

BioShake XP

Operating Manual

Version V008

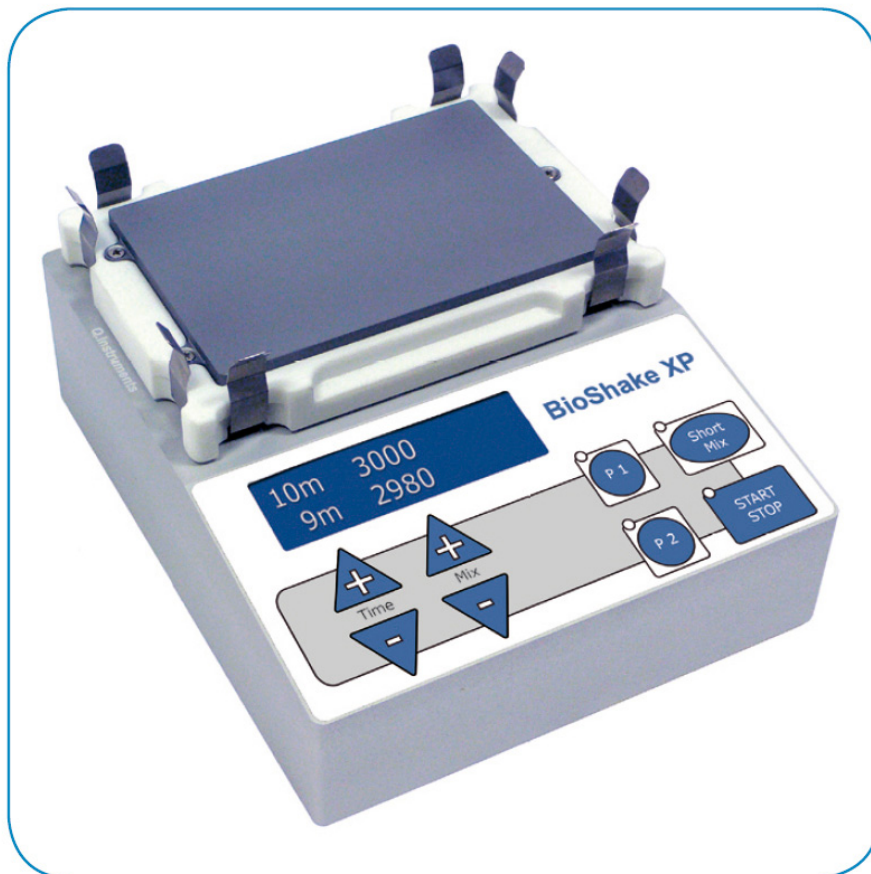


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1 Safety and Caution



1. Do not operate the device in rooms where work is being carried out with explosive substances.
2. Do not use this device to process any explosive, radioactive or highly reactive substances.
3. Do not use this device to process any substances, which could create an explosive atmosphere.
4. **Danger!** Electric shock from damage to device/power cable. **Danger!** Lethal voltages inside the device.
5. **Warning!** General hazard point.
6. **Warning!** Injury from rapidly rotating holder. Injury from rapidly rotating imbalance compensation. Injury from flying tubes and plates.
7. **Warning!** Injury from sample material being flung out. Injury from incorrect vortexing.
8. **Warning!** Damage due to incorrect power supply.
9. **Caution!** Damage to the display from mechanical pressure. Severe vibration.
10. **Caution!** Damage to electronic components caused by spilled liquids. Damage to electronic components from condensation.
11. **Caution!** Poor safety due to missing operating manual. Caution when using aggressive chemicals.
12. Please start even with minimal mixing frequencies to avoid overloading.
13. Only mix in sealed tubes and plates. Sample material can be flung out of open, inadequately sealed or unstable tubes and plates.
14. When working with hazardous, toxic and pathogenic samples, always comply with the nationally specified safety environment.
15. Please use the original power supply delivered by QUANTIFOIL Instruments.
16. Please use the original accessories recommended by QUANTIFOIL Instruments.

Pay particular attention to personal safety gear (gloves, clothing, glasses etc.), the extraction hood and the safety class of the laboratory.



Read this section carefully and follow the instructions before beginning installation and any procedure.

The unit must be placed on a horizontal solid work space.

The device must be saving from shocks and falling.

The unit must be placed in sufficient distance to heat registers or radiators to ensure ambient temperature conditions in accordance with the technical specifications (section 9.2).



Use the normal care and precaution one would use with any electrical appliance. Be sure to use a power cord with the same rating and of the same type (three-wire with neutral conductor) as the one supplied with the instrument.

Ensure that voltage and frequency of your power source match the input voltage and frequency inscribed on the electrical rating label of the power supply (AC/DC adaptor) and that the output voltage matches the rating of the equipment. The AC/DC adaptor is designed to work with a single-phase power system having a grounded neutral conductor.

If you are not sure what type of power is supplied to your building contact your facilities manager.

As BioShake is an electrical device do not spill large quantities of liquid onto the device. Do not use it in an explosive atmosphere.

As parts of the device may generate electric, magnetic or electromagnetic fields, keep parts away that may be affected (e.g. data storage units).



Do not unscrew any part of BioShake except for the interchangeable power supply, the power cord and different blocks.

Do not make any mechanical or electrical modifications to the equipment.

Never do anything else with BioShake as intended in this manual.

Noncompliance of the safety instructions may lead to device damage, loss of warranty and may cause serious personal injury as well as death.

2 General Information



Warning! Injury from sample material being flung out.

Sample material can be flung out of open, inadequately sealed or unstable wells, plates and tubes.

- Only mix in sealed tubes and plates
- When working with hazardous, toxic and pathogenic samples, always comply with nationally specified safety environment. Pay particular attention to personal safety gear (gloves, clothing, glasses etc.), the extraction hood and the safety class of the laboratory.

When setting mixing frequency, adhere to the rule outlined in table 1.

3 Warranty

QUANTIFOIL Instruments warrants products manufactured by it to be free from defects in material or workmanship under normal use and service for a period of 2 years from date of shipment.

This warranty is specifically limited to the replacement or repair of any such warrantable defects, without charge, when the complete product is returned to QUANTIFOIL Instruments GmbH, freight prepaid, at the address shown above. Contact the factory at the address above for a Return Material Authorization (RMA) number before returning the product.

QUANTIFOIL Instruments shall be the sole judge of the warrant ability of alleged product defects. Products that are returned for warranty examination and that are found to be non-warrantable are chargeable and are returned freight collect. A copy of a purchase order with the amount of the charge must be received by QUANTIFOIL Instruments, either by mail or by FAX, before any equipment is returned. Warrantable products are repaired or replaced at no charge and returned freight prepaid.

THIS EXPRESS WARRANTY EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE. QUANTIFOIL INSTRUMENTS GmbH SHALL NOT BE LIABLE FOR WARRANTY IN ANY AMOUNT EXCEEDING THE PURCHASE PRICE OF THE GOODS. QUANTIFOIL INSTRUMENTS GmbH SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN CONTRACT, TORT, OR OTHERWISE.

The buyer acknowledges that he/she is not relying on the seller's skill or judgment to select or furnish goods suitable for any particular purpose and that there are no warranties that extend beyond the description on the face hereof.

This warranty extends only to the original purchaser, and shall not apply to any products or parts that have been subject to misuse, neglect, accident, or abnormal conditions or operations. Claims for damage in transit are directed to the freight carrier upon receipt.

Please use the online form for registration of your appliance:

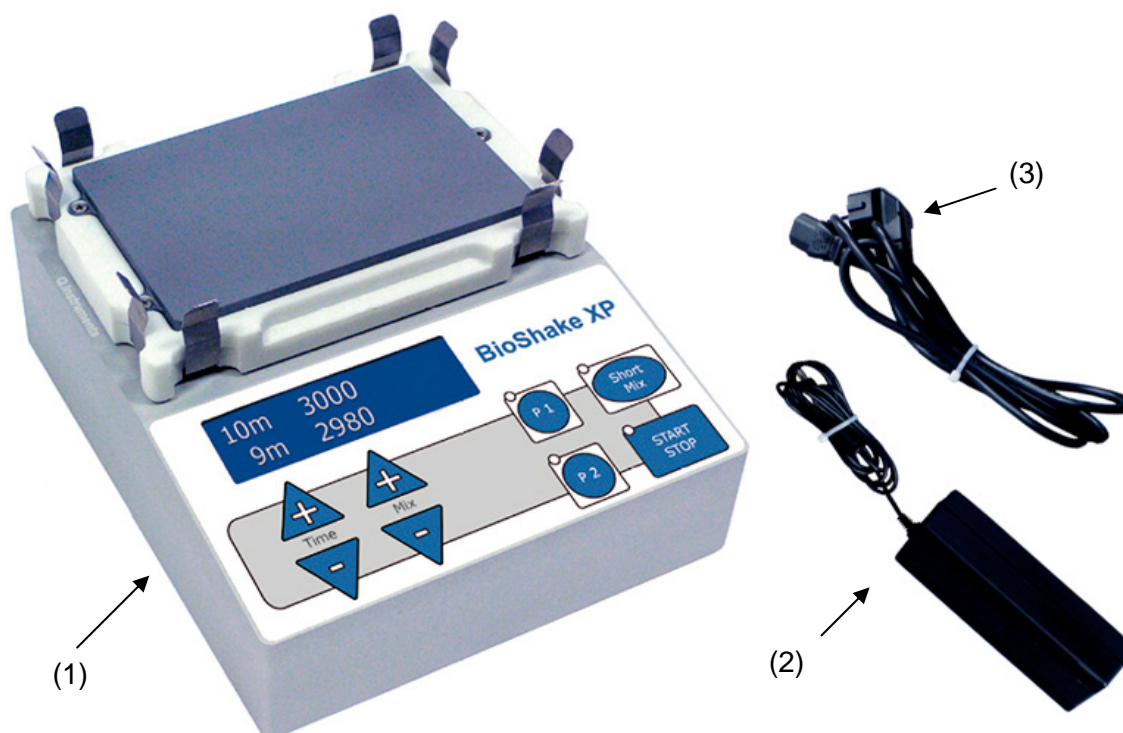
<http://www.qinstruments.com/device-registration.html>



Your completed data will serve as registered certificate of guarantee for our extended guaranteeing and will assure optimal service.

Please keep your sales slip for a possible warranty case which must be presented then. Your personal data will not be given to third persons.

4 Delivery Parts



Part (1) | BioShake XP

Part (2) | Power supply

Part (3) | Power cord

Part (4) | Operating manual (no picture)

5 Installation

Unpack and carefully check the instrument. Report any damage or missing items to your local distributor.

If no damage is found place the device up on a stable horizontal surface.

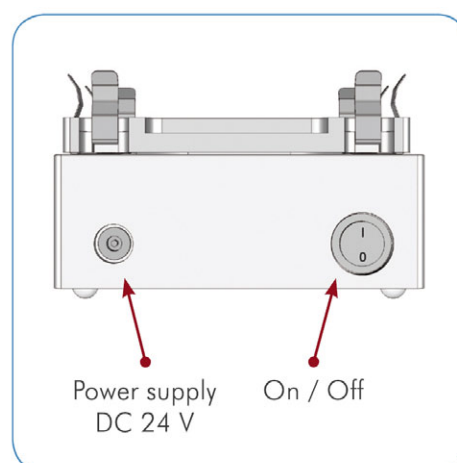
Place an adapter on the shaker (chapter 6: Changing of adapter plates).

Plug the external power supply (2) into the 24 V socket at the rear side of the BioShake.

Plug the power cable (3) into the power supply (2) and into the wall socket.

Turn On the instrument!

It is advisable to carry out a test run at maximum speed to ensure that the device does not move while mixing.



6 Changing of adapter plates



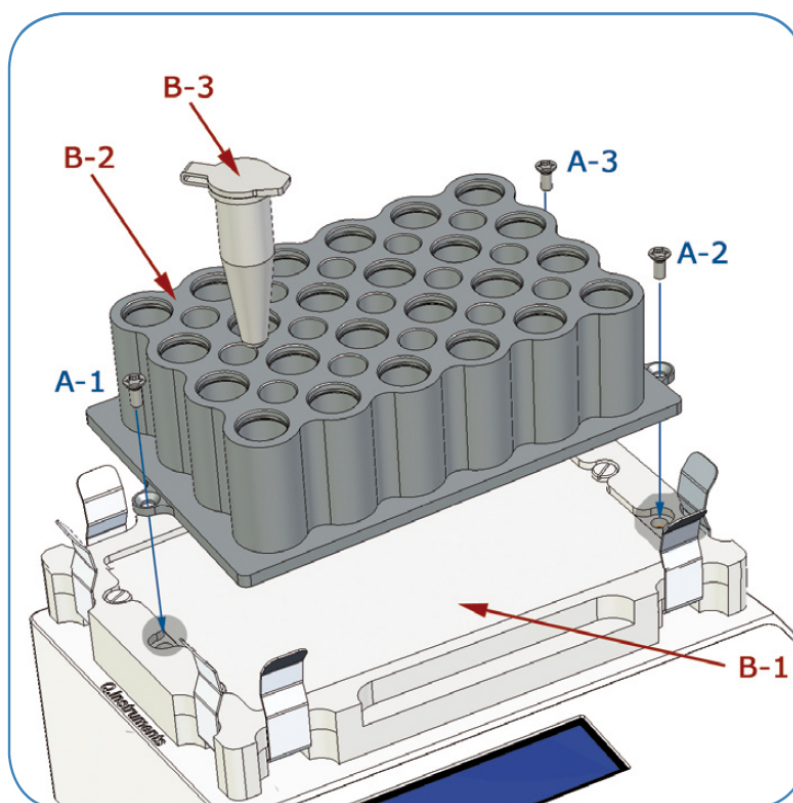
If the security cover plate or an adapter plate already be mounted, please remove it first!

To change the adapter plates, please follow the subsequent steps:

1. Turn Off the instrument!
2. Remove all sample carriers B-3 (tubes, vials, microplates etc.).
3. Loosen the 3 torx screws A-1, A-2 and A-3 by using the supplied screwdriver (*Torx size 8, rotate left*).
4. Take off the adapter plate B-2 straight up and put it on a clean, soft surface.

Mounting of the new adapter plate:

1. Please take care to a clean, dirt-free and particle-free operation.
2. Insert the new adapter plate straight into the impression into the plate holder B-1.
3. Check the fixed position.
4. Fix all torx screws A-1, A-2 und A-3 using clockwise rotation.
Please take care to uniform controlled tightening of screws to ensure a good fit.
5. Please take care to good and tight fit of sample carriers B-3 (tubes, vials, microplates etc.).
6. Turn On the instrument!
The BioShake will recognize the different block types.
All pending information and indications are shown in the display.



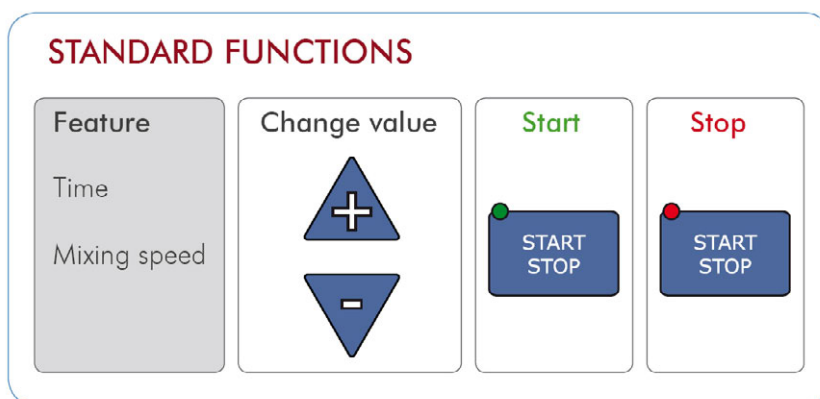
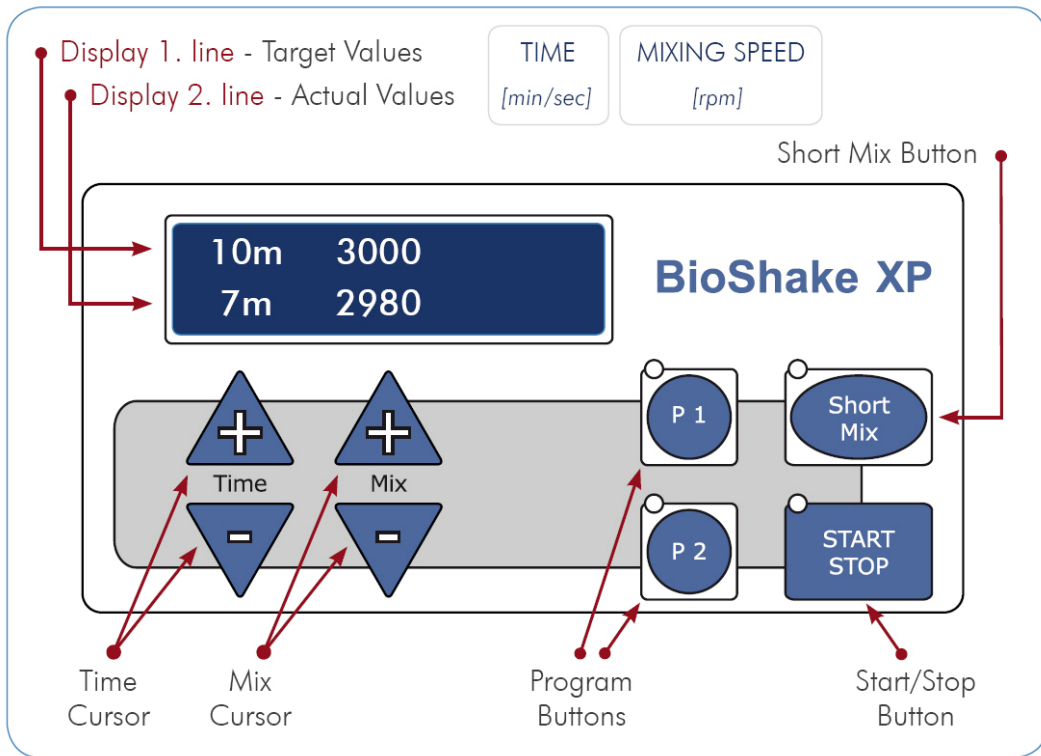
Heavier blocks may limit the shaking speed
(see *Tab. 1 Recommended maximum mixing speeds*)

7 Operation

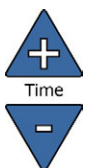
The BioShake is designed for shaking and temperature control of liquids in tissue culture plates, microplates, tubes, and vials. The microplate or tubes have to place on the shaker platform of the BioShake. The liquid to be shaken is introduced into the wells or tubes.

The automatic start up function of the unit ensures a gradual start of the shaking process, without sample splashing. The drive is absolutely wear-free and maintenance-free.

The following pictures show the control panel of the BioShake and standard functions.



7.1 Setting up the time



Use the Time Cursors see to set the required operation time. If the timer is not seated, pressing Start stop will cause a continues operation of the shaker.

7.2 Setting up the mixing speed



It is possible to control mixing speeds from 200 rpm up to 3,000 rpm. To set the mixing speeds use the Mix Buttons.

Type of micro well plate	Weight	Maximal mixing speed [rpm]			
		1,400	2,000	2,500	3,000
Microplate	0 - 80 g				x
Deep well plate	0 - 120 g			x	
Deep well plate	0 - 150 g		x		
Deep well plate	150 - 300 g	x			

Tab. 1 Recommended maximum mixing speeds

All adapters will be automatically detected while mounting on the instrument. The allocation of the adapter to a particular category determines the properties.

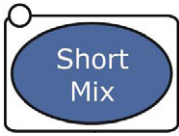
Adapter Category	Max mixing speed [rpm]	Available adapters	
		Item no.	Description
Cat 01	3,000 rpm		A) Without adapter (heating function not available) B) All non classified adapters (heating function not available)
Cat 02	1,800 rpm	1808-1061 1808-1062 1808-1063 1808-1071 1808-1072 1808-1081 1808-1085 1808-1121 1808-1131 1808-1141	Adapter - 24 x 2.0 ml or 15 x 0.5 ml tubes Adapter - 24 x 1.5 ml or 15 x 0.5 ml tubes Adapter - 40 x 0.5 ml or 28 x 0.2 ml tubes Adapter - 30 x 2.0 ml glass vials Adapter - 20 x 4.0 ml glass vials Adapter - Alere ArrayStrip (5 stripes) Adapter - 24 x Alere ArrayTubes 1.5 ml Adapter - Eppendorf deep well plate 96/1000 µl Adapter - Eppendorf Deep well Plate 96/500 µl Adapter - BRAND Deep well plate 96/1100 µl
Cat 03	2,200 rpm	1808-1041 1808-1064	Microplate adapter - 96 well standard PCR plate, universal Adapter - 96 x 0.2 ml tubes
Cat 04	3,000 rpm	1808-1021 1808-1023 1808-1031	Microplate adapter - Flat bottom Adapter - Alere ArrayStrip (12 stripes), flat bottom Microplate adapter - 96 well round bottom, universal
Cat 05	----	not available at the time	
Cat 06	----	not available at the time	
Cat 07	2,500 rpm	1808-1051	Microplate adapter - 384 well standard PCR plate, universal
Cat 08	----	----	
Cat 09	-----	-----	
Cat 10	OEM	Customer specified	

Tab. 2 Mixing speed classification of adapters

All pending information and indications are shown in the display.

Display Line 1 **Adapter Cat.: 01**
 Display Line 2 **Max. Speed: 3000**

7.3 Short mix



By pressing Short Mix, the shaker will start up with the settled parameters. If you stop pressing, the shaker will stop.

7.4 Start / Stop




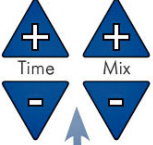





By pressing Start / Stop, the shaker will start up with the settled parameters. If you press Start / Stop again, the shaker will stop.

7.5 Programming the BioShake XP

With the BioShake it is possible to have 2 automatic programs. Both programs can have 3 different steps with different time and speed settings for each step. Program the BioShake with the following steps.

PROGRAMMING P1 and P2

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7
To Start press P1 (or P2)  and hold for at least 2 sec.	Delete program Yes / No ?  Change values with the cursors!	Short press P1 (or P2) 	Change values with the cursors as for progr. step I 	Short press P1 (or P2)  to go forward to the next program step	Repeat STEP 4-5 for program step II and step III 	To End press P1 (or P2)  and hold for at least 2 sec.

TO RUN THE PROGRAM

Program P1 (or P2)	activated	START	STOP	deactivate
Short press P1 (or P2) 		Short press 	Short press  or If you do not press Start/ Stop, the program will stop, when it is finished.	Short press P1 (or P2) 

8 Tips for shaker operation

A wide variety of well plates are commercially available. To ensure that the plates are positioned securely in the plate holder, they must correspond with the *ANIS/SBS Standard for Microplates*.

If the filled plate has a weight of more than 80 g, then the maximum rated shaking frequency of 3,000 rpm may not be attainable with a safety stand. Select a lower shaking frequency in this case. However, there is no risk of damage to the BioShake – even if the weight is too high then the shaking action stops due to excessive weight or excessive shaking frequencies. As soon as you reduce the frequency, the unit will stand firm.

Sir Isaac Newton (anno 1687)

$$\omega = 2\pi f$$

$$F = m\omega^2 r$$

Angular frequency ω , orbital mixing radius r and centripetal force F are important values for efficient mixing.

Maximum shaker platform load: 500 g (filled well plate).

The shaker is driven by a maintenance-free brushless motor which enables silent operation and constant shaking speed independent of the load.

IMPORTANT NOTES:



Please start even with minimal mixing frequencies to avoid overloading.

Only mix in sealed tubes and plates. Sample material can be flung out of open, inadequately sealed or unstable tubes and plates.

When working with hazardous, toxic and pathogenic samples, always comply with the nationally specified safety environment.

Pay particular attention to personal safety gear (gloves, clothing, glasses etc.), the extraction hood and the safety class of the laboratory.

9 Specification

9.1 Adapter for microplates, tubes and glass vials

Q.Instruments offers high precision adapter plates to allow a perfect fit for all kinds of tubes, vials, microplates and other different disposables.

The adapter plates are optimized for an excellent heat transfer to the disposables and enhance the uniformity over all wells and the heat up or cool down time.

The exchange of adapter plates can be performed very easily within one minute.

If you need an adapter plate for specially shaped micro plates, tubes or vials, so please send us additional specific information about your used sample container: manufacturer, description, article number.

You will receive your special formed adapter plate!

9.2 Technical Specification

Adapter Plates	
Microplates	96-, 384-, and 1536-well microplates, deep well plates, PCR plates)
Tubes	0.2 / 0.5 / 1.5 / 2.0 ml standard microcentrifuge tubes
Glass vials	2.0 and 4.0 ml glass vials
others	<i>on request</i>
Mixing	
Mixing frequency	Microplates: 200 to 3,000 rpm (without adapter) Microplates: 200 to 2,600 rpm (depend on adapter) Tubes, glass vials: 200 to 1,800 rpm
Mixing orbit	constant 2 mm
Speed setting resolution	50 rpm increments
Mixing regulation accuracy	± 25 rpm
Short-Mix function	Yes
Timer	
Timer setting	1 min - 99 h with automatic switch to stand-by
Timer setting resolution	1 min
Readability	Minutes, Seconds
Continuous working	Yes
Audible Alarm	Yes
Programming	
Programs stored	2
Definable buttons	P1 and P2
Individual program capacity	3 steps
Internal memory	Yes
Display	
Display	2 x 16 digits LCD-display with backlight (blue)
Target values	Time, Mixing frequency, Temperature
Actual values	Time, Mixing frequency, Temperature
Electrical	
Controller	Micro controller
Power switch	Yes
Operating Voltages	24 V DC input 50 Watt
Power supply	External power supply unit 100-240 V AC, 50-60 Hz
Properties	
Housing Material	Aluminium anodized
Environment operating range	+5°C to 45°C (80 % max. relative humidity)
Dimensions (W x D x H)	142 mm x 170 mm x 80 mm (5.59 in x 6.69 in x 3.14 inches)
Weight	2.7 kg (5.95 lbs)

Tab. 3 Technical specifications



Technical specifications subject to change!

10 CE–Certificate of Conformity



ZERTIFIKAT
CERTIFICATE

Konformitätsbestätigung
Certificate of Conformity



Registrier-Nr. / Registered No.: 057/10

<small>Zeichen des Antragstellers Reference of Applicant</small>	<small>Antragsdatum Date of Application</small>	<small>Aktenzeichen File Reference</small>	<small>Prüfbericht Nr. Test Report No.</small>	<small>gültig bis valid until</small>
	28.05.2010	3510 8672/09	8672/09/01	31.07:2011

Hiermit wird bestätigt, dass das nachfolgend genannte Produkt den Sicherheitszielen der Richtlinie des Rates vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten betreffend elektrische Betriebsmittel (2006/95/EG) sowie den wesentlichen Schutzanforderungen der Richtlinie des Rates vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit (2004/108/EG) entspricht.

We hereby certify that the product mentioned below meets the safety destinations of the council directive of 12. December 2006 on the approximation of the laws of the member states relating to electrical appliances (2006/95/EC) and also meets the protection requirements of the council directive of 15 December 2004 on the approximation of the laws of the member states relating to electromagnetic compatibility (2004/108/EC).

Hersteller: <i>Manufacturer name</i>	QUANTIFOIL Instruments GmbH Loebstedter Straße 101 07745 Jena
Erzeugnis, Typ: <i>Product, type</i>	Thermoschüttler Typ: „BioShake iQ“
Technische Beschreibung: <i>technical description</i>	24VDC, 100W mit Netzteil: Sunny Computer Technology Europe Typ: SYS1250-A324 (nicht Bestandteil der Prüfung)
Prüfgrundlagen: <i>Tested according to</i>	DIN EN 61010-1:2002-08 DIN EN 61010-2-010:2004-06 DIN EN 61010-2-051:2004-07 EN 61326-1:2006

Dieses Zertifikat enthält das Ergebnis einer einmaligen Untersuchung an dem zur Prüfung vorgelegten Erzeugnis. Es stellt kein allgemeingültiges Urteil über die Eigenschaften der Erzeugnisse aus der laufenden Fertigung dar. Es berechtigt nicht zur Führung eines Prüfzeichens des TÜV Thüringen. Eine Veröffentlichung dieses Zertifikates ist ohne schriftliche Genehmigung der Prüfstelle nicht gestattet.
This certificate contains the result of a single testing of the presented object sample. It does not give a general judgement about the quality of the products of the current production. It does not legitimate to use a test mark of TÜV Thüringen. The publishing of that certificate needs the written approval of the testing centre.

Arnstadt, 12.07.2010

TÜV Thüringen Anlagentechnik GmbH & Co. KG Prüfstelle für Gerätesicherheit Ichtershäuser Str. 32 99310 Arnstadt Tel.: 03628 / 598 370 Fax: 03628 / 598 371 gs@tuev-thueringen.de	 Dipl.-Ing. (FH) S. Thron Sachverständiger
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* The products **BioShake XP** and **BioShake iQ** are identical in construction.

11 Maintenance

The device is maintenance-free.

Before cleaning the BioShake XP disconnect the power cord.

If contaminated the device may be cleaned using a mild soap solution and water or an alcohol-based disinfectant. Do not use another cleaning solution!

If you have any questions about cleaning please contact your distributor or directly QUANTIFOIL Instruments.

Should it become necessary to repair the equipment, it should be returned to an authorized servicing agent. The equipment must be clean and free from harmful substances. Always ship the shaker well-packed, preferably in the original shipping container in order to avoid damage to the unit en route.

12 Ordering Information

BioShake – Universal laboratory equipment for diagnostics

Item-Nr.	Description
1808-0505	BioShake XP
1808-0506	BioShake IQ

Adapter and accessories

Item-Nr.	Description
	Adapter for microplates
1808-1021	Microplate adapter - Flat bottom, universal
1808-1031	Microplate adapter - 96 well round bottom, universal
1808-1041	Microplate adapter - 96 well standard PCR plate, universal
1808-1051	Microplate adapter - 384 well standard PCR plate, universal
	Adapter for deep well plates
1808-1121	Adapter - Eppendorf deep well plate 96/1000 µl
1808-1131	Adapter - Eppendorf Deep well plate 96/500 µl
1808-1141	Adapter - BRAND Deep well plate 96/1100 µl
1808-1151	Adapter - NUNC Deep well plate 96/2000 µl
	Adapter for tubes
1808-1061	Adapter - 24 x 2.0 ml or 15 x 0.5 ml tubes
1808-1062	Adapter - 24 x 1.5 ml or 15 x 0.5 ml tubes
1808-1063	Adapter - 40 x 0.5 ml or 28 x 0.2 ml tubes
1808-1064	Adapter - 96 x 0.2 ml tubes
1808-1067	Adapter - 35 x 0.5-2.0 ml Lysis tubes
	Accessories for tube Adapter
1808-1511	iQ Rack Cover – for adapter 24 x 1.5/2.0 ml tubes (1808-1061, 1808-1062)
1808-1521	iQ Cooling Block – for adapter 24 x 1.5/2.0 ml tubes (1808-1061, 1808-1062)
	Adapter for glass vials
1808-1071	Adapter - 30 x 2.0 ml glass vials, Ø 12 mm
1808-1072	Adapter - 20 x 4.0 ml glass vials, Ø 15 mm
	ADAPTER for Alere ArrayStrip (AS) and ArrayTube (AT) platforms
1808-1081	Adapter - Alere ArrayStrip Processor (5 stripes)
1808-1023	Adapter - Alere ArrayStrip Processor (12 stripes), flat bottom
1808-1085	Adapter - 24 x Alere ArrayTubes 1.5 ml
	Customized adapters
1808-1000	customized adapters are available on request

Spare parts

Item-Nr.	Description	
	Spare parts	
1808-0136	Clamping springs BioShake for exchange (Set of 8 pieces)	
1808-0110	External power supply unit for BioShake XP (100-240 V AC, 50-60 Hz, 24 V DC, 75 W)	
1808-0141	External power supply unit for BioShake iQ (100-240 V AC, 50-60 Hz, 24 V DC, 100 W)	
1808-9101	Power cord with 3-pin plug (clover leaf) - Europe	
1808-9102	Power cord with 3-pin plug (clover leaf) - Switzerland	
1808-9103	Power cord with 3-pin plug (clover leaf) - UK	
1808-9104	Power cord with 3-pin plug (clover leaf) - Italy	
1808-9110	Power cord with 3-pin plug (clover leaf) - USA	
1808-9111	Power cord with 3-pin plug (clover leaf) - Japan	
1808-9112	Power cord with 3-pin plug (clover leaf) - China	
1808-9113	Power cord with 3-pin plug (clover leaf) - Korea	
1808-9114	Power cord with 3-pin plug (clover leaf) - Australia	



Please use the original accessories recommended by QUANTIFOIL Instruments.
 Please use the original power supply delivered by QUANTIFOIL Instruments.
 Using spare parts or disposables which we have not recommended can reduce the precision, accuracy and life of the BioShake.
 QUANTIFOIL Instruments do not honour any warranty or accept any responsibility for damage resulting from such action.

13 Support

Contact:

Q.Instruments
 QUANTIFOIL Instruments GmbH
 Loebstedter Str. 101
 07749 Jena
 Germany

Phone: +49 (0) 3641 876 12 0
 Fax: +49 (0) 3641 876 12 99
www.QInstruments.com
info@QInstruments.com

Application support: support@QInstruments.com