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Operating Manual

Biometra TSuite
Software for Biometra Thermal Cycler

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For a proper and safe use of this product follow the instructions. Keep the operating manual for future reference.

General Information http://www.analytik-jena.com

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1 About this document

What is Biometra TSuite?

The software application Biometra TSuite is conceived for operating the Biometra standalone thermal cycler versions Biometra TOne, Biometra TRIO and Biometra TAdvanced, as well as for operating the automated thermal cycler Biometra TRobot II from a computer. When operated via TSuite, thermal cyclers can either be connected to a network or directly to a computer with a network interface that is configured to run the device using the application.

The software has the following functions:

- Operating one or several thermal cyclers in a network using the Biometra TSuite to execute the majority of the functions of the Biometra thermal cyclers and all functions of the Biometra TRobot II
- Creating, editing, copying, executing and monitoring PCR programs
- Exchanging PCR programs between different Biometra thermal cyclers
- Managing PCR programs
- Saving and exporting log files for executed PCR programs and events that occurred while a PCR program was running
- Testing and documenting the proper functioning of the device
- Saving service info files
- User administration

Depending on the thermal cycler model, three connection options are available for communication with the thermal cycler: a serial RS232 interface, USB2.0 via an RS232 to USB adapter or Ethernet.

PCR programs, run log files and other files generated by the thermal cycler can be stored in the internal memory of the thermal cycler, the thermal cycler's controller or on the computer or server of the control software.

GLP compliance

The Biometra TSuite application guarantees GLP compliance by accessing and using the user administration of the thermal cycler and by documenting log files and device self-testing results.

There is a comprehensive user management with three pre-set user levels for the thermal cyclers Biometra TAdvanced, Biometra TRIO and Biometra TRobot II. An administrator can configure user rights for each individual user. Password protection for user accounts allows restricting access to the device to authorized persons to prevent unwanted changes to the system settings and PCR programs.

The documentation section contains logs summarizing the results of the initial self tests, messages for events occurring during PCR program execution, messages for run log files or advanced run log files for PCR program executions as well as the log files of the extended self test. The user can save these log files on a computer or in the network and export them as a CSV file. These CSV files can be archived as Excel files or PDF files.

Program version

The description in this operating manual is based on the Biometra TSuite version V1.02-(1.12)-(1.03)-(1.03).

Biometra TSuite can be used with Biometra thermal cyclers from firmware version ME 2.00 - RE 2.00 (Biometra TRobot II) or ME 2.04 - RE 2.04 (Biometra TOne, Biometra TAdvanced, Biometra TRIO) onwards.

Target group

This operating manual is aimed at qualified specialist personnel with knowledge of PCR analysis. Users are expected to have basic knowledge of working with a computer and using the operating system Windows.

Users must know the content of the operating manuals of the respective Biometra thermal cyclers and the chapter on “Safety” in particular to guarantee safe operation of the Biometra thermal cyclers via the Biometra TSuite software.

About this operating manual

The terms program and PCR program are used in the same sense as PCR protocol in this document. This program or protocol is a programmed sequence of successive temperature iterations with different or similar hold times and cycles.

The following conventions are applied in this operating manual:

- Instructions for action are grouped into blocks of instructions, shown as bullet points. These are marked with a black triangle (▸).
- Software terms used on the user interface of the application are printed in bold, e.g. **Save**.
- Software pages/windows containing a lot of information are grouped in tabs. Page name and tab name are linked by a vertical bar, e.g. **Options** | **Info**.

The following icon is used:

NOTICE

This is a note to be followed to avoid operating errors and obtain correct results.

2 Installing Biometra TSuite

Biometra TSuite license models

The user has to introduce a USB dongle to license the Biometra TSuite. This license is retrieved by the application every 30 seconds.

There are the following licensing options:

Description	Order number
Biometra TSuite single-user license with USB dongle	846-070-001
Biometra TSuite multi-user network license with USB dongle for 5 licenses	846-070-002
Biometra TSuite multi-user network license with USB dongle for 20 licenses	846-070-003
Biometra TSuite multi-user network license with USB dongle for 50 licenses	846-070-004

The Biometra TRobot II is delivered including a Biometra single-user license with USB dongle. There is no need to acquire a separate license.

Installation requirements

The operating system on the computer on which Biometra TSuite is supposed to be installed must be Windows 8 or higher.

Biometra TSuite is compatible with the following thermal cycler models:

- Biometra TRobot II with firmware version ME 2.00 – RE 2.00 or higher
- Biometra TOne, Biometra TAdvanced, Biometra TRIO, with firmware version ME 2.04 – RE 2.04 or higher

Please contact our service department to update the firmware on existing devices.

Biometra TSuite is protected by a “debugger check”. This means that the application cannot be started or quit if the system finds a debugger that is attached to the application. Some anti-virus software programs include a debugger function.

Installing Biometra TSuite

The Biometra TSuite software is available on a USB stick. For update versions of the software, the respective file can also be downloaded via a dedicated link. The application CodeMeter which is required for license protection is installed automatically during the installation process of the Biometra TSuite software.

- ▶ Open the folder “Biometra TSuite”, select the file “Biometra TSuite Vxxx.xxx.xxx.xxx.exe”. and start the installation process by double clicking this file. The software is installed to the folder C:\Programs (x86)\Biometra TSuite or to a folder that the user defined during the installation process.
- ▶ Follow the instructions on the screen.
- ▶ When installing a network license, change the default settings in the following prompt to **Network server**.

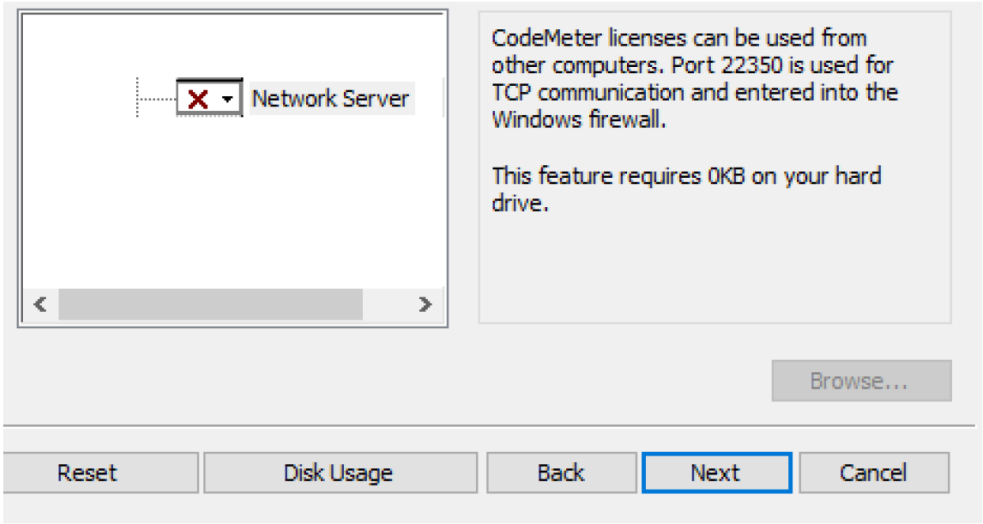

Fig. 1 Selecting the network settings

- Allow the installation program to create the Biometra TSuite start icon on the desktop during the installation process.

  ✓ The software is installed in the folder C:\Program Files (x86) or any other folder selected by the user. You can now activate your Biometra TSuite license.

Language setting of the Biometra TSuite

Biometra TSuite is available in the language versions English, German or Chinese. The language of the user interface of the Biometra TSuite is predefined by the language settings configured under Windows. If the Windows operating system on the computer is set to German, the Biometra TSuite user interface will be displayed in German. When the language setting on the computer is English, the application is displayed in English, and on a computer with Chinese language settings, the application is displayed in Chinese. For all other Windows language settings, the application will select the English version for the user interface.

You can change the language settings of your operating system. Under Windows 10, go to **Settings** | **Language** to change the language settings.

Irrespective of the system language on the computer, you can change the user interface's language in Biometra TSuite by editing the Biometra TSuite link (icon) on the desktop or in the start menu.

- Right-click the Biometra TSuite icon on the desktop.

- Select **Properties** in the shortcut menu.
  A corresponding window is opened.
- Open the **Link** tab.
- Go to the field **Target** and enter the file name (EXE file), a blank space and the string -language=de (for German), -language=en (for English) or -language=zh (for Chinese).
  For example, change "C:\Program Files (x86)\Biometra TSuite\Biometra TSuite.exe" to "C:\Program Files (x86)\Biometra TSuite\Biometra TSuite.exe -language=en".
- Click **OK** to confirm your entry.

  ✓ The Biometra TSuite language settings are adjusted.

Activating a single-user license

- Insert the USB dongle into a USB port on the computer.

✓ The system will automatically detect the USB dongle when the Biometra TSuite application is launched. While the application is running, the system will validate in regular intervals that the USB dongle is still inserted into the computer. Once the dongle is unplugged, the application can no longer be used on that computer.

Activating a network license

When activating a network license, Biometra TSuite can be installed on any number of computers within the network. Licenses are floating, which means that the number of user instances that can be launched simultaneously is defined by the number of licenses that were purchased. Once a user quits a licensed application on one computer, this application can be launched on a different computer.

▶ Insert the USB dongle into a USB port on the server.

✓ When starting Biometra TSuite on one of the installed computers, the system will automatically try to retrieve the license from the network. The system will check the number of licenses that are not used at that moment on the network dongle and launch the application on the respective computer if at least one license is unused. If all licenses are in use, the application will display a corresponding message.

3 Starting and ending Biometra TSuite

Starting Biometra TSuite

- Double-click the AJ icon on the computer's desktop to start Biometra TSuite.

  ✓ Biometra TSuite opens with the dashboard on the **Home screen**. All Biometra thermal cyclers that are linked to the Biometra TSuite instance are shown on the dashboard on the tile **Thermal cycler**.

After starting the application for the first time

After starting Biometra TSuite for the first time, you have to first select the interfaces for connecting the thermal cyclers to be displayed. If there are several thermal cyclers in your network, you can select which thermal cyclers you want to monitor using this instance of Biometra TSuite. Furthermore, you can enable bulk notifications for selected thermal cyclers.

These settings are used as the default configuration each time the application is started and must not be set again. After configuring the connection settings, the thermal cyclers are automatically connected to Biometra TSuite provided the connection to Biometra TSuite has not been changed.

Ending Biometra TSuite

- Click the cross icon in the top right corner of the Biometra TSuite window to quit the application.
- When prompted whether you really want to quit the application, select **Yes**.

  ✓ Biometra TSuite is terminated.

See also

- Displaying thermal cyclers in Biometra TSuite [▸ 59]
- Selecting thermal cyclers for monitoring [▸ 60]
- Enabling block notifications [▸ 60]

4 Storage paths under Biometra TSuite

Biometra TSuite stores log files, PCR programs and backups of the thermal cycler. The local storage location can either be on the computer or in the network. To keep things simple, the expression used in this operating manual is "Save to PC".

The storage path is composed of several parts:

1. Custom path
   You can define this path on page **Application settings** | **General** in the field **Offline storage location**.
2. Queried thermal cycler
   This folder name consists of the device type and the serial number.
3. Folder BIOMETRA.TCY
4. Folder for different file types

The following folders are created for the file types:

Folder	File
ADVPROT.COL	Advanced run log file
EXTSELFT.EST	Self test log file
PROGPROT.COL	Run log file
RUNPROGR.AMS	Files from programs that have been copied from a thermal cycler to the computer. The program name of the TXT file is generated automatically and does not correspond to the program name in the Biometra TSuite application or on the thermal cycler. The time and date of the file serve as a reference.
SERVICEI.NFO	Service info file
WRITEIMA.GES	Backup file

Example of a complete path name

C:\Users\User\Documents\Biometra TSuite\Biometra TAdvanced_3625186 \BIOMETRA.TCY\WRITEIMA.GES

See also

Page Application settings | Settings [▶ 33]

5 The structure of the Biometra TSuite application

After Biometra TSuite is launched, the application will open the software interface with the dashboard of the **Home screen**.

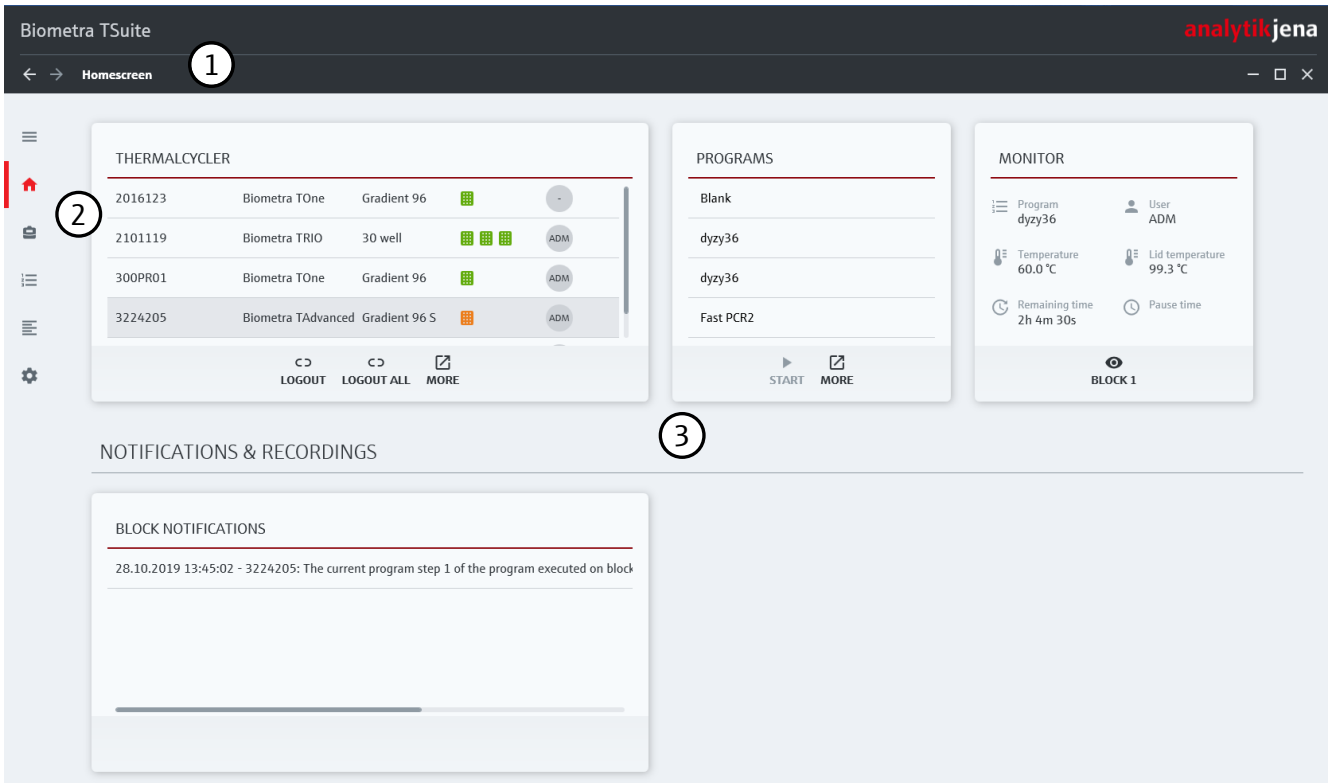

Fig. 2 Software interface elements of Biometra TSuite

Elements of the software interface

No.	Element
1	Header with the name of the current page You can use the arrows ← → to navigate between the previously selected pages.
2	Menu with selection of the main pages You can use the buttons on the main pages to access additional pages. Click the ☰ icon to minimize the menu to displaying the main page icons only. After clicking the icon again, the system will display the names of the main pages again.
3	Content of the current main page including parameters , settings and selectable options

Content of the main pages

The different functions of the Biometra TSuite can be found on the various main pages of the application. The respective page is opened after clicking the icon/page name. The icon of the current page turns red.

Main page	Content/functions
Home screen	Dashboard for quick access to devices and for monitoring selected devices
Thermal cycler	Overview of the thermal cyclers available in the network Device parameters and settings of a selected thermal cycler
Programs	Creating and managing PCR programs

Main page	Content/functions
Documentation	Administration of log files on the computer/network and of the thermal cyclers that are available in the network
Settings	Settings of the Biometra TSuite software and connection to the thermal cyclers that are available

5.1 Home screen

After starting Biometra TSuite, the application will show the **Home screen**. You can open this page by clicking on **Home screen** in the menu. This page is used as a dashboard for a quick overview and access to the thermal cyclers that are available via Biometra TSuite after the device interface used for connection was selected in the Biometra TSuite application settings. Information is arranged on tiles which are displayed depending on which function was selected.

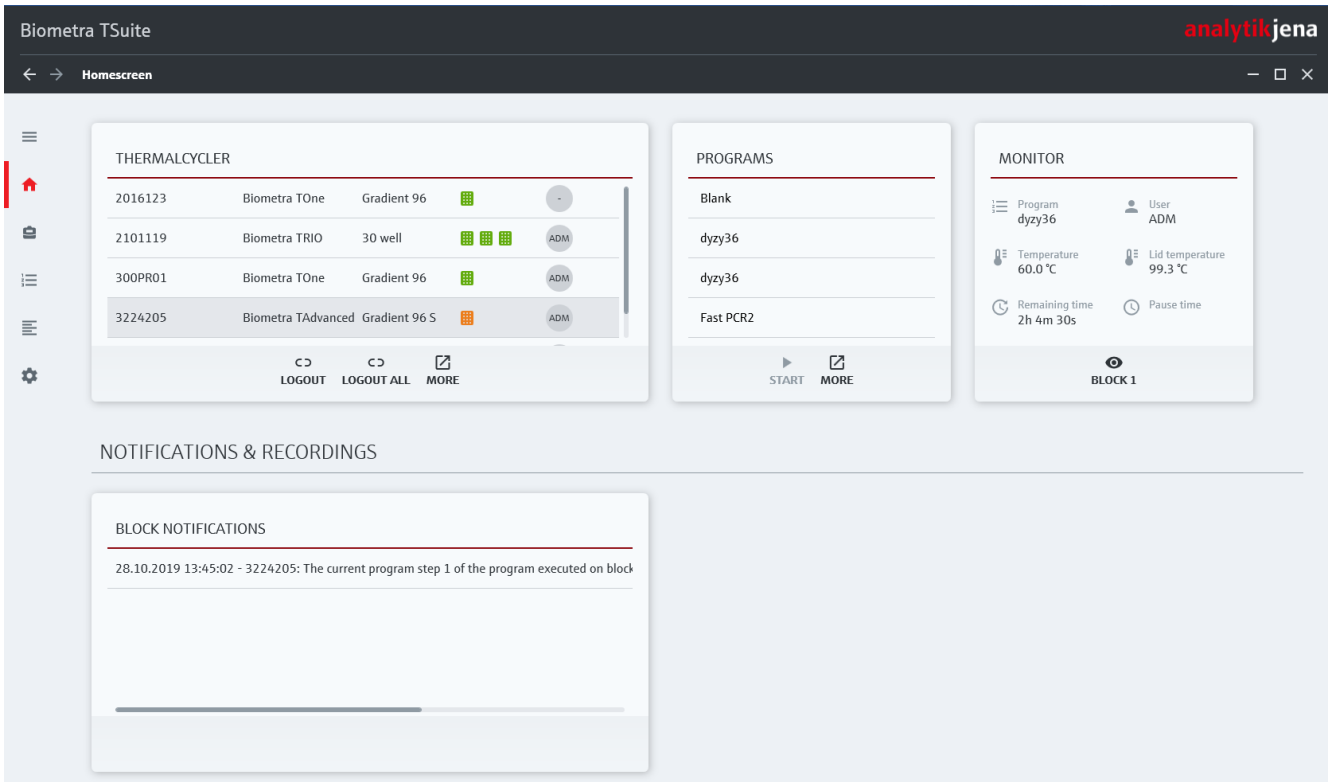

Fig. 3 Page Home screen with dashboard

The following tiles are displayed:

Tile	Description
Thermal cycler	Display of the thermal cyclers available in Biometra TSuite
Monitor	Display of the current device status of a selected thermal cycler
Programs	Display of the programs which are available on a particular thermal cycler for the user who is logged in
Notifications & Recordings	Notifications from running devices
Active advanced run log files	Notifications of programs started with an advanced run log file

5.1.1 Tile Thermal cycler

The tile **Thermal cycler** displays the thermal cyclers available for Biometra TSuite on the dashboard of the **Home screen**. The availability status of the devices is queried every 30 seconds and the device list is updated should any changes occur. Thermal cyclers are only available as long as the devices are switched on. If a device that was previously available cannot be found within 5 consecutive availability queries, it will initially be displayed as inactive in light gray before it will be removed from the device list later.

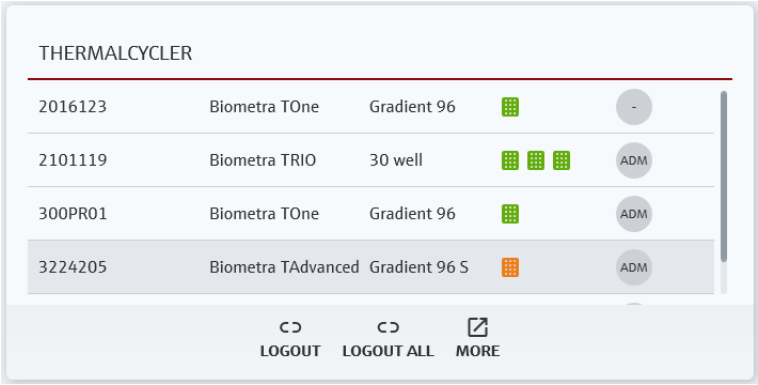

Fig. 4 Tile Thermal cycler on the dashboard

Information on the thermal cyclers

The following information is displayed in the different columns:

- Device name
- Device model
- Block type
- Block status with a colored block icon
- Alarm notification
- Icon of the user login

Block status

The block status is indicated by a colored icon in the thermal cycler row. The block status is queried every 2 seconds. For thermal cyclers with several blocks, the system will display several icons side by side.

Icon/color	
green	The block is vacant.
orange	The block is in use.
orange	An auto-restart has been executed. The device has restarted and continued the previous action.
orange	A self test is carried out in the block.
blue	The block is paused.
blue	An auto-restart has been executed. The device has restarted and is in pause state.
red	An error has occurred.

Displayed information during a firmware update

When a firmware update is carried out on a thermal cycler, the application will show a progress bar instead of the block status icon.

Icon	Description
	Continuous red bar The software is searching for the firmware update.
	Progressing red bar The firmware update is in progress.
	The firmware update is completed. The thermal cycler must be restarted.

Alarm notification

Whenever an error occurs in the block, the button is displayed next to the block icon.

- Click .
  - ✓ This will open the **Documentation** page with the **Error log file** tab and the current error message.
- In order to return to the dashboard **Home screen**, click the button on the left edge of the Biometra TSuite application.
  - ✓ The displayed alarm notification is hidden because the error has been acknowledged.

Selecting a thermal cycle

To display the information on a particular thermal cycler, you first have to select a thermal cycler.

- To do this, click on the thermal cycler's line in the list.
  - ✓ This line will be highlighted in gray. The tile **Monitor** is displayed.
- Hold the "Ctrl" key on the keyboard and click the line to deselect the device.

User login

If you want to start or edit programs on a thermal cycler, you will first have to log in to the thermal cycler. After that, the application will list the programs assigned to the user account on the thermal cycler on the tile **Programs**.

Additional information on the thermal cyclers

Click the button **More** to open the page **Thermal cycler** which contains additional information.

See also

- Logging a user on and off [▸ 36]
- Page Thermal cycler [▸ 18]

5.1.2 Tile Monitor

The application will display the tiles **Monitor** on the dashboard of the **Home screen** if you have selected a thermal cycler on the tile **Thermal cycler**. A separate tile is opened for each block of the thermal cycler.

The **Monitor** tiles allow you to check the status of a thermal block:

Option	Description
Program	Currently executed program
User	This user account was used to start the program

Option	Description
Temperature	Current block temperature
Lid temperature	Current lid temperature
Remaining time	Remaining time for the currently executed program
Pause time	This is the time that has elapsed since the program was paused

The following information regarding the lid are displayed for a Biometra TRobot II

Option	Description
Lid state	Lid opened or closed
Contact pressure	Adjusted contact pressure

Additional information

When a PCR program is executed in a particular block, the button **Block** is activated. Click the button to open the page **Monitor** with information on the program's progress

See also

Page Monitor [▸ 28]

5.1.3 Tile Programs

When a user is logged in on a selected thermal cycler, the tile **Programs** will be displayed on the dashboard **Home screen**. This tile contains a list of all PCR programs that are available under this user account. You have the option to launch a selected program or open the page **Programs** containing the PCR program administration.

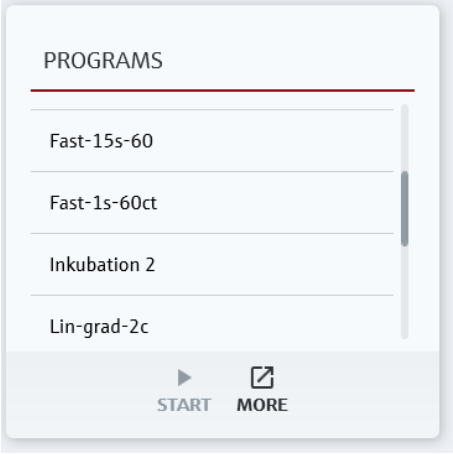

Fig. 5 Tile Programs on the dashboard

Starting a PCR program

After selecting a program, click on **Start** to start the PCR program on the thermal cycler.

Additional information

For further information on the programs, click on **More** on the page **Programs**.

See also

- Starting, pausing and stopping a PCR program [▶ 36]
- Page Programs [▶ 24]

5.1.4 Tile Block notifications

The tile **Block notifications** of the dashboard displays all notifications of the thermal cyclers that are logged in and selected for block notifications in chronological order that Biometra TSuite has registered for the particular thermal cyclers since the software was opened. The most recent notification is listed at the top.

Notifications of the thermal blocks

The following notifications may be displayed:

- Start/stop of an extended self test
- Start/stop of a freeze program
- Program paused
- Program terminated
- Error on one block
- Program was started
- Program step was skipped

The following notifications can be displayed for the thermal cycler Biometra TRobot II:

- Lid was closed
- Lid was opened
- Error on the lid
- Lid not ready

Only such notifications are displayed that are related to events that occurred directly on the thermal cycler or that were triggered there from a computer on the same network, e.g. pausing a program or skipping a program step. If such an event is triggered by the user themselves via Biometra TSuite, the application will not display a notification, because it assumes that this was done deliberately. All events are logged in the run log file and the advanced run log file.

It is possible to monitor up to 10 thermal blocks at the same time. The blocks for this can be selected in the Biometra TSuite settings.

The dashboard or the section **Documentation** | **Notifications** can show a maximum of 1000 notifications (i.e. 100 notifications per block). When this number of notifications is reached, the system will overwrite the oldest entries with new notifications.

See also

- Enabling block notifications [▶ 60]
- Page Documentation [▶ 30]

5.1.5 Tile Active advanced run log files

The dashboard on the Home screen shows the tile **Active advanced run log files** after the user starts a program with the option **Advanced run log file**. This tile reports the recording of the advanced run log files. Once the recording/program is completed, the tile will no longer be displayed.

Stopping a recording

Click ■ to stop recording the advanced run log files for the currently executed program of a thermal cycler. All data recorded up to that point will be discarded.

See also

Starting, pausing and stopping a PCR program [▶ 36]
Page Documentation [▶ 30]

5.2 Page Thermal cycler

The page **Thermal cycler** is displayed when you click on **Thermal cycler** | in the Biometra TSuite menu. You will also find a list of thermal cyclers available on the dashboard **Home screen** in the tile **Thermal cycler**.

The page **Thermal cycler** lists all devices available in this Biometra TSuite instance. You can access all device features and functions of a selected thermal cycler from here.

You will also find a list of thermal cyclers available on the dashboard **Home screen** in the tile **Thermal cycler**. You have the option to limit the displayed devices on the page **Application settings** | **Device selection** or to extend the list by additional/all devices in the network.

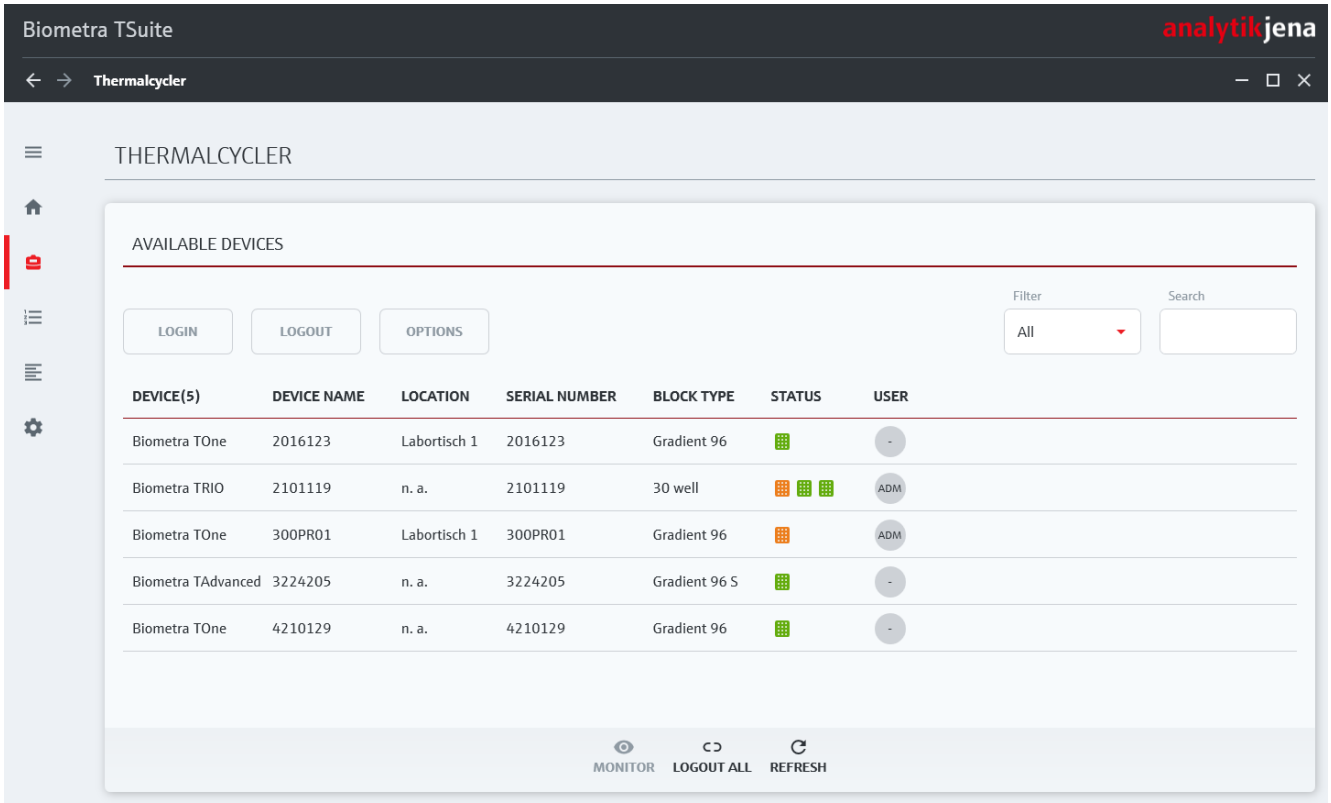

Fig. 6 Thermal cycler page

Information on the thermal cyclers

The following information are displayed for the thermal cyclers:

Option	Description
Device	Device model The number of devices in the list will be shown in brackets.
Device name	There is the option to edit the device name on the page **Options**	**Settings**.
Location	There is the option to edit the device location on the page Options	**Settings**.
Serial number	Serial number of the thermal cycler
Block type	Type of thermal block used

Option	Description
Status	Block status with color code
User	User logged in on the thermal cycler

Functions on the Thermal cycler page

The following functions are available:

Function	Description
Login/Logout/Logout all	Login/logout of one or several users
Options	View/edit device properties of a selected thermal cycler
Monitor	Monitor a currently executed program on a selected thermal cycler
Refresh	Refresh the display of the thermal cyclers available in Biometra TSuite

See also

Tile Thermal cycler [▶ 14]

5.3 Page Options

You will find detailed information about the thermal cycler on which you are logged in as a user on the **Options** page. The information is arranged by topic on different tabs. Which tabs you can access is defined by the permissions you were granted via the user management.

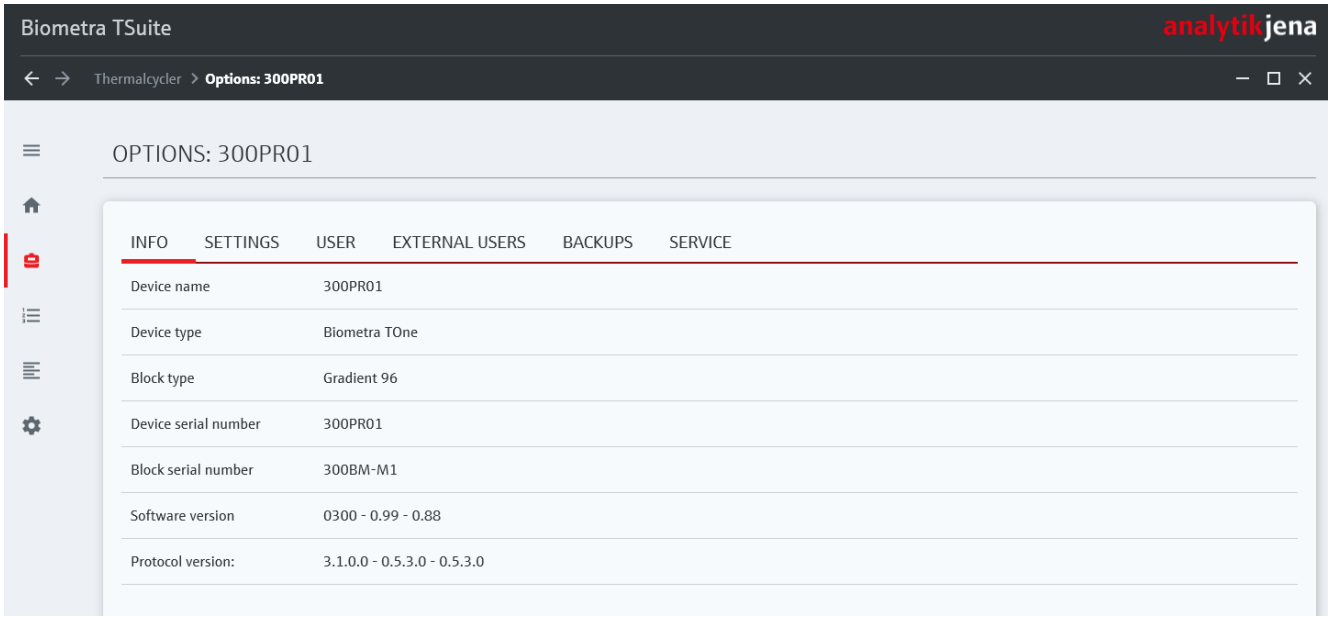

Fig. 7 Options page

Tabs on the Options page

Tab	Description
Info	Information on the hardware equipment of the thermal cycler, the software version and the protocol version
Settings	General data, activation of the user management function, network settings, lid settings for TRobot II
User	Administering the user management
External users	Users who are logged in on the thermal cycler via a network connection, e.g. via Biometra TSuite

Tab	Description
Backups	Administering backups
Service	Storing the service info file, starting a self test

Opening the Options page

You can open the **Options** page via the **Thermal cycler** page:

- Click the icon **Thermal cycler** in the menu to open the page with this title.
- Select one thermal cycler from the list and log in as a user.
- Click the button **Options**.

See also

Logging a user on and off [▶ 36]

5.3.1 Page Options | Info

The page **Options** | **Info** provides device information primarily used for servicing purposes:

- **Device name**: Name of the device. You have the option to enter a name on the page **Options** | **Settings**
- **Device type**
- **Block type**
- **Device serial number**
- **Block serial number**
- **Software version**
- **Protocol version**: Version of the communication protocol of the thermal cycler

5.3.2 Page Options | Settings

A user with administrator rights can open the page**Options** | **Settings** to configure the selected thermal cycler.

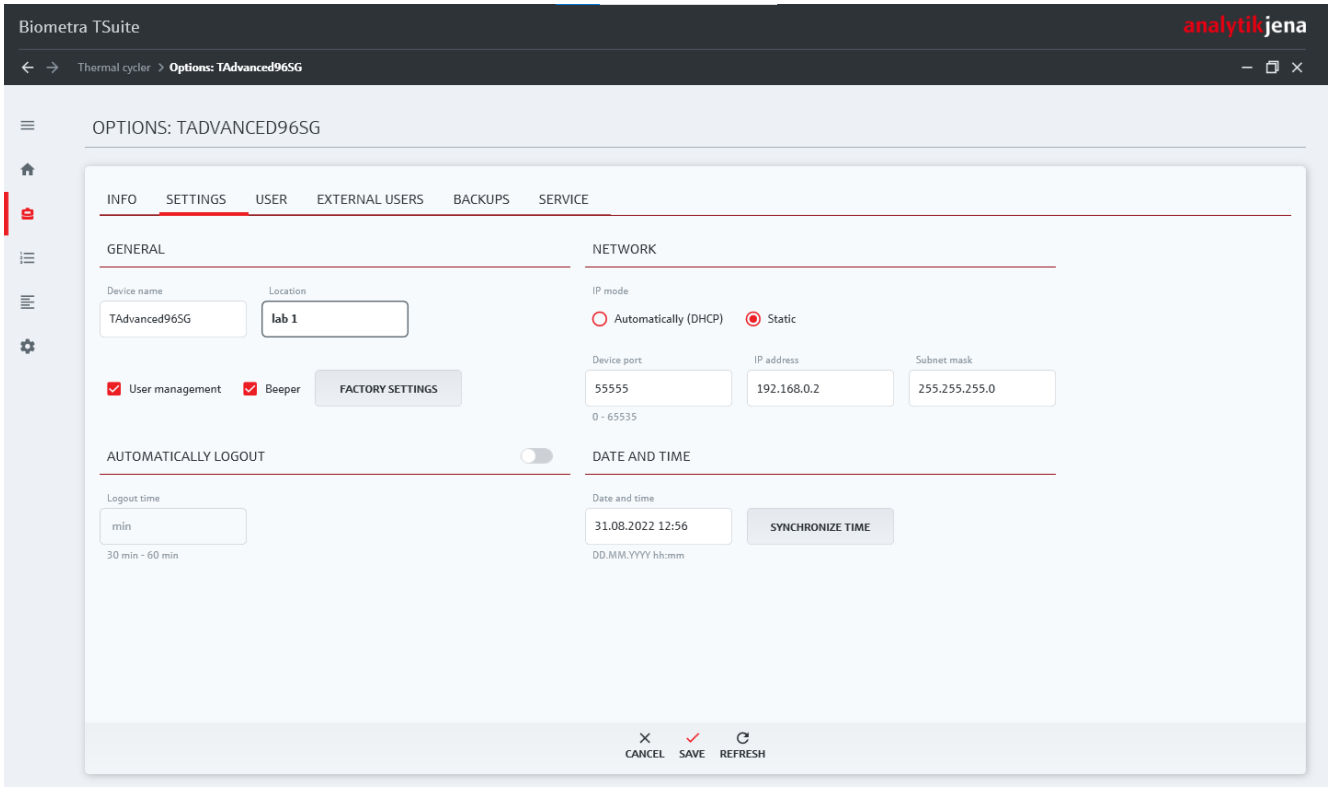

Fig. 8 Page Options | Settings

Group General

Option	Description
Device name	Device name The device is listed under this name on the different Biometra TSuite pages. Entering a name is optional
Location	There is the option to enter the device location
User management	Enabling the user management function on the thermal cycler **Attention!** Loss of data when disabling the user management function When disabling the user management on a thermal cycler, all settings regarding permissions and rights will be lost. The only way to restore this data is by using a backup file which you must have created before disabling the function. On devices without management function with various user rights, this option is not available, for example on the device Biometra TOne. In this case, this option is grayed out.
Beeper	Enabling acoustic signals at the end of the execution of a PCR process
Factory settings	Resetting the software of the thermal cycler to factory settings **Attention!** After confirming the prompt, the software will delete all programs and user directories on the thermal cycler. **Tip**: Create a backup file before confirming in order to be able to restore programs and user directories if needed.

Group Network

Option	Description
Automatically (DHCP)	Network configuration settings (IP address and subnet mask) for the thermal cycler are automatically retrieved from a DHCP server located within the network. The device port number is preset: If required, you have the option to change this number. Consult your network administrator if necessary.

Option	Description
	Please note that IP addresses used by devices may change if these addresses are not configured as static IP addresses.
Static	The thermal cycler's network configuration (IP address, subnet mask) is assigned manually. The device port number is preset. If required, you have the option to change this number. Consult your network administrator if necessary.

Group Automatically logout

Option	Description
Slider	Enabling automatic user logout By default, this option is disabled.
Logout time	For entering the time after which the software will automatically log out an inactive user Value range: 30 ... 60 min

Group Date and time

Option	Description
Date and time	For setting date and time in the following format: DD.MM.YY hh:mm
Synchronize time	For retrieving date and time settings from the PC

Group Motorized lid

Only for Biometra TRobot II

Option	Description
Contact pressure	For entering the lid contact pressure Value range: 4 ... 12 kg, recommended value: 10 kg If samples have evaporated during the test, first check the sealing material before increasing the contact pressure, if required.
Opening mode	**Loosen plate** When opening the lid, the plate lifters at the edge of the block will be extended automatically to briefly lift the PCR plate out of the block. **Don´t loosen plate** The plate is not lifted and released from the block. By default, this parameter is set to **Loosen plate**.

5.3.3 Page Options | User

The page **Options** | **Create user** provides a table with an overview of the user accounts with names and initials that are created on the selected thermal cycler.

The following functions are available:

Option	Description
Create	Create a new user
Edit	Edit the selected user's profile
Delete	Delete a user

See also

Administering the user management [▶ 49]

5.3.4 Page Options | External users

The page **Options** | **External users** lists all users logged in on the thermal cycler using a remote connection via Biometra TSuite. This list only serves information purposes. Only users with administrator rights have access to this page.

Note: The IP address is shown to identify the user. Data protection principles must be respected here.

5.3.5 Page Options | Backups

The page **Options** | **Backups** provides an overview of all the backup files that are available in this Biometra TSuite instance. The files are sorted by date, time, device and serial number. The backup file contains a copy of all folders, programs, users and user settings of the particular thermal cycler. In case of data loss, e.g. after restoring the factory settings, you can load the backup file to restore this data. By loading the backup file on a different thermal cycler, you will transfer this data and synchronize the content of the memories of the two thermal cyclers.

On the PC, the backup file is stored in the subfolder WRITEIMA.GES.

There are the following functions:

Option	Description
Save	Save a backup file of the thermal cycler on which you are currently logged in to the computer
Load	Load a backup file to the thermal cycler to: ■ Restore any lost user directories and programs ■ Use the user directories and programs of another device on this thermal cycler
Delete	Delete the selected backup file from the list. Hold the Ctrl key and click on the entries in the list to select more than one file.

See also

- Using backup files and synchronizing thermal cyclers [▶ 53]
- Storage paths under Biometra TSuite [▶ 11]

5.3.6 Tab Options | Service

On the tab **Options** | **Service** you have the option to save the service info file and to start the extended self test function. The service info file is a helpful tool for the customer service of Analytik Jena. The extended self test includes extensive device testing and provides an output of the test results.

There are the following functions:

Option	Description
Save	Generate a service info file and save it to the PC
Start	Start the self test and save the result as a self-test log file
Stop	Cancel the self test The self-test log file is not stored at all or stored only incompletely

See also

- Creating a service info file [▶ 54]
- Carrying out an extended self test and managing self-test log files [▶ 54]

5.4 Page Programs

The **Programs** page can be opened by clicking on the icon **Programs** in the Biometra TSuite menu. The **Programs** page provides an overview of all PCR programs that are available. You have the option to manage, recreate and start the programs in different storage locations and on different thermal cyclers.

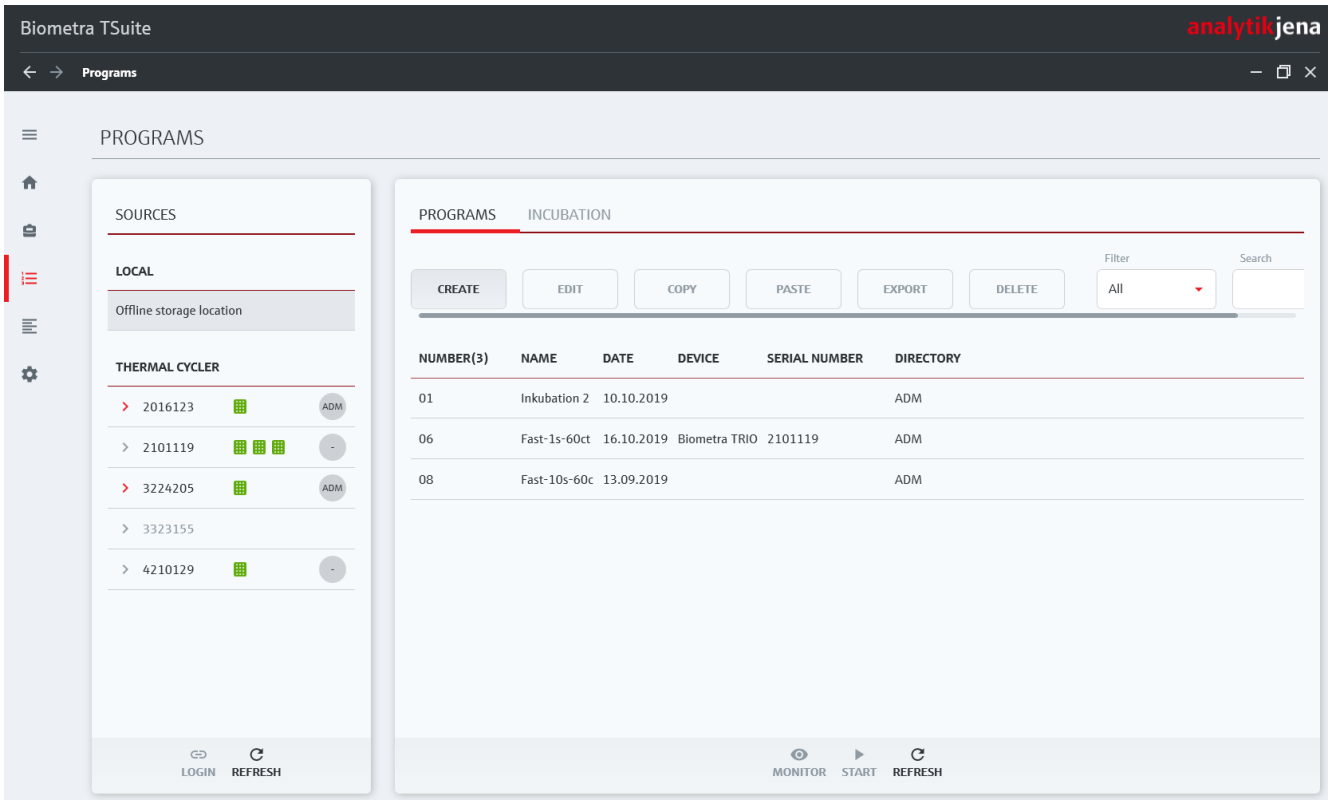

Fig. 9 Programs page

Sources tile

The tile **Sources** provides information on the storage locations of the different programs:

- **Local/Offline storage location**: Programs stored on the computer or on a network drive.
- **Thermal cycler**: Programs stored on one of the available thermal cyclers
  A drop-down menu (red arrow) can be used to display all users logged in on the thermal cycler. To do this, log in on one thermal cycler. After that, you can view the programs in a particular user directory by clicking on that user.

Programs tab

The **Programs** tab shows the programs at the storage location, i.e. on the computer or in the thermal cycler's user directory. Only users with the respective user rights can view the programs and use the functions.

The following information on the programs is displayed in a table:

Option	Description
Number	Storage location of the program on the thermal cycler The number in brackets in the column heading indicates the number of programs available.
Name	Name of the program
Date	Date on which the program was saved
Device	Device model

Option	Description
Serial number	Serial number of the device
Directory	User directory in which the program was stored

Functions for editing programs

The following functions are available:

Function	Description
Create	Create a new program from a template
Edit	Edit a selected program
Copy/Insert	Copy a program from one storage location to another storage location
Export	Export a program as a CSV file
Delete	Delete a program

Additional functions are available in the footer:

Function	Description
Monitor	Switch to the view of a PCR program that is currently executed
Start	Start a selected PCR program
Refresh	Refresh the list of programs

Incubation tab

The **Incubation** tab allows you to enter the parameters for incubating the samples at a particular temperature for a defined or indefinite period of time and to start the incubation.

See also

- Starting, pausing and stopping a PCR program [▶ 36]
- Creating and editing PCR programs [▶ 38]
- Managing PCR programs [▶ 47]
- Incubating samples [▶ 38]

5.5 Page Program view

The **Program view** page is displayed when creating a new program or editing an existing program on the **Programs** page. The **Program view** page shows a list of all programs in a table or as a graph. You can use the button **Table | Graph** to toggle between the two types of display.

Spreadsheet view

During the programming process, the selected step is marked in gray.

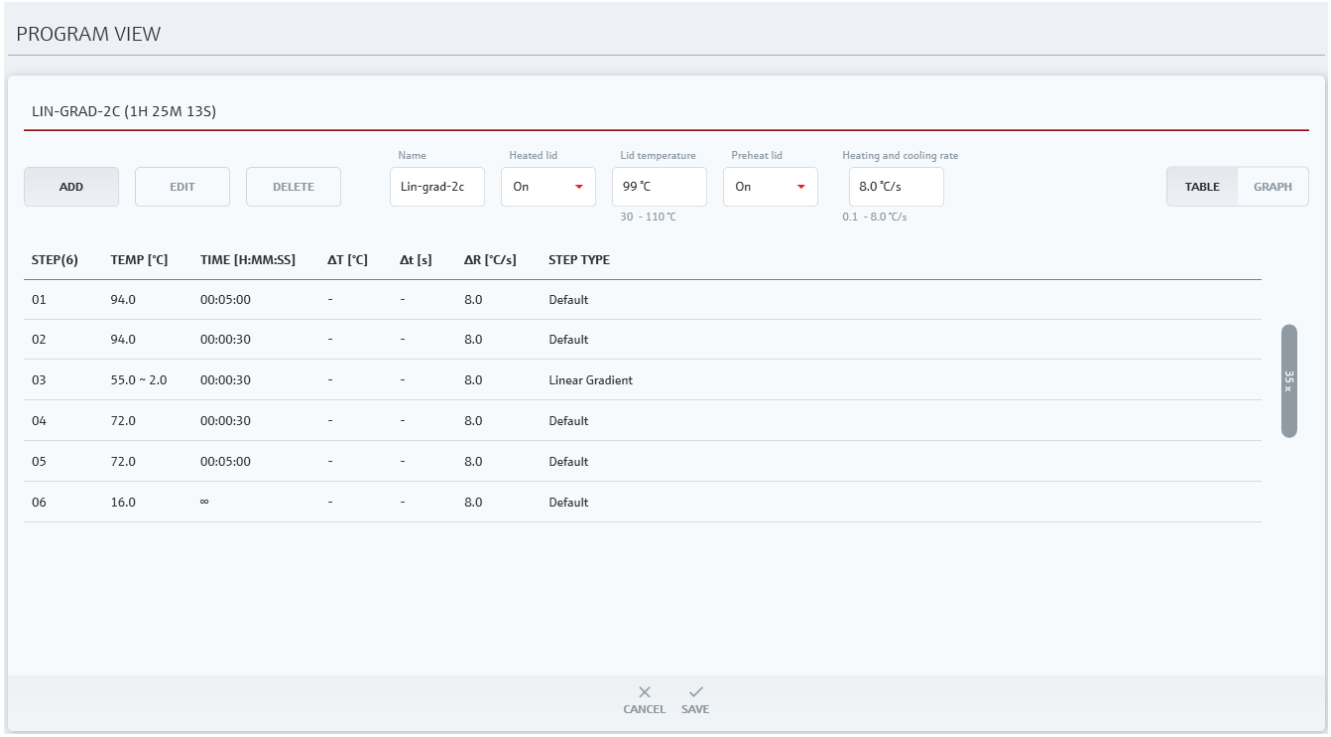

Fig. 10 Spreadsheet view of programs

Program parameters	Example	Description
Name	**Lin-grad-2c**	Define the program name
Heated lid	**On**	Switch the lid heating on and off
Lid temperature	**99 °C**	Set the heated lid's temperature (30 … 110 °C)
Preheat lid	**On**	Switch the heated lid's preheating function before the actual execution of the PCR process on and off
Heating and cooling rate	**8 °C**	Set the rate here, if you wish to use the same heating and cooling rate for each step in the process
Step	**3**	Set at least the block temperature and the hold time for each step All other parameters are optional.
Temp [°C]	**55 – 2.0**	Set a block temperature (3 … 99 °C ±0.1 °C) for each step For gradient steps, also define the temperature deviation
Time [H:MM:SS]	**00:00:30**	Set the hold time during which the block temperature is kept at the same level (≤9 h 59 min 59 s)
ΔT [°C]	**-**	Increase or decrease the block temperature by the temperature increment or decrement of ±0.1 … 20 °C in each cycle
Δt [s]	**-**	Extend the hold time by the time increment of 1 … 240 s in each cycle
ΔR [°C/s]	8.0	Adjust the average heating and cooling rate for the selected step The maximum heating and cooling rate depends on the device model.

Program parameters	Example	Description
Step type	**Linear Gradient**	Default: Do not use a temperature gradient in the block Linear Gradient/Standard gradient: Program a gradient in the block

The gray bar on the right side of the table shows the steps used to program a loop and how often this loop is executed.

Graphical view

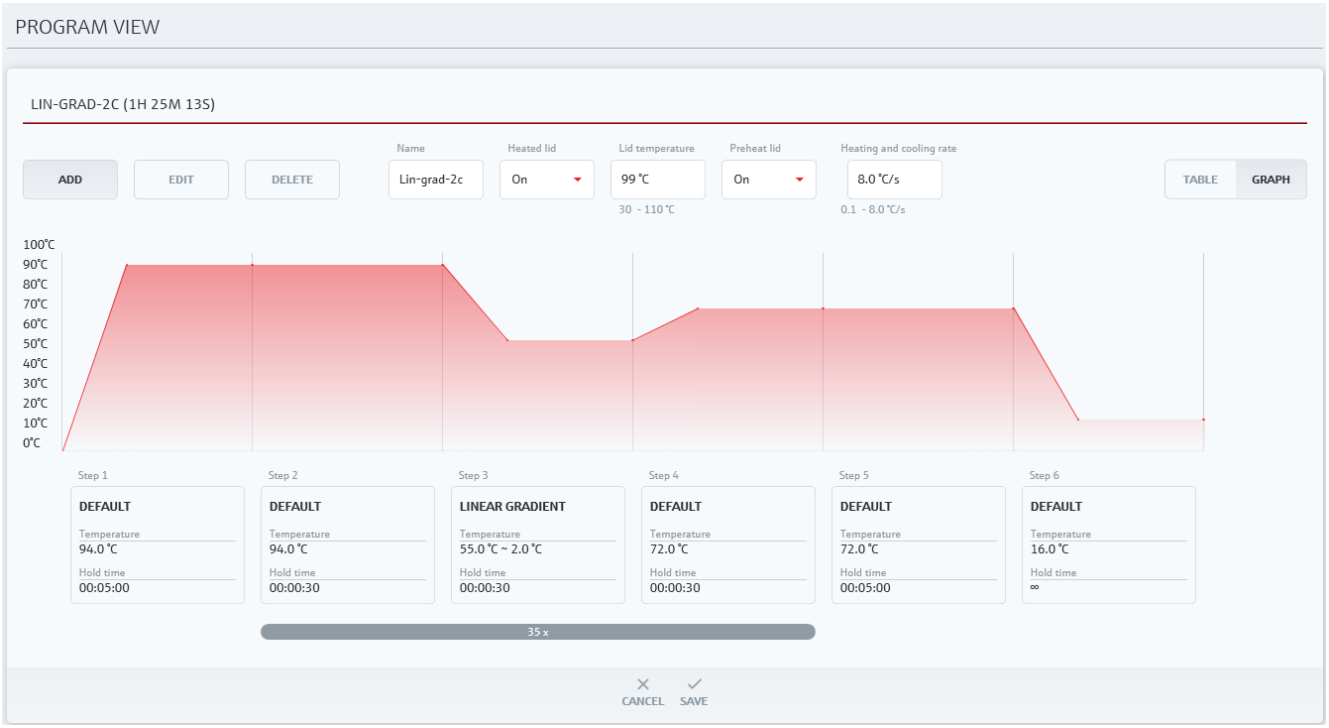

Fig. 11 Graphical program view

The graphical view shows the temperature profile of the program. Underneath the graph, you will find the set temperature and the hold time for each step including the increments/decrements that were programmed. A gray bar is used to reflect the programmed loop and the number of iterations the loop is executed underneath the graph, too.

Functions on the Program view page

The header provides the following functions for managing the program steps:

Option	Description
Add	Insert a step at the end of the program Only available, if there is no step in the program yet or if no step has been selected.
Insert	Insert a temperature step before the selected step
Edit	Edit the selected temperature step
Delete	Delete the selected temperature step

5.6 Page Monitor

When you launch a PCR program in Biometra TSuite, the display will show the **Monitor** page. The **Monitor** page allows you to monitor programs that are currently executed. If you use Biometra TSuite to monitor several thermal cyclers at the same time, you can click the button **Monitor** after selecting a thermal cycler to choose the block condition or the view of the executed program from the following views:

- **Home screen** | Tile **Monitor**
- Page **Thermal cycler**
- Page **Programs**

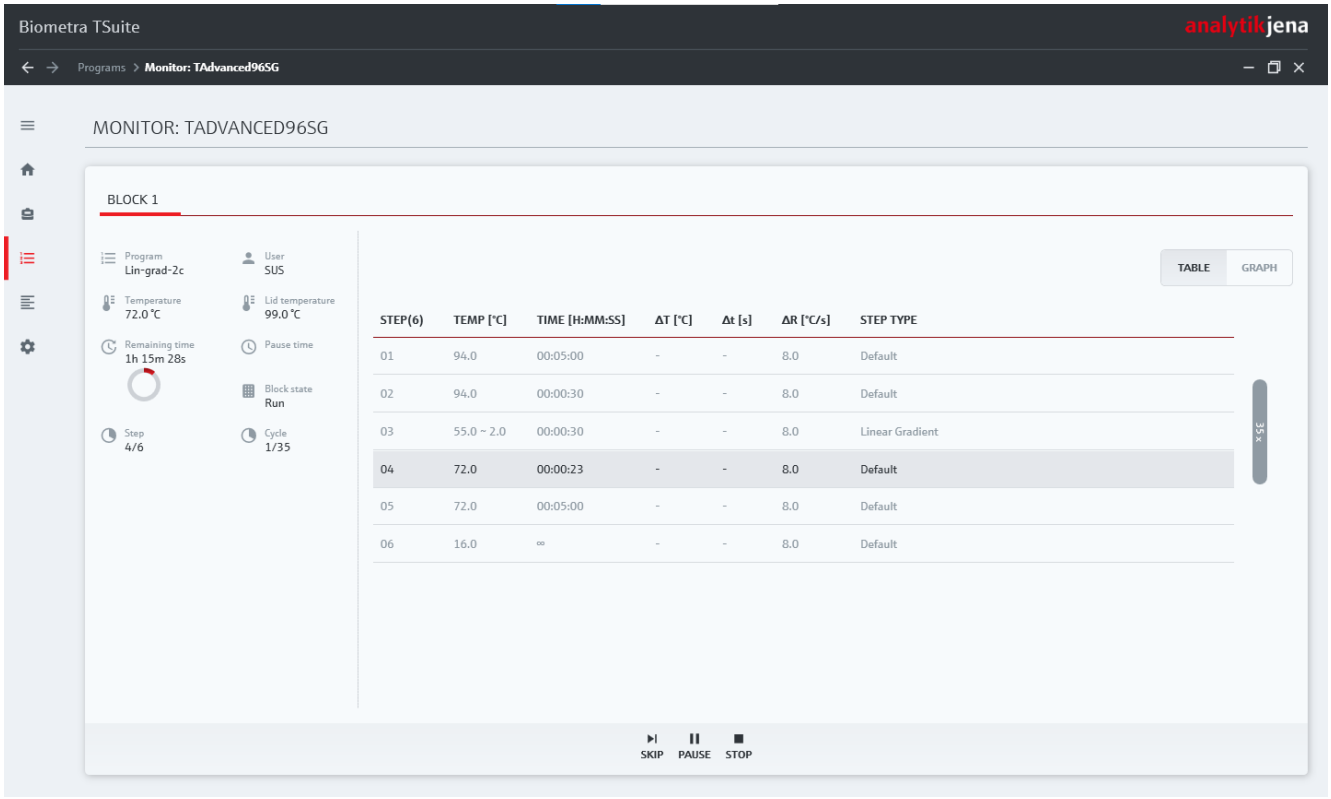

Fig. 12 Monitor page

Elements on the Monitor page

You will find the current block and program parameters on the left side of the page:

Option	Description
Program	Currently executed program
User	The user who is logged in and with whose profile the program was started
Temperature	Current block temperature
Lid temperature	Current lid temperature
Remaining time	Remaining time for the currently executed program
Pause time	Time that has elapsed since pausing the program
Step	Current step in the program

Option	Description
Cycle	Current cycle within a loop

The right side of the page shows the program in spreadsheet or graphical form. The views are the same as on the **Program view** page. The step that is executed at that moment is highlighted with a gray bar in both views. You can use the button **Table Graph** to toggle between the two views.

Functions on the Monitor page

Function	Description
Skip	Skip the current step and proceed to the next step
Pause	Stop the program at the current step
Continue	Continue the program after a pause
Stop	Stop the program

See also

Page Program view [▶ 25]

5.7 Page Documentation

Biometra thermal cyclers generate various different log files which can be viewed on the **Documentation** page.

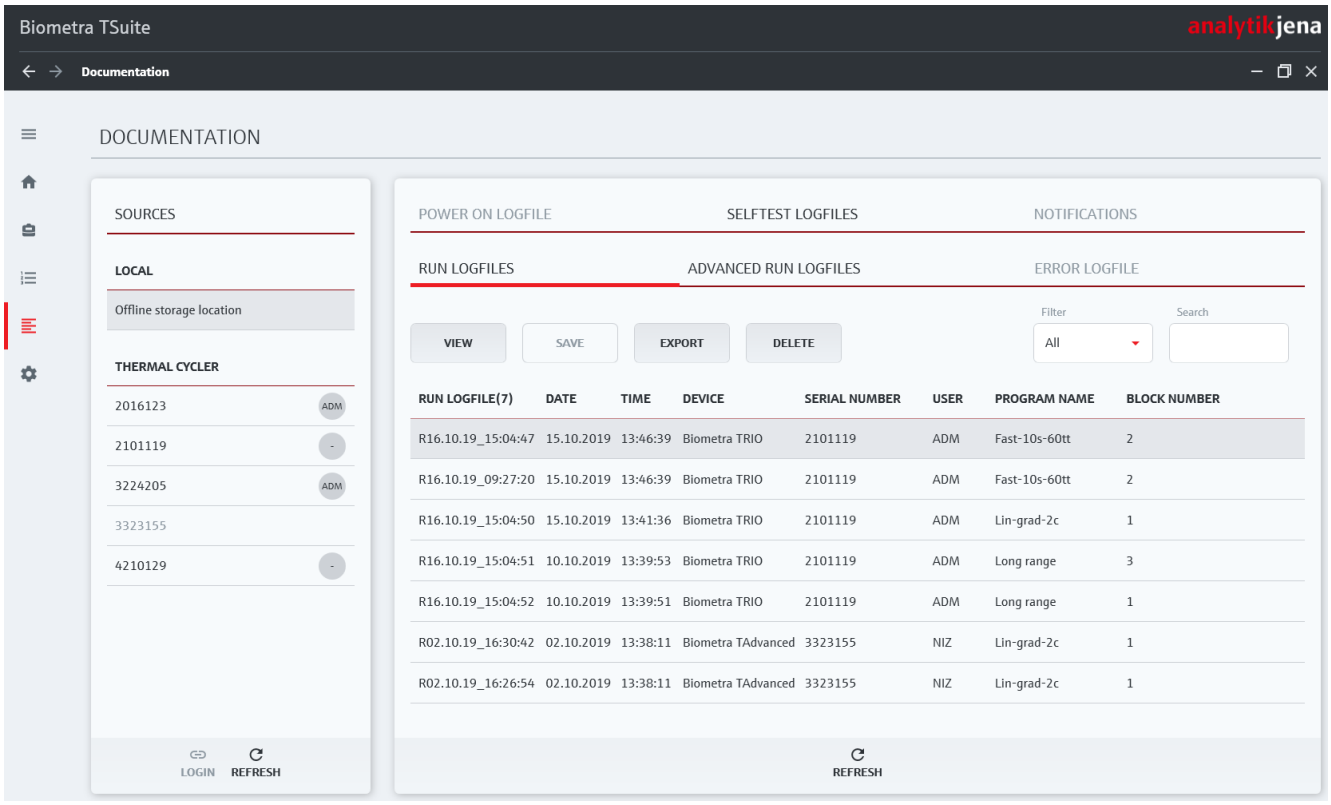

Fig. 13 Documentation page

Sources tile

The tile **Sources** provides information on the storage locations of the different log files:

- **Local/Offline storage location**: On the computer on which the Biometra TSuite instance is installed
- **Thermal cycler**: On one of the thermal cyclers that are available
  To do this, log in on one thermal cycler. You will then see the log files stored on the thermal cycler.

Available log files

The following log files are stored:

Log file	Description
Run log files	Program documentation
Advanced run log files	Documentation of the programs and the continuous temperature recording during the execution of a program
Error log file	List of the error messages recorded by the device
Power On log file	Messages in case there was an error during the last initial self test
Selftest log files	Results of the extended self test
Notifications	Notifications about external events on the device

Run log files

The run log file is generated automatically while a PCR program is executed. The file is stored on the thermal cycler. After selecting a file in the **Run log files** tab and clicking the button **View**, the file's content will be shown in three tabs in the **Run log file** window:

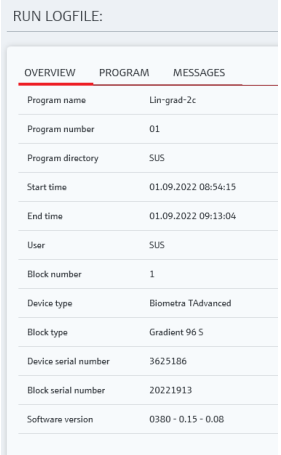

Fig. 14 Example for a run log file

Tab	Description
Overview	Information about the program, date and time of its execution, the user and the device parameters
Program	Display of the program as a spreadsheet or a graph, similar to the type of display in the window **Program view**
Message	Incidents during the execution of the program Errors that have occurred and were recorded in the error log file will also be logged here.

The run log files can be saved on the computer, exported as a CSV file or deleted.

Advanced run log files

Advanced run log files are listed in the **Advanced run log files** tab. It is only possible to generate advanced run log files when the PCR program was launched via Biometra TSuite. Because of their size, these log files are only stored on the computer and not on the thermal cycler. In addition to the content of the ordinary run log file, advanced run log files contain the continuous recording of the temperature data during the execution of the PCR program. Temperature data are recorded at intervals of approx. 1 s. When viewing the log file, you will find the temperature data in the fourth tab **Temperature data** next to the run log file data.

Because of the high volume of data transmitted, the maximum number of advanced run log files that can be recorded at the same time is 10.

Just like ordinary run log files, advanced run log files can be exported and deleted, too. There is no option to save these files, as this data is always stored on the computer.

Error log file

Biometra thermal cyclers record all errors including their date and time and store them on the device. You will find the error messages of the thermal block including an error code and a descriptive text of the error in the **Error log file** tab. The most recent error is shown as the first position in the table. The maximum number of messages that can be stored and displayed is 30. Once this number is reached, the oldest message will be overwritten by any newly recorded error.

Power-on log file

With every system start, Biometra thermal cyclers carry out an initial self test and save the result of this test directly on the thermal cycler in a power-on log file. The following data can be viewed on the thermal cycler itself:

- Last power-on (with date and time)
- Last power-off (with date and time)
- A table with a list of error messages sorted by number, date, time, error code and message

Biometra TSuite only displays messages in the **Power On log file** tab if an error occurred while the thermal cycler was powered on.

Self-test log files

The results of an extended thermal cycler self test are summarized in a log file and stored on the thermal cycler. The tab **Selftest log files** lists all self-test log files stored on the selected thermal cycler or the computer.

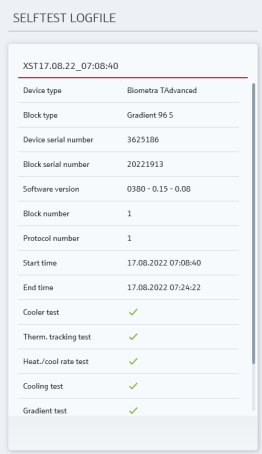

Fig. 15 Example for a self-test log file

Tests listed in the **Result** column in the **Selftest log files** that were passed completely are marked with a green check mark ✓. All tests that were not fully successfully, are marked with a red cross ✕.

The individual test results are displayed on the screen after clicking the button **View**. Here too, all tests that were passed successfully are marked with a check mark ✓ and all failed tests are marked with a cross ✕.

Just like run log files, self-test log files can be viewed, stored on the computer and deleted.

Notifications

The **Notifications** tab shows messages for the selected thermal cycler in chronological order. The most recent notification is listed at the top.

In addition to messages about starting, stopping or terminating an extended self test, this tab only contains messages about events that were not triggered via the Biometra TSuite software.

See also

- Storage paths under Biometra TSuite [▶ 11]
- Carrying out an extended self test and managing self-test log files [▶ 54]
- Viewing, saving, exporting run log files [▶ 56]
- Viewing/exporting advanced run log files [▶ 57]

5.8 Page Application settings

Click **Settings** in the menu to open the **Application settings** page. The **Application settings** page allows you to configure the settings that apply to the entire operation of the Biometra TSuite instance on that computer.

You can make the following settings on the 4 tabs:

Tab	Description
Settings	■ Define an offline storage location ■ Connect the thermal cycler with Biometra TSuite via the network or the serial port ■ Set notifications
Device selection	Select the devices to be monitored/controlled by Biometra TSuite
Block notifications	Select the blocks for which you want the dashboard to display messages on the **Block notifications** tile
Info	■ Manufacturer address ■ Biometra TSuite version

5.8.1 Page Application settings | Settings

Use the page **Application settings** | **Settings** to configure the Biometra-TSuite general settings.

This page only displays those interfaces, networks and serial interfaces that are actually available.

Group “General”

Option	Description
Remote device	Name of the device on which the Biometra TSuite software is running
Offline storage location	Default setting of the storage path in the network or on the computer
Application scaling	Adjust the size of the application window in 10% increments It can be useful to set a smaller zoom factor when using a small screen to be able to see all functions on one screen.

Group Network

If the **Network** option is enabled using the slider, the system will search for thermal cyclers with network connection that are powered on and display them in the list of connected devices.

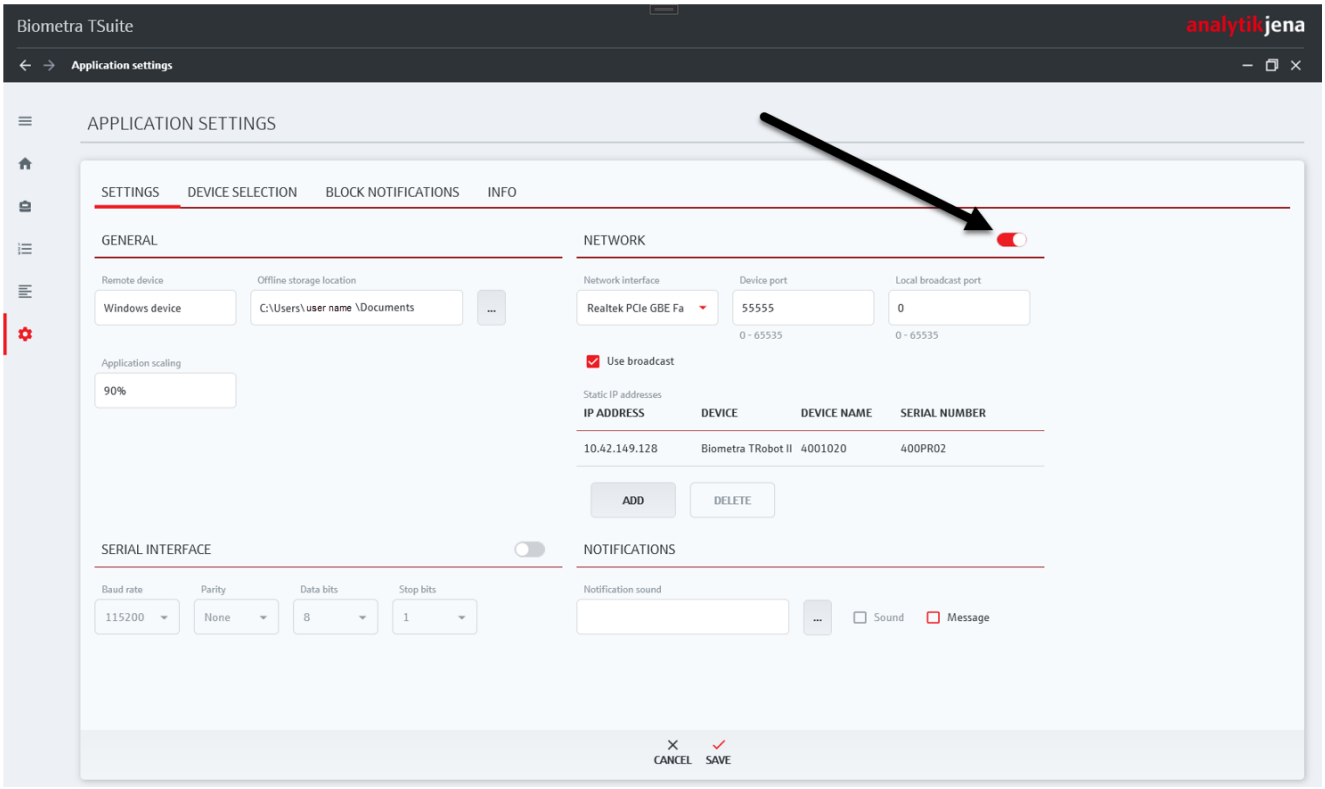

Fig. 16 Network option enabled on the page Application settings | Settings

Option	Description
Network interface	Interface allowing the computer to access the network All network interfaces available on the computer can be selected.
Device port	The device port must match the device port specified on the connected thermal cyclers.
Use broadcast	If the broadcast port is zero, the required port number that the computer requires to communicate in the network will be assigned automatically. However, it may also be entered manually. Consult your network administrator before doing this.
Use broadcast	All thermal cyclers linked to the network are found automatically. If you do not want the system to search all devices in the network, you can disable the broadcast function. Then, only devices entered with a static IP address on the list beforehand will be queried via the network.
Static IP addresses	List of thermal cyclers with static IP addresses
Add	It is possible to enter the IP addresses of thermal cyclers manually, if the option **Use broadcast** has been disabled or if the thermal cyclers are located outside the broadcast range.
Delete	Delete a selected thermal cycler from the **Static IP addresses** list

Group Serial interface

You can enable the option **Serial interface** if you have connected a thermal cycler to a serial interface of the computer. The application will then show a list of the COM ports available on the computer and the connected thermal cyclers, from which the user can select the thermal cyclers to be monitored.

Group Notifications

Option	Description
Notification sound	Select a sound file in WAV, MP3 or WMA format

Option	Description
Sound	Enable notification sounds on the computer on which Biometra TSuite is used
Message	Enable block notifications as a message window

See also

Settings in Biometra TSuite [▶ 58]

6 Operation

6.1 Logging a user on and off

To access Biometra TSuite on a thermal cycler you must log in as a user on a thermal cycler. Only then can you use the programs assigned to you on the thermal cycler or view and edit the device properties of the thermal cycler.

Logging in a user

Different Biometra TSuite pages require the user to log in to a thermal cycler. The login process always follows the same pattern:

- Select a thermal cycler by clicking on the device row.
- Click the button **Login**.
- Click on the desired user in the user selection window.
- If a password was set for that user: Enter the password. The password is case sensitive.
  The default password for the administrator is “Admin”.
- Click **Ok** to confirm the settings.
  - ✓ The user is logged in on the thermal cycler. Then, additional functions of the thermal cycler will be enabled on the pages, such as displaying the programs.

User status

The initials of the user who is logged in on the thermal cycler are displayed in a circle icon in the line showing the thermal cycler.

Icon	Description
-	No user is logged in.
ADM	A user is logged in.
ADM	A user was logged in but the device can no longer be found in the network. A user is/was logged in on the device.

Logging out a user

You can log out a user.

- Select a logged in user. Hold the Ctrl key and click on the entries in the list to select more than one user.
- Click the button **Logout**.
- On some pages it is possible to log out all users at once: Click the button **Logout all** without selecting any user.
  - ✓ The selected users are logged out of the thermal cycler.

6.2 Starting, pausing and stopping a PCR program

You can use Biometra TSuite to start a PCR program. To do this, the program must be stored in a user directory on a thermal cycler for which you have the access rights. If the program is located in a different storage location, you must first copy the program to the user directory of the thermal cycler. You can start a program on the dashboard on the **Programs** tile or on the **Programs** page.

Starting a program via the Programs tile

- Click **Home screen** in the menu to open the dashboard.
- Select the thermal cycler on the **Thermal cycler** tile.
  If the block status icon is green, the selected block is vacant.
- Log in as a user on the thermal block.
  - ✓ The application displays the **Programs** tile which contains all programs that are available to the user on that thermal cycler.
- Select the program from the list and click **Start**.
  - ✓ The **Start program** window appears.

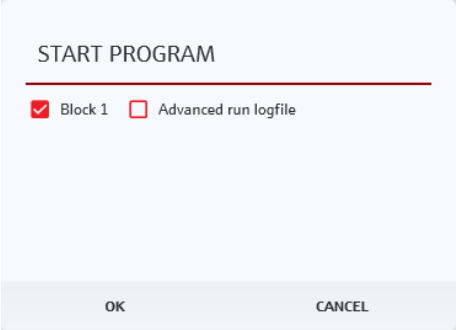

Fig. 17 Start program window

- For thermal cyclers with multiple blocks: Select one block or start the same program on several blocks.
- If you want to record an advanced run log file, enable that option.
  - ✓ The PCR program is started. The application displays the **Monitor** page which shows an overview with the progress of the program.

Starting a program via the Programs page

- Click **Programs** in the menu to open the **Programs** page.
- Select the thermal cycler on the **Sources** tile.
  If the block status icon is green, the selected block is vacant.
- Log in as a user on the thermal cycler.
- Select the program from the list and click **Start**.
  - ✓ The **Start program** window appears.
- For thermal cyclers with multiple blocks: Select one block or start the same program on several blocks.
- If you want to record an advanced run log file, enable that option.
  - ✓ The PCR program is started. The application displays the **Monitor** page which shows an overview with the progress of the program.

Skipping, pausing and stopping program steps

The following functions are available on the **Monitor** page:

Function	Description
Skip	Skip the current step and proceed to the next step
Pause	Stop the program at the current step
Continue	Continue the program after a pause
Stop	Stop the program

See also

- Tile Programs [▶ 16]
- Page Programs [▶ 24]
- Page Monitor [▶ 28]

6.3 Incubating samples

You have the option to incubate samples at a constant temperature for a defined or an indefinite period of time. Just like when creating programs, you can activate the lid heater at higher temperatures to prevent the liquid in the reaction preparation to condensate on the walls and the lid of the reaction vessel.

- Click **Programs** in the menu to open the **Programs** page.
- Select a thermal cycler from the **Sources** list and log in as a user.
- Open the **Incubation** tab.
- Enter the **Temperature** and the **Hold time** in the respective boxes.
  The default time setting "∞" means that the incubation process is carried out indefinitely.
- If necessary, activate the lid heater.
- Click the button **Start** to start the incubation process.
  - ✓ The **Monitor** page shows the progress of the incubation process. If the duration of the incubation process is set to "indefinitely", you can click **Stop** to stop the process manually.

See also

- Entering a program name and the heated lid's parameters in the program header [▶ 40]

6.4 Creating and editing PCR programs

Creating programs

You can use Biometra TSuite to create new PCR programs directly on a thermal cycler or on your computer. Start creating a new program by selecting a program template which you can then adapt to your own needs.

- Click **Programs** in the menu to open the **Programs** page.
- Select the storage location for the program on the **Sources** tile:
  - **Offline storage location**: Saves the program on the computer.
  - **Thermal cycler**/user directory: For logging in oneself to a thermal cycler and selecting a user account.
- Click the button **Create**.
  - ✓ The application displays the **Select program template** window containing various program templates.

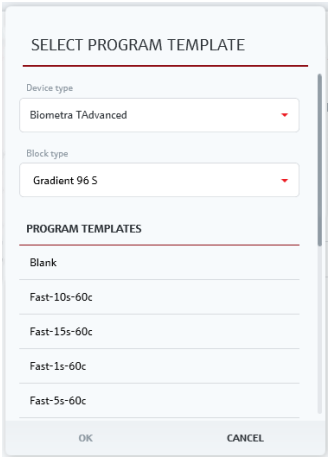

Fig. 18 Select program template window

- When saving a file to a user directory on a thermal cycler, the application will apply the default settings for the maximum heating and cooling rates, the gradients etc. automatically in the protocol template as defined in the thermal cycler's technical parameters.
  When selecting to save the program on a computer, you must choose a device configuration for this default setting. Programs are automatically adapted when they are copied to other thermal cyclers and block types.
  - **Device type**: Select the type of thermal cycler.
  - **Block type**: Select the thermal block.
- Select a template from the **Program templates** list. The template called **Blank** does not contain any predefined steps.
- Confirm your choice by clicking **Ok**.
  ✓ The **Program view** page is opened on which you can define your program using a spreadsheet or a graphical programming view.

Proceed as follows:

- Enter the name of the program and set the heated lid's options
- Enter the temperature steps including target temperature and hold time, program reiterations/loops
- Program a temperature gradient, if you are using gradient blocks
- As an option for Biometra TRIO: program a TOS step
- Save the program

Editing programs

You can open an existing program for editing on the **Programs** page.

- Just as when creating a new program, open the **Programs** page and define the storage location.
- Select a program from the list and click the button **Edit**.
  ✓ The **Program view** page is opened on which you can define your program using a spreadsheet or a graphical programming view. You have the option to edit all program parameters here.

Canceling the editing process of a program

When you are editing a program, you can abort the process by clicking the button **Cancel** without applying the changes to the program.

When you are creating a new program, you can leave the **Program view** page without saving by clicking the navigation arrow in the Biometra TSuite header to go back to a previous view or by selecting a different page from the menu.

See also

- Page Program view [▶ 25]
- Entering a program name and the heated lid's parameters in the program header [▶ 40]
- Editing target temperatures, hold times and heating and cooling rates in a program step [▶ 41]
- Programming the temperature gradient [▶ 42]
- Programming the Temperature Optimization Step (TOS) [▶ 45]
- Saving the program [▶ 46]

6.4.1 Adding and deleting program steps

Prerequisite: You are creating a new program or you are editing a program that was saved previously and you have opened the **Program view** page.

Inserting or adding a step

You have the option to insert further steps in a program or to add them at the end of a program. The maximum number of program steps is 30.

- For adding a step to an empty program or at the end of a program:
  - Do not select a step. Hold the Ctrl key and click on the entry to deselect already selected entries.
- Click the button **Add**.
  - ✓ The step is added at the end of the program.
- For inserting a step before a particular program step:
  - Select the program step and click the button **Insert**.
  - ✓ The step is inserted before the step that is marked.

Deleting a step

- Select a step and click the button **Delete**.
  - ✓ The selected program step is deleted.

6.4.2 Entering a program name and the heated lid's parameters in the program header

Prerequisite: You are creating a new program or you are editing a program that was saved previously and you have opened the **Program view** page.

- Enter the following parameters in the program header:

Option	Description
Name	Name of the PCR program (not more than 13 characters)
Heated lid	**On**: Lid heating is switched on during the execution of the program **Off**: Switching off the lid heating
Lid temperature	Setting the lid temperature The default setting for the heated lid's temperature is 99 °C. This is the ideal temperature for most PCR programs,
Preheat lid	**On**: Activating the preheating function **Off**: Deactivating the preheating function
Heating and cooling rate	You have the option to enter one value for all program steps This value can be changed in the individual program steps.

The temperature of the heated lid should generally be slightly above the maximum block temperature to prevent liquids from evaporating from the reaction preparation and condensing at the walls or the lid of the reaction cups. For most applications it is recommended to preheat the heated lid before executing the PCR program to prevent the sample from condensing on the cold lid of the sample vessel. If the preheating function is enabled, the device will first heat the heated lid to the set temperature while the sample block temperature is kept constant at 25 °C. After a subsequent equilibration phase of 40 s during which the device will produce homogeneous temperature conditions throughout the entire block, the PCR program is started and the sample block is heated.

If the difference of the temperature of the block and the temperature of the heated lid exceeds 75 °C, the heated lid will be deactivated automatically, to extend the service life of the Peltier elements. At such low block temperatures, it is no longer expected that the sample will condense at the vessel's lid.

6.4.3 Editing target temperatures, hold times and heating and cooling rates in a program step

Prerequisite: You are creating a new program or you are editing a program that was saved previously and you have opened the **Program view** page.

Editing a step

- Select the program step and click the button **Edit**.
  - ✓ The **Step No.** window with the parameters of the respective program step is displayed. Under each input field, you will see the allowed value ranges and input formats.

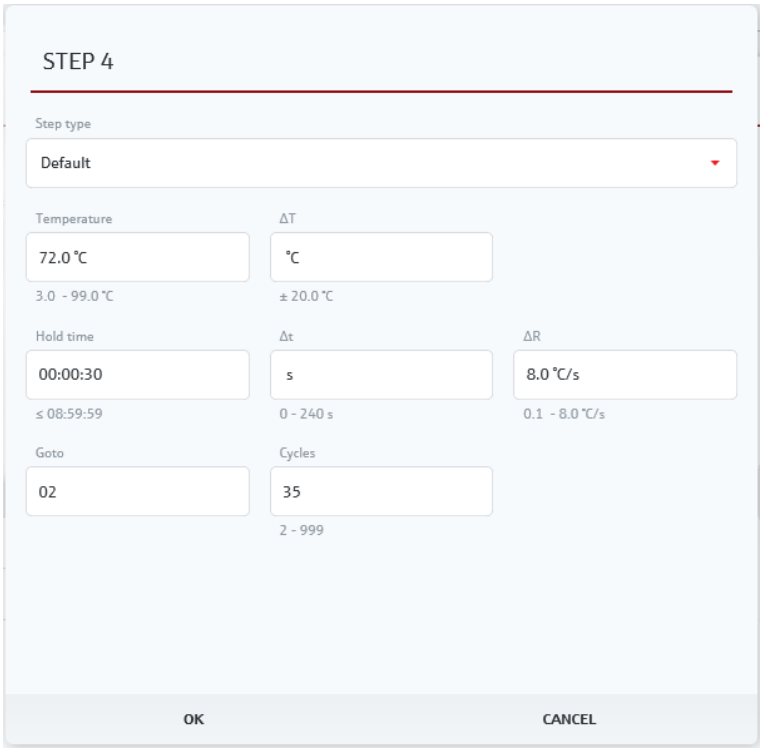

Fig. 19 Step No. window with parameters of the program step

- Only for gradient-enabled thermal blocks: The **Step type** field allows programming a temperature gradient (see below). If you do not wish to enter a temperature gradient, select the option **Default**.

- Enter the block temperature, the heating and cooling rates and the hold time for the step:

Parameter	Description
Temperature	Enter the target temperature for the thermal block
ΔT	You have the option to enter an increment/decrement for the target temperature If this is a step within a loop, the block temperature is increased or decreased by this value with each iteration. A positive value is used for an increment (rise) while a negative value is used for a decrement (fall). If the user does not enter any value, the target temperature remains the same for each iteration.
Hold time	Enter the hold time for the temperature step in the format hh:mm:ss The hold time begins as soon as the target temperature in the block is attained. If you wish to enter an unlimited hold time, e.g. to keep the samples at a particular temperature after the PCR procedure has ended, you can enter a value that is greater than the maximum hold time. The application will than show the ∞ symbol. Now, the temperature will be maintained until you stop the program manually.
Δt	You have the option to enter an increment for the hold time If this is a step within a loop, the hold time is increased or decreased by this value with each iteration.
ΔR	Edit the heating/cooling rate for the selected step Reducing the heating/cooling rate can be useful if a PCR program is transferred from a slower device to a device that heats or cools faster, or for special PCR applications such as telomerase PCR. Enter a value between 0.1 °C/s and the maximum value of the device-specific heating rate in tenths of °C/s .

- Program a loop.
  A typical PCR program is made up of repetitive steps for denaturation, annealing and extension. It is possible to program loops for repeating steps which are defined by a target step for returning to the beginning of the loop (**Goto**) and the number of reiterations (**Cycles**).
  - Enter the step number to which the program shall go back in the last step of a loop in the field **Goto**.
  - Enter the number of reiterations in the field **Cycles**.
- Click **Ok** to confirm all settings.
  - ✓ The changes are applied and the parameters for the step are updated on the **Program view** page.

6.4.4 Programming the temperature gradient

Prerequisite: You are creating a new program or you are editing a program that was saved previously and you have opened the **Program view** page.

You can only use the gradient function when you are using a gradient-enabled thermal block/thermal cycler.

A temperature gradient is used to set a temperature profile which defines how the temperature in the thermal block changes over the course of the program step. The temperature gradient is always passed along the long side of the sample block to ensure that as many different temperatures as possible can be monitored.

In mono blocks, the gradient runs from column to column, i.e. horizontally from left to right. The highest temperature may be in the first or last column. All samples in one column have the same temperature. However, the temperatures differ from column to column.

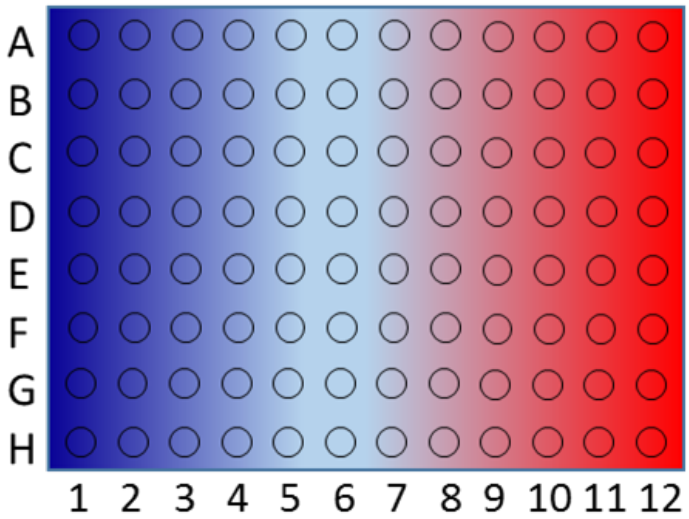

Fig. 20 Temperature gradient (block format 96)

In twin blocks, the gradient also runs along the long side of the block, but in this case vertically from line to line.

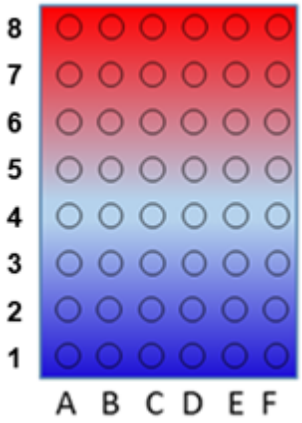

Fig. 21 Temperature gradient (block format 48)

On thermal cyclers with twin blocks, only the block on the left-hand side is gradient-enabled. Whenever you try to start a gradient program on the right block, the software will generate an error message.

You can use the gradient function to find the ideal annealing temperature for new primer pairs, for example. Spread each of the replicates along the long sides of the sample block to determine the block temperature that will yield best results.

Programming a standard gradient

When using a standard gradient, the change of the block temperature is defined via the temperature of the edge columns.

- On the **Program view** page, select the annealing step in the program and click the button **Edit**.
  - ✓ The **Step** window with the settings for the program step is displayed.
- Select the **Standard gradient** option from the **Step type** list.

- Use the fields **Left temp** and **Right temp** to enter the temperatures of the two edge columns.
  - ✓ The temperature distribution in the block is calculated and displayed in a graph on the **Step** window rounded to one tenth °C.

Fig. 22 Programming the standard gradient

Programming a linear gradient

For a linear gradient, the temperature is defined for the center of the thermal block, on a 96-block model that would be column 6, for example. The temperature is than decreased by a decrement from column to column on one side of the block and increased by an increment on the other side.

- On the **Program view** page, select the annealing step in the program and click the button **Edit**.
  - ✓ The **Step** window with the settings for the program step is displayed.
- Select the **Linear Gradient** option from the **Step type** list.
- Enter the temperature for the central block column in the field **Temperature** and the rate at which the temperature changes in the field **Increment**.
  When entering a positive increment, the temperature in column 1 is lowest and the temperature in column 12 is highest. When entering a negative increment with a minus sign, the temperature in column 1 is highest and in column 12 the temperature is lowest.
  - ✓ The temperature distribution in the block is calculated and displayed in a graph on the **Step** window rounded to one tenth °C.

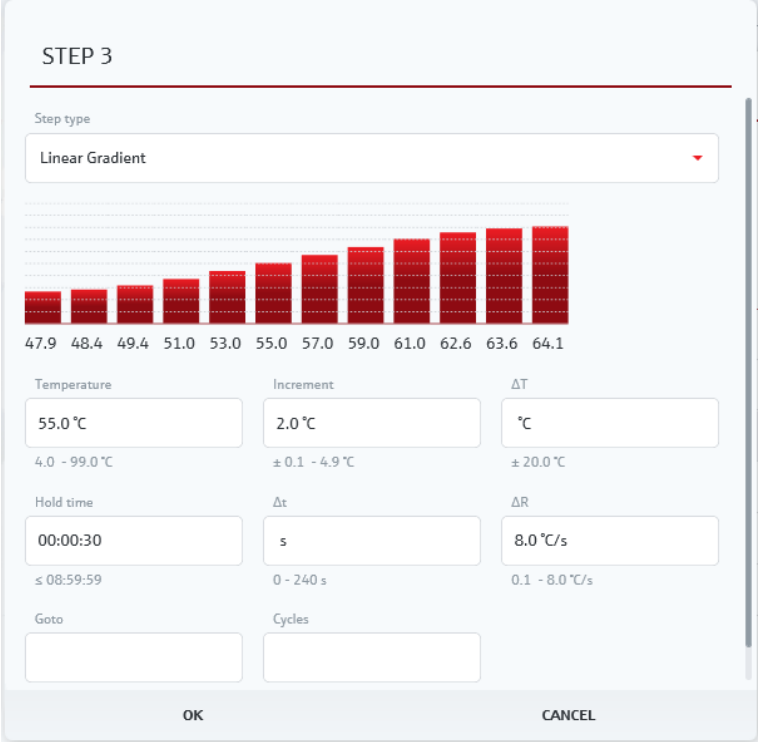

Fig. 23 Programming the linear gradient

6.4.5 Programming the Temperature Optimization Step (TOS)

On Biometra TRIO, you have the option to program a temperature optimization step (TOS). When working with a TOS, you apply three different temperatures to the sample blocks during the annealing step to determine the ideal annealing temperature.

Prerequisite: You are creating a new program or you are editing a program that was saved previously and you have opened the **Program view** page.

Programming the TOS

- On the **Program view** page, select the annealing step in the program and click the button **Edit**.
  - ✓ The **Step** window with the settings for the program step is displayed.
- Select the **TOS** option from the **Step type** list.
- Enter the block-2 temperature in the field **Temperature**.
- Enter the temperature difference to the other two blocks in the field **Increment**.
- When entering a positive increment: The temperature for block 1 is lowest and for block 3 it is highest.
- When entering a negative increment: The temperature for block 1 is highest and for block 3 it is lowest.
  - ✓ The TOS is programmed.

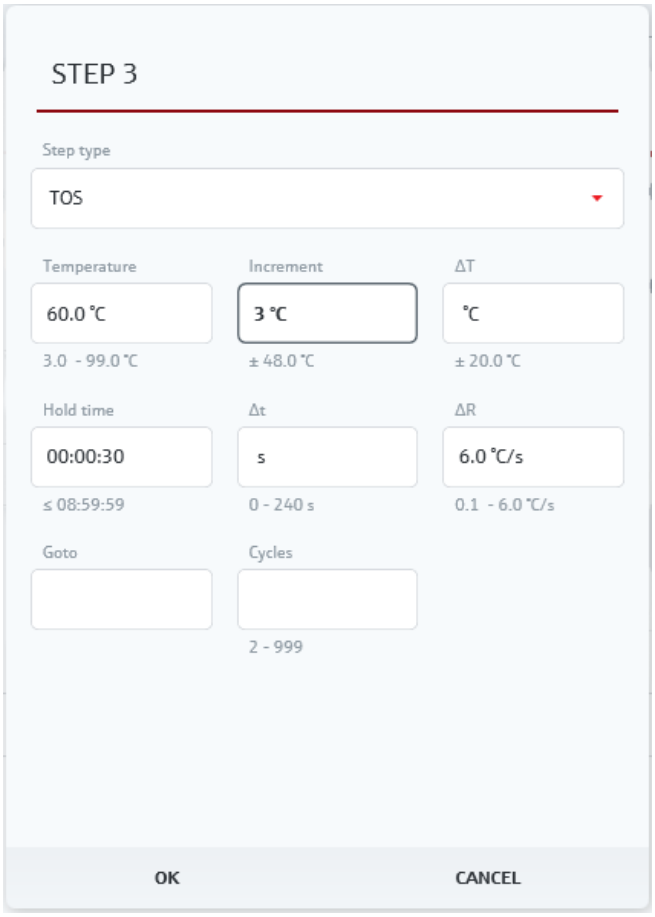

Fig. 24 Programming a TOS step

6.4.6 Saving the program

Prerequisite: You are creating a new program or you are editing a program that was saved previously and you have opened the **Program view** page.

After you have edited all steps and entered the name of the program and the parameters for the heated lid in the program header, you can save the program.

- Click the button **Save** in the footer of the **Program view** page.
  - ✓ The program is saved in the storage location (thermal cycler or computer). For newly created programs, this is the storage location that you have defined before opening the program template. When you save the new program on the thermal cycler, the device will automatically use the first storage location of the user who is currently logged in. Edited programs will be overwritten in their storage location after the user confirms a prompt.

6.5 Managing PCR programs

The **Programs** window allows you to copy, programs between different thermal cyclers and a computer with a Biometra TSuite instance and delete or export these programs as a CSV file.

6.5.1 Copying programs

You can copy the PCR programs available in Biometra TSuite from one storage location to any other storage location. This allows you to transfer programs from one user account of a thermal cycler to another user account of the same thermal cycler, to another thermal cycler or to a computer. Of course, you can also distribute programs that are stored on a computer to user accounts on different thermal cyclers.

When exchanging programs between different device types, the parameters for heating and cooling rates and for a gradient step will be adjusted automatically. It may be necessary to make further manual adjustments to the program to match the device type/thermal block.

In order to use the copy/paste function, you must have the corresponding user rights.

Copying programs

- Click **Programs** in the menu to open the **Programs** page.
- Log in to the thermal cycler on which the programs are saved in the **Sources** tile or select the option **Offline storage location** (computer).
- Select the program from the list on the **Programs** page. Hold the Ctrl key and click on the entries in the list to select more than one element. Click the button **Copy**.
- Select the target in the **Sources** tile and click the button **Insert**.
  - ✓ The selected programs are inserted in the user account and can now be used on the thermal cycler by this user.
- If necessary, select further target directories to insert the programs here, too, and click the button **Insert**.

Automatic adjustment of the program

If the software detects deviations from the device specifications while loading a program, the software will automatically adjust the program to the specifications. Such adjustment may also be necessary when changing the thermal block. Before initiating the program or when editing a program, the software will generate a message to notify the user that changes are required. In this prompt the software will request the user to confirm the changes. If you reject an adjustment that is required, the device cannot launch the program.

The following adjustments are made:

Cause	Automatic adjustment
A program with temperature optimization step (TOS) is transferred to a device without TOS function.	The software applies the mean of the temperatures programmed for the left and right sample blocks.
A program with temperature gradients is transferred to a device with TOS function.	The software deletes the gradient and uses the average temperature of the programmed gradient or the annealing temperature for this step. You can subsequently set up a temperature optimization step (TOS) for this step.
The heating and cooling rate is exceeded.	The software reduces the heating and cooling rate to the allowed maximum rate.

Cause	Automatic adjustment
The heating and cooling rate is not reached.	The software raises the heating and cooling rate to the allowed maximum rate.
User-defined heating and cooling rate.	The software maintains the user-defined heating and cooling rate.
A program with a temperature gradient is transferred to a non-gradient-enabled device.	The software deletes the gradient and uses the average temperature of the programmed gradient or the annealing temperature for this step.
The gradient is outside the permitted temperature range.	The software will raise the lower temperature to the minimum value allowed, e.g. from 5 °C to 20 °C.
The program exceeds the allowed maximum gradient range.	The software reduces the temperature range of the gradient and applies the mean temperature of the programmed gradient or the annealing temperature.

See also

Administering the user management [▶ 49]

6.5.2 Exporting programs

You can save selected programs as a CSV file on the computer.

- Click **Programs** in the menu to open the **Programs** page.
- Log in to the thermal cycler on which the programs are saved in the **Sources** tile or select the option **Offline storage location**.
- Select the program from the list on the **Programs** page. Hold the Ctrl key and click on the entries in the list to select more than one element. Click the button **Export**.
- Select the target directory under **File location** in the **Export programs** window.
- Click **Ok** to confirm your choice.
  - ✓ A CSV file of the selected programs is saved to the selected folder.

6.5.3 Deleting programs

You have the option to delete programs from a user account that are no longer needed on a thermal cycler or from the computer. You need the corresponding user rights in order to delete a program.

- Click **Programs** in the menu to open the **Programs** page.
- Log in as a user to the thermal cycler on which the programs are saved in the **Sources** tile or select the option Offline storage location.
- Select the program from the list on the **Programs** page. Hold the Ctrl key and click on the entries in the list to select more than one element. Click the button **Delete**.
- When prompted whether you want to delete the program, answer **Yes**.
  - ✓ The selected programs are deleted from the storage location.

6.6 Administering the user management

You will find the user management of a thermal cycler on the page **Options** | **User**. The user management tool allows you to create up to 90 user accounts for one thermal cycler.

Opening the user management

- Click **Thermal cycler** in the menu bar.
- Log in as a user of the thermal cycler in the **Available devices** list.
- Click the button **Options**.
  - ✓ The **Options** | **User** page lists the users who were created for the thermal cycler. Depending on your permission settings, you have the option to add, edit or delete user accounts.

User roles and rights

By default, the software is delivered with an administrator account (Admin) with the password "Admin". You cannot delete this administrator. Change the default password after you have logged in for the first time to protect the system from unwanted access.

An active user administration has three different user groups with preset rights:

- **Administrator**
  As an administrator you have the right to create new users. You can assign users to user groups and customize their individual rights.
- **General user**
  As a user with general rights you can create general users and restricted users, but you cannot create administrators. You do not have the right to change the rights of other users. Furthermore, you have no access to the system configuration and you cannot create a backup.
- **Restricted user**
  As a user with restricted rights you do not have any rights to manage users or configure the system.

User roles with preset rights	Administrator	General user	Restricted user
System configuration	X	-	-
Edit other users	X	-	-
Create new users	X	X	-
Delete other users	X	-	-
Write/delete programs of other users	X	-	-
Read programs of other users	X	X	-
Start/stop programs	X	X	X
Write/delete own programs	X	X	X
Show your own programs to other users	X	X	X

An administrator can assign or block additional individual rights to users, irrespective of the preset rights of the user group. All functions that the user cannot access are hidden or disabled for this particular user. Regardless of such individually assigned rights, this operating manual assumes the default rights when describing specific functions.

Please note that the software will convert all newly created users, including administrators, to general users after you disable the user management at a later point in time. The only way to restore previous settings is by loading a backup file.

Restricted user management on Biometra TOne

The Biometra TOne user management only has two user roles: administrator and general user. There is the option to create additional general users, but no additional administrator. It is also not possible to customize individual rights.

6.6.1 Activating the user management

You can enable the user management function for a thermal cycler directly on the thermal cycler or via Biometra TSuite. You need administrator rights to enable/disable the user management.

Enabling the function in Biometra TSuite

- Click **Thermal cycler** in the menu bar.
- Log in as a user of the thermal cycler in the **Available devices** list.
- Click the button **Options**.
- On the **Options** | **Settings** page, enable the option **User management**.
  - ✓ The user management is enabled. It is now possible to log in users with different rights to work on the thermal cycler.

Disabling the user management

- On the **Options** | **Settings** page, disable the option **User management**.
  - ✓ The user management is disabled. There is only one administrator, all other users have the rights of a general user.

NOTICE

Loss of data when disabling the user management

When disabling the user management on a thermal cycler, all settings regarding permissions and rights will be lost.

Before disabling the function, create a backup of the settings on the thermal cycler to be able to restore the data.

See also

- Administering the user management [▶ 49]
- Using backup files and synchronizing thermal cyclers [▶ 53]

6.6.2 Creating a new user

Users with the user rights **Administrator** and **General** can create new users. However, a user with general rights can only create users with general or restricted rights and does not have the right to edit user permissions.

- On the page **Options** | **User**, click the button **Create**.
  - ✓ The **Create user** window appears.

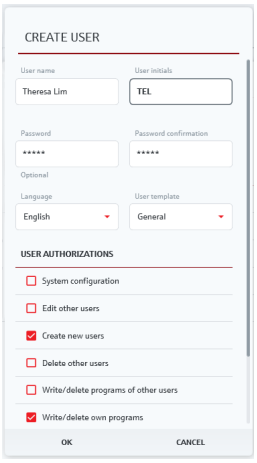

Fig. 25 Create user window

- Define the user name, initials and an optional password for the user:
  - **User name**: Enter Up to 13 letters or numbers.
  - **User initials**: Define two or three uppercase letters.
  - **Password** (optional): If you do not enter a password, the account will not be password protected.
- Select the language for the thermal cycler's software interface from the list **Language**: English, German or Chinese.
- Select the default settings for the user rights in the **User template** lists.
- When logged in as an administrator, you can assign individual user rights in the **User authorizations** section.
- Click **Ok**.
  - ✓ A new user is created and available on the thermal cycler.

6.6.3 Editing a user and changing a password

Editing a user

Administrators can edit all created users and their user rights. Users with general rights can only edit their own profile. They do not have the right to change their own user rights.

- Select a user on the page **Options** | **User**.
- Click the button **Edit**.
  - ✓ The **Edit user** window appears.
- Change the parameters of the user profile. It is not possible to change the value in the **User initials** fields.
- Click **Ok** to confirm the entered data.
  - ✓ The user settings have been changed.

Changing the password

After logging in for the first time, you can change the administrator password to protect the system from unwanted access. The default password is “Admin”. The user name and the initials of the default administrator cannot be changed.

- Recommendation: Create a backup file of the system before changing the administrator password, so that you are able to restore the content of all folders, programs and user directories, if needed.
- When not logged in, select the administrator on the **Options** | **User** page.

- Click the button **Edit**.
- Enter the new password in the **Password** field and repeat your entry in the field **Password confirmation**.
- If you do not enter a password, the password protection for the administrator will be lifted.
- Click **Ok** to confirm your entry.
  - ✓ You have changed the administrator password.

As an administrator, you have the right to edit users. You have the right to change the passwords of other users. To do this, follow the procedure described above.

NOTICE

No system access without an administrator password

If you forget the password of the only administrator, you can no longer access the system without assistance by the manufacturer's customer service.

- Enable the user management and create at least one additional administrator who can restore the system settings via a backup file, if required.
- Keep your passwords safe.
- If you can no longer access the system, contact the customer service.

6.6.4 Assigning user rights

Assigning user rights

As an administrator, you have the right to edit other users. You can assign a role with preset rights to a user and customize these rights in the user management. It is not possible to change the permission settings of the default administrator, because at least one user must have all rights.

- Create a new user or edit a selected one on the page **Options** | **User**.
- In the window with the user settings, assign a user group to the user in the **User template** list: **Administrator**, **General** or **Limited**.
- Extend or limit rights by enabling/disabling the default rights in the **User authorizations** section.
  - ✓ You have assigned a user to a user group and adjusted their permission settings.

Importance of user rights

User rights	Meaning
System configuration	Allow access to system settings such as date and time, acoustic signal, display brightness, network settings, factory settings
Edit other users	Allow changing user names, user initials, language settings and user rights
Create new users	Allow creating new user accounts
Delete other users	Allow deleting existing user accounts
Write/delete programs of other users	Allow editing, copying and deleting programs for all users
Write/delete own programs	Allow editing, copying and deleting the user's own programs, but not programs of other users
Read programs of other users	Allow read-only access to the programs of other users If disabled, the user will only see their own programs.

User rights	Meaning
Show your own programs to other users	Allow users to show or hide their own programs to other users
Start/stop programs	Allow starting and stopping programs

6.6.5 Deleting a user

- Select the user that you wish to delete on the page **Options** | **User**. Hold the Ctrl key and click on the entries in the list to select more than one user.
- Click the button **Delete**.
- When prompted whether you want to delete the selected user, confirm with **Yes**.
  - ✓ You have deleted the user with all programs.

6.7 Managing log files and backup files

6.7.1 Using backup files and synchronizing thermal cyclers

The Biometra TSuite backup function is used to save a local copy of all folders, programs, users and user settings. This function can be used to restore data or to synchronize the memories of different thermal cyclers. After a firmware update, you can use this file to restore the original settings of the thermal cycler.

Saving a backup file

- On the page **Options** | **Backups**, click the button **Save**.
  - ✓ A backup file of the thermal cycler is stored in the subfolder WRITEIMA.GES on the computer.

Loading a backup file

Loading a backup file allows you to restore lost data on the thermal cycler. You also have the option to transfer the backup file to another thermal cycler in order to synchronize the content of the memory of the thermal cyclers.

- Select a backup file on the page **Options** | **Backups**.
- Click the button **Load**.
- When prompted whether you want to load the backup file on the thermal cycler, answer **Yes**.
  - ✓ You have saved the users and programs from the backup file on the thermal cycler.

You can also use backup files to synchronize different types of thermal cyclers or thermal cyclers using different block types. In this case, Biometra TSuite automatically adjusts the transferred programs after the user confirms a corresponding prompt just as it does when copying programs.

Deleting a backup file

You can delete backup files which you do not need anymore.

- Select a backup file on the page **Options** | **Backups**. Hold the Ctrl key and click on the entries in the list to select more than one element.
- Click the button **Delete**.
- When prompted whether you want to delete the backup file, confirm with **Yes**.
  - ✓ The backup file has been deleted from the local memory.

See also

- Copying programs [▶ 47]
- Page Options [▶ 19]
- Storage paths under Biometra TSuite [▶ 11]

6.7.2 Creating a service info file

In case of device malfunctions, create a service info file, attach it to an e-mail and send it to the service department of Analytik Jena. The service department can retrieve the device data from these data and search for the cause of the malfunction. Device data are stored in the subfolder SERVICEI.NFO on the computer.

- Click **Thermal cycler** in the menu bar.
- Log in as a user of the thermal cycler in the **Available devices** list.
- Click the button **Options**.
- On the page **Options** | **Service**, click the button **Save**.
  - ✓ The service info file is generated.
- If you answer **Yes** when prompted whether you want to open the service info file in the Explorer, the system will open the Explorer.
  - ✓ You have successfully created the service info file.

6.7.3 Carrying out an extended self test and managing self-test log files

The software checks the most important functions and device components during the extended self test. You will be prompted to carry out an extended self test at regular intervals by the software. The extended self test takes approx. 15 to 20 minutes.

The system will carry out the following tests:

Test	Description
Cooler	Incubates the sample block to 4 °C and checks if the temperature in the block is reached and can be held for a longer time.
Thermal tracking	Checks the synchronicity of the control circuits and whether they work together in a coordinated way.
Heating/cooling rate	Checks whether the device can generate the required average heating and cooling rate.
Refrigeration	Checks whether the heat sink and the fans are working properly together.
Gradient	Only for gradient-enabled models Checks whether the sample block can generate the specified temperature gradient.
Heated lid	Tests whether the heated lid reaches the set temperature and can hold it for a longer time.
Control unit	Tests whether the sample block is set correctly by the control unit.

Starting a self test

- The following conditions must be met to generate reproducible test results:
  - Mains voltage: 100 V; 115 V; 230 V ±10 %
  - Ambient temperature: 20 to 25 °C
  - The sample block must have cooled down to ambient temperature.

- Insert a microwell plate or a set of individual vessels into the first and the last column of the sample block to ensure ideal contact pressure for testing the heated lid.
- Close the heated lid.
- Click **Thermal cycler** in the menu to open the **Thermal cycler** page.
- Log in as a user of the thermal cycler in the **Available devices** list.
- Click the button **Options**.
- On the page **Options** | **Service**, click the button **Start**.
  - ✓ The extended self test is started. While the self test is executed, the block status is shown by an orange icon which can be found on the dashboard on the **Thermal cycler** tile, for example. The user can read the results of the self test on the **Documentation** page.

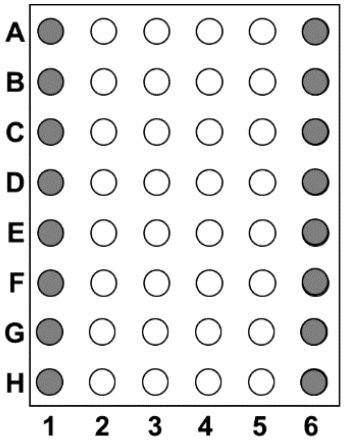

Fig. 26 Load the thermal block (block format 48) for the self test

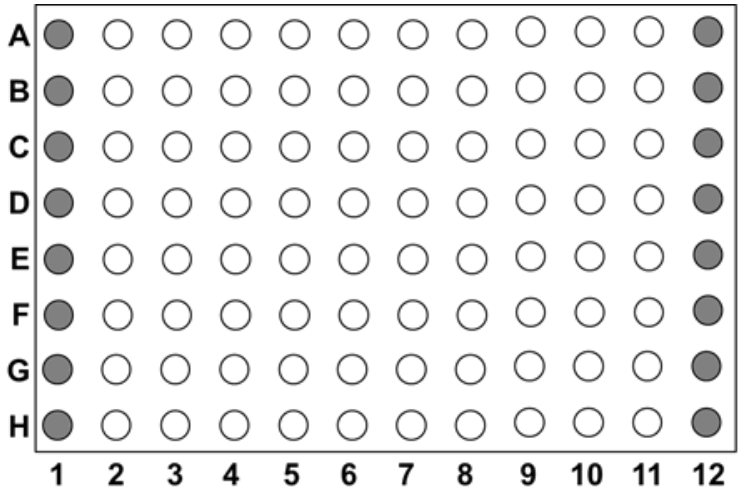

Fig. 27 Load the thermal block (block format 96) for the self test

Stopping a self test

During a self test it is not possible to start another program. If you want to stop a self test while it is carried out, click the button **Stop** on the **Options** | **Service** page. The software will then either generate no log file at all or just an incomplete log file.

Viewing the list of self-test log files

The page **Documentation** | **Selftest log file** lists all self-test log files that are stored on the computer or on a selected thermal cycler.

- Click the button **Documentation** in the menu to open the **Documentation** page.

- Select the storage location in the **Sources** tile:
  Offline storage location or log in as a user on a thermal cycler.
  - ✓ The page **Documentation** | **Selftest log file** lists all self-test log files available in this storage location.

Viewing the content of the self-test log files

- Select a self-test log file on the page **Documentation** | **Selftest log file** and click the **View** button.
  - ✓ The **Selftest log file** window opens. Tests that were passed successfully are marked with a check mark ✓ while failed tests are marked with a cross ✕.

Saving self-test log files

If you want to keep the log files for documentation purposes, you have the option to save the log files on your computer.

- Select a self-test log file for a thermal cycler on the page **Documentation** | **Selftest log file**. Hold the Ctrl key and click on the entries in the list to select more than one element.
- Click the button **Save**.
  - ✓ The selected log files are saved as TXT files under the selected storage path in the subfolder EXTSELFT.EST on the computer.

Deleting self-test log files

You can delete self-test log files which you do not need anymore.

- Select a self-test log file on the page **Documentation** | **Selftest log file**. Hold the Ctrl key and click on the entries in the list to select more than one element.
- Click the button **Delete**.
- When prompted whether you want to delete the data, confirm with **Yes**.
  - ✓ The self-test log files are deleted.

See also

- Tile Thermal cycler [▸ 14]
- Tab Options | Service [▸ 23]
- Page Documentation [▸ 30]

6.7.4 Viewing, saving, exporting run log files

Run log files are generated automatically every time a PCR program is executed. The files are stored on the thermal cycler.

The page **Documentation** | **Run log files** lists all run log files that are stored on the computer or a selected thermal cycler. The thermal cyclers only store the last 24 run log files. If you want to keep the log files for documentation purposes, you have the option to save the log files to the computer.

Viewing the list of run log files

- Click the button **Documentation** in the menu to open the **Documentation** page.
- Go to the **Sources** tile and select the storage location **Offline storage location** or log in as a user on a thermal cycler.
  - ✓ The page **Documentation** | **Run log files** lists all run log files available in this storage location.

Viewing the content of the run log files

- Select a run log file and click the button **View**.
  - ✓ The software will open the **Run log file** window which sorts the content of the file on three different tabs:

Tab	Description
Overview	Information about the program, date and time of its execution, the user and the device parameters
Program	Display of the program as a spreadsheet or a graph, similar to the type of display in the window **Program view**
Message	Incidents during the execution of the program Errors that have occurred and were recorded in the error log file will also be logged here.

Saving run log files

- Select a run log file on a thermal cycler. Hold the Ctrl key and click on the entries in the list to select more than one element.
- Click the button **Save**.
  - ✓ The selected log files are saved as TXT files under the selected storage path in the subfolder PROGPROT.COL on the computer.

Exporting run log files as CSV files

- Select a run log file on a thermal cycler.
- Click the button **Export**.
- Select a folder in the standard Windows window for saving files and click **Save** to confirm.
  - ✓ The selected log file is exported. You have the option to open the exported file in Excel, for example, you can add further information or save it as a PDF file.

Deleting run log files

You can delete run log files which you do not need anymore from the computer.

- Select a run log file. Hold the Ctrl key and click on the entries in the list to select more than one element.
- Click the button **Delete**.
- When prompted whether you want to delete the data, confirm with **Yes**.
  - ✓ The run log files are deleted from the computer.

See also

- Storage paths under Biometra TSuite [▶ 11]
- Page Documentation [▶ 30]

6.7.5 Viewing/exporting advanced run log files

It is only possible to create advanced run log files when the PCR program was launched via Biometra TSuite. Advanced run log files are always stored on the computer.

The page **Documentation** | **Advanced run log file** lists all advanced run log files that are stored on the computer.

Viewing the list of advanced run log files

- Click the button **Documentation** in the menu to open the **Documentation** page.
- Select the storage location **Offline storage location** in the **Sources** tile.
  - ✓ The page **Documentation** | **Advanced run log file** lists all run log files available in this storage location.

Viewing the content of the advanced run log files

- Select an advanced run log file and click the button **View**.
  - ✓ The software will open the **Advanced run log file** window which sorts the content of the file on four different tabs:

Tab	Description
Overview	Information about the program, date and time of its execution, the user and the device parameters
Program	Display of the program as a spreadsheet or a graph, similar to the type of display in the window **Program view**
Message	Incidents during the execution of the program Errors that have occurred and were recorded in the error log file will also be logged here.
Temperature data	Continuously recorded temperature data during the execution of a PCR program Temperature data are recorded at intervals of approx. 1 s.

Exporting run log files as CSV files

- Select an advanced run log file.
- Click the button **Export**.
- Select a folder in the standard Windows window for saving files and click **Save** to confirm.
  - ✓ The selected log file is exported. You have the option to open the exported file in Excel, for example, you can add further information or save it as a PDF file.

Deleting run log files

You can delete advanced run log files which you do not need anymore from the computer.

- Select an advanced run log file. Hold the Ctrl key and click on the entries in the list to select more than one element.
- Click the button **Delete**.
- When prompted whether you want to delete the data, confirm with **Yes**.
  - ✓ The advanced run log files are deleted from the computer.

See also

- Page Program view [▶ 25]
- Storage paths under Biometra TSuite [▶ 11]

6.8 Settings in Biometra TSuite

For changing the Biometra TSuite configuration which shall apply for the entire instance of the software, go to the **Application settings** page.

After starting the software for the first time, you should find the thermal cyclers in Biometra TSuite via the network connection or a serial interface to the computer as connected devices.

You have the option to make further changes to the settings:

- Select thermal cyclers for monitoring. By default, Biometra TSuite will display all connected thermal cyclers.
- You can choose to have notifications for specific thermal cyclers displayed on the dashboard.

6.8.1 Displaying thermal cyclers in Biometra TSuite

After opening Biometra TSuite for the first time, you must set the type of connection used to link the thermal cyclers with the network or the computer in the settings of the application.

All thermal cyclers must be switched on for Biometra TSuite to identify them as available devices. The availability status of the devices is queried every 30 seconds and the device list updated should any changes occur. If a device that was previously available cannot be found in 5 consecutive availability queries, it will initially appear in bright gray (= inactive) and will then be removed from the device list.

You can configure the connection settings on the page **Application settings** | **Settings**.

Displaying thermal cyclers via the network

When using the network interface, devices in the dedicated subnet will be found via the broadcast function. If you do not want the system to search all devices in the network, you can disable the broadcast function. Then, only devices entered with a static IP address on the list beforehand will be queried via the network. There is the option to add the IP addresses of particular thermal cyclers manually to the list of static IP addresses, e.g. when the broadcast function is disabled or when a thermal cycler is out of range of the broadcast function. Please note that IP addresses used by devices may change under certain circumstances if these addresses are not configured as static IP addresses.

- Click **Application settings** in the menu to open the **Application settings** | **Settings** page.
- Enable the **Network** option.
- Enable the **Use broadcast** option.
  - ✓ The thermal cyclers available in the network are now displayed on the dashboard in the **Thermal cycler** tile and on the **Thermal cycler** page.

If you have a large number of thermal cyclers in the network and you only want the Biometra instance to communicate with certain thermal cyclers, you can register the thermal cyclers with their static IP addresses:

- On the **Application settings** | **Settings** page, disable the option **Use broadcast**.
- Click the button **Add**.
- Enter the IP address.
  - ✓ The thermal cycler is displayed in the overview **Static IP addresses** and can now be found on the dashboard in the **Thermal cycler** tile as well as on the **Thermal cycler** page. You can connect additional thermal cyclers by entering their static IP addresses.

Connecting Biometra TRobot II to the serial port of the computer

If you do not want to or cannot use the network to connect a Biometra TRobot II device, you can connect the thermal cycler via the serial interface of the computer. If the computer is not equipped with a serial port, you can use a USB to serial port adapter.

- On the **Application settings** | **Settings** page, enable the option **Serial interface**.
- Enable all COM ports to which thermal cyclers are connected.
- The thermal cyclers are now displayed on the dashboard in the **Thermal cycler** tile and on the **Thermal cycler** page.

6.8.2 Selecting thermal cyclers for monitoring

You can restrict the number of thermal cyclers you want to monitor. This may be useful, for example, when working with several Biometra TSuite instances on different computers to monitor certain groups of thermal cyclers. The default setting includes all devices found in the network. Restricting this list to certain devices can be useful if there are very many devices available in the network and it would thus take longer to update the corresponding views with active thermal cyclers. If, for example, there are only two thermal cyclers selected, only these two thermal cyclers will be displayed in the software, for example on the **Overview** page. This leads to a faster updating of the views and greater clarity.

- Click **Application settings** in the menu to open the **Settings** page. Open the **Device selection** tab.
- Enable all thermal cyclers that the Biometra TSuite instance is supposed to monitor in the list.
  - ✓ The **Thermal cycler** tile of the dashboard and the **Thermal cycler** page will now only display the selected thermal cyclers.

6.8.3 Enabling block notifications

You have the option to select the thermal blocks for which you want to receive notifications on the dashboard for events that are triggered directly on the thermal cycler, e.g. when a PCR program is paused during its execution. This will help you to ensure that important experiments run smoothly. You can monitor up to 10 blocks. On thermal cyclers with multiple blocks, each block will be monitored separately.

- Click **Settings** in the menu on the **Application settings** page. Open the **Block notifications** tab.
- Click on the icon of the respective block for which you want to receive a notification. The icon turns red.
- In order to stop receiving a notification, click on the red block icon which will then turn into a gray icon again.
  - ✓ For the selected blocks, the notifications are presented on the **Block notifications** tile of the dashboard.

Events that were triggered by the user via Biometra TSuite, such as skipping or pausing a program step, will not be displayed here, as these events were consciously triggered acts that are assumed to be known to the user. All events occurring during the execution of the PCR program are logged in run log files and advanced run log files. Log files and the messages logged can be displayed on the **Documentation** page.

List of figures