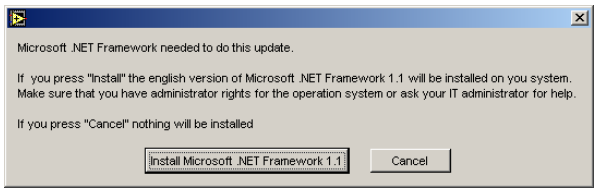


Start the installation with button “**Start installation**”.

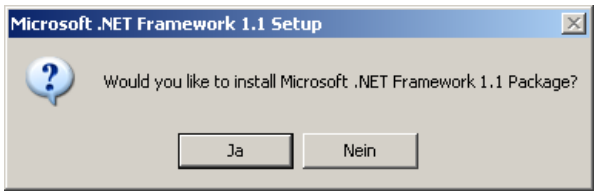
Some components of your operating system might need to be updated also. They are included on the CD and will be automatically installed if you confirm the according questions. The concerned components are Microsoft .NET Framework 1.1 (chap. 5.4.1) and NI-VISA 3.6 (chap. 5.4.2). If your operating system already contains the actual versions of one or both of the components, APT-COM™ 3 DataControlSystem will directly be installed (chap. 5.4.3).

5.4.1 Installation of Microsoft .NET Framework

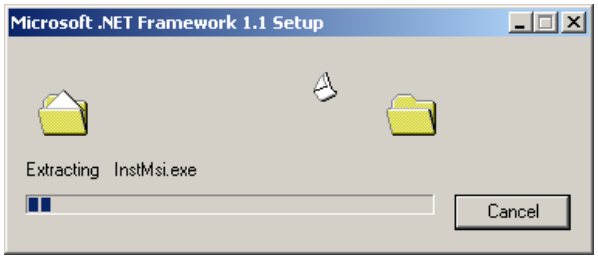
Microsoft .NET Framework 1.1 is used for building and running all kinds of software, including Web-based applications, smart client applications, and XML Web services. These components facilitate integration by sharing data and functionality over a network through standard, platform-independent protocols such as XML (Extensible Markup Language), SOAP, and HTTP.



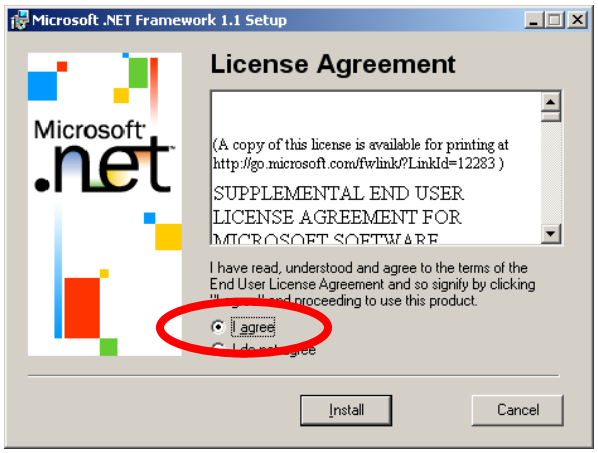
Select “**Install Microsoft .NET Framework 1.1**”



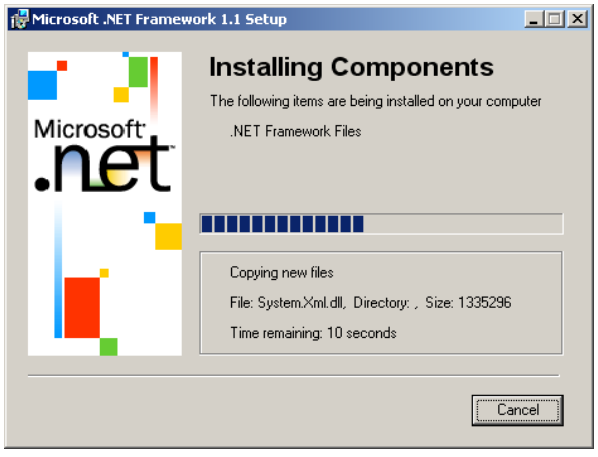
Confirm the interrogation window with “**Yes**”.



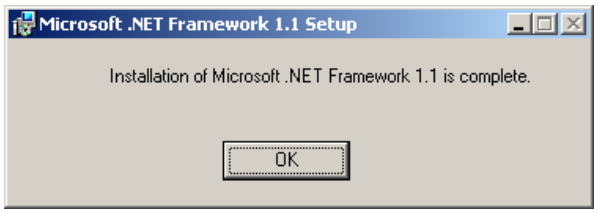
(sample figure)



Confirm your acceptance of the license agreements with “I agree” and continue the installation with “**Install**”.

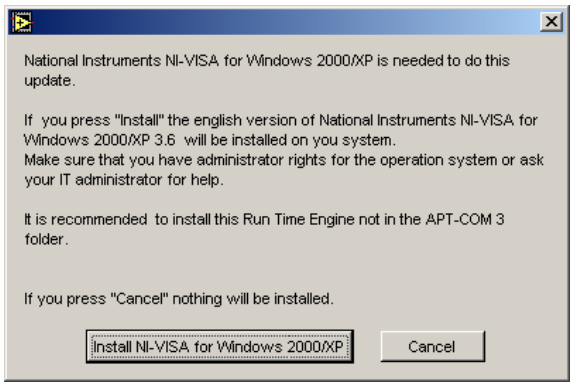


Installation running (sample figure)

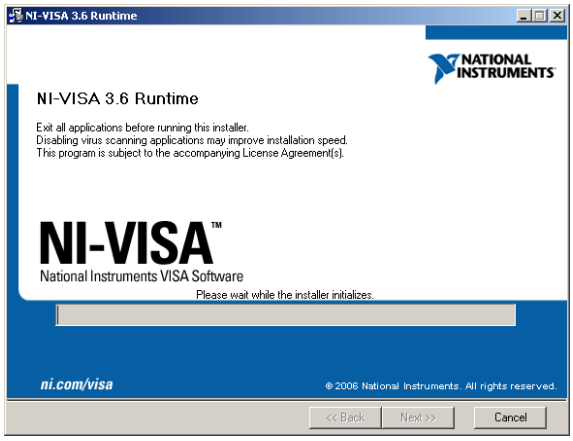
	Confirm the message that the installation is complete with “**OK**”.

5.4.2 Installation von NI-VISA 3.6

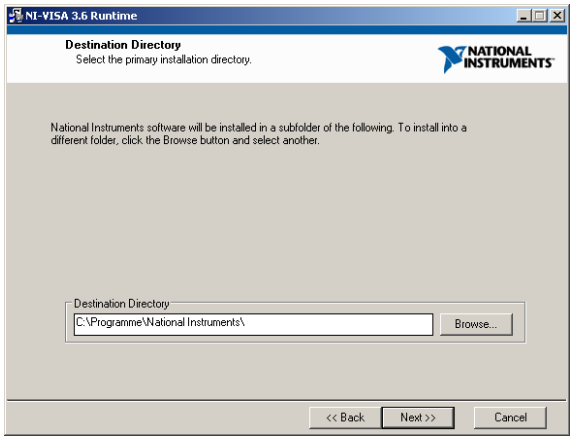
These are drivers for communication interfaces. They are installed additionally to already existing drivers.



Select “**Install NI-VISA for Windows 2000/XP**”

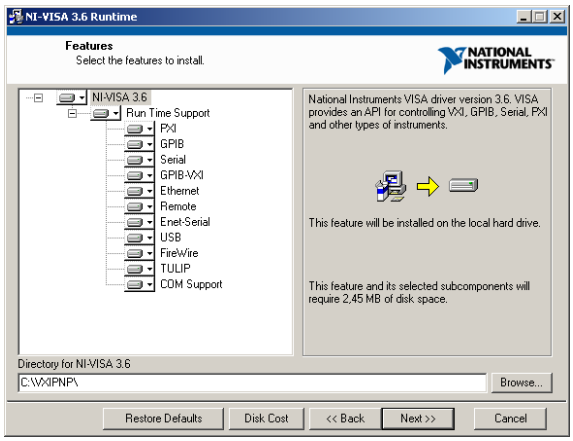


Preparing the installation

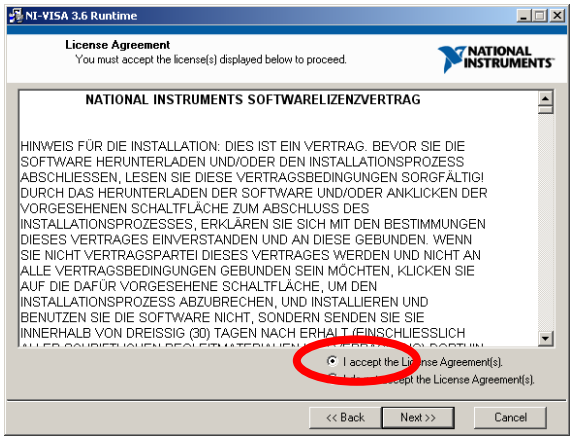


You can accept the target directory shown under “Destination Directory” or select another directory under “**Browse**”.

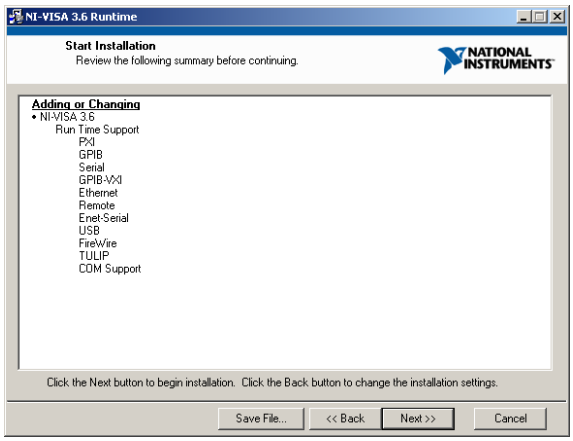
Continue the installation with “**Next**”.



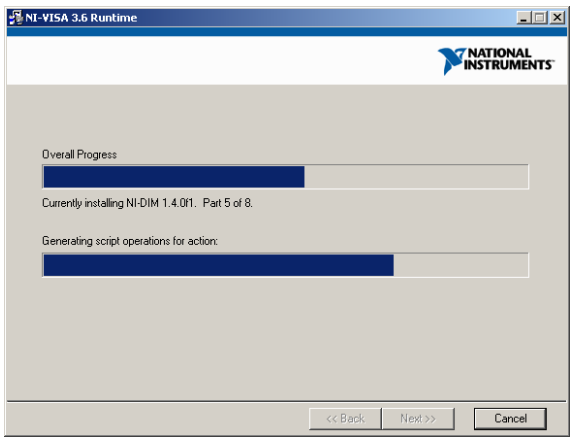
Continue the installation with “**Next**”.



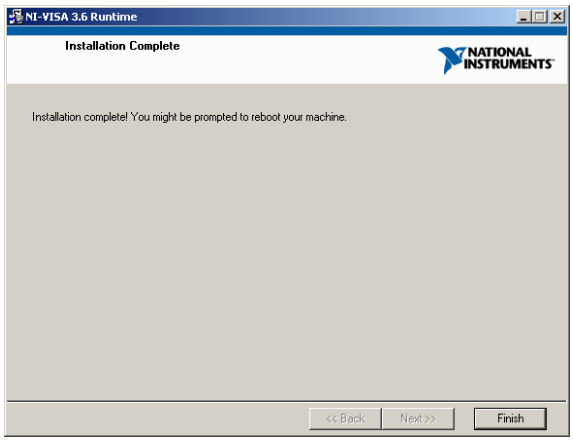
Confirm your acceptance of the license agreements with “I accept the License Agreement(s)” and continue the installation with “**Next**”.



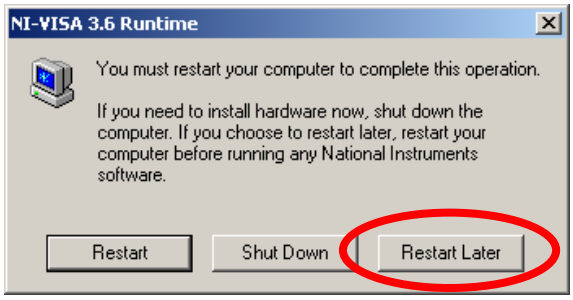
Continue the installation with “**Next**”.



Installation running (sample figure)



Confirm the message that the installation is complete with “**Finish**”.



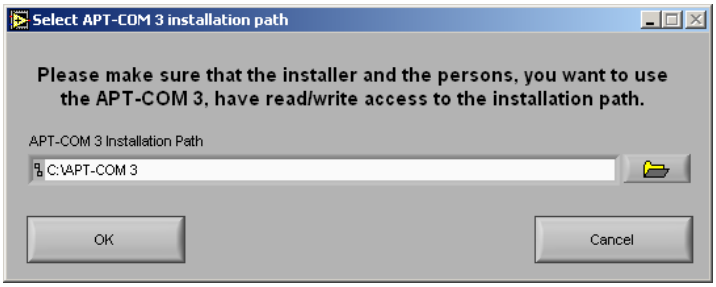
The program proposes to restart the computer in order to adopt the modified settings.

If you want to continue directly with the installation of APT-COM™ 3 DataControlSystem, select “**Restart later**”.

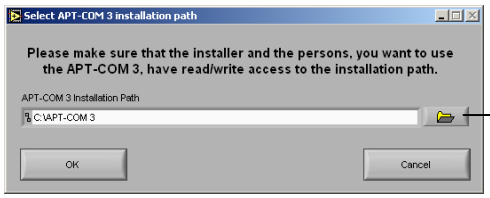
5.4.3 Installation von APT-COM™ 3 DataControlSystem

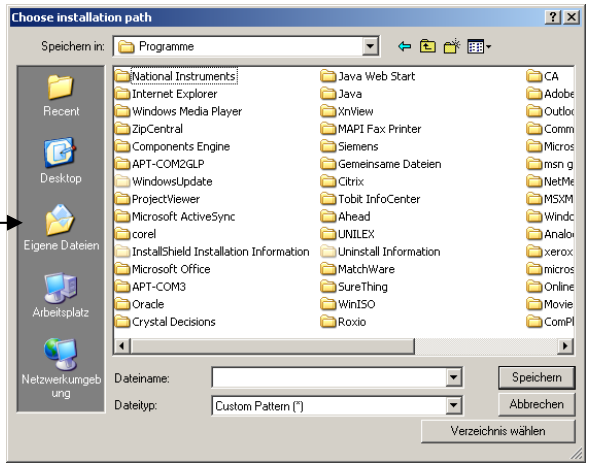
> **!** **We recommend installing APT-COM™ 3 DataControlSystem into a special partition of 2 GB minimum.**

You can accept the target directory shown under “APT-COM 3 Installation Path” or type in another path here.

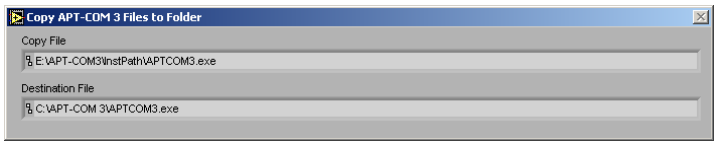


Or you select another directory in the window “Choose installation path” and then hit “**Save**” and “**Choose directory**”.





Start the installation with “**OK**”. APT-COM™ 3 is extracted into the selected directory.

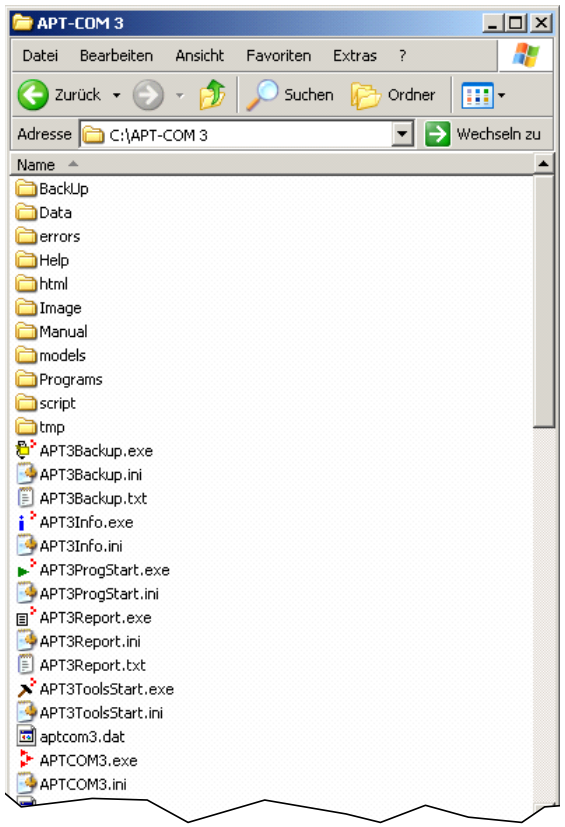


(sample figure)

After this, confirm the message that all files have been extracted with "**OK**".

The selected directory on your local computer opens up automatically.

We recommend creating a shortcut to this file on the Windows desktop (chap. 4.4) and in the Windows Auto start folder (see also chap. 8.6).



!	**During the installation of the APT-COM 3 software, no entry will be made to the registry database of your computer. With the first start an entry is made for one Active X element needed to address the Windows standard printer. For security reasons the APT-COM™ 3 Software does not make any further system entries.**

5.5 Creating an APT-COM™ 3 icon on the desktop

To start APT-COM™ 3 DataControlSystem comfortably you can additionally create a link to the APT-COM™ 3 program file "**APTCOM3.exe**" on the Windows desktop. Now you can start the program by clicking on the icon (or by double clicking, according to your system configuration).

If you did not restart your computer following the updates of the Windows system components (chap. 5.4.1, 5.4.2), restart it now.

Then you can start APT-COM™ 3 by double click on the "**APTCOM3.exe**" file.

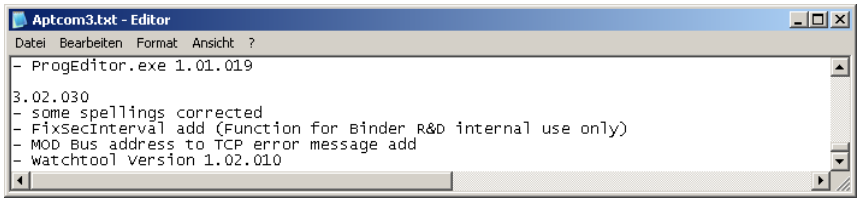
5.6 Updating APT-COM™ 3 to actual versions

Updates to APT-COM™ 3 are frequently published in order to enable you to upgrade your version to the latest developmental stage and to make sure that you have access to all software features.

!	**When executing an update, all configuration settings and measurements are conserved.**

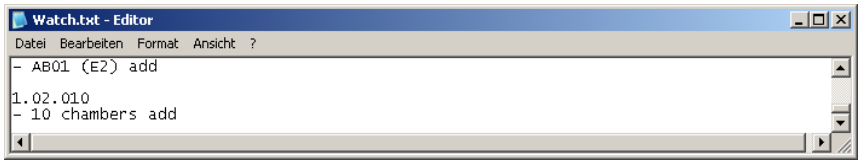
5.6.1 Product identification of the current APT-COM™ 3 version

In order to know the version numbers of each individual program, call up the respective information file “Aptcom3.txt“,“Watch.txt”, “ProgEditor.txt”, “ProgRemote.txt”, “ToolDatabase_optimizer.txt”, “ProgWeekProgEditor.txt” etc. in the APT-COM™ 3 folder that you have created. In these files all the version numbers of the respective program are listed. The last number indicates the actual version of the program installed.



Example picture:

The actual version of the APT-COM™ 3 software in this example is 3.02.030.



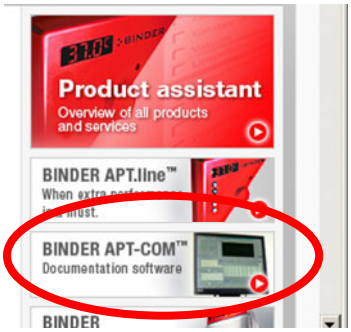
Example picture:

The actual version of the Watch Tools in this example is 1.02.010.

5.6.2 Downloading the update from the Internet

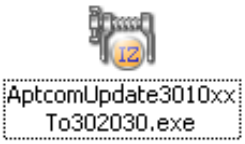
Call up the BINDER homepage “www.binder-world.com“ and after having selected your language version click on “Products”.

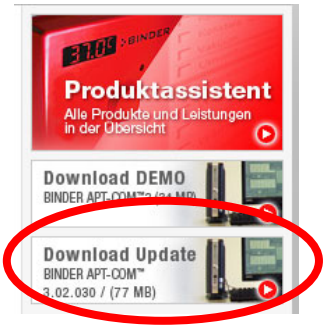
Select then under “Product assistant” information about APT-COM™ 3 DataControlSystem.



On the following page under “Product assistant” you can access a link to download the update, which also indicates the actual update version (example: 3.02.030) and the file size.

If you want to download the update, click on the link and save the exe file “AptcomUpdate3010xxTo302030.exe” (resp. the name corresponding to the actual link) on your computer.

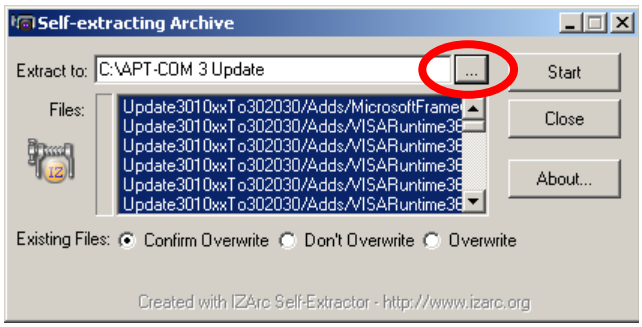




! **You can also obtain the actual update on CD from the BINDER service.**

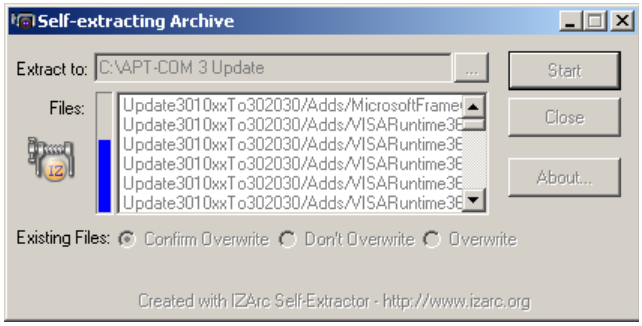
5.6.3 Executing the update

Open file “AptcomUpdate3010xxTo302030.exe“ (resp. the name corresponding to the actual update version) that you have downloaded from the Internet, or insert the CD “APT-COM 3 Update“ in your CD drive and open file “AptcomUpdate3010xxTo302030.exe“ (resp. the name corresponding to the actual update version).



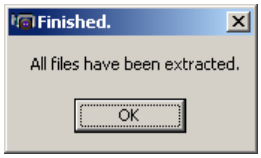
Select a target directory by “**...**” to extract the Update-file.

Then click on button “**Start**”.

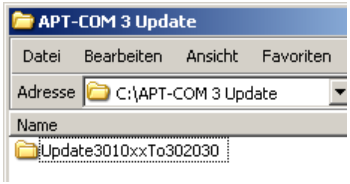


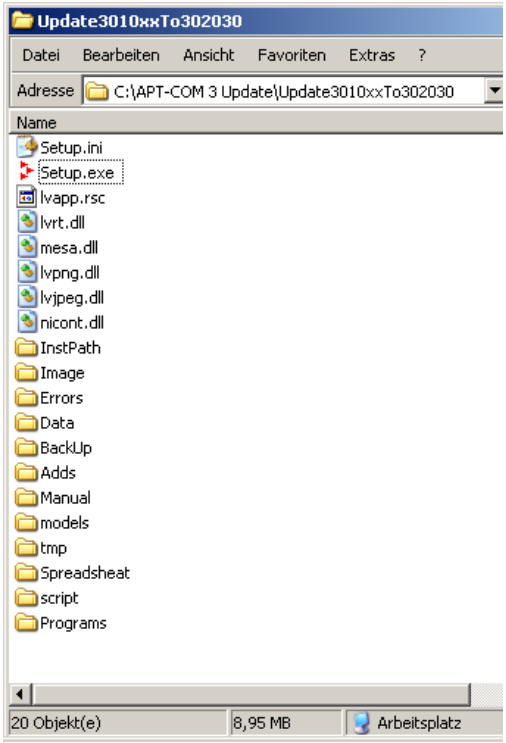
In the selected directory the folder “Update3010xxTo302030” (resp. the name corresponding to the actual update version) is created.

An information window tells you that the necessary files have been extracted completely.



You can now update your software. Open the folder “Update3010xxTo302030” (resp. the name corresponding to the actual update version) and select file “**setup.exe**”.



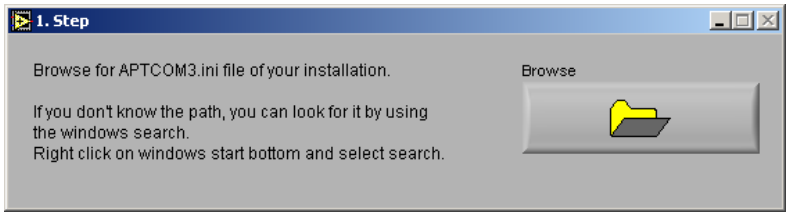


Following double click on file “setup.exe”, the window “Welcome to APT-COM 3 Update 3.02.xxx” appears.

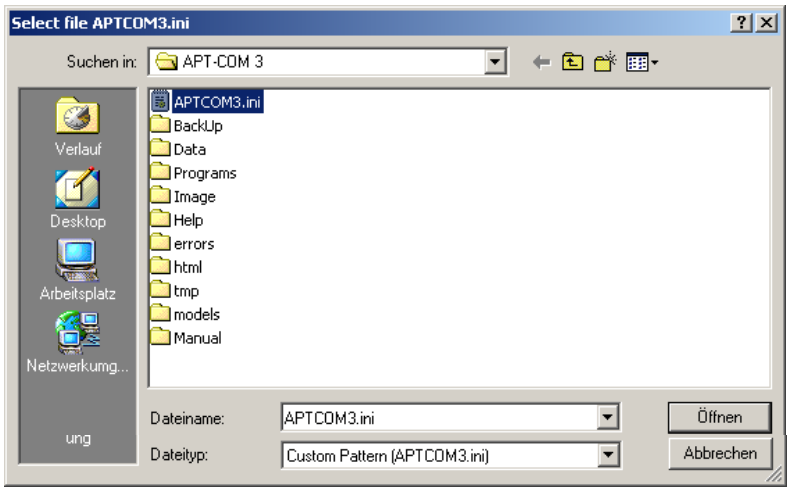
If APT-COM™ 3 should be opened at this moment, please close it.

Hit button “**Start update**“.

Several windows will now guide you through the installation.



Click on “**Browse**” and select file “**APTCOM3.ini**” in your APT-COM™ 3 folder.



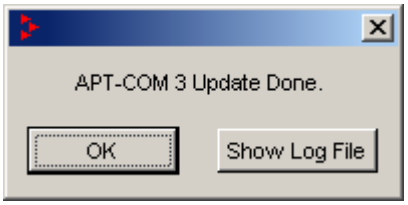
Hit “**Open**”. The update is executed.

Some components of your operating system might need to be updated also. They are included in the packed update file and will be automatically installed if you confirm the according questions. The concerned components are Microsoft .NET Framework 1.1 (chap. 5.4.1) and NI-VISA 3.6 (chap. 5.4.2). Please follow the description in these chapters.

A window showing “Update done” informs about the successful installation of the update.

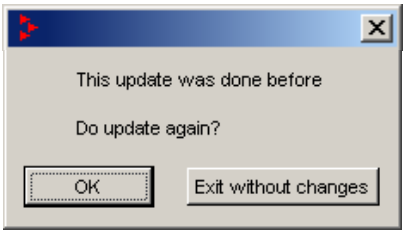
Close the information window with “**OK**”.

If you are afterwards requested to restart your system, restart the computer.



If the latest APT-COM™ 3 version had already been installed, the update will not be executed. An window asks if you would like to repeat the update.

Close the window with the button “**Exit without changes**”.



For control purpose you can now again check the version number of the APT-COM™ 3 programs (see chap. 5.6.1). Call up file “Aptcom3.txt” in the APT-COM™ 3 folder.

The last mentioned (actual) version number will now be the same as the update version number. (In our example the APT-COM™ 3 version number is now 3.02.030). The version numbers of the Watch Tool and of the other programs are independent of the APT-COM™ 3 version number and are thus not necessarily modified when executing an update.

6. Starting APT-COM™ 3 DataControlSystem

6.1 Note to access right assignment (GLP Edition)

APT-COM™ 3 DataControlSystem provides two access hierarchies in normal program operation:

1. **The APT-COM™ 3 administrator**

   The APT-COM™ 3 administrator can configure the basic settings of the software and the connected temperature chambers. Only with his name and password the configuration level (“Configuration” menu, chap. 8) can be accessed. The APT-COM™ 3 administrator does not need to be identical to the system administrator of the whole computer network. The APT-COM™ 3 administrator should himself not carry out measurements, in order to keep the distinction between administrator and user level.

2. **The APT-COM™ 3 user**

   APT-COM™ 3 users are the persons who work with the temperature chambers configured by the APT-COM™ 3 Administrator, i.e., who carry out measurements. Each user logs in with his individual user name and password and then has access only to the measurements he has generated. Also the APT-COM™ 3 administrator does not have access to measurements created by other users.

Only one person (the APT-COM™ 3 administrator or any user) can work with the software APT-COM™ 3 DataControlSystem at a given moment. A so-called simultaneous multi user operation is not possible.

6.2 Program start

Double click with left mouse key on the desktop icon APTCOM3.exe (in case you established this icon before, see chap. 5.5) or double click on the file “**APTCOM3.exe**” in the previously assigned APT-COM™ directory (see chap. 5).

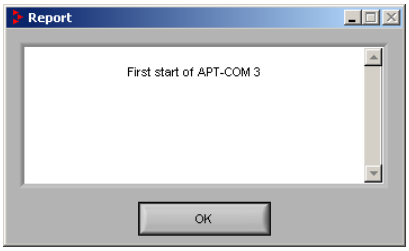
Having started the program, at first the APT-COM™ 3 welcome window appears

Hit “**OK**” or wait 4 seconds.

6.3 Special features of the first program start

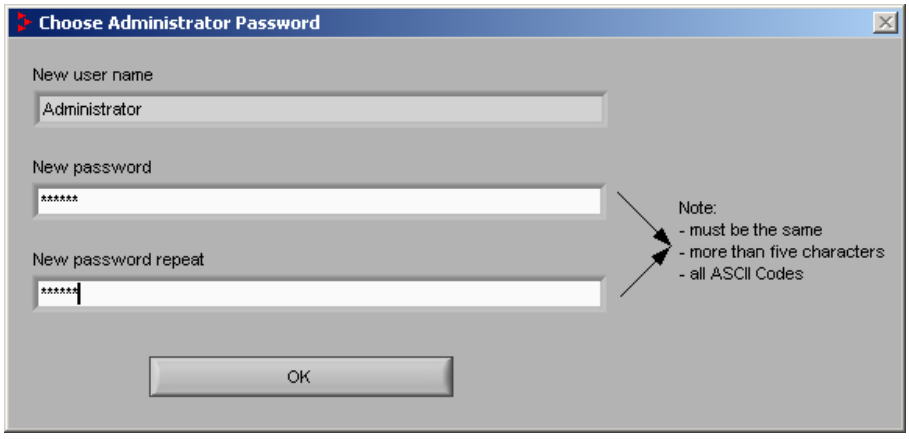
After the first program start the system needs to be configured. Especially the connected temperature chambers and the user management have to be set up (which can of cause always be modified by the APT-COM™ 3 administrator). Therefore the APT-COM™ 3 administrator must conduct the very first program start.

Close the window by pressing "**OK**". The message "First start of APT-COM 3" is displayed:



Now the APT-COM™ 3 administrator is asked to select a **password**.

- Capitalization is recognized
- All ASCII characters can be used, i.e., letters, numbers, space characters and special characters
- The password requires a minimum length of 6 characters

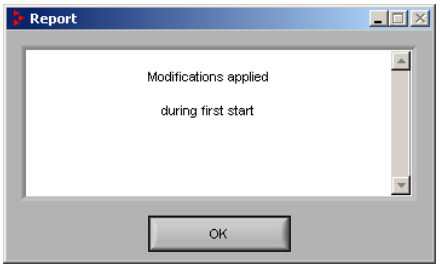


Enter the password twice and confirm by "**OK**".

In case of wrong password entry (difference between first entry and repeat, or password shorter than 6 characters) a corresponding information window appears.

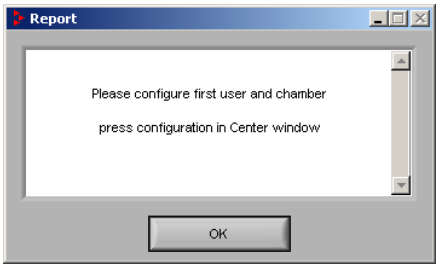
Hit "**OK**" or wait 10 sec. You can now again enter the password.

Having entered the correct password twice, an approving window appears.



Confirm by “**OK**”.

Follows a notifying window that asks to proceed with the APT-COM™ 3 configuration settings.



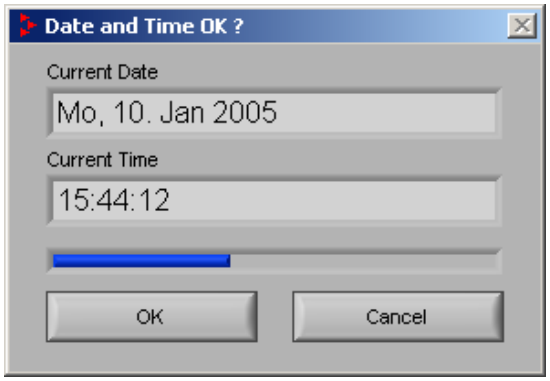
APT-COM™ 3 GLP Edition:

! The combination of a user name and a password meets the requirements of an electronic signature according to FDA guideline 21 CFR 11Teil C. According to 21 CFR 11 §11.100 (c) (1) the electronic signature can replace a handwritten signature. Its use has to be submitted to the Office of Regional Operations (HFC-100), 5600 Fishers Lane, Rockville, MD 20857 in paper form and supplied with a traditional handwritten signature.

6.4 General steps during program start

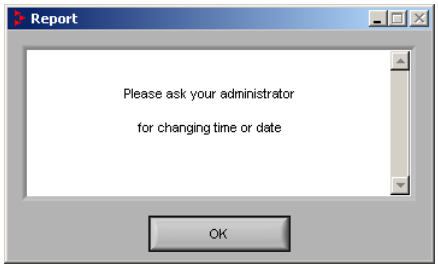
The following windows appear in case of the very first program start after the above described entry requests (chap. 6.3), in case of later APT-COM™ 3 starts right after the welcome window.

Date and time query window



Hitting “**OK**” closes the window, or it disappears after 30 sec.

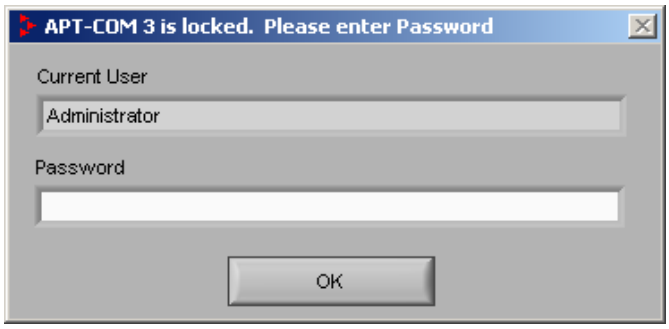
If the indicated date and time (the same as the system time on your local computer) are not correct, hit “**Cancel**”. An information window appears that informs you to ask the system administrator to set date and time. Confirm by “**OK**“.



! In this case the program will be shut down, because the correct time setting is a necessary condition for a valid measuring value acquisition.

6.4.1 Password entry in Basic and Standard Edition

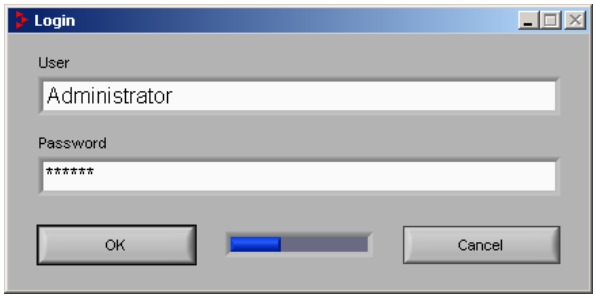
If the time is correct, you can log in with your previously entered password:



Confirm by "**OK**". Having entered the password correctly, the window "Center Version 3.02.xxx [edition]" opens up.

6.4.2 Password entry in GLP Edition

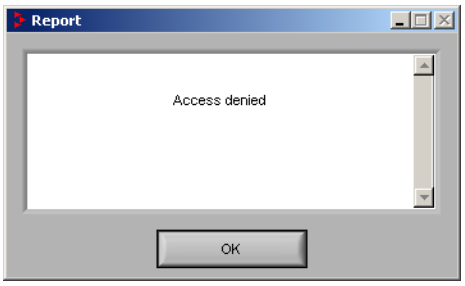
If the time is correct, you can log in as administrator with your previously entered password:



This is also true for other users on condition that they have been previously configured by the APT-COM™ administrator in the configuration settings (see chap.8.10).

Confirm by "**OK**".

The time to enter a password is 30 sec. In case of a wrong password an indication window appears. Having confirmed it with "**OK**" you can again enter the password.



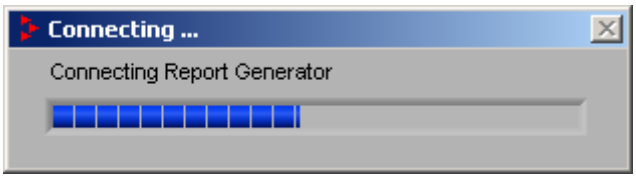
!	**While entering the password respect the position of the CapsLock key of your key panel.**

The total time of 30 sec continues to run down. If this time is over, the program is terminated. Also after 3 wrong attempts to log in the program will be terminated.

Having entered the password correctly, the window "Center Version 3.02.xxx GLP" opens up.

Some information windows inform about the state of the program. If the Watch Tool (chap. 10) or other programs have been working, the respective windows will open up as well.

The window "Connecting…" indicates that the connection to the APT-COM™ 3 accessory program "Report Generator" (chap. 9.2) is being established.



7. Program management

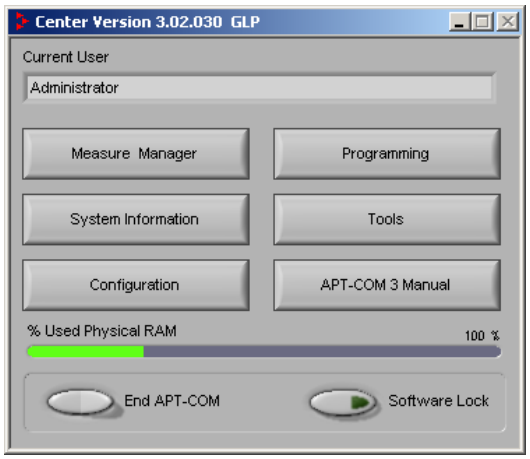
7.1 Window “Center Version 3.02.xxx [edition]”

The window “Center Version 3.02.xxx [edition]“ appears following program start and successful login.

This window allows calling up all program functions.

The field on top of the window indicates the user currently logged-in. in the GLP-Edition with the APT-COM™ Administrator logged in, and in the Standard Edition the screen looks as shown beside.

The green bar under “% Used Physical RAM” represents the current load of the physical computer RAM (random access memory).



GLP Edition:

If any other user is logged in (not possible at first APT-COM™ start) the button “**Configuration**” is missing, because the security-related configuration settings (see chap.8) must only be administered by the administrator:

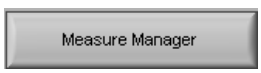
! **The buttons of the window “Center Version 3.02.xxx [Edition]“ are toggle buttons, i.e., the first click opens up a corresponding window that will be closed by a next click. Thus double-clicking on such a button would open and immediately close again the window.**

7.1.1 Menu button “Configuration”

With this button accessible only for the administrator you access the menu window “Config”. Here the APT-COM™ 3 configuration settings are done, in the GLP Edition additionally security-related settings as password setting, user management etc. See chap. 8.

! **It is recommended with GLP Edition that measurements are carried out by users and not by the APT-COM™ administrator. This assures that the configuration will not be accidentally modified.**

7.1.2 Menu button “Measure Manager”

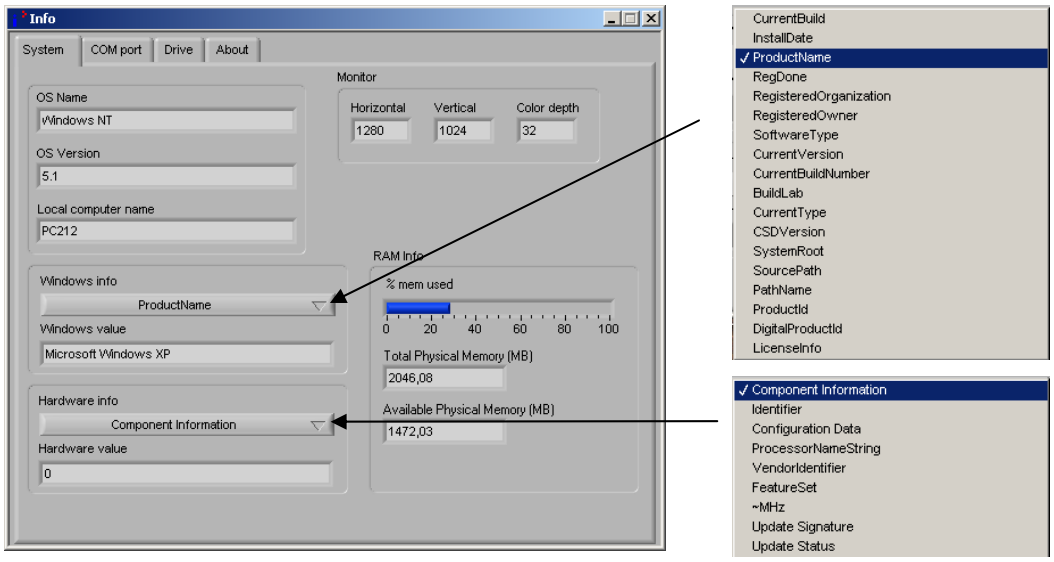


By this button you can access measurement setting up and management. See chap. 9.

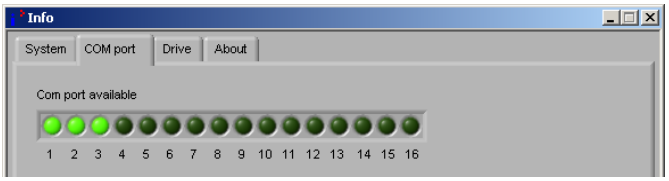
7.1.3 Menu button “System Information”

Here information about the local computer system is easily accessible. The information is provided by the Windows registry database.

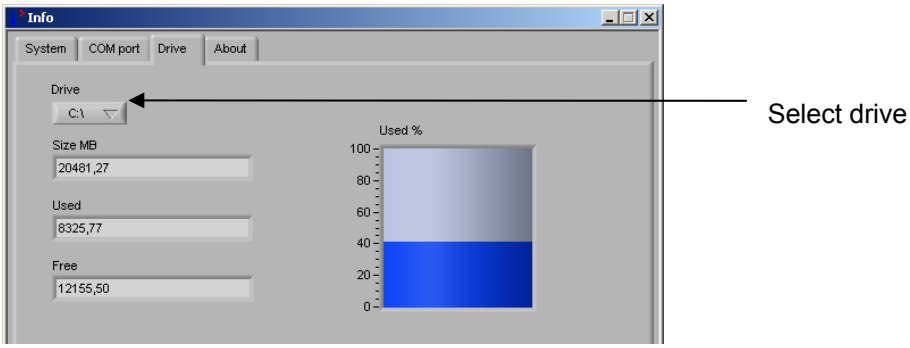
At this point it is easy to check again if the computer meets the system requirements listed in chap. 2.



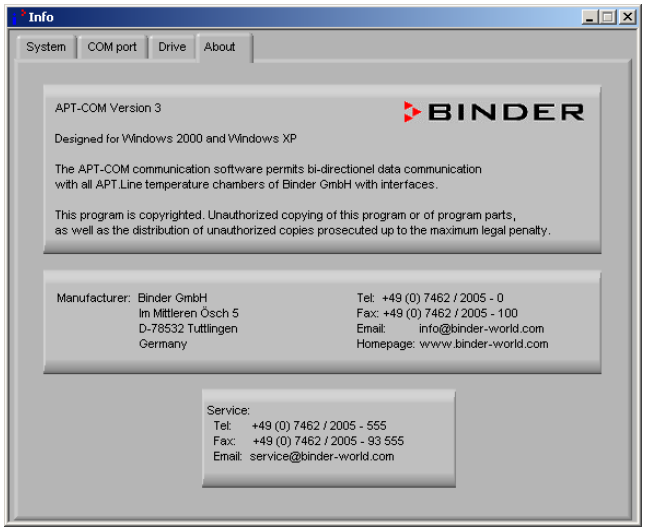
Under "**COM Port**" the number of COM ports available in your system is indicated (light green). The indicated ports can be free ore occupied.



"**Drive**" indicates the available storage space on the selected drive:



Under "About" information about the producer, the software, and service data are listed:



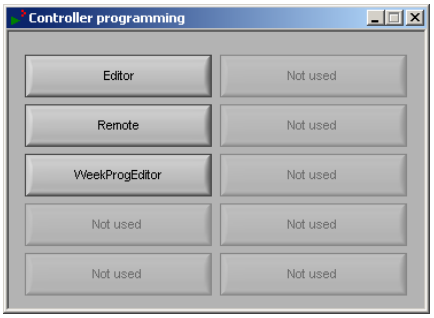
7.1.4 More menu buttons

Having selected buttons 

or 

windows open up that can look different according to the optional software modules you might have installed. The functions cannot be used without running such an additional module. The software modules are optionally available at BINDER and are continuously developed. User-specific problem solutions can also be implemented.

- In the window “Controller programming” optional software modules (controller programs for chamber controllers) installed according to your requirements are displayed and can be started by clicking on the corresponding button.

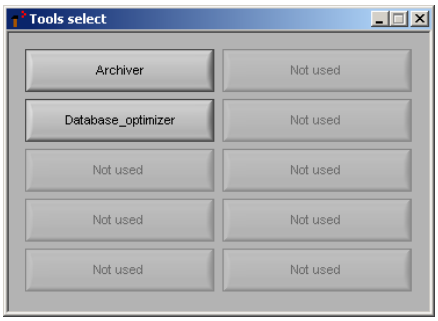


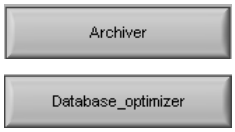
Program Editor, see chap. 11.

Week Program Editor, see chap. 12

Remote program, see chap. 13.

- In the window “Tools select” optional software modules (Tools) installed according to your requirements are displayed and can be started by clicking on the corresponding button.



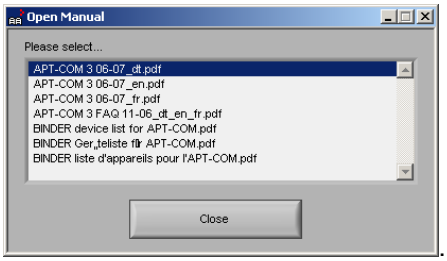


Archiver, see chap. 9.5

Database Optimizer, see chap. 9.6

Having selected button

the window “Open Manual” appears offering to select one of the documents via double click. You can add to the folder “Manuals” in your APT-COM™ 3 directory to which this window refers any type of document that you like to access during APT-COM™ operation. Regularly the operating manual is included in several language versions. When updating the software, the English manual – if it has been modified – is updated. Ask the BINDER Service for other language versions.



7.1.5 Function “Software Lock”

The “**Software Lock**” button can be activated by the APT-COM™ administrator as well as by any user logged-in correctly. After clicking on it a window to enter the password opens up.

! APT-COM™ 3 DataControlSystem cannot be used until the correct password has been entered. Previously started measurements and other processes remain active. This assures operation protected against unauthorized access in absence of the user.

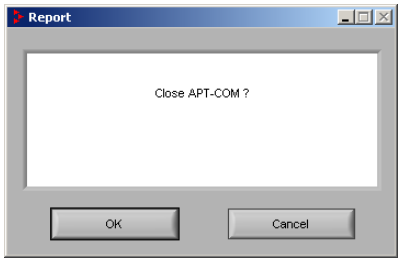
If the administrator disables the user manager function (chap. 8.10.2), the function “Software lock“ is automatically activated when starting APT-COM™ 3.

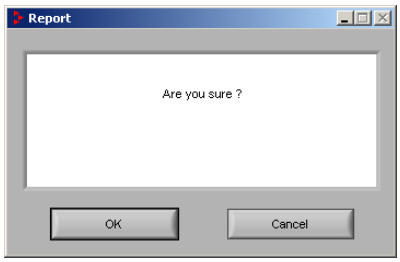
In order to allow an automatic program restart with a computer restart e.g., after power failure, without password entry, the function “**Autostart measure after program start**“ (chap. 8.6) must be enabled. This assures that also after an automatic restart the protected program course of the same user is continued.

7.1.6 Program end

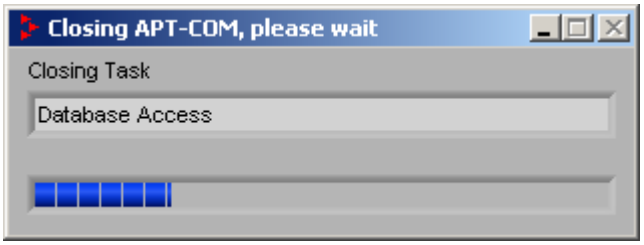
The button “**End APT-COM**” serves to quit the program.

Two additional security checks serve to prevent erroneously quitting the program (and thus interrupting the measurements).





The window “Closing APT-COM, please wait” indicates that APT-COM™ 3 is just being terminated and handing over system resources to Windows. Under “Closing Task” is indicated which subprogram is just being shut down.



Depending on the configuration, some more windows might indicate that other related programs are being closed.

When closing APT-COM™ 3 the window “Report Generator” will be closed with a delay. Print demands, if any, will be completed (chap. 9.2).

8. Configuration of APT-COM™ 3 DataControlSystem

8.1 Principle explanation regarding this and the following chapters

BINDER GmbH offers a large variety of different temperature chambers and measuring devices. The measurement windows offered by APT-COM™ 3 DataControlSystem for the different chamber types differ according to chamber function and the number and type of parameters controlled. Most functions are presented in this manual with the MK (E2) chamber type.

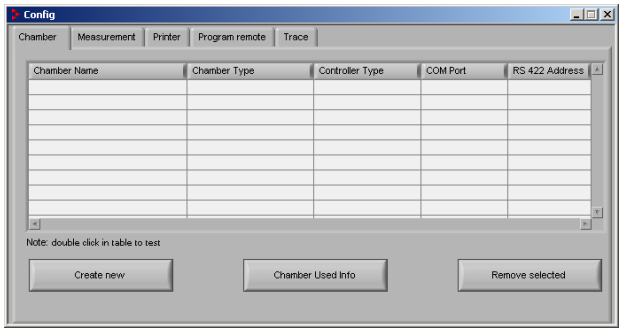
Additional hints at some points in the text explain special cases for other chamber types whenever their divergent properties could cause application problems.

Only the APT-COM™ 3 administrator can do all settings described in this chapter.

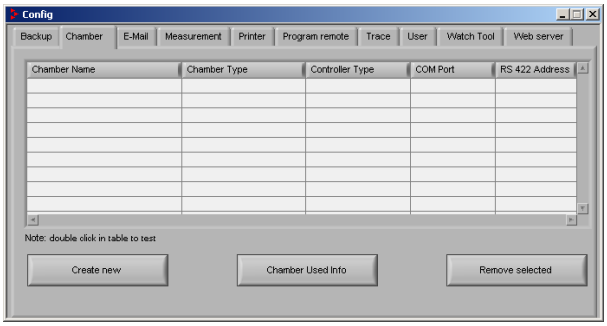
8.2 The configuration window “Config”

If you select the button “**Configuration**” in the window “Center Version 3.02.xxx [edition]“, the configuration window opens up. As administrator you can now configure the APT-COM™ 3.

Note: Depending on your edition of APT-COM™ 3 (Standard, Basic, or GLP) the number of menus in the window “Config” will vary. Also the individual menus might differ according to the functions included in the respective APT-COM™ 3 edition.



“Config“ window in Basic Edition



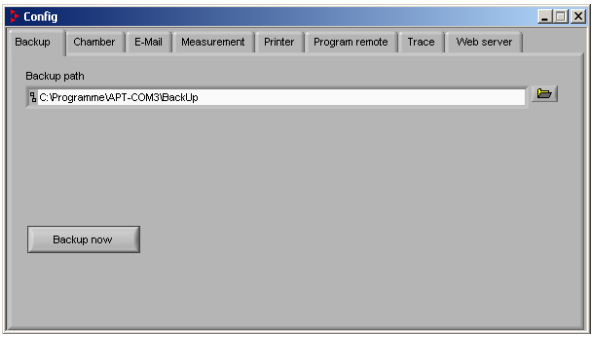
“Config“ window in GLP Edition

8.3 Backup settings (“Backup” menu) (Standard and GLP Edition)

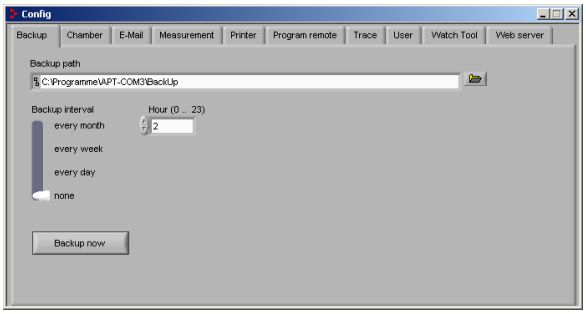
A Backup is a copy of the measuring and configuration data of all users accumulated so far, provided that they have not been manually deleted by the APT-COM™ administrator since the last backup or that a new measuring database has been started to be used.

Backup names always indicate the moment of generation.

In **Standard Edition** a backup can be generated via the button “Backup now”.

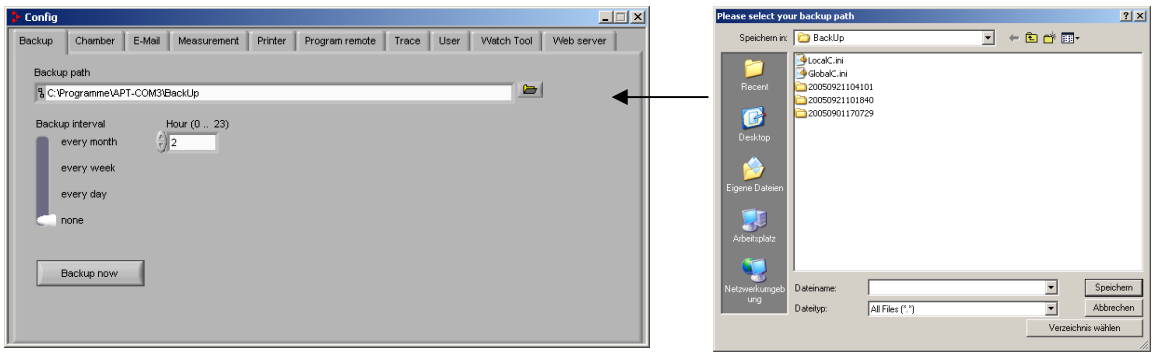


In **GLP Edition** the Backup is automatically generated in regular intervals (according to the settings selected under “Backup interval”) and saved to a location determined under “Backup path”. Additional backups can be generated independently of the selected interval via the button “Backup now”.



Backup path

Enter the path for the backup to be generated regularly, or select it in window “Please select your backup path” and then hit “**Save**” and “**Choose directory**”.



You can enter any path. Backup directories can be created on any storage medium that APT-COM™ 3 has access to and can create directory structures on. Following the generation by APT-COM™ 3 directories can be manually copied to any medium.

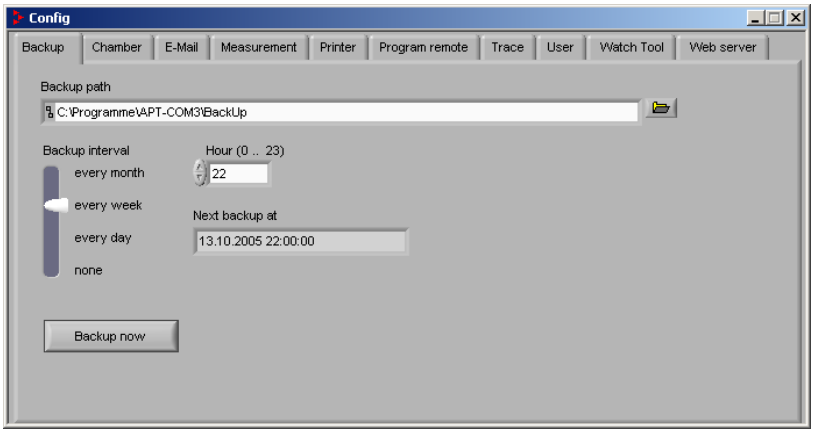
! The default path refers to the “Backup” folder in the APT-COM™ 3 directory. The file “Backup.dat” located in this folder is required by the system and must not be deleted.

APT-COM™ 3 also saves the configuration files localc.ini and globalc.ini in the folder “Backup” in the APT-COM™ 3 directory. In case of an error the software could access these files for a system recovery. This saving happens independently from the Backup via the configuration menu which leads to the creation of a folder bearing the name of the moment of its creation and containing the complete file system of this moment.

APT-COM™ 3 GLP-Edition:

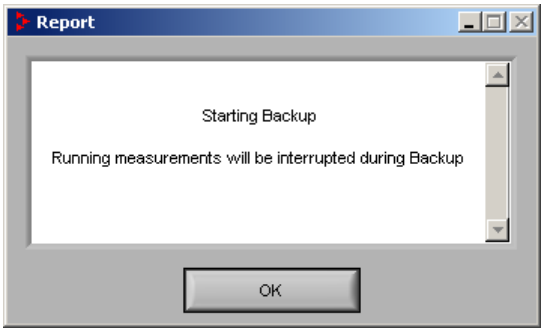
For the automatic backup function you can select the interval for the automatic backup generation under “**Backup interval**” and the desired time (full hour) for carrying out the backup under “**Hour**”.

The moment of the next backup according to the settings is displayed under “Next backup at”.

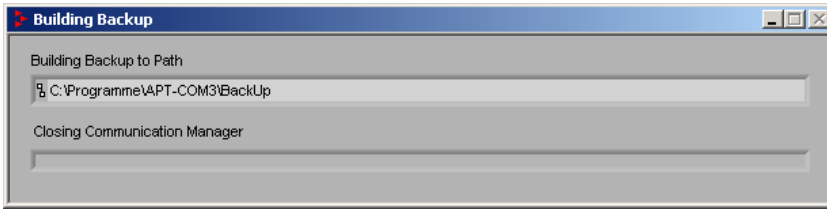


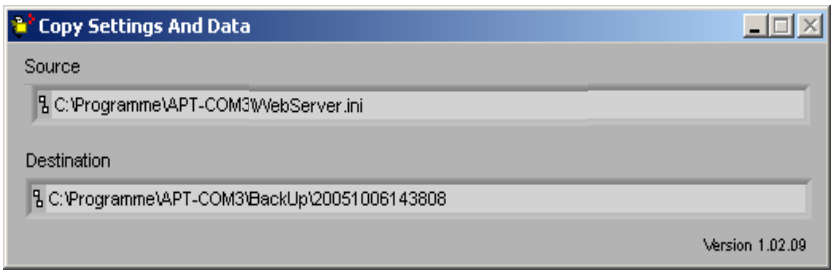
Also if the automatic backup function (GLP Edition) is set, an additional backup can be generated at any time via the button “**Backup now**”.

If you want to create a backup via button “Backup now” at first an information window shows up. Confirm with “**OK**” or wait about 10 seconds. Then the backup starts.



When a backup is generated via the button “Backup now” or according to the selected interval (GLP-Edition), notifying windows inform about the running backup creation.

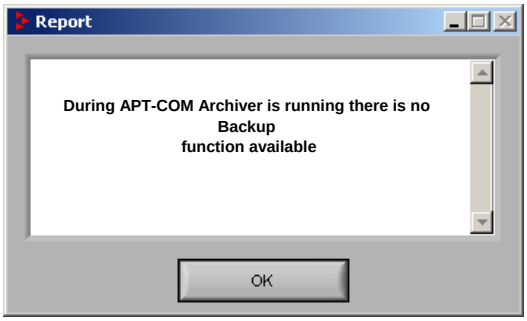




During backup creation, all running measurements are stopped. They are restarted when the Backup is finished. In the Trace file (chap.8.9) the moment of completing the backup is noted, so you can associate missing data with backup creation.

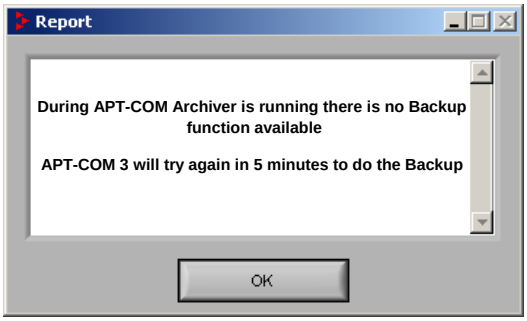
It is impossible to create a manual backup via button “Backup now” while the APT-COM™ 3 Archiver (chap. 9.5) is running. In this case, an according information window will appear.

Terminate the Archiver with button “End” in the window “APT-COM 3 Archiver” or wait until it has completed its task.

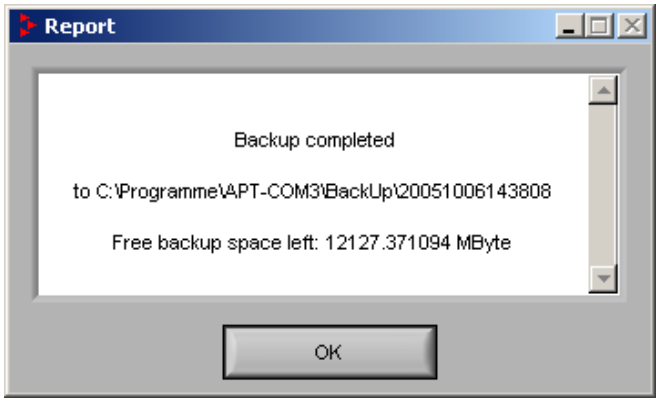


Also the automatic backup can not be executed at the selected moment while the APT-COM™ 3 Archiver (chap. 9.5) is running. The backup program attempts every 5 minutes to create the backup until the Archiver is terminated. An according information window appears.

You can terminate the Archiver with button “End” in the window “APT-COM 3 Archiver”, or the program waits until the Archiver has completed its task and then creates the backup.



As soon as the backup is completed you receive a message informing about creation and location of the backup and about the free space still available on the Backup data storage medium.

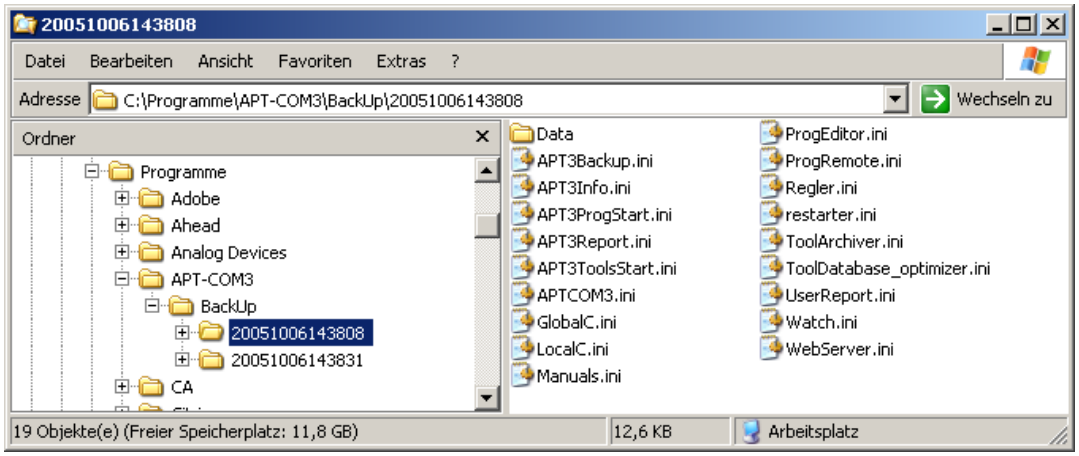


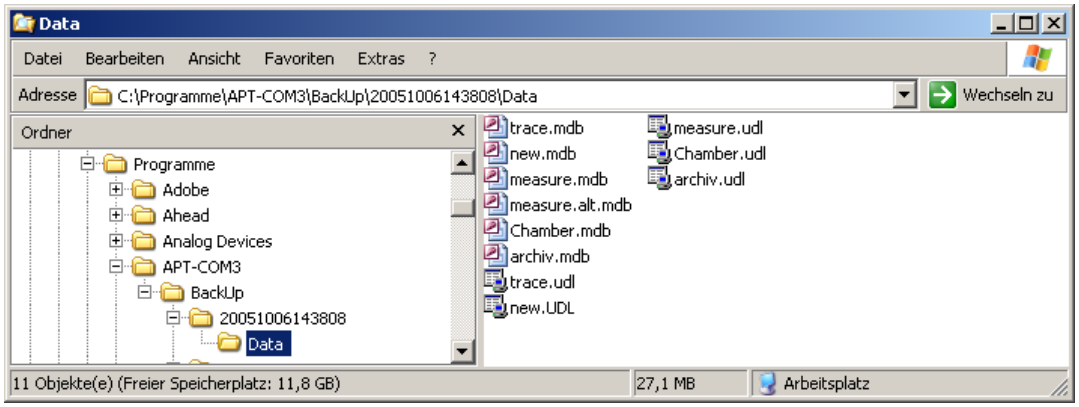
The displayed number is the **name of the corresponding backup folder**. It consists of date and time of the backup creation. The number 20051006143808 of the example indicates:

2005	year
10	month
06	day
14	hour
38	minute
08	second

This guarantees that each backup receives an individual and informative name, that no elder backup be overwritten and the order in time is assured.

The **Backup directory** contains all files used by APT-COM™ 3 and relevant for the measurements from the moment of its creation:





The following files are included in the backup:

.ini files: Here configuration data of APT-COM™ 3 and its components are saved.

.mdb and **.udl** files in the “Data” folder: Saving of database files and of the access paths of the database.

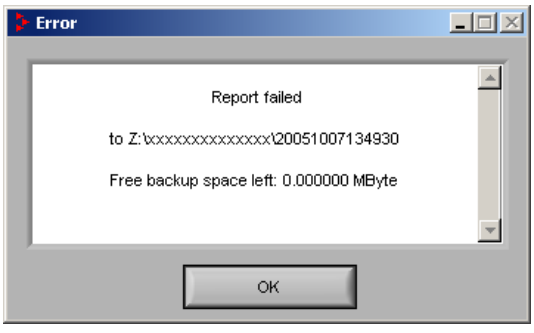
- measure.mdb This file contains all data referring to your measurements.
- trace.mdb This file contains the automatically generated system protocol (chap. 8.9).

Further database files and the access paths are needed for software operation.

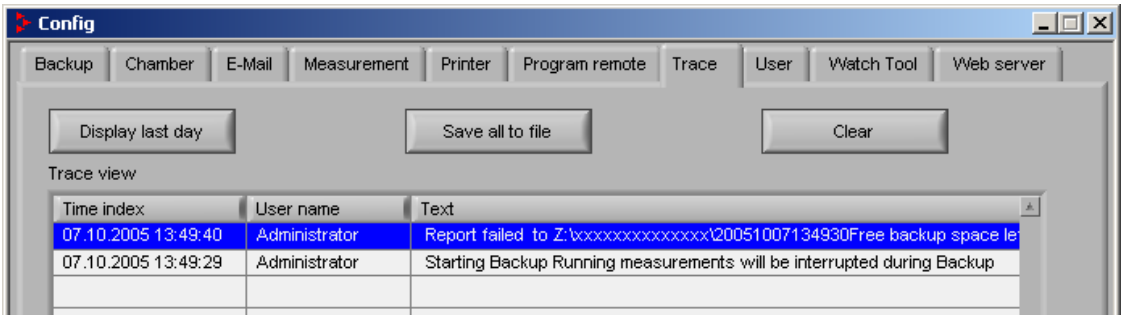
The backup is cumulative. The size of the file “measure.mdb” in the backup-folder equals the size of the original measuring database in the APT-COM™ 3 directory at the moment of the backup creation. The data are identical.

Backup failed

If ever a backup has not been completed correctly, e.g., because the connection to the storage location on a remote server has been interrupted, during 20 seconds an information window with an according error message is displayed.



The according message is also noted in the “Trace” menu (chap. 8.9):



Reading the backup:

Like the original file also the file “measure.mdb” in the backup folder cannot be handled with an editor. It will only be readable by copying it into the APT-COM™ 3 directory.

> **! For this purpose the current database “measure.mdb” in the APT-COM™ 3 directory must be saved or temporarily renamed prior to copying back the backup database.**

> **! Only the user who has originally generated the measurement can do the evaluation of measuring data from backups.**

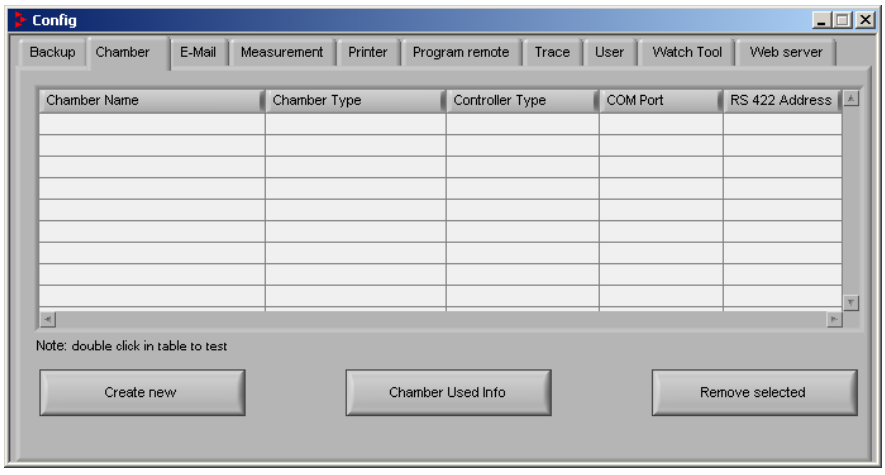
If all files of a backup folder are copied into the APT-COM™ 3 directory, all system settings configured by the administrator and alls measurement settings configured by the user are activated as they were at the moment of backup creation. This is also true for the alarm delay time “Alarm Delay” selected in the Watch Tool program.

It is also possible to copy individual files from the backup folder to the APT-COM™ 3 directory:

- “measure.mdb” e.g., for purpose of evaluation of individual measurements, this on condition, that the user who generated the measurements has also current access to APT-COM™ 3 with his user name and password,
- “trace.mdb” for evaluation of the automatically generated system protocol,
- “aptcom3.ini”, “localc.ini”, “globalc.ini” must be copied altogether if the system configuration of the moment of backup creation is to be reconstructed.

Note: If files or folders in the APT-COM™ 3 directory are renamed or if thy are modified or added by copying a backup file, prior to this APT-COM™ 3 and the monitoring software Watch Tool have to be terminated. After copying / renaming APT-COM™ 3 is restarted and now respects the modified settings.

8.4 Temperature chamber management (menu “Chamber”)

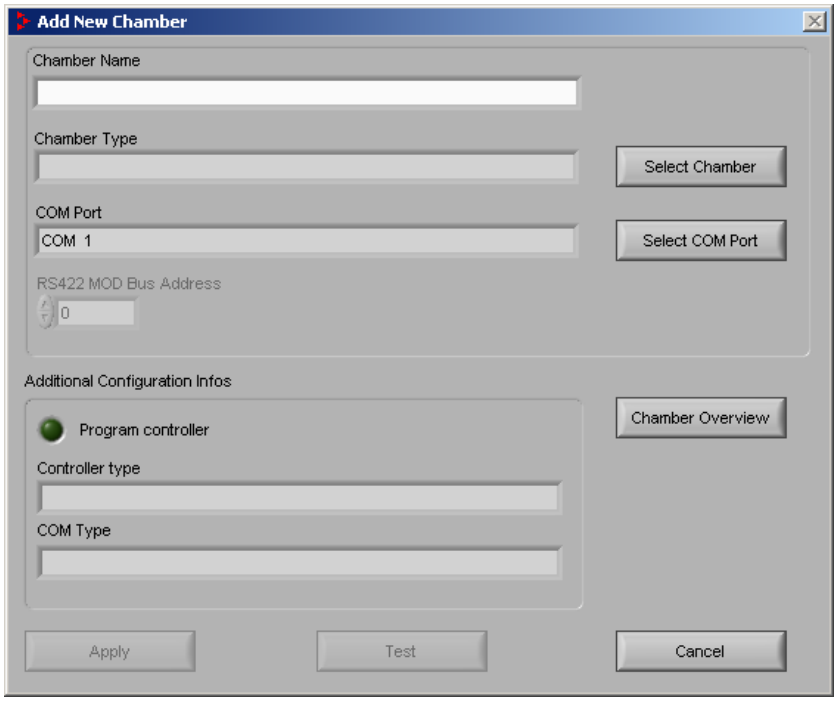


This menu serves to set up in APT-COM™ 3 DataControlSystem the temperature chambers that are connected cross-linked to the computer on which APT-COM™ 3 is running.

In case of the Basic Edition one single temperature chamber can be registered. The chamber entry will be done here regardless if measurements will be started immediately after or only at a later moment.

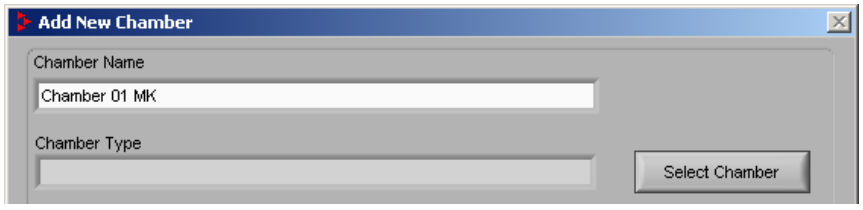
8.4.1 Registering the connected chambers in APT-COM™ 3

After selection of button "**Create new**" the window "Add New Chamber" opens up:



8.4.1.1 Chamber name

In window "Add New Chamber" you can enter any name as "**Chamber name**". In our example it is "Chamber 01 MK". The maximum length is of 240 characters, and it can consist of letters and numbers including space.



If you select button "**Chamber Overview**" the window "Chamber Info" appears. Here the chambers are listed that have already been registered. You can see which names are already in use and thus can no more be selected.

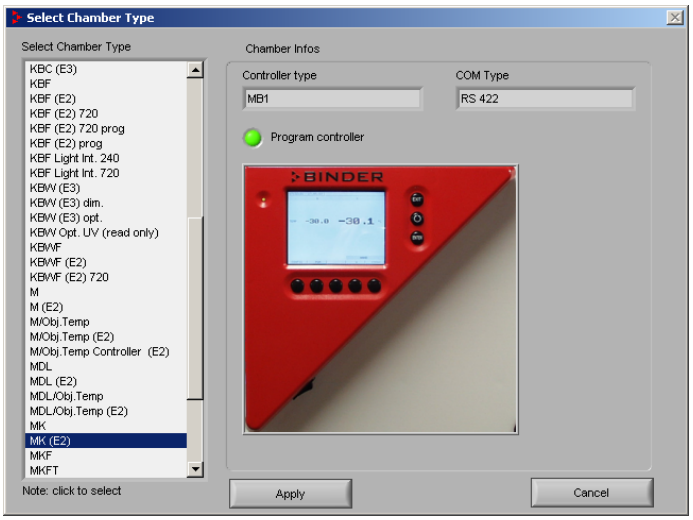
8.4.1.2 Chamber type

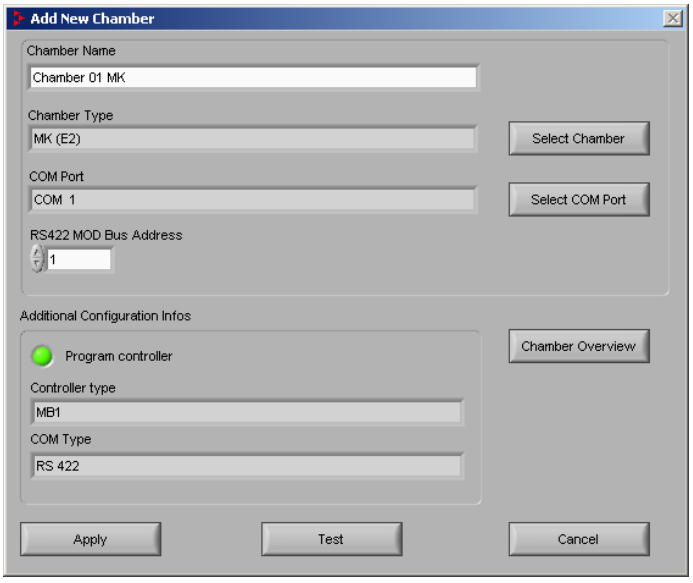
In window “Add New Chamber” hit the button “**Select**” next to field “Chamber Type”. The window “Select Chamber Type” appears. You can select under “**Select Chamber Type**” the desired chamber type, MK (E2) in our example.

For the selection the according controller type (here: MB1 controller) is displayed. Under “**Controller type**” the controller type is indicated, under “**COM Type**” the chamber interface type. The image should be compared with the temperature chamber in order to avoid a wrong chamber type selection.

If the chamber is equipped with a program controller (see example), the signal button “Program controller” lights up.

Confirm your selection by hitting “**Apply**”. The chamber type is displayed in window “Add New Chamber” under “Chamber Type”.





Now the entry field “RS422 MOD Bus Address” becomes active if a chamber with RS422, or Ethernet interface has been selected (chap. 8.4.1.4).

The submenu “Config Info” displays data about the chamber controller (“Controller type”) and the interface (“COM Type”). In case of a program controller button “Program controller” lights up.

Special cases:

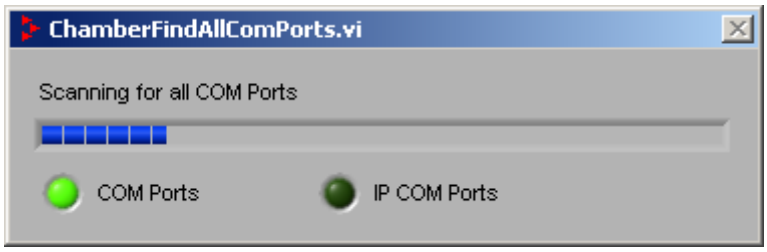
- For KBF (E1) chambers with option PD2 program controller select chamber type KBWF.
- Elder KBF chambers produced before November 1997 provide only a temperature interface. The humidity controller type SM has no interface card. For connection to APT-COM™ these chambers have to be re-equipped with a different controller type.
- For KBF-ICH chambers select the according KBF controller type without ICH illumination.

8.4.1.3 Entry of COM port number or of IP / MAC address

In this menu you can either select the corresponding COM port of your computer to which the selected chamber is connected, or you can address the chamber directly via its IP / MAC address in case it is connected via the W&T Ethernet converter (exception: units with RD2 controller) or if it is equipped with an internal Ethernet interface.

In window “Add New Chamber” hit the button “**Select**” next to field “COM Port”. The window “Select COM Port” appears.

The information window “Chamber Find All Com Ports” indicates scanning for existent COM Ports and for chambers connected via Ethernet.

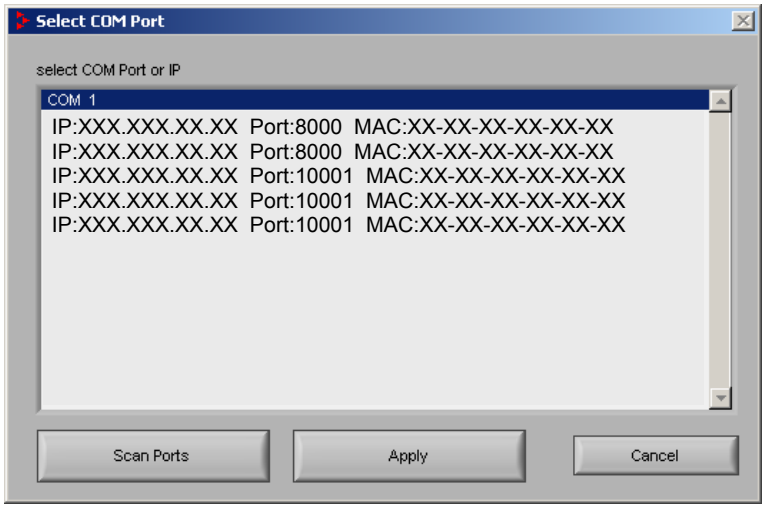


Those are listed in the window “Select COM Port” and can be selected under “select COM Port or IP”.

The addresses of the connected W&T Ethernet-converters are listed with Port 8000. The MAC address is printed on each converter.

The addresses of the chambers with an internal Ethernet connection are listed with Port 10001. The MAC address sticks next to the chamber interface.

Confirm your selection by hitting “**Apply**”.



- For chambers with RS 422 interface select the number of the COM port the RS 422/RS 232 interface converter is plugged to. That means, all chambers with RS 422 interface have the same COM number. They are recognized by their different RS422/MOD Bus addresses (chap. 8.4.1.4).
- For chambers with RS 232 interface select the number of the COM port the chamber is connected to. That means, each chamber with RS 232 interface has its own individual COM number. The appropriate selection of the COM port for each individual chamber with RS 232 interface is the number of the COM port via which the chamber is connected to the computer. If it is connected via an extension port (see chap. 4.1.5) enter the COM number corresponding to the socket used on one of the 8-port modules. The enumeration of the COM ports is fixed under “Individual Port setting” in the Moxa configuration panel (see installation manual 7001-0108 for the CPU module). So each chamber with RS 232 interface is unambiguously addressed.
- If several chambers are connected via the W&T Ethernet converter (TCP Port 8000), select the MAC address of the converter. The chambers are recognized by their different RS422/MOD Bus addresses (chap. 8.4.1.4). To detect the chambers, APT-COM uses the following UDP ports: 8512, 8513, and 14236. At this, it sends a multi-address telegram. When APT-COM communicates with the chambers through a Firewall, make sure that these ports are open.
- For chambers that are connected via an internal Ethernet interface (TCP Port 10001), select the MAC address indicated on the chamber. To detect the chambers, APT-COM uses the following UDP ports: 43282, 30718, and 17236. At this, it sends a multi-address telegram. When APT-COM communicates with the chambers through a Firewall, make sure that these ports are open.

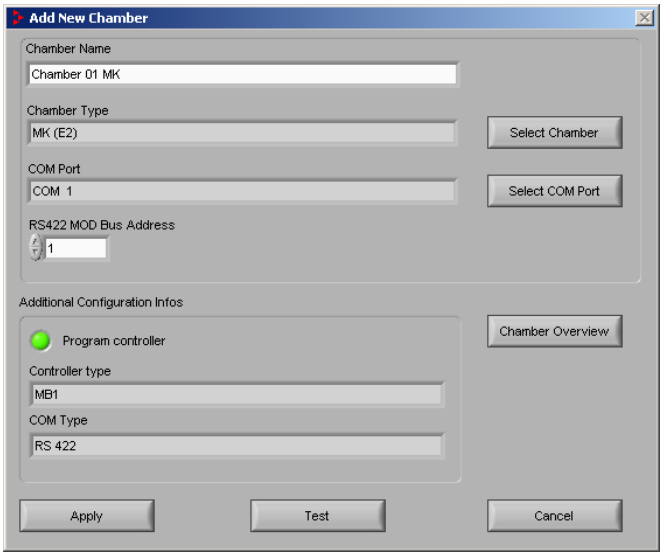
Confirm your selection by hitting “**Apply**”. The selection is displayed in window “Add New Chamber” under “COM Port”.

Note regarding networking via Ethernet:

APT-COM™ 3 saves the IP address of every chamber. If then the IP address is modified, communication with the chamber is not possible any more, the chamber should first be registered again.

- Therefore the IP address must be fixedly assigned for every chamber via the DHCP server.
- If during selection of the MAC address no IP address can be seen (represented as IP 0.0.0.0), this means that no IP address has been assigned for the chamber so far. For chambers provided with an internal Ethernet interface (Lantronix X-Port) you can assign the IP address using the Software Lantronix DeviceInstaller included on the APT-COM™ 3 CD (chap. 3.3).

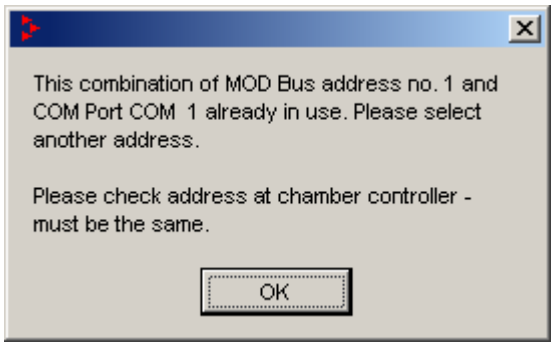
If chamber name, chamber type and COM port have been entered, the buttons “Apply” to adopt the settings and “Test” to check communication between APT-COM™ 3 and the chamber controller (chap. 8.4.1.5) appear.



8.4.1.4 Setting the RS422 MOD Bus Address

The address can be set in window “Add New Chamber” under “RS422 MOD Bus Address” as soon as an according chamber type has been selected.

! If several chambers with an RS422 interface are connected to the same COM port, you must assign an individual RS422 Modbus address to each chamber.



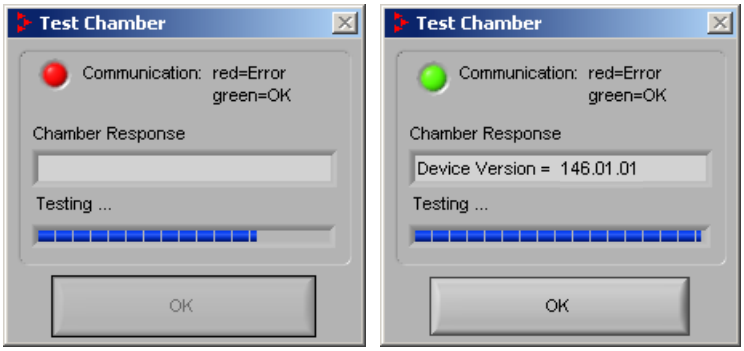
- For chambers with RS 422 interface the address individually assigned at the chamber controller (see chap. 3) must be entered under “RS422 MOD Bus Address”.

- If a chamber with RS 232 interface is selected, this field is inactive because in this case no entry is needed here.

- For all chambers with internal Ethernet connection the setting should be set to “1” (default setting of the chamber controller and in APT-COM™ 3).

8.4.1.5 Communication check

Selecting button “**Test**” in window “Add New Chamber” offers to check if all data have been entered correctly and if the computer, i.e., APT-COM™ 3 is connected to the temperature chamber.



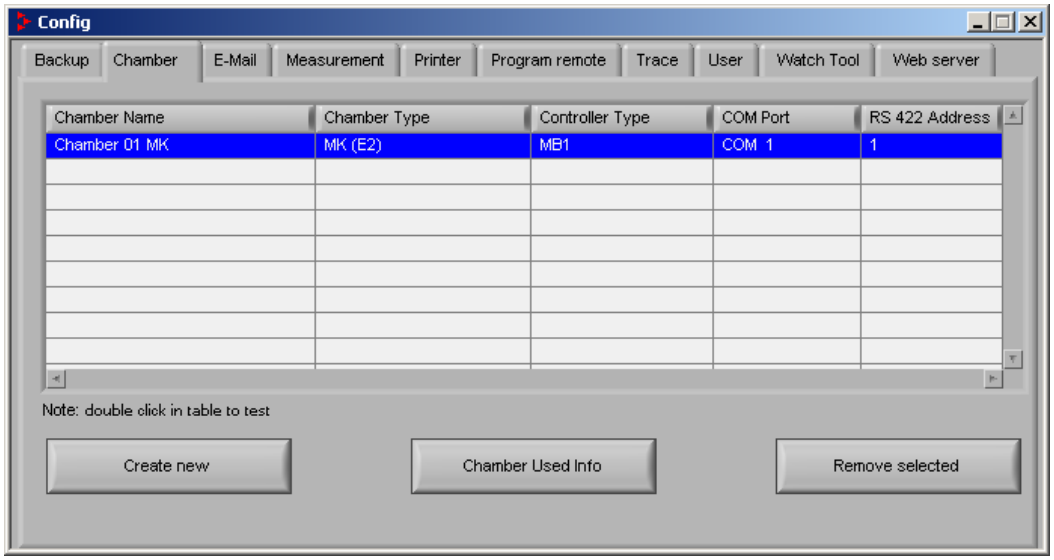
If the signal button “Communication” lights up green, there is a functional connection between APT-COM™ 3 and the chamber.

Under “Chamber Response” a device number or a set-point appears (different number according to the chamber controller type).

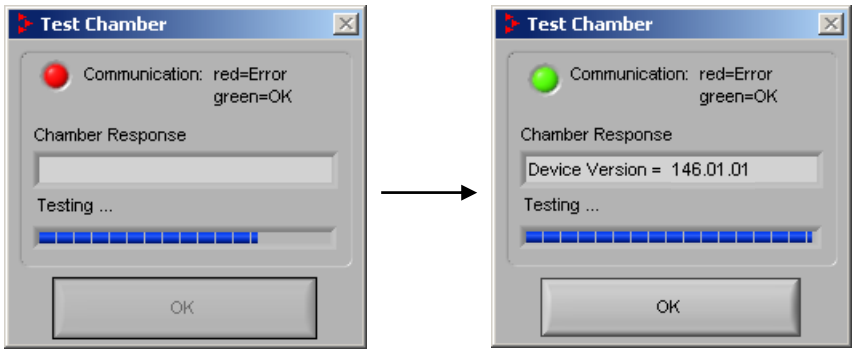
Quit the test hitting “**OK**”.

You can now apply all settings in window “Add New Chamber” with “**Apply**”.

In the configuration window “Chamber” the chamber data are displayed.



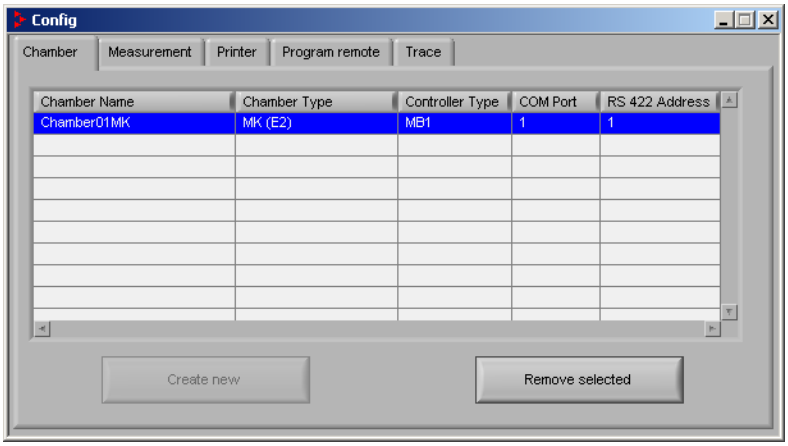
You can also test here the connection between APT-COM™ and the chamber by clicking on the corresponding table line.



Note (Basic-Edition):

As only one chamber can be operated with APT-COM™ 3 Basic Edition, button “Create new” is inactive following chamber configuration.

Configuring a new chamber is possible only if the chamber configuration has been deleted with “Remove selected”.

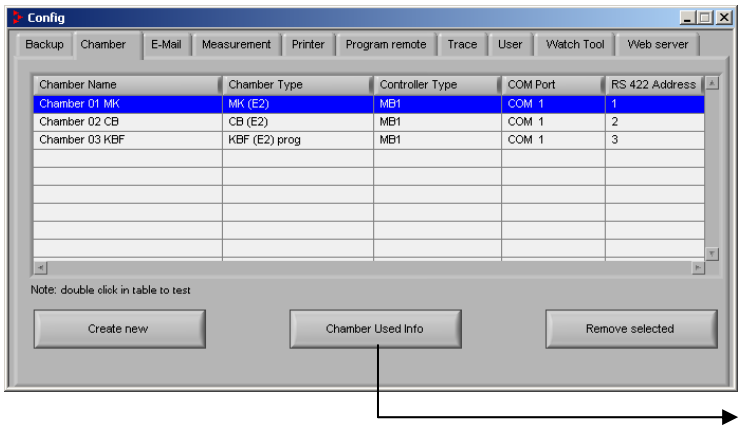


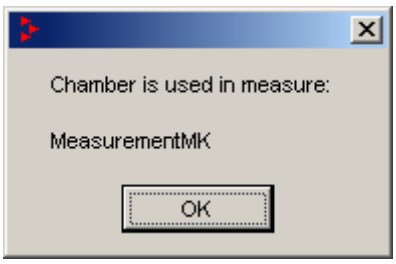
All chambers connected to the APT-COM™ 3 computer are now set up one after the other and the connection is tested.

If more than one chamber is set up, you can choose each chamber by clicking in the table line.

8.4.2 Information about chamber use in measurements

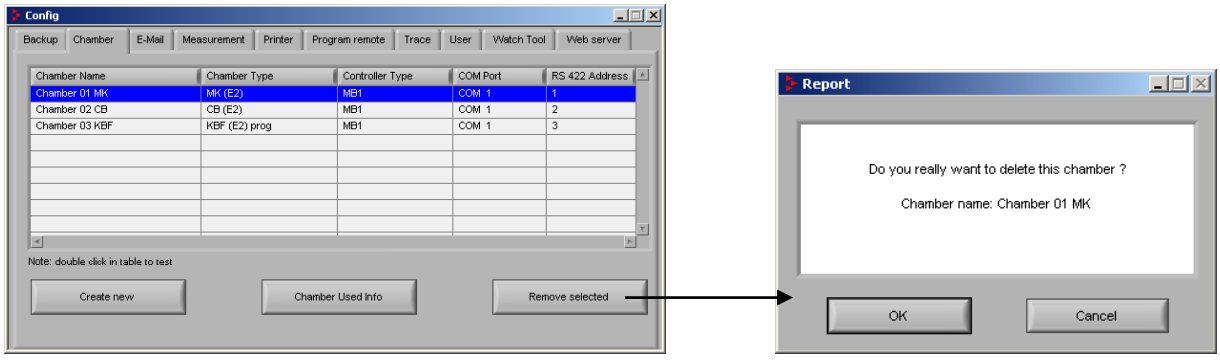
Select a chamber by clicking in the corresponding table line. Hit button ”**Chamber Used Info**”. An information window indicates if and in which measurements the chamber is used.





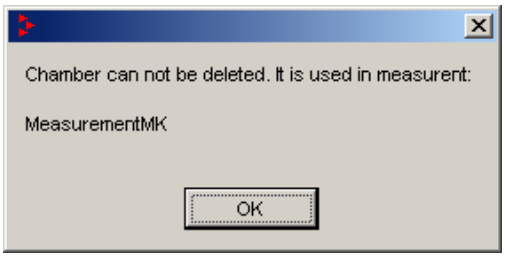
8.4.3 Deleting chambers from APT-COM™ 3

Select the chamber that you want to remove from APT-COM™ 3 by clicking in the corresponding table line. Hit button “**Remove selected**”. A security query appears.



Confirm the security query. The chamber is deleted from APT-COM™ 3.

As long as any measurements exist using the chamber, you can not delete the chamber.

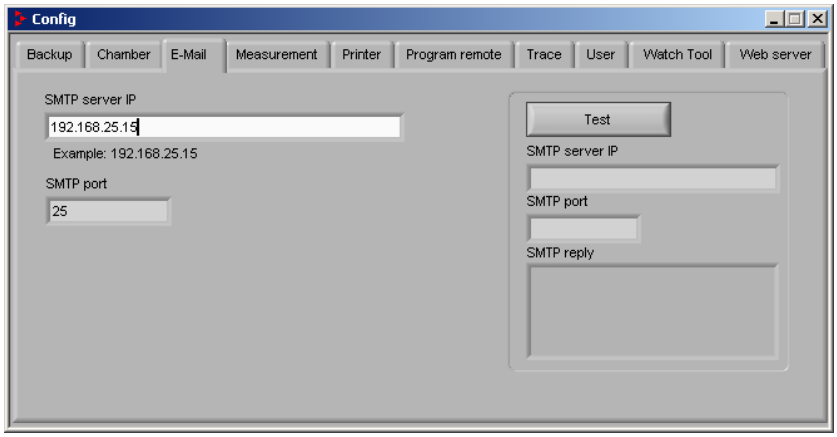


! Before deleting a chamber from APT-COM™ 3, stop all active measurements using this chamber, if appropriate, set the measurement(s) to inactive (chap. 9.1.4) and delete all the measurements using the corresponding chamber (chap. 9.1.3).

8.5 Mail server settings (“E-mail” menu) (Standard and GLP Edition)

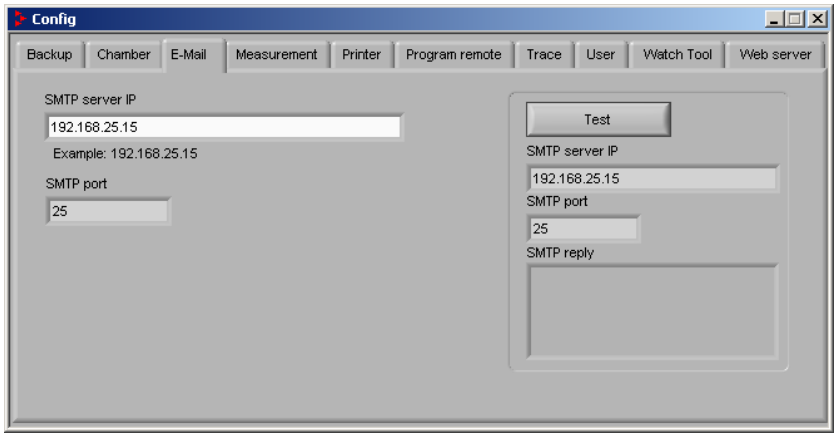
APT-COM™ 3 DataControlSystem offers comfortable remote alarm and remote monitoring functions. In this configuration menu the server data will be entered that are needed for sending e-mails and using the html-based monitoring function (chap. 9.2.1 and 9.2.2).

Enter the IP address of your e-mail server under “**SMTP server IP**” (see an example in the following picture).



As soon as you hit **Return** or leave the menu point, the new IP address is taken over. An information window confirms this.

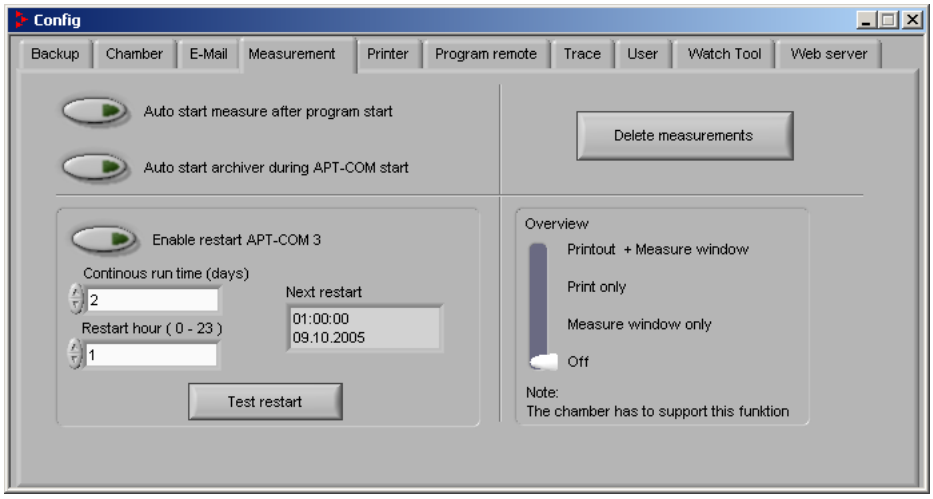
After hitting the “**Test**” button settings are taken over to “SMTP server IP”:



Under “**SMTP port**” the default value of 25 is displayed.

If the communication to the server is established, an additional server message is displayed under “**SMTP reply**”.

8.6 Automatic start following system failure or restart. Deleting measuring data. Measurement window configuration “Overview” (“Measurement” menu)



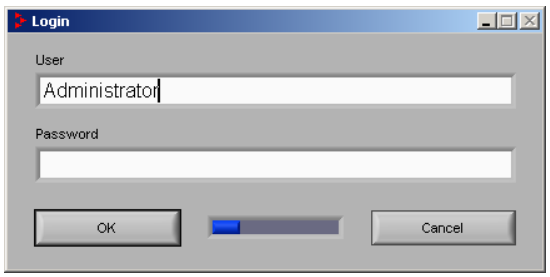
8.6.1 Automatic start of measurements following start of APT-COM™ 3

With the button “**Auto start measure after program start**” you can define if the measurement shall be automatically continued when starting APT-COM™ 3. This is especially important for the case of power failure, when APT-COM™ 3 – with according configuration of the operating system –restarts automatically.

Now the measurements that have been active before are automatically continued with APT-COM™ 3 start.

When starting APT-COM™ 3 with the function “Auto start measure after program start” being activated, instead of the welcome window and the Date and time query window, the window “Change User” appears, allowing to select a user different from the administrator.

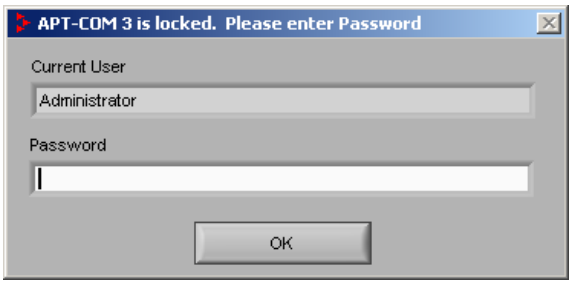
If you select button “**Change User**”, the entry window “Login” appears. You can enter a user name and the according password. If there is no entry during 30 sec, the program is shut down.

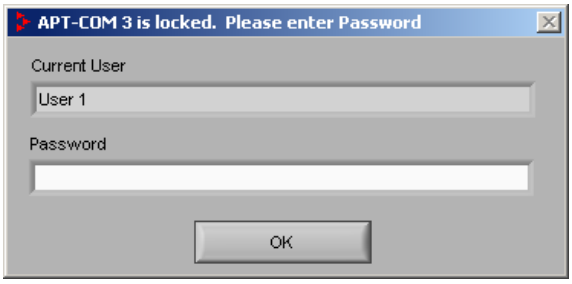


If you select button “**Next**” or wait 10 sec, the window “APT-COM 3 is locked” appears. APT-COM™ 3 is now in “Locked” mode (chap. 7.1.5) with the user logged-in before.

Some information windows inform about the state of the program. All measurements previously set to active (chap. 9.1.4) are now automatically continued, and window “Communication Manager” (chap. 9.4) appears. If the Watch Tool (chap. 10) or other programs have been working, the respective windows will open up as well.

You need to enter the password in order to operate APT-COM™ 3 or to shut down the program, which would mean to stop the measurements that have been automatically continued.





Notes about the start following power failure and system crashes

If the system configuration has been carried out as described, these settings are always respected. This means that all **active** (see chap. 9.1.4) **measurements** before the system crash or power failure will be automatically continued following computer restart. Therefore only for the period of power failure / system error measuring data will be missing.

> **! Danger of data loss. A condition for the automatic measurement restart after a power failure is that no user must manually log in when the computer restarts. The user login of the operating system must be automated.**

A shortcut to APT-COM™ 3 must be included in the Auto start directory.

The only absolutely safe protection method against data loss in case of power failure is the current supply of the computer and possible power supply units by a battery-buffered no-break power supply.

8.6.2 Automatic archiving during APT-COM™ 3 start

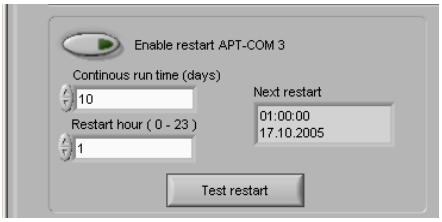
With the button “**Auto start archiver during program start**” you can determine if the APT-COM™ 3 Archiver (chap. 9.5) shall be automatically started when starting APT-COM™ 3. This is recommended in order to keep the measuring database fast and slim.

8.6.3 Restart function

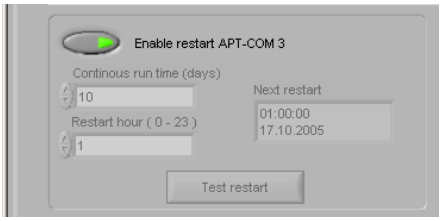
It is recommended to shut down operating systems after about 1 week in order to prevent a RAM overflow. To assure the stability of APTCOM and of the operating system, the “Restart” feature offers to shut down the software automatically in adjustable intervals at defined moments. All active measurements are terminated for the duration of the shutdown. After a short delay APT-COM™ 3 starts again. It is then in “Locked” mode (chap. 7.1.5) with the last logged-in user. All active measurements are automatically restarted.

> **! This is independent of the function “Autostart measure after program start” having been activated or not. The function is automatically effective during Restart.**

Under “Continuous run time” enter the information after how many days and at which time the software shall be shut down and then restarted. The according date and time are automatically displayed under “Next restart”.

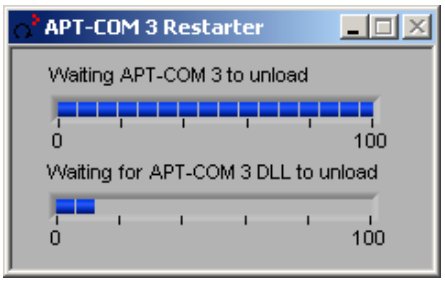


With the button “**Enable restart APT-COM 3**” the Restart function is activated. The fields for parameter entry are now inactive.



Button “**Test restart**” serves to test the Restart function:

The program is terminated. The window “APT-COM 3 Restarter” displays the remaining duration until restart. The duration depends on the time needed to clear APT-COM™ 3 and all its components from the main memory.



The window “Change User” appears, permitting to select a user different from the administrator.

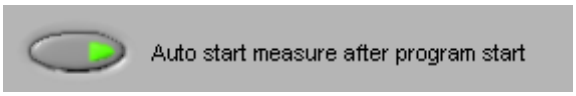
If you select button “**Change User**”, the entry window “Login” appears. You can enter a user name and the according password. If there is no entry in window “Login” during 30 sec, the program is shut down.

If you select button “**Next**” or wait 10 sec, the window “APT-COM 3 is locked” appears. APT-COM™ 3 is now in “Locked” mode (chap. 7.1.5) with the user logged-in before.

Some information windows inform about the state of the program. All measurements set to active (chap. 9.1.4) are now automatically continued, and window “Communication Manager” (chap. 9.4) appears. If the Watch Tool (chap. 10) or other programs have been working, the respective windows will open up as well.

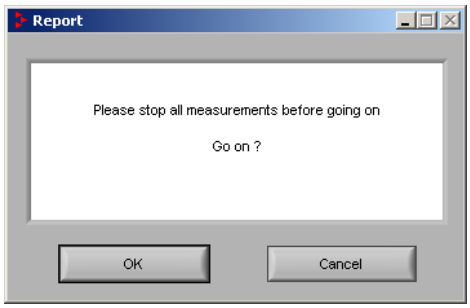
You need to enter the password in order to operate APT-COM™ 3

The function “Auto start measure after program start” is now automatically activated which can be recognized by the highlighted button.

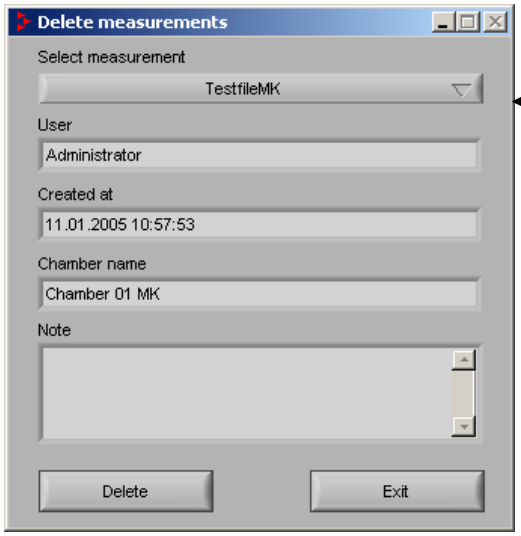


8.6.4 Deleting individual measurements

Via the button “**Delete measurements**” The APT-COM™ administrator can remove measurement data of individual users from the measuring database “Measure.mdb”. All measurements need to be halted. If any measurements are still running, a window reminds to shut them down. Confirm with “**OK**” and stop the running measurements (chap. 9.4.4).



Now a selection window opens up that displays all measurements contained in the database file.



The selection window indicates next to the measurement name the name of the user who created the measurement (“User”) and date and time of creation.

Under “Note” the notes are displayed that have been entered to the field “Note for new measurement” (chap. 9.1.1) when creating the measurement.

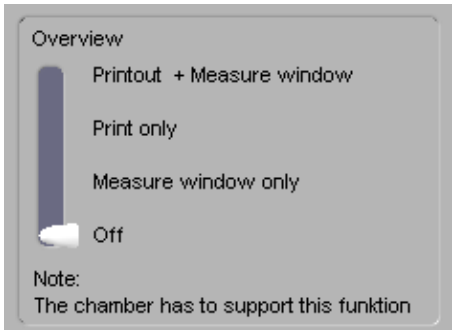
The selected measurement is deleted after an additional security check.

! A measurement set to active cannot be deleted (see chap. 9.1.3).

8.6.5 Common graphical representation of several measuring parameters (“Overview”)

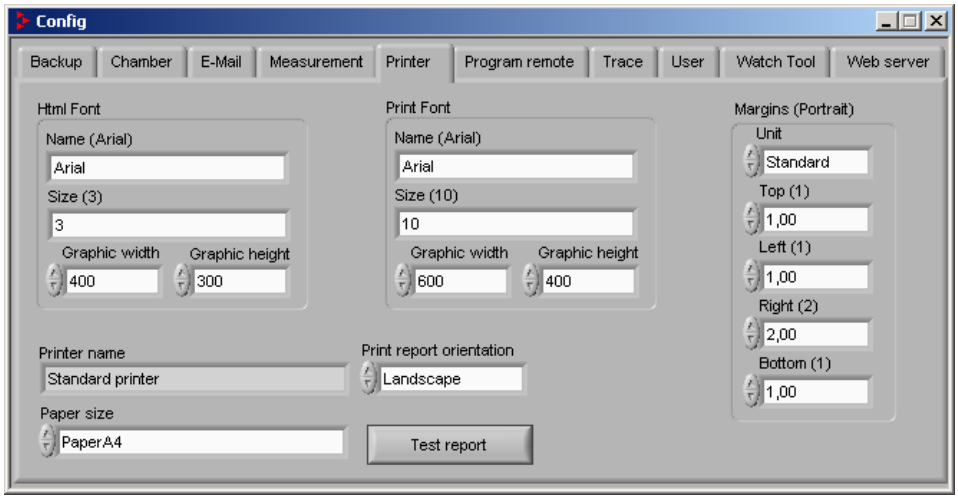
By positioning the slide button you determine the influence of the common graphical representation:

- “**Measure window only**”: representation only in the measuring window (chap. 9.3.7).
- “**Print only**”: representation only in the printout (html or paper print, chap. 9.2.1).
- “**Printout + Measure window**”: representation in the measuring window and in the printout
- ”**Off**”: The measuring parameters are graphically represented separately. We recommend this setting in case of limited memory resources.



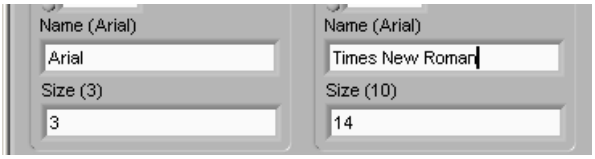
! This function is effective only for measurements with several parameters (beside temperature e.g., humidity or CO_2).

8.7 Settings for printer and HTML output (“Printer” menu)

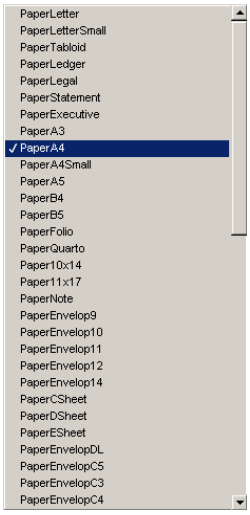


In this menu the settings can be selected for the Html data output “**Html Font**” as well as for paper prints “**Print Font**”. The paper prints are generated in the “Manual Documentation” (chap. 9.2.1) and “Auto Documentation” (chap. 9.2.2) menus. The indications in brackets are the default settings.

- **The standard printer selected in Windows gives out paper prints**. If you want to use any other than the standard printer, go to the Windows printer setting menu: **Start – Settings– Printer** auf and select after clicking on the printer symbol of choice the option “**define as standard**” with the right mouse key.
- **Font type and Font size** can be selected under “**Name**” and “**Size**”:



- **Paper size**: Under “Paper size” you can choose the desired size. Click into the field



  or use the selection button.

- **Margins**: In the submenu “**Margins (Portrait)**” you can choose under “**Unit**” between the settings “Standard”, “US”, or “Metrisch” (metrical). The margin designations (“**Top**”, “**Left**”, “**Right**”), “**Bottom**”) refer to the orientation in portrait orientation, i.e., if you choose Landscape orientation, e.g. “Left” designated the bottom margin.
- **Orientation**: Under “**Print report orientation**” you can select between “Landscape” and “Portrait” paper orientation.

The desired **graphic size** in pixels can be selected under “**Graphic width**” and “**Graphic height**”:

After selecting the button “**Test report**” an overview of the actual printer settings is printed:

Left header middle header

16:30:29

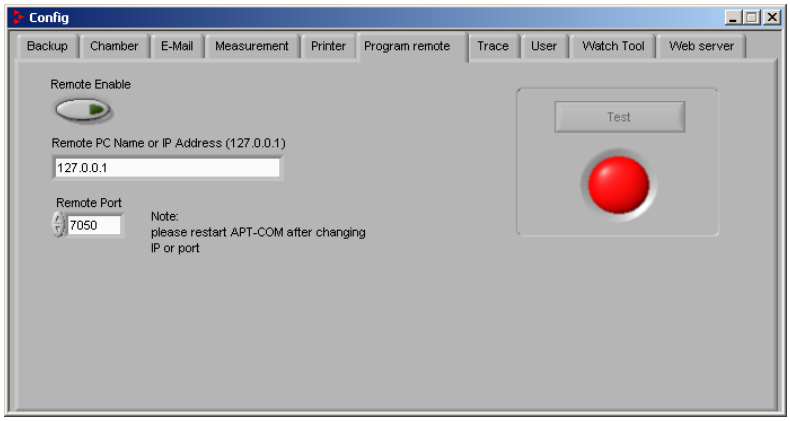
Test print report APT-COM 3

Orientation: Landscape

Margin unit: Standard Margins (top, left, right, bottom): 1,00, 1,00, 2,00, 1,00

Print Font: Arial

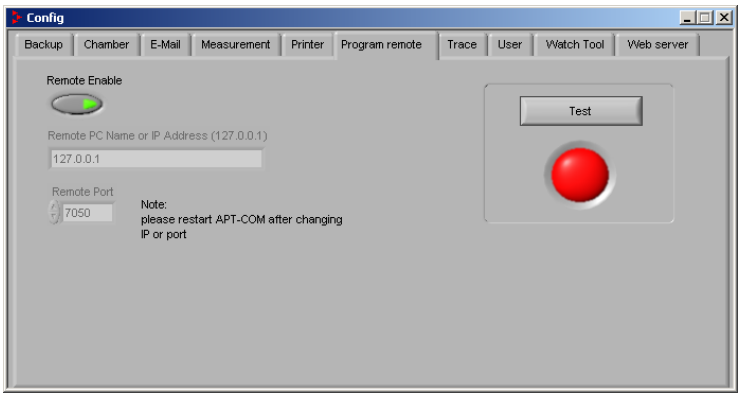
8.8 Connection to the Remote Program (“Program remote” menu)



In this menu name or IP address of the computer can be entered on which the Remote Program is installed. Corresponding settings have to be configured in the Remote Program (chap. 13). The default setting assumes an installation of both programs on the same computer. The setting of the port used (default: 7050) must also be the same in both programs.

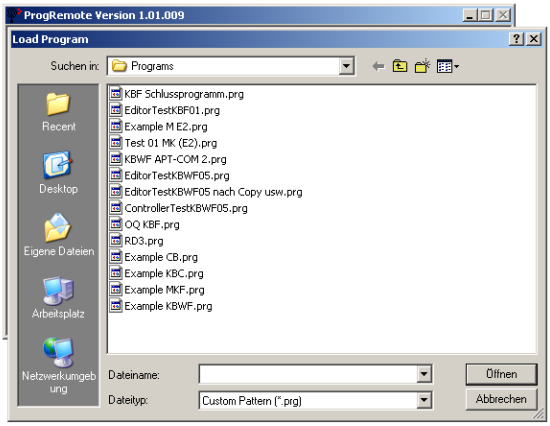
With the button “**Remote Enable**” the connection to the Remote Program (chap. 13) is started.

At the same time the entry fields for computer address and port are set inactive in order to protect the settings against changes during the functional connection.

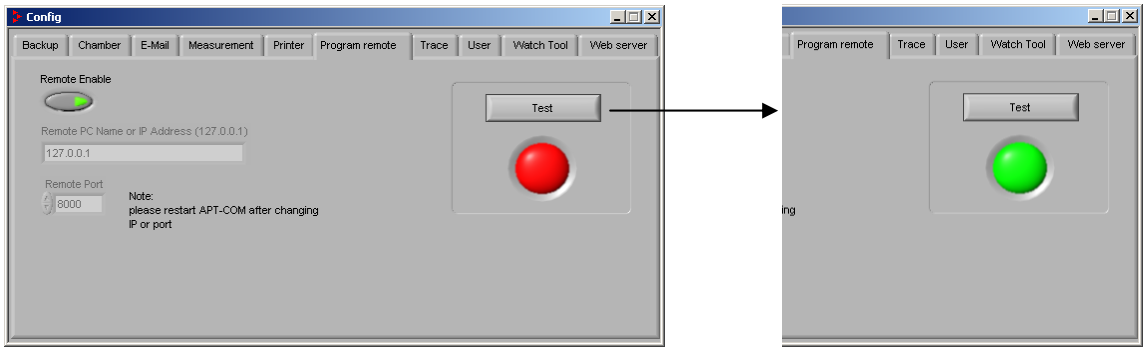


The Remote Program is started showing the window “ProgRemote Version 1.01.xxx” (chap. 13.2).

The window “Load Program” asks to load a program (see chap. 13.2.3).

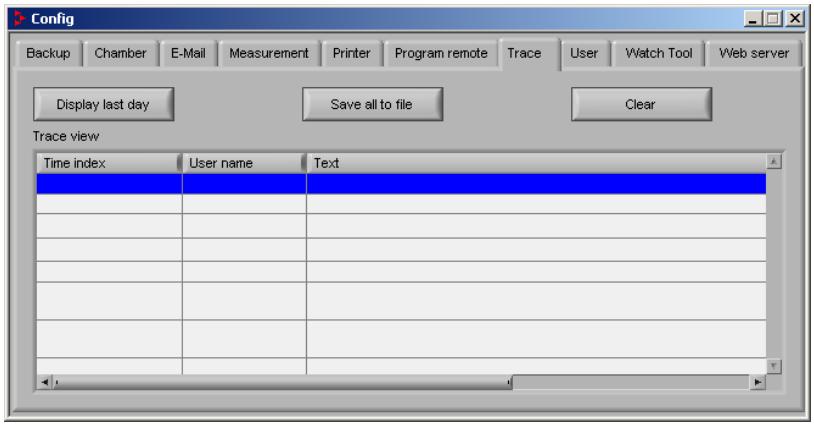


The button “**Test**” serves to test the connection of APT-COM™ 3 to the Remote Program. It is tested if the connection to the second computer is functional (in case the Remote Program has been installed on another computer than APT-COM™ 3) and if the Remote Program is running.



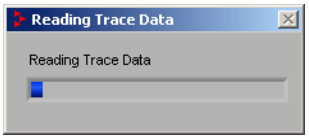
If there is a functional connection to the Remote Program the indication lamp lights up green.

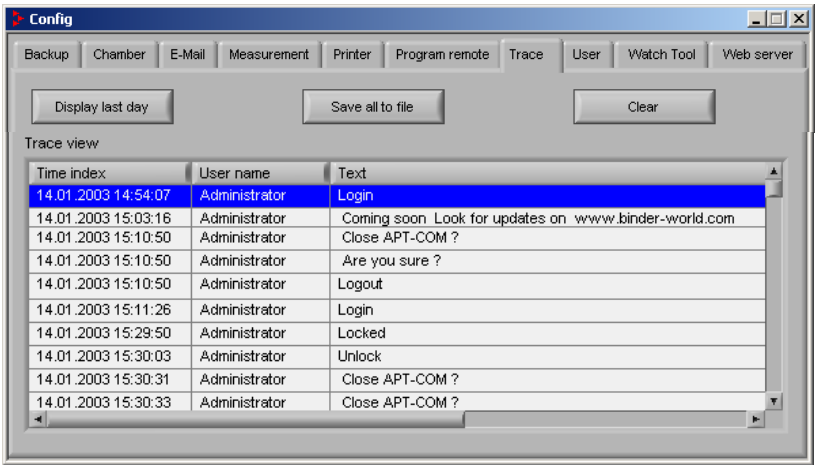
8.9 Automatic system protocol (“Trace” menu)



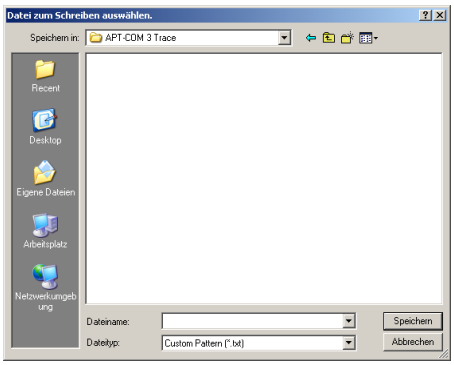
In this menu an overview of all important events is displayed that are automatically documented by the APT-COM 3 system. Together with the possibly commented measuring data these data are an important part of the Audit Trail.

Having selected button ”**Display last day**”, after reading the data the events of the last 24 hours are displayed:

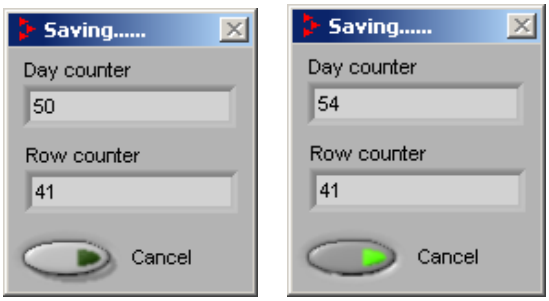




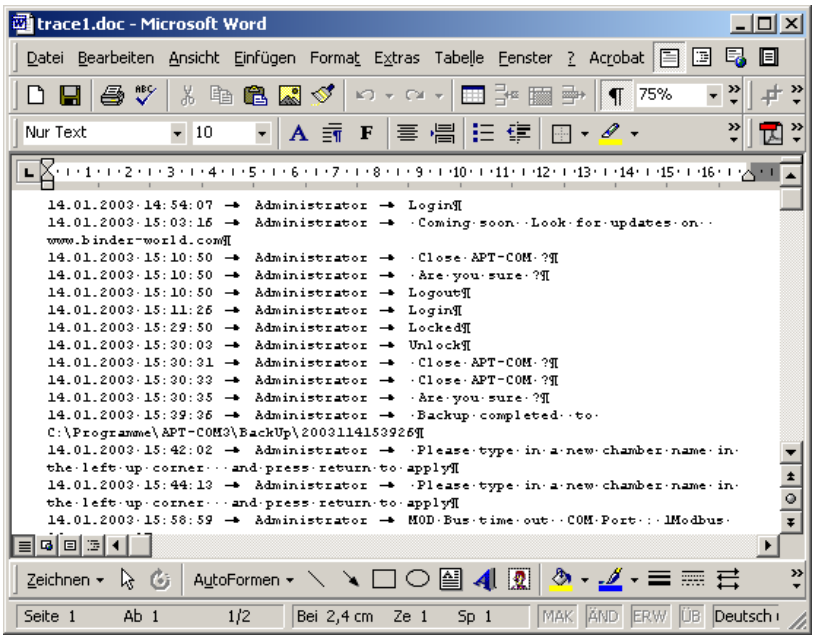
With “**Save all to file**” the displayed event list can by saved under any name of choice. Select the file type according to the program you like to use for processing the memorized data later on (e.g. .doc, .txt, .xls).



The status window “Saving...” indicates the running procedure of saving the data. As soon as the saving is completed, it disappears. Saving can be terminated with button “**Cancel**”.



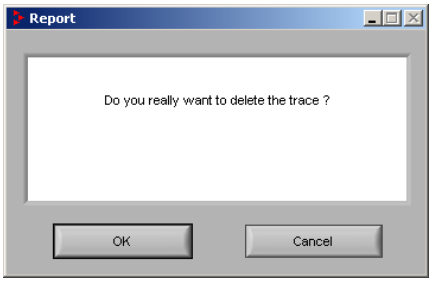
Example of a “Trace” file saved as a “Word” document:



If the file has become too large, the APT-COM™ 3 administrator can delete the data by the button “**Clear**”.

In this case a security query appears.

Confirm by “**OK**”.



Note: Independent of savings by the user with the “Save” function, which can be done in any format, the program saves the “Trace” data in the file “trace.mdb”.

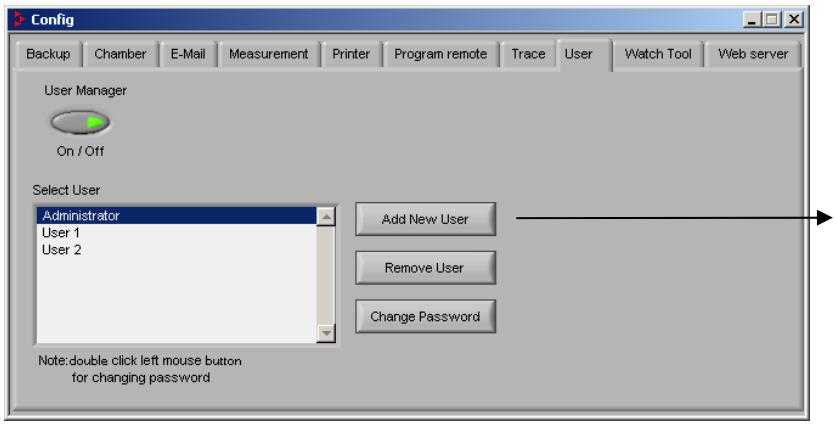
! Do not delete the file! APT-COM™ 3 does not generate new files but stores data in the existent files! In order to delete data recorded so far in the file “trace.mdb”, use the function “Clear” in the “Trace” menu described above.

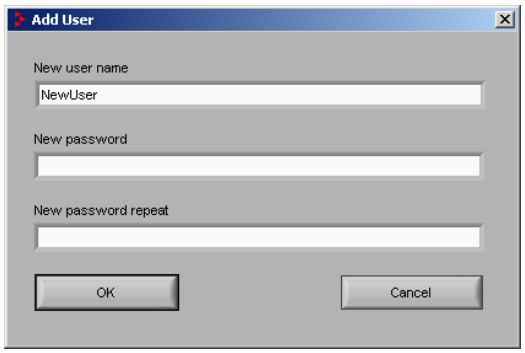
Messages displayed in this menu and stored in the database file “trace.mdb” are compiled in chap. 15.1.

8.10 User management (“User” menu) (GLP Edition)

8.10.1 Setting up and deleting of users, password changing

With the function “**Add new user**” new users can be set up in APT-COM™ 3.

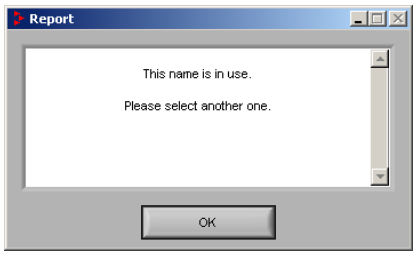


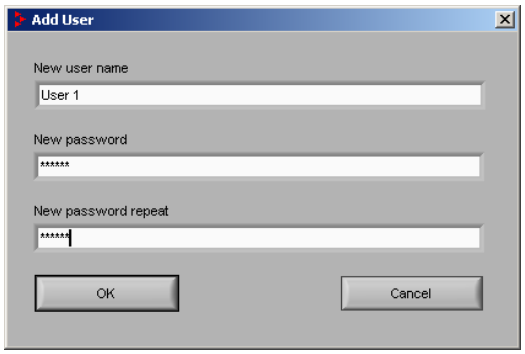


1. **Enter a user name and a password.**

If you entered a user name that has already been configured, you get a note indicating this. The same note appears if you did not enter a user name. In this case “NewUser” is displayed in the according field.

Confirm the information window by “OK” and enter a different user name.



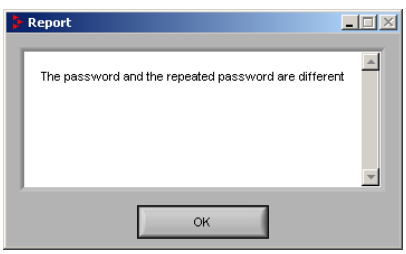


2. **Enter the password twice and confirm by “OK”.**

- Capitalization is recognized
- All ASCII characters can be used, i.e., letters, numbers, space characters and special characters
- The password requires a minimum length of 5 characters

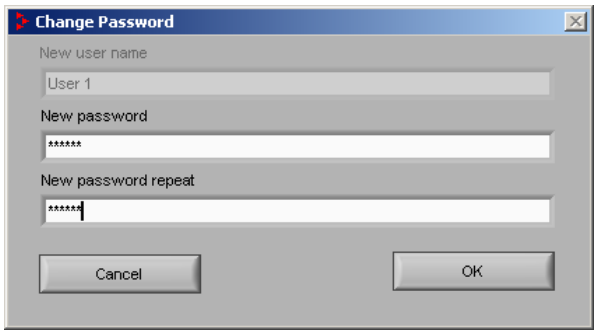
In case of wrong entry (difference between first and second password entry, or password less than 6 characters long) a corresponding error message is displayed.

Confirm the message window by “**OK**” and enter a valid password.



To change any user's password, select the user under "Select user" and click on button "**Change Password**". You can also select a user by double click under "**Select user**".

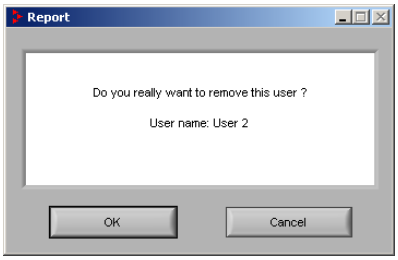
The window "Change Password" appears that serves to assign a new password to the selected user:



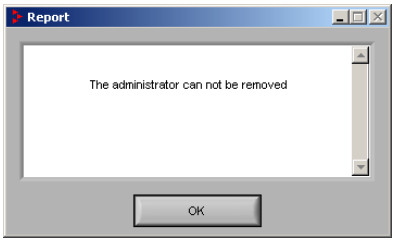
Also the administrator's password can be modified in this way.

With the button "**Remove User**" the selected user can be removed from the configuration menu and therefore has no more access to APT-COM™ 3.

Confirm the security query with "**OK**".



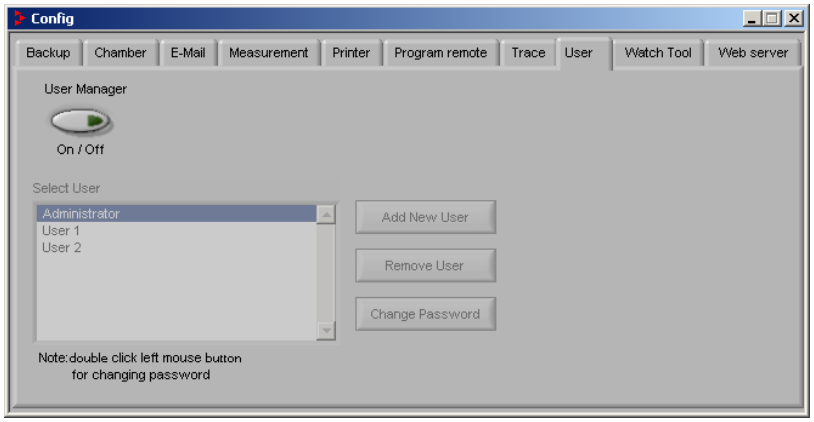
This function cannot be used to remove the administrator – if you try, a message window will appear.



8.10.2 User manager

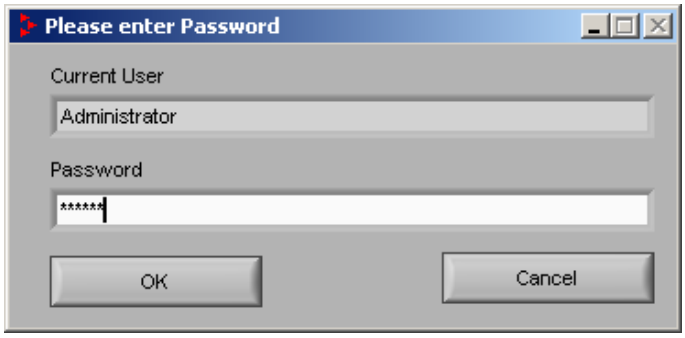
The user manager function that can be accessed in the "User" menu via the button "**User Manager**", has a security-related function.

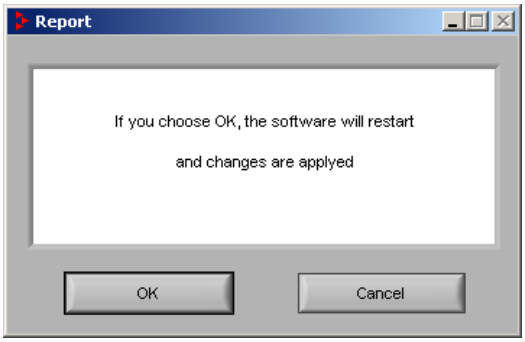
If the button is disabled, the function "Software lock" (chap. 7.1.5) automatically is activated. This guarantees that no system changes can be effected without password entry. In this case the system assumes that the APT-COM™ administrator is the only person that has access to APT-COM™ 3. The configuration menu therefore remains available.



Representation of the menu with disabled "User Manager" button and inactivated user management

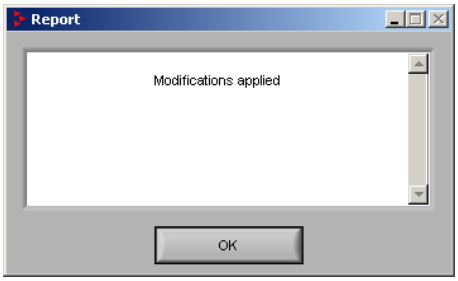
If after a start of APT-COM™ 3 the user manager is again set active, there is a security check for the administrator password.





After correct password entry a window appears displaying the message that the program, if confirmed with "**OK**" will be shut down and restarted.

- If "**Cancel**" is selected, the window with inactivated "User Manager" button and inactivated user management is kept.
- After selecting "**OK**" a confirmation window displays the message that the change of state of the user manager has been applied. If you select again "**OK**" or wait 10 sec, the program will be shut down and then restarted.



The window "APT-COM 3 Restarter" indicates the remaining time (60 sec.) until restart.

During automatic restart of APT-COM™ 3 with the activated function "Autostart measure after program start", the welcome window and the Date and time query window are omitted.

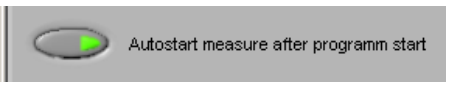
The window "Change User" appears, permitting to select a user different from the administrator.

- If you select button "**Change User**", the entry window "Login" appears. You can enter a user name and the according password. If there is no entry during 30 sec, the program is shut down.
- If you select button "**Next**" or wait 10 sec, the window "APT-COM 3 is locked" appears. APT-COM™ 3 is now in "Locked" mode (chap. 7.1.5) with the user logged-in before.

  Some information windows inform about the state of the program. All measurements set to active (chap. 9.1.4) are now automatically continued, and window "Communication Manager" (chap. 9.4) appears. If the Watch Tool (chap. 10) or other programs have been working, the respective windows will open up as well.

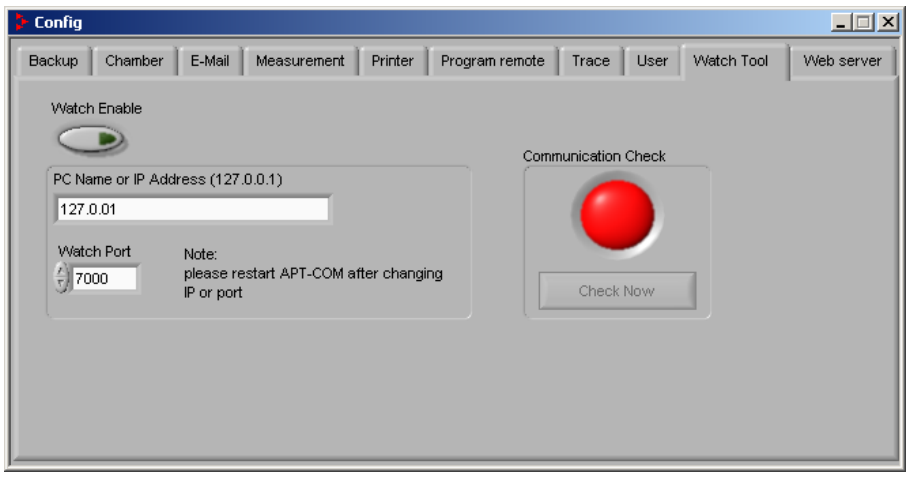
  You need to enter the password in order to operate APT-COM™ 3

The function "Autostart measure after program start" is now automatically activated which can be recognized by the highlighted button.



! So APT-COM™ 3 will be restarted if you set the user manage from "Off" mode to "On".

8.11 Connection to the monitoring software Watch Tool (“Watch Tool” menu) (GLP Edition)

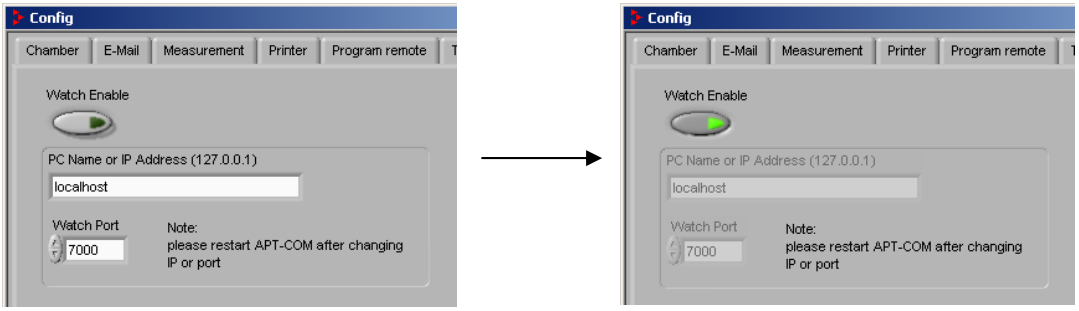


In this menu name or IP address of the computer can be entered on which the monitoring software Watch Tool is installed. Corresponding settings have to be configured in the Watch Tool (chap. 10.2.1). The default setting assumes an installation of both programs on the same computer. The setting of the port used must also be the same in both programs.

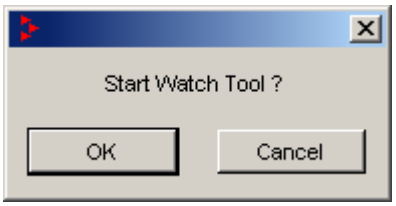
> **! Following any changes of the IP address and/or the port number, you need to restart APT-COM™ 3 in order to adopt the changes.**

Activating button “Watch Enable”:

- The entry fields for computer address and port are set inactive in order to protect the settings against changes during the monitoring process.



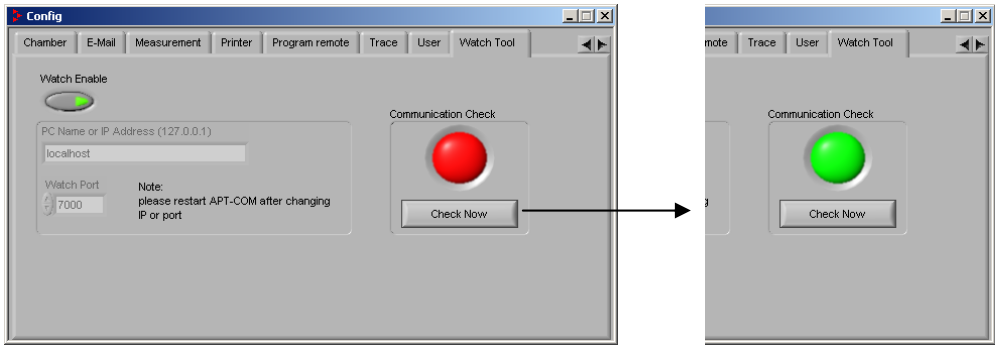
If under “PC Name or IP Address” the information “localhost” or the IP address of the measuring computer has been entered, when activating button “**Watch Enable**” a notification window appears asking “Start Watch Tool ?”.



After confirmation with “**OK**” the monitoring software Watch Tool is started (chap. 10), and the window “Watch tool APT-COM 3 Version 1.01.xxx” opens up. The monitoring process by the monitoring software Watch is started.

If the address entered under “PC Name or IP Address” is different from “localhost” or the measuring computer address, after activating button “**Watch Enable**” a notification window appears asking to start the Watch Tool on the monitoring computer corresponding to the entered address.

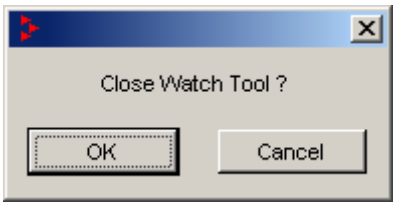
- The submenu “Communication Check” is activated. It serves to automatically check the connection to the Watch Tool. The test is about if the connection to the second computer is functional (in case the Watch Tool has been installed on another computer than APT-COM™ 3) and if Watch Tool is running. With button “**Check now**” you can execute the check at any time.



If there is a functional connection to the Watch Tool, the indication lamp lights up green.

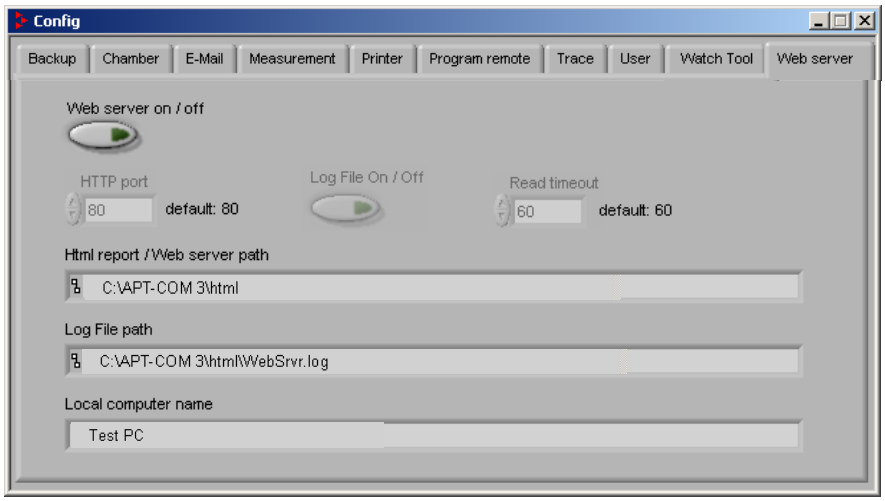
- If under “PC Name or IP Address” the information “localhost” or the IP address of the measuring computer has been entered, when switching off button “**Watch Enable**” a notification window appears asking “Close Watch Tool ?”.

  After confirmation with “**OK**” the monitoring software Watch Tool is terminated.



- If the address entered under “PC Name or IP Address” is different from “localhost” or the measuring computer address, after **deactivating** button “Watch Enable” a notification window appears asking to stop the Watch Tool on the monitoring computer.

8.12 Web server settings (“Web server” menu) (Standard and GLP Edition)

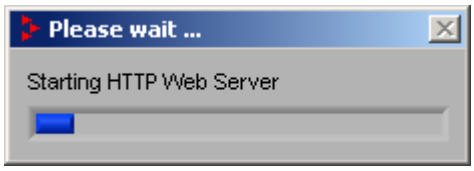


The button “**Web server on/off**” must be activated to allow the HTML export of the measuring data (see chap. 9.2.1 and 9.2.2).

“Web server on/off” disabled

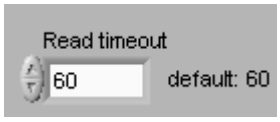
“Web server on/off” enabled

When enabling or disabling button “**Web server on/off**” a notification window indicates the web server being activated or shut down.



As soon as the web server function has been activated, you can define its configuration under “HTTP port”, “Read timeout”, and “Log File On / Off”.

“**HTTP port**” should be set to 80 (default). If port 80 is occupied, another free port can be selected, i.e., defined as HTTP port.



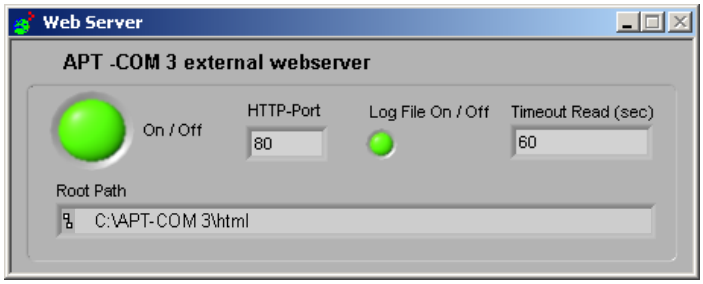
“**Read timeout**” defines the access time to the server (web server/client attending time). In case of a bad connection the attempt to access the server is canceled after the entered time (e.g. 60 sec). This time can be increased if the network has become too slow due to heavy work-load.

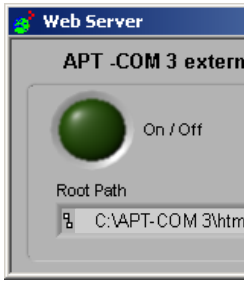
If button “**Log File On / Off**” is activated, any access to the web server (IP address, browser type) will be registered.

Window “Web Server”:

As soon as the button “Web server on/off” is switched on for the first time, the window “Web Server” appears

- The green signal button “On/Off” lights up indicating that the web server is active.





If you switch off button “Web server on/off”, the signal button “On / Off” in the “Web Server” window goes off (dark green).

- Under “Root Path” the corresponding directory is displayed which can be addressed via the indicated http port.
- The entries under “http-Port” and “Timeout Read” and the state of “Log File On / Off” are the same as entered in the configuration menu “Web server”.
- If the switch “Web Server” in the “Hide windows” submenu of the “Measure Manager” window (see chap. 9.1) has been activated, the window “Web Server” is not visible.
- If APT-COM™ 3 is started with button “Web server on/off” switched on, the window “Web Server” appears automatically.

9. Measurements

Overview of **functional principle** of controlling and measuring data acquisition:

The arrows represent the direction of data flow.

..... "Read" — — - "Write" (i.e., control commands)

Measuring data recording

The measuring data of all measurements are saved in a database file. This file "measure.mdb" can be found in the APT-COM™ 3 directory in the "Data" folder. The growth of this file depends on the number of measurements, the number of parameters of each measurement, and the recording interval selected for each measurement. Each recorded measuring parameter value needs about 2 KB in the database. The file growth does not proceed in a linear manner, because the database file is self-compressing in defined intervals.

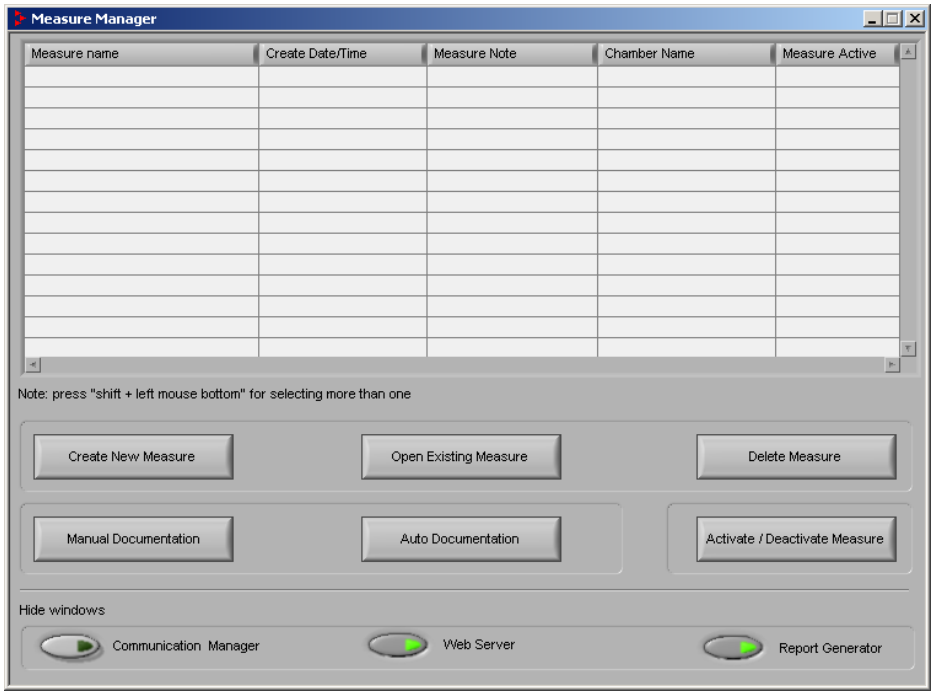
It is therefore recommended to closely watch the increase after putting the system into operation for a certain time, e.g., one week. Then you can fix a regular interval to backup the database file. When creating a backup, the file "measure.mdb" is copied to any location you like. You can use the backup function (see chap. 8.3) which copies the file (among others) into a backup directory named after the moment of its generation.

If you tend to carry out backups very often, the space available on the storage medium can decrease quickly.

By selecting the button "**Measure Manager**" in the window "Center Version 3.02.xxx [edition]" you enter the menu to create and control the measurements.

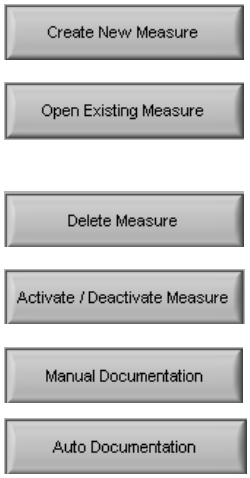
9.1 The window "Measure Manager"

This window offers an overview of the measurements created so far.



By selecting the button “Measure Manager” in the window “Center Version 3.02.xxx [edition]” the window “Measure Manager” opens up which serves to create, run and delete individual measurements.

From this window the user can access the measurement window (chap. 9.3) used by each user to administer his measurements. The APT-COM™ administrator can administer all measurements of all users.



The button “**Create New Measure**” serves to create a new measurement (see chap. 9.1.1).

By hitting the button “**Open Existing Measure**” (see chap. 9.1.2) the measurement window corresponding to the selected measurement is opened (see chap. 9.3).

With “**Delete Measure**” the selected measurement can be deleted (see chap. 9.1.3).

With “**Activate / Deactivate Measure**” the selected measurement can be set to active or inactive (see chap. 9.1.4).

For the documentation settings “**Manual Documentation**” and “**Auto Documentation**” see chap. 9.2.

The submenu “Hide windows” allows hiding some information windows when the corresponding switch is activated: the Communication Manager (chap. 9.4), window “Web Server” (chap. 8.12), and window “Report Generator” (chap. 9.2).

As soon as the corresponding switch is disabled again, the window will become visible, on condition that the according function is active.

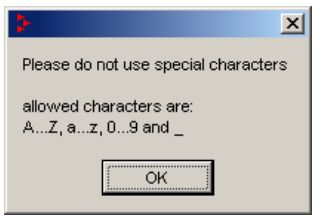
9.1.1 Creating a new measurement

Click on button “**Create New Measure**” to open the entry window “Enter Measure Name”. Under “**Name of measure**” enter the name of the measurement.

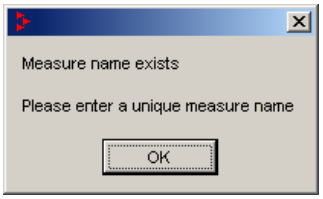
This is the name for saving the measuring data in the APT-COM™ 3 database file “measure.mdb” in the APT-COM™ 3 directory as well as in the backup copy of this database (chap. 8.3). It is helpful to choose a filename providing information about the test period, a common chamber designation etc.

! For this entry use only letters and numbers, no space characters and no special characters! The maximal length is of 40 characters.

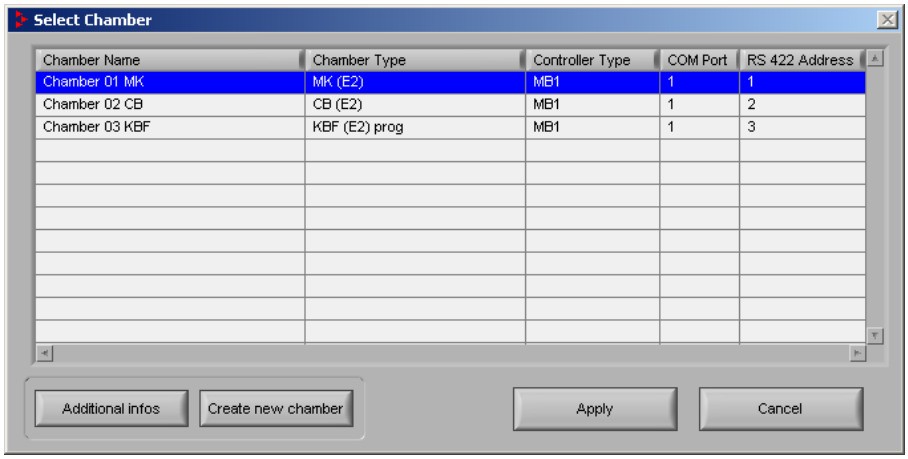
In case of a wrong entry (use of spaces or special characters), following entry confirmation with “Apply” a window appears displaying an error message



Each measurement name can only be assigned once in a measuring database. If you enter a name that is already in use, following entry confirmation with “Apply” you will receive an error message asking to enter a new name.



Following entry confirmation with "**Apply**" the selection window "Select chamber" appears.

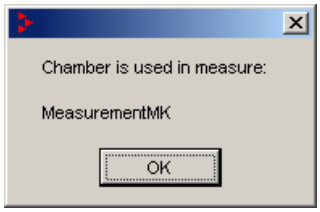


Select here the temperature chamber for which the measurement shall be created. Chambers will figure in the selection list only if they have been configured previously in the configuration menu "Chamber" (chap. 8.4).

In case you have forgotten to create the chamber in the configuration menu "Chamber", use button "**Create new chamber**" as a shortcut to window "Add New Chamber" in the configuration menu "Chamber".

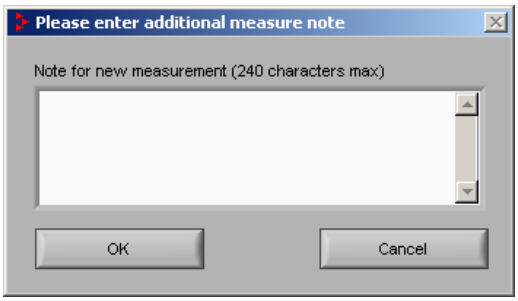
This button is visible only if you have logged in as APT-COM™ 3 Administrator. It is inactive in Basic Edition if a chamber has been created.

Via button "**Additional infos**" you can see if and in which measurements the selected chamber is used.



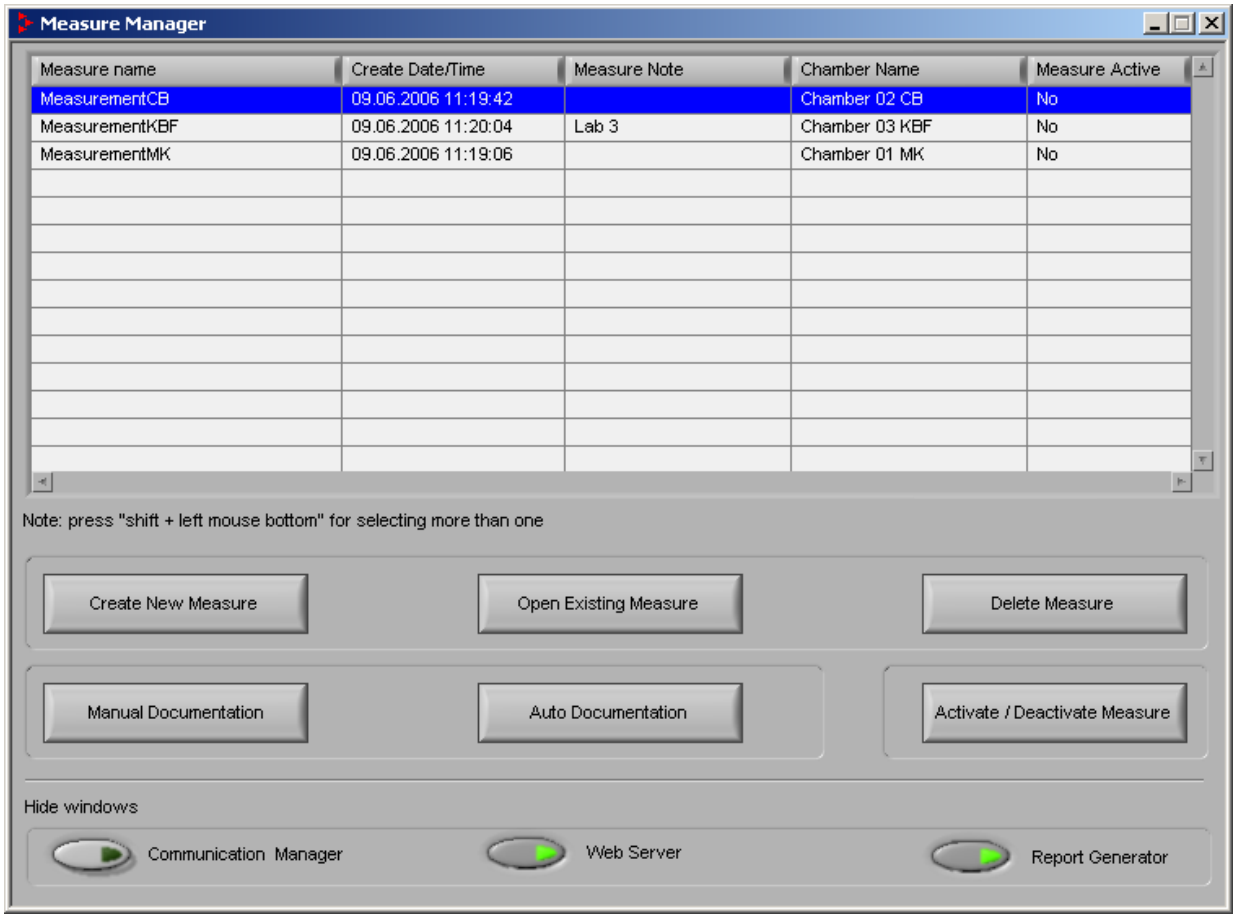
Following chamber selection with button "Apply" or by double click, the window "Please enter additional measure note" appears:

- Here you can enter additional comments and information. The maximum length is of 240 characters; any type of character is possible.
- The entered information is displayed in the selection windows "Select measure for open" (chap. 9.1.2) and "Select measure for delete" (chap. 9.1.3) in the row "Measure Note" and when printing data as hardcopy or Html file as "User note" (chap. 9.2.1 and 9.2.2).
- Confirm by the button "**OK**": The measurement window of the measurement opens up (see chap. 9.3).



Following measurement creation, the measurement window is opened automatically. The measurement can be selected and opened later on under "Open Existing Measure" and removed by the button "Delete Measure".

All the measurements created are now displayed in the window “Measure Manager”.



9.1.2 Selecting a measurement and opening the measurement window

Select one or several of the measurements displayed in window “Measure Manager”.

> **! GLP Edition: While selecting a measurement keep in mind that any user (including the administrator) can only see those measurements that he himself has generated, no files initiated by other users.**

Hit “**Open Existing Measure**” to open the measurement window corresponding to the selected measurement. The measurement can be started or continued (see chap. 9.3).

After a new start of a measurement that had already been running but then interrupted, the new measuring data are added to the older ones. No data are lost.

> **! Remind that when you start a measurement, other measurements that are set to “active” (chap. 9.1.4) will be started as well.**

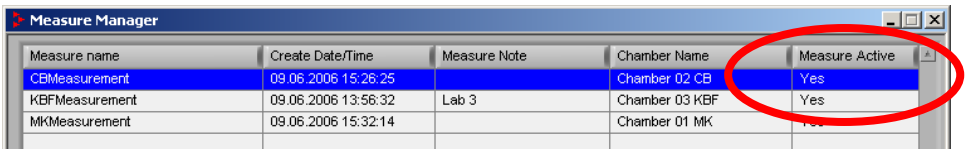
9.1.3 Deleting a measurement

Select one or several of the measurements displayed in window “Measure Manager”.

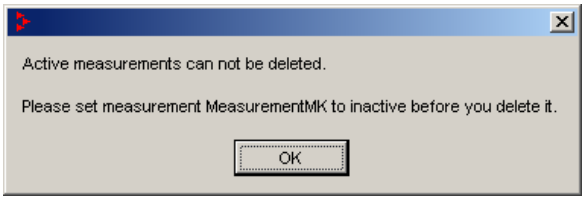
Hit “**Delete Measure**” to delete the selected measurement. A security query follows.

Confirm with “**OK**” to delete the selected measurement.

! A measurement set to active cannot be deleted.



If you attempt to delete a measurement set to Active, an information window appears and asks to set the measurement to Deactive first (chap. 9.1.4).



Confirm with "**OK**" and set the measurement to Deactive as described in chap. 9.1.4.

Now you can select again the measurement and delete it with button "Delete".

! After deletion of a measurement from the database it is not any more contained in the file "measure.mdb", neither in backup files generated after the moment of deletion (chap. 8.3). If earlier backups are deleted, the data of the deleted measurement are lost.

GLP Edition:

- In the menu "Measurements" every user can only handle the **measurements that he himself has previously created**. Therefore it is not possible in this menu to delete measurements generated by different users. The APT-COM™ 3 administrator can control the measurements of all users, including deleting them.
- The APT-COM™ 3 administrator can also delete messages in the configuration menu "Measurement" (chap. 8.6.4). Measurements set to active cannot be deleted.

You need to delete all measurements, which use a certain chamber before you can delete this chamber in the configuration menu "Chamber" (chap. 8.4.3).

9.1.4 Activating and deactivating a measurement

This menu allows classifying a measurement as active or deactivated.

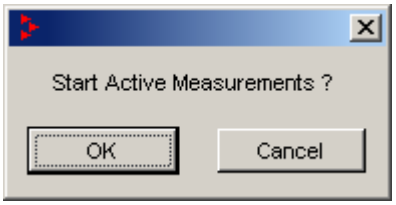
Select one or several of the measurements displayed in window "Measure Manager".

By the button "**Activate / Deactivate Measure**" you can define the state of selected measurement(s).

A notification window informs about the change:

If a measurement is set to active and there is no measurement running (Communication Manager is off), a query window asks if the measurement shall be started.

- "**OK**": The measurement is set to Active and is started together with all active measurements.
- "**Cancel**": The measurement is set to Active. No measurement is started.

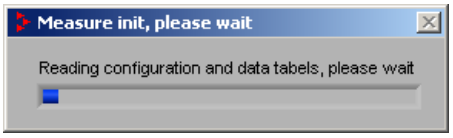


As soon as any measurement is started, or when button “Stop” is hit in an inactive measurement window, all measurements set to active are started, and window “Communication Manager” (chap. 9.4) appears.

“**Yes**”: Measurement is set to active.

“**No**”: Measurement is set to inactive

When starting a measurement the window “Measure init” opens up shortly. In the database all measurements indicated as active are looked for. The setup data of these measurements are read and the measurements are started.



! **When a measurement is started, it is automatically set to active.**

Implications when starting a measurement:

- Start of a measurement set to inactive:

  Open the measurement window by button “**Open Existing measure**” → select button “**Start**” → the measurement starts running, all measurements set to active are started as well.

- Start of a measurement set to active:

  Open the measurement window by button “**Open Existing measure**” → the measurement starts running, all measurements set to active are started as well.

- In case of a new start, e.g., after power failure those measurements are restarted that had been set to active. This on condition that in the configuration menu “Measurement” the setting “Autostart measure after program start” is enabled and that the overall system configuration allows an autonomous start-up of the operating system and of APT-COM™ 3 (chap. 8.6).

! **A measurement set to active can not be deleted (see chap. 9.1.3). So, the according chamber cannot be deleted either.**

9.2 Documentation settings

By selecting button “**Measure Manager**” in the window “Center Version 3.02.xxx [edition]” the window “Measure Manager” opens up.

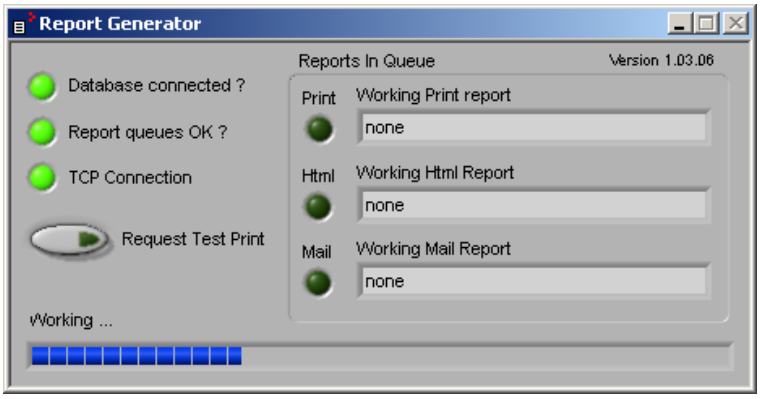
You can access the functions “Manual Documentation” (chap. 9.2.1) and “Auto Docu” (Standard and GLP Edition, chap. 9.2.2) by buttons “**Manual Documentation**” and “**Auto Documentation**” (Standard and GLP Edition).

Basic-Edition

Standard- and GLP-Edition

The window “Report Generator” indicates that the accessory program “Report Generator” is active which is used by APT-COM™ 3 in order to generate documentation as html file, e-mail or paper printouts.

In order to see this window which is normally hidden, deactivate button ”**Report Generator**” in the submenu “Hide windows” of window “Measure Manager”.



Several **signal buttons** can illuminate to communicate the following information:

- “Database connected” = Connection to measurement database established
- “Report queues OK ?” = Waiting for next APT-COM™ 3 demand
- “TCP Connection” = APT-COM™ 3 actually communicating with the Report Generator (signal button flashes at data transfer)
- The blue bar “Working” indicates that the Report Generator is active.

Submenu “Reports **in Queue”:**

- Illumination of the signal buttons indicates if an html file, an e-mail or a paper print is being generated or the according request is in the waiting queue.
- Additionally the text fields beneath indicate for which measurement a report is being created.
- In case of a long report (html file, e-mail or paper print), a delay can occur; in this case the measurement name of the printing demand being processed is displayed under “Working Print report”.

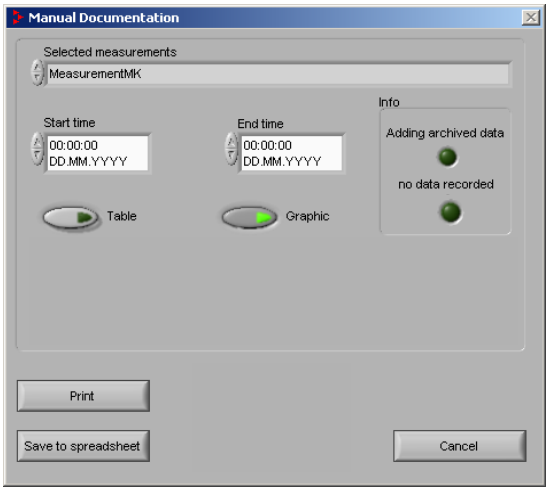
Button “**Request Test Print**” serves to print out an overview of the actual printer settings. Its functionality is identical to button “Test report” in configuration menu “Printer” (chap. 8.7).

The window “Report Generator” can be hidden in the submenu “Hide” of window “Measure Manager” (chap. 9.1).

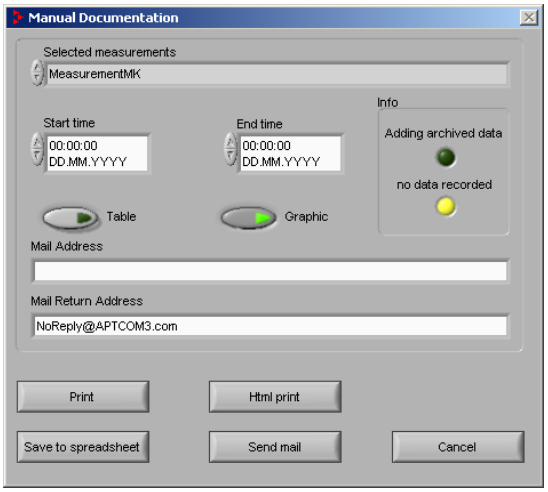
When closing APT-COM™ 3 the window “Report Generator” will be closed with a delay. Print demands, if any, will be completed.

9.2.1 Menu “Manual Documentation”

Select one or several of the measurements displayed in window “Measure Manager”. Hit button “**Manual Documentation**” to open the menu “Manual Documentation”.



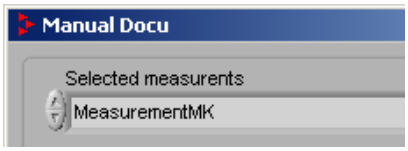
Window in Basic Edition



Window in Standard and in GLP Edition

In this view interim printouts or sending of measuring data can be performed even in case of an active measurement. Settings in the “Auto Documentation” menu (GLP Edition, chap. 9.2.2) are not affected.

If you selected several measurements, you can switch between them under “Selected measurements”.



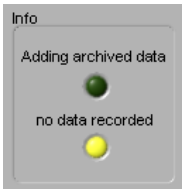
At first select if the measuring values shall be printed / sent in tabular (button “**Table**”) or graphical (button “**Graphic**”) representation. Both possibilities can be combined.

Determine the time interval for which printing and/or sending of the measurement data shall occur.

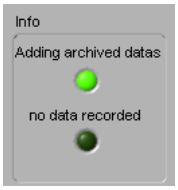
Here you can define the period including the data that will be put out.

The “Graphic” button is regularly activated. If no further selections are made, the whole data from the start of the measurement on are put out graphically.

Under “Info” the signal button “no data recorded” indicates that the according measurement does not contain any data so far.



If during data output data are used that have been previously archived using the Archiver (chap. 9.5) or the Database Optimizer (see chap. 9.6) under “Info” the signal button “Adding archived data” illuminates.



Measuring data printout (graphical and/or tabular)

The printout is put out at the Windows standard printer. For printer settings see chap. 8.7.

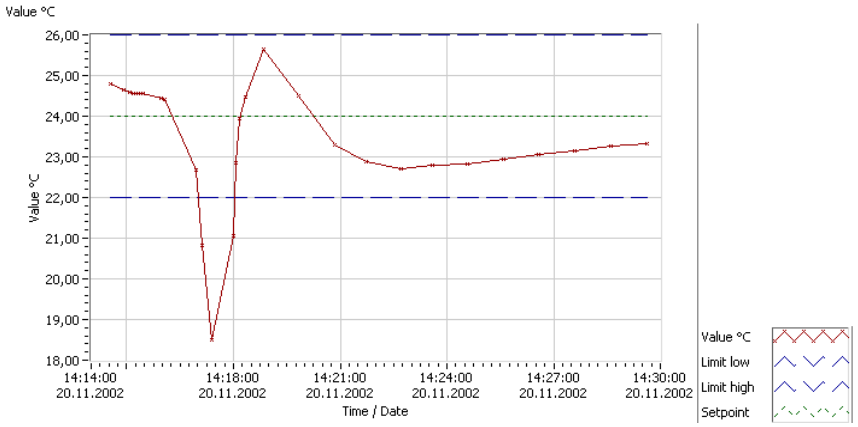
Following a print example is displayed as will be put out on the Windows standard printer if "**Table**" and "**Graphic**" have been selected. The print header contains all necessary information about the measurement and the selected period, so the print can be signed and directly added to the testing documentation.

Example printout:

User Administrator Measure name: TestfileMK 22.01.03 12:03:14

Measurement data:

Date of creation: 20.11.2002 09:58:53
User note:
Chamber name: Chamber 01 MK
Data read interval (minutes): 1
Chamber type: MK (E2)
Connected to COM port: 1
Chamber address: 1
Time period: 20.11.2000. 14:14:32 – 20.11.02 14:329:36
Limits overun: 0
Limits underrun: 3
Measure points: 27

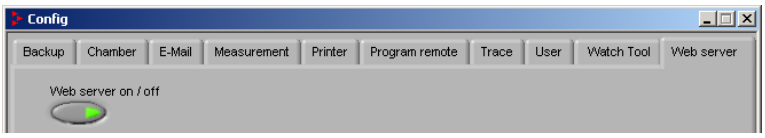


Date / Time	Value °C	Limit Low °C	Limit High °C	Setpoint °C	Limit	Note
20.11.2002 14:14:32	24,80	22,00	26,00	24,00	OK	none
20.11.2002 14:14:55	24,65	22,00	26,00	24,00	OK	none
20.11.2002 14:15:05	24,59	22,00	26,00	24,00	OK	none
20.11.2002 14:15:10	24,56	22,00	26,00	24,00	OK	none
20.11.2002 14:15:19	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:27	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:57	24,43	22,00	26,00	24,00	OK	none
20.11.2002 14:16:04	24,42	22,00	26,00	24,00	OK	Door open
20.11.2002 14:16:56	22,67	22,00	26,00	24,00	OK	none
20.11.2002 14:17:07	20,82	22,00	26,00	24,00	Underrun	none

Html output of the measuring data (graphical and/or tabular) (Standard and GLP Edition)

With the function “Html Print” you can generate a measuring data output in graphical and/or tabular representation as an html file.

This function can be used on condition that in the “Web server” menu in the configuration window the setting “**Web server on / off**” has been enabled (chap. 8.12).



The html file is written in the folder APT-COM 3\HTML\Reports. The name is the same as the measurement name + ending .html. This is the same file name as generated by the function “**Auto html**” (chap. 9.2.2). If there is a previously generated file with the same name, it will be overwritten. The included graphical representation(s) for each measuring parameter can be found in the same folder under the name of the measurement + numerical index + ending .png.

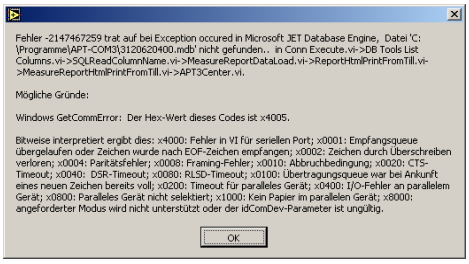
For calling-up the web server HTML reports see chap. 9.3.10.

E-mail sending of the measuring values (graphical and/or tabular) (Standard and GLP Edition)

This button serves to directly send an e-mail to an address entered under “**Mail Address**”. The measuring data are sent in graphical and/or tabular representation as html file in the e-mail attachment

If you receive an error message, check:

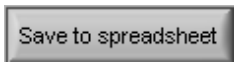
- Did you enter the e-mail address correctly?
- Did you enter the server address correctly under “**SMTP server IP**” in the “E-mail” configuration menu?



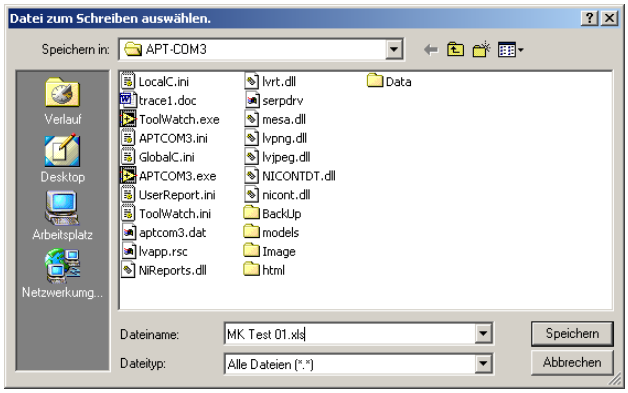
Sample E-mail:

Similar to the html file displayed in chap. 9.3.10, the html file in the e-mail attachment contains a header including all important information about the measurement and the selected period of representation, and the measurement values and comments in tabular presentation.

Saving the measurement values (table)

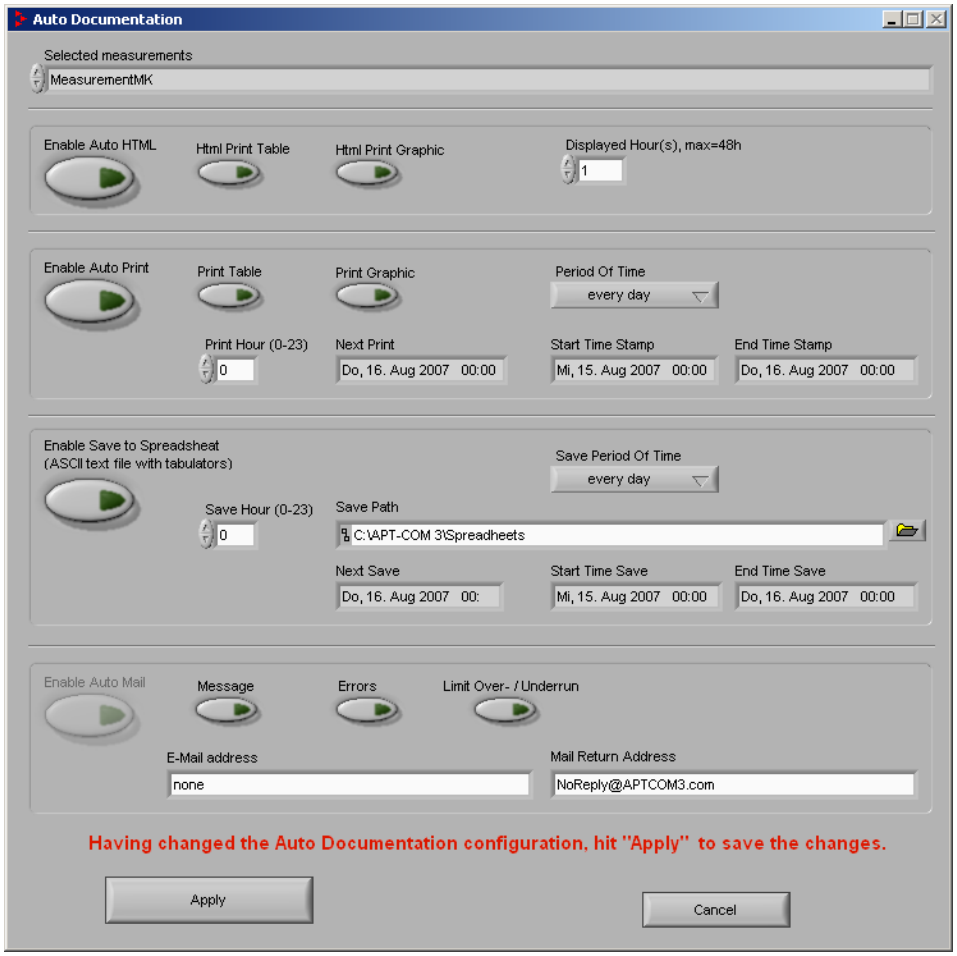


The measuring data are saved in a file with a free-of-choice name and extension. Select the extension corresponding to the program you like to use to process the data later on (e.g., .doc, .txt, .xls).

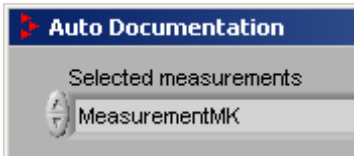


9.2.2 Menu “Auto Documentation” (GLP Edition)

Select one or several of the measurements displayed in window “Measure Manager”. Hit button “**Auto Documentation**” to open the menu “Auto Documentation”.

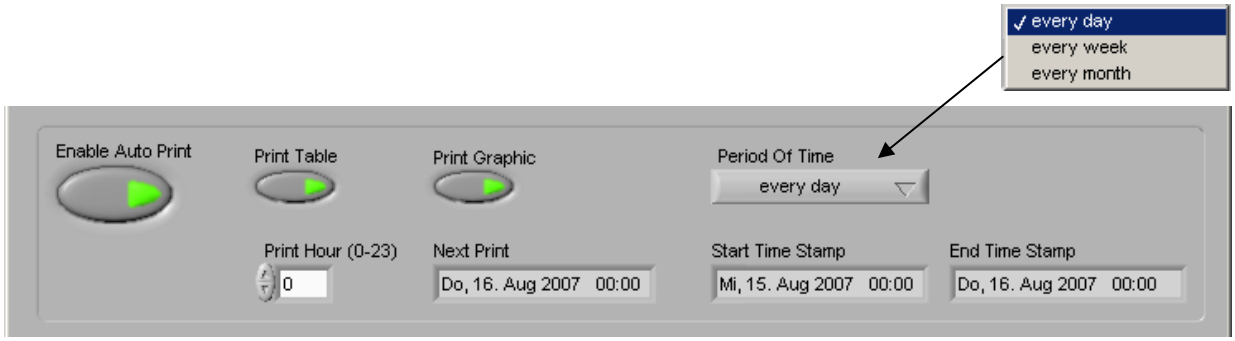


If you selected several measurements, you can switch between them under “Selected measurements”.



Function “Auto print” – Automatic printer function

In this submenu the setting is done for the automatic measuring data printout of this measurement in regular intervals. The prints are given out at the Windows standard printer (for printer settings see chap. 8.7).



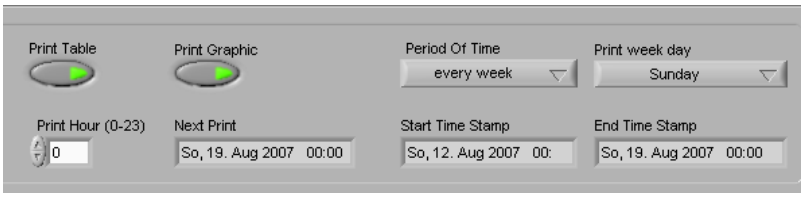
If "**Print table**" is activated, the automatic print provides the measuring data of the selected period in tabular representation.

If "**Print graphic**" is activated, the automatic print provides the measuring data of the selected period in graphical representation.

Both selections can be combined.

Under "**Period of time**" and "**Print hour**" the interval for generated the automatic printouts is determined. Under "Period of time" the frequency (daily / weekly / monthly) can be selected. The selection of the "Print hour" determines the time (full hour) of the printout. Date and time of the next print are indicated under "Next print".

For weekly printout you can select the day of the week under "**Print week day**".



For monthly printout you can select the desired day of the month under "**Print Date**".

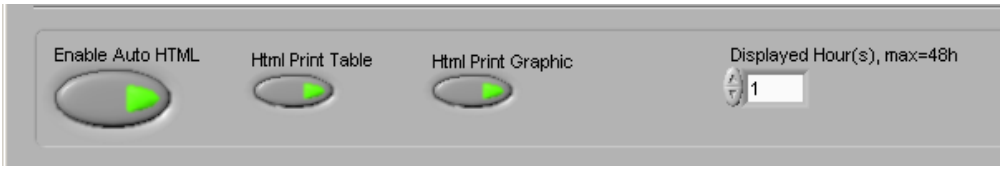
Activating button "**Enable Auto print**" activates the automatic printer function.

For an example printout see chap. 9.2.1, function "Print" in the menu "Manual Documentation".

Function "Auto HTML" – Automatic HTML output function

In this submenu the settings for the automatic measuring data output as HTML file at a given interval are selected (APT-COM™ 3 web server function). This file can be opened with a browser on the local computer. According to the sharing configuration by the system administrator the data can also be viewed with a browser in the local network or via the Internet.

This function can be used on condition the button "Web server on/off" in the "Web server" menu of the configuration window has been activated and the menu configured according to system requirements (chap. 8.12).



If "**Html print table**" is activated, the existing measuring values or value records (for chambers with more than one parameter) for the selected time (e.g. 60 for 1 hour with a measuring interval of 1 minute) are put out in tabular form in HTML file format.

If "**Html print graphic**" is activated, the existing measuring values or value records (for chambers with more than one parameter) for the selected time (e.g. 60 for 1 hour with a measuring interval of 1 minute) are put out in graphical form in HTML file format.

Both selections can be combined.

Under "Displayed hour(s)" select the period of which the data will be displayed on the web server. The minimum data displayed are those of the last hour, the maximum data those of the last 48 hours.

Activating button "**Enable Auto HTML**" activates the automatic html output function.

The html file is written in the folder APT-COM 3\HTML\Reports. The name is the same as the measurement name with the ending .html. The included graphical representation(s) for each measuring parameter can be found in the same folder under the name of the measurement + numerical index + ending .png.

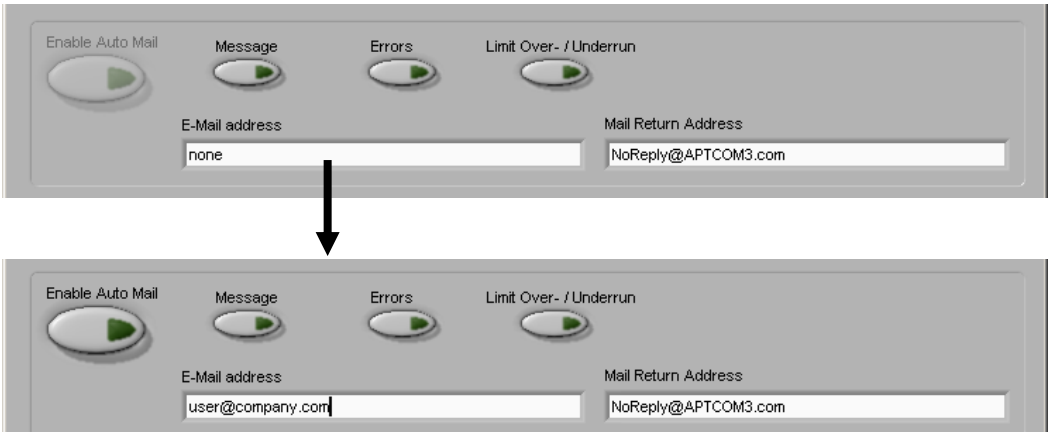
About viewing the measuring data via a browser see chap. 9.3.10.

Function "Auto mail" – Automatic e-mail Function

In this submenu the settings for the automatic e-mail sending are determined that serve to transmit messages concerning the individual measurement.

This function can be used on condition that in the "E-mail" menu in the configuration window the according settings have been carried out (chap. 8.5).

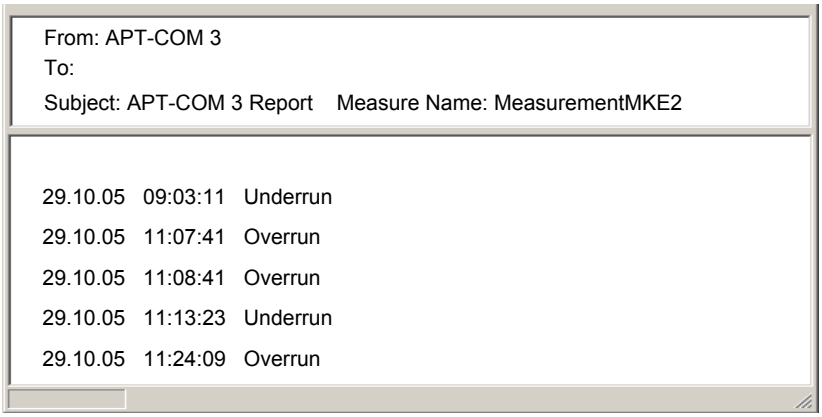
Enter the address to which the e-mails shall be sent into the field "**E-mail address**". The button "**Enable Auto mail**" can now be activated in order to use the e-mail functions:



You can select the following options for information to be included to the e-mail message:

- If "**Message**" is activated, the notifying messages that appear on screen during the measurement course will be transmitted to the entered address.
- If "**Errors**" is activated, error messages that appear on screen during the measurement course will be transmitted to the entered address.
- If "**Limit over-/underrun**" is activated, messages will be transmitted to the entered address as soon as a measuring value leaves the surveillance tolerance limits (chap. 9.3.2) set for this individual measurement. For each new value situated outside the limits a new message is generated. All limit-exceeding events are listed in cumulative manner.

E-mail example after activated “Limit over-/underrun” setting:

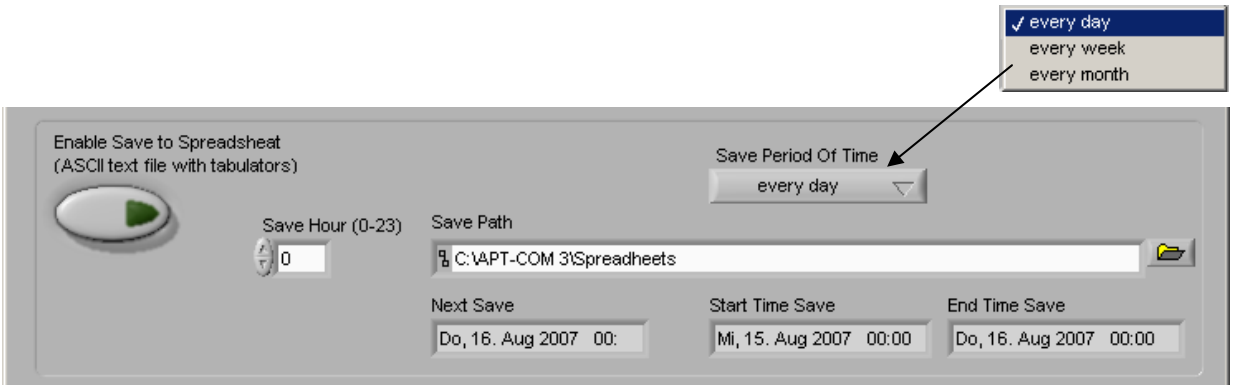


All three selections can be combined.

Activating button “**Enable Auto mail**” activates the automatic e-mail function.

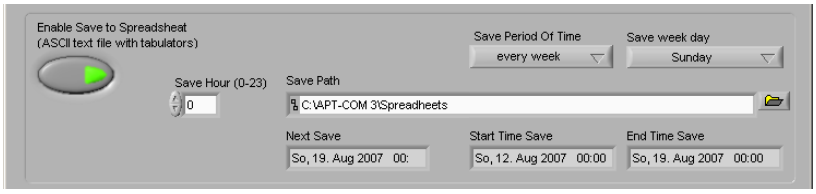
Function “Save to Spreadsheet” – Automatically saving the measurement values (ASCII file)

In this submenu the settings for the automatic generation of spreadsheets are determined, in which the measuring data are saved. This function serves to create a version if the measuring data that is universally readable as well as by machines, and which will remain readable independent from programs and operating systems for a long time (meeting specified GLP conditions). It is user’s responsibility to store the files in a manipulation-proof manner, because a .txt file can be manipulated.

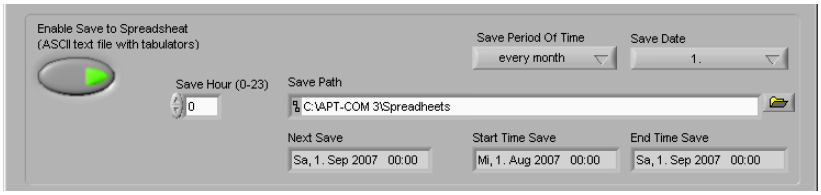


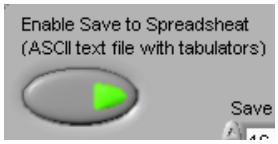
Under “Save Path” enter the location for the automatically generated spreadsheets.

For weekly saving you can select the day of the week under “**Save week day**”.



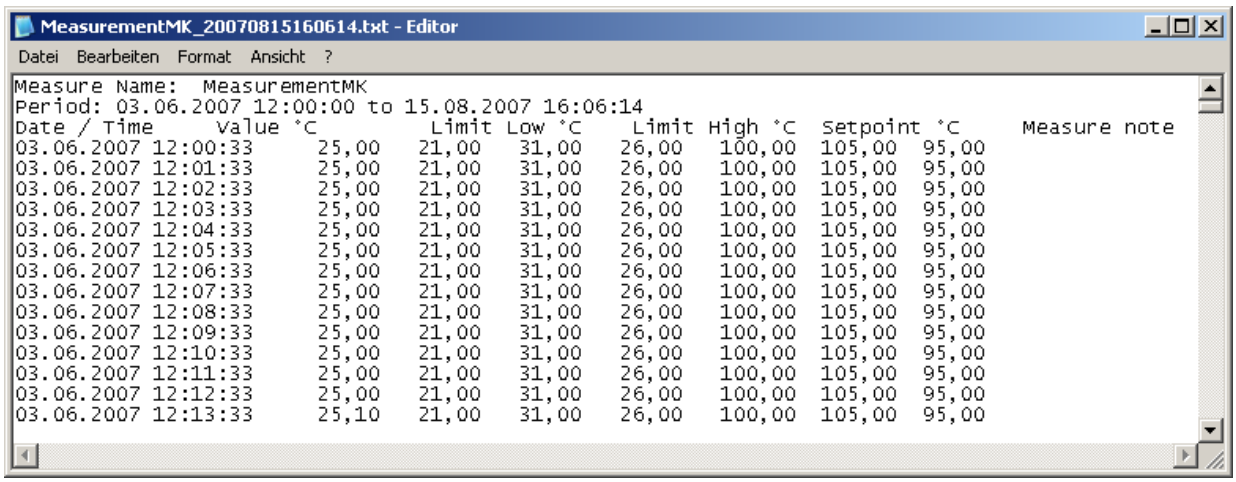
For monthly saving you can select the desired day of the month under “**Save Date**”.





Activating button "**Enable Save to Spreadsheet**" activates the automatic generation of spreadsheets.

The generated spreadsheet can be found at the location selected under "Save Path". It bears the name of the measurement and the date and time of its generation.



The number in the file name "MeasurementMK_20070815160614.txt" of the above example means:

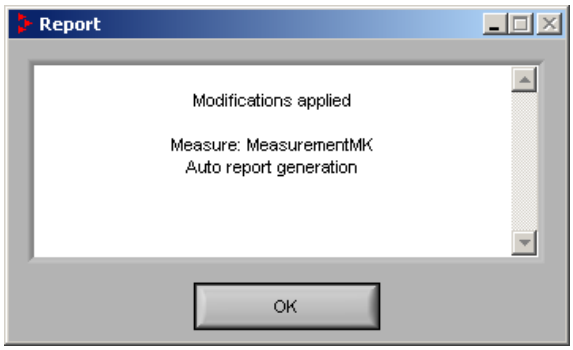
2007	08	15	16	06	14
year	month	day	hour	minute	second

This is the moment where the last available measuring value was acquired and the generation of the spreadsheet was completed.

! All modifications or settings in the menu "Auto Documentation" are applied only if you hit the button "Apply".

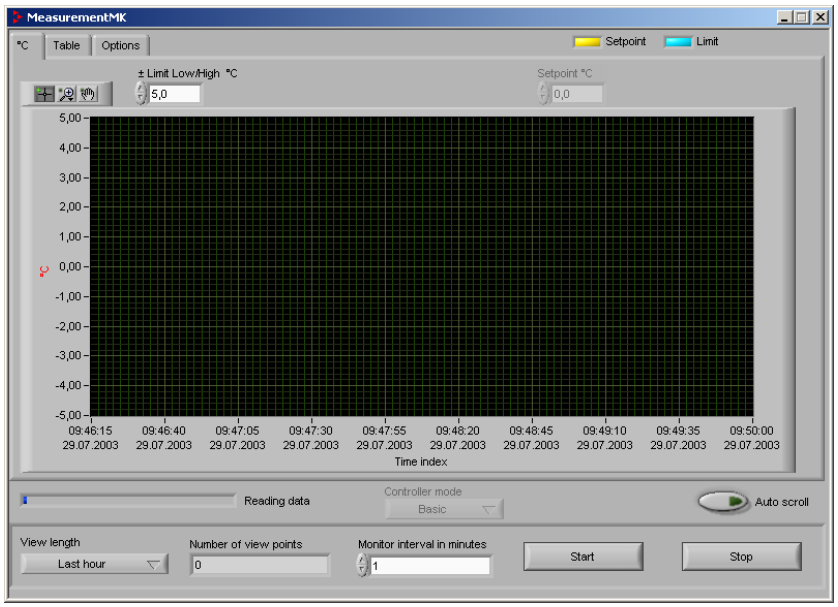
If at least one of the functions in window "Auto Documentation" was activated, following adoption with button "Apply" a confirmation window appears.

Confirm with "**OK**" or wait 10 seconds



9.3 The measurement window

After a new measurement has been generated (chap. 9.1.1) or an already existing measurement has been opened (chap. 9.1.2) in the “Measure Manager” window, the measurement window opens up bearing the name of the measurement.



You can execute as many measurements as you like at the same time and also open up the corresponding measurement windows; this is limited by the equipment of the measuring computer (hardware, RAM, hard disk, processor).

If a measurement is active (chap. 9.3.4), the corresponding measurement window can be closed without affecting the measurement. This is recommended if many measurements are carried out at the same time (Standard and GLP Edition) because closing the windows reduces the computer load. Closed measurement windows can be opened again in the window “Measure Manager” by button “Open Existing Measure”. In addition, the window “Communication Manager” (chap. 9.4) allows supervising the operation of all measurements.

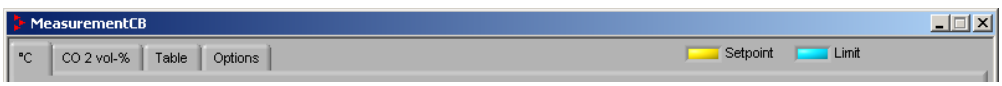
9.3.1 Overview

At the top border of the measuring window several **registers** (menus) are visible for views and settings of the measurement. They can vary according to the selected chamber type because the number of measuring parameters can be different.

Example Material test chamber **MK** series

Example climatic chamber **KBF** series

Example CO_2 Incubator **CB** series with O_2 control



A legend explains which colors correspond to the graphical display, (chap. 9.3.6):

- yellow for the entered set-point
- blue for the selected tolerance limits (chap. 9.3.2).

The actual value is represented in red color in the graphical display.

9.3.2 Surveillance tolerance limits

In the menu of each parameter the set-point (chap. 9.3.6) and the surveillance tolerance limits for this parameter (in our example: °C) can be set as soon as the measurement has been started.

The actual set-point can be monitored with individually set tolerance limits that lie symmetrically above and below the set-point.

In the graphical representation (chap. 9.3.6) of the parameter Parameters the upper and the lower tolerance limit are represented as blue lines in the selected distance from the entered set-point (yellow line). The actual value is displayed in this type of view as a red line.

If the actual value leaves the tolerance limits, following measures are taken automatically:

- Marking the limit in the tabular representation of the web server (chap. 9.3.10) instead of “OK” with “Overrun” or “Underrun”

Date / Time	Value °C	Limit Low °C	Limit High °C	Setpoint °C	Limit	Note
20.11.2002 14:14:32	24,80	22,00	26,00	24,00	OK	none
20.11.2002 14:14:55	24,65	22,00	26,00	24,00	OK	none
20.11.2002 14:15:05	24,59	22,00	26,00	24,00	OK	none
20.11.2002 14:15:10	24,56	22,00	26,00	24,00	OK	none
20.11.2002 14:15:19	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:27	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:57	24,43	22,00	26,00	24,00	OK	none
20.11.2002 14:16:04	24,42	22,00	26,00	24,00	OK	Door open
20.11.2002 14:16:56	22,67	22,00	26,00	24,00	OK	none
20.11.2002 14:17:07	20,82	22,00	26,00	24,00	Underrun	none
20.11.2002 14:17:23	18,49	22,00	26,00	24,00	Underrun	none
20.11.2002 14:18:00	21,07	22,00	26,00	24,00	Underrun	Door closed
20.11.2002 14:18:05	22,85	22,00	26,00	24,00	OK	none

- Sending an e-mail message according to the configuration in chap. 9.2.1 and chap. 9.2.2.
- Reaction of the independent monitoring software Watch Tool (chap. 10), that supervises from another computer that the tolerance limits are respected. This program indicates the coming or actual limit overrun or underrun (chap. 10.3.2). In case of exceeding the limit the alarm message “Limit alarm” is given out. According to the selected configuration a message can be sent to an additional e-mail address (chap. 10.2.4) and an information can be transmitted via the BINDER Alarm Box AB 01 to a house alarm system or to the telephone dialling device TWG for transmitting a voice message (chap. 10.2.3).

Notes to the limit setting:

Surveillance tolerance limits are generally defined around the set-point according to the test guidelines of the user. The resulting alarm measures are working according to the same principle for all parameters.

The tolerance limits are taken into account immediately after they have been entered. If the corresponding parameter is well-adjusted at this moment, no alarm will be transmitted after limit change. If the parameter value is less exactly adjusted and following limit modification is situated outside the new limits, with the next measuring value acquisition alarm is triggered.

Following set-point change the alarm is transmitted with the next measuring value acquisition if the actual value is now situated outside the limits.

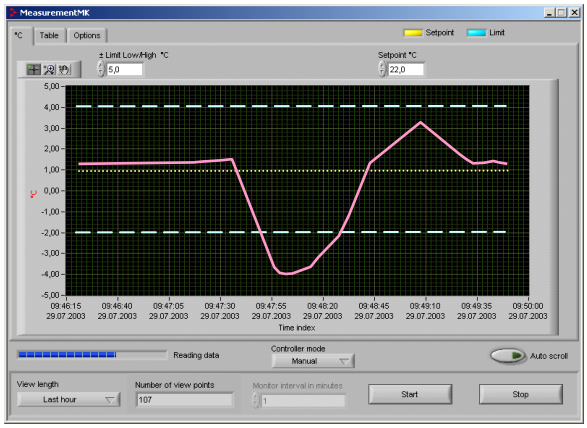
The defined parameter limits are also valid at any moment during program operation. If during program course set-point changes occur faster than the actual value can adjust and if the actual value therefore will be situated outside the limits, the alarm functions – according to previous selections – will be started. We therefore recommend not entering programs that exceed the chamber power regarding the parameter value adjustment. Special chamber load (e.g., heat load or energy charge of the charging material) must be taken into consideration.

The surveillance tolerance limits that can be defined at APT-COM™ 3 have no effect on the tolerance limits that can be programmed at the chamber program controller! These controller-specific limits cause an automatic program stop until the parameter value will be situated inside the controller-set tolerance range. The APT-COM™ 3 surveillance tolerance limits have no effect on the program course; they have just a supervisory function.

If allowed by the test guidelines, the controller tolerance limits can be laid closer around the set-point than the APT-COM™ 3 surveillance tolerance limits so that during set-point changes no alarms will occur. The program duration can be increased (see operating manuals of the chamber controller).

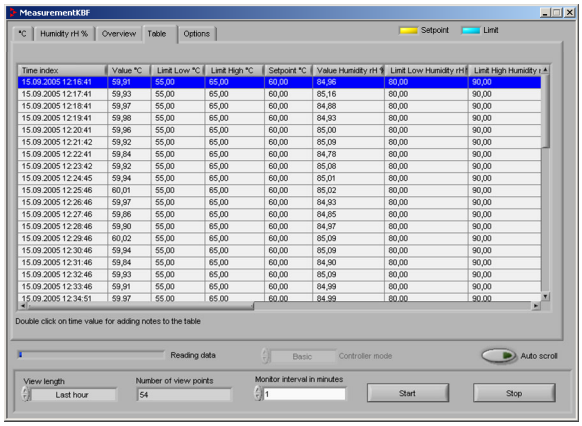
Overview of the different measurement window views:

- Graphical representation of a measuring parameter, depending on the chamber type one menu for each monitored parameter, e.g. “°C”, “CO 2 vol-%”, “Humidity rH %”…(chap. 9.3.6))

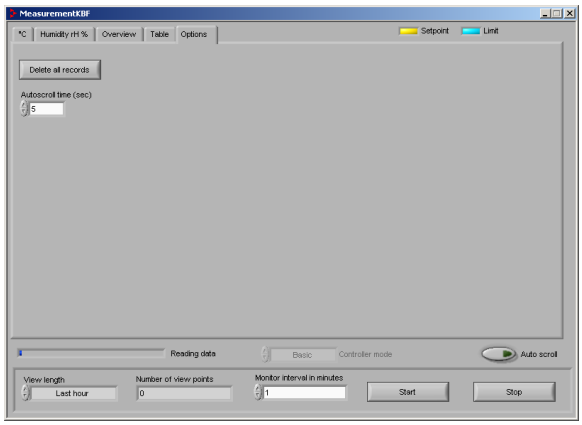


- Graphical representation of all measuring parameters “**Overview**” (optional for measurements with more than one parameter, chap. 8.6.5).

- Tabular representation of the measuring values “**Table**” (chap. 9.3.8)

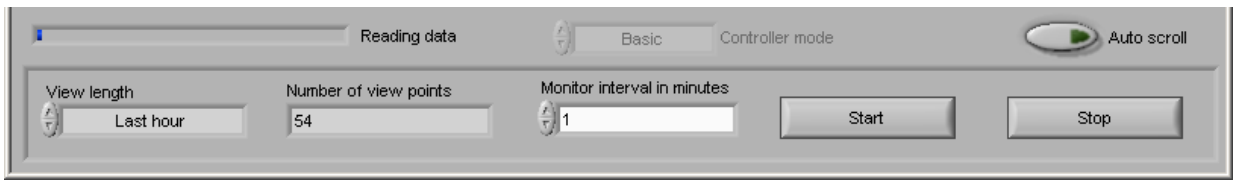


- "**Options**" (chap. 9.3.9)



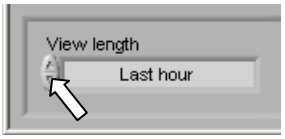
9.3.3 Standard function bar

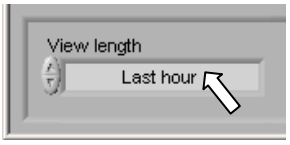
The lower bar of the measurement window refers to all views and therefore remains always visible.

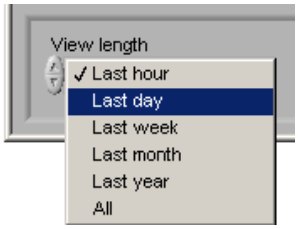


Under "**View length**" the period can be selected for which the measurement data shall be displayed in the measurement window.

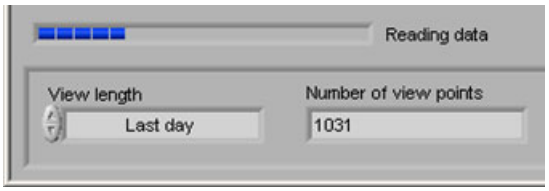
You can select the desired period directly with the up/down button or click in the field which makes a selection menu appear.







A soon as the period is changed the running bar under "Reading data" indicates that data are being read, regardless whether a measurement is running or data are read from the database.



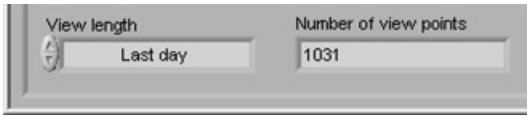
Under "**Monitor interval**" the data-actualizing interval in minutes can be set. This setting affects:

1. how often data are written from the chamber controller into the database (selected interval)
2. how often the e-mails are sent automatically (in case it has been activated)

Setting the actualization interval is possible only if the measurement has been stopped with "Stop".

The measuring values are written to the database with the frequency entered as monitor interval. If you notice a permanent light shift > 10 seconds of the intervals of measuring value acquisition, this signifies an exaggerated load of the computer. More system resources should be made available or the hardware power should be increased.

Under “**Number of view points**” the number of the measuring values displayed graphically or in the table view is indicated. This number depends on the period selected under “View length”. If “all” is selected, the number equals the total number of so far recorded measuring values. If there are many measuring points, it can last a while until data are displayed.



Selection of operating mode (for chambers with program controller only)

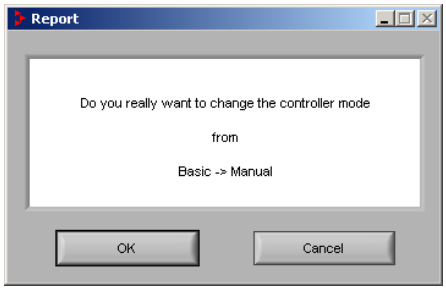
As soon as the measurement has been started with “**Start**”, i.e. is active, you can select the operating mode of the program controller under “**Controller mode**”. You can select the desired period directly with the up/down button or click in the field which makes a selection menu appear.

Controllers PD2, MB1

Controller RD3

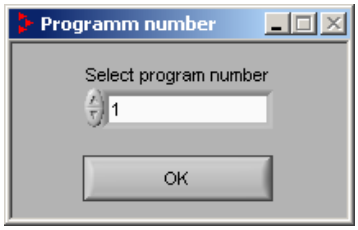
Vacuum controller CVC 2000 / 3000

Following your selection a corresponding questioning window appears.



Confirm by “**OK**”.

When changing to operation mode “Auto” additionally the program place of the controller is requested.



Select the desired program and confirm by “**OK**”.

The chamber controller takes over the selected mode that is indicated at the measurement window and on the controller display.

	Selection of “Controller mode” Basic	Selection of “Controller mode” Manual	Selection of “Controller mode” Auto
Operating mode of controller **PD2 / DICON 1001**	Idle mode (“GRUNDSTELLUNG”)	Fixed value operation (“MANUAL MODE”)	Program operation
Operating mode of controller **MB1**	Idle mode	Manual mode (“HAND”)	Program operation (“AUTO”)
Operating mode of controller **RD3**	-----	Fixed value operation	Program operation
Operating mode of vacuum controller **CVC 2000 / CVC 3000**	Idle mode	Fixed value operation	-----

Idle mode: The controller does not operate (no heating, no humidification, no admission of CO_2 or O_2).

Exception: With some KBF (E1), and KBWF (E1) chambers with DICON 1001 (PD2) program controller, the unit operates according to the entered set-points.

Fixed value operation: The actual values are adjusted to the entered set-points.

Program operation: The selected program that has been entered at the controller is running. Now it is not possible to enter a set-point value at the measurement window.

> **! By selecting the controller mode “Auto” during a running measurement, a program is started.**

In order to change the set-point at the vacuum controller, select operating mode “Manual” under “Controller mode”. For communication with the vacuum controller CVC2000 with speed controlled vacuum pumping unit, respect the vacuum controller settings described in the original manual of the vacuum controller and in chap. 16.5 of the VD operating manual.

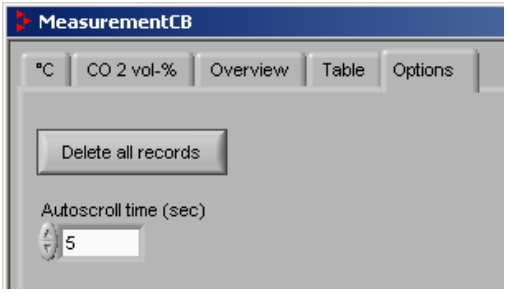
Set the operating mode of the controller PD2 (DICON 1001) to Idle mode (“GRUNDSTELLUNG”) or Fixed value operation (“MANUAL MODE”) before transmitting a program to the controller with the Program Editor (chap. 11) or reading out a program from the chamber controller.

Automatic screen change

The button “**Auto scroll**” enables this function. It allows changing automatically between the graphical displays of all measured parameters with an interval to be selected (see below).

This should only be used with chambers that provide more than one measuring parameters (e.g., temperature, CO_2 content, relative humidity...), because there will be no screen change in case of only a single graphical display.

Select the duration of display of the individual parameter display (“**Autoscroll time**”) in the menu “Options”.



9.3.4 Starting a measurement

Hit the "**Start**" button.

- The blue bar "**Reading data**" indicates that data are being read from the database into the measurement window.

- At the same time the window "Communication Manager" opens up which provides information all active measurements (chap. 9.4).
- If the measurement has already been active at a previous moment, the new measuring data are now added to the existing data. No data will be lost.

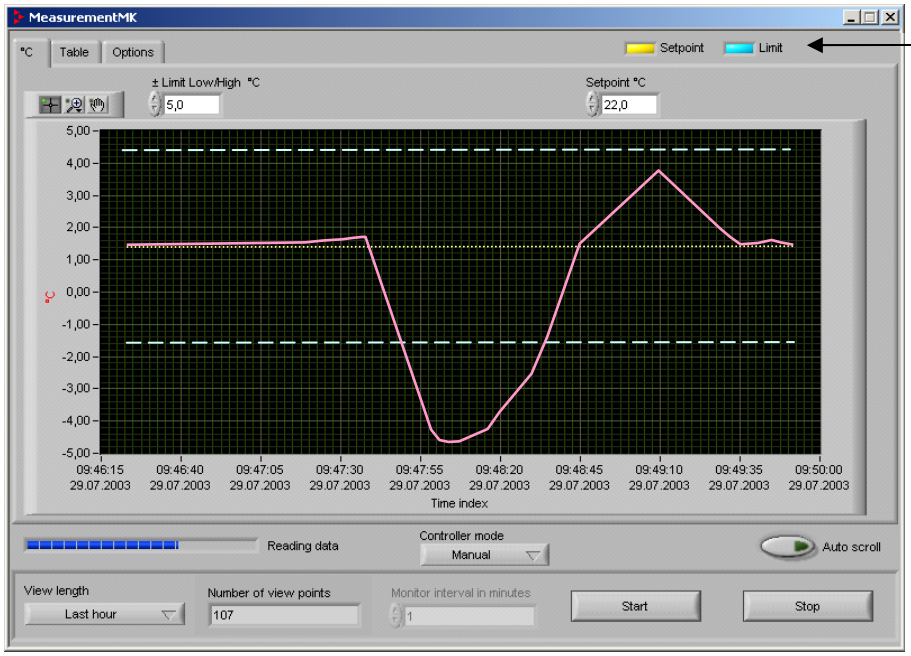
9.3.5 Stopping a measurement

Hit the "**Stop**" button.

- The blue bar "**Reading data**" disappears, indicating that the measurement is not running, i.e., no data are transferred from the chamber controller to the database. The blue bar "Reading data" can also indicate reading from the database as soon as the representation period is modified under "**View length**" (chap. 9.3.3), regardless whether a measurement is running or data are read from the database.
- The window "Communication Manager" is closed if there are no other active measurements. It is also possible to terminate all active measurements from the window "Communication Manager" (chap. 9.4.4).
- If the measurement is monitored by the monitoring software Watch Tool (chap. 9.3.3), the indication "Waiting For New Data" is displayed and, depending on the configuration, an alarm is triggered.

9.3.6 Graphical presentation of a measurement parameter, set-point entry

In this view the measurement course of the parameter indicated in the menu bar is represented graphically. The representation contains the period selected under "View length (chap. 9.3.3) up to the actual moment.



Color legend for the representation:

Set-point: yellow

Limit: blue

In this menu the set-point and the tolerance limits of the parameter (in our example: °C) can be entered.

Set-point entry

The set-point can be set under "**Setpoint °C**" (or "Setpoint CO2 vol-%" etc. depending on the parameter). Setting at the chamber controller is also possible.

Chambers with program controller allow setting of the set-point via APT-COM™ 3 in fixed value operation mode "Manual" (all program controllers) and in Idler Mode "Basic" (PD2 = DICON 1001 and MB1).

For setting the limits see chap. 9.3.2.

For chambers with an RD2 controller, see chap. 9.3.11.

Automatic screen change

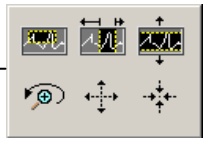
With the "**Autoscroll**" function you can set an automatic change of the graphical representation of each measuring parameter (see chap. 9.3.3).

View options of the graphical representation

Switching on and off the scroll and zoom functions

After selecting the hand icon you can move the graphic inside its frame.

After selecting the magnifying glass icon a submenu opens up.



Details of the individual functions:

Rectangle zoom: With this option click on any point of the graphic that should serve as a corner point of the zoom area, and drag the tool until the desired zoom area is covered.

X zoom: With this option you can enlarge a part of the graph along the X-axis.

Y zoom: With this option you can enlarge a part of the graph along the Y-axis.

Zoom back: With this option you can return to the previous view after enlarging or reducing the representation.

Enlarges the graphical representation when clicking on any point of the graphic

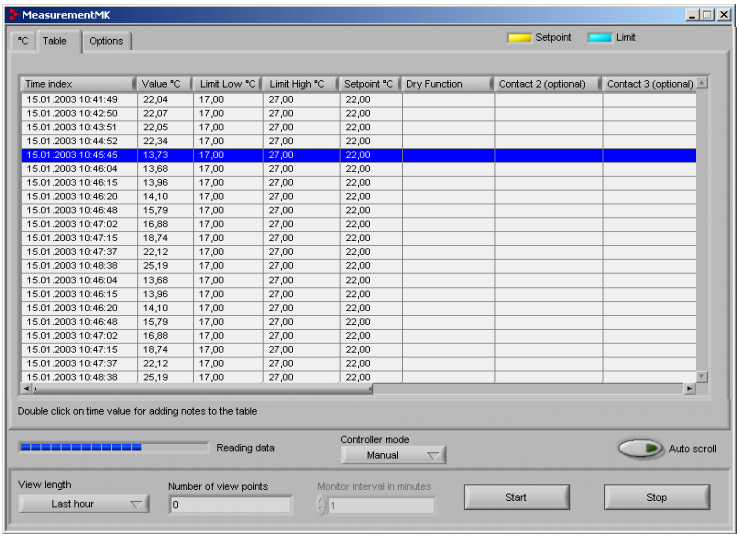
Reduces the size of the graphical representation when clicking on any point of the graphic

9.3.7 Common representation of the measuring parameters (menu “Overview”)

For chambers with more than one measuring parameters, these parameters can be displayed together.

Select this option in the configuration menu “Measurement” (chap. 8.6).

9.3.8 Tabular presentation with possibility of entering comments (“Table” menu)



As soon as the measurement is activated with “**Start**”, the measuring values are written into the table lines according to the chosen interval (see chap. 9.3.3). No measuring values will be overwritten; there is no limit of recording capacity by APT-COM™ 3.

Time Index: Exact moment (date and time) of the measuring value acquisition. The information is automatically taken over by the real time clock of the computer. The format depends on the entries under “Regional Options” in the Windows control panel.

Value °C: Temperature values in °C measured at the moment of data acquisition

Setpoint °C: Temperature set-point in °C set at the moment of data acquisition

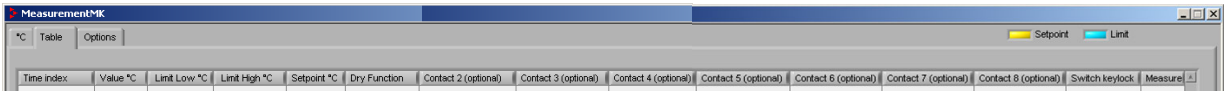
Limit Low °C and **Limit High °C**: Setting of minimum and maximum value for the corresponding parameter (e.g., temperature) that can be accessed by the parameter while still lying inside the tolerance limits. The limits are selected in the measuring window under “± Limit Low/High” (chap. 9.3.2). The upper tolerance limit “Limit High” results of the actual set-point plus the entered limit value. The lower tolerance limit “Limit Low” results of the actual set-point minus the entered limit value.

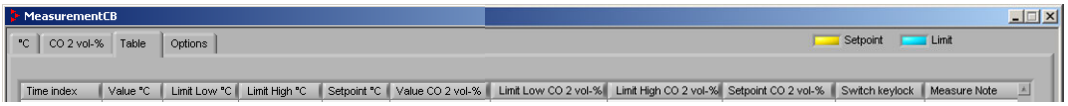
Example:

Setting in the menu "°C"	Displays in the "Table" menu			
Limit value set under "**± Limit Low/High °C**"	Actual value "**Value °C**"	Maximum value "**Limit High °C**"	Minimum value "**Limit Low °C**"	Actual set-point "**Setpoint °C**"
5	18	22	12	17

The table representation in the measuring windows of different chambers can show further different control parameters: CO_2, O_2 (CB / CTM 01), O_2 (CB with option O_2 control) or humidity (KBF / KBWF / FTM 01) and show the switching states of up to 8 operating contacts and various options (e.g., keyboard locking).

Examples:





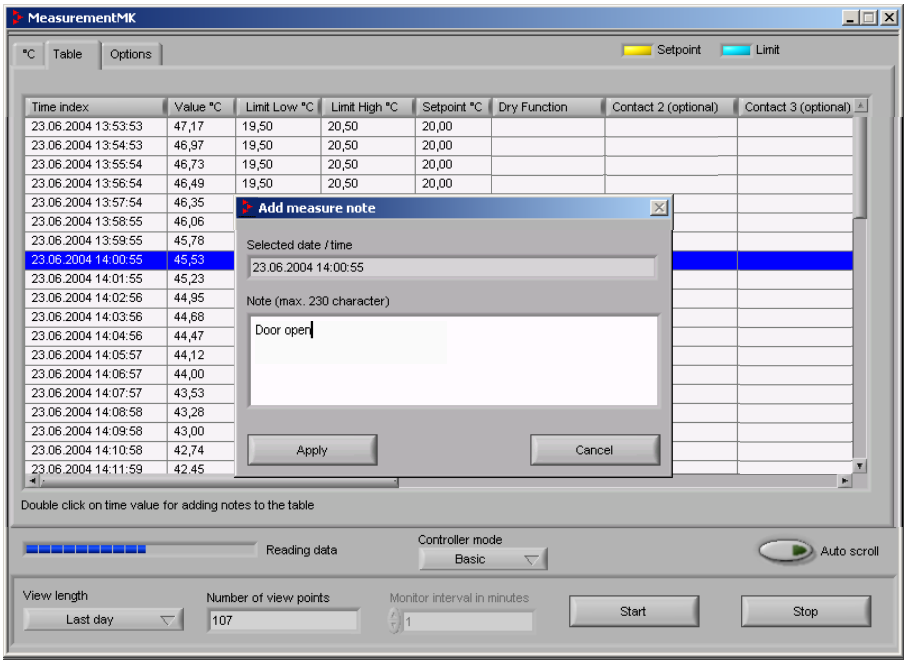
Elder models of the CO_2 incubator CB (without screen controller MB1) with option oxygen regulation are supplied with a second PD2 controller to control the oxygen concentration. The second channel is not used. This is why with this controller VOL.% O_2 appears on the first channel instead of °C.

Comments to individual measuring values

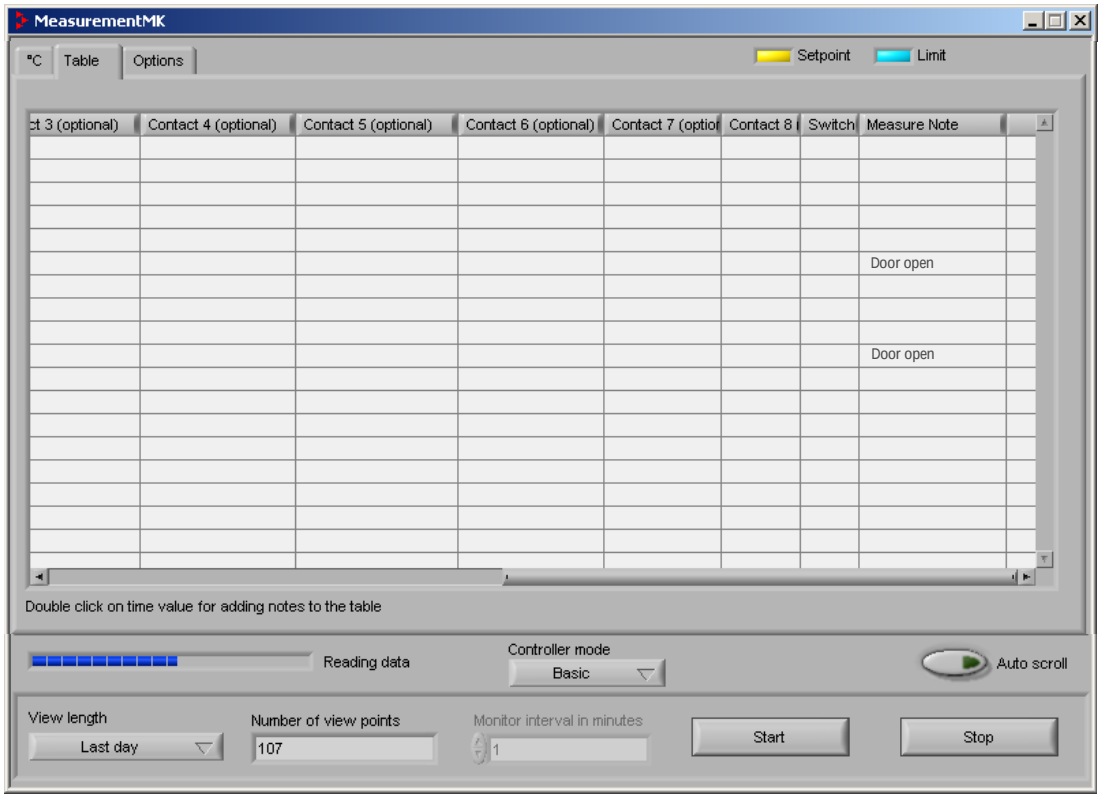
It is possible to enter information to individual measuring values:

- First stop a running measurement.
- Select by double click on the according table line the measuring moment under "**Time index**". The entry window for commentaries "Add measure note" opens up.
- The date and time are displayed under "**Selected date / time**". Now you can enter a comment of up to 230 characters into the field "**Note (max 230 character)**".
- Confirm by clicking on the button "**Apply**", so the comment will be taken over to the database. The window "Add measure note" is closed.

Example:



The entered text can be viewed under “Measure Note” at the right edge of the measurement window.



If a table print or html print (Standard and GLP Edition) is generated (chap. 9.2.1 and 9.2.2), the entered comments are displayed:

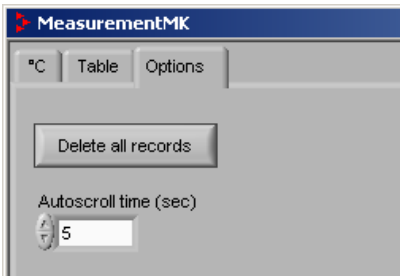
Date / Time	Value °C	Limit Low °C	Limit High °C	Setpoint °C	Limit	Note
20.11.2002 14:14:32	24,80	22,00	26,00	24,00	OK	none
20.11.2002 14:14:55	24,65	22,00	26,00	24,00	OK	none
20.11.2002 14:15:05	24,59	22,00	26,00	24,00	OK	none
20.11.2002 14:15:10	24,56	22,00	26,00	24,00	OK	none
20.11.2002 14:15:19	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:27	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:57	24,43	22,00	26,00	24,00	OK	none
20.11.2002 14:16:04	24,42	22,00	26,00	24,00	OK	Door open
20.11.2002 14:16:56	22,67	22,00	26,00	24,00	OK	none
20.11.2002 14:17:07	20,82	22,00	26,00	24,00	Underrun	none
20.11.2002 14:17:23	18,49	22,00	26,00	24,00	Underrun	none
20.11.2002 14:18:00	21,07	22,00	26,00	24,00	Underrun	Door closed
20.11.2002 14:18:05	22,85	22,00	26,00	24,00	OK	none
20.11.2002 14:18:09	23,95	22,00	26,00	24,00	OK	none

comments

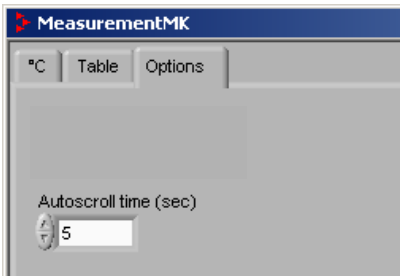
The tabular printout, consisting of the automatically generated data and the comments, is, together with the automatic system protocol (trace file, see chap. 8.9), an important part of the audit trail. For more information, see chap. 14.

9.3.9 Menu “Options”

With the button “**Delete all records**” you can delete the recordings of the measurement window (graphical display and table). This function is only available for the administrator. If measurements are to be deleted that have been generated by one of the users (i.e., not by the administrator), only the administrator can do this in the configuration menu “Measurement” (chap. 8.6).



Menu for administrator



Menu for other users (GLP Edition)

You need to confirm a security query before the data will be deleted.

! This function will delete all data in the database that belong to this actual measuring.

Under “**Autoscroll time**” you can set the display duration of the graphical windows for the automatic display change function **automatic screen change**, if the button “Auto scroll” in the standard function bar (chap. 9.3.3) has been activated.

9.3.10 Calling-up the web server HTML report (Standard and GLP Edition)

To be able to view the measuring data in html file format generated according to the settings in the menus “Manual Documentation” and / or “Auto Documentation”, you need to run a web browser (e.g., Microsoft Internet Explorer 5.5 or alternative Browsers as Mozilla, Firefox, or Opera that can be found on the APT-COM™ 3 CD in the “Adds” directory).

You can access the files from any computer if the system administrator has set up the according access possibilities.

Calling-up the html report from the local computer

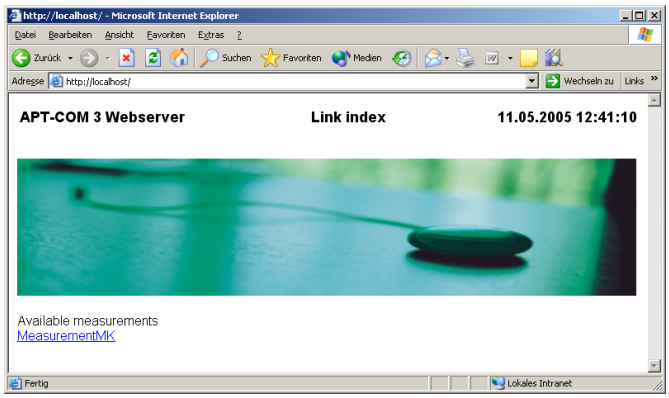
Open a web browser, enter the address **http://localhost/:80** and hit Return. The indication “:80” is the http port default setting and can be omitted, if the settings in the configuration menu “Web server” (chap. 8.12) have not been modified. In case of a modification, the number entered there must be entered to the address field of the browser instead of “:80”. Now the index page of the web server opens up.

Calling-up the html report from another computer in the local network

Enter the IP address of the measurement computer where APT-COM™ 3 is running to the browser address field. For this it is recommended that the measurement computer be assigned an invariable IP address by the system administrator. If the local network is equipped with a Domain Name Server (DNS server), you can directly enter the name of the measurement computer into the browser address field. After correct address entry the index page of the web server opens up.

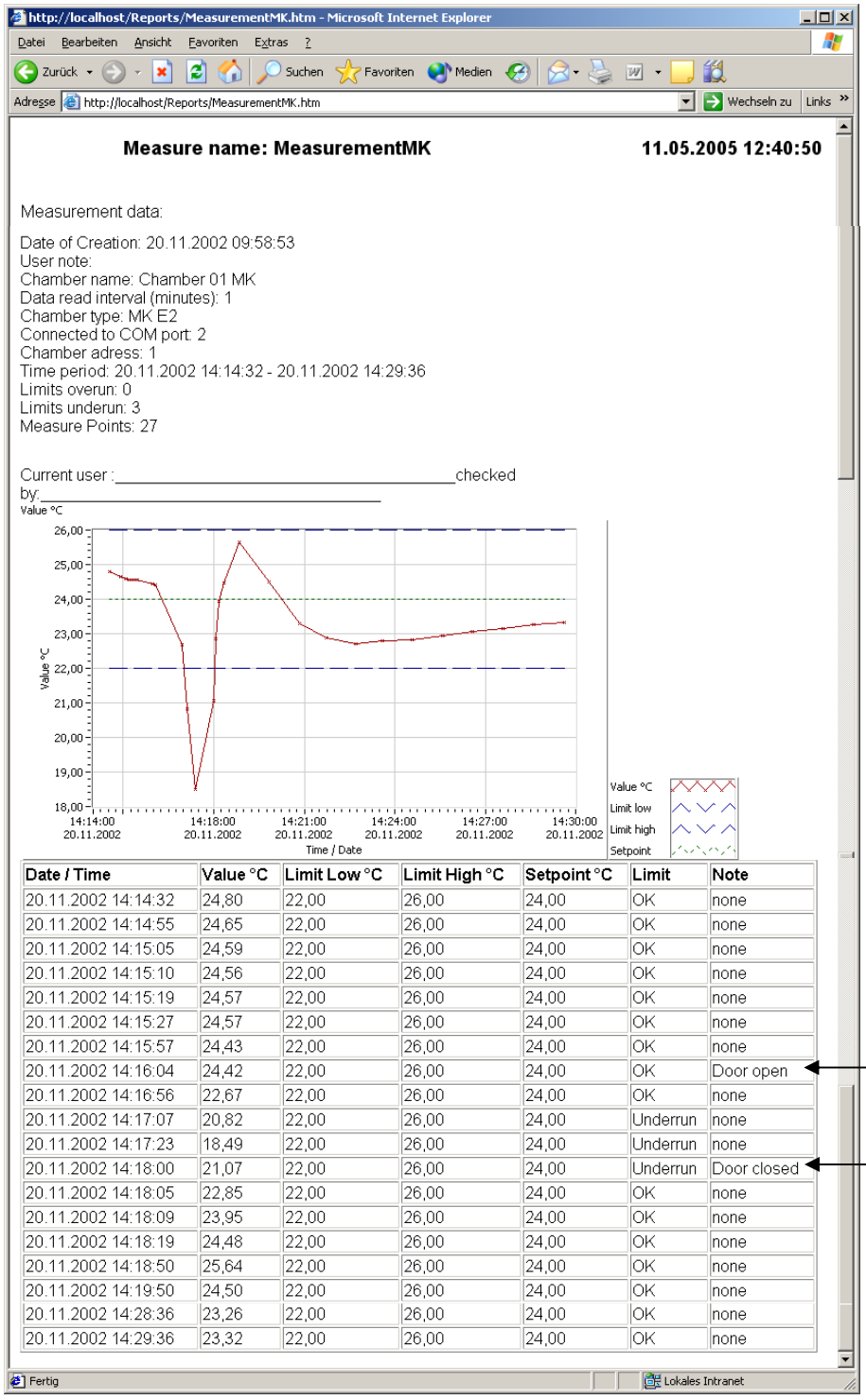
Calling-up the html report via the Internet

Please ask your system administrator how to carry out this in your network and which security-related measures are necessary.



The displayed page offers links to all selected measurements.

Such a link – in our example "**MeasurementMK**" – directly leads to the HTML presentation of the measuring values.



Date / Time	Value °C	Limit Low °C	Limit High °C	Setpoint °C	Limit	Note
20.11.2002 14:14:32	24,80	22,00	26,00	24,00	OK	none
20.11.2002 14:14:55	24,65	22,00	26,00	24,00	OK	none
20.11.2002 14:15:05	24,59	22,00	26,00	24,00	OK	none
20.11.2002 14:15:10	24,56	22,00	26,00	24,00	OK	none
20.11.2002 14:15:19	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:27	24,57	22,00	26,00	24,00	OK	none
20.11.2002 14:15:57	24,43	22,00	26,00	24,00	OK	none
20.11.2002 14:16:04	24,42	22,00	26,00	24,00	OK	Door open
20.11.2002 14:16:56	22,67	22,00	26,00	24,00	OK	none
20.11.2002 14:17:07	20,82	22,00	26,00	24,00	Underrun	none
20.11.2002 14:17:23	18,49	22,00	26,00	24,00	Underrun	none
20.11.2002 14:18:00	21,07	22,00	26,00	24,00	Underrun	Door closed
20.11.2002 14:18:05	22,85	22,00	26,00	24,00	OK	none
20.11.2002 14:18:09	23,95	22,00	26,00	24,00	OK	none
20.11.2002 14:18:19	24,48	22,00	26,00	24,00	OK	none
20.11.2002 14:18:50	25,64	22,00	26,00	24,00	OK	none
20.11.2002 14:19:50	24,50	22,00	26,00	24,00	OK	none
20.11.2002 14:28:36	23,26	22,00	26,00	24,00	OK	none
20.11.2002 14:29:36	23,32	22,00	26,00	24,00	OK	none

Here the comments to individual measuring values that have been entered into the table (chap. 9.3.8) are displayed.

In this kind of table the measuring values of the selected measurement are displayed as result of the function “Auto html” in the “Auto Documentation” menu (chap. 9.2.2), or all measuring values of the set time interval are displayed as result of the function “Html print” in the “Manual Documentation” menu (chap. 9.2.1).

Note: The function “Manual Print” overwrites the data of the function “Auto html” in the HTML file until the next automatic actualization.

Measurements with more than one measuring parameters (e.g., temperature and humidity with climatic chambers) the graphical representations of the measuring parameters are displayed one below the other. The tabular display is extended with additional columns.

The measuring data in the table can be selected and copied via the Windows clipboard into in Excel. Additionally the graphics can be independently saved via right click and “Save as”.

9.3.11 Special information for chambers with an RD2 controller

Heating power and fan speed are registered but can only be modified at the chamber controller.

Accordingly in the measurement window of chambers with RD2 controller no set-points can be entered under “Heat power %” and, if appropriate for the chamber type, under “Fan speed %”, which can be recognized by the indication “Process value (only read)”. Any values entered here have no effect and are set back at the next value reading.

> **! With an RD2 controller, the set-points of heating power and fan speed should be set directly at the chamber controller.**

The reason for this is an incompatibility between the RD2 controller and new computer hardware. For units with RD2 controller therefore enter the set-points for heating power and fan speed directly at the chamber controller.

This does not affect the temperature set-point entry.

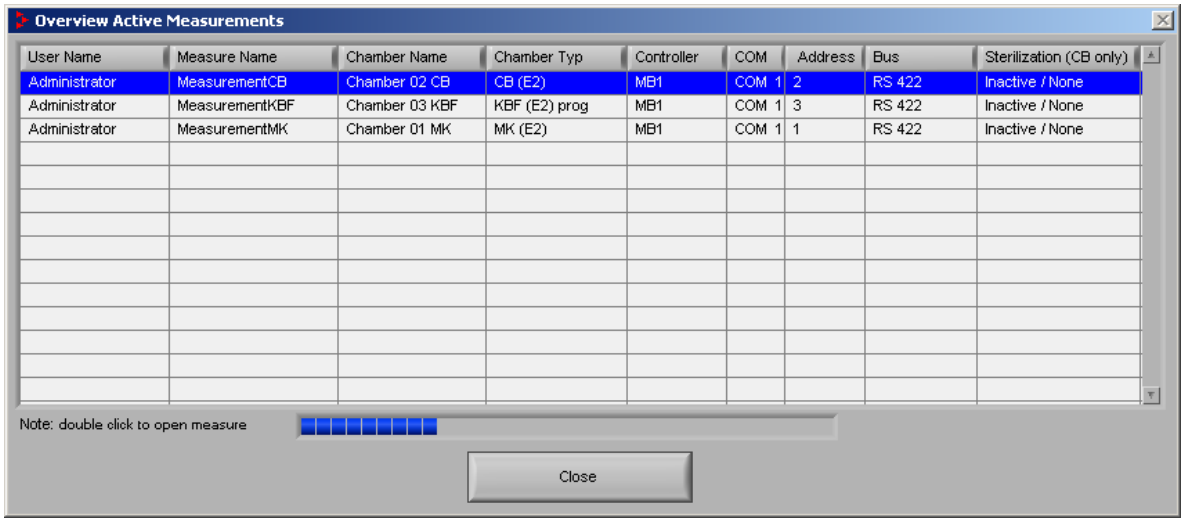
> **! With an RD2 controller, the temperature set-point should generally be entered in the APT-COM™ 3 “Measurement” window and not at the chamber controller.**

9.4 The window “Communication manager”

This window serves to manage all active measurements.

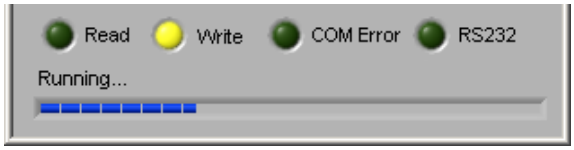
9.4.1 Display functions

- With button "**Chamber Info**" open the window "Overview Active Measurements" displaying the actually active measurements and information about the users and the related temperature chambers. For measurements with CO_2 incubators CB, the event of a running sterilization is indicated under "Sterilization".

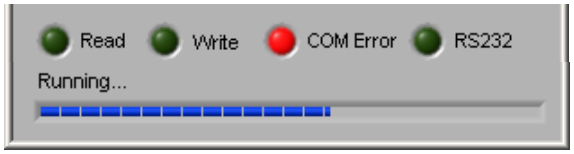


By double click on a table line you can open the corresponding measurement window.

- The signs "**Read**" and "**Write**" indicate the actual data transfer between chamber controller and data base (for the basics see chap. 9.3.4)



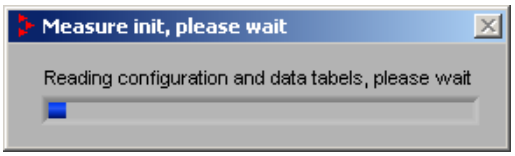
- The sign "**COM Error**" indicates a communication error between APT-COM™ 3 and at least one of the temperature chambers. The error is noted down in the "Trace" protocol (chap. 8.9).
- The sign "**RS232**" indicates that APT-COM™ 3 is waiting for controller data.



9.4.2 New initialization

This function is needed only if any problems occur during a measurement course, e.g., while reading data from the chamber controller. Via the button "**Init all measure**" all active measurements are equalized with the database and the interfaces are newly initialized. This will affect the measuring windows only (regardless if they are opened or closed), not the database.

An information window indicates the new initialization being executed.



9.4.3 Database actualization

With "**Force read all**" all data are read of the chamber controller to the database. This occurs at the same time for all active measurements.

9.4.4 Stopping all measurements

"**Stop all**" interrupts the connection between chamber controllers and the database for all active measurements, i.e., the database is not updated any more. The actualization of the measurement windows with database data is not affected. The window "Communication Manager" is closed.

As soon as the "Start" button is used in one of the measurement window, "Communication Manager" opens up again; the "Stop all" effect is removed for all previously active measurements. If there are any measurements set to active, this will also happen when button "Stop" is hit in an inactive measurement window. Window "Communication Manager" opens up, and the measurements set to active are started.

9.5 APT-COM™ 3 Archiver

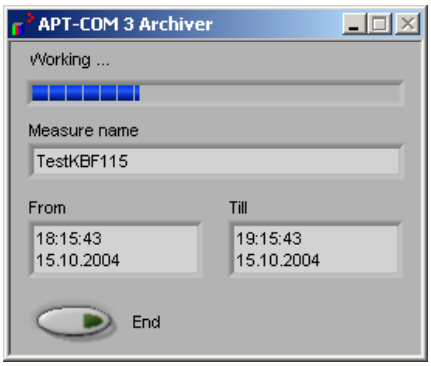
The APT-COM™ 3 Archiver is a tool that compresses the measurement data and thus makes faster APT-COM™ 3. It creates or uses an archive database (archiv.mdb) for measurement data that are older than one day. The working database of APT-COM™ 3 is maintained small and fast. APT-COM™ 3 automatically integrates the created archive when the user requests any data located there. If the Database Optimizer (chap. 9.6) has already created the working database, the Archiver will use it as well to write the data.

During installation of the software APT-COM™ Data Control System 3 from version 3.02.xxx on, or when updating existing APT-COM™ 3 software to this or a higher version, the Archiver is installed automatically.

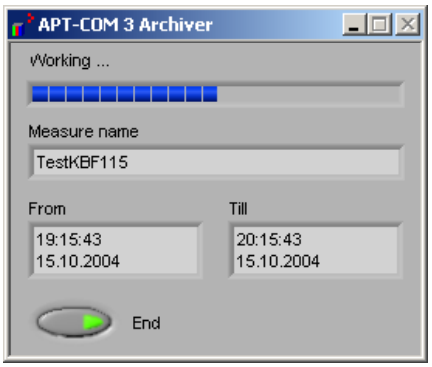
The APT-COM™ 3 Archiver can be started any time when the system seems to become slower. It is recommended to execute the data compression about every 2 to 3 weeks at high measuring data rates.

To start the tool select button "Tools" in the window "Center Version 3.02.xxx GLP", and in the window that opens up then hit button "**Archiver**".

The Archiver operates in the background during APT-COM™ 3 operation, i.e., also during actually executed measurements.



The compression terminated, the window “APT-COM 3 Archiver” is closed automatically. To stop program operation activate button “END”. As soon as an adequate moment is reached, the compression is terminated.



With a big data volume operating the Archiver is recommended as a preparation for compression by the Database Optimizer, which will then need less time.

In case of power failure occurring exactly during a writing event executed by the Archiver, measuring data of one measurement of max. 1 hour may be lost.

With button “**Auto start archiver during program start**” in the configuration menu “Measurements” you can select if the Archiver shall automatically be started when starting APT-COM™ 3. This is recommended in order to keep the measuring database fast and slim (chap. 8.6.2). In addition we recommend using the Database Optimizer (chap. 9.6) about every two weeks.

9.6 Database Optimizer

Database Optimizer is a tool that compresses the measurement data much more than the APT-COM™ 3 Archiver (chap. 9.5) and thus makes faster APT-COM™ 3. It creates or uses an archive database (archiv.mdb) for measurement data that are older than one day. The working database of APT-COM™ 3 is maintained small and fast. APT-COM™ 3 automatically integrates the created archive when the user requests any data located there. If the Archiver has already created the working database, the Database Optimizer will use it as well to write the data.

During installation of the software APT-COM™ Data Control System 3 from version 3.01.029 on, or when updating existing APT-COM™ 3 software to this or a higher version, the Database Optimizer is installed automatically.

The Database Optimizer can be started any time when the system seems to become slower. It is recommended to execute the data compression about every 2 to 3 weeks at high measuring data rates. Contrasting the Archiver, the Database Optimizer must only be operated when all measurements are terminated and APT-COM™ 3 has been shut down. This is due to the fact that the Database Optimizer compresses data much more efficient (by factor 2 to 10) and for this completely recreates the database.

To start the tool select button “Tools” in the window “Center Version 3.02.xxx GLP”, and in the window that opens up then hit button “**Database_optimizer**”.

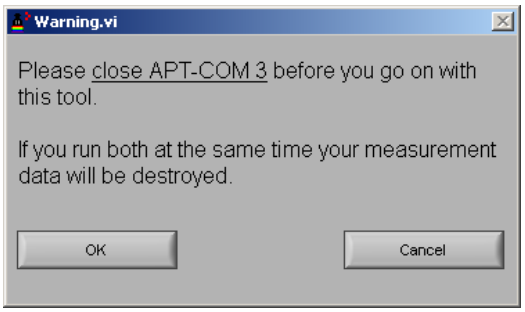
It is also possible to create a shortcut to file “ToolDatabase_optimizer.exe” on the Windows Desktop. The file is located in the APT-COM™ 3 directory on your computer.

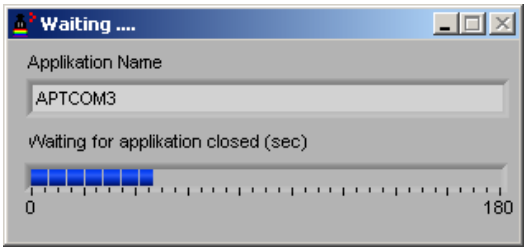
ToolDatabase_optimizer.exe

Following start of the Database Optimizer a warning window appears asking to shut down APT-COM™ 3 before continuing.

You can now quit the function by hitting "**Cancel**", terminate APT-COM™ 3 and then start the Database Optimizer via the shortcut on the Windows Desktop.

Or you confirm the message in the warning window by hitting "**OK**". This is followed by the notifying window "Waiting…" appearing. It indicates that the Database Optimizer will wait for max. 180 sec. for APT-COM™ shutdown to start then compression. If the APT-COM™ 3 is not terminated during this time, the Database Optimizer will not be executed.

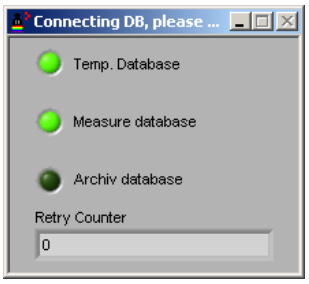




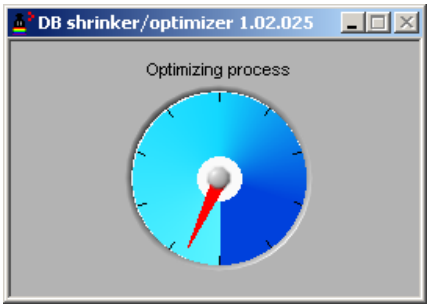
! When operating APT-COM™ 3 during data compression by the Database Optimizer, data will be lost. It is therefore important to terminate APT-COM™ 3 before starting data compression by the Database Optimizer.

The window "DB shrinker/optimizer" that will indicate the optimizing process rests inactive until APT-COM™ 3 is shut down.

The window "Connecting DB" indicates the connection to the APT-COM™ 3 databases.



Then advancing of the program can be followed as graphically displayed in the window "DB shrinker/optimizer".



The average run time is about 2 hours. With a big data volume the Database Optimizer might operate for several hours or days. Operating the Archiver first can shorten this time.

! The compression must not be interrupted! In case of power failure during operation of the Database Optimizer loss of all measuring data is possible. It is therefore recommended to create a backup using the "Backup" function (chap. 8.3) prior to starting the Database Optimizer. If measuring data are lost, please contact the BINDER Service. With an existing backup, complete data recovery is possible, without a backup at least a partial recovery can be done.

When the compression is terminated the window "DB shrinker/optimizer" closes automatically. You can now open APT-COM™ 3 and continue your measurements.

If data taken out into the archive database are needed APT-COM™ 3 automatically requests them. There is no difference for the user in operating APT-COM™ 3.

10. Watch Tool monitoring software (GLP Edition)

The Watch Tool is designed to monitor the running measurements independent of APT-COM™ 3. It does not exert any control functions on the measurement computer on which APT-COM™ 3 is running, or on the temperature chambers connected to the measurement computer.

The tolerance limits defined at the APT-COM™ 3 and the COM connections of the measurements are monitored, as well as the connection of the Alarm Box AB01.

Functions:

- Optical supervision of the limits of the monitored parameters selected at APT-COM™ 3 for each chamber (individual and collective alarm), e.g., as signal at the reception
- Optical supervision of the communication between APT-COM™ 3 and the connected chambers, e.g., as signal at the reception or a control room.
- E-mail sending in case of an alarm, e.g., to a service technician
- Remote alarm via the Alarm Box AB 01

10.1 Installation and start of the monitoring software Watch Tool

There are principally two possibilities to install Watch Tool:

- Operation of Watch Tool on the same computer on which APT-COM™ 3 is running and controls the measurements to be monitored (chap. 10.1.1).
- Installation and operation on a computer (monitoring computer) different from the measuring computer on which APT-COM™ 3 is running and controls the measurements to be monitored. Both computers need to be able to communicate via a TCP/IP network (chap. 10.1.2).

10.1.1 Operating APT-COM™ 3 and Watch Tool on the same computer

During installation of the Software APT-COM™ Data Control System 3 the Watch Tool has been installed automatically.

If “Localhost” or the IP address of the measuring computer is entered under “PC Name or IP Address” in the APT-COM™ 3 configuration menu (chap. 8.11), and button “**Watch Enable**” in this menu is activated, the Watch Tool is started automatically. It also starts automatically when restarting APT-COM™ 3 with these settings.

10.1.2 Operating Watch Tool on the monitoring computer

1. The software APT-COM™ 3 is installed on the computer (measurement computer) the measuring data are recorded to (chap. 5). It is recommended that the system administrator assigns a special partition. Following this APT-COM™ 3 is started and configured (chap. 6 to 8). The temperature chambers are configured and the measurements are started (chap. 9).
2. On a second computer (monitoring computer) that serves to supervise the APT-COM™ 3 the Watch Tool is installed. Installation here means an extraction process equal to the APT-COM™ 3 installation described in chap. 5.3. Start the file “**setup.exe**” in the “**APT-COM 3**” directory on the APT-COM™ 3 CD. The self-extracting file copies all files and folders necessary for the operation of the Watch Tool to a folder that you create prior to or during the extraction process on the local hard disk of the monitoring computer (e.g., C:\Programs\Watch Tool).

! The program APTCOM3.exe that will also be copied during the installation must not be run on the monitoring computer. This can lead to loss of measuring data.

3. In the directory to which the Watch Tool has been extracted select the file “Watch.exe” to start the Watch Tool. It is recommended to create a shortcut on the Windows Desktop and, if desired, in the Windows Auto Start folder.

4. In the APT-COM™ 3 configuration menu (chap. 8.11), enter under “PC Name or IP Address” the name or IP address of the monitoring computer and activate button “**Watch Enable**”. A notifying window informs you to start the Watch Tool on the monitoring computer.

1. Start the Watch Tool by double click on the file or shortcut “Watch.exe”.

Establishing a connection between the measurement computer (APT-COM™ 3) and the monitoring computer (Watch Tool) is done in the program Watch Tool to allow access of Watch Tool to the data generated by APT-COM™ 3.

10.1.3 Start of monitoring software Watch Tool

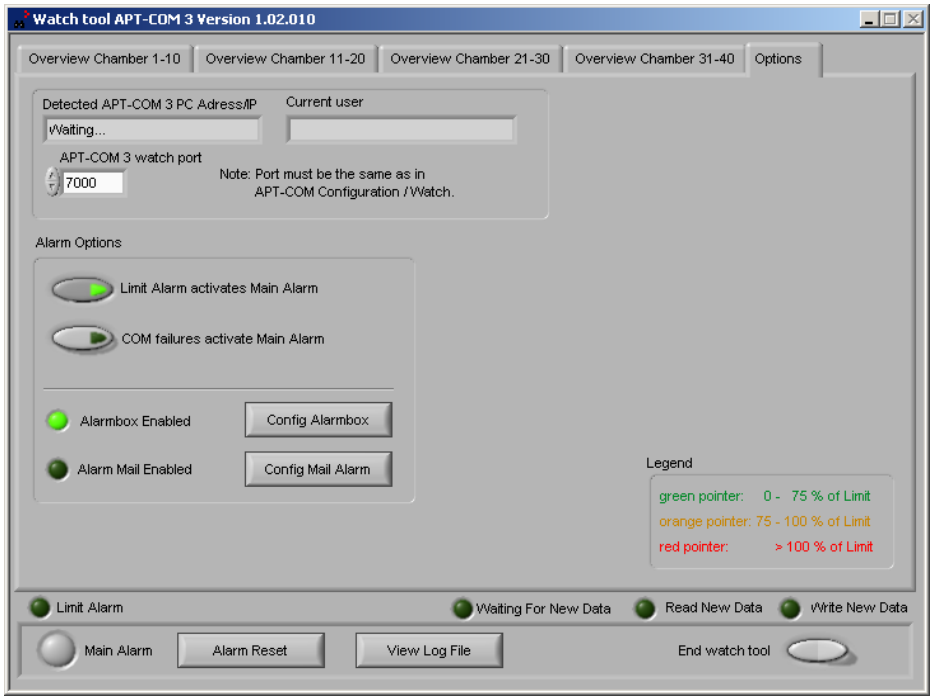
The window “Watch tool APT-COM 3 version 1.02.xxx” opens up.

In the title bar the actual **version number** of your Watch Tool program is displayed. This manual refers to the latest actual version 1.02.010 at the moment of the manual’s publishing. Due to continuous improvement of and additions to our software leading to frequent updates it is possible that you find a different version number displayed in the title bar. In this case please open the file “**Watch.txt**” in your APT-COM™ 3 directory that will inform you about any new features.

When first starting the Watch Tool, the menu “Options” is visible (chap. 10.2). At first the connection to the APT-COM™ 3 Software controlling the measurements to be monitored can be configured in this Watch Tool menu. Also in APT-COM™ 3 configuration settings have to be done in the configuration menu “Watch Tool” (chap. 8.11).

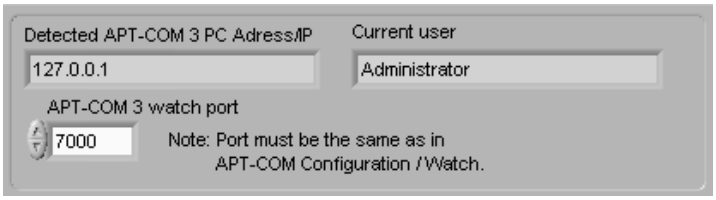
10.2 “Options” menu – Watch Tool configuration

The “**Options**” menu offers several indications and possibilities of configuration.



10.2.1 Display of the connection settings between Watch Tool and APT-COM™ 3

The connection to the APT-COM™ 3 software controlling the measurements to be monitored is configured in the APT-COM™ 3 configuration menu “Watch Tool” (chap. 8.11). The connection settings are displayed in the Watch Tool menu “**Options**”:



The display is different depending on the mode of installation, i.e. if the monitoring software is running on the same computer as APT-COM™ 3 controlling the measurements to be monitored (“APT-COM 3 PC”), or if it is running on a distinct monitoring computer (“Watch PC”):

APT-COM™ 3 and Watch Tool on the same computer:

- In the APT-COM™ 3 configuration menu “Watch Tool” (chap. 8.11), “localhost” or the name or IP address of the measuring computer is displayed (default setting).
- In the Watch Tool menu “**Options”** “localhost” or name or IP address of the measuring computer appear under “**Detected APT-COM 3 PC Address/IP**”.
- Under “APT-COM 3 watch port” the same value must be set as in the APT-COM™ 3 configuration menu “Watch Tool” (chap. 8.11). Default setting: 7000.

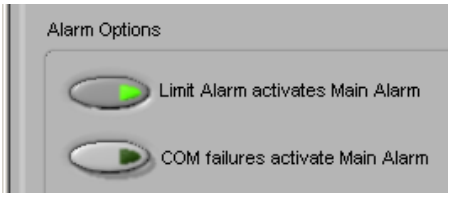
APT-COM™ 3 on the measuring computer, Watch Tool on the monitoring computer:

- In the APT-COM™ 3 configuration menu “Watch Tool” (chap. 8.11) the name or IP address of the monitoring computer is displayed. The system administrator should do these settings.
- In the Watch Tool menu “**Options”** name or IP address of the measuring computer appear under “**Detected APT-COM 3 PC Address/IP**”
- Under “APT-COM 3 watch port” the same value must be set as in the APT-COM™ 3 configuration menu “Watch Tool” (chap. 8.11). Default setting: 7000.

Under “**Current user**” the actually logged-in user of the APT-COM™ 3 Software is displayed.

APT-COM™ 3 initializes the Watch Tool again when a measurement is started or terminated. Monitoring of the measurements can also be manually restarted by hitting the button “Init all measure” in the window “Communication Manager” (chap. 9.4.2).

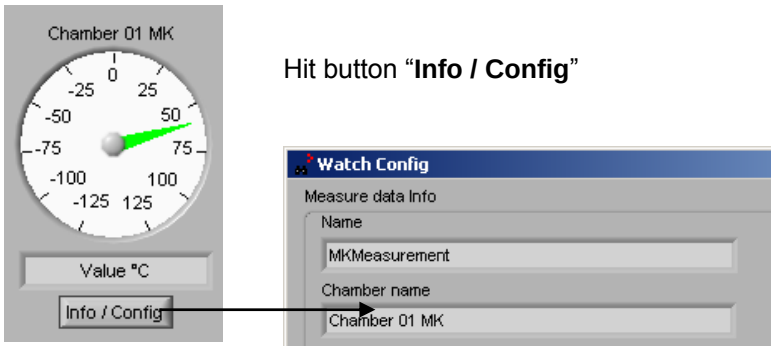
10.2.2 Alarm options



In the submenu “Alarm Options” you can set if a **collective alarm** shall be triggered when exceeding the ob limits (“Limit alarm”) or in case of communication errors (“COM failures”). This means the red “**Main Alarm**” sign lighting up and, with the appropriate configuration, addressing the **Alarm Box AB 01** and sending an **e-mail message**.

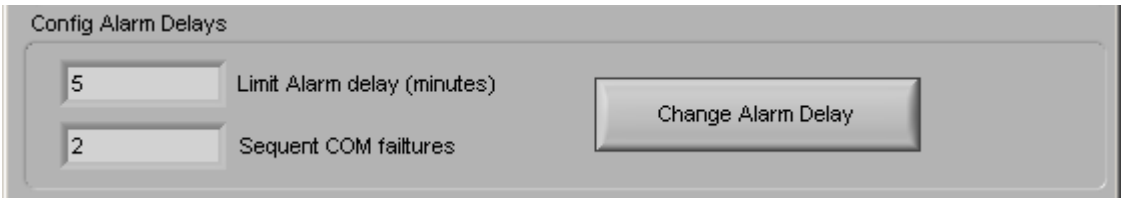
- The yellow signal “Limit alarm” and the orange or red pointer color of the corresponding chamber indicate exceeding the Limits at least at one chamber. If you activate button “**Limit Alarm activates Main Alarm**”, this will trigger the collective alarm.
- The blue signal „Waiting For New Data“ and the blue round display of the corresponding chamber indicate exceeding the monitoring interval, which is set in the measurement window. If you activate button “**COM failures activate Main Alarm**”, this will trigger the collective alarm.

You can set individual alarm delays for each measurement in window “Watch Config” (chap. 10.3.4.2).



Hit button “**Info / Config**”

The submenu “Config Alarm Delays” displays the actual alarm delay times that have been individually set for the measurement.



For setting the alarm delay times via button “**Change Alarm Delay**”, see chap. 10.3.4.2.

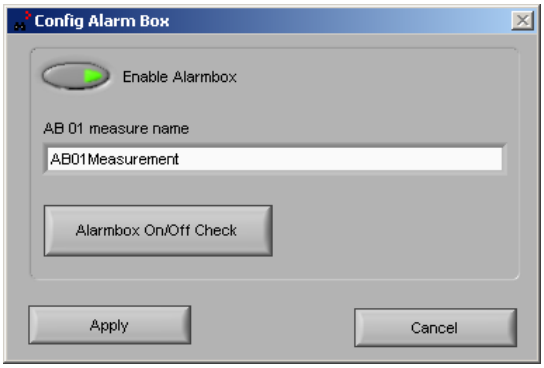
10.2.3 Settings and test of the Alarm Box AB 01

Hit button “**Config Alarmbox**”. The window “Config Alarm Box” appears. The functions in this submenu serve to enable and test the BINDER Alarm Box AB 01 Art. No. 9052-0004). This window offers different options depending on the installation of the Alarm Box AB 01 a the measuring or the monitoring computer.

Operating APT-COM™ 3 and the Watch Tool on the same computer:

The Alarm Box AB 01 is connected to the measuring computer. In APT-COM™ 3 an according measurement was created and started.

In this case the Alarm Box AB 01 is configured as one of the connected chambers in the APT-COM™ 3 Configuration menu “Chamber” (chap. 8.4) and thus managed and directly monitored by APT-COM™ 3.

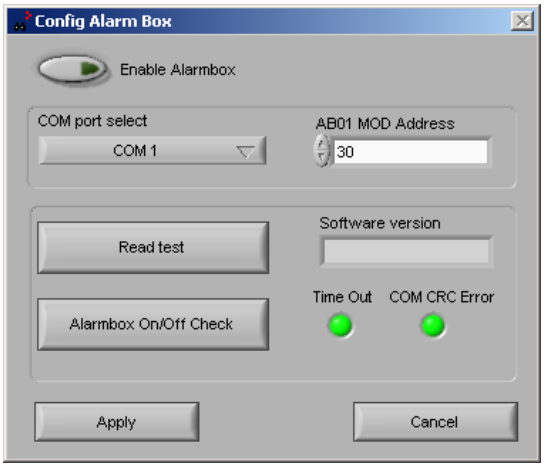


Under “AB 01 measure name” the name of the measurement that has been created for the Alarm Box is displayed.

Operating APT-COM™ 3 on the measuring computer, the Watch Tool on the monitoring computer:

In this case the Alarm Box AB 01 will be connected to the monitoring computer as described in chap. 4.3. The Alarm Box can be placed at up to 50 m far from the monitoring computer.

When operating APT-COM™ 3 and the Watch Tool on the same computer, this window also appears in case the Alarm Box measurement has been stopped.



Activating the Alarm Box

Hit button "**Enable Alarmbox**".

- **Entry of the connection data for the Alarm Box if it is connected to the monitoring computer**

  Under "**COM port select**" you can select the COM port of the monitoring computer to which the Alarm Box is connected

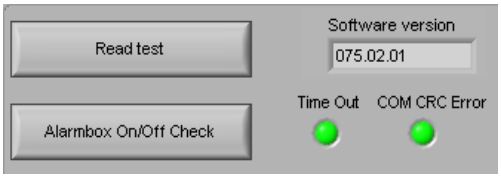
  Under "**AB01 MOD Address**" enter 30, the default Alarm Box address.

- **Check of the connection to the Alarm Box AB 01 if it is connected to the monitoring computer**

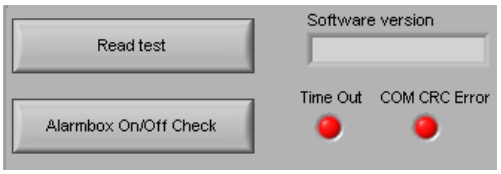
!	**The Alarm Box AB 01 must be switched on for the Alarm Box test.**

Hit button "**Read test**". If the signs "COM CRC Error" and "Time out" remain green, the connection to the Alarm Box is OK and functional.

Under "Software version" the answer-back code of the Alarm Box controller is displayed.



If one of the signs "COM CRC Error" or "Time out" or both of them light up red, the Alarm Box AB 01 is not or not correctly connected or for another reason communication is not possible.



If APT-COM™ 3 and Watch Tool are running on the same computer, the test of the connection to the Alarm Box AB 01 via "Read test" is unnecessary cannot be addressed, because APT-COM™ 3 continually monitors the COM connection.

- **Function „Alarmbox On/Off Check"**

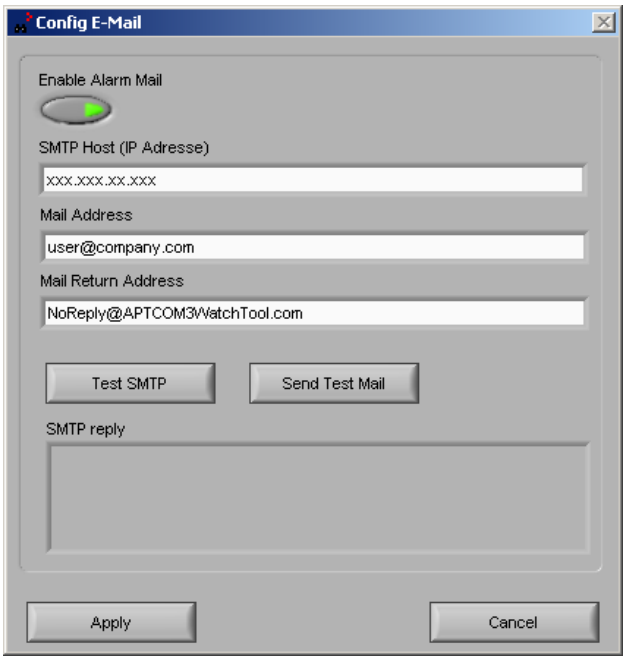
The button "**Alarmbox On/Off Check**" allows manually switching on and off the alarm pilot lamp of the Alarm Box AB 01. This allows simulating the state of alarm for test purpose.

10.2.4 Function "Mail alarm"

Hit button "**Config Mail Alarm**". The window "Config E-Mail" opens up.

The functions in this submenu serve to configure and test the e-mail address. This e-mail address is independent from the e-mail addresses entered in the APT-COM™ 3 measurement configuration (chap. 9.2.1 and 9.2.2). Any SMTP-Server can be entered under "SMTP Host" to send the Watch Tool e-mails.

Enter a valid e-mail address under “Mail Address”.



Test of the server connection.

Hit button “**Test SMTP**”.

A response is displayed under “SMTP reply”.

Test of the e-mail connection

Hit button “**Send Test Mail**”

A response is displayed under “SMTP reply”.

Enable button “**Enable mail alarm”** to activate automatic e-mail sending to the address entered under “Mail address”. The green signal button is lit.

Confirm with “**Apply**”. The window “Config E-Mail” is closed automatically.

The green sign “Alarm Mail Enabled” is lit.

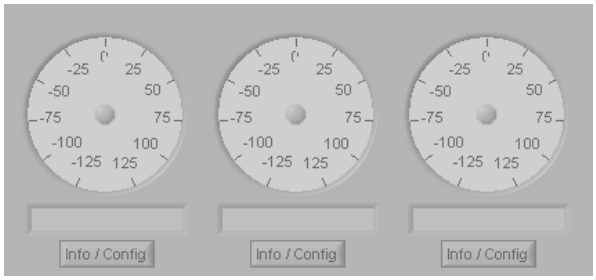
E-mails generated by the Watch Tool can be used to inform e.g., a service technician who will eliminate the alarm cause at the temperature chamber. In case of an alarm (limit alarm or COM failures) an e-mail with more information about the cause of alarm is automatically sent to the entered address.

This is repeated as long as the error lasts. In this case the renewed e-mail sending is done after rundown of the database access interval of the Watch Tool (see chap. 9.3.3) which is the actualization interval of the Watch Tool for this measurement. So the recipient of the e-mail gets information if and how long the alarm state lasts.

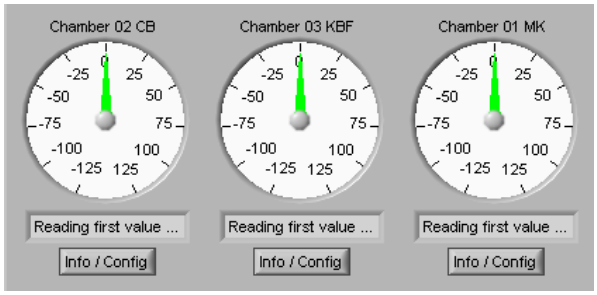
10.3 Display menu “Overview”

As soon as at least one measurement is started at APT-COM™ 3, Watch Tool is actualized by the initialization of this measurement. Next to the menu “Options” the display menu “Overview” opens. This is on condition that there is a functional connection between APT-COM™ 3 and the Watch Tool that has been activated by “Watch enable” (cap. 8.11).

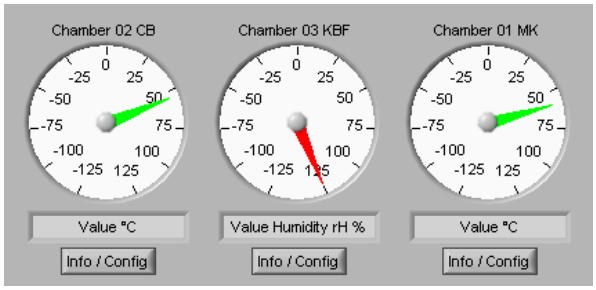
In the overview menu “Overview” all chambers with running measurements are displayed. Up to 40 chambers can be displayed. You can toggle between views “Overview Chamber ...“.



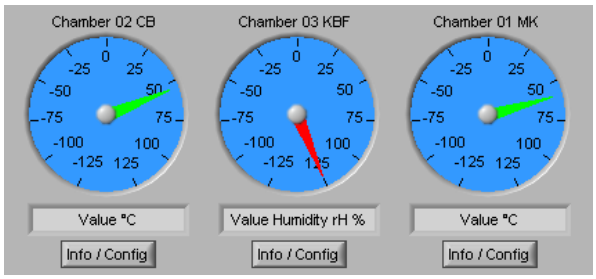
No active measurements



Measurements have just been started, no value read yet



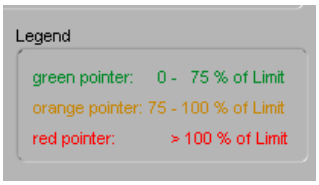
Measurements running, monitoring of measuring values



Waiting for the next measuring value, monitoring interval exceeded

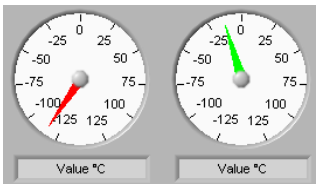
Use the buttons "**Info / Config**" to access detailed information about the individual measurements (chap. 10.3.4).

The round pointer displays indicate (in percent) whether the limits are respected by the monitored parameters. They show that the last values read from the database are located inside the limit range set at APT-COM™ 3.



Formula: Display in % = (actual value – set-point value) / limit x 100

In case of more than one monitored parameter e.g., temperature, humidity, CO_2...) the parameter is indicated that is most far from limit respect. The pointer color (legend displayed in the menu "Options") bears additional information about the degree of deviation)



Red: Deviation of the actual value from the set-point value is more than 100% of the set limit for this parameter in this measurement: limit overrun or underrun. In this case, following rundown of the alarm delay time (chap. 10.3.4) Limit Alarm is triggered. Deviations of more than 125% cannot be represented.

Orange: Deviation of the actual value from the set-point value between 75% and 100% of the set limit for this parameter in this measurement.

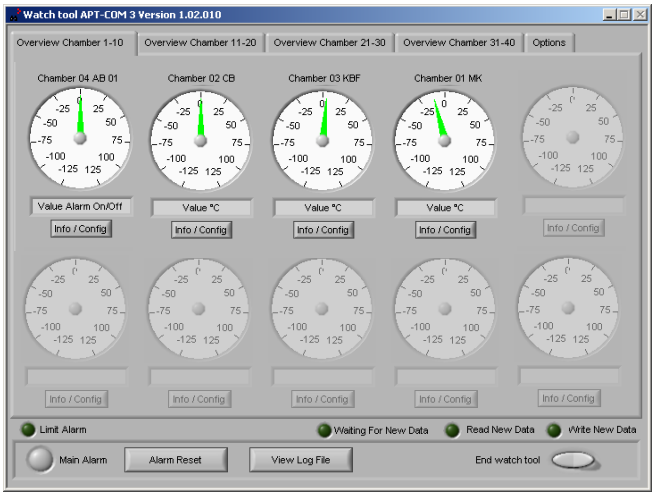
Green: Deviation of the actual value from the set-point value up to 75% of the set limit for this parameter in this measurement.

Limit Alarm is displayed beginning with a deviation of more than 100% from the set limit minimum and following rundown of the alarm delay time (chap. 10.3.4).

10.3.1 Display of undisturbed operation

The signs "Main Alarm" and "Limit Alarm" do not indicate any alarm message.

The green pointers indicate whether the limits are respected by the monitored parameters They show that the last values read from the database are located inside the limit range set at APT-COM™ 3.

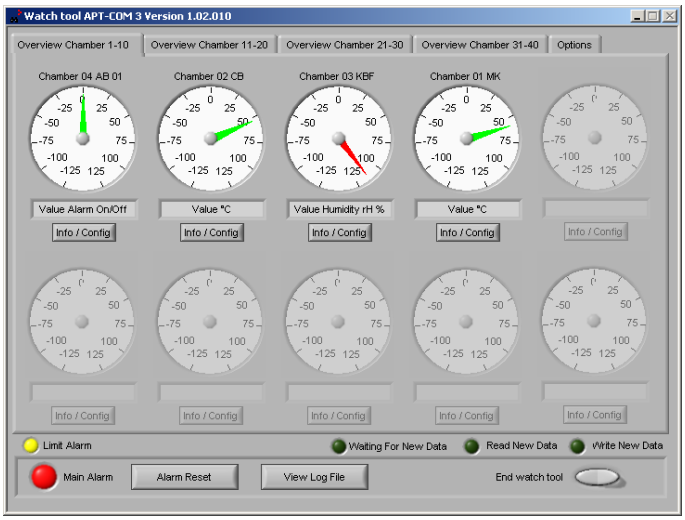


10.3.2 Display of exceeding the limit set at APT-COM™ 3

The **red collective alarm sign "Alarm"** indicates that at least at one of the chambers an error has occurred.

The **yellow sign "Limit alarm"** indicates that limit overrun or underrun at least at one of the chambers has occurred. This is therefore more detailed information in addition to the collective red alarm sign.

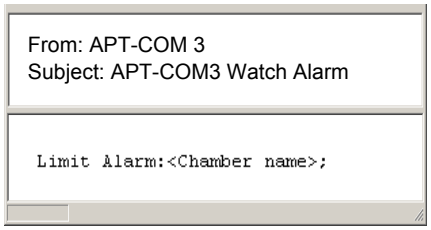
The **red pointer color** of chamber "Chamber 03 KBF" indicates that the limit of the indicated parameter– here "Value Humidity rH %", i.e., humidity – is exceeded by more than 100%.



! An alarm only takes place if in the Watch Tool menu „Options" under „Alarm Options" the according button for Limit alarm has been activated (chap. 10.2.2).

For more detailed information about the limit exceeding, select button "**Info / Config**" below the corresponding display to access the chamber information window (chap. 10.3.4).

If the limit alarm option and e-mail messaging have been activated, in case of a limit alarm a message is sent to the entered address (e.g., a technician's). The message contains information at which of the chambers the error occurred.

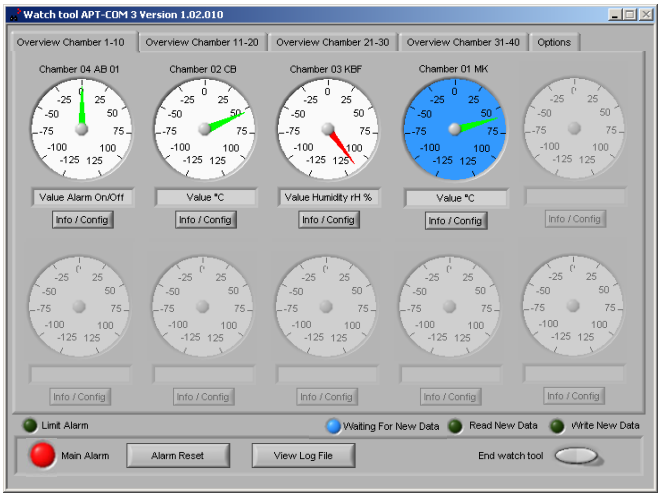


10.3.3 Indications at communication errors

The **red collective alarm sign "Alarm"** indicates that at least at one of the chambers an error has occurred.

The **blue sign "Waiting For New Data"** indicates that a communication error at least at one of the chambers has occurred. This is therefore more detailed information in addition to the collective red alarm sign.

The **round display** of the according chamber is colored in blue, indicating that Watch Tool is waiting for the next measuring value and that the monitoring interval set in the measurement window has been exceeded.

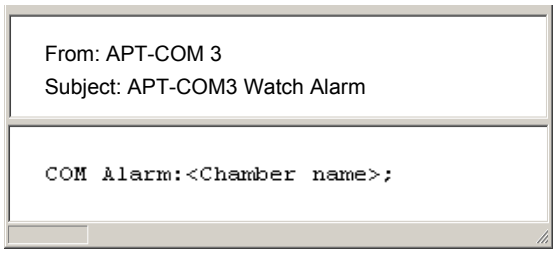


For more detailed information about the limit exceeding check the APT-COM™ 3 configuration menu "Trace" (chap. 8.9). If recent data are not available, this indicates an error concerning the COM port connection on condition that the period of missing data is about 4 times as long as the measuring interval of the corresponding measurement. It is recommended to check the chambers and the connections directly at their location.

! An alarm only takes place if in the Watch Tool menu „Options“ under „Alarm Options“ the according button for „COM failures“ has been activated (chap. 10.2.2).

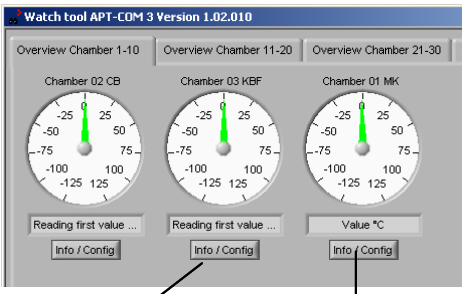
If the “COM failures“ option and e-mail messaging have been activated, in case of COM failures a message is sent to the entered address (e.g., a technician’s). The message contains information at which of the chambers the error occurred.

(from version 3.02.020 on: “COM failures Alarm”)

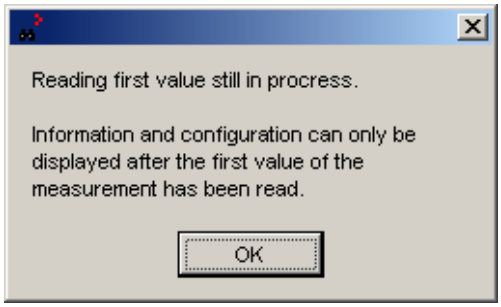


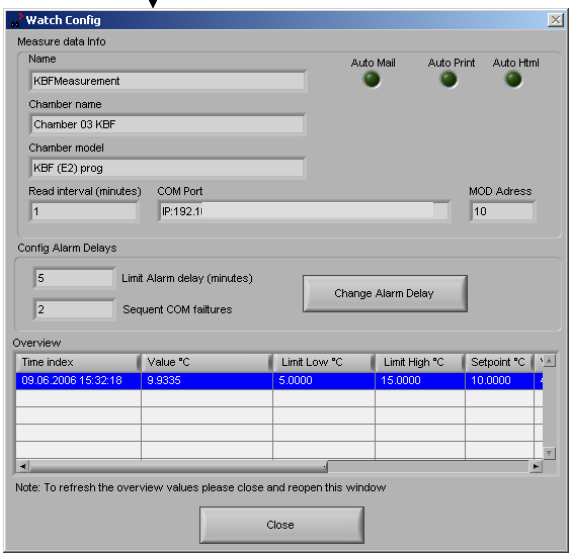
10.3.4 Chamber information window “Watch Config”: displays and alarm delay setting

Hit button “**Info / Config**” below the chamber display to access the window “Watch Config” displaying information about the corresponding measurement and that offers to enter a special “Alarm Delay” time for this measurement.



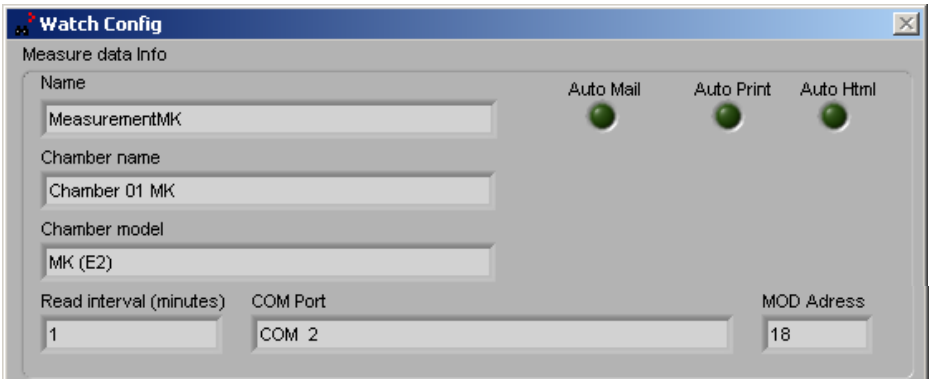
As long as no data have been read by the Watch Tool, an according notification is displayed:





10.3.4.1 Information about the measurement

In the submenu “Measure data info” the measurement name, chamber name, chamber type and COM Port or IP address and Modbus address are displayed.

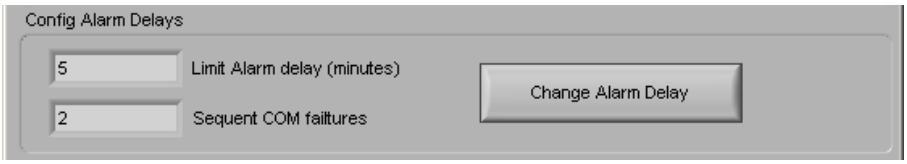


"Read interval" indicates the current read interval set at APT-COM™ 3 (chap. 9.3.3).

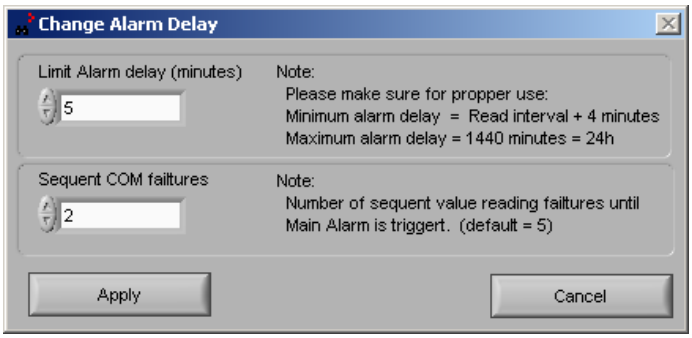
Under "COM Port" either the COM port used of the measuring computer or when connection is established via the Ethernet, the IP, and MAC addresses are displayed.

10.3.4.2 Alarm Delay

In the submenu "Config Alarm Delays", the individual alarm delays for limit alarm and COM failures of each measurement are displayed.



Select button "**Change Alarm Delay**" to access a window, in which the alarm delays can be modified.



Alarm Delay means the alarm is delayed by the selected value. In case of limit alarm, this means a delay by the selected time in minutes. In case of communication error (COM failures), this means how many times the read interval set in the measurement window of the according measurement may be exceeded before the alarm is triggered. Purpose of this function is that after a one-time error or an error of only short duration the alarm (alarm signs, e-mail sending, Alarm Box AB 01) is not immediately triggered but that the systems waits for one or more further measuring values. Only if the error lasts for the whole selected period, the alarm is triggered.

> **! An alarm only takes place if in the Watch Tool menu „Options" under „Alarm Options" the according button for Limit alarm and/or „COM failures" has been activated (chap. 10.2.2).**

In the window "Change Alarm Delay" the desired **delay time until an alarm is triggered** is entered, calculated since the moment of error (interruption or error of data communication for "COM failures" alarm or exceeding the tolerance limits for "Limit-Alarm").

The entered delay time for limit alarm must exceed the database actualization interval set at the APT-COM™ 3 that is displayed in the submenu "Measure data info" under "Read interval" by at least 4 min. If a shorter value is entered, it is automatically corrected accordingly. The shortest "Read interval" that can be defined at APT-COM™ 3 is 1 min, so the shortest alarm delay time that can be entered is 5 min. The maximum delay time that can be entered is 24 hours.

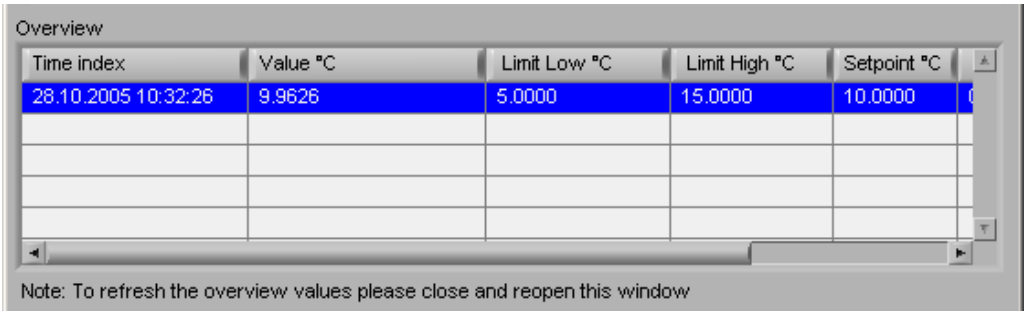
The value entered under "Alarm delay" in the chamber information window is saved by APT-COM™ 3 as part of the measurement in the measuring database (file "measure.mdb"). If the Watch Tool is started again, the previously entered alarm delay value appears for the corresponding measurement because it is now read together with other measurement information. This is the only write access of the Watch Tool to the measurement computer.

If the alarm is reset with "Alarm reset" (chap. 10.4.1) the total alarm delay time begins to run down again.

If any value during this time has been at least once inside the limits, i.e., has there been any moment without an error, only the period after a renewed error occurrence is regarded. So of e.g., a measuring value oscillates around the value set as limit value and therefore always manages to lie inside the limits for a moment during the alarm delay time, no alarm will be set-off. It is therefore recommended to enter limit values during the measurement configuration that are not too far from the set-point.

10.3.4.3 Actual measuring values

Under “**Overview**” the last measuring values transmitted from the database of all measurement parameters are displayed.



Close the window by button “**Close**”.

10.4 Lower sign bar of the monitoring window

This bar is visible in both menus “Overview” and “Options”.

10.4.1 Indications of errors and alarms

The sign “**Waiting For New Data**” lighting up indicates that Watch Tool is waiting fort he next measuring value and that the monitoring interval set in the measurement window has been exceeded.

The sign “**Limit alarm**” lighting up indicates that the surveillance tolerance limits set at APT-COM™ 3 (chap. 9.3.2) have been left.

If in the Watch Tool menu „Options“ under „Alarm Options“ the according button for Limit alarm and/or „COM failures“ has been activated, an additional **collective alarm indication** is displayed:

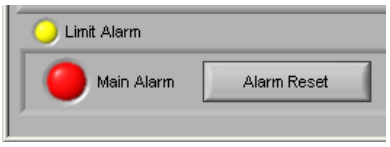
- The red sign “**Main Alarm**” lights up.
- The **Alarm Box AB 01** is addressed.

  Conditions: Alarm Box has been enabled and is connected correctly (see chap. 10.2.3).
- An **e-mail message** is sent to the address indicated in the “Options” menu (chap. 10.2.4).

  Condition: In the “Options” menu “Enable Alarm Mail” is enabled (possible only if a valid e-mail address has been entered under “Mail address” and “Host-IP”).

Reset of the alarm indications

Press “**Alarm reset**” button.



The first pressing resets the cause indication signs “COM failures” or “Limit alarm”, the second pressing, in case of “**Limit alarm**”, resets the red collective alarm sign.

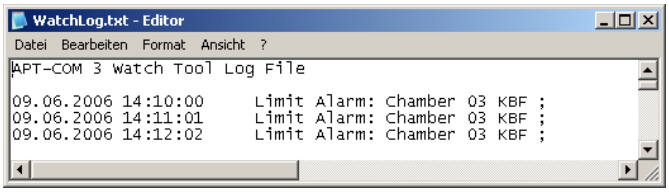
1.

2.

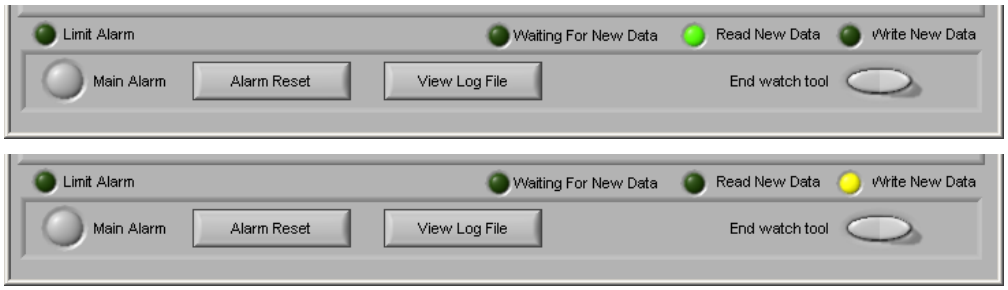
! A condition for alarm reset is that the alarm cause is no more persistent.

10.4.2 Information about alarms that have been triggered

With button “View Log File” file “WatchLog” will open up in a text editor. This file serves to check directly in the Watch Tool if there have been any alarms in the past and which is the concerned chamber.



10.4.3 Indication of data transfer



Lighting up of the green indicator “Read New Data” indicates that the Watch Tool is just receiving data from APT-COM™ 3.

Lighting up of the yellow indicator “Write New Data” indicates that the Watch Tool is just sending data to APT-COM™ 3.

Additional information:

The measuring interval set in APT-COM™ for a measurement is at the same time the actualization interval of Watch Tools regarding the corresponding measurement.

Following data transfer in case of a limit alarm and after rundown of the alarm delay time (chap. 10.3.4) and with e-mail function enabled (chap. 10.2.4) messages are sent to the entered address. This is repeated after each data transfer as long as the error lasts, in case of a “COM failures” alarm each minute.

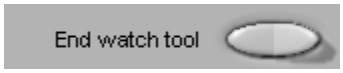
If the alarm is reset with “Alarm reset” (chap. 10.4.1) the total alarm delay time begins to run down again.

After the entered measuring interval of APT-COM™ 3, i.e., after actualization of the Watch Tool, an e-mail message is again sent because at this moment information is available if the error is still lasting.

10.4.4 Leaving the Watch Tool program

Supervision is ended by switching off button “**Watch Enable**” in the APT-COM™ 3 configuration menu (chap. 8.11).

- When operating the Watch Tool on the same computer on which APT-COM™ 3 is running, the Watch Tool program is closed automatically.
- When operating the Watch Tool on a monitoring computer you need in addition to close the Watch Tool program on the monitoring computer by hitting button “**End watch tool**”.



11. Program Editor

The Program Editor offers the possibility to create, modify, and save programs for temperature chambers with **program controllers**. Programs can be entered easily in graphical mode as well as by entry of numerical values. Programs can be transferred to the chamber controller and loaded from the controller. It is possible to copy or delete individual program sections. Program collections can be created and managed. Programs are saved in easily editable form as text files.

Using the Program Editor it is possible to create, modify, and save programs for temperature chambers with **non-programmable controllers**. The Remote Program (chap. 13) serves to transfer such a program to the chamber controller via APT-COM™ 3.

11.1 Installation of the Program Editor

There are principally two possibilities to install the Program Editor:

- The Program Editor has already been installed during APT-COM™ Data Control System 3 installation. The file “ProgEditor.exe” is located in the selected APT-COM™ 3 directory.
- The module has been downloaded via the Internet during an APT-COM™ 3 Update. After the download, the latest version of the file “ProgEditor.exe” can be found in your APT-COM™ 3 directory.

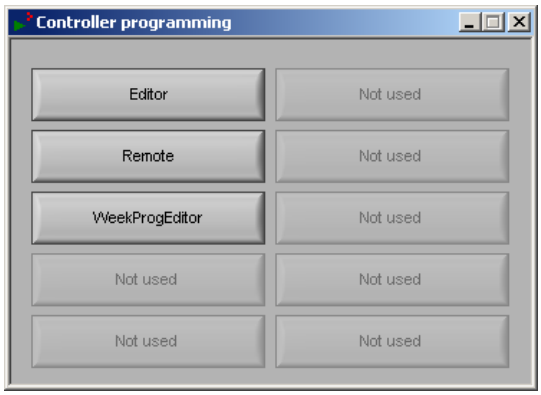
11.2 Starting the Program Editor

- Select file “ProgEditor.exe” in the APT-COM™ 3 folder to start the Program editor. You can create a desktop shortcut for easier access.

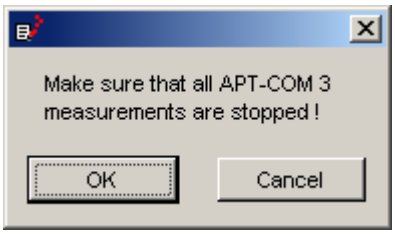
- It is also possible to start the program editor directly from APT-COM™ 3:

  Select button “**Programming**” (chap. 7.1.4) in the window “Center Version 3.02.xxx [edition]” (chap. 7.1)

  The window "Controller programming" opens up. Press button “**Editor**”.



! The Program Editor is functional only if APT-COM™ 3 is not carrying out any measurement.



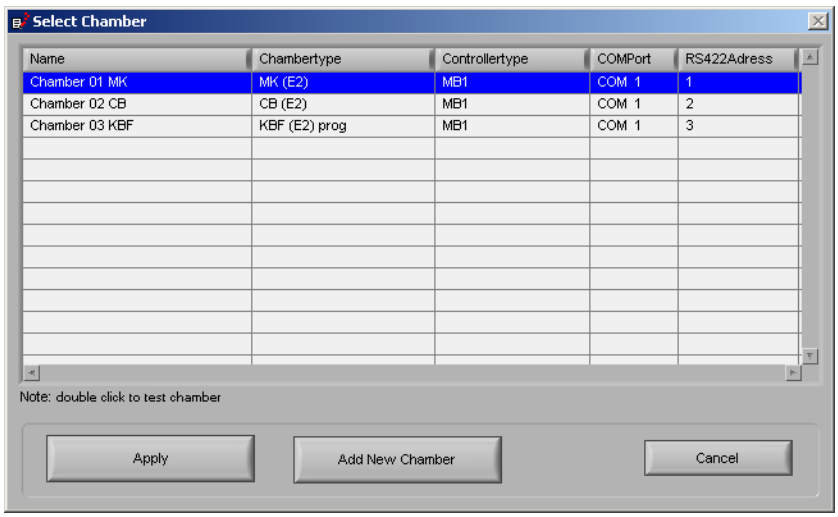
Thus when starting the program the first thing to appear is the information window “Make sure that all APT-COM 3 measurements are stopped !”

Close any running measurement (chap. 9.3.5 or 9.4.4).

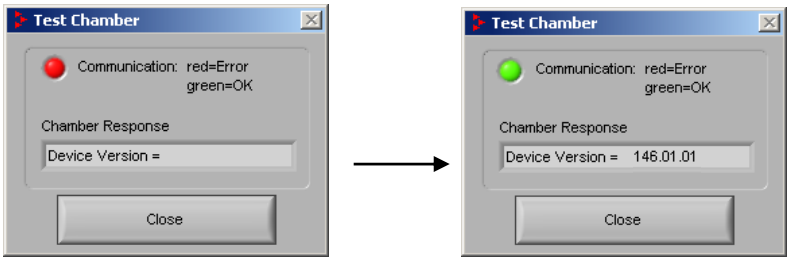
Then hit “**OK**” to select the desired temperature chamber.

11.3 Chamber selection

At first the selection window “Select chamber” appears to select the desired temperature chamber.



You can test the connection between APT-COM™ and the chamber by double click on the corresponding table line.

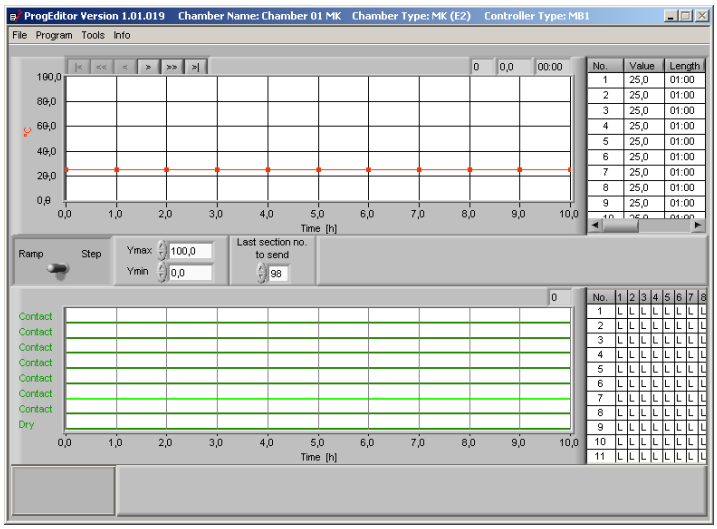


Select with button “**Apply**” the temperature chamber for which the program shall be created. Chambers will figure in the selection list only if they have been configured previously in the configuration menu “Chamber” (chap. 8.4).

In case the chamber has not yet been configured in APT-COM, button **“Add new chamber”** serves as a shortcut to window “Add New Chamber” in the APT-COM™ 3 configuration menu “Chamber”.

If you use the button “Add new chamber” to create further chambers in Basic Edition, you will only see the chamber in APT-COM™ which comes alphabetically first. In this case, delete in the configuration menu “Chamber” any other chambers until the original chamber names appears again. If you like to manage several temperature chambers, you will need APT-COM™ 3 Edition Standard or GLP.

Following the chamber selection the corresponding Program Editor window opens up.



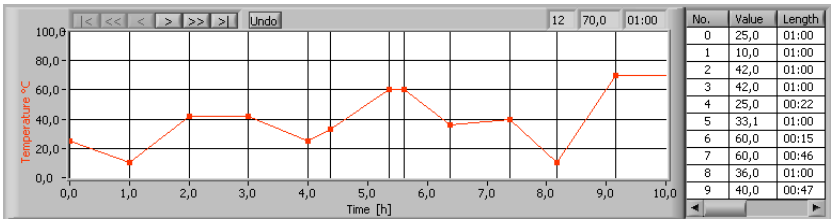
There are several ways to create or open a program in order to edit it in the Program Editor:

- Direct program entry (graphical or numerical) in the Program Editor window (chap. 11.4 and 11.5)
- Loading a program previously saved by the Program Editor (chap. 11.6.3)
- Program import from APT-COM™ 2 (chap. 11.6.4)
- Reading a program entered at the chamber controller (program controllers only, chap. 11.7)

The Program Editor window corresponds to the chamber type that has been selected immediately after program start. If you like to create, open, import or load from the chamber controller a program suitable for a different chamber type, you need to exit the program (chap. 11.11) and select the desired chamber type when starting the program again.

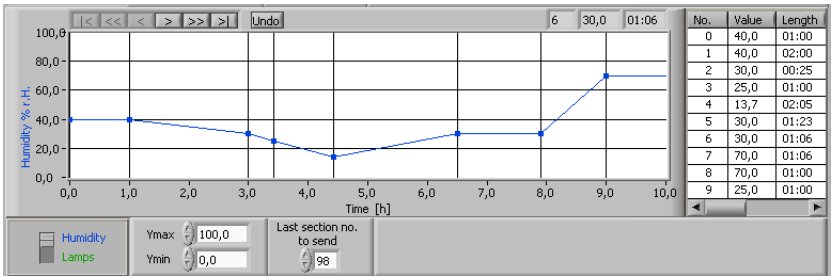
11.3.1 Overview and functions of the Program Editor window

The upper window part represents the parameter **Temperature**.

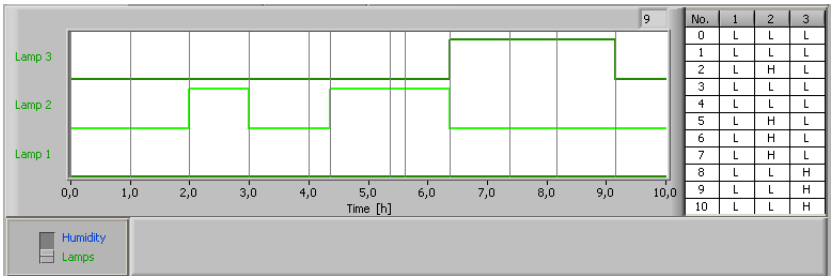


The representation in the lower window part is different according to the selected chamber type:

- Display of further **programmable parameters** (e.g., humidity, CO_2, O_2)



- Display of **Control tracks** (e.g., bedew protection, light…)



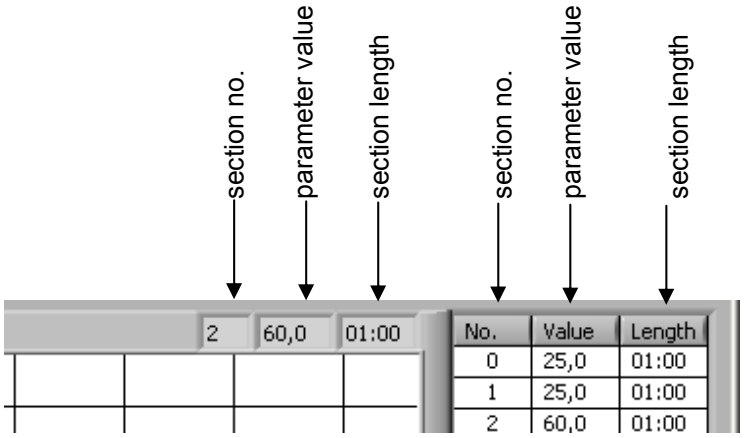
Each parameter is represented in graphical form. At the right side of the graphical display, the corresponding values are listed in a table. The sections of the program selected for graphical display correspond to the program sections displayed in the table.

10 hours can be overlooked in the graphical display, 10 sections in the tabular representation. Move the graphical representation using the scroll buttons.

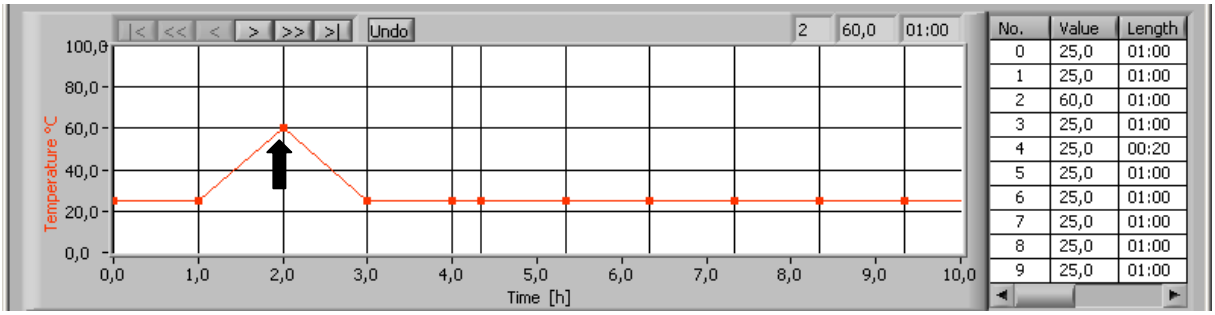
Scroll function: 

>	one section to the right	**<**	one section to the left
>>	10 sections to the right	**<<**	10 sections to the left
>I	to the right to the last program section	**I<**	to the left to the first program section

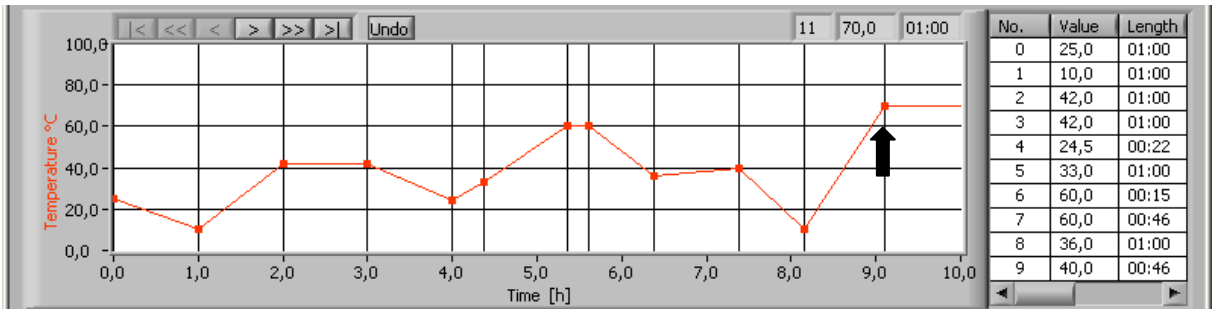
The first section represented graphically is also the first section of the tabular representation. Above the graphic in the right corner data of the section just being edited are displayed. The data are the same as given in the first three table rows of the program section.



Example below:
section No. 2,
temperature value: 60.0 °C,
section length: 1 hour



This display serves to easily inform about the section number of a program section and which are the corresponding values. In the following example the graphical representation shows more sections than the table. The values for section no. 11 just being edited are displayed:



Table

Using the scroll bar at the lower edge of the table, all values that can be entered for one program sections and one parameter can be viewed. Values can be entered graphically using the graphical display (entry of parameter value “Value” and section length “Length”) or numerically using an entry window (chap. 11.4.3), that opens up following double click to the desired table line, allowing to enter values for all elements listed in the table.

No.	Value	Length	min	max	Segment	Repeats
0	25,0	01:00	-999	999	0	0
1	10,0	01:00	-999	999	0	0
2	40,0	00:52	-999	999	0	0
3	40,0	00:59	-999	999	0	0
4	25,0	00:19	-999	999	0	0
5	30,0	00:40	-999	999	0	0
6	60,0	00:24	-999	999	0	0
7	60,0	00:37	-999	999	0	0
8	44,6	00:46	-999	999	0	0
9	35,3	00:56	-999	999	0	0

(hypothetical overall view of table)

Undo function

Hitting button “**Undo**” sets back the last modification. This button appears only following a modification. Only the last step can be set back, thus, the button disappears following its use.

Selection of parameter displayed in the lower part of the Program Editor window

This function is available only for chambers with more than two programmable elements (parameters or control tracks).

By clicking on the switch the display in the lower part of the Program Editor window changes according to the according legend.

11.4 Program entry for temperature and, if appropriate, further parameters

The following steps are demonstrated using a temperature program.

Program entry for other parameters than the temperature (e.g., humidity, CO_2, O_2) is almost equal to the entry of a temperature program. This is true for the points listed below that can be determined for each parameter independently from the temperature program:

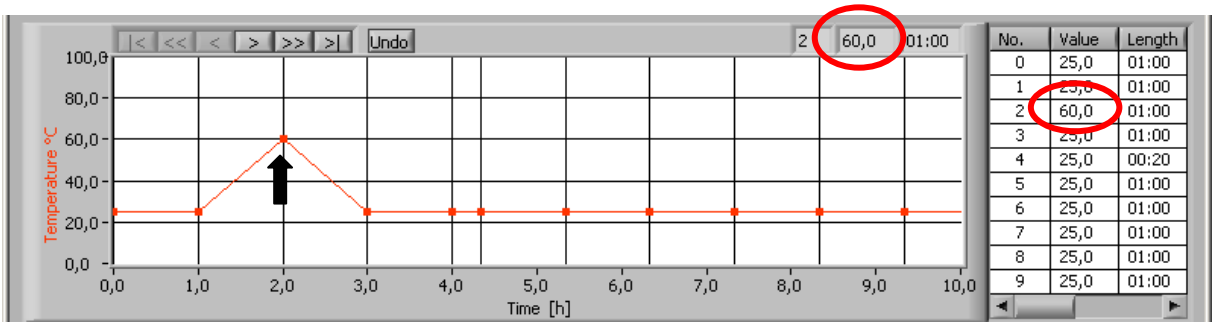
- Graphical value entry (chap. 11.4.1)
- Numerical value entry (chap. 11.4.3)
- Graduation of the graphical representation (chap. 11.4.2)
- Determination of the last program section to be transmitted (chap. 11.4.4)

11.4.1 Graphical value entry

While entering values graphically above at the right of the graphical display data of the section just being edited are displayed. At the same time the data are taken over into the table.

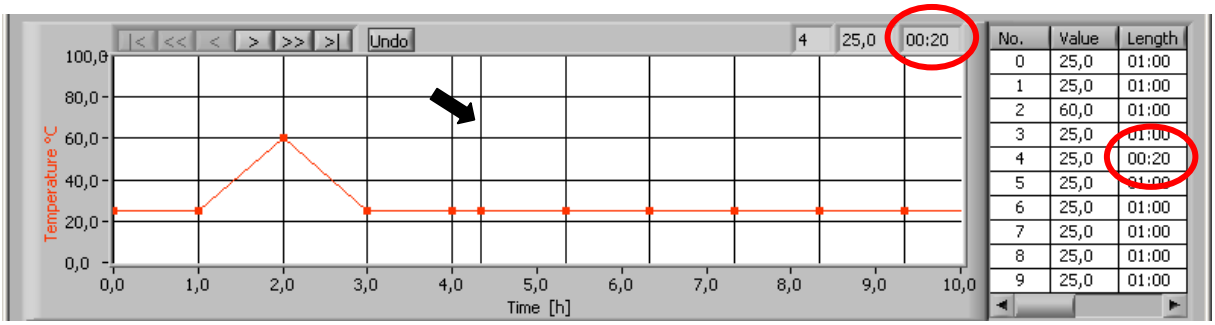
Value entry (“Value”)

Move the knot using the mouse pointer.



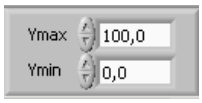
Setting the section length (“Length”)

Move the vertical section line using the mouse pointer.

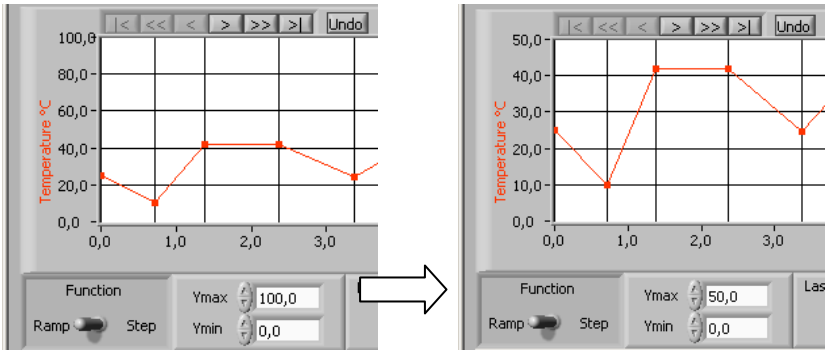


For a precise graphical entry of values pressing the SHIFT key can turn off the mouse function of “clicking into place”. If appropriate, consider changing the graduation of the graphical representation (chap. 11.4.2) according the minimum and maximum values to be entered.

11.4.2 Graduation of the graphical representation



By entries of "**Ymin**" and "**Ymax**" the graduation of the Y-axis can be modified. This makes easier e.g., a precise graphical entry of values (see chap. 11.4.1).

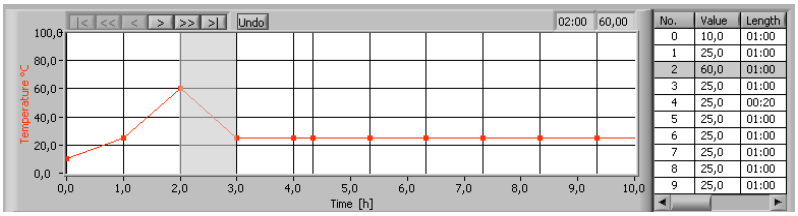


The X-axis graduation cannot be modified; the displayed section comprises always 10 hours.

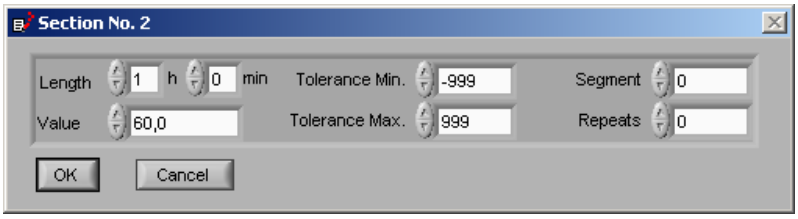
11.4.3 Numerical value entry and section repeats

In order to enter the values of parameters and section length with high precision, it is recommended to use the numerical value entry. Also, in this mode further settings concerning the program section can be entered, as tolerance minimum and maximum or information about program section repeat.

For numerical value entry a double click on the according table line opens up the entry window. In the graphical representation and in the table the selected program section is shaded.

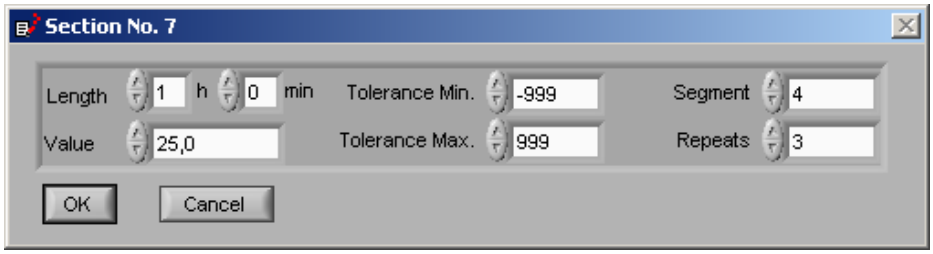


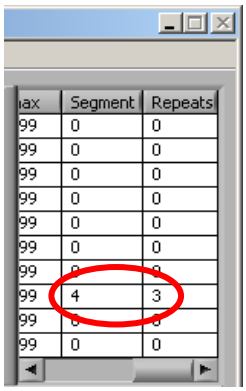
In the entry window values for section length ("**Length**"), parameter value ("**Value**"), and tolerance limits for the selected section ("**Tolerance Min.**", "**Tolerance max.**") can be entered.



You can also specify which program sections shall be repeated and how often this shall be done. Enter the section number of the first section to be repeated under "**Segment**" and enter the desired number of repeats under "**Repeats**".

In the following example sections 4 ("Segment") to 7 (section selected under "Section No.") shall be repeated 3 times ("Repeats") altogether.





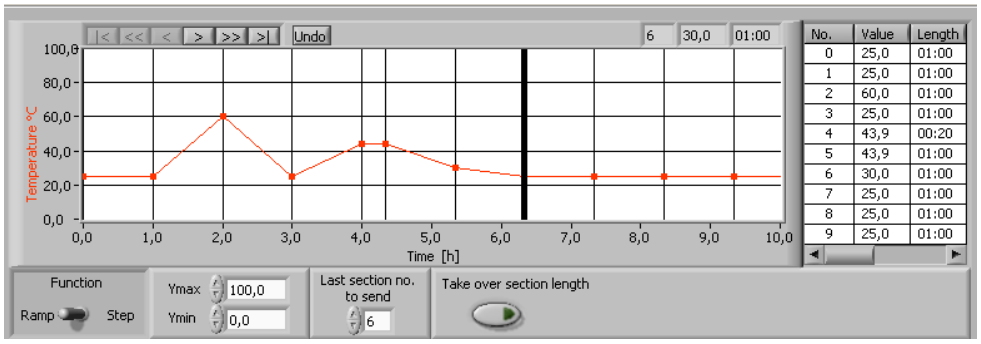
This can also be seen in the table following the entry and its confirmation with "**OK**".

11.4.4 Determining the last program section

> **! This function determines the last functional program section.**

This function is important concerning program transfer to the chamber controller (chap. 11.7) and attachment of another program (chap. 11.9). The default setting is the last possible program section.

The end of the program to be transmitted is represented by a black line according to the section indicated under “Last section no. to send”:



If “Last section no. to send” is set to e.g., 6, all set-points and section length values are transmitted up to the 6th section. Also the set-point value of the 7th section is then transmitted while its length is automatically set to the shortest possible duration (1 min or 1 sec depending on the controller type).

11.4.5 Applying the time structure to other parameters

This function is available only with chambers that can control more than one parameter

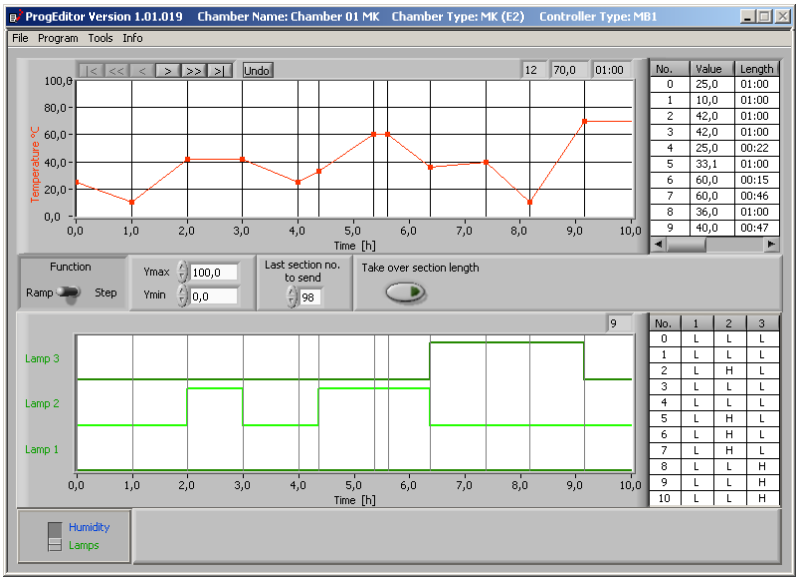
By hitting button “**Take over section length**” the section lengths that have been programmed for the temperature program will be applied to all other parameters.

> **! The time structure can be taken over only from the temperature program to other parameters, not vice versa.**

> **! Time structure takeover cannot be annulated! If previously individual section lengths have been programmed for the parameters shown in the lower part of the Program Editor window, they will be lost when hitting button** “Take over section length”.

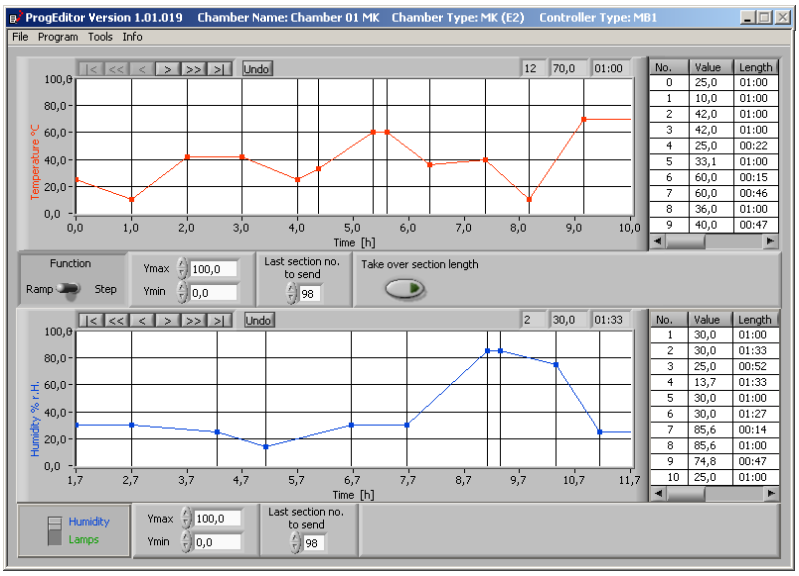
The time structure of the sections of the upper parameter (temperature) is also valid for the control tracks (if any, according to the chamber type).

The sections displayed here are always the same as displayed in the upper part. Thus, the vertical lines (section length) cannot be moved and there are no scroll buttons.



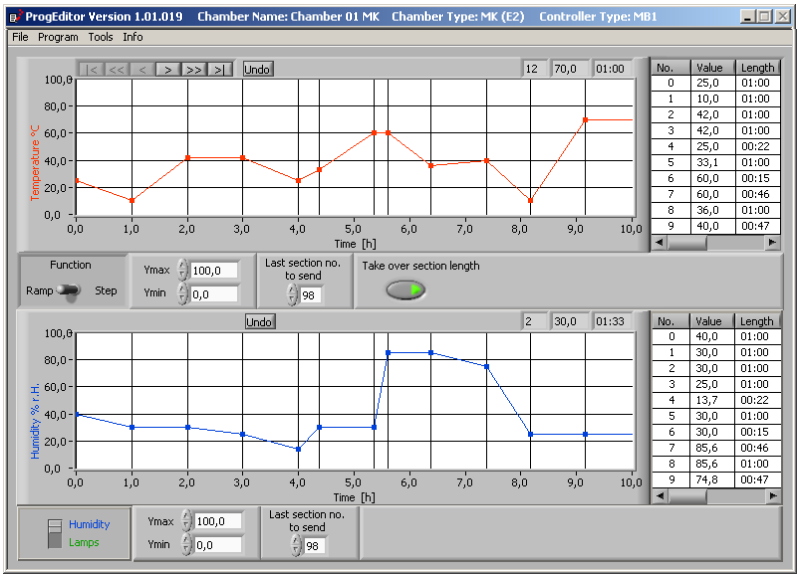
The time structure of the sections of other programmable parameters (e.g., humidity, CO_2), shown in the lower window part, is independent. Individual section lengths can be entered, and a different part of the program can be selected by the scroll buttons.

(Button “Take over section length” is inactive.)

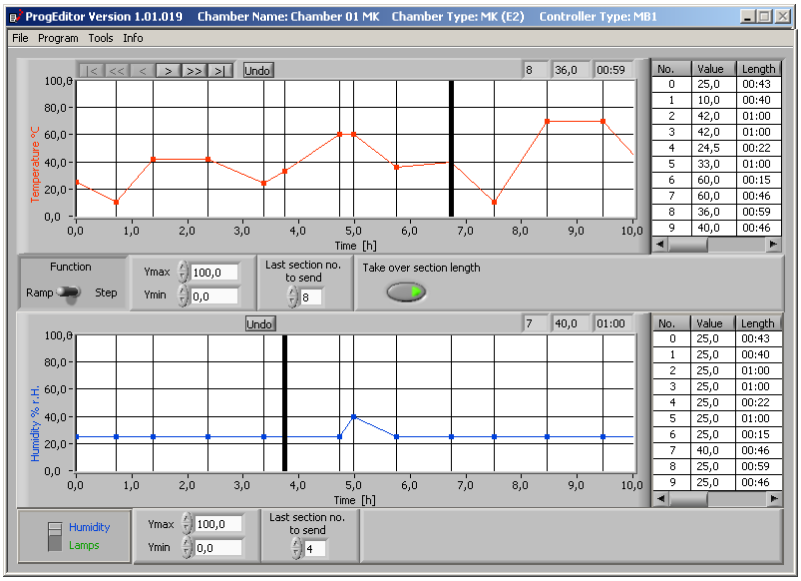


If the button “**Take over section length**” is activated the time structure of the upper window part (temperature program) is taken over for the other programmable parameters.

Now the sections displayed here are the same as displayed in the upper part. Thus, the vertical lines (section length) cannot be moved and there are no more scroll buttons.



Even if the button “Take over section length” is activated, the last program section to be transferred can be determined individually for each programmed parameter.

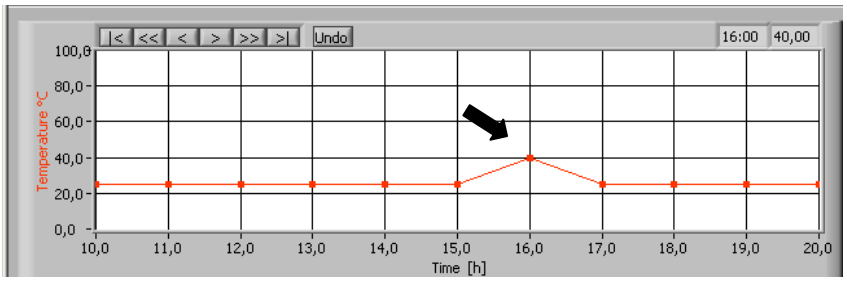


With the RD3 controller (see chap. 11.4.7) the button “Take over section length” is missing because the section length structure is automatically valid for all parameters and cannot be assigned individually.

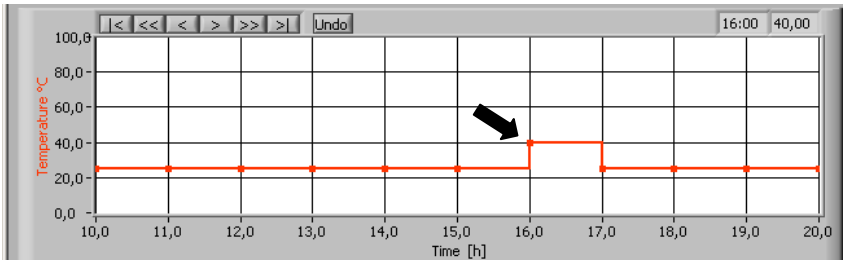
11.4.6 Selection set-point ramp or set-point step

The selection set-point ramp (pre-selected) or set-point step will affect all parameters together.

Selection set-point ramp



Selection set-point step

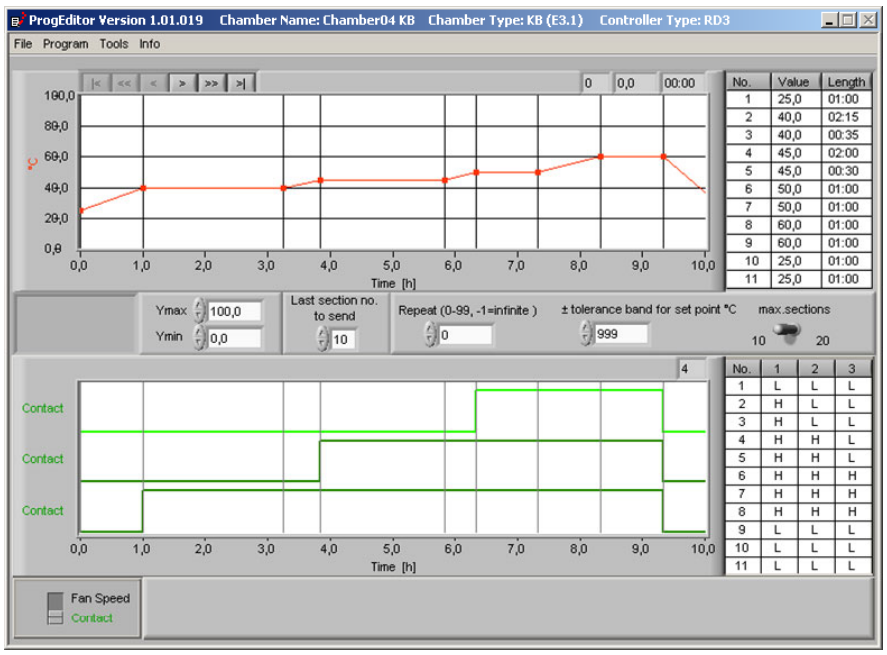


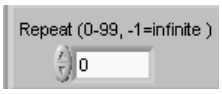
Attention: The controller setting of chambers with MB1 program controller is “set-point ramp”. This setting cannot be changed at the chamber controller, but only via APT-COM™ 3. A modification of this setting affects all programs stored in the controller. With the standard setting “set-point ramp”, set-point steps are programmed using additional program sections, as set-point ramps of a very short duration (see operating manual of the corresponding chamber). If programs with set-point ramps or with both ramps and steps are used, the setting “set-point ramp” must not be changed.

> **! Select the setting set-point step ONLY if only programs with set-point step will be run at the corresponding chamber.**

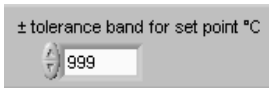
For units with an RD3 program controller the controller setting is invariably “set-point ramp”. Set-point steps are programmed using additional program sections, as set-point ramps of a very short duration (see operating manual of the corresponding chamber).

11.4.7 Special features with the RD3 controller





Under “**Repeat (0-99, -1=infinite)**” the number of desired program repeats can be entered. Repeating always means the entire program, while it is not possible to repeat individual program sections.



The tolerance band affects all temperature set-points of the program in common and thus is not entered in the individual section window but in the Program Editor-window under “**± tolerance band for setpoint °C**”.

The selection of one program with 20 sections max or of two programs with 10 sections max. each can be made under “**max. sections**”.

In the window of numerical entry for one program section that opens up when clicking on the according table line, only the values of section length (“**Length**”) and the parameter set-point (“**Value**”) can be entered.

For the section length structure is automatically valid for all parameters and cannot be assigned individually, the button “Take over section length” is missing (chap. 11.4.5).

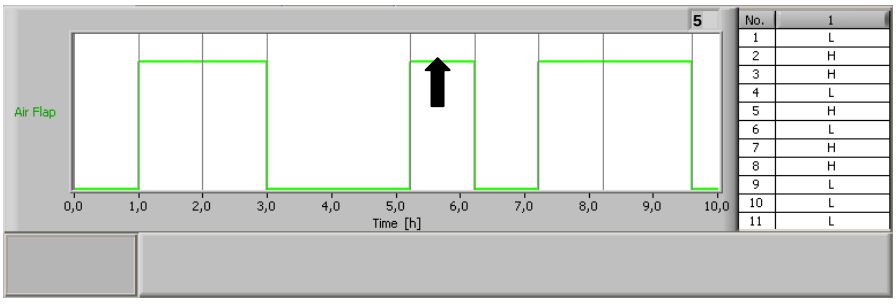
11.5 Program entry for control tracks

The time structure of the sections of the temperature program displayed in the upper part of the Program Editor window is also valid for control tracks, if any. These are represented in the lower part of the Program Editor window. The sections displayed are always the same as displayed in the upper part. Thus, the vertical lines (section length) cannot be moved and there are no scroll buttons.

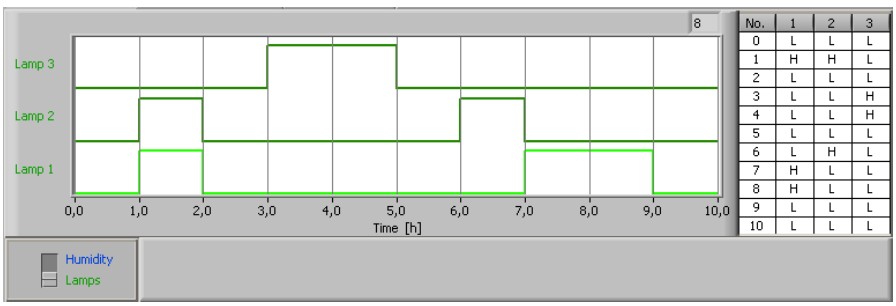
11.5.1 Graphical editing of the control tracks

The switching state of a selected control track can be determined by clicking at the green lie in the desired section. The line will be displayed high (**H = High, On**) when the control track is switched on, and is displayed low (**L = Low, Off**) when the control track is not switched.

While editing a section, above at the right of the graphical display data of this section are displayed. At the same time the switching state is taken over into the table.



If several control tracks are used they are together displayed in the lower window part. Each individual control track is indicated by its own legend. The control track currently being edited is highlighted by light green color.

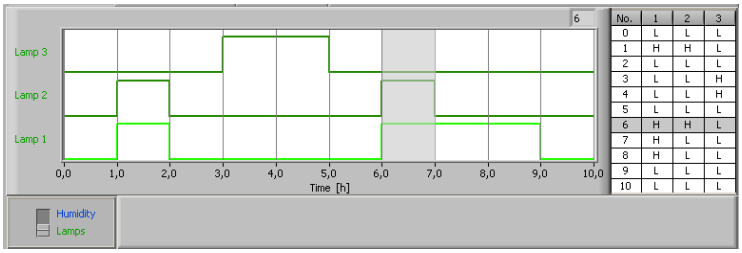


11.5.2 Manual editing of the control tracks

If many control tracks are used it might be better to edit the switching states using the manual entry mode, offering a better overview.

Double click on the desired table line opens up the entry window “Section No. x”.

In the graphical display and in the table the selected section is shaded.



In the entry window “Section No. x” the control tracks of the selected program section can be switched on or off individually. The switching state can be recognized by lighting up of the button corresponding to the control track.

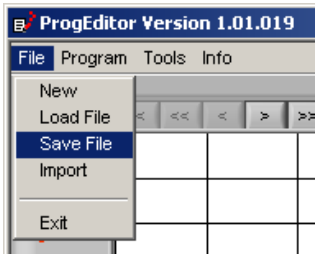
After confirmation with “**OK**” the switching state is taken over to the graphical display and to the table.

11.6 File management

The functions that can be found in the “File” menu allow to save a program, to open a new Program Editor window to create a new program, to open a previously saved program and to import programs that have been created using APT-COM™ 2.

11.6.1 Saving a program

With **File / Save File** a program that has been created or modified can be saved.



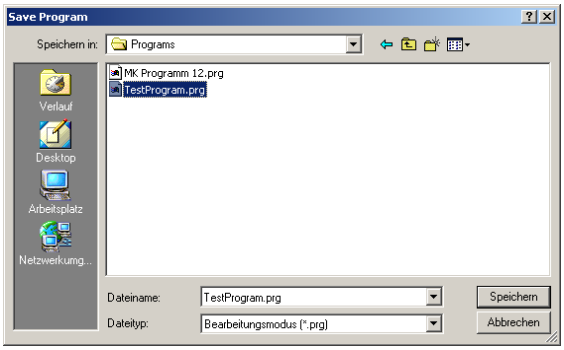
The window “Save Program” opens up offering to save the program in the “Programs” folder in the APT-COM™ 3 directory. You can also choose any other location.

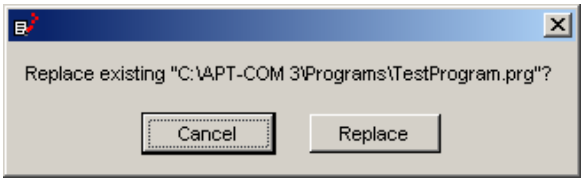
Enter the name under which the program shall be saved and hit “**Save**”.

If there is already a program bearing the same file name, a security request will ask you how to proceed (see sample figure).

If you select “**Replace**” the already existing file will be overwritten.

Having selected “**Cancel**” you can then again call up the saving function and choose another file name for the program.

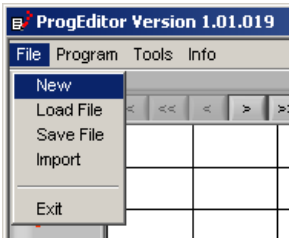




11.6.2 Creating a new program

Under **File / New** a new program for temperature and – according to the selected chamber type – for other parameters can be created.

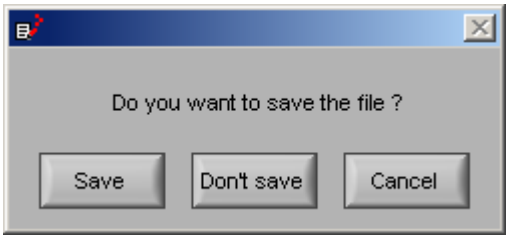
If previously a program has been opened and modified without having saved it, at first an inquiry window appears asking "Do you want to save the file ?"



With "**Save**" you can save the actual program. After this you can again call up the function "New".

When hitting "**Don't save**" the new Program Editor window will be opened. Modifications in the actual program that have not been saved will be lost.

With "**Cancel**" you return to the actual program



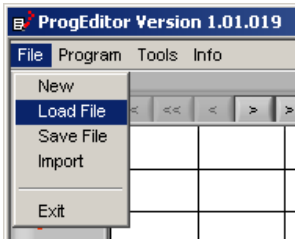
If you have saved or abandoned any modifications, or if there haven't been any, the new Program Editor window opens up. You can now start to enter the program.

> **! Each new Program Editor window corresponds to the chamber type that has been selected directly after program start. If you want to work on a program for a different chamber type, you need to quit the program (chap. 11.11) and then restart it, selecting the appropriate chamber type (chap. 11.3).**

11.6.3 Loading a program

Under **File / Load File** a previously saved program can be opened.

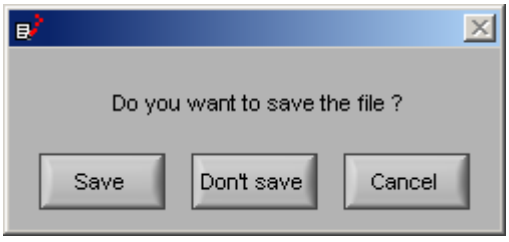
If previously a program has been opened and modified without having saved it, at first an inquiry window appears asking "Do you want to save the file ?"



With "**Save**" you can save the actual program. After this you can again call up the function "Load File".

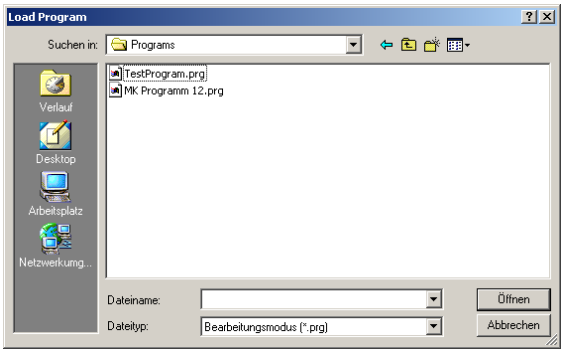
When hitting "**Don't save**" the window "Load Program" will be opened. Modifications in the actual program that have not been saved will be lost.

With "**Cancel**" you return to the actual program.



If you have saved or abandoned any modifications, or if there haven't been any, the window "Load Program" opens up. It offers to load the program from the "Programs" folder in the APT-COM™ 3 directory. You can also choose any other source directory.

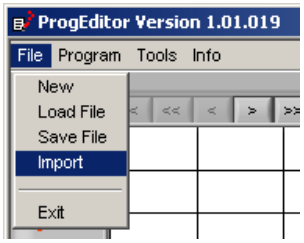
Select the program to be loaded and hit "**Open**" The selected program will be attached to your actual Program right after the section that was selected as "Last section no. to send".



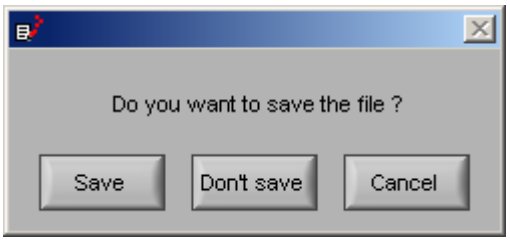
! Each new Program Editor window corresponds to the chamber type that has been selected directly after program start. If you want to work on a program for a different chamber type, you need to quit the program (chap. 11.11) and then restart it, selecting the appropriate chamber type (chap. 11.3).

11.6.4 Program import from APT-COM™ 2

Under **File / Import** you can open a program that has been saved using APT-COM™ 2.



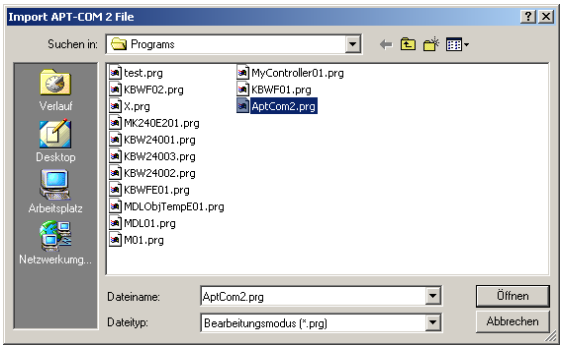
If previously a program has been opened and modified without having saved it, at first an inquiry window appears asking "Do you want to save the file ?"



With "**Save**" you can save the actual program. After this you can again call up the function "Import".

When hitting "**Don't save**" the window "Import APT-COM 2 File" will be opened. Modifications in the actual program that have not been saved will be lost.

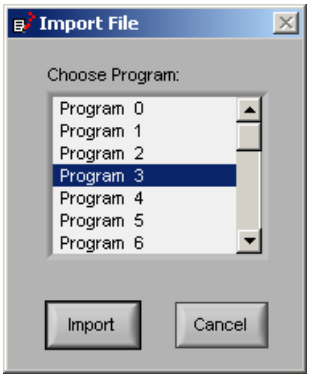
With "**Cancel**" you return to the actual program.



If you have saved or abandoned any modifications, or if there haven't been any, the window "Import APT-COM 2 File" opens up. It offers to import the program from the "Programs" folder in the APT-COM™ 3 directory. Select the appropriate source directory

Select the program to be opened and hit "**Open**".

If the selected program is not an APT-COM™ 2 program, an error message appears.



If an APT-COM™ 2 program has been selected, the selection window "Import File" opens up. You can select the program to be imported.

After hitting "**Import**" the selected program is taken over to the Program Editor.

Note: Programs created with APT-COM™ 2 do not contain any information about the chamber type. They always contain 2 time programs and 3 control tracks.

11.7 Communication with the chamber controller (program controllers only)

The Program Editor can only communicate with the temperature chamber selected during program start. If you want to work on a program for a different chamber type, you need to quit the program (chap. 11.11) and then restart it, selecting the appropriate chamber type (chap. 11.3).

Chambers with a non-programmable controller:

If a chamber with a non-programmable controller has been selected the menu “Program” described in this chapter is missing. In this case the created or modified program is saved and the Program Editor is quit. To transfer the program to the chamber controller use the “Remote Program” (chap. 13).

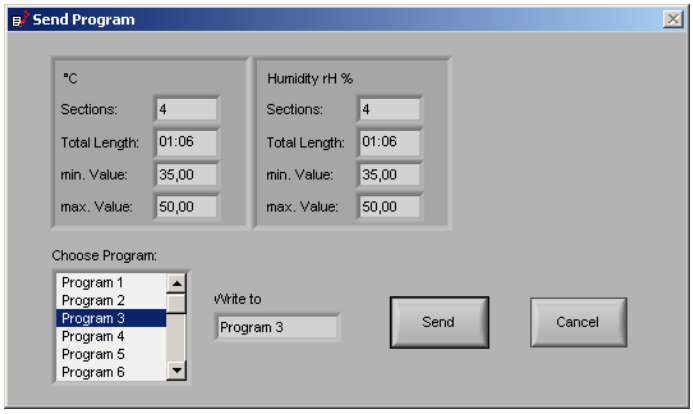
Chambers with controller PD2 (DICON 1001):

Set the operating mode of the controller PD2 (DICON 1001) to Idle mode (“GRUNDSTELLUNG”) or Fixed value operation (“MANUAL MODE”) before transmitting a program to the controller or reading out a program from the chamber controller.

11.7.1 Function “Send program”

Under **Program / Send Program** you can select a temperature program and – according to the selected chamber type – programs for other parameters.

Having selected “**Send Program**”, a control and selection window opens up. Select the program to be sent to the chamber controller.



Under “°C” and, according to the selected chamber type, other parameters, the following characteristics of the actual program are shown:

“**Sections**” Total of program sections until the section selected under “Last section no. to send” (chap. 11.4.4), i.e., the number of sections that are to be transferred to the chamber controller.

“**Total Length**” Total length of the program to be transferred, i.e., of the sections that shall be transferred to the chamber controller.

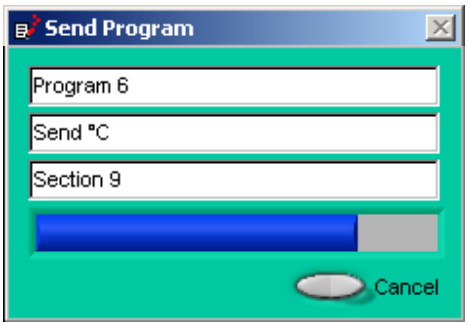
“**min. Value**” Smallest value of the indicated parameter

“**max. Value**” Largest value of the indicated parameter

Under “**Choose Program**” you can select to which program place of the controller the current program shall be sent. The selected program place is shown under “Write to”.

You can now either stop the procedure by hitting “**Cancel**” which will close the window without any data having been transferred, or you can start the transfer with “**Send**”. In this case the program will be transferred section by section and for all parameters to the chamber controller.

The information window “Send Program” gives information about the proceeding of the process, showing various state reports. If the complete program has been transferred the window is closed.



(sample figure)

! If the transfer process is interrupted by hitting the “Cancel” button in the information window, it must be assumed that so far only some of the program sections have been transferred.

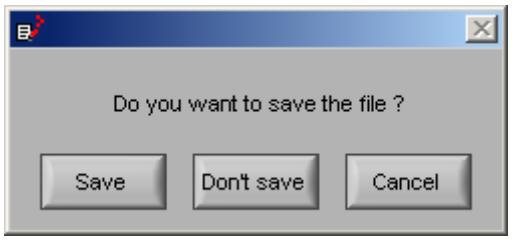
In case of a connection error between the computer and the temperature chamber the notification window “COM-Port ERROR !” opens up, and the transfer is cancelled.

Check the connections and start the function again.

11.7.2 Function “Get program”

Using **Program / Get Program** you can read out a program from the chamber controller.

If previously a program has been opened and modified without having saved it, at first an inquiry window appears asking "Do you want to save the file ?"



With “**Save**” you can save the actual program. After this you can again call up the function “Get Program”.

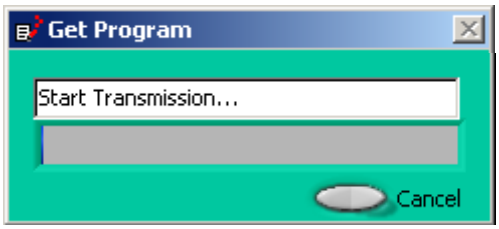
When hitting “**Don’t save**” the window “Get Program” will be opened. Modifications in the actual program that have not been saved will be lost.

With “**Cancel**” you return to the actual program.

If you have saved or abandoned any modifications, or if there haven’t been any, the window “Get Program” opens up offering to select the controller program.

You can now either stop the procedure by hitting “**Cancel**” which will close the window without any data having been transferred, or you can start the transfer with “**Get**”. In this case the program will be transferred section by section and for all parameters from the chamber controller to the Program Editor.

The information window “Get Program” gives information about the proceeding of the process, showing various state reports. If the complete program has been transferred the window is closed.

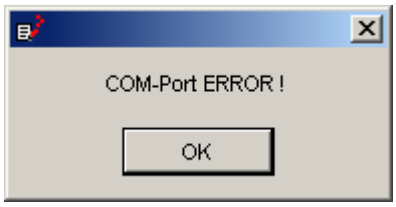


(sample figure)

! If the transfer process is interrupted by hitting the “Cancel” button in the information window, it must be assumed that so far only some of the program sections have been transferred.

In case of a connection error between the computer and the temperature chamber the notification window “COM-Port ERROR !” opens up, and the transfer is cancelled.

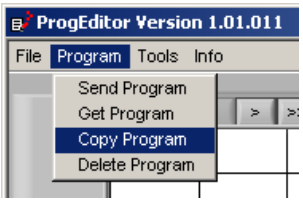
Check the connections and start the function again.



11.7.3 Function “Copy Program” – PD2 controllers only

This function allows copying individual programs of the PD2 controller from one program place to another. This does not affect the program currently opened in the Program Editor

Under **Program / Copy Program** you can call up programs for temperature and – according to the selected chamber type – for other parameters in the chamber controller.



PD2 controller

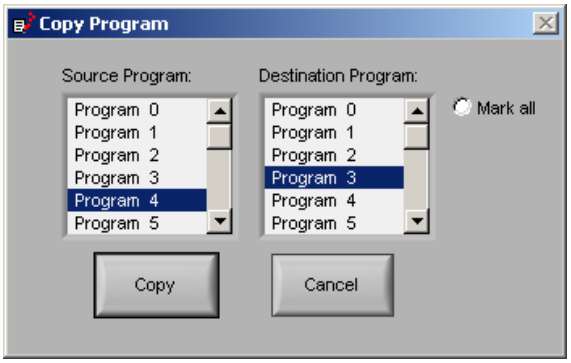
Other program controllers

If “**Copy Program**” is selected, the selection window “Copy Program” opens up.

Under “**Source Program**” the programs of the chamber controller can be selected that shall be copied to a different program place.

Under “**Destination Program**” the target program place of the chamber controller is selected.

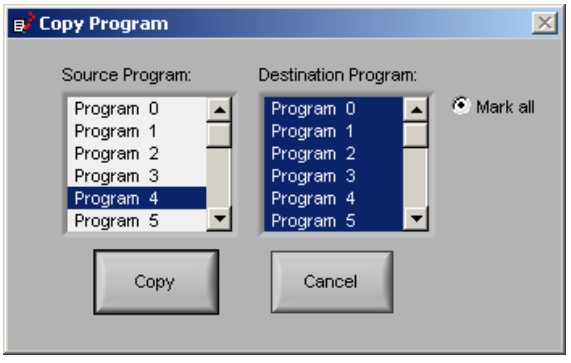
In the example program 2 shall also be copied to program place 3 of the chamber controller.



If “**Mark all**” is selected, the program selected under “Source program” will be copied to all program places of the chamber controller.

If “**Cancel**” is selected, the process will be cancelled. The window is closed without any programs having been copied.

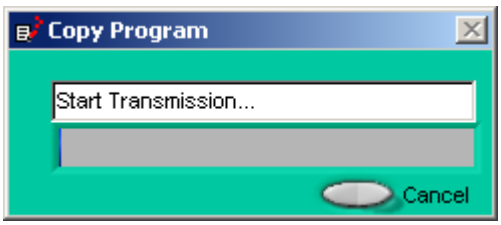
If you want to copy the programs, hit button “**Copy**”. A security query follows, because it is possible that previously existing programs in the chamber controller might be overwritten.



Confirm by hitting “**Yes**”.

The information window “Copy Program” gives information about the proceeding of the copying process, showing various state reports. If the process is completed, the window is closed.

(sample figure)



! If the transfer process is interrupted by hitting the “Cancel” button in the information window, it must be assumed that so far only some of the program sections have been copied.

In case of a connection error between the computer and the temperature chamber the notification window “COM-Port ERROR !” opens up, and the transfer is cancelled.

Check the connections and start the function again.

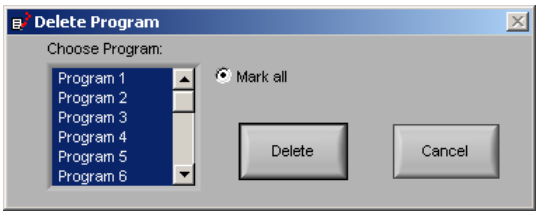
11.8 Deleting a program

This function allows deleting individual programs in the chamber controller. This will not affect the program currently opened in the Program Editor.

Select **Program / Delete Program**.

The selection window “Delete Program” opens up. You can select the controller program to be deleted.

If you select “**Mark all**”, this means selecting all programs of the chamber controller to be deleted.



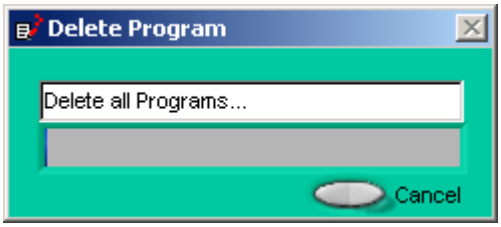
If “**Cancel**” is selected, the process will be canceled. The window is closed without any programs having been deleted.

If you want to delete the programs, hit button “**Delete**”. A security query follows.

Confirm by hitting “**Yes**”.

The information window “Delete Program” gives information about the proceeding of the deleting process, showing various state reports. If the process is completed, the window is closed.

(sample figure)



! If the transfer process is interrupted by hitting the "Cancel" button in the information window, it must be assumed that so far only some of the program sections have been deleted.

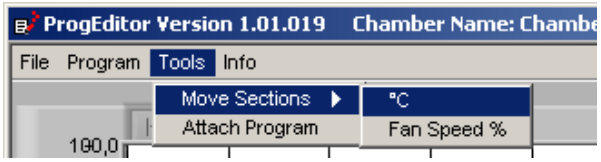
In case of a connection error between the computer and the temperature chamber the notification window "COM-Port ERROR !" opens up, and the transfer is cancelled.

Check the connections and start the function again.

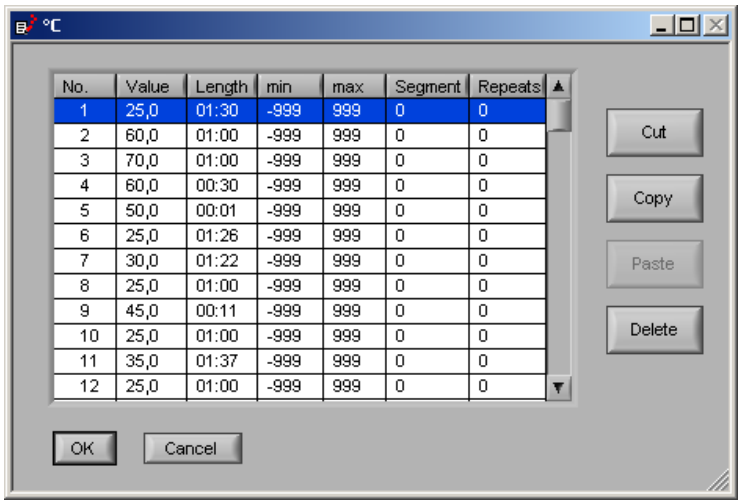
11.9 Function "Move sections"

With this function individual sections of the actual program can be copied, cut, or deleted.

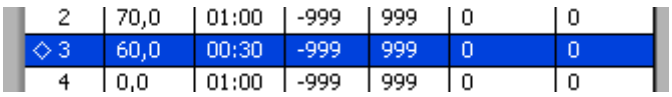
Under **Tools / Move Sections** you can select the temperature program and – depending on the selected chamber type – also a program for another parameter.



Having selected the parameter the corresponding window opens up.

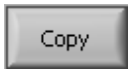


Mark the section to be copied and cut. Hold down the "Shift" key to mark several sections together. After hitting button "**Cut**" the highlighted section(s) are copied and indicated by a preceding rhomb symbol.

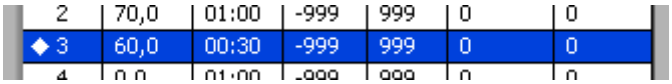


2	70,0	01:00	-999	999	0	0
◇ 3	60,0	00:30	-999	999	0	0
4	0,0	01:00	-999	999	0	0

The copied section(s) can now be inserted by "Paste".



Mark the section to be copied. Hold down the "Shift" key to mark several sections together. After hitting button "**Copy**" the highlighted section(s) are copied and indicated by a preceding filled rhomb symbol.



2	70,0	01:00	-999	999	0	0
◆ 3	60,0	00:30	-999	999	0	0

The copied section(s) can now be inserted by "Paste".

This button is activated as soon as one or more lines have been copied by “Cut” or “Copy”.

Mark the section below which the previously copied section(s) shall be inserted. This line is now indicated in blue. After hitting button “**Paste**” the previously copied section(s) is/are inserted.

Mark the section to be deleted. Hold down the “Shift” key to mark several sections together. After hitting button “**Delete**” the selected section(s) are deleted. The subsequent sections follow up, i.e., they now receive the formerly preceding section number (if one section has been deleted).

All modifications are applied only if they are confirmed with “**OK**”. The function window is closed and the modifications are taken over to the program window.

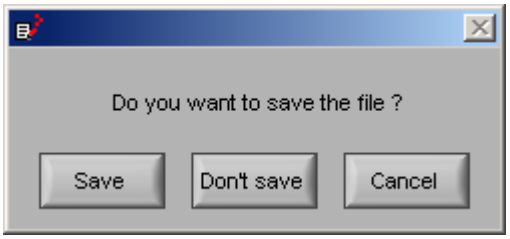
By “**Cancel**” the function window is closed without applying any modifications.

11.10 Function “Attach program”

This function serves to attach a second, previously saved program to the actually visible program.

With **Tools / Attach Program** the function “Attach Program” can be called up.

If previously a program has been opened and modified without having saved it, at first an inquiry window appears asking "Do you want to save the file ?"

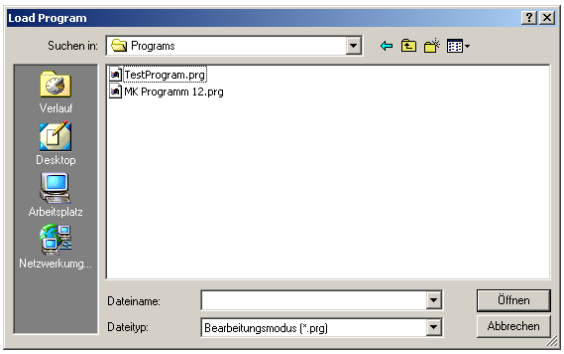


With “**Save**” you can save the actual program. After this you can again call up the function “Attach Program”.

When hitting “**Don’t save**” the window “Load Program” will be opened. Modifications in the actual program that have not been saved will be lost.

With “**Cancel**” you return to the actual program.

If you have saved or abandoned any modifications, or if there haven’t been any, the window “Load Program” opens up. It offers to select the program to be attached from the “Programs” folder in the APT-COM™ 3 directory. You can also choose any other source directory.



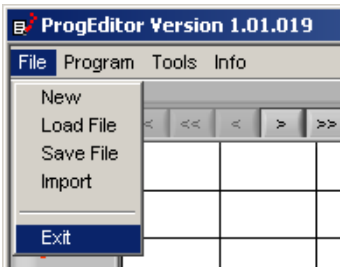
Select the program to be attached and hit “**Open**” The selected program will be attached to your actual Program right after the section that was selected as “Last section no. to send”.

! If there are any more sections following the section selected as “Last section no. to send” the attached program will overwrite them.

11.11 Terminate the Program Editor

To terminate the Program Editor select **File / Exit**.

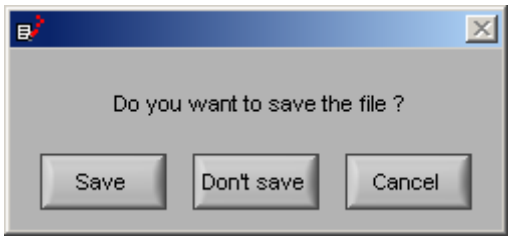
If previously a program has been opened and modified without having saved it, at first an inquiry window appears asking "Do you want to save the file ?"



With “**Save**” you can save the actual program. After this you can again call up the function “Exit”.

When hitting “**Don’t save**” the program is terminated directly. Modifications that have not been saved will be lost

With “**Cancel**” you return to the actual program.



12. Week Program Editor

There are principally two possibilities to install the Week Program Editor:

The Week Program Editor has already been installed during APT-COM™ Data Control System 3 installation. The file “ProgWeekProgEditor.exe” is located in the selected APT-COM™ 3 directory.

The module has been downloaded via the Internet during an APT-COM™ 3 Update. After the download, the latest version of the file “ProgWeekProgEditor.exe” can be found in your APT-COM™ 3 directory.

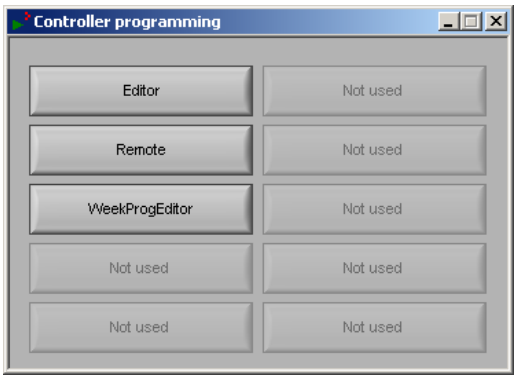
12.1 Starting the Week Program Editor

- Select file “ProgWeekProgEditor.exe” in the APT-COM™ 3 folder to start the Program editor. You can create a desktop shortcut for easier access

- It is also possible to start the Week Program Editor directly from APT-COM™ 3:

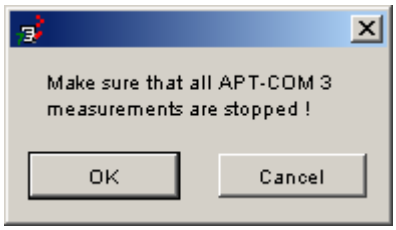
  Select button “**Programming**” (chap. 7.1.4) in the window “Center Version 3.02.xxx [edition]” (chap. 7.1)

  The window "Controller programming” opens up. Press button “**WeekProgEditor**”.



! The Program Editor is functional only if APT-COM™ 3 is not carrying out any measurement.

Thus when starting the program the first thing to appear is the information window “Make sure that all APT-COM 3 measurements are stopped !”

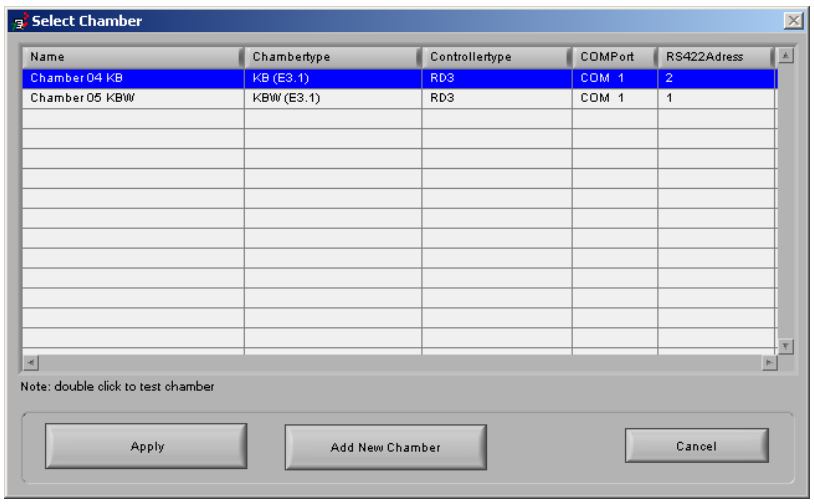


Close any running measurement (chap. 9.3.5 or 9.4.4).

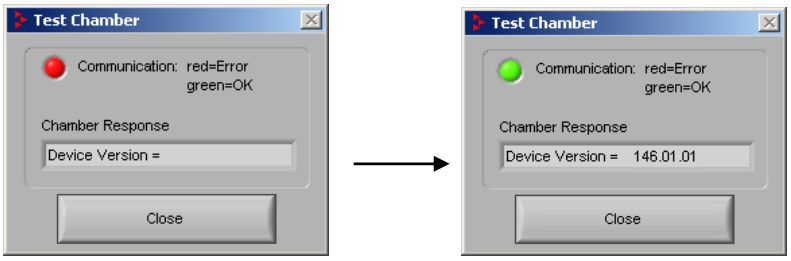
Then hit “**OK**” to select the desired temperature chamber.

12.2 Chamber selection

At first the selection window “Select chamber” appears to select the desired temperature chamber.



You can test the connection between APT-COM™ and the chamber by double click on the corresponding table line.



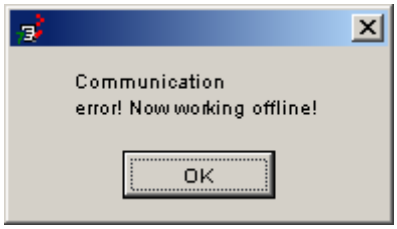
Select with button “**Apply**” the temperature chamber for which the program shall be created. Chambers will figure in the selection list only if they have been configured previously in the configuration menu “Chamber” (chap. 8.4).

In case the chamber has not yet been configured in APT-COM, button **“Add new chamber”** serves as a shortcut to window “Add New Chamber” in the APT-COM™ 3 configuration menu “Chamber”.

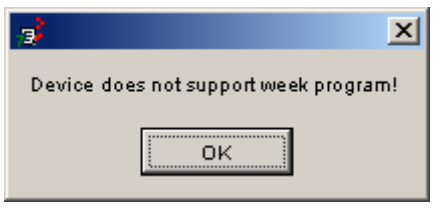
If you use the button “Add new chamber” to create further chambers in Basic Edition, you will only see the chamber in APT-COM™ which comes alphabetically first. In this case, delete in the configuration menu “Chamber” any other chambers until the original chamber names appears again. If you like to manage several temperature chambers, you will need APT-COM™ 3 Edition Standard or GLP.

Following the chamber selection the corresponding Week Program Editor window opens up.

If there is no connection, the message “Communication error! Now working offline!” appears.

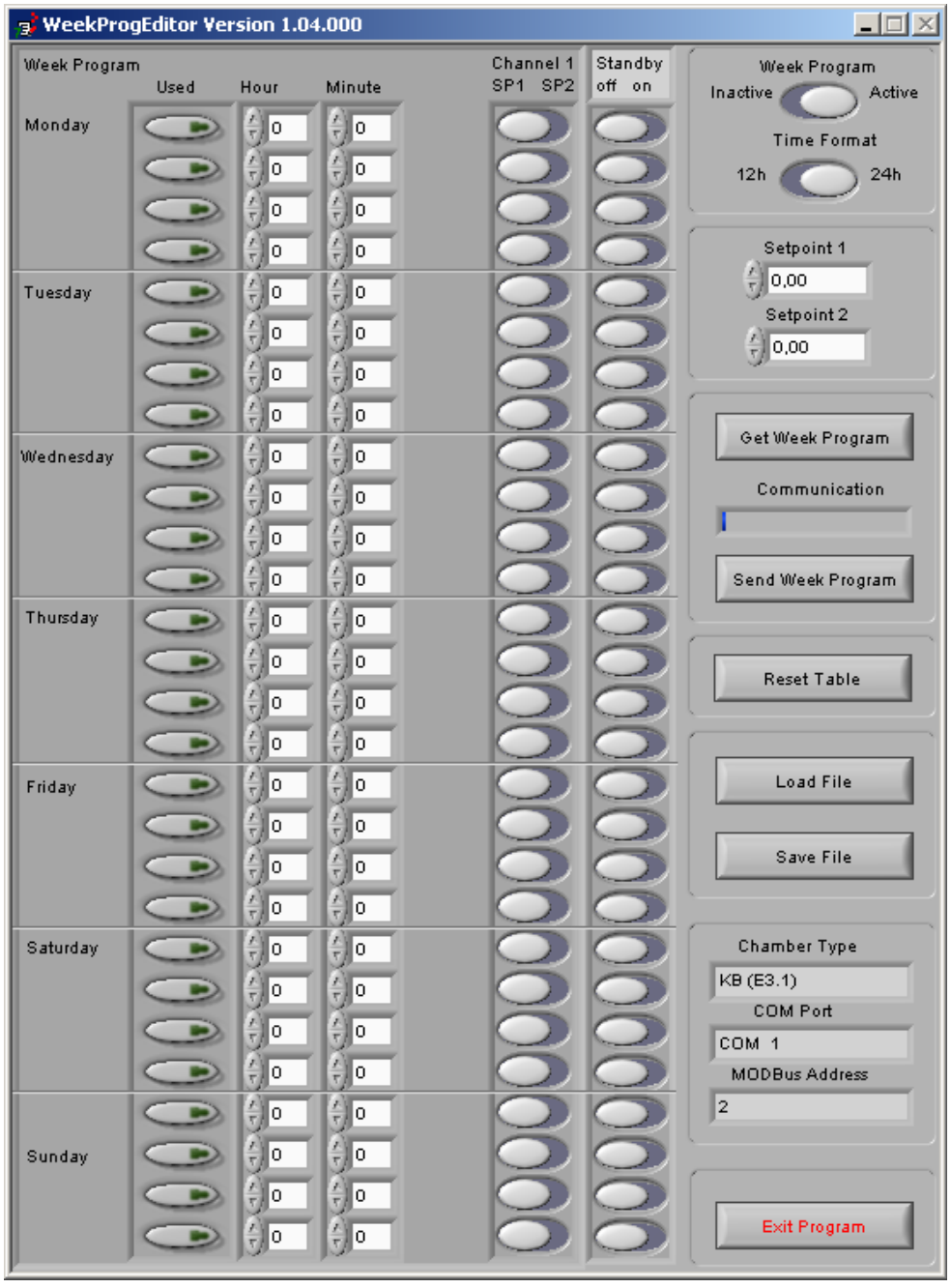


If you selected a chamber type whose controller does not support the week program timer function, the message “Device does not support week program!” appears.



12.3 Functional overview of the Week Program Editor window

Day of the week | Activate shift point | Time of shift point | Channel 1 | Channel 2



Activate the week program (chap. 12.6)

Time format

Set-point 1 (night / week-end)

Set-point 2 (day / week)

Read program (chap. 12.8.2)

Communication with chamber controller

Write program (chap. 12.8.1)

Delete program

Load program (chap. 12.7.2)

Save program (chap. 12.7.1)

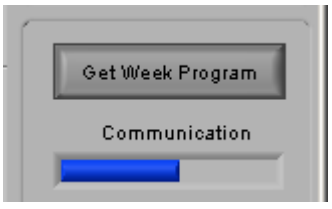
Chamber type

Connection data

Chamber address

Terminate the Week Program Editor (chap. 12.9)

Having called up the Week Program Editor and selected the temperature chamber, the function “Get Week Program” (chap. 12.8.2) is automatically executed, i.e. the data of the week program are read off the chamber controller. You can recognize that by the blue bar below “Communication”.



There are several ways to create or open a program in the Week Program Editor:

- Direct entry of the shift point times into the Week Program Editor window (chap. 12.4)
- Loading a program previously saved by the Week Program Editor (chap. 12.7.2)
- Reading a week program previously entered at the chamber controller (chap. 12.8.2)

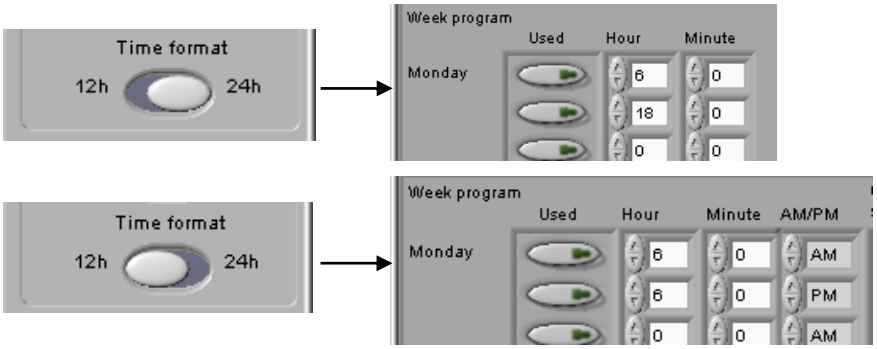
The Week Program Editor window corresponds to the chamber that has been selected immediately after program start and can look different depending on the selected chamber type.

! If you like to create, open, or load from the chamber controller a week program suitable for a different chamber type, you need to first exit the week program editor (chap. 12.9) and when starting the program again select the desired chamber (chap. 12.2).

12.4 Program entry

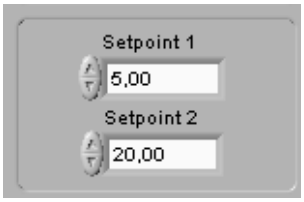
12.4.1 Selecting the time format

You can select under “Time Format” if you want to display the hours in 12-hour format (a.m. / p.m.) or in 24-hour format. This setting is also adopted by the chamber controller as soon as you transmit the week program to the chamber controller (chap. 12.8.1).



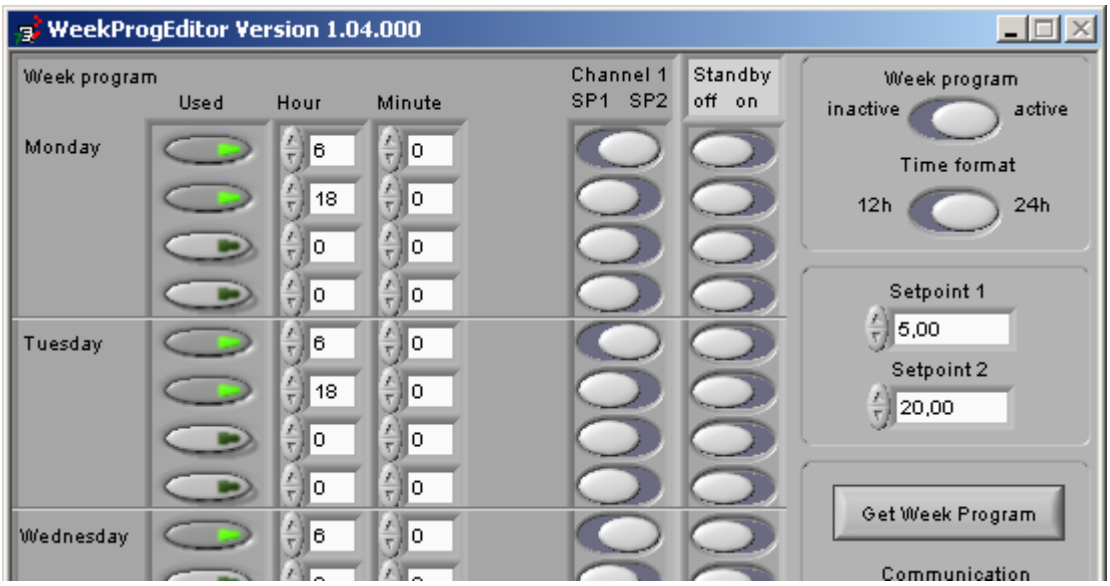
12.4.2 Set-point entry

Enter the desired set-point values under “Setpoint 1” and “Setpoint2” (Example: night set-point SP1 = 5°C, day set-point SP2 = 20°C).



12.4.3 Programming the shift points

- Enter the times of the shift points under “Hour” and “Minute” for the desired days of the week (example: every day at 6 a.m. and at 6 p.m.).
- Select under “Channel 1”, if set-point SP1 or SP2 shall be regulated at the selected time (example: during the day SP2, at night SP1).
- Activate the desired shift points under “Used”. This offers the possibility not to use parts of the programming for a while without having to delete them.



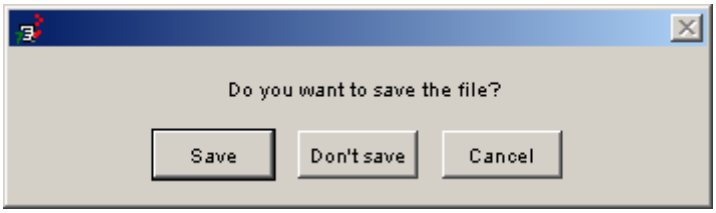
Depending on the chamber type, you can define further parameters for the switching points in addition to Channel 1, e.g., light at KBW:

When the week program is completed, you can directly transmit it to the chamber controller (chap. 12.8.1) or save it (chap. 12.7.1) and call it up later (chap. 12.7.2).

12.5 Deleting a week program

You can reset all settings with button “**Reset Table**”.

First an inquiry window appears asking "Do you want to save the file ?"



With “**Save**”, you can save the actual program. After this the function “Reset Table” is executed.

When hitting “**Don’t save**” the function “Reset Table” is executed.

With “**Cancel**” you return to the actual program.

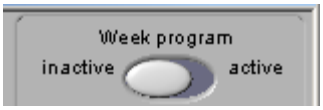
! If you then transmit the empty week program to the chamber controller (chap. 12.8.1), also any week program that might already have been existing in the chamber controller will be deleted.

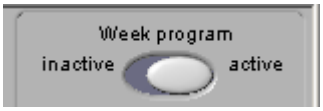
12.6 Activating / inactivating the week program timer

With this setting you determine if the week program timer function shall be active or inactive at the chamber controller.

Select the desired setting under “Week program“.

Then you can transmit the setting to the chamber controller (chap. 12.8.1).





12.7 File management

12.7.1 Saving a week program

With button “**Save File**” you can save a week program that has been created or modified previously.

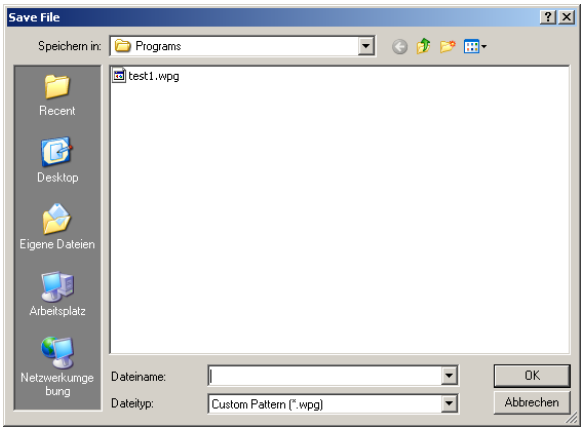
The window “Save Program” opens up offering to save the program in the “Programs” folder in the APT-COM™ 3 directory. You can also choose any other location.

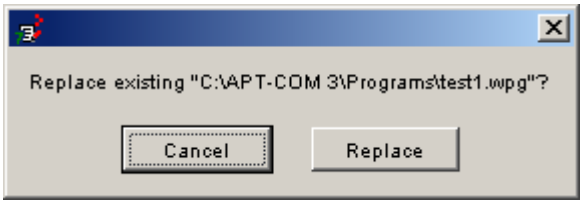
Enter the name under which the program shall be saved and hit “**OK**”. A week program is saved with the program ending “wpg”.

If there is already a program bearing the same file name, a security request will ask you how to proceed (see sample figure).

If you select “**Replace**” the already existing file will be overwritten.

Having selected “**Cancel**” you can then again call up the saving function and choose another file name for the program.

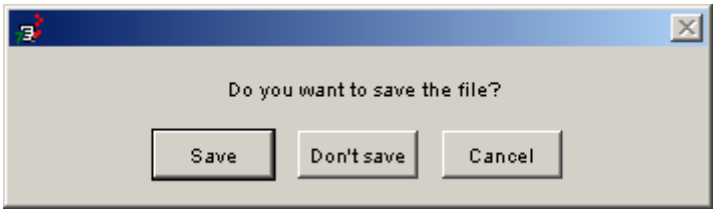




12.7.2 Loading a week program

With button “**Load File**” you can open a previously saved program.

First an inquiry window appears asking "Do you want to save the file ?"



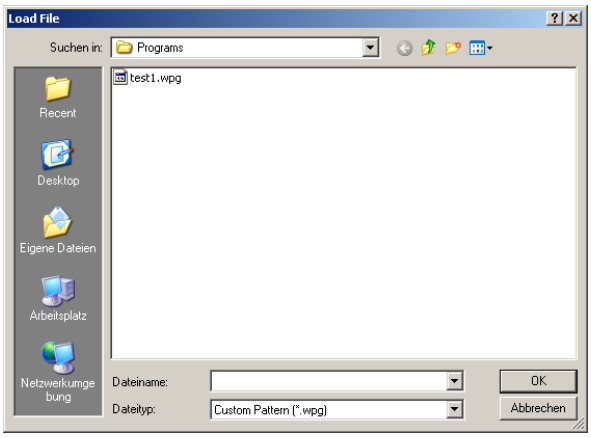
With “**Save**”, you can save the actual program. After this you can execute the function “Load File”.

When hitting “**Don’t save**” the window “Load Program” will be opened. Modifications in the actual program that have not been saved will be lost.

With “**Cancel**” you return to the actual program.

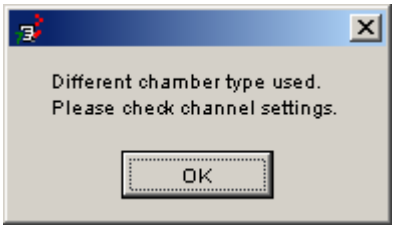
If you have saved or abandoned any modifications, or if there haven't been any, the window "Load Program" opens up. It offers to load the program from the "Programs" folder in the APT-COM™ 3 directory. You can also choose any other source directory.

Select the program to be loaded bearing the program ending "wpg" and hit "**OK**".



If you load a week program that has been created for a different chamber type, a notifying window appears asking you to check the channel settings. The function of channel 2 might differ with different chamber types, but when you load a week program all settings are adopted, including a possible programming of channel 2.

Confirm with "**OK**".



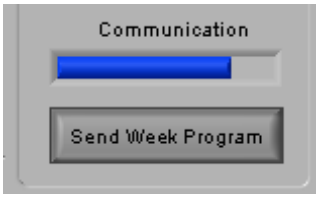
12.8 Communication with the chamber controller

The Week Program Editor can only communicate with the temperature chamber selected during program start. If you want to work on a program for a different chamber than the selected one, you need to quit the program (chap. 12.9) and then restart it, selecting the appropriate chamber (chap. 12.2).

12.8.1 Function "Send week program"

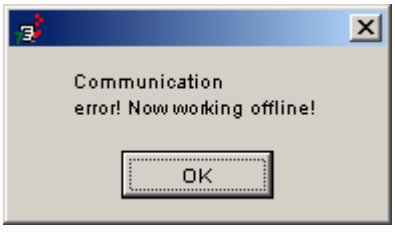
With button "**Send Week Program**" you can start the transfer of the week program to the chamber controller.

The blue bar under "Communication" indicates that data are being sent to the chamber controller.



In case of a connection error between the computer and the temperature chamber the notification window "Communication error! Now working offline!" opens up, and the transfer is cancelled.

Check the connections and start the function again.



! If you like to send a week program to the controller of a different chamber, you need to first exit the week program editor (chap. 12.9) and when starting the program again select the desired chamber (chap. 12.2).

12.8.2 Function “Get week program”

With button “**Get Week Program**” you can read out a program from the chamber controller.

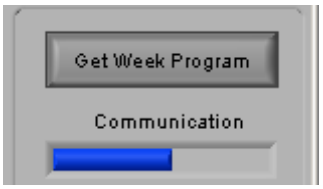
First an inquiry window appears asking "Do you want to save the file ?”

With “**Save**”, you can save the actual program. After this you can execute the function “Load File”.

When hitting “**Don’t save**” the window “Load Program” will be opened. Modifications in the actual program that have not been saved will be lost.

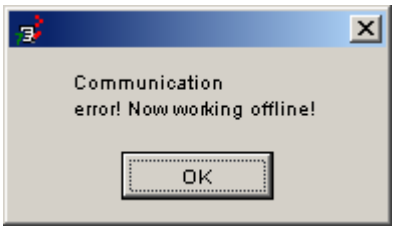
With “**Cancel**” you return to the actual program.

If you have saved or abandoned any modifications, the blue bar under “Communication” indicates that data are being read off the chamber controller.



In case of a connection error between the computer and the temperature chamber the notification window “Communication error! Now working offline!” opens up, and the transfer is cancelled.

Check the connections and start the function again.



12.9 Terminate the Week Program Editor

To terminate the Week Program Editor select button “**Exit Program**”.

First an inquiry window appears asking "Do you want to save the file ?"

With “**Save**”, you can save the actual program. After this the Week Program Editor is terminated.

When hitting “**Don’t save**” the Week Program Editor is directly terminated. Modifications in the actual week program that have not been saved will be lost.

With “**Cancel**” you return to the actual week program.

13. Remote Program

The Remote Program allows running programs at chambers that are not equipped with a program controller. The program is in a first step created with the software “Program Editor” (chap. 11). Then the created or modified program is saved and the Program Editor quit. The software “Remote Program” will now transfer the program to the chamber controller. The Remote Program loads the program and then transmits it section by section, during the whole program run time, via APT-COM™ 3 to the chamber controller.

13.1 Installation of the Remote Program

There are principally two possibilities to install the Remote Program:

- The Remote Program has already been installed during APT-COM™ Data Control System 3 installation. The file “ProgRemote.exe” is located in the selected APT-COM™ 3 directory.
- The module has been downloaded via the Internet during an APT-COM™ 3 Update. After the download, the file “ProgRemote.exe” can be found in your APT-COM™ 3 directory.

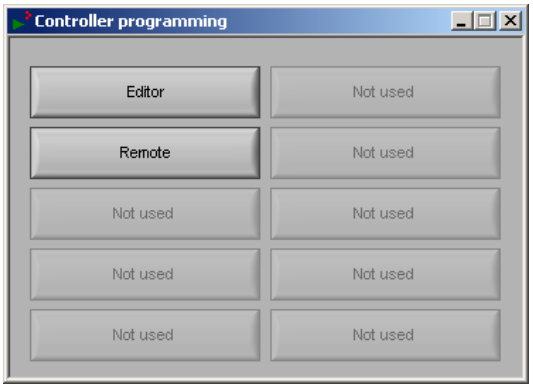
13.2 Starting the Remote Program

Select file “ProgRemote.exe” in the APT-COM™ 3 folder to start the Program editor. You can create a desktop shortcut for easier access.

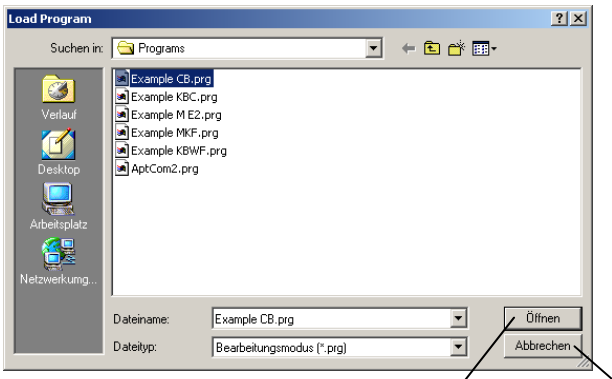
It is also possible to start the program editor directly from APT-COM™ 3:

Select button “**Programming**” (chap. 7.1.4) in the window “Center Version 3.02.xxx [edition]” (chap. 7.1)

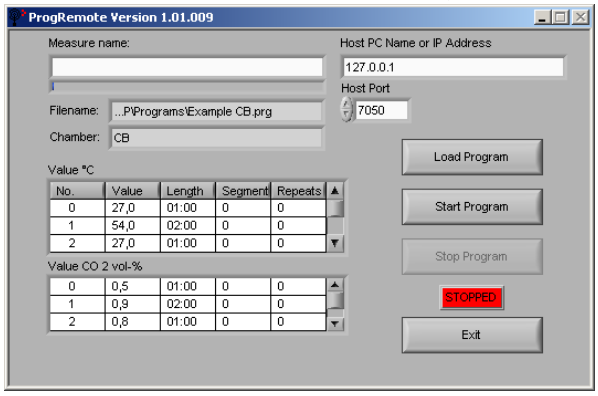
The window "Controller programming" opens up. Press button “**Remote**”.

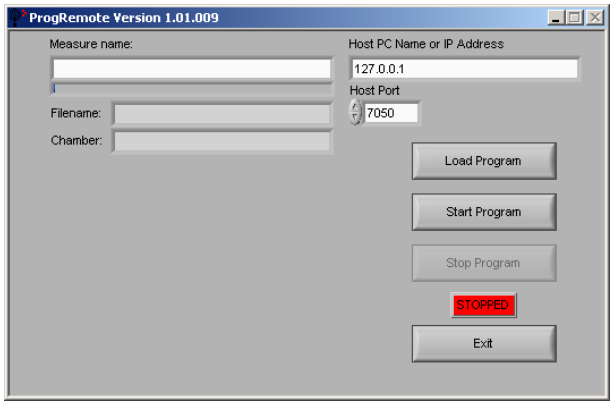


Also when button “**Remote enable**” in the APT-COM™ 3 configuration menu “Program remote” (chap. 8.8) is activated, the Remote Program is started.



At first the window “Load Program” opens up. You can now select the desired program (“Open”) or cancel the procedure in order to configure first the necessary settings for network connection and measurement in the Remote Program and in APT-COM™ 3.



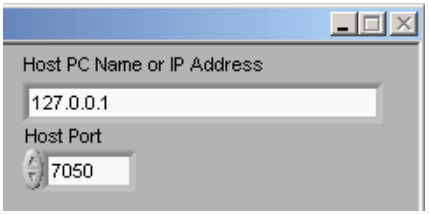


A selected program is displayed in the Remote Program window.

13.2.1 Connecting the Remote Program and APT-COM™ 3

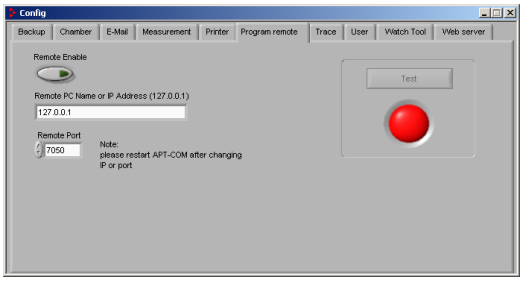
- Following first start of the Remote Program the connection to the APT-COM™ 3 software is configured in the window “ProgRemote Version 1.01.xxx”.

  Under “**Host PC Name or IP Address**” enter the name or the IP address of the computer on which APT-COM™ 3 is running. Under “Host Port” enter the port number 7050 used by the APT-COM™ 3 computer.



- Configuration settings are also to do in the APT-COM™ 3 configuration menu “Program remote” (chap. 8.8).

  Under “**Remote PC Name or IP Address**” enter the name or the IP address of the computer on which the Remote Program is running; under “Remote Port” enter the port number used by this computer.

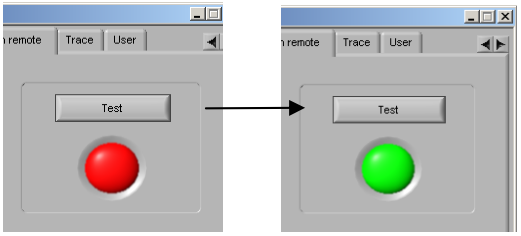


! If APT-COM™ 3 and the Remote Program are run on the same computer the network information (computer name / IP address and port) must be the same in both programs.

The default setting assumes installation of both programs on the same computer.

- With the button “**Remote enable**” the connection between APT-COM™ 3 and the Remote Program is activated. When activating the button, the Remote Program is started. At the same time the entry fields for computer address and port are set inactive in order to protect the settings against changes during the functional connection.

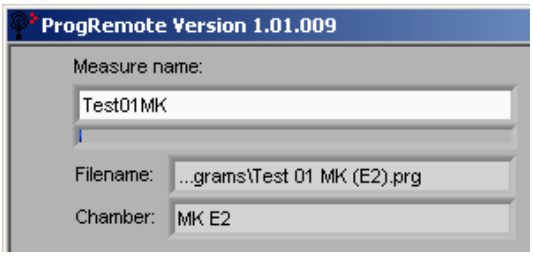
- Now the connection between APT-COM™ 3 and the Remote Program can be tested (chap. 8.8). It is tested if the connection to the second computer is functional (in case the Remote Program has been installed on another computer than APT-COM™ 3) and if the Remote Program is running. If there is a functional connection the indication lamp lights up green.



13.2.2 Selecting the measurement

The next step is to start the measurement in APT-COM™ 3. If necessary set up the temperature chamber in the APT-COM™ 3 configuration menu “Chamber” (chap. 8.4) and create the measurement in the “Measure Manager” menu (chap. 9.1.1). Start the measurement as described in chap. 9.1.2 and 9.3.4.

Now enter the name of the measurement in the Remote Program under “**Measure name**”.

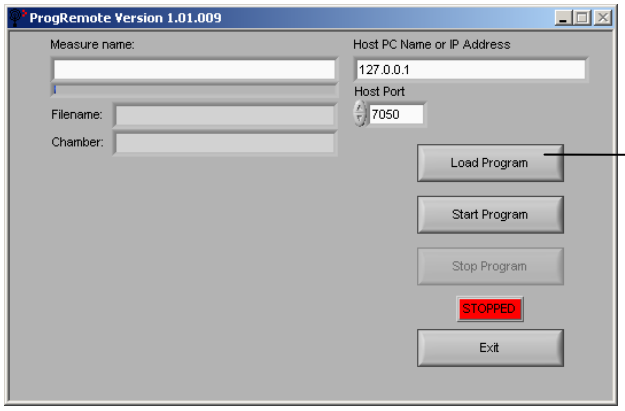


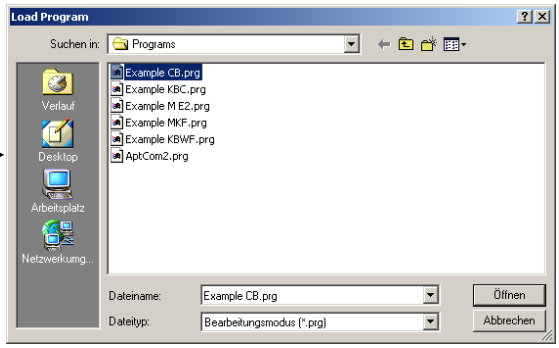
! The measure name must be exactly the same as in the measurement created in APT-COM™ 3 that is displayed in the “Communication Manager” window.

! Attention! If you want to transmit a program to the vacuum controller CVC 2000 or CVC 3000, set the operating mode in the measurement window under “Controller mode” to “Manual” (chap. 9.3.3).

13.2.3 Selecting the program and representation in the Remote Program

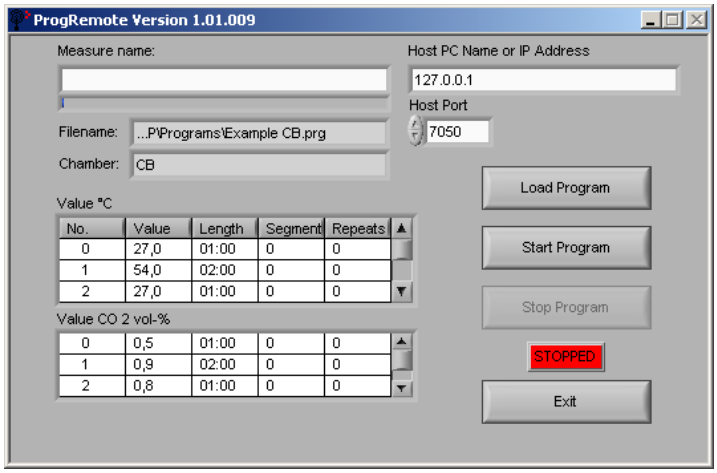
With “**Load Program**” you can open a program that has previously been created and saved by the Program Editor.

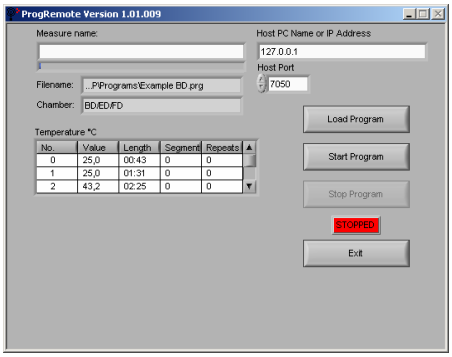


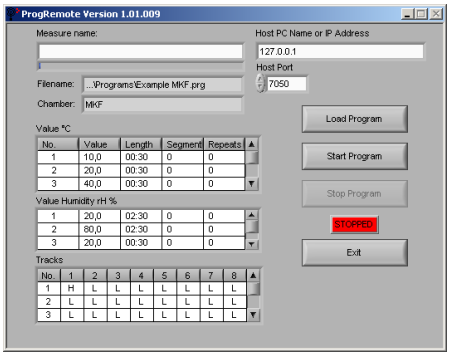


In the selection window “Load Program” you can select the program and load it in the Remote Program by hitting “**Open**”.

The window “ProgRemote Version 1.01.xxx” adapts its representation to the actually loaded program.







Under “Filename” the name of the loaded program is displayed, under “Chamber” the corresponding chamber type.

The values of one parameter are displayed in a table each. These values are set-point, section length, target section in case of repeats and number of desired repeats of one or more program sections (see chap. 11.4.3).

Limits are not displayed because they are not functional with non-programmable chamber controllers.

The switching states of the control tracks, if any, are also displayed in a table.

A table is represented up to the section that has been selected as the “Last section no. to send” in the Program Editor (see chap. 11.4.4).

It is not possible to carry out any program changes. To do so, the program must be opened with the Program Editor (chap. 11) modified and then saved again. It then can be loaded again in the Remote Program.

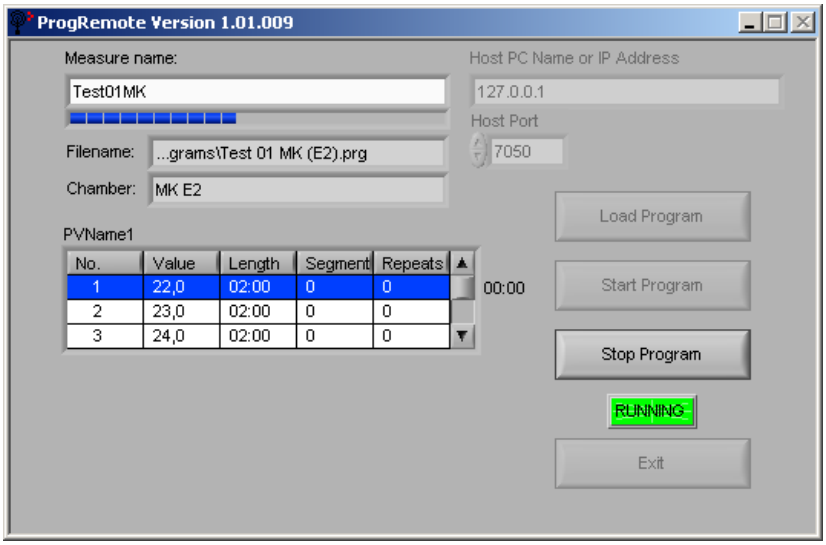
13.2.4 Program course

After hitting button "**Start Program**" the first set-point (and, according to the chamber type, may be set-points of further parameters and / or the first switching state of a control track) is transmitted via APT-COM™ 3 to the chamber controller. The measurement begins to run.

Data transfer can be recognized in APT-COM™ 3 by lighting up of the indication light "Write" in the window "Communication Manager". It lights up with every set-point transmission, i.e., with each new sections when the values of the corresponding parameter are being transferred.

When transferring the set-point value to the chamber controller, a maximum inaccuracy of 10 sec is possible.

The window "ProgRemote Version 1.01.xxx" during program course:



The green button "RUNNING" indicates that the Remote Program is sending data / the selected program is running. Also a rundown bar is displayed below the measurement name. The Remote Program does not receive any data but is sending data. These data comprise measurement name, information about the parameter(s) and/or control tracks, parameter value and/or control track switching state.

The tables automatically scroll to the program section that is actually running.

At the right side of each table the past time of the actually running section is shown. This actual section is represented in blue.

Using the entered names the Remote Program controls if the temperature chamber and the measurement indicated are identical. To be sure about the functionality of the computer connection, check it, as described above (chap. 13.2.1, chap. 8.8) with the test routine.

! The green button "RUNNING" and the rundown bar do not guarantee that there is actually a transfer to the chamber controller.

Program repeats / section repeats:

The Remote Program manages repeats internally. If e.g. section A05 is to be repeated three times, the Remote Program will send data of this section three times before proceeding to the next section A06.

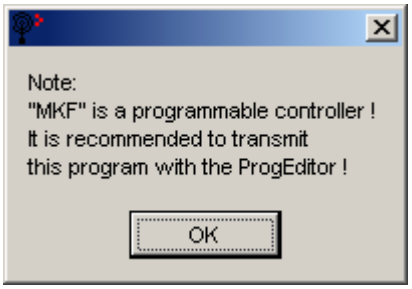
Terminating the program transfer

By hitting button "**Stop Program**" the program transfer can be stopped at any time. In this case the connected temperature chamber continues to operate at the last transferred set-point value(s).

Note:

During the whole program duration the connection between both computers must be functional, because data are transmitted directly at each new program section start via APT-COM™ 3 to the program controller. An interruption of the connection or any disturbance of the data transfer would not be noticed by the Remote Program. Thus for security reasons it is not recommended to use this way to transfer a program with program controllers. In case of program controllers programs can be directly transmitted from the Program Editor to the controller without making use of a TCP/IP protocol (menu "Program", chap. 11.7). The complete program is transmitted as a whole while the Remote Program would transmit it "on line" section by section.

For this reason, a notification appears as soon as the Remote Program loads a program for a chamber with a program controller (in our example: MKF).



! Under GMP/GLP conditions it is required to operate program controllers if program operation is desired.

13.3 Leaving the Remote Program

When no program is being transmitted (indicated by visible red "STOPPED" sign), leave the program by hitting the "**Exit**" button.

14. Measures for data security (GLP Edition)

The following is an overview about the software functions of APT-COM™ 3 DataControlSystem GLP Edition that have been described in this manual, as far as security aspects are concerned as those needed to comply with GMP / GLP (Good Manufacturing Practice / Good Laboratory Practice) guidelines or with guideline 21 CFR part 11 released by the American “Food and Drug Administration” (FDA).

Admission control:

Access to the APT-COM™ 3 system is limited by determination of a group of authorized users.

Selective assignment of rights of use:

Next to the users that can carry out configurations only with respect to their measurements, an administrator will do all system configurations. Each user has access only to his own data.

Electronic signature:

Every user must authenticate himself by his individual username and secret password in order to get access to the user interface. The combination of user name and password meets the conditions of an electronic signature according to FDA guideline 21 CFR 11T part C. According to 21 CFR 11 §11.100 (c) (1), an electronic signature serves to replace a handwritten signature.

Raw data format protected against manipulation:

The measuring and system data are saved in an encrypted database format. These databases are protected by a software internal password and encrypted according to the Microsoft Access RC4 encryption algorithm with a 32-bit key of the RSA Data Security Incorporated. Manipulating the raw data by use of an editor is not possible.

Automatic backups of measuring and system data:

The automatic backup system assures that the measuring data file, the automatically generated system protocol and all system settings are saved as a backup in intervals of choice on any network directory. A backup can easily be related to the moment of its creation. Backup copies allow at any moment to reconstruct any measurement data with all related system information that have been active at the moment of data acquisition.

Automatic part of the Audit Trail:

To the measuring data comments can be added during measurement course. These comments become part of the raw data. They are equally encrypted and saved together with the measuring data in the measuring database. Actions in the measurement important for documentation can thus be comfortably documented. So explanations for modification of the software settings can become part of the raw data. System modifications executed at the software are automatically recorded in an event database (“trace” file). The commented measuring data together with the time synchronous system protocol form the part of the des Audit Trail that can be automatically supplied by this sort of documentation software.

Periodically and automatically generated printouts supply protocols easily to overlook for each measurement. The respect of tolerance limits which can be defined as well as alarm events are already summarized for the reported.

Process security:

The continuity of measuring data acquisition and the respect of the tolerance limits that can be defined for each controlled parameter of each measurement and connected chamber is monitored by many supervision and alarm functions. Also a crash of the measurement computer or any communication error between temperature chambers and the measuring computer as well as in the connection of the monitoring computer will be reported as an alarm.

A second computer with a monitoring program supplies an independent second security level for the data communication and respect if tolerance limits.

All alarm messages can be actively transmitted in different manners (alarm contact, telephone network, e-mail) also over long distances. The automatic generation of a homepage as an information platform of all running measurements (functions can be added for each individual measurement) – if the measuring computer or its APT-COM™ partition has been allowed to be shared – allows remote monitoring of the measurement by each computer with a standard browser that is connected to the network. With the according sharing permission this is also possible via the Internet.

By connection of different BINDER measuring devices reference measurements can be carried out, if desired, which are independent from chamber controlling and can be documented, monitored, and saved like chamber data.

15. Appendix

15.1 Notifying and error messages of APT-COM™ 3

Can't find Localc.ini
Can't create LocalC.ini
Can't create GlobalC.ini
Can't read LocalC.ini
Can't read GlobalC.ini
Can't read aptcom.dat
Can not write in File GlobalC.ini
Can not write modifications in file GlobalC.ini
MOD Bus invalid controller function
MOD Bus invalid parameter address
MOD Bus parameter out of range
MOD Bus controller not ready
MOD Bus write access denied
MOD Bus time out
MOD Bus unknown bus error
MOD Bus CRC error
The measurement not built Possible reasons: 1. Name is in use 2. Use of space in Name or special characters Please select another one

Report failed
Write to chamber failed
Backup failed
User config cancelled APT-COM will go down
Can not modify Localc.ini
Can not write to aptcom3.ini
E-Mail Error Please check mail address, SMTP server IP and port
Connection to Database failed Please check if Access drivers (APT-COM 3 CD) are correctly installed Closing APT-COM 3
New config files created
Less than 6 characters Access denied
Access denied
This name is in use. Please select another one.
This is not a valid username. Please make sure the name is at least 6 characters long. All characters of ASCII are allowed.
This is not a valid password. Please make sure it is at least 6 characters long. All characters of ASCII are allowed.
The password and the repeated password are different
This is not a valid path. Please select a valid one.
Modifications applied
First start of APT-COM 3
Please ask your administrator for changing time or date
The administrator can not be removed
Coming soon Look for updates on www.binder-world.com
Backup completed
Please configure first user and chamber press configuration in Center window
Please type in a new chamber name in the left up corner and press return to apply
Controller reports Error
Measuring data deleted
Low physical RAM Please close some programs or restart APT-COM 3

During APT-COM 3 Archiver is running there is no Backup function available APT-COM 3 will try again in 5 minutes to do the Backup.
During APT-COM 3 Archiver is running there is no Backup function available.
Starting Backup Running measurements will be interrupted during Backup
Backup built Restarting measurements…
Close APT-COM ?
Are you sure ?
If you choose OK, the software will restart and changes are applied
Do you really want to remove this user ?
Do you really want to remove this measuring ?
Do you really want to delete all records of
Do you really want to delete the trace ?
Do you really want to delete this chamber ?
Please stop all measurements before going on Go on?
Do you really want to change the controller mode from
Login
Logout
Unlock
Locked
New E-Mail host
Modifications:
Measurement applied
Report generated
Auto shut down
Auto start up
TCP/IP Connection failed
Chamber Connection failed
Unknown Code Error

15.2 FAQ – Frequently asked questions

15.2.1 General

Can several users simultaneously access chambers with APT-COM™ 3 (multi-user operation)?

Yes. When a measurement set to active is started, all the measurements of other users that are set to active are also started.

Which operating systems are suitable for APT-COM™ 3?

BINDER recommends **Windows 2000** with Service Pack 4 and **Windows XP Professional** from Service Pack 2 on for professional use.

You can operate APT-COM™ 3 versions lower than 3.02.021 with the operating system **Windows NT 4.0** (Service Pack 6). If you like to use also versions from 3.02.021 on with Windows NT 4.0, please contact the BINDER Service. BINDER recommends using Windows 2000.

We don't have any experimental values with **Windows XP Home**. **Windows 95, 98, and ME** have proved to be inadequate during long-term tests. Even when operated short-term (about 1 hour) system crashes occurred frequently. APT-COM™ 3 must not be run under Windows 95, 98, or ME.

Can I run APT-COM™ 3 also on computers with multicore processors?

Yes. APT-COM™ 3 DataControlSystem supports multicore systems. The software strongly scales with the number of cores in the system. When choosing a processor we therefore generally recommend using a multicore system as preferable compared to a single core system. The advantage of speed was up to 40 % measured with a dual core processor

What does the error message "LoadLibary (.....) failed" at the first APT-COM™ 3 start mean?

In order to print out data from APT-COM™ 3 the ActiveX DLL "NiReports.dll" must be entered into the Windows registry file. If the automatic entry has not been successful, the above-mentioned error message is generated.

The entry can be done manually at any time. Proceed as follows:

1. Close APT-COM™ 3
2. Click on Windows "Start" and select "Run...."
3. Now enter a line according to the following scheme:

   regsvr32 "installation directory of APT-COM™ 3\ NiReports.dll"

   Example: If the installation directory of APT-COM™ 3 is "C:\APTCOM3", the line goes as follows:

   regsvr32 "C:\APTCOM3\NiReports.dll"

4. Following this a message should appear informing about the successful entry.

Depending on the configuration of your operating system, main user rights or administrator rights might be required. Please ask your system administrator.

Is APT-COM™ 3 capable of real-time processing (recording at the exact second)?

No. Reasons:

1. It needs about 1 second to read out a set-point value and an actual value. The time until the values are recorded and displayed is at least another second. Due to the operating system used ant to its configuration or installed components, a time lag can be added.
2. The operating system is not capable of real-time processing, nor is it deterministic.

3. The computer hardware is not capable of real-time processing. The reason is the Interrupt System of the IBM PC standard. Hardware components can interrupt the processor. The same is true for the computer clock that is not exact to a second.

What happens to the measuring data when the computers changes between summer time and regular time?

APT-COM™ 3 uses the Windows system time. The change between summer time and regular time does not restrict the functionality of APT-COM™ 3.

- Change from regular time to summer time

  It seems as if one hour (2.00 a.m. to 3.00 a.m.) of records were missing. Really no measuring values are lost because that hour does not exist.

- Change from regular time to summer time

  Data of the hour from 2.00 a.m. to 3.00 a.m. will be recorded twice. No values are overwritten.

Is there any possibility to reset APT-COM™ 3 to its state of installation without losing the measurement data and chamber settings?

Yes. If the files “LocalC.ini” and “GlobalC.ini” in the APT-COM™ 3 directory are deleted, APT-COM™ 3 is reset to its state of first installation. Measurement data and chamber settings are kept unchanged.

Note: In order to access measurement data after having deleted both “ini” files, the same User names and passwords as before have to be used.

Is there any possibility to network BINDER chambers with existing IT systems, without using APT-COM™ 3?

1. If the BINDER chamber is equipped with a digital interface (RS232, RS422, Ethernet …), you can request the interface description at BINDER Service.
2. If the BINDER chamber is equipped with an analogue interface (4-20mA, 0- 10V…), the specification is given in the chamber’s operating manual.
3. If the BINDER chamber is equipped with access ports, you can use sensors, measuring devices, and software provided by the customer to record the chamber data.

Also it is possible to have the temperature chamber adapted to the customer’s requirements via BINDER Individual.

Is it possible to integrate APT-COM™ 3 into an existing software (LIMS)?

The directory “BINDERInterfaceDocs” on the APT-COM™ CD provides all necessary information which you need in order to directly address BINDER units with your domestic software (LIMS). Please keep in mind that BINDER GmbH can not give any kind of support for software developers. The information and software (source code) are provided without warranty of any kind.

15.2.2 Networking

> **!** **Perform addressing of the chamber controller before connecting the chamber to the APT-COM computer.**

Which kinds of controller types can I network with APT-COM™ 3?

- SM controller with an optional interface can only be networked with APT-COM™ 2.
- RD2 controller with RS232 interface can be networked with APT-COM™ 3, but we recommend APT-COM™ 2. See chap. 4.1.1 for detailed information.
- All other controllers of BINDER chambers (D2 (DICON 1000), PD2 (DICON 1001), RP1, R3, R3.1, RD3, MB1) provide either a RS422 or an Ethernet interface. They can be networked with APT-COM™ 3 without any problem.

A new chamber has been created in window "Add New Chamber". When testing communication with button "Test", the signal button "Communication" in the window "Test Chamber" lights up red. Under "Chamber Response" no answer is displayed.

The connection is not correct. Please check the address at the chamber controller.

A new chamber has been created in window "Add New Chamber". When testing communication with button "Test", the signal button "Communication" in the window "Test Chamber" lights up green. Under "Chamber Response" special characters are displayed.

If the connection is correct, either a number or "Device version = xxx.xx.xx" is displayed under "Chamber Response". Special characters indicate that the connection is not correct. Please check the address at the chamber controller and check also if the chamber type (KBF, CB, ...) has been correctly selected.

In the window "Communication manager" the sign "COM Error" lights up.

Communication between APT-COM™ 3 and at least one temperature chamber is disturbed. In configuration menu "Trace" you can find the information which chamber is concerned. Check the cable connections to the respective chamber and also check if the chamber is operating.

The general user has no access to the Trace protocol. He should inform the APT-COM 3 administrator. The APT-COM 3 administrator is the one who has built up the system and therefore is informed about the system network, which is necessary to value the error information. He must be informed because he is responsible fort he system.

Is there any possibility to provide a RS232 interface using a USB/RS232 converter if the computer does not bear a RS232 interface?

Yes. We use and recommend "Digitus DS-70146" that proved reliable in internal tests. After correct driver installation (from the supplier CD) the additional interface is reported in the device manager and can then be used like a regular COM port. Please follow the supplier's instructions.

Is it possible to monitor non-BINDER devices with APT-COM™ 3?

Yes. There are 3 possible solutions:

1. The measuring devices CTM01, FTM01, and TM01 from BINDER can integrate devices from other manufacturers. The respective sensor is installed in the non-BINDER chamber. Then monitoring os performed through the listed BINDER measuring devices.

Note: This is just a monitoring and data logging functions. It is not possible to implement set-point control.

2. Through BINDER-Individual you can ask about the possibility to integrate your chamber in APT-COM™ 3. Please contact our Sales dep. or the BINDER service..
3. BINDER has disclosed the chamber interface. Ask our Service to receive the necessary information. Part of this information is APT-COM™ 3 source code, which you can use to integrate it into your software or to create your own software.

Can I install the 50m cable (5023-0017 or 8012-0164) also after the plug distributor?

The 50m cable shall in principle be mounted before and not after the plug distributor. Mounting after the plug distributor causes modification in the characteristic wave impedance leading to reflexions in the bus system. If due to structural conditions the customer needs to install the 50m cable after the plug distributor, installing a repeater between the plug distributor and the 50m cable is required to guarantee safe and unimpaired operation. A repeater is an electronic device that receives a signal and retransmits it at a higher level and/or higher power, so that the signal can cover longer distances. BINDER offers the RS422 Repeater Art.no. 5021-0020 “RS422-Isolator Industry (230V)” with cable no. 5023-0111, tested in the system.

There is no communication between APT-COM™ 3 and a unit with internal Ethernet interface (Lantronix interface, see chap. 3.4.1).

You’ve got the following possibilities:

1. Check the RS422 chamber addresses in ATP-COM™ and in the chamber controller for their identity.

   The RS422 chamber addresses in ATP-COM™ and in the chamber controller must be identical (default setting: „1“). In APT-COM™ 3 the RS422 Address is indicated in the configuration menu “Chamber” under “RS 422 Address”. To check it at the chamber controller see the corresponding chamber manual or chap. 3.2 of the APT-COM™ 3 manual. If the indicated addresses are not identical, correct them either in APT-COM™ 3 or at the chamber controller.

2. Check if the IP address has not been assigned or was assigned wrongly.

   Start DeviceInstaller (if necessary, install it from the APT-COM 3™ CD, see chap. 3.3). Hit button “Search” to search the unit.

   - The unit was not detected: Check the connections ant the network (plugs, cables, switches, power supplies). If the unit is still not detected, contact your system administrator.
   - The IP address is “0.0.0.0”, “Status Unreachable” or is not correct: Please proceed according to chap. 3.4.

When registering the connected chambers, APT-COM™ 3 does not find the chambers with an Ethernet interface. Why?

This may be due to a customer’s firewall. Please refer to chap. 8.4.1.3

15.2.3 APT-COM™ 3

If I click the buttons in the “Center” window, the according windows open up only shortly or don’t even open up.

The buttons are toggle buttons, i.e. clicking once opens up the window, and the next click closes the window. Thus a double click immediately closes the window just opened.

How do I start a program at the controller?

Either manually at the controller or using APT-COM™ 3 in a running measurement by selecting "Controller Mode" --> "Auto". Since version 3.01.028 it is possible to select the program number.

How do I start a program with the Remote Program?

Edit the program with the Program Editor and save it. Then open the Remote Program and load the saved program. In the "Config" window of APT-COM™ 3 enter under "Program Remote" the IP address of the local computer ("localhost" or "127.0.0.1") and a port number (e.g., 8000). Make the same entries in the Remote Program. Test the connection using the "Test" button (signal changing to green after a moment). Create a new measurement with APT-COM™ 3 and enter the measurement name at the Remote Program. After starting the measurement, you can now start the program via "Start" in the Remote Program.

If a program shall be started from a different computer connected via a network, the Remote Program must be started from this computer, and the IP addresses of the corresponding computers must be entered.

How do I proceed in order to monitor a measurement with the Watch Tool?

In the "Config" window of APT-COM™ enter under "Watch Tool" the IP address of the local computer ("localhost" or "127.0.0.1") and a port number (e.g., 7000). Open the Watch Tool and make the same entries there. Test the connection using the "Test" button (signal changing to green after a moment). Create a new measurement with APT-COM™ 3.

If a program shall be started from a different computer connected via a network, the Watch Tool must be started from this computer, and the IP addresses of the corresponding computers must be entered.

What is the difference between “localhost” and “127.0.0.1”?

"Localhost" means the local computer network. “127.0.0.1” is the resolved IP address of "localhost". Both entries lead to the same results in APT-COM™ 3.

Why is the set-point of the RD2 controller modified by APT-COM™ 3 during start or recording?

If the set-point is modified by hand at the chamber (via the controller keyboard) during or previous to APT-COM™ 3start, it is impossible to read out the value from the controller. The controller will actualize the according set-point only in display and control, but not at the interface.

Solution: If APT-COM™ 3 is used to control the chamber, the set-point must always be entered via the software. Only then it is sure that chamber and software have the same set-point.

Note: The controller can be forced to actualize the interface set-point by switching off and on the chamber.

The “Monitor Interval” of the RD2 controller can not be set with APT-COM 3? Why?

The RD2 controller has primarily been designed to connect a printer. Thus it does not put out the actual value on request, but independently at the so-called “print interval”. The print interval can only be specified at the controller. Please see the operation manual of the respective chamber for details.

Why does APT-COM™ 3 not transmit the RD2 controller set-point, or only very slowly?

APT-COM™ 3 will only transmit the set-point of the RD2 controller when a read telegram has been received. This guarantees that a collision by simultaneous writing and reading be avoided. If the print interval is set at the controller to e.g. 3 minutes, it could happen in the worst case that the set-point is transmitted to the controller only after 3 minutes.

The print interval at the RD2 controller should always be set to 1 minute.

Following for table entries one entry is missing at the RD2 controller. Why?

The RD2 controller puts out the actual value 4 times to APT-COM™ 3. Then it transmits the print interval set at the controller. This is system-related and cannot be avoided, because this controller type has been designed for printer operation only in 1992. This has been changed at the newly developed RD3 controller (available since late 2003) in view of software operation (APT-COM).

What is the meaning of Manual/Basic at the Vacuum Controller (CVC 2000 / CVC 3000)?

To activate the controller, switch to “Manual”. There is no pressure control in Basic mode. The set-point in Basic mode has no effect on the controller.

What is the difference between the climatic chambers “KBF (E2)” and “KBF (E2) prog”?

The climatic chambers „KBF (E2)“ (sizes 115, 204) and „KBF 720 (E2)“ (size 720) are equipped with a MB1 fixed value controller without program function. This controller has then been developed further. In order to use the program functions of chambers equipped with a MB1 program controller APT-COM™ 3 and in the Program Editor, select “KBF (E2) prog” resp. “KBF (E2) 720 prog” for these units.

I cannot detect my chamber type in the list of the configuration menu “Chamber”.

You can find a list of all chambers with the appropriate selection in chap. 15.3. If you still have trouble, please contact the BINDER Service. Please keep the Art. no. and, if existing, the project no. of your chamber at hands (you will find the on the type plate).

I got a climatic chamber with program control. But in the measurement window there is no possibility to select “Auto” for program operation.

The chamber has been wrongly configures in the configuration menu “Chamber”. Make sure that the option “KBF (E2) prog” resp. “KBF (E2) 720 prog” is selected for chambers with MB1 controller. For chambers with PD2 (DICON 1001) controller, “KBWF” is the right option.

Is it possible to execute automatic documentation functions at the same time?

All automatic documentation functions can be executed at the same time. No function can block another one. From a technical point of view: they are independent threads.

In the window Report Generator (see chap. 9.2) the documentation demands currently in progress are visible. If this window is invisible, inactivate the function “Hide windows” (chap. 9.1).

One may have the impression that the automatic documentation functions block each other. The reason why is that these functions to charge the computer’s capacity on a high level (CPU load of 80% or more, according to the data volume). Requesting all demands at the same time leads to data jam because the computer’s processor is the limiting factor.

There are several possibilities to reduce this effect:

1. Faster CPU. A greater number of cores is more useful than a high GHz clocking. APT-COM™ 3 supports up to 8 cores.
2. Staggering the timescale of the automatic documentation functions, e.g. Auto Print at 2.00 a.m., Auto Spreadsheat at 3.00 a.m. The demands of one common automatic documentation function are processed one after the other, so it is of no use to stagger the timescale of the demands of one common function.
3. Maintenance of the APT-COM™ 3 database by regularly executing Achiver and DataBase Optimizier. Rough estimation: Archiver once a week, DataBase Optimizer approx. once a month. We can also recommend tostart both one after the other every two weeks (see chap. 5.2).

What happens to the automatic documentation functions when I activate the automatic Restart function?

Still waiting demands in the Report Generator are lost when a new start happens. These demands can be triggered after the restart with the function “Manual Documentation”. Never any data are lost by this.

To avoid loss of the demands, the moment of the automatic restart should be sufficiently far from the function “Auto Documentation”.

Example: “Auto Print” starts at 8.00 a.m., printing takes 2 hours. Thus the function Restart should not be executed before 10.00 a.m. If it happens already at 9.00 a.m., only half of the print demands will be executed. We can also recommend performing the Restart one hour before the print demands start. So APT-COM™ 3 has the complete set rest start interval (minus one hour) at its disposal for processing the demands. In some cases you can also select a bigger rest start interval.

15.2.4 Watch Tool

When a user logs in, the “Configuration” button disappears. How then can the user establish the connection to the Watch Tool or to the Remote Program?

Only the APT-COM™ administrator can specify connection settings for Watch Tool and the Remote Program. One single setting by the APT-COM 3 administrator is sufficient.

When I start the Watch Tool during a running measurement, I do not see any or just shaded limit indications (pointer displays).

Hit button "Init all measure" in the "Communication Manager" window of APT-COM™ 3. Following run-down of the monitor interval the pointer should appear in the Watch Tool display.

Why do I see at the pointer display of the Watch Tool only one of the actual values?

The Watch Tool always refers to the actual value having the greatest deviation from the set-point. So it can be assumed that other actual values have a smaller deviation. The Watch Tool serves primordially as a monitoring system. In order to get information about other values, click on "Info/Config".

Could several pointers be displayed in the Watch Tool window?

Several displays correspond to several running measurements.

15.2.5 Program Editor

What exactly is deleted at the menu point “Delete Program”?

A program in the chamber controller is deleted. No files will be deleted on the computer. The "Program" menu affects only the controller, and the "File" menu affects only the file system.

Can a program be edited with the Program editor while an APT-COM™ 3 measurement is running?

This should generally be avoided. Only if the "Program" menu of the Program Editors is not used, and if the function "Test Chamber" in the first window "Select Chamber" has not been used, then, if necessary, a program can be edited, saved, or loaded during a running APT-COM™ measurement.

Up to which section a program is transferred when “Last section no. to send” is set e.g., to 4?

From the first section on until the 4th section all set-points and duration values are transmitted. Regarding the 5th section, the set-point is transmitted as well, while the duration is automatically set to the shortest possible time (1 minute or 1 second, according to the controller type).

What is the meaning of “H” and “L” in the table of control tracks?

"H" means "HIGH", i.e. switching ON a control track. "L" means "LOW", i.e. switching OFF a control track.

How do I set sections to be repeated indefinitely?

Set the number of repeat cycles to -1.

If I want to save a program that I have created, how do I specify the desired program number?

Editing, loading, saving, and transferring are always done for one single program (in contrast to APT-COM™ 2 where always the entire program collection of 25 Programs is concerned). In order to know later on which program has been transmitted to which program place, it is recommended to name the program files accordingly (e.g., KBWF_Program2.prg).

How do I select a different temperature chamber in the Program Editor?

This can only be done in the "Select Chamber" window when calling-up the program. To select a different chamber later on, start the Program Editor again.

I got a climatic chamber with program control. But in the Program Editor there is no “Program” menu to communicate with the chamber controller.

The chamber has been wrongly configures in the configuration menu “Chamber”. Make sure that the option “KBF (E2) prog” resp. “KBF (E2) 720 prog” is selected for chambers with MB1 controller. For chambers with PD2 (DICON 1001) controller, “KBWF” is the right option.

15.3 List of BINDER chambers for configuration in APT-COM™ 3

If you cannot find your chamber in this list, or if you are not sure, please contact the BINDER Service. This is especially important if your chamber has been modified with a project not listed here.

Article No.	Designation (type, size, equipment)	Volt	Option / Project No.	Controller	Selection in APT-COM 3
Alarm Box AB 01 (E1)					
9x52-0004	AB 01	230V		dTron8	AB01
Alarm Box AB 01 (E2)					
9x52-0008	AB 01	230V		dTron308	AB01 (E2)
B 28					
9x10-0002	B 028	230V		Thermostat	----
9x10-0004	B 028 class 1	230V			
9x10-0067	B 028 (115V)	230V			
9x10-0184	B 028 class 1 (115 V)	230V			
BD (E1)					
9x10-0005	BD 053	230V		R2	----
9x10-0009	BD 053-UL class 2	115V			
9x10-0022	BD 053 class 3.1	115V			
9x10-0019	BD 115	230V			
9x10-0154	BD 115 class 3.3	230V			
9x10-0024	BD 115 class 3.1	115V			
9x10-0025	BD 115-UL class 2	115V			
9x10-0039	BD 240	230V			
9x10-0155	BD 240 class 3.3	230V			
9x10-0113	BD 240-UL class 2	115V			
9x10-0048	BD 400	230V			
9x10-0055	BD 720	230V			
BD (E2)					

9x10-0186	BD 023	230V		R3	----
9x10-0187	BD 023 + RS422	230V			BD/ ED / FD (E2)
9x10-0188	BD 023	115V			----
9x10-0189	BD 023-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0080	BD 053	230V			----
9x10-0081	BD 053 + RS422	230V			BD/ ED / FD (E2)
9x10-0178	BD 053-UL	115V			----
9x10-0179	BD 053-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0086	BD 115	230V			----
9x10-0088	BD 115 + RS422	230V			BD/ ED / FD (E2)
9x10-0180	BD 115-UL	115V			----
9x10-0181	BD 115-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0089	BD 240	230V			----
9x10-0095	BD 240 + RS422	230V			BD/ ED / FD (E2)
9x10-0182	BD 240-UL	115V			----
9x10-0183	BD 240-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0073	BD 400 + RS422	230V			BD/ ED / FD (E2)
9x10-0176	BD 400-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0074	BD 720 + RS422	230V			BD/ ED / FD (E2)
9x10-0177	BD 720-UL + RS422	115V			BD/ ED / FD (E2)
BED					
9x10-0006	BED 053	230V		RD2.1	BED
9x10-0008	BED 053 class 3.1	115V			
9x10-0010	BED 053-UL class 2	115V			
9x10-0156	BED 053 class 3.3	230V			
9x10-0026	BED 115	230V			
9x10-0027	BED 115-UL class 2	115V			
9x10-0028	BED 115 class 3.1	115V			
9x10-0157	BED 115 class 3.3	230V			
9x10-0041	BED 240	230V			
9x10-0117	BED 240-UL class 2	115V			
9x10-0158	BED 240 class 3.3	230V			
9x10-0050	BED 400	230V			
9x10-0121	BED 400-UL class 2	115V			
9x10-0159	BED 400 class 3.3	230V			
9x10-0060	BED 720	230V			
9x10-0122	BED 720-UL class 2	115V			
9x10-0160	BED 720 class 3.3	230V			
BF					
9x10-0235	BF 053	230V		R 3.1	BF (E1)
9x10-0236	BF 053-UL	115V			
9x10-0237	BF 115	230V			
9x10-0238	BF 115-UL	115V			
9x10-0239	BF 240	230V			
9x10-0240	BF 240-UL	115V			
9x10-0241	BF 400	230V			
9x10-0242	BF 400-UL	115V			
9x10-0243	BF 720	230V			
9x10-0244	BF 720-UL	115V			
BFD (E1)					
9x10-0087	BFD 053	230V		R 2.1	----
9x10-0071	BFD 053	115V			
BFED (E1)					
9x10-0012	BFED 053	230V		RD2.1	BFED
9x10-0072	BFED 053	115V			
CB (E1)					
9x40-0001	CB 150	230V		PD2 (Dicon 1001)	CB
9x40-0003	CB 150 copper	230V			
9x40-0009	CB 150-UL	115V			
9x40-0005	CB 210	230V			

9x40-0007	CB 210 copper	230V			
9x40-0011	CB 210-UL	115V			
CB (E1) with option O_2 control					
9x40-0002	CB 150 O_2 control	230V		MB1	CB / O2
9x40-0004	CB 150 copper O_2 control	230V			
9x40-0006	CB 210 O_2 control	230V			
9x40-0008	CB 210 copper O_2 control	230V			
CB (E2)					
9x40-0012	CB 150	230V		MB1	CB (E2)
9x40-0056	CB 150-UL copper	115V			
9x40-0016	CB 150-UL	115V			
9x40-0020	CB 150 div. glass door	230V			
9x40-0024	CB 150-UL div. glass door	115V			
9x40-0030	CB 150-UL Fail-Safe	115V			
9x40-0032	CB 150	100V			
9x40-0013	CB 210	230V			
9x40-0015	CB 210 copper	230V			
9x40-0017	CB 210-UL	115V			
9x40-0021	CB 210 div. glass door	230V			
9x40-0025	CB 210-UL div. glass door	115V			
9x40-0031	CB 210-UL Fail-Safe	115V			
9x40-0033	CB 210	100V			
CB (E2) with option O_2 control					
9x40-0018	CB 150 O_2 control	230V		MB1	CB / O2 (E2)
9x40-0022	CB 150-UL O_2 control	115V			
9x40-0026	CB 150 O_2 control div. glass door	230V			
9x40-0028	CB 150-UL O_2 control div. glass door	115V			
9x40-0019	CB 210 O_2 control	230V			
9x40-0023	CB 210-UL O_2 control	115V			
9x40-0027	CB 210 O_2 control div. glass door	230V			
9x40-0029	CB 210-UL O_2 control, div. glass door	115V			
CB (E3) unit with beads					
9x40-0069	CB 53	230V		MB1	CB (E3)
9x40-0070	CB 53-UL	115V			
9x40-0038	CB 150	230V			
9x40-0039	CB 210	230V			
9x40-0041	CB 210 copper	230V			
9x40-0042	CB 150-UL	115V			
9x40-0043	CB 210-UL	115V			
9x40-0046	CB 150 div. glass door	230V			
9x40-0047	CB 210 div. glass door	230V			
9x40-0050	CB 150-UL div. glass door	115V			
9x40-0051	CB 210-UL div. glass door	115V			
CB (E3) unit with beads, with O_2 control					
9x40-0071	CB 53 O_2 control	230V		MB1	CB O2 (E3)
9x40-0072	CB 53-UL O_2 control	115V			
9x40-0044	CB 150 O_2 control	230V			
9x40-0045	CB 210 O_2 control	230V			
9x40-0048	CB 150-UL O_2 control	115V			
9x40-0049	CB 210-UL O_2 control	115V			

9x40-0052	CB 150 O_2 control div. glass door	230V			
9x40-0053	CB 210 O_2 control div. glass door	230V			
9x40-0054	CB 150-UL (115V) O_2 control div. glass door	230V			
9x40-0055	CB 210-UL (115V) O_2 control div. glass door	230V			
CTM 01 measuring device CO_2 and temperature					
9x52-0002	CTM 01	230V		PD2 (Dicon 1001)	CTM01
E 28					
9x10-0001	E 028	230V		Thermostat	----
9x10-0003	E 028 class 1	230V			
9x10-0106	E 028 (115V)	230V			
9x10-0185	E 028 class 1 (115 V)	230V			
ED (E1)					
9x10-0011	ED 053	230V		R2	----
9x10-0133	ED 053 class 3.1	230V			
9x10-0015	ED 053-UL	115V			
9x10-0030	ED 115-UL	115V			
9x10-0029	ED 115	230V			
9x10-0134	ED 115 class 3.1	230V			
9x10-0037	ED 240	230V			
9x10-0123	ED 240-UL	208V			
9x10-0046	ED 400	400V			
9x10-0057	ED 720	400V			
ED (E2)					
9x10-019x	ED 023	230V		R3	----
9x10-0191	ED 023 + RS422	230V			BD/ ED / FD (E2)
9x10-0192	ED 023-UL	115V			----
9x10-0193	ED 023-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0078	ED 053	230V			----
9x10-0079	ED 053 + RS422	230V			BD/ ED / FD (E2)
9x10-0131	ED 053-UL	115V			----
9x10-0132	ED 053-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0096	ED 115	230V			----
9x10-0097	ED 115 + RS422	230V			BD/ ED / FD (E2)
9x10-0164	ED 115-UL	115V			----
9x10-0165	ED 115-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0098	ED 240	230V			----
9x10-0101	ED 240 + RS422	230V			BD/ ED / FD (E2)
9x10-0166	ED 240-UL	208V			----
9x10-0167	ED 240-UL + RS422	208V			BD/ ED / FD (E2)
9x10-0075	ED 400 + RS422	400V			BD/ ED / FD (E2)
9x10-0168	ED 400-UL + RS422	208V			BD/ ED / FD (E2)
9x10-0076	ED 720 + RS422	400V			BD/ ED / FD (E2)
9x10-0169	ED 720-UL + RS422	208V			BD/ ED / FD (E2)
EED					
9x10-0014	EED 053	230V		RD2.1	EED / EEDK / FED
9x10-0017	EED 053-UL	115V			
9x10-0136	EED 053 class 3.1	230V			
9x10-0031	EED 115	230V			
9x10-0032	EED 115-UL	115V			
9x10-0137	EED 115 class 3.1	230V			
9x10-0038	EED 240	230V			
9x10-0124	EED 240-UL	208V			
9x10-0138	EED 240 class 3.1	230V			
9x10-0047	EED 400	400V			

9x10-0125	EED 400-UL	208V			
9x10-0139	EED 400 class 3.1	400V			
9x10-0056	EED 720	400V			
9x10-0126	EED 720-UL	208V			
9x10-0140	EED 720 class 3.1	400V			
EEDK 76					
9x10-0110	EEDK 076	230V		RD2.1	EED / EEDK / FED
FD (E1)					
9x10-0016	FD 053	230V		R2	----
9x10-0023	FD 053-UL	115V			
9x10-0085	FD 053 not UL conform	115V			
9x10-0141	FD 053 class 3.1	230V			
9x10-0033	FD 115	230V			
9x10-0069	FD 115 E built-in	230V			
9x10-0142	FD 115 class 3.1	230V			
9x10-0034	FD 115-UL	115V			
9x10-0042	FD 240	230V			
9x10-0127	FD 240-UL	208V			
9x10-0143	FD 240 class 3.1	230V			
9x10-0051	FD 400	400V			
9x10-0058	FD 720	400V			
FD (E2)					
9x10-0194	FD 023	230V		R3	----
9x10-0195	FD 023 + RS422	230V			BD/ ED / FD (E2)
9x10-0196	FD 023-UL	115V			----
9x10-0197	FD 023 + RS422	115V			BD/ ED / FD (E2)
9x10-0082	FD 053	230V			----
9x10-0083	FD 053 + RS422	230V			BD/ ED / FD (E2)
9x10-0128	FD 053-UL	115V			----
9x10-0135	FD 053-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0102	FD 115	230V			----
9x10-0103	FD 115 + RS422	230V			BD/ ED / FD (E2)
9x10-0129	FD 115-UL	115V			----
9x10-0149	FD 115-UL + RS422	115V			BD/ ED / FD (E2)
9x10-0104	FD 240	230V			----
9x10-0107	FD 240 + RS422	230V			BD/ ED / FD (E2)
9x10-0130	FD 240-UL	208V			----
9x10-0150	FD 240-UL + RS422	208V			BD/ ED / FD (E2)
9x10-0151	FD 400-UL + RS422	208V			BD/ ED / FD (E2)
9x10-0161	FD 720-UL + RS422	208V			BD/ ED / FD (E2)
FDL 115 (E1)					
9x10-0099	FDL 115	230V		RD2.1	FDL
9x10-0152	FDL 115 IP 54	230V			
FDL 115 (E2)					
9x10-0269	FDL 115	230V		RD3	FDL (E2)
FED (E1)					
9x10-0018	FED 053	230V		RD2.1	FED Fan
9x10-0021	FED 053-UL	115V			
9x10-0077	FED 053 not UL	115V			
9x10-0144	FED 053 class 3.1	230V			
9x10-0035	FED 115	230V			
9x10-0036	FED 115-UL	115V			
9x10-0084	FED 115 not UL	115V			
9x10-0145	FED 115 class 3.1	230V			
9x10-0043	FED 240	230V			
9x10-0146	FED 240 class 3.1	230V			
9x10-0111	FED 240-UL	208V			
9x10-0052	FED 400	400V			
9x10-0147	FED 400 class 3.1	400V			
9x10-0112	FED 400-UL	208V			

9x10-0059	FED 720	400V			
9x10-0070	FED 720-UL	208V			
9x10-0148	FED 720 class 3.1	400V			
FED (E2)					
9x10-0208	FED 023	230V		R3.1	FED (E2)
9x10-0209	FED 023	115V			
9x10-0210	FED 053	230V			
9x10-0211	FED 053-UL	115V			
9x10-0212	FED 115	230V			
9x10-0213	FED 115-UL	115V			
9x10-0214	FED 240	230V			
9x10-0215	FED 240-UL	208V			
9x10-0216	FED 400	400V			
9x10-0217	FED 400-UL	208V			
9x10-0218	FED 720	400V			
9x10-0219	FED 720-UL	208V			
FP (E1)					
9x10-0225	FP 053	230V		RD3	FP
9x10-0226	FP 053-UL	115V			
9x10-0227	FP 115	230V			
9x10-0228	FP 115-UL	115V			
9x10-0229	FP 240	230V			
9x10-0230	FP 240-UL	208V			
9x10-0231	FP 400	400V			
9x10-0232	FP 400-UL	208V			
9x10-0233	FP 720	400V			
9x10-0234	FP 720-UL	208V			
FP (E1) with option object temperature display					
all models as FP (E1)			8012-0504	RD3	FP/Obj. Temp
FP (E1.1) with week program timer					
9x10-0153	FP 053	230V		RD3 with week program timer	FP (E1.1)
9x10-0175	FP 053-UL	115V			
9x10-0255	FP 115	230V			
9x10-0262	FP 115-UL	115V			
9x10-0263	FP 240	230V			
9x10-0264	FP 240-UL	208V			
9x10-0265	FP 400	400V			
9x10-0266	FP 400-UL	208V			
9x10-0267	FP 720	400V			
9x10-0268	FP 720-UL	208V			
FTM 01 measuring device humidity and temperature					
9x40-0010	FTM 01	230V		D2 (Dicon 1000)	FTM01
9x52-0003	FTM 01	230V			
KB (E1)					
9x20-0001	KB 053	230V		RD2	KB / KBW
9x20-0002	KB 053 class 3.3	230V			
9x20-0003	KB 115	230V			
9x20-0004	KB 115 class 3.3	230V			
9x20-0005	KB 240	230V			
9x20-0007	KB 720	230V			
9x20-0008	KB 720 class 3.3	230V			
KB (E1) with option program controller					
9120-0001	KB 053	230V	8012-0118	PD2 (Dicon 1001) program	Please contact BINDER Service
9120-0003	KB 115	230V	8012-0119		
9120-0005	KB 240	230V	8012-0120		
9120-0007	KB 720	230V	8012-0121		
KB (E2) 23 with Peltier refrigeration system					
9x20-0053	KB 023	230V		RD2	----
9x20-0054	KB 023	115V			----
9x20-0056	KB 023 + RS422	230V			KB 23

9x20-0057	KB 023 + RS422	115V			KB 23
KB (E2) from size 53 on					
9x20-0015	KB 053	230V		RD2	KB / KBW
9x20-0033	KB 053	115V			
9x20-0017	KB 115	230V			
9x20-0034	KB 115	115V			
9x20-0030	KB 240	230V			
9x20-0035	KB 240	115V			
9x20-0020	KB 400	230V			
9x20-0036	KB 400	115V			
9x20-0031	KB 720	230V			
9x20-0037	KB 720	115V			
KB (E3) all sizes					
9x20-0095	KB 023	230V		RD3	KB (E3)
9x20-0098	KB 023-UL	115V			
9x20-0069	KB 053	230V			
9x20-0070	KB 053-UL	115V			
9x20-0071	KB 115	230V			
9x20-0072	KB 115-UL	115V			
9x20-0073	KB 240	230V			
9x20-0074	KB 240-UL	115V			
9x20-0075	KB 400	230V			
9x20-0076	KB 400-UL	115V			
9x20-0077	KB 720	230V			
9x20-0078	KB 720-UL	115V			
KB (E3.1) with week program timer					
9x20-0112	KB 023	230V		RD3 with week program timer	KB (E3.1)
9x20-0113	KB 023-UL	115V			
9x20-0114	KB 053	230V			
9x20-0115	KB 053-UL	115V			
9x20-0116	KB 115	230V			
9x20-0117	KB 115-UL	115V			
9x20-0118	KB 240	230V			
9x20-0119	KB 240-UL	115V			
9x20-0120	KB 400	230V			
9x20-0121	KB 400-UL	115V			
9x20-0122	KB 720	230V			
9x20-0123	KB 720-UL	115V			
KB (E5) with week program timer					
9x20-0136	KB 240	200-240V		RD3 with week program timer	KB (E5)
9x20-0137	KB 240-UL	100-120V			
KB (E5.1) with week program timer					
9x20-0162	KB 240	200-240V		RD3 with week program timer	KB (E5.1)
9x20-0163	KB 240-UL	100-120V			
9x20-0178	KB 400	200-240V			
9x20-0197	KB 400-UL	100-120V			
9x20-0111	KB 720	200-240V			
9x20-0167	KB 720-UL	200-240V			
KBC (E3)					
9x20-0059	KBC 400	230V		RD3	KBC (E3)
9x20-0063	KBC 400	115V			
9x20-0062	KBC 720	230V			

9x20-0064	KBC 720	115V			
KBF before 1996					
				RD2 + SM	Use APT-COM 2
KBF (E1)					
9x20-0009	KBF 115	230V		D2 (Dicon 1000)	KBF
9x20-0011	KBF 240	230V			
9x20-0012	KBF 240 class 3.3	230V			
9x20-0013	KBF 720	230V			
9x20-0014	KBF 720 class 3.3	230V			
KBF (E1) with option program controller					
9120-0009	KBF 115		8012-0122	PD2 (Dicon 1001) program	KBWF
9120-0011	KBF 240		8012-0123		
9120-0013	KBF 720		8012-0124		
KBF (E2) 115, 240					
9x20-0038	KBF 115	230V		MB1 fixed value	KBF (E2)
9x20-0039	KBF 240	230V			
KBF (E2) 115, 240 with option program controller					
9120-0038	KBF 115	230V	8012-0352	MB1 program	KBF (E2) prog
9120-0039	KBF 240	230V	8012-0352		
KBF (E2) 720					
9x20-0040	KBF 720	230V		MB1 fixed value	KBF (E2) 720
KBF (E2) 720 with option program controller					
9120-0040	KBF 720	230V	8012-0352	MB1 program	KBF (E2) prog
KBF (E2.1) 115, 240 and KBF-ICH (E2.1) 240 with program controller					
9x20-0093	KBF 115	230V		MB1 program	KBF (E2) prog
9x20-0155	KBF 115-UL	115V			
9x20-0094	KBF 240	230V			
9x20-0103	KBF 240-UL	240V			
9x20-0066	KBF 240 ICH (Tür)	230V			
9x20-0104	KBF 240 ICH-UL	240V			
KBF (E2.1) 720 and KBF-ICH (E2.1) 720 with program controller					
9x20-0096	KBF 720	230V		MB1 program	KBF (E2) 720 prog
9x20-0153	KBF 720	240V			
9x20-0068	KBF 720 ICH (door)	230V			
9x20-0154	KBF 720 ICH-UL	240V			
KBF 240 (E2.1) with option light integration					
9120-0094	KBF 240	230 V	8012-0409	MB1 program	KBF Light Int. 240
9120-0066	KBF 240 ICH (door)	230V			
KBF 720 (E2.1) with option light integration					
9120-0096	KBF 720	230V	8012-0409	MB1 program	KBF Light Int. 720
9120-0068	KBF 720 ICH (door)	230 V			
KBF-LQC (E2.1) 240					
9x20-0157	KBF 240 LQC	230V			KBF LQC (E2) 240
KBF-LQC (E2.1) 720					
9x20-0158	KBF 720 LQC	230V			KBF LQC (E2) 720
KBF (E3) 240					
9x20-0099	KBF 240	230V			
KBF (E5)					
9x20-0105	KBF 240	200-240V		MB1 program	KBF (E3) 720
9x20-0144	KBF 240-UL	200-240V			
KBF-ICH (E5)					
9x20-0133	KBF-ICH 240	200-240V		MB1 program	KBF (E3) Light Int.
KBF-LQC (E5)					
9x20-0159	KBF-LQC 240	200-240V		MB1 program	KBF(E3) Light Int. 720
KBF (E5.1)					

9x20-0139	KBF 115	200-240V		MB1 program	KBF(E5.1)
9x20-0184	KBF 115-UL	200-240V			
9x20-0109	KBF 240	200-240V			
9x20-0176	KBF 240-UL	200-240V			
9x20-0108	KBF 720	200-240V			
9x20-0168	KBF 720-UL	200-240V			
KBF-ICH (E5.1)					
9x20-0160	KBF-ICH 240	200-240V		MB1 program	KBF(E5.1)
9x20-0106	KBF-ICH 240-UL	200-240V			
9x20-0143	KBF-ICH 720	200-240V			
9x20-0169	KBF-ICH 720-UL	200-240V			
KBF-LQC (E5.1)					
9x20-0177	KBF-LQC 240	200-240V		MB1 program	KBF LQC (E5.1)
9x20-0161	KBF-LQC 240-UL	200-240V			
9x20-0171	KBF-LQC 720	200-240V			
9x20-0170	KBF-LQC 720-UL	200-240V			
KBW (E1)					
9x20-0016	KBW 240	230V		RD2	KB / KBW
9x20-0018	KBW 240 class 3.3	230V			
9x20-0019	KBW 720	230V			
KBW (E1) with option program controller					
9120-0016	KBW 240	230V	8012-0120	PD2 (Dicon 1001) Program	Please contact the BINDER Service
9120-0019	KBW 720	230V	8012-0121		
KBW (E2)					
9x20-0045	KBW 240 illumin. 3 steps	230V		RD2	KB / KBW
9x20-0041	KBW 240 illumin. 3 steps	115V			
9x20-0048	KBW 240 dimming	230V			
9x20-0046	KBW 400 illumin. 3 steps	230V			
9x20-0055	KBW 400 illumin. 3 steps	115V			
9x20-0049	KBW 400 dimming	230V			
9x20-0047	KBW 720 illumin. 3 steps	230V			
9x20-0042	KBW 720 illumin. 3 steps	115V			
9x20-0050	KBW 720 dimming	230V			
KBW (E3) with light commutation via 3 operation lines					
9x20-0084	KBW 240 illumin. 3 steps	230V		RD3	KBW (E3) opt.
9x20-0085	KBW 240 illumin. 3 steps	115V			
9x20-0087	KBW 400 illumin. 3 steps	230V			
9x20-0088	KBW 400 illumin. 3 steps	115V			
9x20-009x	KBW 720 illumin. 3 steps	230V			
9x20-0091	KBW 720 illumin. 3 steps	115V			
KBW (E3) with dimming					
9x20-0086	KBW 240 dimming	230V		RD3	KBW (E3) dim.
9x20-0089	KBW 400 dimming	230V			
9x20-0092	KBW 720 dimming	230V			
KBW (E3.1) with week program timer					
9x20-0124	KBW 240 illumin. 3 steps	230V		RD3 with week program timer	KBW (E3.1)
9x20-0125	KBW 240 illumin. 3 steps	115V			

9x20-0127	KBW 400 illumin. 3 steps	230V			
9x20-0128	KBW 400 illumin. 3 steps	115V			
9x20-0130	KBW 720 illumin. 3 steps	230V			
9x20-0131	KBW 720 illumin. 3 steps	115V			
KBW with option UV (read only)					
9x20-0084	KBW 240 illumin. 3 steps	230V	04-239	MB1	KBW Opt. UV (read only)
KBW (E5) with week program timer					
9x20-0140	KBW 240 illumin. 3 steps	200-240V		RD3 with week program timer	KBW (E5)
9x20-0141	KBW 240-UL illumin. 3 steps	100-120V			
KBW (E5.1) with week program timer					
9x20-0164	KBW 240 illumin. 3 steps	200-240V		RD3 with week program timer	KBW (E5.1)
9x20-0180	KBW 400 illumin. 3 steps	200-240V			
9x20-0172	KBW 720 illumin. 3 steps	200-240V			
KBWF (E1)					
9x20-0022	KBWF 240	230V		PD2 (Dicon 1001) program	KBWF
9x20-0043	KBWF 240-UL (208V)	230V			
9x20-0023	KBWF 240 class 3.3	230V			
9x20-0024	KBWF 720	230V			
9x20-0044	KBWF 720-UL (208V)	230V			
9x20-0025	KBWF 720 class 3.3	230V			
KBWF (E2) 240					
9x20-0051	KBWF 240	230V		MB1 program	KBWF (E2)
KBWF (E2) 720					
9x20-0052	KBWF 720	230V		MB1 program	KBWF (E2) 720
KBWF (E3) 720					
9x20-0133	KBWF 240	230V		MB1 program	KBWF (E3)
KBWF (E3) 720					
9x20-0134	KBWF 720	230V		MB1 program	KBWF (E3) 720
KBWF (E5) 240					
9x20-0149	KBWF 240	200-240V		MB1 program	KBWF (E5)
KBWF (E5.1) 720					
9x20-0166	KBWF 240	200-240V		MB1 program	KBWF (E5.1)
9x20-0173	KBWF 720	200-240V			
KMF (E5.1)					
9x20-0187	KMF 115	200-240V		MB1 program	KMF (E5.1)
9x20-0188	KMF 115-UL	200-240V			
9x20-0145	KMF 240	200-240V			
9x20-0182	KMF 240-UL	200-240V			
9x20-0185	KMF 720	200-240V			
9x20-0186	KMF 720-UL	200-240V			
M (E1)					
9x10-0090	M 053	230V		PD2 (Dicon 1001) program	M
9x10-0114	M 053 class 3.1	230V			
9x10-0091	M 115	230V			
9x10-0115	M 115 class 3.1	230V			
9x10-0092	M 240	230V			

9x10-0116	M 240 class 3.1	230V			
9x10-0093	M 400	400V			
9x10-0118	M 400 class 3.1	400V			
9x10-0094	M 720	400V			
9x10-0119	M 720 class 3.1	400V			
M (E1) with option object temperature					
9x10-0090	M 053	230V	8012-0184	PD2 (Dicon 1001) program	M/Obj.Temp
9x10-0091	M 115	230V	8012-0185		
9x10-0092	M 240	230V	8012-0186		
9x10-0093	M 400	400V	8012-0187		
9x10-0094	M 720	400V	8012-0187		
M (E2)					
9x10-0201	M 053	230V		MB1 program	M (E2)
9x10-0170	M 053	115V			
9x10-0202	M 115	230V			
9x10-0171	M 115	115V			
9x10-0203	M 240	230V			
9x10-0172	M 240	208V			
9x10-0204	M 400	400V			
9x10-0173	M 400	208V			
9x10-0205	M 720	400V			
9x10-0174	M 720	208V			
M (E2) with option object temperature display					
all models as M (E2)			8012-0334	MB1 program	M/Obj.Temp (E2)
M (E2) with option object temperature control (cascade control)					
all models as M (E2)			04-329	MB1 program	M/Obj.Temp Controller (E2)
9x10-0203	M 240	400V	06-165		
9x10-0205	M 720	400V	04-186		
MDL (E1)					
9x10-0100	MDL 115	400V		PD2 (Dicon 1001) program	MDL
MDL (E1) with option object temperature display					
9x10-0100	MDL 115	400V	8012-0177	PD2 (Dicon 1001) program	MDL/Obj.Temp
9x10-0100	MDL 115	400V	8012-0178		
MDL (E2)					
9x10-0200	MDL 115	400V		MB1 program	MDL (E2)
MDL (E2) with option object temperature display					
9x10-0200	MDL 115	400V	8012-0331	MB1 program	MDL/Obj.Temp (E2)
9x10-0200	MDL 115	400V	8012-0332		
MK (E1)					
9x20-0026	MK 053	230V		PD2 (Dicon 1001) program	MK
9x20-0028	MK 240	400V			
9x20-0029	MK 720	400V			
MK (E2)					
9x20-0006	MK 053	230V		MB1 program	MK (E2)
9x20-0021	MK 240	400V			
9x20-0027	MK 720	400V			
MK (E2) with option object temperature control (cascade control)					
all models as MK (E2)			04-026	MB1 program	M/Obj.Temp Controller (E2)
9x20-0027	MK 720	400V	04-098		
MK (E3)					
9x20-0146	MK 115	230V		MB1 program	MK (E3)
9x20-0148	MK 240	400V			
9x20-0156	MK 720	400V			
MKF (E1) and MKF (E1.1)					
9x20-0065	MKF 240	400V		MB1 program	MKF
9x20-0081	MKF 720	400V			
MKF (E1) with option object temperature control (cascade control)					
9x20-0065	MKF 240	400V	04-228	MB1 program	MKF/Obj.Temp Controller

MKF (E2)					
9x20-0107	MKF 115	230V		MB1 program	MKF (E2)
9x20-0109	MKF 115	115V			
9x20-0100	MKF 240	400 V			
9x20-0110	MKF 240	208V			
9x20-0108	MKF 720	400V			
9x20-0111	MKF 720	208V			
MKF (E3)					
9x20-0107	MKF 115	230V		MB1 program	MKF (E3)
9x20-0132	MKF 240	400V			
9x20-0147	MKF 720	400V			
MKFT (E1) and MKFT (E1.1)					
9x20-0080	MKFT 240			MB1 program	MKFT
9x20-0083	MKFT 720				
MKFT (E3)					
9x20-0152	MKFT 115	230V		MB1 program	MKFT
9x20-0080	MKFT 240	400V			
9x20-0083	MKFT 720	400V			
MKT (E1) and MKT (E1.1)					
9x20-0079	MKT 240	400V		MB1 program	MKT
9x20-0082	MKT 720	400V			
MKT (E3)					
9x20-0151	MKT 115	230V		MB1 program	MKT
9x20-0110	MKT 240	400V			
9x20-0082	MKT 720	400V			
Temperature measuring device TM 01 (E1)					
9x52-0001	TM 01	230V		dTron8	TM01
Temperature measuring device TM 01 (E2)					
9x52-0007	TM 01	230V		dTron308	TM01 (E2)
Vacuum Controller CVC 2000					
	CVC 2000 (hPa)	230V		CVC2000	Vacu-Controller (hPa)
	CVC 2000 (mbar)	230V			Vacu-Controller (mbar)
	CVC 2000 (hPa)	115V			Vacu-Controller (hPa)
	CVC 2000 (mbar)	115V			Vacu-Controller (mbar)
Vacuum Controller CVC 3000					
	CVC 3000 (hPa)	230V		CVC3000	Vacu-Controller-Graphical (hPa)
	CVC 3000 (mbar)	230V			Vacu-Controller-Graphical (mbar)
	CVC 3000 (hPa)	115V			Vacu-Controller-Graphical (hPa)
	CVC 3000 (mbar)	115V			Vacu-Controller-Graphical (mbar)
VD (E1)					
9x30-0001	VD 023	230V		RD2	VD/VDL
9x30-0014	VD 023-UL	115V			
9x30-0008	VD 023 acid resistant	230V			
9x30-0004	VD 053	230V			
9x30-0015	VD 053-UL	115V			
9x30-0006	VD 053 acid resistant	230V			
9x30-0007	VD 115	230V			
9x30-0013	VD 115-UL	115V			
9x30-0009	VD 115 acid resistant	230V			
VD (E2)					
9x30-0017	VD 023	230V		RD3	VD/VDL (E2)
9x30-0023	VD 023-UL	115V			
9x30-0020	VD 023 acid resistant	230V			
9x30-0018	VD 053	230V			
9x30-0024	VD 053-UL	115V			
9x30-0021	VD 053 acid resistant	230V			

9x30-0019	VD 115	230V			
9x30-0025	VD 115-UL	115V			
9x30-0022	VD 115 acid resistant	230V			
VD (E2) with option object temperature display					
all models as VD (E2)			8012-0551	RD3	VD/VDL Obj.Temp (E2)
VD (E2.1) with week program timer					
9x30-0029	VD 023	230V		RD3 with week program timer	VD/VDL (E2.1)
9x30-0035	VD 023	115V			
9x30-0032	VD 023 acid resistant	230V			
9x30-0030	VD 053	230V			
9x30-0036	VD 053	115V			
9x30-0033	VD 053 acid resistant	230V			
9x30-0031	VD 115	230V			
9x30-0037	VD 115	115V			
9x30-0034	VD 115 acid resistant	230V			
VD (E2.1) with week program timer, with option object temperature display					
all models as VD (E2.1)		230V	8012-0551	RD3 with week program timer	VD/VDL Obj.Temp (E2.1)
VDL (E1)					
9x30-0010	VDL 023	230V		RD2	VD/VDL
9x30-0011	VDL 053	230V			
9x30-0012	VDL 115	230V			
VDL (E2)					
9x30-0026	VDL 023	230V		RD3	VD/VDL (E2)
9x30-0027	VDL 053	230V			
9x30-0028	VDL 115	230V			
VDL (E2) with option object temperature display					
9130-0027	VDL 053	230V	8012-0210	RD3	VD/VDL Obj.Temp (E2)
9130-0028	VDL 115	230V	8012-0211		
VDL (E2.1) and VDL-EX, with week program timer					
9x30-0038	VDL 023	230V		RD3 with week program timer	VD/VDL (E2.1)
9x30-0039	VDL 053	230V			
9x30-0040	VDL 115	230V			
9x30-0002	VDL EX 023	230V			
9x30-0003	VDL EX 053	230V			
9x30-0005	VDL EX 115	230V			
VDL (E2.1) with week program timer, with option object temperature display					
all models as VDL (E2.1)		230V	8012-0551	RD3 with week program timer	VD/VDL Obj.Temp (E2.1)
VM 01 vacuum measuring device					
9x52-0006	VM 01	230V		DVR5	Vacuum gauge (hPa)
9x52-0013	VM 01	115V			