



# Kuhner shaker



## MPS-Z Automated

The perfect solution for continuous  
robotic cell culture handling

# MPS-Z Automated

**The perfect solution  
for robust 24/7  
cell culture handling.**

The Kuhner MPS-Z Automated was developed to automate cell culture cultivations in microtiter plates with or without system Duetz well plate closures. It combines the established Kuhner incubator shaker robustness with completely self-developed robotic features and interfaces. Main objective is to guarantee reproducible and uniform cultivation conditions and a real 24/7 work process.



## Kuhner Hawk (SCARA)

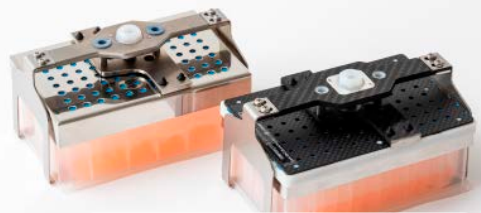
The Kuhner Hawk, our self-developed SCARA system (Selective Compliance Assembly Robot Arm), purpose-designed to operate under particularly aggressive conditions (CO<sub>2</sub>/humidity). The unique design and positioning within the system ensure minimal heat input and minimal impact on the temperature distribution in the incubator chamber. The flexibility of the Kuhner Hawk allows it to work with many different shaking diameters and a variety of deepwell plates. The compact gripper guarantee stable grip security while maintaining the MPS-Z Automated's 16 well plate capacity.



## Display

The large display mounted on the front door is designed to provide a quick overview of the process. All process parameters are clearly displayed, and the current work step is visualized. Additionally, the positions of the microtiter plates on the clamping table are shown. An acoustic and visual alarm management system is integrated.





## Features

### Side door and transfer platform

To minimize the impact on cultivation parameters, the size and opening time of the side door have been optimized. Compared to opening the door of ISF1-Z, the side door opening on the MPS-Z Automated has no impact on control parameters within the chamber.

The side-mounted transfer platform includes both an optional barcode reader and occupancy sensor. The device offers high flexibility as the transfer platform can be preconfigured on both sides of the MPS-Z chamber - meaning 'left' or 'right' orientation is possible to fit either orientation.



### Interfaces

One of Kuhner's development goals is the seamless and trouble-free integration of systems into automated platforms. This principle has also been applied to the MPS-Z Automated. The device features both a standard TCP/IP interface and a future-oriented SiLa2 (HTTP/2) interface. Additionally, numerous drivers are available for compatibility with integrator and liquid handler platforms right out of the box.

Further  
info:



### Automated clamping table

To prevent inconsistent cultivation results, Kuhner developed a new, patented, clamping table to ensure the firm fixing of microtiter plates during rapid shaking. Additionally, the quiet operation of the device and the secure clamping table prevent abrasion of the microtiter plates, eliminating concerns about particulate generation in the chamber. The clamping table releases all plates upon stopping, allowing the Kuhner SCARA gripper (Kuhner Hawk) to easily pick up the microtiter plates.



The MPS-Z Automated incubator maintains Kuhner's renowned features without compromise. CO<sub>2</sub>, bi-directional humidity, and temperature control (heating and cooling with Peltier technology) adhere to the highest standards, ensuring reproducible cultivation results. The Kühner Direct Drive is known for its lack of wearable parts and long-term durability. Additionally, the built-in capability to change the shaking diameter (3, 12.5, 25, 50) enhances the system's flexibility for the wide variety of microtiter used at different cultivation scales and volumes. Process safety is a high priority for Kühner devices. In addition to the mentioned key features, further safety measures have been implemented. The automatically secured door prevents unauthorized access to the incubator interior and initiates a complete inventory scan upon closing. Additionally, the occupancy sensors on the SCARA and at the transfer platform prevent potential collisions.

After a power interruption, the system restarts with the previous cultivation parameters. Furthermore, an integrated UPS system protects against data loss, and internal storage ensures data availability.



# Options and Accessories



## MPS-Z(C) Automated

The device is available in two options: one with and one without precise CO<sub>2</sub> control.



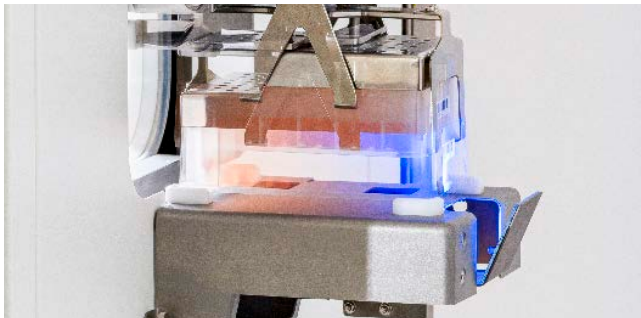
## Floorstand

The floor stand is characterized by its flexible height adjustment (position of the transfer platform 115 mm ± 400 mm) and the lockable storage space.



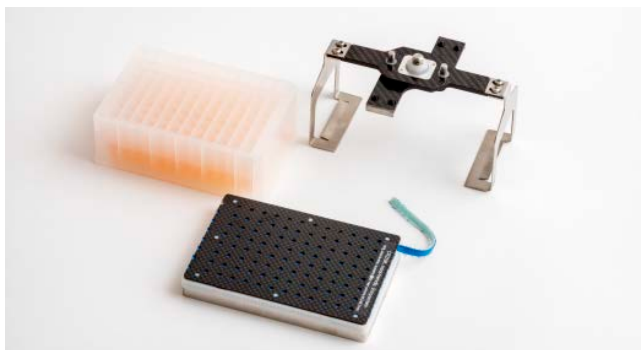
## Bar code reader

The barcode reader, optionally integrated into the transfer platform, contributes to process security. The flexibly mountable reader can read barcodes either on the long side or the short side of the microtiter plates.



## Kuhner Nemiri clamp

The patented Nemiri clamps enable the automated use of system Duetz well plate closures. Automated clamping and de-clamping is accomplished using the optional, stand-alone, Kuhner Nemiri clamping system.



## Double stack

The machines can be stacked on top of each other as standard, but a maximum of 2, to double the capacity.

# Application areas

- Mammalian / human cells  
(e.g. Chinese Hamster Ovary (CHO, CHO-K1, CHO-DG44, ExpiCHO), HEK 293 cells, duck cells (AGE1.CR), Hybridoma)
- Stem cells  
(e.g. Suspension adapted hPSC's and their derivatives)
- Insect cells  
(e.g. Spodoptera frugiperda (Sf-9, Sf-21), H-5)
- Plant cells  
(e.g. Nicotiana tabacum L.CV BY2, Vitis Vinifera, Theobroma cacao, Algae)
- Cell line development
- Cell clone screening
- Media screening
- Research Materials production



## Kuhner shaker

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### Kuhner shaker

A family-owned business

Kuhner shaker, founded in 1949 in Basel, Switzerland, is a science first shaker manufacturer renowned worldwide for our uncompromising shakers, incubator shakers, and orbital shaken bioreactors (OSB). From bench top shakers to large scale industrial shaking machines, we offer machines of the highest quality. We commit to earning trusting client relationships which will span decades.



### Comprehensive **consulting**, lab **trainings** and **seminars**

Consultations are free of charge for our customers and are confidential. Based on our long-time experience and our partnerships with research facilities, we provide application-oriented support and lab trainings for our products. Kuhner also offers quality workshops either at the customer's premises or at our head office in Basel.

The Shaking Technology Forum operated by Kuhner is a helpful resource for users of any type of shaken cultivation vessel, providing support, information, and a publication database.

[www.shakingtechnology.com](http://www.shakingtechnology.com)



### Custom-made

solutions

Does our existing range of products not meet your requirements? Simply contact us – custom made solutions are the daily business of our specialists from the Kuhner Atelier department. We generate the optimal solution for your shaking machine or orbital shaken bioreactor system.

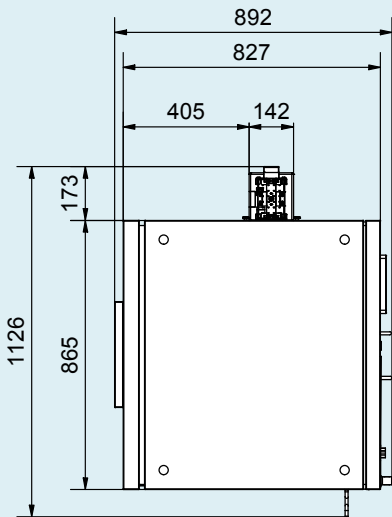
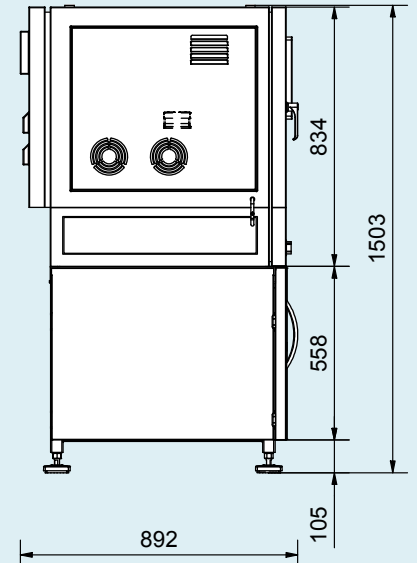
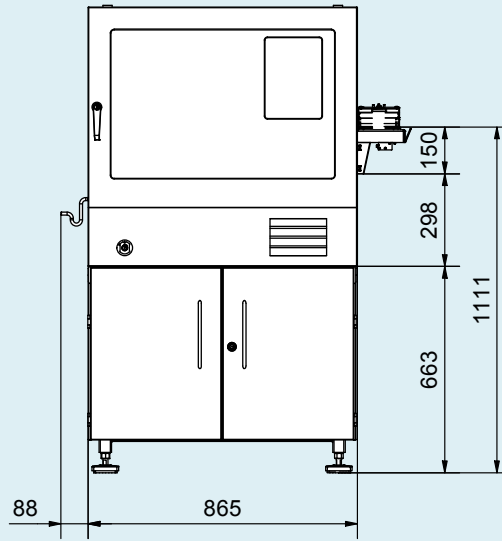
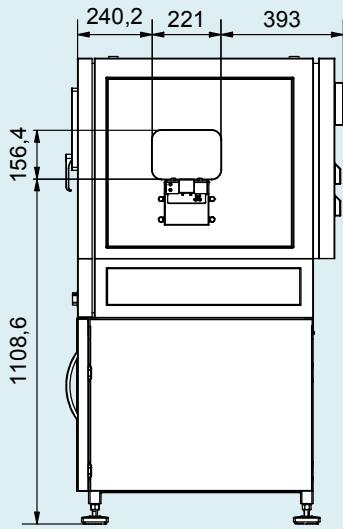


### Services

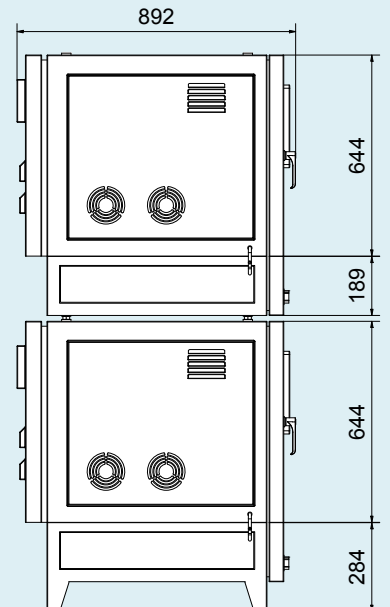
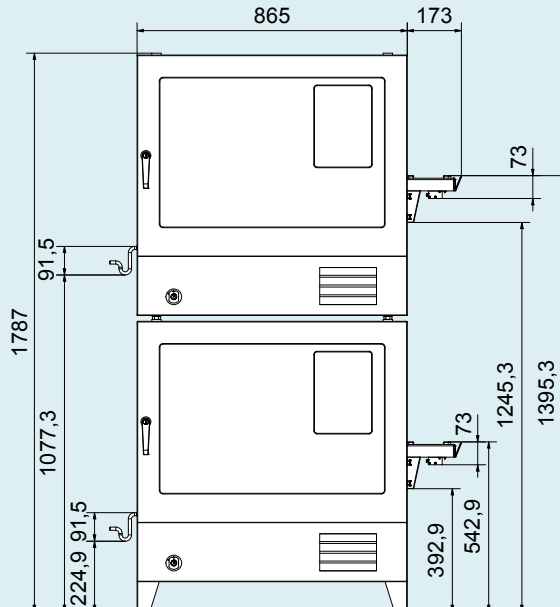
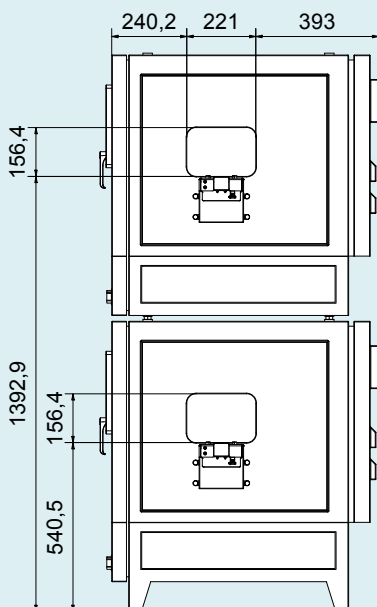
We provide support and advice for each customer right from the start. Our services are performed by our trained service team personally at your premises. We support our customers in implementation, maintenance, and repair of all Kuhner products. This includes upgrades of functionalities and updates of software for all Kuhner shakers and OSBs. We offer one-time services or service contracts extending over several years, depending on our customer's needs. We also perform calibrations specific to our customer's requirements.

# Dimensions

(in mm)



Please contact us to receive an information folder with the local requirements for setting up the MPS-Z Automated



	Unit	MPS-Z(C) Automated		
<b>Temperature Control</b>			<b>General</b>	
Cooling	yes / no	yes	Power consumption typical (steady state)	W approx. 280
Temp. minimum	°C	30 (at RT above 25, RT + 5)	Power consumption typical (startup heating, humidity, etc.)	W approx. 605
Temp. maximum	°C	40	Power consumption max. (type plate)	W 1000
Setting, digital	°C	0.1	UPS	yes, for software
Temperature distribution at 37/85% r.H.	± °C	≤ 0.35	Power cable length	mm 300 (CH & AU: 250)
Power of heating (electric)	W	125	Incubation gas volume	L 230
Power of cooling (electric)	W	140	Weight	kg 260 - 270
Principle of temp. sensor	type	Pt-100	Illumination	type LED
Air recirculation	m <sup>3</sup> / h	373.4	Interface, standard	Ethernet TCP / IP, CAN-Bus service only
<b>Humidity Control</b>			Parent / child	Always child
Humidity max. at 30 - 40 °C	% r.H.	85	Ambient temperature	°C 10 - 35
Humidity min. at 30 - 40 °C	% r.H.	70	Cable feedthrough port (side port)	mm 40
Setting, digital	% r.H.	1	Dimensions (L x D x H)	mm 1107.5 x 892.5 x 984
Accuracy absolute	± % r.H.	2	Sound Level @1000 rpm	dB < 59
Power of waterbath heater	W	180	Compatible MTPs type	DWP 96/48/24/12/6/2
Power of door (front & back) and frame heater	W	180	<b>Automation</b>	
Water refill		automatic	MTP access time	seconds 65
Principle of hum. sensor	type	capacitive	Sample rate recording	Every 5 second, 3 month recorded
Principle of hum. control	type	evaporation & recondensation	Connection	TCP sockets / SiLA 2
<b>CO<sub>2</sub> Control*</b>			Parent / child	Always child
CO <sub>2</sub> max.	%	20	Command response	Response in JSON format
CO <sub>2</sub> min.	%	0	Manual door open request time	seconds 30
Setting, digital	%	0.1	Emergency stop	yes
Accuracy absolute	± %	0.40 at 5% CO <sub>2</sub>	barcode reader (code types...)	optional
Temperature range	°C	up to 40	long or short side	
CO <sub>2</sub> supply	bar	max. 2 bar overpressure	static nest (maximum size)	ANSI Format +- LBT
Principle of sensor	type	Infrared	Robotic system	4 axis SCARA
<b>Shaking Control</b>			Transfer platform direction	Right / Left
Motor	type	direct drive		
Shaking diameter	mm	3 - 50, adjustable		
Shaking motion	type	orbital		
Shaking frequency range at 3 mm	rpm	0, 20 - 1000		
Shaking frequency range at 12.5 mm	rpm	0, 20 - 500		
Shaking frequency range at 25 mm	rpm	0, 20 - 400		
Shaking frequency range at 50 mm	rpm	0, 20 - 300		
Loading max.	kg	16 DWPs with Duetz & Clamp (10 kg)		
Setting, digital	rpm	1		
Accuracy absolute	± rpm	20 - 800 rpm = 0.5 > 800 rpm = 1		
Acceleration		automatic		
Active brake		automatic		
Tray Positioning System (TPS+)		yes, automatic		
Power of standard motor (EM-Z HS)	W	140		

Technical data subject to change

# Kuhner shaker

## Shakers & Accessories

Represented by:



**Adolf Kühner AG • since 1949**

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