cobas® 4800 system

Operator's Manual (for the US)
Software Version 2.0
for ***cobas***® *4800 BRAF V600 Mutation Test*

Document information

Revision history

Manual version	Software version	Revision date	Changes
1.0	2.0		

Edition notice

This manual is for users of the **cobas®** 4800 system, software version 2.0 in conjunction with the **cobas®** 4800 BRAF V600 Mutation Test.

Every effort has been made to ensure that all the information contained in this manual is correct at the time of printing. However, Roche Diagnostics Ltd. reserves the right to make any changes necessary without notice as part of ongoing product development.

Any customer modification to the equipment will render the warranty or service agreement null and void.

Software updates are done by Roche Service representatives.

Intended use

The **cobas®** 4800 system including dedicated software for IVD use is intended to be used as an in-vitro diagnostic device providing amplification and detection of specific targets from human samples for selecting patients for treatment with therapeutics for which this test is indicated.

It is important that the operator read this manual thoroughly before using the system.

The **cobas®** 4800 system is to be used by laboratory professionals trained in laboratory techniques and by instruction on the use of the system.

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Approvals

The Operator's Manual meets the European Standard EN 591.

Compliance of the system is demonstrated by the following marks:

CE Complies with the IVD directive 98/79/EC.

c UL us Issued by Underwriters Laboratories, Inc. (UL) for Canada and the US.

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Table of contents

Preface

This manual covers all topics related to the **cobas**® 4800 software and describes the test-specific workflow for the **cobas**® 4800 BRAF V600 Mutation Test. The **cobas z** 480 analyzer which is also part of the **cobas**® 4800 system is described in the Instrument Manual for the **cobas z** 480 analyzer.

How to use this manual

- Keep this manual in a safe place to ensure that it is not damaged and remains available for use.
- This manual and all other relevant manuals should be easily accessible at all times.

To help you find information quickly, there is a table of contents at the beginning of the manual and each chapter. In addition, a complete index can be found at the end of the manual.

Where to find information

In addition to the Operator's Manual, the following documents are also provided to assist in finding desired information quickly:

*Instrument Manual for the **cobas z** 480 analyzer*

The Instrument Manual for the **cobas z** 480 analyzer provides information about the hardware, maintenance and specifications of the **cobas z** 480 analyzer, as well as intended use and safety information.

Test-specific package insert

The test-specific package insert provides information on preparation and handling of the reagent and DNA isolation kit as well as on manual PCR setup of the microwell plate.

Other test-specific Operator's Manuals

For each test, there is a specific Operator's Manual similar to this one. This Operator's Manual is only for use of **cobas** 4800 software version 2.0 in conjunction with the **cobas** 4800 BRAF V600 Mutation Test.

Conventions used in this manual

Visual cues are used to help locate and interpret information in this manual quickly. This section explains formatting conventions used in this manual.

Symbols The following symbols are used:

Symbol	Used for
►	Start of procedure
■	End of procedure
•	List item
👁	Cross-reference
	Tip
	Safety alert
	Electrical and electronic equipment marked with this symbol are covered by the European Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). The symbol denotes that the equipment must not be disposed of in the municipal waste system.

Abbreviations The following abbreviations are used:

Abbreviation	Definition
A	
ANSI	American National Standards Institute
C	
cc	cubic centimeter
CSA	Canadian Standards Association
D	
DIL	Diluent
DNA	Deoxyribonucleic Acid
E	
EC	European community
EN	European standard
I	
IVD	In Vitro Diagnostic
L	
LED	Light Emitting Diode
LIS	Laboratory Information System
M	
MWP	Microwell Plate
N	
n/a	not applicable
P	
PCR	Polymerase Chain Reaction
R	
RNA	Ribonucleic Acid
Q	
QC	Quality Control
S	
SD	Standard Deviation
U	
UL	Underwriters Laboratories Inc.
UPS	Uninterruptible Power Supply
W	
WEEE	Waste Electrical and Electronic Equipment

System description A

General safety information

In this chapter, you will find information on the safe operation of the **cobas** 4800 system.

In this chapter *Chapter* 1

Safety classifications

This section explains how precautionary information is presented in this manual.

The safety precautions and important user notes are classified according to the ANSI Z535.6 Standard. Familiarize yourself with the following meanings and icons:

The safety alert symbol by itself without a signal word is used to promote awareness to hazards which are generic or to direct the reader to safety information provided elsewhere in the document.

These symbols and signal words are used for specific hazards:

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE

Indicates a hazardous situation which, if not avoided, could result in damage to equipment.

For more information about product safety labels, refer to the Instrument Manual for the **cobas z** 480 analyzer.

Important information which is not safety relevant is indicated by the following symbol:

Tip

Indicates additional information on correct use of the system or useful tips.

Safety precautions

Particular attention must be paid to the following safety precautions. If these safety precautions are ignored, the operator may suffer serious or fatal injury. Each precaution is important.

Operator qualification

Operators are required to have a sound knowledge of relevant guidelines and standards as well as the information and procedures contained in all relevant manuals.

- Do not carry out operation and maintenance unless you have been trained by Roche Diagnostics.
- Carefully follow the procedures specified in all relevant manuals for operation and maintenance.
- Leave maintenance, installation, or service that is not described in the manuals to trained Roche Service personnel.
- Follow standard laboratory practices, especially when working with biohazardous material.

Safe and proper use of the system

Personal protective equipment

- Be sure to wear appropriate protective equipment, including, but not limited to, safety glasses with side shields, fluid resistant lab coat, and approved disposable gloves.
- Wear a face shield if there is a chance of splash or splatter.

Accuracy/precision of measured results

- Do not use reagents that have exceeded their expiration date, otherwise inaccurate data may be obtained.
- For diagnostic purposes always assess the results in conjunction with the patient's medical history, clinical examination, and other findings.
- Each laboratory must verify that reagent performance meets the published specifications.

Installation

- Installation must be performed by trained Roche Service personnel only.

Third-party software

Installation of any third-party software that is not approved by Roche Diagnostics may result in incorrect behavior of the **cobas** 4800 system or the **cobas** 4800 software. Do not install any non-approved software.

Miscellaneous safety precautions

Power interruption

A power failure or momentary drop in voltage may lead to data loss. Operation with an uninterruptible power supply (UPS) is strongly recommended. Check the UPS regularly to make sure it functions properly.

Data backup

There is an automatic backup process that stores the data on the D drive. It is the customers responsibility to perform regular backups of all measurement results.

Safety summary

This safety summary contains the most important and general warning and caution messages. Additionally, you will find specific safety information at the beginning of Part *Operation* and Part *Maintenance*, as well as in the Instrument Manual for the **cobas z** 480 analyzer.

For more information about the safe use of the **cobas** 4800 system, refer to the Instrument Manual for the **cobas z** 480 analyzer and to the test-specific package insert.

Warning messages

Biohazardous materials

Infection by samples and associated materials

Contact with samples containing material of human origin may result in infection. All materials and mechanical components associated with samples of human origin are potentially biohazardous. Therefore, universal precautions should be taken when handling and processing samples.

- Follow standard laboratory practices, especially when working with biohazardous material.
- Be sure to wear appropriate protective equipment, including, but not limited to, safety glasses with side shields, fluid resistant lab coat, and approved disposable gloves.
- Wear a face shield if there is a chance of splash or splatter.
- If any biohazardous material is spilled, wipe it up immediately and apply disinfectant.
- If sample or waste solution comes into contact with your skin, wash it off immediately with soap and water, and apply a disinfectant. Consult a physician.

Waste

Infection by biohazardous waste

Contact with waste solution or used pipetting tips may result in infection. All materials and mechanical components that come into contact with waste are potentially biohazardous. Therefore, universal precautions should be taken when handling waste.

- Be sure to wear protective equipment. Take extra care when working with protective gloves; these can easily be pierced or cut which can lead to infection.
- If any biohazardous material is spilled, wipe it up immediately and apply disinfectant.
- If waste solution comes into contact with your skin, wash it off immediately with soap and water, and apply a disinfectant. Consult a physician immediately.

Contamination of the environment by liquid waste and solid waste

The waste generated during the procedure is potentially biohazardous.

- When disposing of any liquid or solid waste, do so according to the appropriate local regulations.

Explosion and fire risk

Explosion through sparks

Hazard of explosion through sparks.

- Keep all potentially flammable or explosive material (e.g. anesthetic gas) away from the analyzer.

Fire risk through usage of sprays

Spraying liquid on the power supply parts can cause a short circuit and result in a fire.

- During fire-fighting operations disconnect the equipment from the main power supply.

Caution messages

CAUTION

List of caution messages

Before operating the system, read the caution messages contained in this summary and in all relevant manuals carefully. Failure to observe them may result in minor or moderate injury.

Reagents

Skin inflammation or injury caused by reagents

Direct contact with reagents, detergents, or cleaning solutions may cause skin irritation, inflammation, or burns.

- When handling reagents, exercise the precautions required for handling laboratory reagents. Be sure to wear protective equipment (such as goggles, gloves).
- Observe the cautions given in the package insert and observe the information given in the Material Safety Data Sheets available for Roche Diagnostics reagents and cleaning solutions.
- If a reagent or detergent comes into contact with your skin, wash it off immediately with soap and water, and apply a disinfectant. Consult a physician immediately.

Invalid results due to incorrect reagent volume

Incorrect reagent handling may cause an undetectable loss of reagent.

- Store reagents always according to specified storage conditions.
- Do not leave opened sample containers on the system for any considerable length of time to avoid evaporation.
- Partially used reagents should not be used on other **cobas** 4800 systems.

Invalid results due to expired reagents and consumables

Data obtained using expired reagents and consumables are not reliable. Reagents are supplied in a kit package with a label that indicates the expiration date. The expiration date of microwell plate and sealing film is printed on their package label.

- Do not use reagents and consumables that have exceeded their expiration dates. Replace expired reagents and consumables with unexpired reagents and consumables before sample processing.

Choosing the wrong test kit

- Make sure to choose the correct test kit for the required test. Choosing a wrong test kit will not let you proceed with the test.

Interfering substances in samples

Invalid results due to interfering substances

Interfering substances in samples, for example clots or foam, may cause clogging and lead to incorrect results.

Incorrect results due to two barcode labels or mixing up specimen barcodes

Incorrect results due to two barcodes on the same tube or mixing up specimen barcodes

- Take adequate measures to avoid mixing up specimen barcodes.
- Make sure that there is only one barcode on each specimen tube.

Incorrect results due to wrongly typed sample IDs

Incorrect results due to wrongly typed sample IDs

If the sample IDs are entered manually, there is the risk of making spelling mistakes or entering wrong sample IDs.

- After printing the microwell plate layout, compare the sample IDs on the sample tubes with the sample IDs on the microwell plate layout.
- If you notice a mistake, correct the mistake in the sample ID column. Then save the work order file and use the new printout for setting up the microwell plate.

Cross contamination

Incorrect results due to carryover

Traces of analytes or reagents may be carried over from one test to the next.

- Take adequate measures to prevent cross contamination and to avoid potentially false results.
- When any indication of potential sources of contamination is seen (e.g. punctured sealing film, spilled reagents or samples, etc.), or if manual sample preparation was not performed according to good laboratory practice, proper decontamination services must be performed.

Data security

Unauthorized access and data loss due to malicious software and hacker attacks

Portable storage media can be infected with and transmit computer malware, which may be used to gain unauthorized access to data or cause unwanted changes to software.

The **cobas** 4800 system is not protected against malicious software and hacker attacks.

The customers are responsible for IT security of their IT infrastructure and for protecting it against malicious software and hacker attacks. Failure to do so may result in data loss or render the **cobas** 4800 system unusable.

Roche recommends the following precautions:

- Allow connection to authorized external devices only.
- Ensure that all external devices are protected by appropriate security software.
- Ensure that access to all external devices is protected by appropriate security equipment. cobas IT firewall must be used when the **cobas** 4800 system is integrated into a network.
- Do not copy or install any software on the **cobas** 4800 software control unit unless it is part of the system software or you are instructed to do so by a Roche Service representative.
- If additional software is required, contact your Roche Service representative to ensure validation of the software in question.
- Do not use the USB ports to connect other storage devices unless you are instructed to do so by official user documentation or a Roche Service representative.
- Exercise utmost care when using external storage devices such as USB flash drives, CDs, or DVDs. Do not use them on public or home computers while connecting to the **cobas** 4800 system.
- Keep all external storage devices in a secure place and ensure that they can be accessed by authorized persons only.
- Do not enter any confidential patient-relevant information into the work order file. There is the risk of unauthorized access to patient data.

Disposal

Disposal of control unit components

Components of your control unit (such as the computer, monitor, keyboard) which are marked with this symbol are covered by the European Directive on *Waste Electrical and Electronic Equipment* (WEEE, 2002/96/EC).

These items must be disposed of via designated collection facilities.

For more information about disposal of your old product, please contact your city office, waste disposal service or your Roche representative.

Constraint: It is left to the responsible laboratory organization to determine whether control unit components are contaminated or not. If contaminated, treat them in the same way as the analyzer. For more information, refer to the analyzer's instrument manual.

For information about disposal of the analyzer, refer to the Instrument Manual for the **cobas z** 480 analyzer.

Overview

In this chapter, you will get a basic overview of the **cobas** 4800 system.

In this chapter *Chapter* **2**

System overview

The **cobas**® 4800 system provides a platform to perform qualitative in vitro nucleic acid amplification tests from human specimens.

The **cobas**® 4800 system combines the following components:

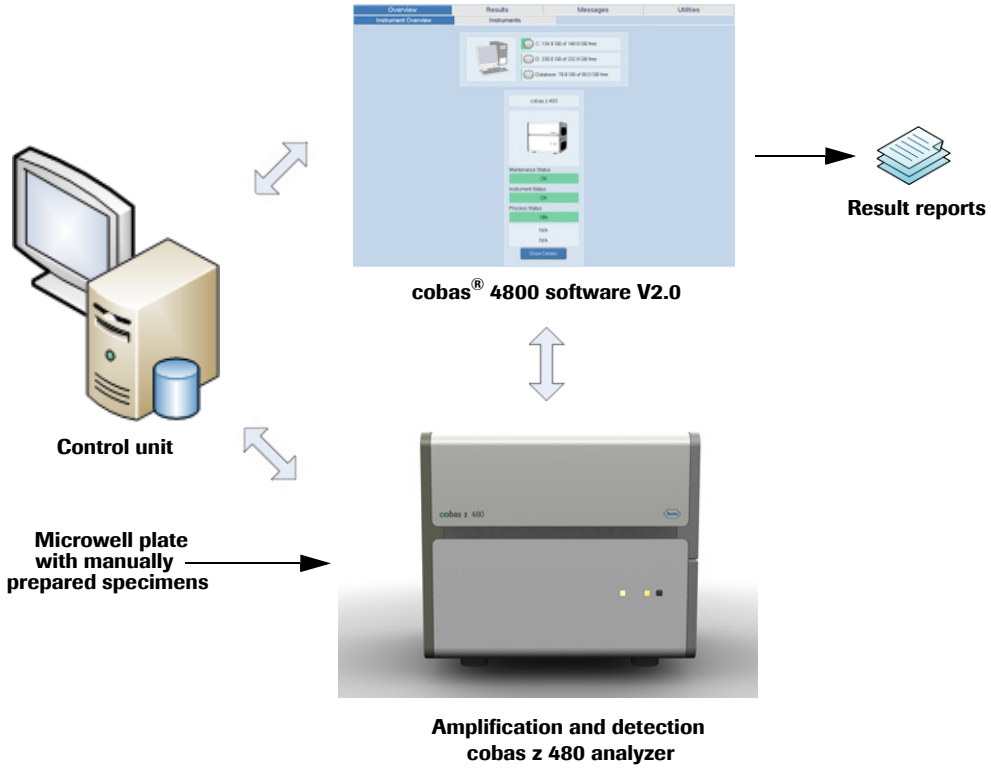


Figure A-1 **cobas** 4800 software version 2.0 system overview

Software

In this chapter the software basics and database are explained.

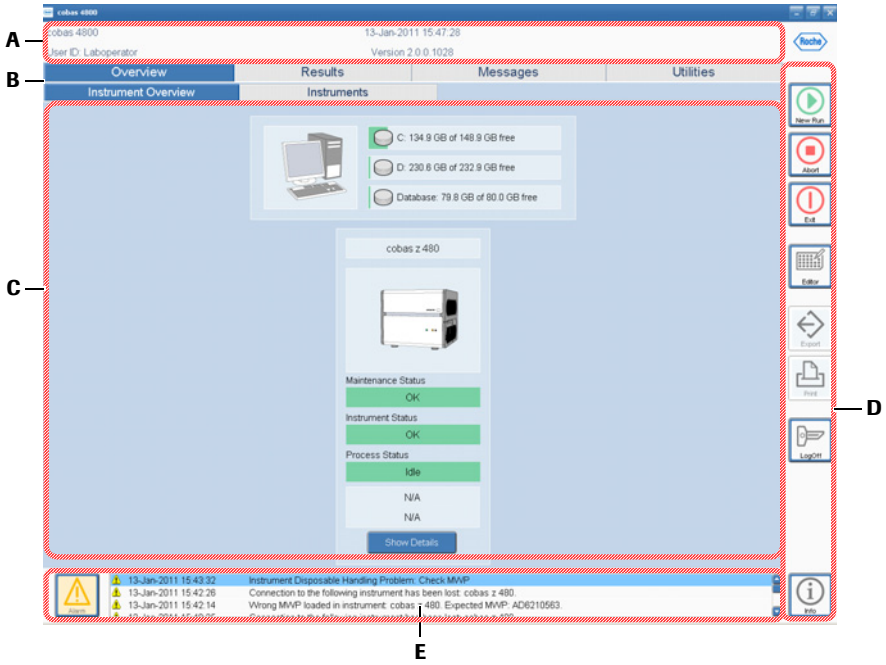
In this chapter *Chapter* 3

Basic software elements

The screen of the **cobas** 4800 software is divided into the following dedicated areas making the software easy to understand and intuitive to use:

- Status area
- Tab navigation bar
- Main work area
- Global action bar
- Alarm area

The screen representations shown in this chapter and throughout this manual are for illustrative purposes only. The screens do not necessarily show valid data.



A The *status area* displays the currently logged in user as well as and date and time.

B The *tab navigation bar* displays the tabs. Choose a tab to open it. In the first row of the navigation bar, the tabs of the main work areas are displayed. In the second row, the subtabs belonging to the currently selected work area are displayed.

C This is the main work area. It displays the content of the currently selected tab.

D The *global action bar* contains buttons used for general software functions. These buttons are always available.

E The *alarm area* displays the most recent alarms that are not yet confirmed by the operator. Select an alarm in the list and click the Alarm button on the left to get more details about the selected alarm.

Figure A-2 Software screen

Colors

The **cobas** 4800 software uses the familiar *traffic light* color scheme.

Color	Meaning
Green	Normal condition. The status is OK.
Yellow	Warning condition. Status is not OK, but immediate intervention is not required.
Red	Alarm condition. Immediate intervention is required. Operation may have stopped.
Blue	The item is selected or active.

Table A-1 Color concept

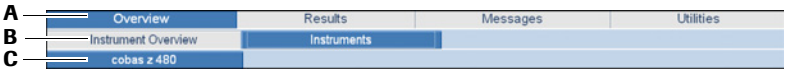
Tabs

Tabs are used to group information and software functions into units that can be displayed on one screen. The second row of tabs represent subgroups of the tab selected in the first row. The tab in the third row is a subtab of the **Instruments** tab in the second row and becomes visible once the **Instruments** tab is selected.

Navigating within the software needs only one or two clicks.

1. Choose a main tab in the first tab row. Here you have access to the five main work areas **Overview**, **Workplace**, **Results**, **Messages**, and **Utilities**.
2. Choose a subtab in the second row. Here you have access to all tabs of the selected work area.

The **Workplace** tab is displayed only if a run is active.



A Main tabs. **Overview** is selected. The first row of tabs give access to the main work areas.

B Subtabs. **Instruments** is selected. The second row of tabs show all tabs of the selected work area.

C Subtab belonging to **Instruments** tab. It is only visible if the **Instruments** tab is selected.

Figure A-3 Main tabs and subtabs

Buttons

Text buttons

Choose a button to start the associated function. Some text buttons have a triangular marking in a corner. This triangle tells you what exactly happens on screen if you choose the button.

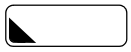
Button	Behavior
Cancel	Performs a specified action in the current window
	A triangle in the top right corner of a button tells you that a new dialog box will be displayed when you choose the button.
	A triangle in the bottom left corner of a button tells you that the current window or dialog box will be closed when you choose the button.

Table A-2 Triangular markings in text buttons

Global action buttons

On the right side of the screen, the global action buttons are available. They are always visible and perform the following functions:

Button	Name	Use for...
	New Run	Starting a new run A wizard will guide you through the whole run.
	Abort	Aborting a run The **Abort Run** dialog box is displayed when several runs are active. Select the run you want to abort.
	Exit	Exiting the **cobas** 4800 software.
	Editor	Opening the sample editor Opens the window for creating a new work order file for microwell plate preparation.
	Export	Exporting results
	Print	Printing results, messages, and alarms A preview window is displayed allowing to configure printing options.
	Log on, Log off	Logging on and off. The button label will change depending on whether the user is logged in or logged off.
	Info	Accessing the manuals and displaying the installed software versions

Table A-3 Global action buttons

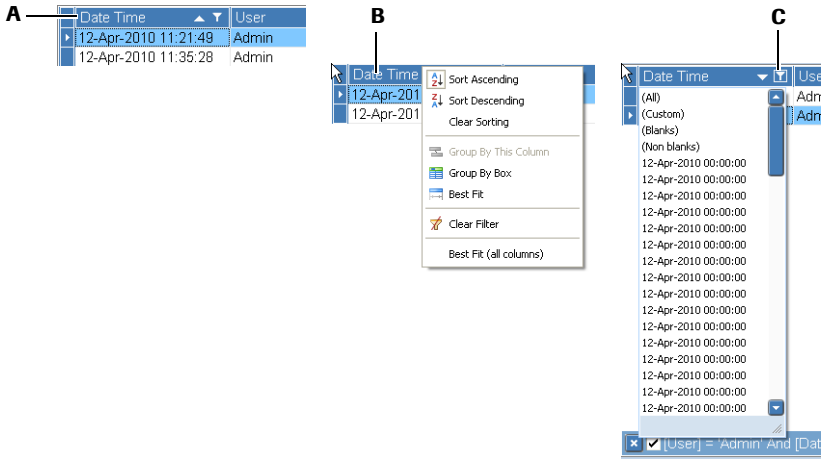
Lists

The software provides powerful sorting and filtering tools for information displayed in tables. These allow a lengthy list to be condensed in ways that provide fast access to items of interest. It is also possible to hide certain columns, display additional columns, and change their left-to-right order.

This section just gives a general overview. Some functions are not available in some of the work areas, or less options are available, e.g. in a context menu.

Organizing lists

The sorting and filtering tools are accessed by right- or left-clicking the respective column headings.



A Click the column header to sort the table in ascending or descending order. The sort order is indicated by an arrow.

B Right-click the column header to display context menu for sorting and grouping information items.

C Click the filter symbol (funnel icon) to display a list with appropriate filter options for this column.

Figure A-4 Displaying the filter options

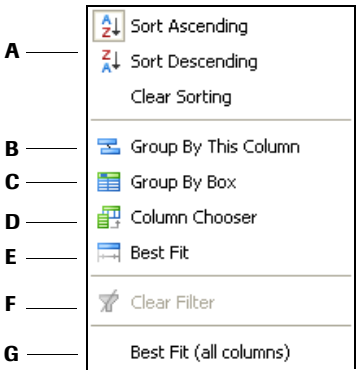
Sort by column

Click a column header to sort the table by the entries of this column. Successive clicks switch between ascending and descending sort order, the order is indicated by the arrow that appears in the header.

Not every column is sortable. If a column is sortable, an arrow indicating the sorting direction will appear in the column header after clicking the column header.

Column header context menu

Right-click any column header to display a context menu with further sorting and grouping options.



A Select the sort order, or clear any sorting.

B Group listed items by the values of this column (click + or - next to individual groups to reveal or hide the items they contain).

C Display a box with a graphic representation of the grouped items. Create nested groups by dragging column headings to the display box above the list (click + or - to expand/collapse nested levels and show/hide items within a level.

D Add or remove columns from the table.

E Auto-adjust the selected column for optimum display width.

F Clear the filter settings.

G Auto-adjust all columns for optimum display width.

Figure A-5 Column sort and group context menu

Displaying and hiding columns

Right-click any column header and select **Column Chooser**.

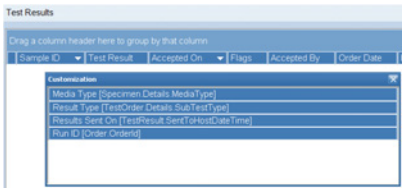


Figure A-6 **Column Chooser** dialog box

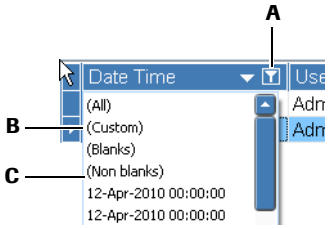
The **Column Chooser** dialog box contains all available information items that are not included in the table. Which items are available depends on the table from which you started the **Column Chooser**.

To add a column (information item) to the table, select the item in the **Column Chooser** and drag it to the appropriate place in the table header.

To remove a column from the table, select its header and drag it into the **Column Chooser**.

Filter drop-down menu

A filter symbol (funnel icon) is displayed in the column header of all columns that can be filtered. Right-click the filter symbol and a drop-down menu appears.



A Click the filter symbol (funnel icon) to display the filter context menu.

B Select **Custom** to display the **Custom AutoFilter** dialog box for refining the filter criterion.

C Select the item that should serve as a filter criterion.

Figure A-7 Filter context menu

When a filter criterion is applied, its details are displayed in a bar at the bottom of the list (A).

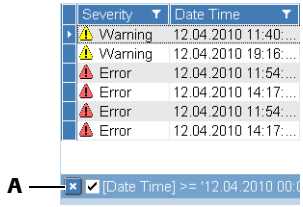


Figure A-8 Filter details bar

To return to the full view at any time (no filtering), click the close button in the filter details bar. Previously used filter settings remain accessible from the filter history.

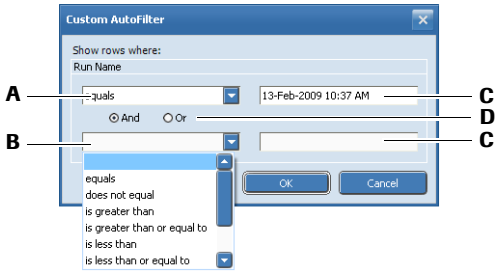
For more information, see *Managing filters and advanced filtering* on page A-25.

Custom AutoFilter

The **Custom AutoFilter** option is available only in those columns that have a filter symbol (funnel icon) in their column header.

With the help of the **Custom AutoFilter** you can apply one or two filter conditions, logically linked by AND or OR.

Click the filter icon in a column heading and select **(Custom)** to display the **Custom AutoFilter** dialog box.

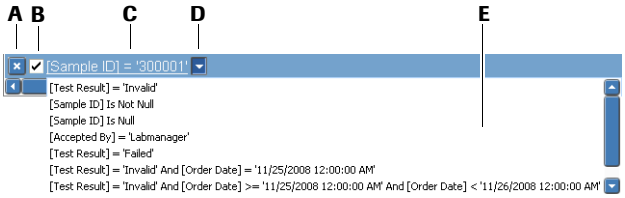


A Primary filter condition
B Secondary filter condition (optional)
C Box for typing a value
D Logical operator linking the two filter conditions

Figure A-9 **Custom AutoFilter**

Managing filters and advanced filtering

When a filter criterion is applied, its details are displayed in a bar at the bottom of the list. This bar allows convenient selection of previously selected filter conditions (filter history) as well as disabling and enabling the criteria respectively.



A Click to close the filter details bar and remove all filters.
B Click to switch current filter on and off.
C Current filter condition
D Click to display previously used filters (filter history).
E Filter history list: Click a filter entry to apply this previously used filter.

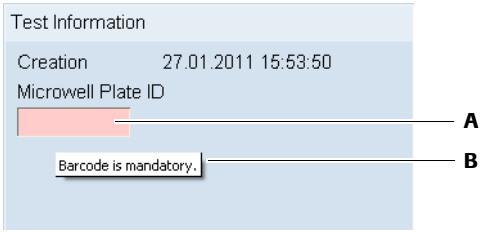
Figure A-10 Filter control bar

For information about filtering in the **Results** work area, see *Creating result filters* on page B-29.

Tool tips

Tool tips provide brief functional descriptions when the mouse is paused over a tool or application button. They mainly occur in the sample editor and give information to the user when there is a mistake in editing.

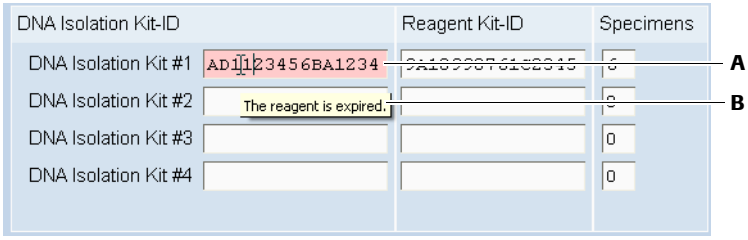
For a list of tool tips in the sample editor, see *List of messages and tool tips within the sample editor* on page D-12.



A Box where an error occurred

B Tool tip informing about the nature of the error

Figure A-11 Example of a tool tip within the sample editor



A Box where an error occurred

B Tool tip informing about the nature of the error

Figure A-12 Example of a tool tip within the sample editor

Wizard

Performing a **cobas** 4800 system run requires the coordination of operator, instrument, and software interactions. A wizard guides the operator through all processing steps and helps keep track of all necessary operator actions. The wizard is started by clicking the **New Run** button and ends with the display of the final PCR results. The run wizard is accessible through the **Workplace** tab.

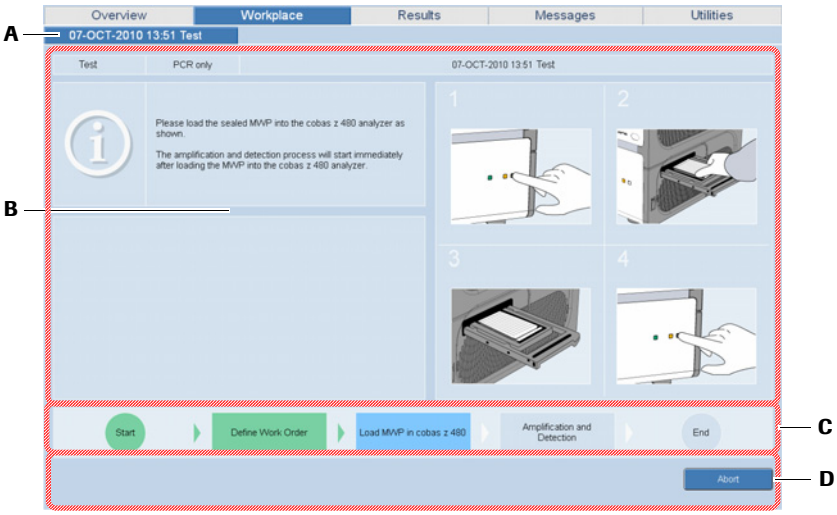
A run goes through a series of steps. The next step can only be accessed if the current step has been successfully finished. Any step that has been finished is displayed as a green box. The step that is currently in progress is displayed as a blue box. Any steps that have not been started are displayed as grey boxes.

A PCR Only run includes the following steps:

Figure A-13 Steps in a run

NOTICE

It is not possible to go back to a previous step in a run. Follow the guidelines outlined in this manual to avoid losing reagents, samples, or disposables.



A Run information
B Instructional area. Guides the operator through all steps and gives feedback to the operator.
C Step time line
D Button area for starting actions and aborting the run.

Figure A-14 Working with the wizard

Database

All data of the **cobas** 4800 system are stored in an Oracle database. The database has a storage capacity of 100 000 results. The purge and archive function is used to archive results and purge them from the database to free up space in the database for new results. Purge and archive should be done much earlier before the database limit is reached.

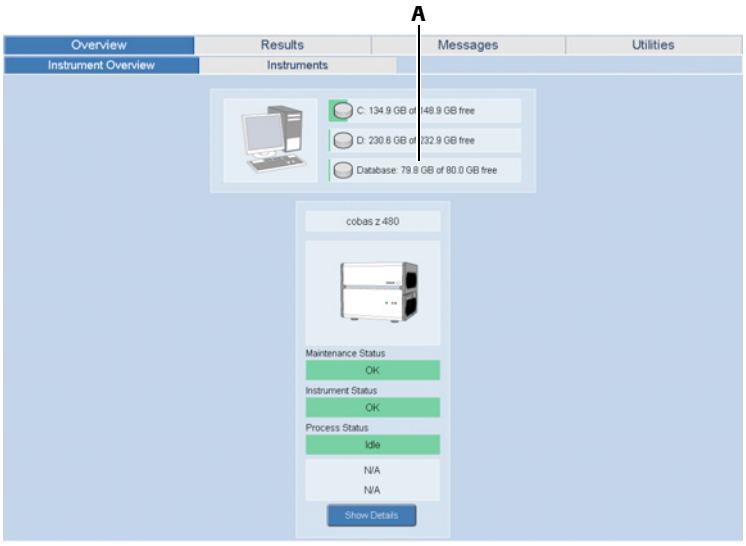
For information about the purge and archive function, see *Archiving* on page B-39.

NOTICE

No run can be started when the database has reached the maximal size. Use the purge and archive function to clean up the database.

The purge and archive function only covers run data and results. Messages are kept in the **cobas** 4800 software until they are deleted manually. Therefore, it is recommended to manually delete confirmed messages from time to time to free up additional space in the database.

The actual size of the database is displayed in the **Instrument Overview** tab.



A Database size

Figure A-15 Database size in **Instrument Overview** tab

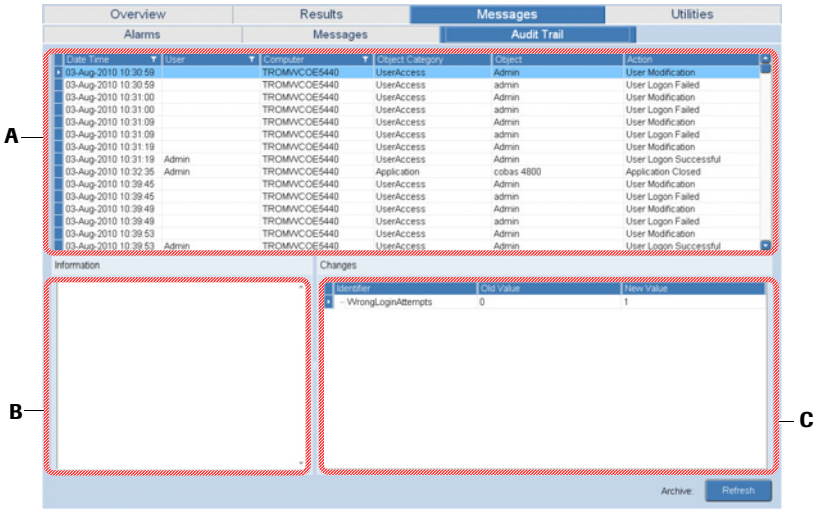
Audit trail

The software provides a secure, computer-generated, time-stamped audit trail to record user activities that include the following:

- Operator log on and log off
- Result acceptance, purging, and archiving
- Configuration changes, including changes in user accounts

The audit trail of the **cobas** 4800 software is designed based on guidelines in FDA Title 21 CFR, Part 11, Electronic Records: Electronic Signatures.

To access the audit trail, choose **Messages > Audit Trail**.



A List of user activities
B Information area
C Changes area

Figure A-16 Audit trail

Hardware

In this chapter, you will find information on the control unit and the handheld barcode scanner.

In this chapter *Chapter* 4

Hardware

This chapter includes information about the control unit and handheld barcode scanner. Apart from these two components, the system also includes the **cobas z** 480 analyzer which is described in the Instrument Manual for the **cobas z** 480 analyzer.

NOTICE

Note that the type and specification of the control unit and the barcode scanner is subject to change without notice. The specifications listed below apply to the type and specification provided at the time of publishing of this manual.

Control unit

A dedicated control unit runs the **cobas** 4800 software.

CAUTION

- Use only manufacturer's original installation CD-ROM or DVD sets for the operating system, and the original **cobas** 4800 software.
- Any manipulation of **cobas** 4800 system data files or other information determining or affecting **cobas** 4800 system functions can result in erroneous results or equipment failure.
- Only use the control unit that is supplied with the **cobas** 4800 system.

Software

Operating system	Windows XP Professional SP3
Database	Oracle Database Enterprise Edition

Handheld barcode scanner

A handheld barcode scanner is connected to the control unit. It is used to scan reagent and specimen barcodes during creation of the work order file for microwell plate preparation.

Supported barcode types

The following barcode types are supported:

- Codabar
- Code 39
- Code 128, subset B and C
- Data matrix (Roche-manufactured reagents only)

Usage

The barcode label is read by holding the head of the barcode scanner in close proximity to the barcode label and then pressing the button on the barcode scanner. The barcode ID is then automatically read and displayed on the screen.

NOTICE

Be sure to hold the head of the handheld barcode scanner over the correct barcode label. It is recommended to visually verify the displayed scanned characters with the human readable characters on the barcode label.

Figure A-17 Handheld barcode scanner

Technical specifications

Type	IT4600
Interface	The handheld barcode scanner is connected to the control unit through the USB interface.
Skew angle	±40 degrees
Pitch angle	±40 degrees
Motion tolerance	10 cm (4 in) per second
Scan contrast	45% minimum for Matrix codes
	37.5% minimum for all others
Temperature	Operating: 0-50°C (32-122°F)
	Storage: -40 to +70°C (-40 to +158°F)
Humidity	0-95% non-condensing

This is the last page of Part A.

Operation B

Workflow short guide

This chapter provides a short instruction on the workflow.

In this chapter *Chapter* **5**

PCR Only run

The workflow for a PCR Only run is shown below.

For the PCR Only workflow, the test reagents and prepared patient specimens are manually pipetted into the microwell plate (AD plate 0.3 ml).

For information on handling and preparing reagents and specimens, and how to pipette them into the microwell plate, refer to the test-specific package insert.

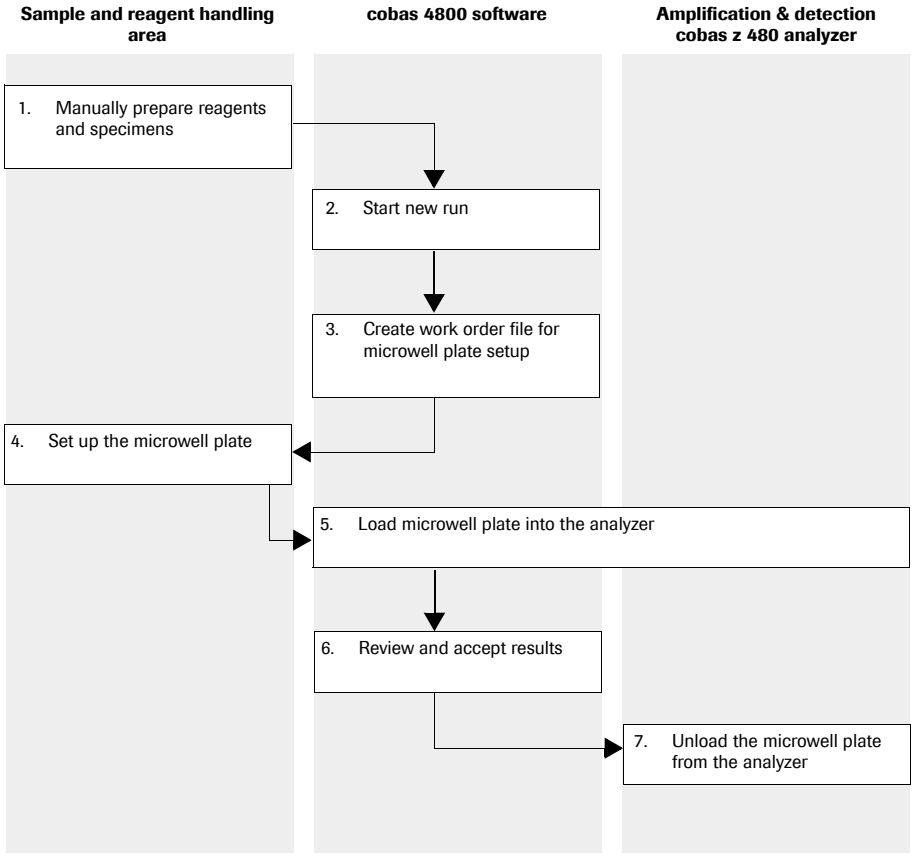


Figure B-1 Workflow for a PCR Only run

CAUTION

- Do not eat, drink, or smoke in laboratory work areas.
- Wear protective disposable gloves and laboratory coats whenever preparing consumables, reagents, samples, or when cleaning.
- Wear eye protection when handling samples. Wash hands thoroughly afterwards.

PCR Only run short guide

The following short guide is a summary of the workflow without details.

For a complete and detailed description of the workflow, see Chapter 6 *Operation*.

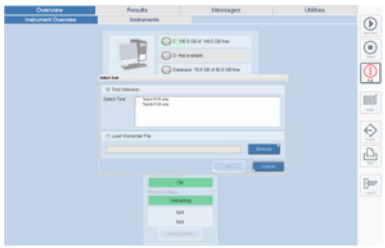
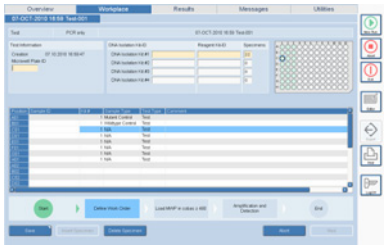
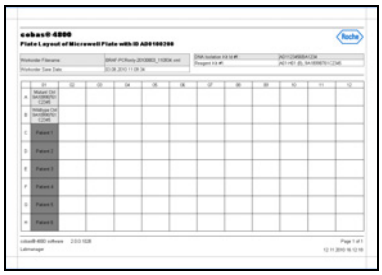
Step		User action
1	Manually prepare the reagents and specimens.	1. Remove the reagents and specimens from storage. 2. Manually prepare the reagents and specimens according to the test-specific package insert.
2	Start a new run.	 1. Choose **New Run**. 2. Do one of the following: • Select a test from the list. • Choose **Load Workorder File.** Load the required work order file and proceed to step 3, action 8 (paragraph below). 3. Choose **OK**.
3	Create a work order file for microwell plate setup.	 1. Scan the microwell plate barcode into the **Microwell Plate ID** box. 2. Scan the DNA sample preparation kit barcode into the first **DNA Isolation Kit-ID** box. 3. Scan the barcode of the BRAF V600 Mutation Test kit into the first **Reagent Kit-ID** box. 4. Type the number of specimens into the first **Specimens** box. If you use more than one test kit, enter a maximum number of 22 specimens into the first **Specimens** box. The other boxes may contain up to 24 specimens each. 5. Scan the sample ID barcodes into the **Sample ID** column in the lower part of the screen. 6. If you use more than one test kit, repeat steps 2 to 5 for each test kit in the order described above. 7. Choose **Save**. Save the file with the default file name assigned by the software. 8. Choose [🖶] to print the work order file for microwell plate setup.
4	Set up the microwell plate.	 1. Pipette the reagents and prepared specimens into the microwell plate in accordance with the printout of the work order file and the description in the test-specific package insert. 2. Seal the microwell plate. 3. If necessary, log back into the software. 4. In the software, choose **Next**.

Table B-1 PCR Only run short guide

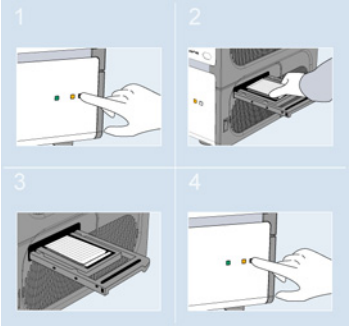
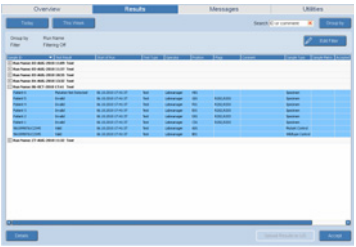
Step		User action
5 Load the microwell plate into the analyzer.		1. Press load button on the analyzer. 2. Place the sealed microwell plate onto the extended loader. 3. Press load button again. The amplification and detection run starts automatically.
6 Review and accept results.		1. After the run has finished, click **Show Results**. 2. Review and accept results in **Results** work area. 3. Select results and click to print the results report.
7 Unload the microwell plate from the analyzer.		1. Unload the microwell plate from the analyzer as soon as is practical after the run has finished. 2. Check the microwell plate for indications of leakage or evaporation. 3. Discard the microwell plate according to the appropriate local regulations.

Table B-1 PCR Only run short guide (continued)

Operation

This chapter describes how to prepare and to perform a run, and how to handle results.

In this chapter *Chapter* 6

Safety information

Make sure that you have read and understood the chapter *General safety information*. In particular, please note the following safety messages:

Warning messages:

- *Infection by samples and associated materials* on page A-7
- *Infection by biohazardous waste* on page A-7
- *Contamination of the environment by liquid waste and solid waste* on page A-7
- *Explosion through sparks* on page A-8
- *Fire risk through usage of sprays* on page A-8

Caution messages:

- *Skin inflammation or injury caused by reagents* on page A-8
- *Invalid results due to incorrect reagent volume* on page A-8
- *Invalid results due to expired reagents and consumables* on page A-8
- *Invalid results due to interfering substances* on page A-9
- *Incorrect results due to carryover* on page A-9
- *Incorrect results due to two barcodes on the same tube or mixing up specimen barcodes* on page A-9
- *Incorrect results due to wrongly typed sample IDs* on page A-9
- *Data security* on page A-10

Safety precautions:

- *Operator qualification* on page A-6

Observe the system safety labels illustrated and described in the Instrument Manual for the **cobas z** 480 analyzer.

Preparations for a run

Perform the following procedures before starting a run.

Perform startup procedures

To start up the **cobas** 4800 system, you need to perform the following steps:

1. Switch on the analyzer.
2. Start the **cobas** 4800 software.

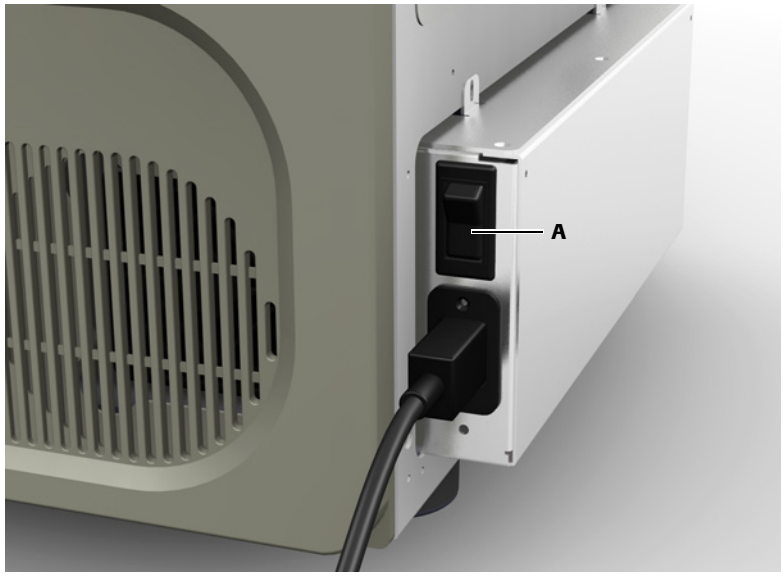
NOTICE

To prevent hardware damage, follow the steps in the exact order outlined when starting up the **cobas** 4800 system.

► To switch on the cobas z 480 analyzer

1 Switch on the analyzer. The main switch is located at the back of the analyzer.

The analyzer is powered on and initializes automatically upon startup. During initialization, the analyzer performs several function tests to ensure proper function.



A Main switch of the analyzer

Figure B-2 Switching on the analyzer

👁 For information about the meaning of the colors of the status LEDs on the analyzer's front, refer to the Instrument Manual for the **cobas z** 480 analyzer.

■

► To start the cobas 4800 software

1 Power on the monitor and control unit.

2 To start the software, do one of the following:

- Double-click the **cobas** 4800 software icon on the desktop.
- Open the **Start** menu and choose the **cobas** 4800 software icon.

3 Enter your assigned user ID and password.

4 Choose **Logon**.

- The user ID is not case sensitive.
- The password is case sensitive. The password displays as asterisks when typed to maintain security.

■

► To manually prepare the reagents and specimens

1 Remove the reagents and specimens from storage.

 For information on handling and preparing reagents and specimens, refer to the test-specific package insert.

2 Manually prepare the reagents and specimens according to the instructions in the test-specific package insert.

■

Performing a run

A wizard guides you through the entire run, from preparation of the microwell plate to amplification and detection on the analyzer.

NOTICE

- Do not disconnect the network cable during a run.
- It is not possible to go back to a previous step in a run. Follow the guidelines outlined in this manual to avoid losing reagents, specimens, or disposables.

The software will automatically log off the user after a certain period of inactivity if the box **Log off user on inactivity** is checked in the user settings. Only users with the **Supervisor** role can change these settings for their own user level and for the **Operator** user level.

For information on how to change the settings of a user account, refer to *Changing user accounts* on page B-44.

You can use the sample editor to prepare one or more work order files before starting a run, or to prepare a work order file for the next run while a run is still in progress. A work order file can be selected in the **Select Test** dialog box as described below.

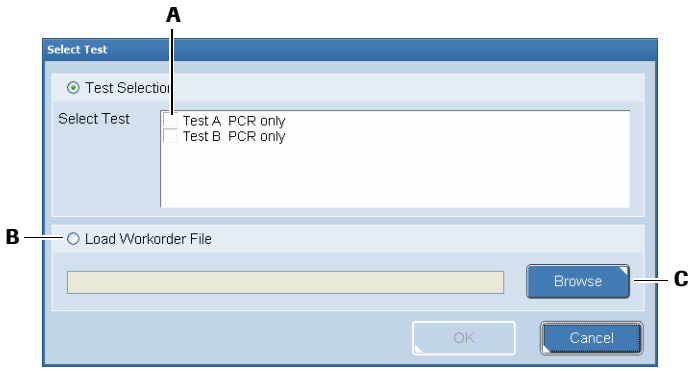
For information about the sample editor, see *Using the sample editor to create a work order file* on page B-21.

If you use more than one DNA sample preparation kit, make sure to first enter the specimens prepared with the first kit into the **Sample ID** column, then the specimens prepared with the second kit and so on. For tracking purposes, specimens should be separated according to the kits with which they were prepared.

► To start a new run

1 Choose **New Run**.

The **Select Test** dialog box is displayed.



A Select a test type
B Load a work order file
C Browse for a work order file

Figure B-3 **Select Test** dialog box

2 Do one of the following:

- Select a test from the list.
- Choose **Load Workorder File** and load an existing work order file.

3 Choose **OK**.

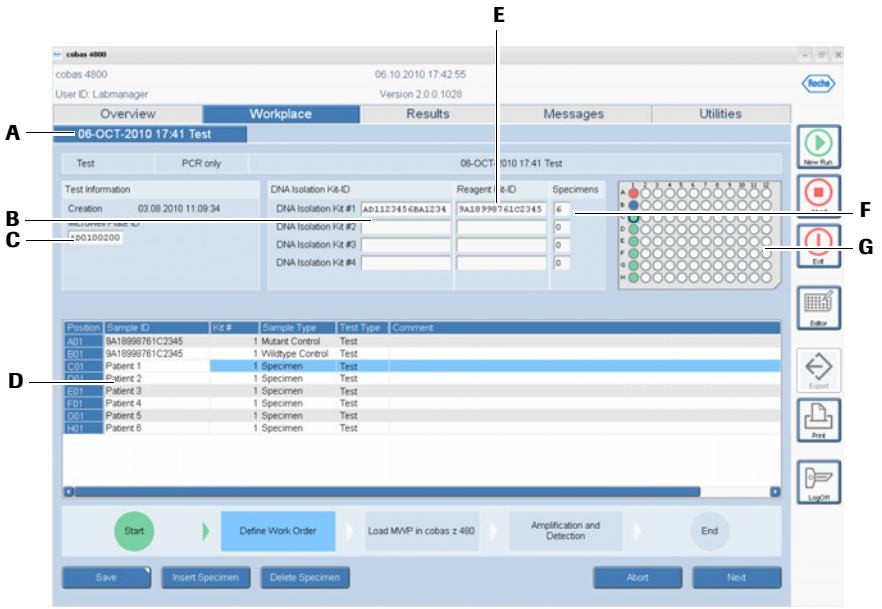
The **Workplace** area is displayed.

■

Set up the microwell plate

NOTICE

- Use only Roche consumables designed for use on the **cobas** 4800 system. Use of non-Roche consumables may damage the analyzer or lead to incorrect results.
- The microwell plate is barcoded and designed to be used only once. The **cobas** 4800 software tracks the use of the plate and rejects previously used microwell plates.



A Information about test type and run date
B Boxes for DNA isolation kit ID (DNA sample preparation kit)
C Box for barcode of microwell plate
D Boxes for barcodes of specimens
E Boxes for reagent kit ID (BRAF V600 Mutation Test kit)
F Boxes for number of specimens
G Microwell plate layout

Figure B-4 Creating a work order file for setting up the microwell plate

If an error happens while creating a work order file, the color of the box will change to red. If the boxes for microwell plate ID, DNA isolation kit ID (DNA sample preparation kit), reagent kit ID (BRAF V600 Mutation Test kit), and number of specimens are concerned, a tool tip is displayed. Move the mouse pointer over the red box to display the tool tip that gives information about the nature of the error.

If the error happens in the sample ID area, an error message will be displayed above the sample ID area, and no tool tip is displayed.

For more information, see *List of messages and tool tips within the sample editor* on page D-12.

- Make sure to enter the barcode of the BRAF V600 Mutation Test kit into the box next to the barcode of the DNA sample preparation kit which was used to prepare the same set of specimens.
- Make sure to enter the kit barcodes into their relevant boxes. Entering a barcode into a wrong box will lead to an error.
- If no handheld barcode scanner is available, enter the barcodes manually and press the Enter key after entering each barcode. When entering the barcodes, follow the order described below.

1 Scan the microwell plate barcode into the **Microwell Plate ID** box.

2 Scan the barcode of the DNA sample preparation kit into the first box of the **DNA Isolation Kit-ID** area.

3 Scan the barcode of the BRAF V600 Mutation Test kit into the first box of the **Reagent Kit-ID** area.

4 Type the number of specimens into the first box in the **Specimens** area. If you use more than one test kit, enter a maximum number of 22 specimens into the first **Specimens** box. The other boxes may contain up to 24 specimens each.

5 Scan the sample ID barcodes into the **Sample ID** column in the lower part of the screen.

👁 For information about the pipetting order, refer to the test-specific package insert.

6 If you use more than one test kit, repeat steps 2 to 5 for each test kit in the order described above.

7 After entering all sample IDs, choose **Save**.

Save the file with the default file name assigned by the software.

8 Choose .

A printable work order file that shows the microwell plate layout is displayed. Use this printout for pipetting the reagents and prepared specimens into the microwell plate.

■

► To pipette the reagents and prepared specimens into the microwell plate

1 Pipette the reagents and specimens into the microwell plate in accordance with the printout of the work order file and the description in the test-specific package insert.

👁 For information on handling and preparing reagents and specimens, and how to pipette them into the microwell plate, refer to the test-specific package insert.

Microwell plate layout

The work order file describes the layout of the microwell plate and shows which specimens and reagents are to be pipetted into which well.

■

Sealing the microwell plate

After pipetting all reagents and prepared specimens into the microwell plate, the microwell plate must be sealed properly with a sealing film. Sealing the microwell plate is crucial to eliminate evaporation at high temperatures.

CAUTION

Incorrect results due to evaporation or contamination of specimens and controls

- Make sure that microwell plate and sealing film are not expired.
- Follow the outlined procedure to seal the microwell plate to prevent leakage of the sealing film, evaporation or contamination of specimens and controls. Plate leakage can contaminate the analyzer. If contamination is suspected, contact Roche Service.
- Examine the microwell plate after amplification and detection to ensure that no leakage has occurred.

► To seal the microwell plate

1 Remove the protection layer from the sealing film.

Make sure not to touch the film neither on the adhesive side nor on the non-adhesive side. Only touch the film at the removable edges.

2 Cover the microwell plate with the adhesive side of the sealing film.

3 Firmly press the sealing film to the plate surface using the sealing film applicator.

To ensure a strong seal, use the provided sealing film applicator.

4 Remove both ends of the sealing film alongside the perforation.

Do not lift the sealing film from the plate while tearing off the ends of the film.

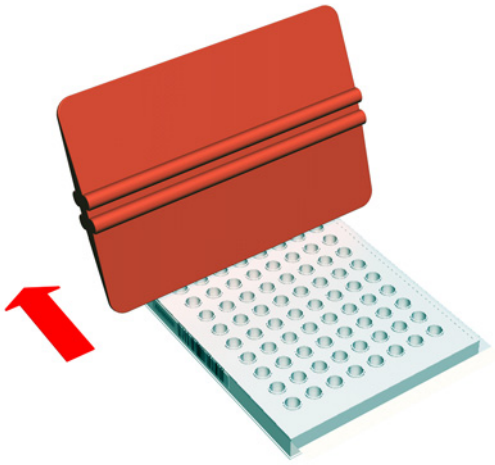


Figure B-5 Sealing the microwell plate

■

Starting amplification and detection run

The sealed microwell plate has to be inserted into the analyzer for amplification and detection.

- The prepared specimens added to working master mix have limited stability. Make sure not to wait too long before starting the amplification and detection run.

For information about the exact timing window, refer to the test-specific package insert.

- Before starting a run, check if the Xenon lamp needs replacement in the **Instruments** tab in the **Overview** work area. Replace the Xenon lamp, if required.

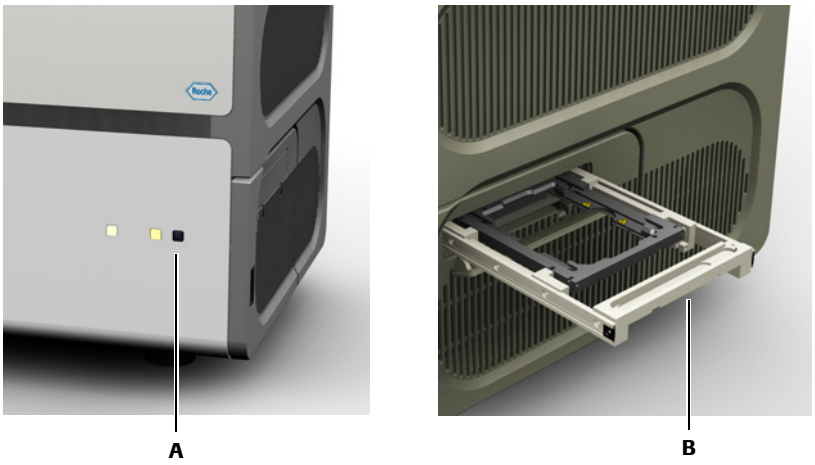
For details about Xenon lamp replacement, refer to the Instrument Manual for the **cobas z** 480 analyzer.

► To load the microwell plate into the cobas z 480 analyzer

1 If necessary, log back into the software.

2 In the **cobas** 4800 software, choose **Next**. The screen for loading the microwell plate onto the analyzer is displayed.

3 Press the load button on the analyzer.



A Load button **B** Extended plate loader

Figure B-6 Loading prepared microwell plate

The microwell plate loader opens.

4 Place the sealed microwell plate onto the loading frame of the loader.

5 Press the load button again to close the loader.

The loader is retracted.

NOTICE

Do not turn off the analyzer power during a run.

6 Check the timer in the wizard.

When the run is finished, the **Show Results** button becomes available in the software.

■

Reviewing and accepting results

Test results are displayed in the **Results** work area.

► To review and accept results

1 In the **Workplace** work area, choose **Show Results**.

A Fluorescence growth curves
B **Show Results** button

The **Results** work area is displayed.

2 Review and accept results in the **Results** work area.

For more information, see *Accepting results* on page B-26.

3 Select results and choose to print the results report.

For more information, see *Printing results* on page B-26.

■

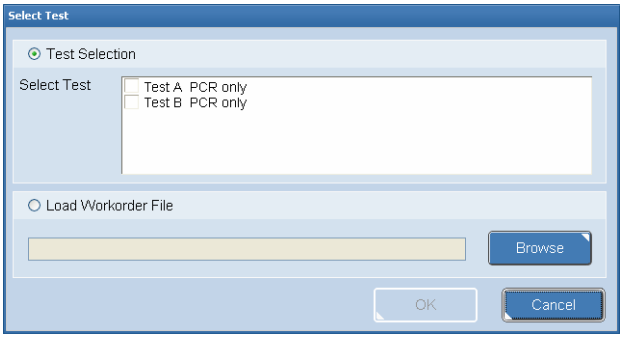
Using the sample editor to create a work order file

Use the sample editor to create a work order file for the next run while a run is still in progress. You can also use the sample editor to create one or more work order files before starting a run.

► To access the sample editor

1 Choose  in the global action bar.

The **Select Test** dialog box is displayed.



2 Select the test type.

3 Choose **OK**.

4 Create the work order file as described above.

👁 For information on how to create a work order file, see *Set up the microwell plate* on page B-16.

■

Unload the microwell plate from the cobas z 480 analyzer

Unload the microwell plate as soon as practical after the run has finished to prevent plate leakage and contamination of the analyzer.

WARNING

Risk of burns due to hot surfaces

Before removing the microwell plate from the plate loader, wait for an appropriate time to allow the plate loader and microwell plate to cool down. Be aware that the microwell plate may have a temperature of 60 °C to 80 °C even if you have allowed the analyzer to cool down after the run. Otherwise, there is a risk of burns when touching the plate loader or microwell plate.

► To unload the microwell plate from the analyzer

1 When the run has finished, open the plate loader to remove the microwell plate.

2 Examine the microwell plate after amplification and detection.

CAUTION

Incorrect results due to evaporation of samples or sample contamination

Plate leakage can lead to incorrect results or can contaminate the analyzer. If contamination is suspected, contact Roche Service.

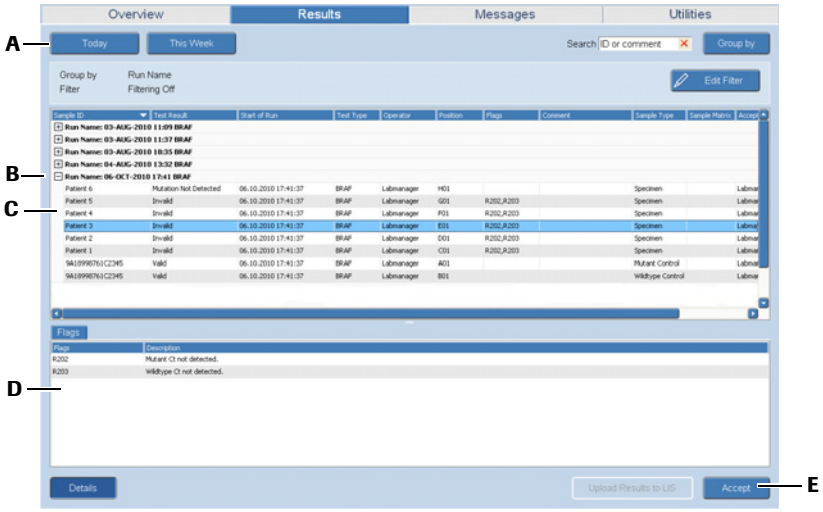
- Unload the microwell plate as soon as practical after the run has finished and check the microwell plate for indications of leakage.

3 Discard the microwell plate according to the appropriate local regulations.

■

Results

The **Results** work area gives access to all runs and test results. Use the **Results** work area to review, accept, print and export results.



A Filter buttons
B Run header
C Test results of the selected run
D **Details** area
E Result handling buttons

Figure B-7 **Results** work area

Reviewing results

The layout of the **Results** work area can be customized. Customization includes:

- Creating various filters
- Sorting and grouping of runs and results.
- Changing the column orders and hiding selected columns.

For more information, see *Lists* on page A-22.

- Customization of the result view in the **Results** work area does not influence result printouts and result export. The details per result that are included in reports and export files are independent of what is displayed on screen.
- When a user customizes the view of the **Results** work area, the new view will be saved for all users.

► To display results of selected runs and to review result details

1 Click the plus sign next to the run header to display the individual results of that run.

2 To display more information about a particular result, select the result you want to review.

3 Choose **Details**.

The **Details** area is displayed. Flags of the selected result are displayed.

4 Review the results data.

For information about flags, see Chapter 10 *Result flags*.

■

Grouping results

The results can be grouped by the following criteria:

- Run name
- Start time of the run
- Test type

► To group the results

1 Choose **Group by**.

2 Select a grouping criterion from the list.

All results are grouped by the selected criterion.

Figure B-8 Grouping results

3 To display the runs in an ungrouped order, choose **Group by** and select **Grouping off** from the list.

■

Searching results

Use the search function to search for sample IDs or comments within the results. The search function searches the whole result database, not only the results that are currently displayed.

Figure B-9 **Search** function on the **Results** work area

The use of the following wildcards is possible:

- Use the question mark (?) as placeholder for a single character.
- Use the asterisk (*) as placeholder for a range of characters (e.g. searching for a sample ID “AD2*” will find all sample IDs starting with “AD2”).

► To search for patient IDs or comments

1 Click into the **Search** box.

2 Type the search term into the box.

The result of the search is displayed automatically in the runs area.

If necessary, the displayed results can be filtered and sorted.

👁 For more information, see *Lists* on page A-22.

3 To remove the search term, click ✕ next to the **Search** box.

All runs are displayed in the runs area once again, not only the results of the search.

■

Filtering and sorting runs and results

Runs and results that are displayed in the **Results** work area can be filtered and sorted.

👁 For more information about sorting, see *Lists* on page A-22.

👁 For more information about filtering, see *Creating result filters* on page B-29.

Accepting results

More details about particular results can be viewed in the **Details** area, for example result flags.

► To accept results

1 To accept a complete run, select all results of the run you want to accept.

2 To accept only certain results, select the results you want to accept.

- Use the Ctrl key to select several nonadjacent results.
- Use the Shift key to select a range of adjacent results.

3 Choose **Accept**.

In the **Accepted by** column, the user who accepted the results is displayed, for example the lab manager.

For information about adding columns, see *Displaying and hiding columns* on page A-23.

■

Printing results

Before printing, a print preview is displayed. Use the **File** menu to specify the print and export options and to print or export the result report.

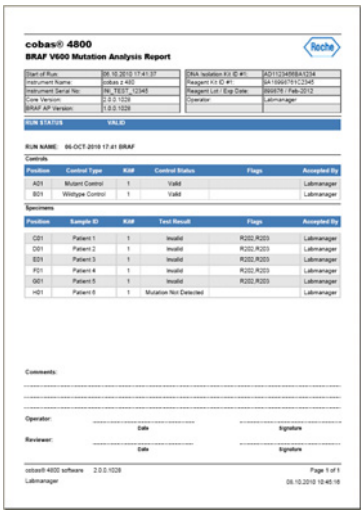

cobas® 4800
BRAF V600 Mutation Analysis Report

Figure B-10 Print preview

The details per result that are included in the report are independent of what is displayed on screen. Structure and layout of reports cannot be changed by the user.

► To print the result report

1 To print complete runs, select the runs you want to print.

2 To print only certain results, select the results you want to print.

- Use the Ctrl key to select several nonadjacent results.
- Use the Shift key to select a range of adjacent results.

3 Choose in the global action bar.

A print preview is displayed for each run that was selected.

4 In the **File** menu, define the printing options.

5 To print the result report, choose **File** > **Print**.

■

► To export the result report as a PDF file

1 To export a complete run, select the run you want to export.

2 To export only certain results, select the results you want to export.

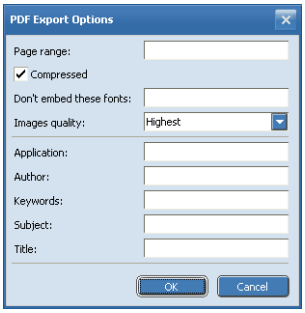
- Use the Ctrl key to select several nonadjacent results.
- Use the Shift key to select a range of adjacent results.

3 Choose **Print** in the global action bar.

A print preview is displayed for each run that was selected.

4 Choose **File** > **Export Document**.

A dialog box for defining the export options is displayed.



5 After specifying the export options, choose **OK**.

A dialog box for defining file name and path for storage is displayed.

6 Define the file name and path for storage.

7 Choose **OK**.

■

Exporting results

After reviewing, test results can be exported and saved as a file.

When exporting results as a file, all results of a run are exported. It is not possible to export individual results of a run.

Make sure not to select the run header of the run you wish to export. Only select one of the results of the run.

► To export results as a file

1 Select one of the of the results of the run you want to export.

2 Choose **Export** in the global action bar.

A dialog box for selecting or creating a folder for storage is displayed.

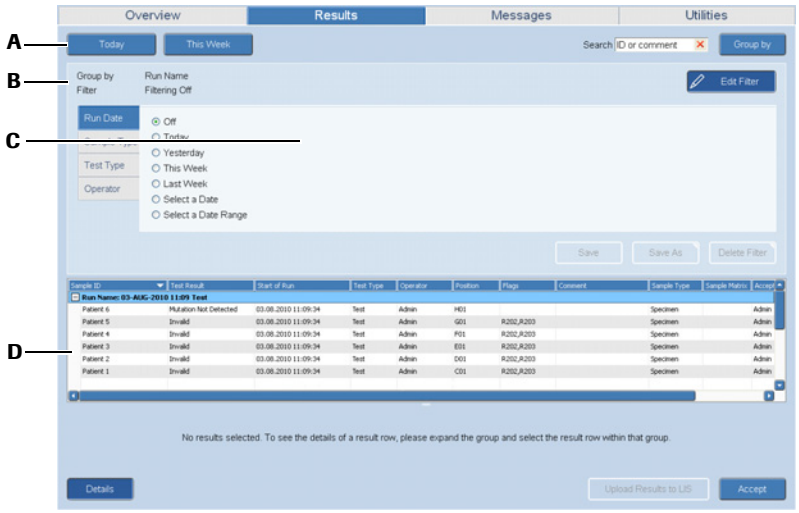
3 Select the folder where you want the export file to be stored.

4 Choose **OK**.

■

Creating result filters

A maximum of three result filters can be defined and saved. The filters will appear as separate buttons above the filter information area. Per default, the filters **Today** and **This Week** are available. The default filters cannot be changed nor deleted. However, they can be used as a basis for a new filter, which has to be saved with another name.



A Filter buttons
B Filter information area
C Filter definition area
D Runs area

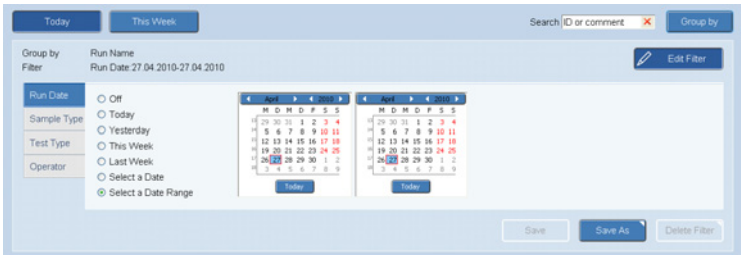
Figure B-11 Filter definition area in the **Results** work area

► To create a new result filter

1 Choose **Edit Filter**.

The filter definition area is displayed.

2 Choose **Run Date** and select a run date or range.



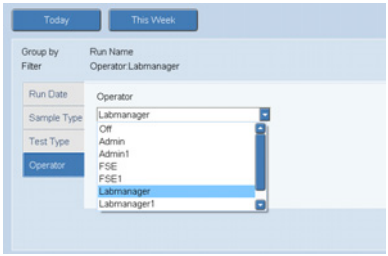
To define a date range, select the start and end date in the calendar boxes.

3 Choose **Sample Type** and select one or more sample types.

To include only controls into the filter, select **Non Specimen**.

4 Choose **Test Type** and select one or more test types.

5 Choose **Operator**. Click the arrow next to the box and select an operator from the list.



6 Choose **Save as**.

A dialog box for defining the filter name is displayed.

7 Type a name for the filter into the box.

8 Choose **Save** in the dialog box.

The filter is displayed as a separate button above the filter information area. The filter and grouping criteria of the new filter are displayed in the filter information area.

■

► To change a result filter

1 Choose the filter button of the filter you want to change.

The selected filter button will change to a darker blue shade.

2 Change the filter criteria as described above.

3 Do one of the following:

- Choose **Save** to save the changes.
- Choose **Save as** to save the filter under a new name.

■

► To delete a result filter

1 Choose the filter button of the filter you want to delete.

The selected filter button will change to a darker blue shade.

2 Choose **Delete Filter**.

A confirmation dialog box is displayed.

3 Choose **Yes** to delete the filter.

The filter button will disappear from the filter area.

■

► To apply a filter to the results

1 Choose the filter button you want to apply.

The selected filter button will change to a darker blue shade. Only the results that correspond to the selected filter will appear in the runs area.

2 If the filter definition area is still displayed, choose **Edit Filter**. The filter definition area will be closed.

Grouping of filtered results

The grouping of the filtered results can be changed anytime by choosing **Group by**.

For more information, see *Grouping results* on page B-24.

■

► To disable result filtering

1 Click the filter button that is currently active. The filter button ceases to be highlighted.

In the filter information area, **Filtering Off** is displayed next to **Filter**. All results are displayed in the runs area once again.

2 If the filter definition area is still displayed, choose **Edit Filter**. The filter definition area will be closed.

■

Configuration

In this chapter the configuration of the system and the export of support data is described.

In this chapter

Chapter **7**

Configuration

The accessible configuration settings are dependent on the user group of the logged in operator.

- Users assigned to the **Supervisor** group can access all configuration settings described below.
- Users assigned to the **Operator** group can only export support data (data for Roche Service) and change their password.

The configuration tasks are divided into the following areas:

- System configuration
- User management

System Settings

➔ **Utilities** > **Configuration** > **System Settings**

Use the **System Settings** group to define the parameters found in Table B-2.

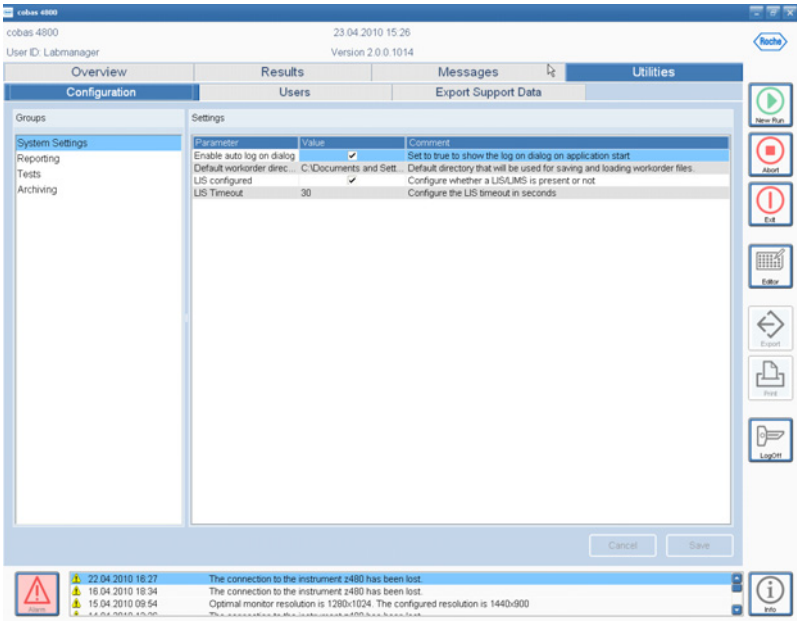


Figure B-12 **System Settings** group

Parameter	Values	Comment
Enable auto log on dialog	☑ ☐	Select the check box to ensure that the log on dialog box is displayed after starting the software.
Default workorder directory	Path name	Location where the system looks for and saves work order files. Type the full path and use Windows naming conventions (e.g. C:\Temp\Workorders). Alternatively, choose and browse for the path.
LIS configured	☐	Make sure that the check box is not selected. LIS connection is not supported.
LIS Timeout		LIS connection is not supported.

Table B-2 **System Settings** parameters

Reporting

➔ **Utilities** > **Configuration** > **Reporting**

Use the **Reporting** group to specify the laboratory name, enable or disable the header of the result report, and to define the maximum number of entries in a report.

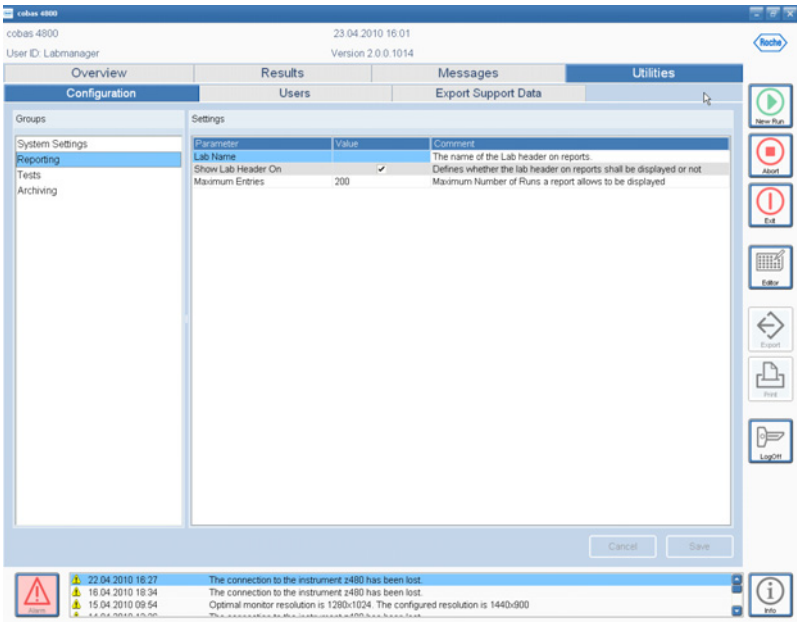


Figure B-13 **Reporting** group

Parameter	Values	Comment
Lab name	Name	The name of the laboratory that will be included in the header of the reports.
Show Lab Header on Reports	☑ ☐	Select the checkbox if you want the specified header to be displayed on the reports.
Maximum Entries	Number (1 to 1000)	Defines the maximum number of result entries in a report.

Table B-3 **Reporting** parameters

Tests

➔ **Utilities** > **Configuration** > **Tests**

Use the **Tests** group to enable or disable tests on the **cobas** 4800 system. Disabled tests cannot be run on the system.

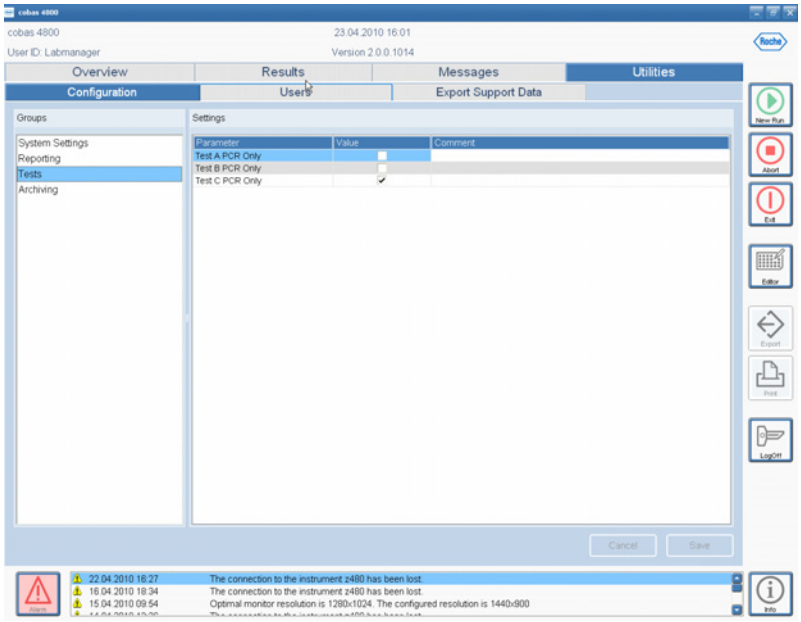


Figure B-14 **Tests** group

Parameter	Values	Comment
Test A PCR Only workflow	☑ ☐	Select a check box to enable a test for use on the **cobas** 4800 system. Clear the check box to prevent a test from being used.
Test B PCR Only workflow	☑ ☐	
Test C PCR Only workflow	☑ ☐	

Table B-4 **Tests** parameters

Archiving

➔ **Utilities** > **Configuration** > **Archiving**

Use the **Archiving** group to define the settings for purging and archiving results.

The purge and archive function is used to archive results and purge them from the results database. This will free up space for new results in the database. Results are archived at regular intervals in a password protected ZIP-file at a predefined location. Each run is archived in a separate ZIP-file.

- No manual intervention is necessary. The **cobas** 4800 system performs purging and archiving of results automatically based on the settings in **Utilities** > **Configuration** > **Archiving**.
- Ensure that the archive directory is included in the backup plans.
- Contact Roche Service if result archives need to be viewed or restored.
- The purge and archive function only covers run data and results. Messages are kept in the **cobas** 4800 software until they are deleted manually. Therefore, it is recommended to manually delete confirmed messages from time to time to free up additional space in the database.

For information on how to delete confirmed messages, refer to *Messages work area* on page D-7.

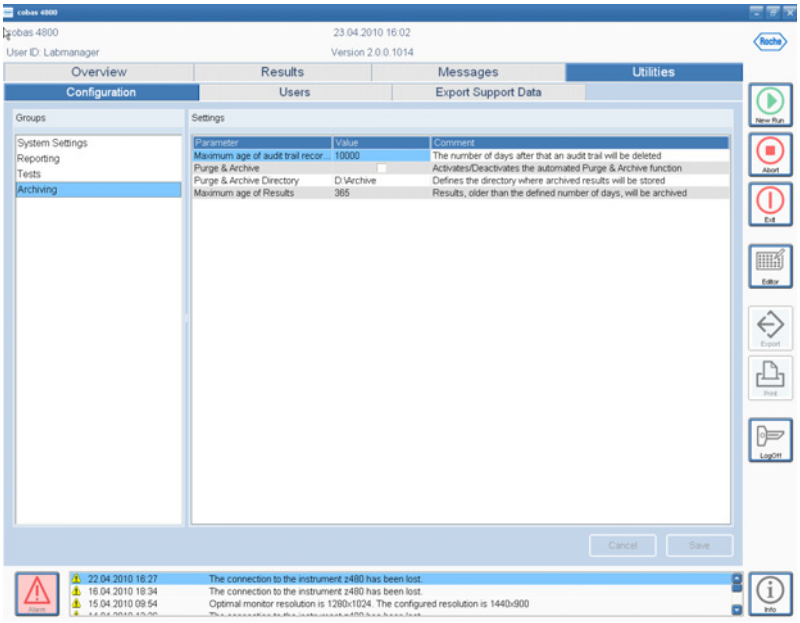


Figure B-15 **Archiving** group

Parameter	Values	Comment
Maximum age of audit trail records	Number (10 to 10000)	Number of days after which the audit trail records will be deleted.
Purge & Archive	☑ ☐	Select the check box to enable the purge & archive function. Deselect the check box to disable the purge & archive function.
Purge & Archive Directory	Directory path	Location where the results are archived. The archive directory can be located on a server. Type the full path to the archive directory and use Windows naming conventions. (e.g. D:\Archive). Alternatively, choose and browse for the path.
Maximum age of Results	Number (10 to 10000)	Number of days after which the results will be be archived and purged from the database. All results that are older then the specified days will be archived and purged.

Table B-5 **Archiving** parameters

User management

➔ **Utilities** > **Users**

There are three groups of functions available for managing users:

- Changing passwords
- Managing user accounts
- Setting up rules for passwords and user accounts

- Only users that are assigned as **Supervisor** can manage users and can set up rules for passwords and user accounts.
- Users assigned as **Operator** can change their password only.
- Keep user access information on a secure place and do not make it public to prevent unauthorized access to the system.

Password management

The initial password is defined during set up of a user account.

For more information, see *To define a new user account* on page B-43.

Changing a password

Any user can change his/her password. Supervisors can change the passwords of all users. The password must follow the password rules that are defined in the **cobas** 4800 software.

For more information, see *Password rules* on page B-46.

► To change the password

1. Choose **Utilities** > **Users** > choose **Change Password**.

   The **Change Password** dialog box is displayed.
2. In the **Old Password** box, type the current password.
3. In the **New Password** box, type the new password.
4. In the **Confirm new Password** box, type the new password again.
5. Choose **Apply**.

■

► **To change the password of another user**

1 Choose **Utilities** > **Users**.

2 Select a user in the list.

3 Choose **Reset Password**.

4 In the **Password** box, type the new password.

5 In the **Confirm Password** box, type the new password again.

6 Choose **Apply**.

■

User account management

The following functions are available:

- Creating new user accounts
- Changing and deleting existing user accounts
- Unlocking user accounts

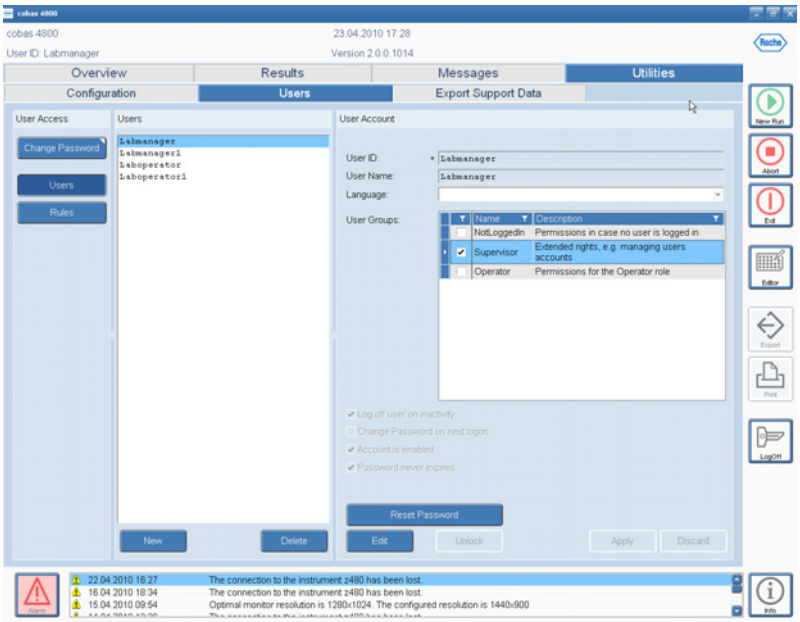


Figure B-16 **Users** area

User rights

A user assigned to the **Operator** group has the following user rights:

- Starting and aborting runs
- Viewing result details and accepting, exporting, and printing results
- Performing maintenance
- Confirming messages

A user assigned to the **Supervisor** group has the same user rights as the **Operator** group plus:

- Editing configuration settings
- Managing user accounts and editing account rules
- Deleting messages

Creating user accounts

User name and password must be unique.

► To define a new user account

1 Choose **Utilities** > **Users** > choose **New**.

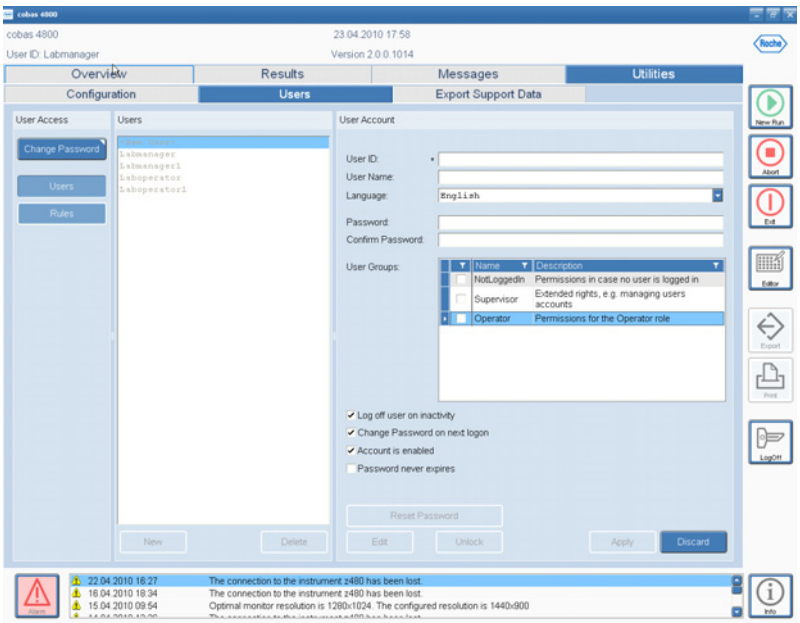


Figure B-17 Defining a new user account

2 Type the **User ID**.

The user ID must be unique on the system.

3 Type the **User Name**.

4 Select the user language.

5 Type the password and confirm it.

The password must follow the password rules that are defined on the system.

6 Assign the **User Group**.

To each group, a set of user rights is assigned.

7 Select **Log off user on inactivity** to make sure that the user will be automatically logged off after a certain period of inactivity on the system.

👁 For more information, see *Account rules* on page B-45.

8 Select **Change Password on next logon** to ensure that the user changes his or her password during the next log on.

9 Clear **Account is enabled** if you are preparing a new user account to be ready for a later date.

10 Clear **Password never expires** if the user should change the password periodically.

For more information, see *Account rules* on page B-45.

11 Choose **Apply**.

This button is only active if all necessary definitions have been made.

■

Changing user accounts

► To change a user account

1 Choose **Utilities** > **Users.**

2 Select a user from the list.

3 Choose **Edit**.

4 Make the necessary changes in the **User Account** area.

5 Choose **Apply**.

■

Deleting user accounts

► To delete a user account

1 Choose **Utilities** > **Users.**

2 Select a user from the list.

3 Choose **Delete**.

A confirmation dialog box is displayed.

4 Choose **Yes** to confirm the action.

■

Unlocking user accounts

By default, user accounts become locked after five unsuccessful login attempts. Locked users are indicated in the **Users** list.

► To unlock a locked user account

1 Choose **Utilities** > **Users.**

2 Select the locked user from the list.

3 Choose **Unlock**.

■

Rules

➔ **Utilities** > **Users** > choose **Rules.**

There are two sets of rules, one for user accounts and one for passwords.

Enter zero to switch off a rule.

Account rules

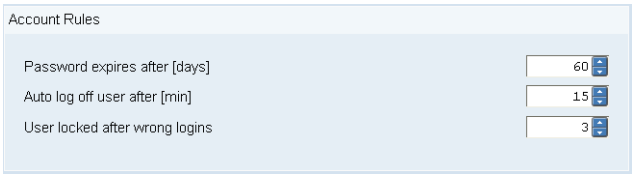


Figure B-18 User account rules

Item	Values	Comment
Password expires after [days]	Number (0 to 999)	Select or type the number of days after which the user must change the password.
Auto log off user after [min]	Number (0 to 999)	Select or type the number of minutes of inactivity on the system after which the user is automatically logged off.
User locked after wrong logins	Number (0 to 999)	Select or type the number of failed login attempts before the system automatically locks the account.

Table B-6 User account settings

Password rules

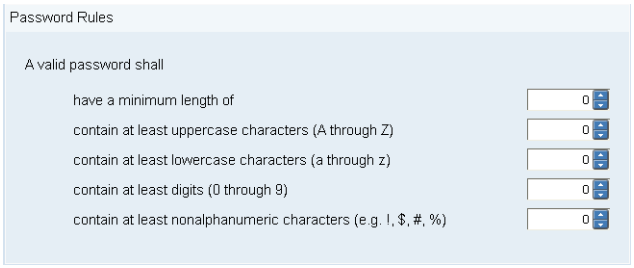


Figure B-19 Password rules settings

Item	Values	Comment
have a minimum length of	Number	Select or type the minimum number of characters a password must consist of. The minimal required value is automatically set by the system based on the values of the other password rules.
contain at least uppercase characters (A through Z)	Number	Select or type the minimum number of uppercase characters a password must contain.
contain at least lowercase characters (a through z)	Number	Select or type the minimum number of lowercase characters a password must contain.
contain at least digits (0 through 9)	Number	Select or type the minimum number of digits a password must contain.
contain at least non-alphanumeric characters (e.g. !, $, #, %)	Number	Select or type the minimum number of non-alphanumeric characters a password must contain.

Table B-7 Password rules settings

Exporting support data

If necessary, support data for individual runs or a batch of runs can be exported to an external storage device. The support data will help Roche Service to support you optimally.

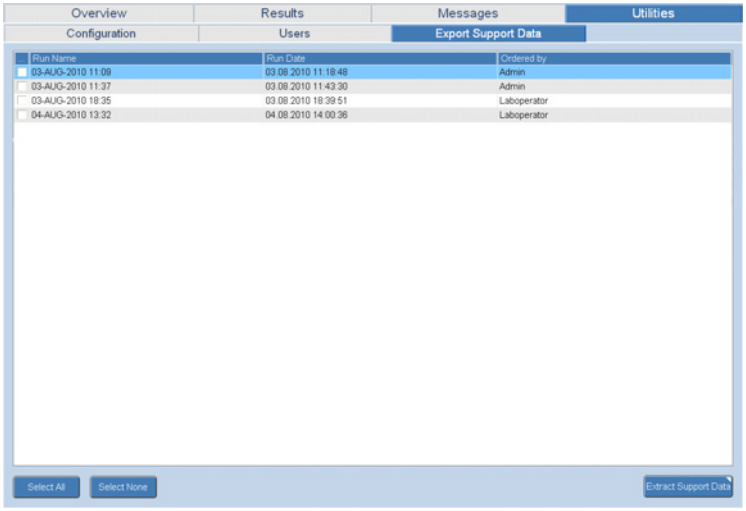


Figure B-20 Export data for Roche Service

► To export support data

1. Choose **Utilities** > **Export Support Data**.
2. Select the runs that were affected by the problem.
3. Choose **Extract Support Data**.

   A dialog box for entering the folder for storage is displayed.
4. In the dialog box, select the folder where you want the exported data to be saved.
5. Follow the instructions of Roche Service how to send the data to them.

■

This is the last page of Part B.

Maintenance C

Maintenance

In this chapter the required maintenance procedures are described.

In this chapter *Chapter* **8**

Safety information

Make sure that you have read and understood the chapter *General safety information*. The following safety messages in particular are relevant:

Warning messages:

- *Infection by samples and associated materials* on page A-7
- *Infection by biohazardous waste* on page A-7
- *Contamination of the environment by liquid waste and solid waste* on page A-7
- *Explosion through sparks* on page A-8
- *Fire risk through usage of sprays* on page A-8

Caution messages:

- *Skin inflammation or injury caused by reagents* on page A-8

Safety precautions:

- *Operator qualification* on page A-6

Observe the system safety labels illustrated and described in the Instrument Manual for the **cobas z** 480 analyzer.

Before performing any maintenance, read the safety messages carefully. If you ignore safety messages, you may suffer serious or fatal injury.

Maintenance

In the **cobas** 4800 software, the **Instrument Overview** and the **Instrument** tab show the actual maintenance status of the **cobas z** 480 analyzer.

For information about exchanging xenon lamp, ventilation dust filters and fuses, and about general cleaning of the analyzer, refer to the Instrument Manual for the **cobas z** 480 analyzer.

This is the last page of Part C.

Troubleshooting D

Troubleshooting and error messages

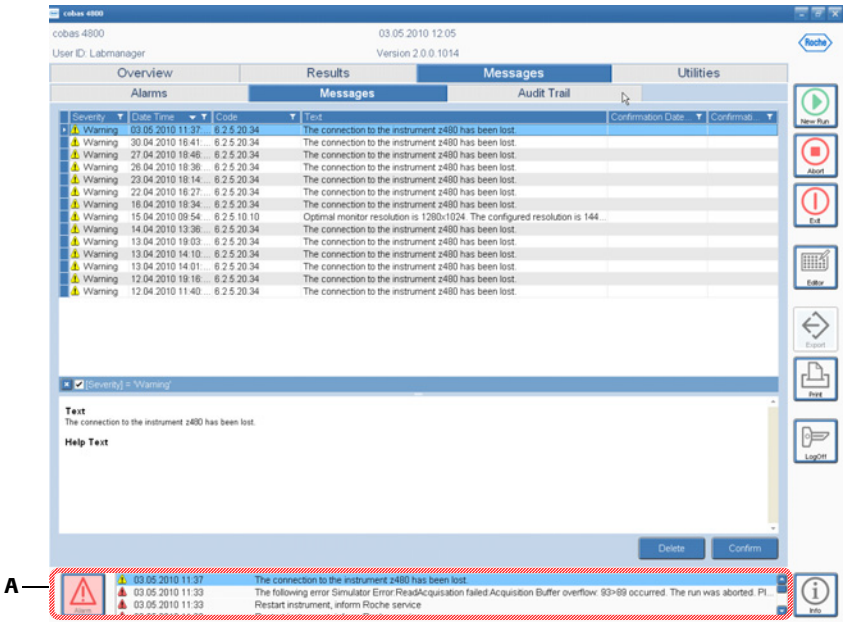
In this chapter, you will find information about troubleshooting and error messages that help to deal with exceptional situations.

In this chapter

Chapter **9**

Overview

The **cobas** 4800 system records all problems originating from the **cobas** 4800 software and **cobas z** 480 analyzer. The error records can be viewed in the alarm area at the bottom of the screen and in the **Alarms** and **Messages** work areas.



A The *alarm area* displays the most recent alarms that are not yet confirmed by the operator. Select an alarm in the list and click the **Alarm** button on the left to get more details about the selected alarm.

Figure D-1 Alarm area

Alarm area

The color of the alarm button changes depending on the severity of the alarms listed in the alarm area.

Icon	Purpose
	Red icon: the alarm area contains at least one error.
	Yellow icon: the alarm area only contains warnings but no errors.
	White icon: the alarm area is empty.

Table D-1 **Alarm** button

Message and alarm icons

The severity of the alarms and messages is indicated by the following icons:

Icon	Purpose
	Designates an error message (red icon). The error must be resolved before additional samples can be run. A problem report is generated automatically. For details about problem reports, see *Problem reports* on page D-10.
	Designates a warning (yellow icon) indicating an error was detected but the system can still be run.
	Designates an informational message.

Table D-2 Message and alarm icons

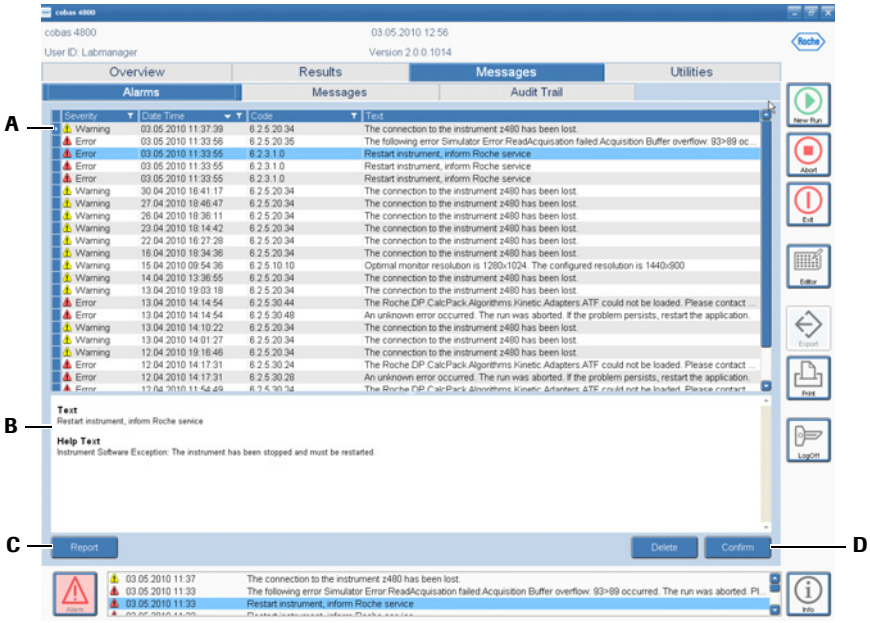
Messages work area

There are three tabs in the **Messages** work area.

Tab	Description
Alarms	Contains all alarms from the **cobas z** 480 analyzer or the **cobas** 4800 software that have not yet been confirmed by the operator.
Messages	Contains all information, error, and warning messages.
Audit Trail	Shows recorded user activities, e.g. operator log on and log off. For more information on the audit trail, see *Audit trail* on page A-29.

Table D-3 Tabs in **Messages** work area

The purge and archive function only covers run data and results. Messages are kept in the software until they are deleted manually. Therefore, it is recommended to manually delete confirmed messages from time to time to free up additional space in the database.



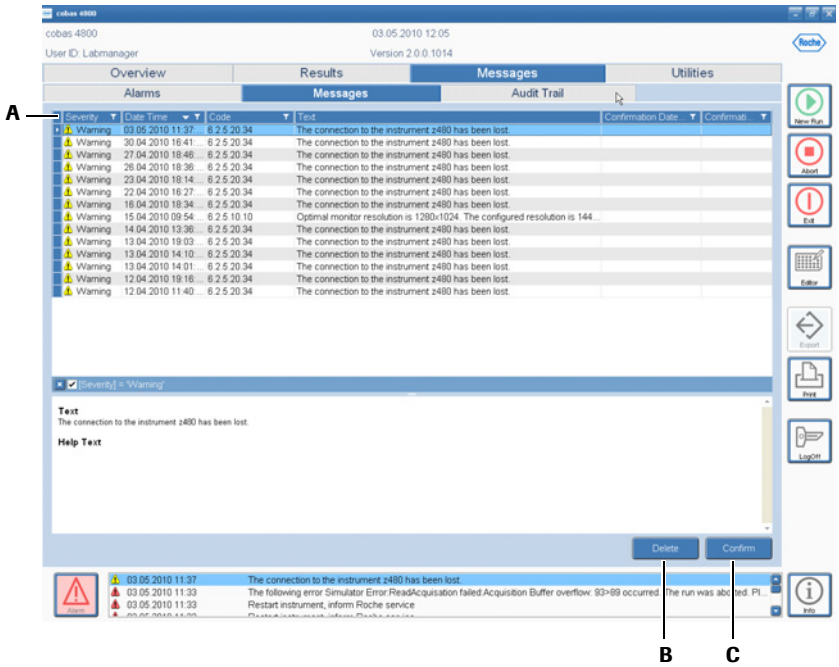
A All unconfirmed alarms are listed in the **Alarms** tab. Alarms are moved to the **Messages** tab after confirmation.

B Alarm details. Select an alarm in the list to see the alarm details.

C Choose **Report** to manually generate a problem report.

D Choose **Delete** to delete the selected alarm or **Confirm** to confirm the selected alarm. Confirmed alarms are deleted from the **Alarms** tab, but are still listed in the **Messages** tab.

Figure D-2 **Alarms** tab



A Use the sort, filter, and group functions in the column headers to customize the list of messages.

B Choose **Delete** to delete the selected message.

C Choose **Confirm** to confirm the selected message.

Figure D-3 **Messages** tab

Field	Description
Severity	Contains an icon to indicate whether the message is an error, warning, or information message.
Date/Time	Displays the date and time when the message was generated.
Code	Displays the message code.
Text	Displays an abbreviated description of the error or situation that occurred.
Confirmation date	Displays date and time of confirmation.
Confirmation user	Displays the operator who confirmed the message.

Table D-4 Fields in **Messages** tab

Reviewing and confirming new alarms

All alarms should be confirmed.

The selected alarm(s) are removed from the **Alarms** tab, but are still listed in the **Messages** tab.

Choose the button to print the contents of the **Alarms** or **Messages** tab.

► To confirm a new alarm

1. Choose **Messages** > **Alarms** or double-click the alarm in the alarm area at the bottom of the screen.
2. Select the alarm to be confirmed.
   - Use the Ctrl key to select several nonadjacent alarms.
   - Use the Shift key to select a range of adjacent alarms.
3. Choose **Confirm**.

■

Troubleshooting

Problem reports

Each time a new error message is generated, a problem report is created by the **cobas** 4800 system. If necessary, a problem report can also be created manually.

Problem reports are used by Roche Service to assist in troubleshooting cases. Problem reports are stored as ZIP-files in a predefined folder where they can be retrieved and sent to Roche Service when required.

When there are already 500 problem reports in the folder and another problem report is added, the oldest problem report will automatically be deleted from the folder.

► To retrieve a problem report

1. Open Windows File Explorer and go to "C:\Documents and Settings\All Users\Application Data\Roche DiagnosticsAG\ cobas4800SR{RELEASE_VERSION}\ProblemReport".
2. Copy the requested problem report to a portable storage device.
3. Send the problem report to Roche Service together with a detailed problem description.

■

► To manually create a problem report

1. In the **cobas** 4800 software, choose **Messages** > **Alarms**.
2. Choose **Report**.
3. Retrieve the problem report as described above.

■

Remote support

In a remote support session, the **cobas** 4800 software is remotely operated by Roche Service. Call Roche Service to initiate a remote support session.

NOTICE Do not operate the **cobas** 4800 software during a remote support session.

► To initiate a remote support session

1 Request a remote support session at Roche Service.

Roche Service initiates a remote session. A message is displayed on screen asking to allow remote access on this computer.

2 Confirm the displayed message.

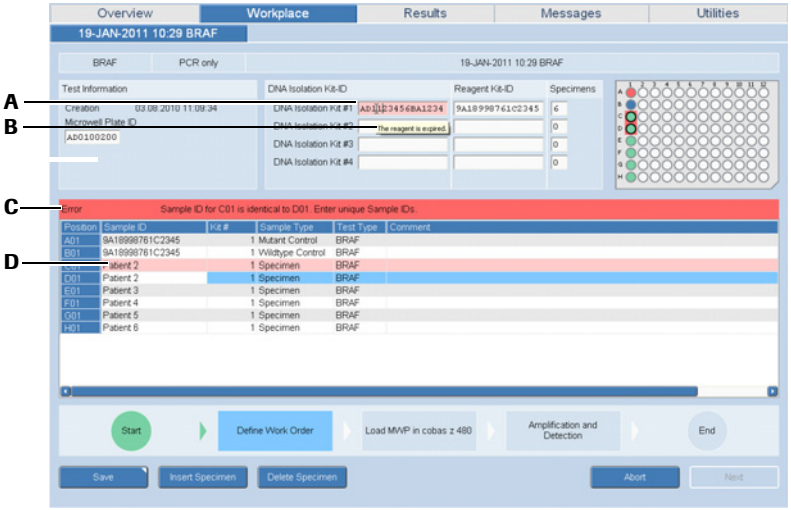
The remote support session starts. The session is terminated by Roche Service.

■

List of messages and tool tips within the sample editor

If an error happens while creating a work order file, the color of the box will change to red. If the boxes for microwell plate ID, DNA isolation kit ID (DNA sample preparation kit), reagent kit ID (BRAF V600 Mutation Test kit), and number of specimens are concerned, a tool tip is displayed. Move the mouse pointer over the red box to display the tool tip that gives information about the nature of the error.

If the error happens in the sample ID area, an error message will be displayed above the sample ID area, and no tool tip is displayed.



A Box where an error occurred

B Tool tip informing about the nature of the error in the box above

C Message originating from an error in the **Sample ID** column

D Box that gave rise to the message above

Figure D-4 Errors within the sample editor

The following table shows the messages and tool tips with an explanation or solution:

Error message	Solution / Comment
The barcode cannot be read.	Scan the barcode once again. For information on handling the barcode scanner, see *Handheld barcode scanner* on page A-34. If the error persists, type the barcode manually into the box. Contact Roche Service if you suspect that there is a problem with the handheld barcode scanner.
Barcode is mandatory.	Scan the correct barcode or type it into the box.
The reagent kit does not match the selected test.	Make sure to scan the barcode of the reagent kit (BRAF V600 Mutation Test kit) that belongs to the test you are about to run.
At least one sample is required if a reagent barcode is entered.	Enter the correct number of specimens into the **Specimens** box.
The DNA isolation kit does not match the selected test.	Make sure to choose the DNA sample preparation kit that belongs to the test you are about to run.
All reagents must be from the same lot.	If you use more than one reagent kit (BRAF V600 Mutation Test kit), make sure that the reagent kits all belong to the same lot.

Table D-5 Messages and tool tips in the sample editor

Error message	Solution / Comment
The reagent type is incorrect.	Make sure to enter the barcode of the correct DNA sample preparation kit into the **DNA Isolation Kit-ID** box. Enter the barcode of the correct reagent kit (BRAF V600 Mutation Test kit) into the correct **Reagent Kit-ID** box.
Sample ID for *xy* is identical to *xz*. Enter unique Sample IDs.	You have entered a sample ID twice or more times into the **Sample ID** column. Make sure to enter the correct barcode for each sample.
The MWP was previously used and cannot be used again.	The microwell plate was used in a previous run. Make sure to use a new microwell plate.
Sample ID of *xy* exceeds 20 character maximum.	Make sure that the sample ID entered into the **Sample ID** column does not have more than 20 characters.
Sample ID of *xy* must be at least two characters.	Make sure that the sample ID entered into the **Sample ID** column has at least two characters.
No specimens were defined.	The **Sample ID** column must contain at least one sample ID. Enter the correct sample IDs.
The reagent is expired.	Make sure to use only reagents that are not expired.

Table D-5 Messages and tool tips in the sample editor

List of error messages

The source of a message is indicated in the message code as outlined in the following table.

Message code	Message source	Example
2.5.**10**.xx	Messages created by the **cobas** 4800 system.	2.5.10.22
2.5.**20**.xx	Messages created by the **cobas z** 480 analyzer.	2.5.20.13
2.5.**30**.xx	Messages created by the calculation module.	2.5.30.19

Table D-6 Message source

The following table lists the user-relevant messages displayed in the **cobas** 4800 software.

- If there is no user action stated in the message table, call Roche Service.
- Placeholders in the message table are printed in italics (e.g. *xy).*

ID	Severity	Message	Solution / Comment
2.5.10.10	Warning	Suboptimal monitor resolution detected. Optimal monitor resolution is 1280 x 1024.	Change the monitor resolution to 1280 x 1024.
2.5.10.12	Warning	Run could not be recovered.	Check the flags in the **Results** work area for more information. If unclear, contact Roche Service.
2.5.10.13	Warning	Run was successfully recovered.	The run was successfully recovered and samples are flagged.
2.5.10.17	Warning	Purge and archive aborted due to insufficient hard disk space.	Clean up hard disc D:\ manually by deleting files that are no longer needed. If unclear, contact Roche Service.
2.5.10.18	Warning	Purge and archive could not be completed.	Contact Roche Service.
2.5.10.19	Warning	Purge and archive could not create directory.	Define the Purge and Archive directory in the **Configuration** area. If the error persists, contact Roche Service.
2.5.10.21	Warning	On *HardDisk* is *x* kB of *y* kB free (*z*% full).	Archive and delete old data.
2.5.10.22	Error	On *HardDisk* is *x* kB of *y* kB free (*z*% full).	Archive and delete old data.
2.5.10.23	Warning	No analysis package installed.	Contact Roche Service.
2.5.10.26	Error	Not enough free space on hard disk or database available to start a new run.	Clean up hard disc D:\ manually by deleting files that are no longer needed. If unclear, contact Roche Service.
2.5.20.30	Error	Current optical filters are not supported on instrument *xy*.	Contact Roche Service.
2.5.20.31	Error	Wrong instrument block: *xy*.	Contact Roche Service.
2.5.20.32	Error	Instrument error has occurred.	Restart the analyzer. If the problem persists, contact Roche Service.
2.5.20.33	Error	The instrument software version *xy* is not supported.	Contact Roche Service.

Table D-7 Error messages

ID	Severity	Message	Solution / Comment
2.5.20.34	Warning	Connection to the following instrument has been lost: *xy*.	The analyzer is not switched on, not connected, or defective. Check connections between analyzer and control unit or switch on the analyzer. Then choose **Refresh**.
2.5.20.35	Error	Instrument error has occurred.	Instrument error. The run was aborted. Restart the analyzer. If the error persists, contact Roche Service.
2.5.30.40	Warning	Incorrect microwell plate loaded in instrument: *xy*. Expected microwell plate: *yz*.	The barcode of the loaded microwell plate does not match. Exchange the microwell plate for the one stated in the work order file.
2.5.30.41	Warning	MWP was used in a previous run. Please exchange MWP.	Microwell plate was used in a previous run. Exchange the microwell plate for an unused one.
2.5.30.42	Error	Microwell plate barcode could not be read.	Contact Roche Service.
2.5.30.43	Error	Algorithm definition file cannot be loaded.	Problem with algorithm definition file. Contact Roche Service.
2.5.30.44	Error	Algorithm definition file does not exist.	Contact Roche Service.
2.5.30.45	Warning	Wrong algorithm version.	The version of the algorithm file does not match the required version. Contact Roche Service.
2.5.30.46	Error	Run template data file is corrupted.	Contact Roche Service.
2.5.30.47	Error	Calculation parameter file cannot be loaded.	Contact Roche Service.
2.5.30.48	Error	An unknown error occurred. The run was aborted.	Restart the software. If the error persists, contact Roche Service.
2.5.30.49	Error	Calculation parameter file does not exist.	Contact Roche Service.

Table D-7 Error messages (continued)

Result flags

In this chapter the result flags are explained.

In this chapter *Chapter* **10**

About result flags

Flags are automatically generated with results if during processing certain technical checks were not passed, the result exceeds or does not reach predefined limits, or if technical or mechanical problems occurred during a run.

Results that do not have flags associated with them can be considered valid. However, not all results that have flags associated with them are incorrect. Some flags are warnings rather than error messages and do not necessarily invalidate the result(s).

The flags may originate from either the **cobas z** 480 analyzer, the **cobas** 4800 software, or the result interpretation.

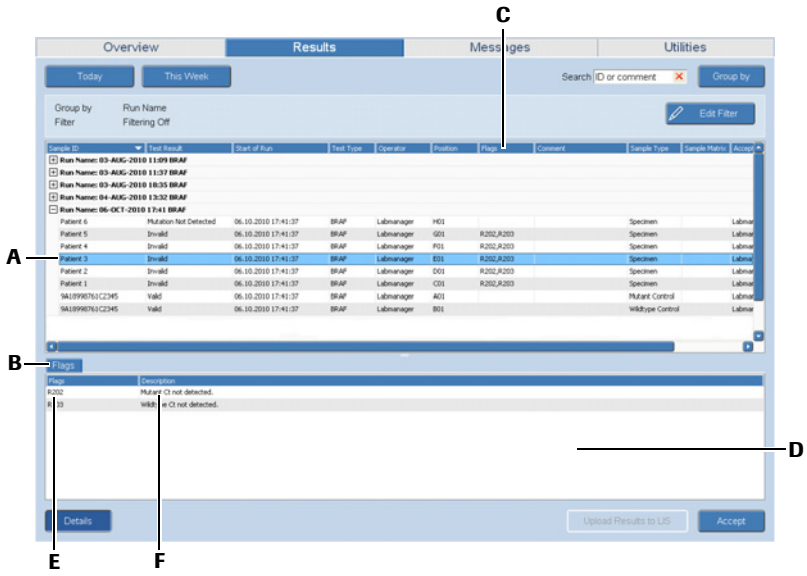
► To display result flag information

1 Choose **Results**.

2 Select a result that has a flag entry in the **Flags** column.

3 Choose **Details**.

The details area is displayed. All flags that were generated for this result are displayed.



A	Selected result	**D**	Details area
B	Tab for displaying **Flags**	**E**	Flag code
C	Flags column	**F**	Flag description

Figure D-5 How to display flag information

Each flag is identified by its flag code, and information on the nature of the reason for each flag is displayed.

■

List of result flags

The source of a flag is indicated in the flag code as outlined in the following table.

Flag code starts with	Flag source	Example
M	Multiple or other reasons	M6
R	Result interpretation	R200
Z	**cobas z** 480 analyzer	Z1

Table D-8 Flag source

The following table lists all result flags of the **cobas** 4800 system that are user relevant.

Flag code	Severity	Description	Recommended action
M1	Error	Software error. Additional information can be found in the alarm messages and the trace log files.	Check the alarm messages in the **Messages** area for more information. If unclear, contact Roche Service.
M2	Error	Aborted by the user.	
M3	Information	Privileged user performed a run without checks. The results cannot be used for patient diagnostics.	None. Flag is for information only.
M4	Information	Privileged user performed a run. The results cannot be used for patient diagnostics.	None. Flag is for information only.
M6	Warning	The run was recovered. Run results were retrieved by data recovery process. Use results with caution.	None. Flag is for information only.
M7	Information	The run was imported by a privileged user without checks.	None. Flag is for information only.
M8	Information	Privileged user performed a recalculation of the results.	None. Flag is for information only.
R200	Error	Mutant control invalid.	Repeat the run. Refer to the test-specific package insert.
R201	Error	Wild type control invalid.	Repeat the run. Refer to the test-specific package insert.
R202	Error	Mutant Ct not detected.	Repeat the specimen. Refer to the test-specific package insert.
R203	Error	Wild type Ct not detected.	Repeat the specimen. Refer to the test-specific package insert.
R204	Error	Mutant Ct out of range.	Repeat the specimen. Refer to the test-specific package insert.
R205	Error	Wild type Ct out of range.	Repeat the specimen. Refer to the test-specific package insert.
Z1	Error	Hardware or software error from the instrument. The run was aborted.	Contact Roche Service.

Table D-9 List of flags

This is the last page of Part D.

Glossary E

Glossary

A

AD plate Abbreviation for amplification and detection plate; synonymous with microwell plate.

Amplification The process of producing many DNA copies from one original DNA or RNA target region. PCR is a nucleic acid amplification technique.

Anneal The biochemical process of hybridizing or binding two segments of complementary nucleic acid.

C

Controls Reagent formulated to produce known results that are processed like samples. The **cobas** 4800 software monitors control results. Each run requires a wildtype and a mutant control.

Control unit A personal computer that runs the Microsoft Windows XP Professional operating system and the **cobas** 4800 software.

D

Denaturation The process of separating double stranded DNA into single strands by breaking the hydrogen bonds.

Detection Obtaining measurements to determine whether a sample is reactive for the target analyte. Fluorescence measurements are made at selected temperatures and times during the amplification process. When the run is complete data are analyzed to determine the presence of the amplified products from the target and internal control nucleic acid sequences.

DNA Deoxyribonucleic Acid (DNA) is the genetic material that is passed from parent to progeny and propagates the characteristics of the species in the form of genes it contains and the proteins for which it codes. DNA contains the following four nucleotides: dATP, dCTP, dTTP, and dGTP.

M

Microwell plate Plate used for amplification and detection. The 96-well plate is barcoded and has to be sealed with a special sealing film before inserting into the **cobas z** 480 analyzer. On the packaging label, the microwell plate is specified as AD plate.

MWP Abbreviation for microwell plate.

P

PCR Polymerase Chain Reaction. The in vitro process used to amplify short specific target nucleic acid sequences. PCR is performed by cycling the temperature of the amplification mixture according to a set profile. The profile generally consists of denaturation and annealing.

T

Target The DNA or RNA target region that is detected and amplified during PCR.

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Revisions

This chapter contains the new contact addresses and the changed copyright information.

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