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Product profile	
Part number	2016-0017
Article name	BioShake 3000 elm
Description	Automation friendly Shaker with 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 | Microplates
Scope of delivery	BioShake 3000 elm | 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.*

ELM positioning	
Description	Patented Edge Locking Mechanism (elm) for repeatable and accurate positioning of micro-plates 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

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 front (GREEN = ok | RED = error)

Electrical	
Operating voltage	24 V DC | Imax: 3.1 A | Peff: 15 Watt | Pmax: 75 Watt
Power supply	Input: 100 - 240 V AC | 50 - 60 Hz Output: 24 V DC | Imax: 5.0 A | Pmax: 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.*

Operating, transport and storage conditions	
Operating range	5 °C - 45 °C (41 - 113 F) | 10 - 80 % RH | up to 2000 m above sea level | non-condensing
Floor base requirements	stable (resonance free) | horizontal | dry | inside buildings | even
Transportation and storage	-10 °C - 60 °C (14 - 140 F) | 10 - 80 % RH | non-condensing

General properties	
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)

Dimension and weight	
Dimensions	(W x D x H) 142 x 99 x 55.35 mm | 5.59 x 3.9 x 2.18 inch
Weight	1.6 kg | 3.53 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

Certifications	
Regulatory compliance	2014/30/EU, 2015/863/EU, 2011/65/EU, DIN EN 61010-1:2020-03, DIN EN 61010-2-051:2016-02 , DIN EN 61326-1:2013-07, DIN EN 55011:2017-03, DIN EN IEC 63000:2019-05
Patents pending	WO2008135565, US8323588, EP2144716, WO2011113858, US9126162, EP2547431, WO2013113847, US10052598, EP2809436, WO2013113849, US9371889, EP2809435, WO2014207243, US20160368003, EP3013480, WO0020221281814A1, WO0020221281809A2 Please notify us or our designated agent, if you believe that a user has infringed our intellectual property rights.

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