

**Product profile**

Part number	2016-0600
Article name	BioShake Q1
Description	Automation friendly Shaker with temperature control function and Edge Locking Mechanism. Designed to be integrated in liquid handling and automation platforms to process labware in chemical and biological laboratories.
Recommended use	Automation   Shaking   Heating   Cooling   Tubes, Vials, Microplates
Scope of delivery	BioShake Q1   External power supply   Power cords Europe & US   2x screws to mount device (M3 x 18   DIN 912)   Calibration certificate   Operation & Integration manual
Conforming use	System is operated by qualified and trained research and laboratory personnel. Applicable safety standards or rules need always be fulfilled.
Country of origin	DE
Customs tariff code	8479 82 00

**Mixing**

Mixing frequency range	200 to 3000 rpm with 1 rpm increment resolution
Maximum frequency*	< 80 g: 3000 rpm    < 120 g: 2500 rpm    < 150 g: 2200 rpm < 300 g: 1800 rpm    < 500 g: 1500 rpm    > 500 g: 1000 rpm
Mixing orbit	constant 2.0 mm diameter
Mixing regulation accuracy	± 25 rpm
Accel. / Decel. range	1 - 30 seconds with 1 second increment resolution
Zero position	Locked zero position with ± 0.1 mm accuracy

\* Feasible frequency heavily depends on load weight **and** height. **Always** start with low frequencies and iterate upwards.

**Temperature control**

Temperature range*	From up to 24 Kelvin under RT to 99,9 °C; typically 4 to 99,9 °C (39.2 to 211.82 F) with 0.1 °C increment resolution (adjustable between -20 to 99.9 °C)
Temperature sensor accuracy	± 0.2 °C (max) from -10 - 85 °C      ± 0.25 °C (max) from -20 - 100 °C (res. 0.008 °C)
Temperature uniformity*	± 1.0 K at 4 °C      ± 0.5 K at 15 °C      ± 0.5 K at 40 °C      ± 1.0 K at 90 °C
Temperature control speed	~ 16 K/min heating      ~ 12 K/min heating
above RT   below RT*	~ 12 K/min cooling      ~ 3 K/min cooling

\* Value depends on the used thermo-adapter. Given value conditions: RT = 21 °C, Adapter = 2016-1041, 96-well PCR, adapter temperature

**ELM positioning**

Description	Patented Edge Locking Mechanism (elm) for repeatable and accurate positioning of microplates on a liquid handling or automation platform. With the elm, labware can either easily be exchanged manually/automatically or it is strongly fixed in a diagonal centered position.
ELM position accuracy	± 0.1 mm

**Thermo-adapter plates for different labware**

Description	An adapter is required for optimal temperature transfer to and/or optimal fixation of labware and needs to be purchased separately. The adapter can be exchanged by the user.
Microplates	All microplates according ANSI-SLAS format 4-, 6-, 8-, 12-, 24-, 48-, 96-, 384-, and 1536-well microplates, deep well plates, PCR plates
Tubes and Vials	0.2, 0.5, 1.5, 2.0 ml standard tubes   2.0, 4.0, 6.0, 8.0, 10.0 ml cylindrical shaped vials
Others	Custom made adapter on request

**Device control**

Description	Required electronic for remote control is build in the device. No external controller required.
Operation control	Remote controlled as described in the Integration Manual
Peripheral interface	EIA-232 / RS-232 interface (2 m cable with RS-232 plug-in connector) optional: USB via USB-Serial Adapters (Rec. DIGITUS DA-70156) or USB via MOXA USB-to-Serial Hub
Status	LED in corner area (GREEN = ok   RED = error   BLUE = booting   YELLOW = no communication)

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**Electrical**

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Operating voltage	24 V DC   I <sub>max</sub> : 4.5 A   P <sub>eff</sub> : 85 Watt   P <sub>max</sub> : 108 Watt
Power supply	Input: 100 - 240 V AC   50 - 60 Hz Output: 24 V DC   I <sub>max</sub> : 5.0 A   P <sub>max</sub> : 120 Watt External power supply unit (CE/UL/CSA approved, 85-264 V AC, 47-63 Hz, IEC/EN60320-1 C14   Degree of protection: IP20)
Power connection*	Prewired cable   length 2 m   barrel connector ID 2.5 mm x OD 5.5 mm

\* Only use the device with the delivered power cord. If another power cord is used ensure the wire diameter is adequate.

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**Operating, transport and storage conditions**

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Operating range	15 °C - 32 °C (59 - 89 F)   10 - 80 % RH   up to 2000 m above sea level   non-condensing
Floor base requirements	stable (resonance free)   horizontal   dry   inside buildings   even   well ventilated and no direct exp. to sunlight
Transportation and storage	-10 °C - 60 °C (14 - 140 F)   10 - 80 % RH   non-condensing

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**General properties**

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Housing material	Aluminum anodized
Degree of protection	IP20 (Protected against solid objects up to 12 mm   No protection against water)
Pollution degree	1 (no contamination or only dry, non-conductive contamination, whereby the contamination has no influence)
Airborne sound emission	< 70 db (A)

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**Dimension and weight**

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Dimensions	(W x D x H) 142 x 99 x 97.7 mm   5.59 x 3.9 x 3.85 inch
Weight	1.65 kg   3.64 lbs
Packaging size	(W x D x H) 347 x 252 x 131 mm   13.66 x 9.92 x 5.16 inch   cardboard box
Packaging weight	3 kg   6.61 lbs

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**Certifications**

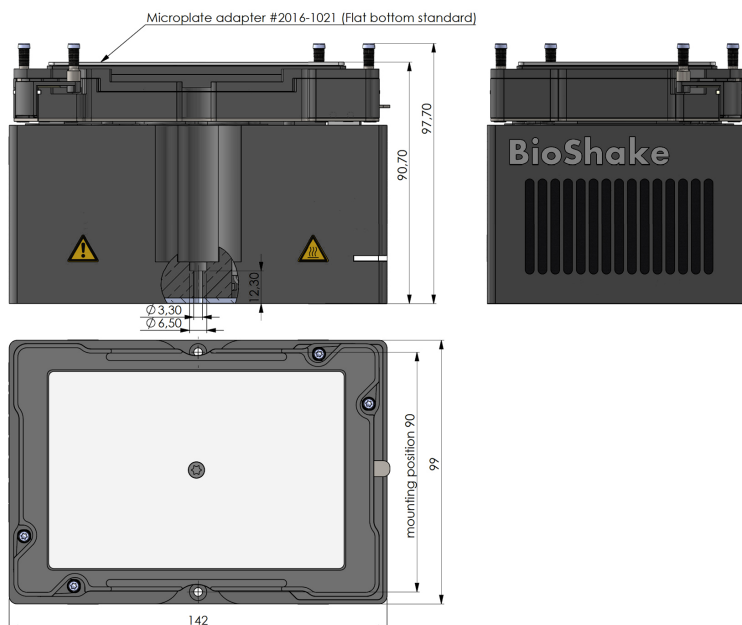
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Regulatory compliance	2014/30/EU, 2015/863/EU, 2011/65/EU, DIN EN 61010-2-010:2015-05, DIN EN 61010-2-051:2016-02, DIN EN 61326-1:2013-07, DIN EN IEC 63000:2019-05, DIN EN 61010-1:2020-03, DIN EN 55011:2018-05
Patents pending	WO2008135565, US8323588, EP2144716, WO2011113858, US9126162, EP2547431, WO2013113847, US10052598, EP2809436, WO2013113849, US9371889, EP2809435, WO2014207243, US20160368003, EP3013480, WO002022128814A1, WO002022128809A2 Please notify us or our designated agent, if you believe that a user has infringed our intellectual property rights.

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**Drawing**

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