




# Self Test Function for Mastercycler® pro and Mastercycler® nexus

Instructions for use

**eppendorf**



Copyright© 2011 Eppendorf AG, Hamburg. No part of this publication may be reproduced without the prior permission of the copyright owner.

**Trademarks**

eppendorf, Mastercycler and vapoprotect are registered trademarks of Eppendorf AG, Hamburg, Germany.

Registered trademarks are not marked in all cases with <sup>TM</sup> or <sup>®</sup> in this manual.

## Table of contents

<b>1</b>	<b>Operating instructions</b>	<b>4</b>
1.1	Using this manual	4
<b>2</b>	<b>Product description</b>	<b>4</b>
2.1	Delivery package	4
2.2	Features	4
<b>3</b>	<b>Operation</b>	<b>4</b>
3.1	Activating the self-test function	4
3.2	Performing the self-test	5
3.2.1	Creating a certificate	7
3.3	Displaying, printing or exporting a history	7
3.3.1	Printing a history	8
3.3.2	Exporting a history as a file	8
<b>4</b>	<b>Troubleshooting</b>	<b>8</b>
<b>5</b>	<b>Transport, storage and disposal</b>	<b>9</b>
5.1	Disposal	9
<b>6</b>	<b>Ordering Information</b>	<b>10</b>

# Self Test Function for Mastercycler® pro and Mastercycler® nexus

## 1 Operating instructions

### 1.1 Using this manual

These instructions for use for the self-test function of the Mastercycler pro and Mastercycler nexus is a supplement to the Thermocycler operating instructions and does not replace the Thermocycler instructions.

Therefore, the Thermocycler operating instructions must be read before using the self-test function for the first time. The current version of the instructions is available on the internet at [www.eppendorf.com](http://www.eppendorf.com)

## 2 Product description

### 2.1 Delivery package

Quantity	Order No. (International)	Order No. (North America)	Description
1	6320 071.001	950030040	<b>Selftest USB Key</b> For Mastercycler pro and Mastercycler nexus
1	6320 071.168	-	<b>Mastercycler pro Self Test Function - Instructions for Use</b>

### 2.2 Features

The self-test function can be used with the following devices:

- Mastercycler pro family of devices and the 6320 control panel (with USB ports)
- Mastercycler nexus family of devices

Eliminating the need for an external measuring system, the self-test function is used to quickly check of the following thermoblock characteristics:

- Heating and cooling rates
- Correct function of the temperature control circuit
- Temperature homogeneity within each of the three block zones (left, center and right zone)
- Temperature homogeneity across the entire block

A certificate can be output as a PDF after the self-test has been completed successfully.

The self-test USB key also activates the self-test function for all connected Mastercyclers.

## 3 Operation

### 3.1 Activating the self-test function

#### Requirement



- A user is logged on (if the *PIN* function is activated).
- The navigation tree is displayed.
- ▶ Connect the self-test USB key to an open USB port on the Thermocycler.

The message *Please wait* appears. The self-test USB key is detected after a few seconds.

The self-test function is now unlocked.

## Self Test Function for Mastercycler® pro and Mastercycler® nexus

The status of the self-test function can be identified using the symbol in the navigation tree below the cyclor node.

-  Self-test function activated
-  Self-test function locked

The self-test function remains active until the self-test USB key is removed.

### 3.2 Performing the self-test



#### **CAUTION! Risk of burns from hot thermoblock and heated lid.**

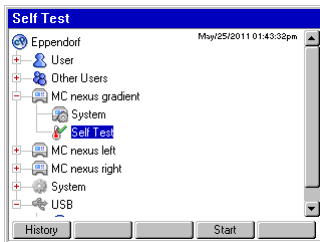
The thermoblock and the heated lid very quickly reach temperatures above 95 °C.

- ▶ Keep heated lid closed until the temperature of the thermoblock is below 30 °C.

#### Requirement

- A user is logged on (if the *PIN* function is activated).
- The navigation tree is displayed.
- The self-test function is unlocked (see p. 4).

1. Mount the thermoblock with an empty PCR plate and close the heated lid.
2. Open the cyclor node.
3. Mark the *Self-test* node.



4. Click the *Start* softkey.

Cycler1 Cycler Self Test			
Test Results	Block zone		
	Left	Center	Right
Heating/cooling rates	UNTESTED	UNTESTED	UNTESTED
Temperature control	UNTESTED	UNTESTED	UNTESTED
Temperature homogeneity	UNTESTED	UNTESTED	UNTESTED
Overall temp. homogeneity	UNTESTED		
Press "Start" to begin		Lid: ... °C	Block: ... °C
Start		Exit	

5. Click the *Start* softkey again.  
The self-test runs automatically. Information on the currently running test is displayed.

## Self Test Function for Mastercycler® pro and Mastercycler® nexus

Cycler1 Cycler Self Test			
Test Results	Block zone		
	Left	Center	Right
Heating/cooling rates	PASS	PASS	PASS
Temperature control	Test in progress...		
Temperature homogeneity			
Overall temp. homogeneity			
Determining block temperature homogeneity	Lid 105 °C Block 94.5 °C		
<input type="button" value="Abort"/>			

<i>Block zone</i>	The left, center and right block zones correspond to the temperature control loop of the block.
<i>Heating/cooling rates</i>	Temperature control velocity of the block during heating or cooling.
<i>Temperature control</i>	Accuracy of thermoregulation.
<i>Temperature homogeneity</i>	Temperature homogeneity within each individual control circuit.
<i>Overall temp. homogeneity</i>	Temperature homogeneity across the entire block.

At block temperatures of 4 °C, 35 °C, 55 °C, 75 °C and 95 °C, the temperature homogeneity and thermoregulation accuracy are determined after 30 s of holding time. After 5 to 10 minutes the test result is displayed.

Cycler1 Cycler Self Test			
Test Results	Block zone		
	Left	Center	Right
Heating/cooling rates	PASS	PASS	PASS
Temperature control	PASS	PASS	PASS
Temperature homogeneity	PASS	PASS	PASS
Overall temp. homogeneity	PASS		
TEST PASSED		Lid 105 °C Block 4.0 °C	
<input type="button" value="Start"/> <input type="button" value="Certificate"/> <input type="button" value="Exit"/>			

Cycler1 Cycler Self Test			
Test Results	Block zone		
	Left	Center	Right
Heating/cooling rates	PASS	PASS	PASS
Temperature control	PASS	FAIL	FAIL
Temperature homogeneity	PASS	FAIL	FAIL
Overall temp. homogeneity	FAIL		
TEST FAILED		Lid 105 °C Block 3.9 °C	
<input type="button" value="Start"/> <input type="button" value="Exit"/>			

- Passed tests are labeled *PASS* and highlighted in green.
- Failed tests are labeled *FAIL* and highlighted in red.

The self-test is passed if all subtests have been passed.

**i** Failure of a test indicates an alteration, maladjustment or malfunctioning of the block. In this case, please contact Eppendorf Service.

**i** Use the Eppendorf Temperature Verification System to verify and adjust the temperature control of the block (see on p. 10).

## Self Test Function for Mastercycler® pro and Mastercycler® nexus

### 3.2.1 Creating a certificate

After the self-test has been passed, a certificate can be exported to an external storage medium as a PDF.

#### Requirement

The self-test has passed all subtests and the test result is displayed.

1. Connect a storage medium.
2. Click the *Certificate* softkey.

The certificate is copied onto the storage medium as a PDF file. The path of the copied files is displayed after the procedure has been completed.

You can display the certificate on a PC and print it using Adobe® Reader® or a different PDF viewer.

The certificate contains fields to enter a validity date and written signature.



Fig. 1: Example of a self-test certificate for a Mastercycler pro.

### 3.3 Displaying, printing or exporting a history

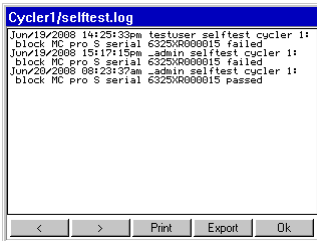
Use of the self-test function and the results are recorded in a log file. To display, print or export the log file to a storage medium, proceed as follows:

# Self Test Function for Mastercycler® pro and Mastercycler® nexus

## Requirement

- A user is logged on (if the *PIN* function is activated).
- The navigation tree is displayed.

1. Open the *cycler* node and mark *Self-test*.
2. Click the *History* softkey.



The self-test history is displayed.

### 3.3.1 Printing a history

#### Requirement

A supported printer is connected (see Cycler operating instructions).


- ▶ Click the *Print* softkey.

### 3.3.2 Exporting a history as a file

1. Connect an external storage medium.
2. Click the *Export* softkey.
3. Select the PDF or TXT file format and confirm by clicking *Ok*.


The file is copied to the storage medium. The path of the copied files is displayed after the procedure has been completed.

## 4 Troubleshooting

Symptom/ message	Cause	Remedy
Self-test USB key is not detected.	The self-test USB key was connected to a non-supported USB hub.	▶ Connect the self-test USB key immediately.
	The control panel USB connections are not active because the control panel was connected to a Mastercycler ep (the  symbol is displayed).	Connect the control panel to a Mastercycler pro immediately (see Mastercycler pro operating instructions).



## Self Test Function for Mastercycler® pro and Mastercycler® nexus

Symptom/ message	Cause	Remedy
	The USB connections were switched off due to a damaged or incompatible USB device (the  symbol is displayed).	Disconnect all USB devices and restart the Cycler.
The self-test node is not displayed.	No user is logged on.	▶ Log on as user or administrator.
	A Mastercycler ep series device is selected.	▶ Select a Mastercycler pro node.

## 5 Transport, storage and disposal

### 5.1 Disposal

In case the product is to be disposed of, the relevant legal regulations are to be observed.

#### Information on the disposal of electrical and electronic devices in the European Community:

Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2002/96/EC pertaining to waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. To document this, they have been marked with the following identification:



Because disposal regulations may differ from one country to another within the EU, please contact your supplier if necessary.

In Germany, this is mandatory from March 23, 2006. From this date, the manufacturer has to offer a suitable method of return for all devices supplied after August 13, 2005. For all devices supplied before August 13, 2005, the last user is responsible for the correct disposal.

## Self Test Function for Mastercycler® pro and Mastercycler® nexus

### 6 Ordering Information

Order No. (International)	Order No. (North America)	Description
6320 071.001	950030040	<b>Selftest USB Key</b> For Mastercycler pro and Mastercycler nexus
6321 900.150	-	<b>Operating Manual Mastercycler pro</b>
6331 900.069	6331900069	<b>Operating Manual Mastercycler nexus</b>
6320 071.168	-	<b>Mastercycler pro Self Test Function - Instructions for Use</b>
0055 000.298	950008059	<b>Temperature Verification System</b>
5331 233.007	on request	<b>Sensor for 384 well block</b>





## Evaluate your operating manual

[www.eppendorf.com/manualfeedback](http://www.eppendorf.com/manualfeedback)

**eppendorf**  
*In touch with life*

**Your local distributor: [www.eppendorf.com/worldwide](http://www.eppendorf.com/worldwide)**

Eppendorf AG · 22331 Hamburg · Germany · Tel: +49 40 53801-0 · Fax: +49 40 538 01-556 · E-mail: [eppendorf@eppendorf.com](mailto:eppendorf@eppendorf.com)

Eppendorf North America, Inc. · 102 Motor Parkway · Hauppauge, N.Y. 11788-5178 · USA

Tel: +1 516 334 7500 · Toll free phone: +1 800-645-3050 · Fax: +1 516 334 7506 · E-mail: [info@eppendorf.com](mailto:info@eppendorf.com)

**Application Support** Europe: Tel: +49 1803 666 789 (Preis je nach Tarif im Ausland; 9 ct/min aus dem dt. Festnetz; Mobilfunkhöchstpreis 42 ct/min)  
[support@eppendorf.com](mailto:support@eppendorf.com)

North America: Tel: +1 800 645 3050 · E-mail: [techserv@eppendorf.com](mailto:techserv@eppendorf.com)

Asia Pacific: Tel: +60 3 8023 6869 · E-mail: [support\\_asiapacific@eppendorf.com](mailto:support_asiapacific@eppendorf.com)