YURI

YURI CLINOSTAT

THE MICROGRAVITY SIMULATOR FOR YOUR LAB

yuri GmbH | 2020

CLINOSTAT BASICS

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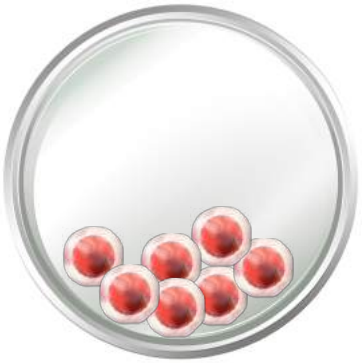
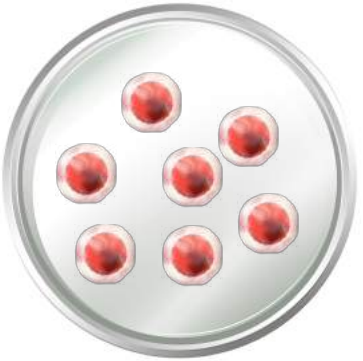
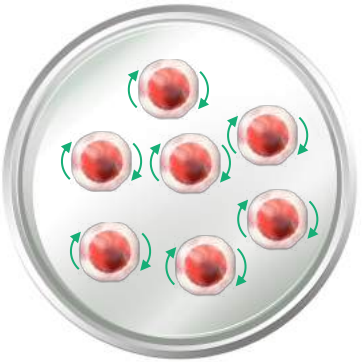
A Clinostat rotates samples constantly perpendicularly to the gravitational field to **hinder the biological system from adapting to gravitation**. A correctly set-up Clinostat forces the particles to rotate around themselves at a speed that is high enough to prevent them from adapting to gravity but slow enough to avoid sheer and centrifugal forces which are the major disturbing forces during Clinorotation.



1g Earth gravity



real microgravity

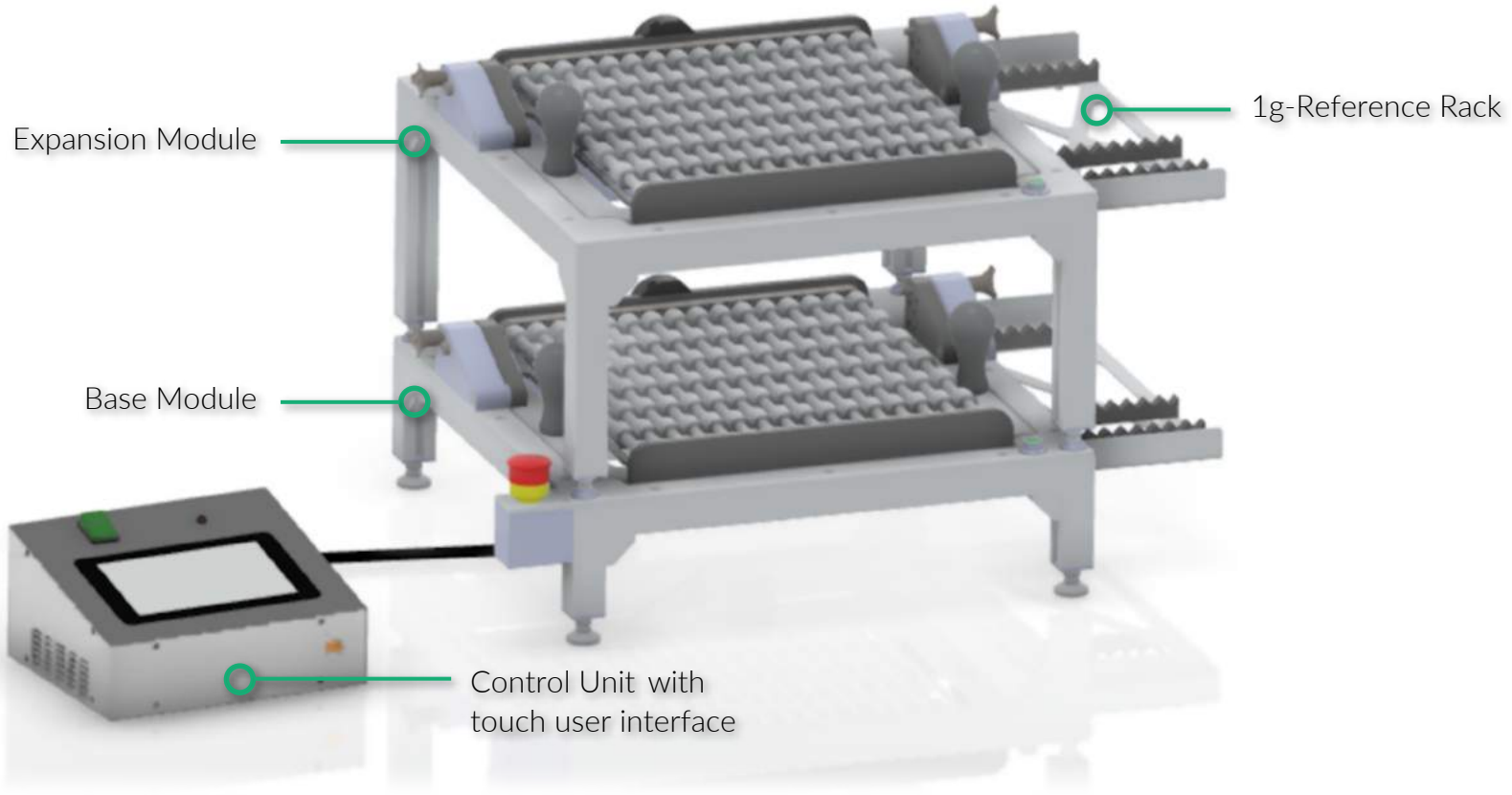


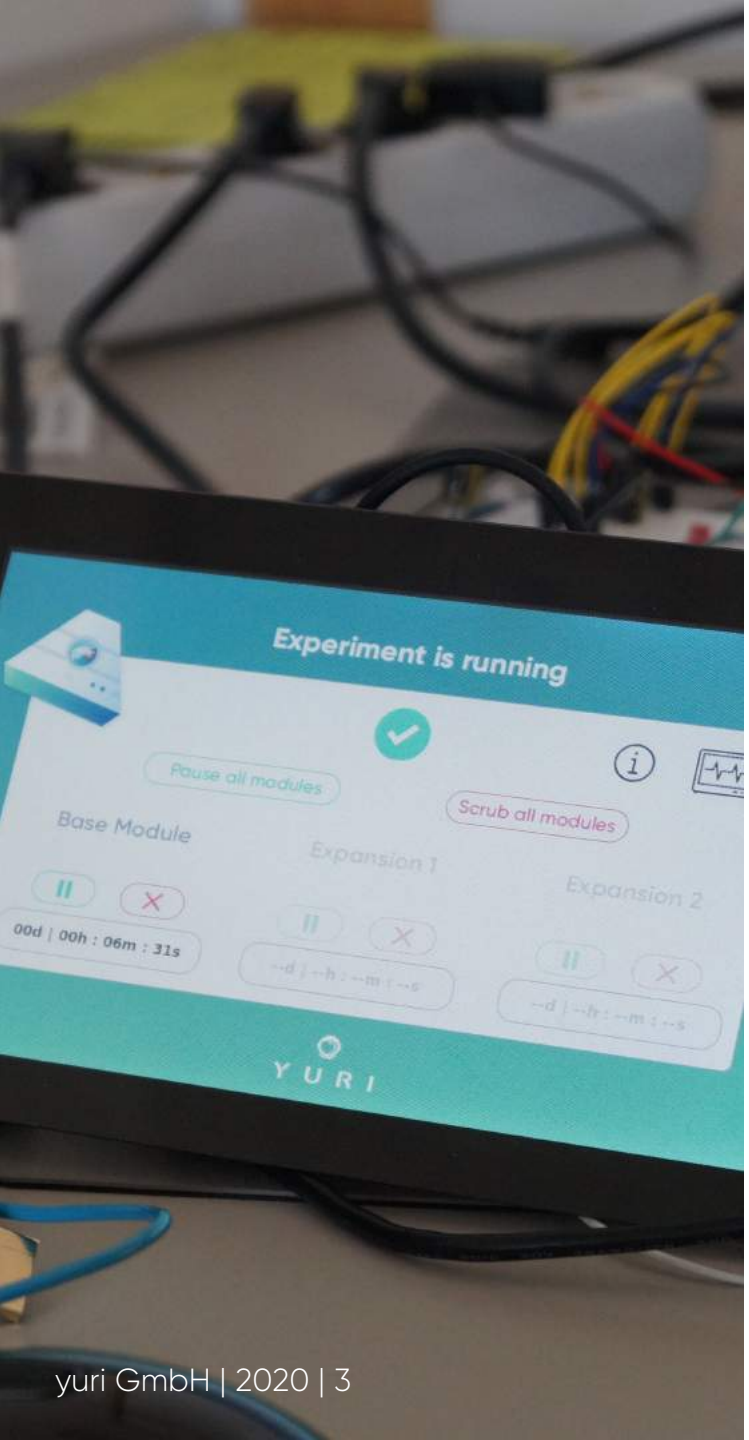
simulated microgravity

The yuri clinostat is the most cost-effective and simple way to perform microgravity experiments – in your own lab.

COMPONENTS AT A GLANCE

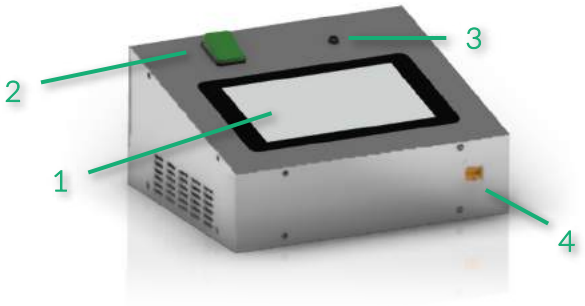
yuri's clinostat is a modular system with a variety of possible configurations and consists of four different elements:

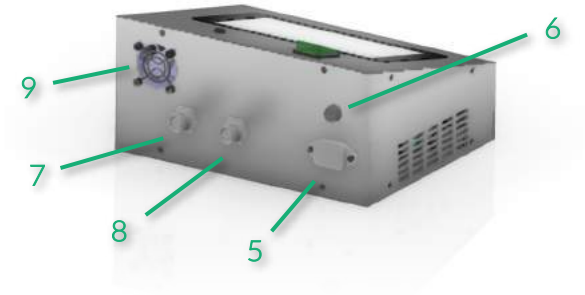




CONTROL UNIT

The Control Unit is the user interface and contains the Clinostat's computing power. The experiment specific settings, like type of sample vessels, experiment duration or speed of rotation, are configured via the menu on the touch screen. The Control Unit is placed outside the incubator to control and supervise the Clinostat without the need of opening the incubator. Before starting the experiment, settings are defined with the help of the touch screen. During experiment execution, housekeeping data can be displayed on this screen and the experiment can be paused or cancelled.





Size: 250 x 200 x 120mm (w x d x h)

1 Touch Display

2 Power Switch

3 Error LED

4 External USB Connector

5 IEC Power Connector

6 Fuse Holder

7 Base Module Connectors 12-pin

8 Base Module Connectors 8-pin

9 Cooling Fan

BASE MODULE

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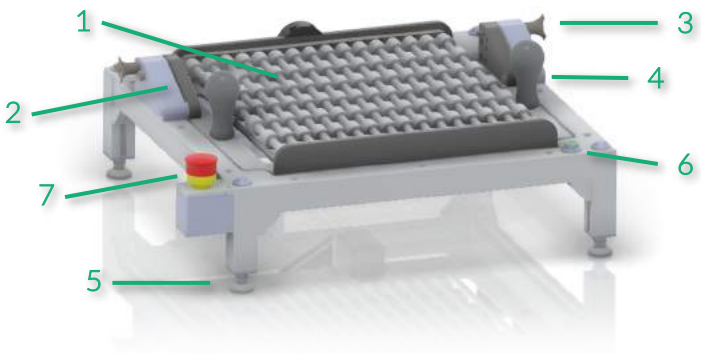
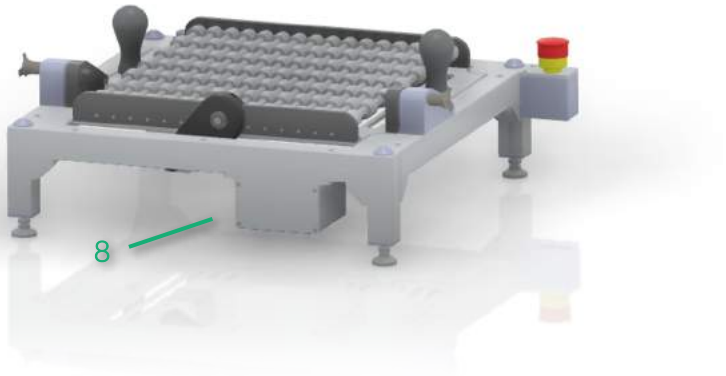
The Base Module is where the actual Clinorotation takes place. It can host up to 15 variable sample vessels. Besides microgravity, it is possible to simulate the gravity of Moon and Mars with the included pitch mechanism. This module is designed to be used inside an incubator and features a temperature sensor and an e-box to connect additional modules. The Clinostat is controlled via the touch screen located on the top of the Control Unit.





Size: 540 x 480 x 245mm (w x d x h)

1 16 Sample Rollers rotating at least 15 samples

2 Pitch Mechanism

3 Alignment Pin

4 Grab Handles

5 4 adjustable feet

6 Bubble Level

7 Emergency Stop

8 E-Box

EXPANSION MODULE

Optionally, the Base Module can be extended with up to two (2) Expansion Modules that are stackable and can be used inside an incubator. They are connected to the Base Module via Expansion Module Cables. Every module can be set to a different rotational speed from 1 to 100 RPM. Besides microgravity, it is possible to simulate the gravity of Moon and Mars with the included pitch mechanism for each module separately.

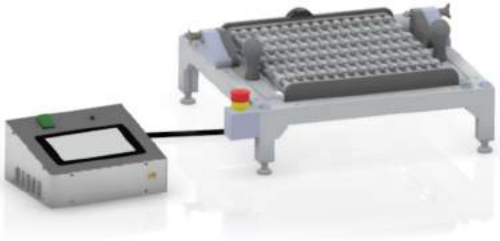
The Expansion Modules are almost identically constructed as the Base Module, despite the following differences:

Size: 480 x 480 x 355mm (w x d x h)

Legs The legs of the Expansion Modules are longer than the ones of the Base Module, ensuring proper handling when the modules are stacked over one another.

E-Box The E-Box of the Expansion Module does not need to distribute power to other modules and therefore only has one Sub-D 9 input connector and one Sub-D 9 output for the motor. It does not feature an emergency stop as the complete system is switched off with the one on the Base Module. Furthermore, it does not feature a temperature sensor.

EXPANSION MODULE OPTIONS



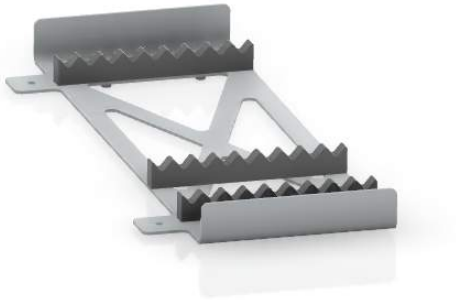
This option provides enough space for 15 sample vessels

This option provides enough space for 30 sample vessels

This option provides enough space for 45 sample vessels

1g-REFERENCE RACK

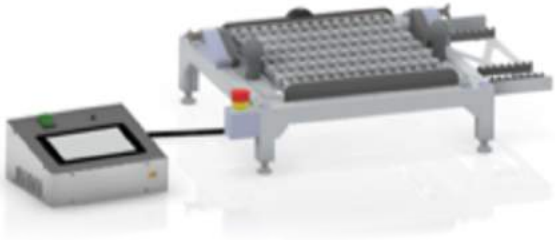
Optionally, the system can be extended with up to three (3) 1g-Reference Racks for reference samples under similar environmental conditions that are mounted on the modules.



Size: 140 x 400 x 40mm (w x d x h)

The 1g Reference Rack can be assembled to each module of the Clinostat to neglect all other environmental influences like radiation or vibration.

1g-REFERENCE RACK OPTIONS



This option provides enough space for an addition of 9 sample vessels on the 1g-Reference Rack

This option provides enough space for an addition of 18 sample vessels on the 1g-Reference Rack

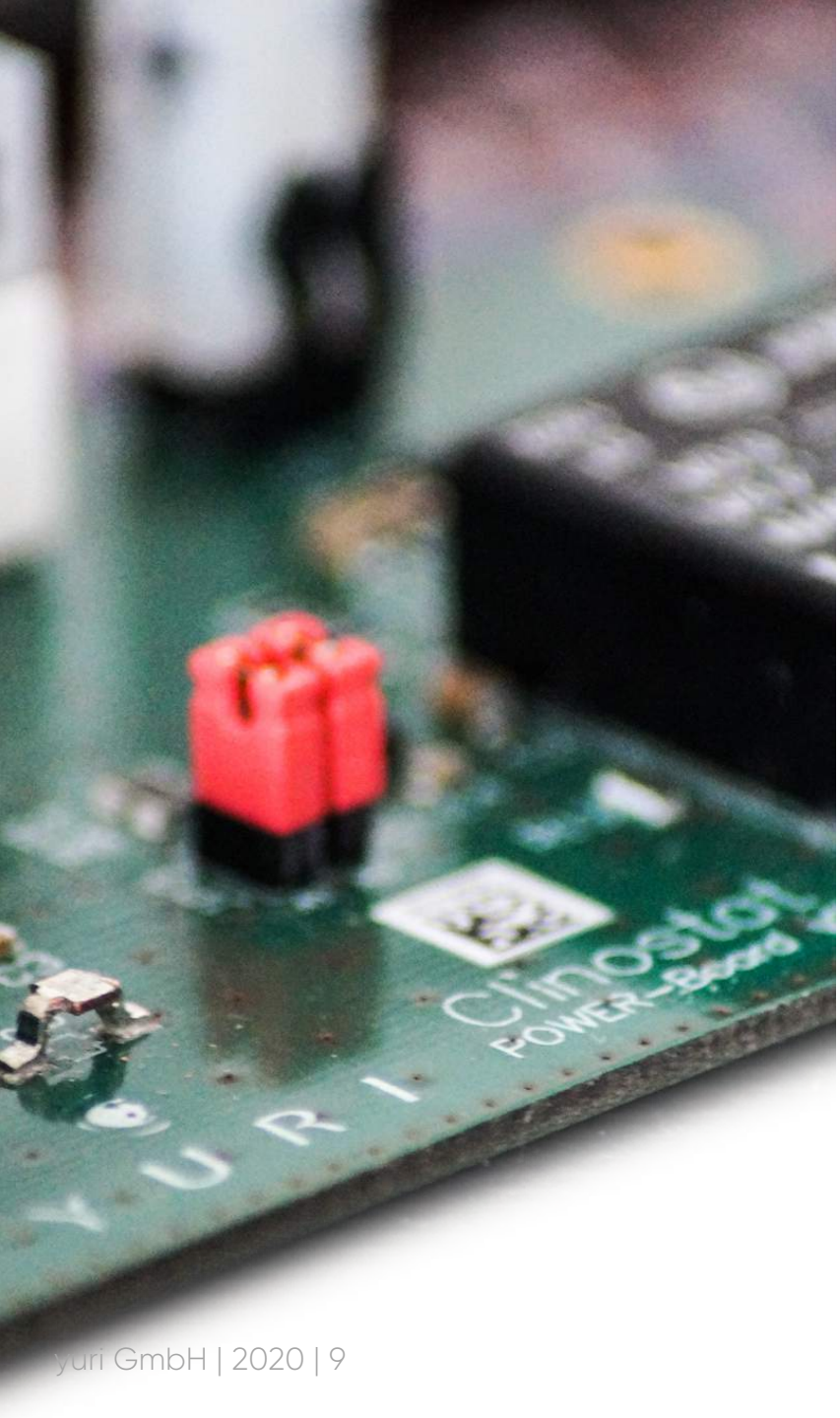
This option provides enough space for an addition of 27 sample vessels on the 1g-Reference Rack

CONFIGURATION OVERVIEW

Our clinostat is available in various configurations. The following matrix provides an overview of all possible configurations and their prices. You can even rent the Clinostat with a monthly fee.

The prices in grey are to be seen as a one-time payment. Those in green represent the price for a monthly rental payment.

	Base Module	Base + 1 Expansion Module	Base + 2 Expansion Modules
0 Reference Racks	18,500€ 930€ 	26,500€ 1,330€ 	34,500€ 1,730€ 
1 Reference Rack	18,800€ 950€ 	26,800€ 1,350€ 	34,800€ 1,750€ 
2 Reference Racks		27,100€ 1,370€ 	35,100€ 1,770€ 
3 Reference Racks			35.400€ 1,790€ 



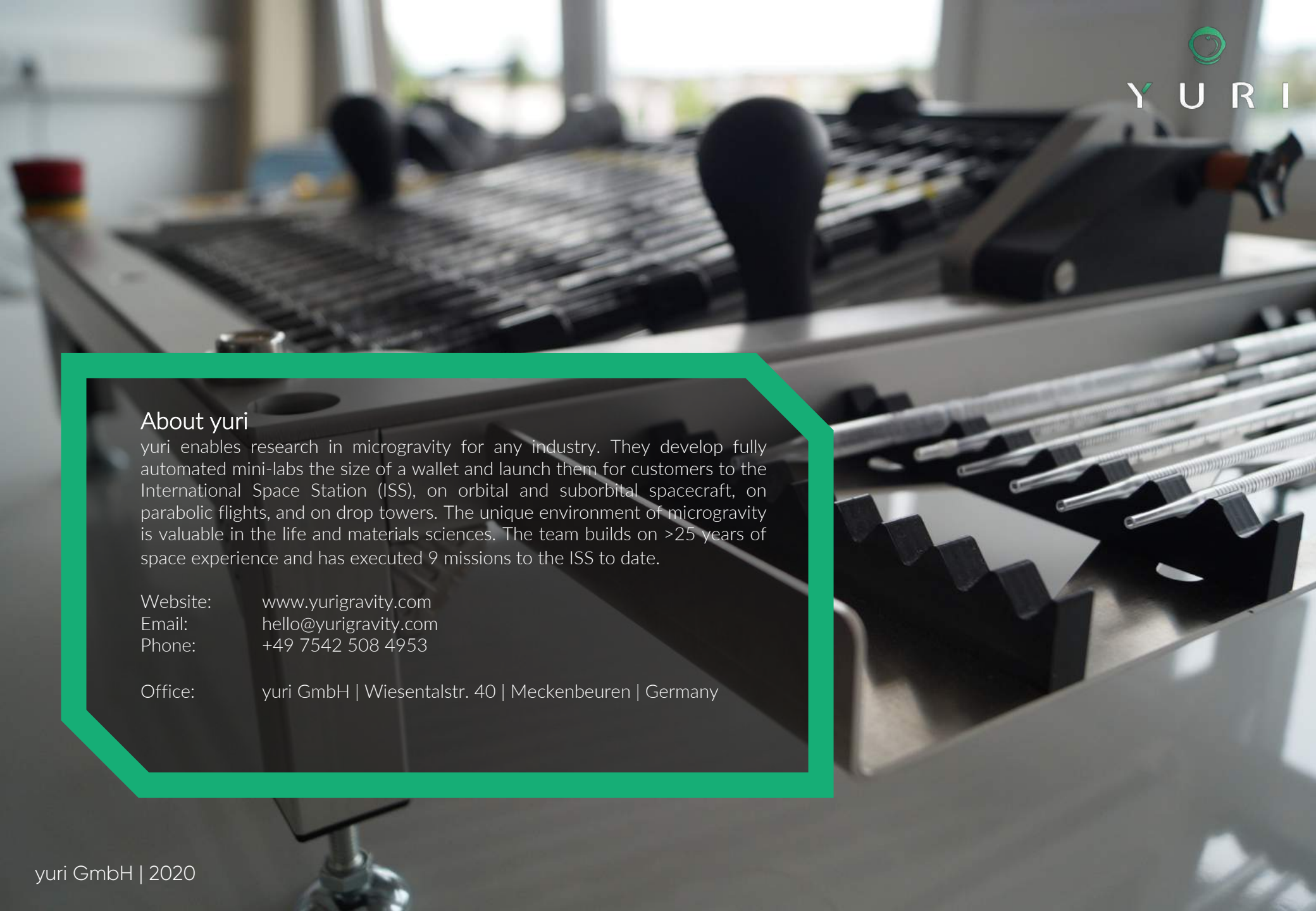
TECH SPECS

The control unit calculates and proposes a rotational speed dependent on the diameter of the used sample vessels. The user also has the possibility to set a different rotational speed as well, ranging from 1 to 100 RPM and adjustable in 1 RPM steps.

A temperature sensor is located inside the E-Box of the Base Module. The housekeeping data and rotational speeds are recorded constantly.

Additional technical specifications are listed below:

Sample rotation speed:	0 – 100 RPM
Power supply:	100 V @ 60 Hz (USA) 240 V @ 50 Hz (EU)
Maximum power consumption:	150 W
Operating temperature:	4 - 40 °C



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About yuri

yuri enables research in microgravity for any industry. They develop fully automated mini-labs the size of a wallet and launch them for customers to the International Space Station (ISS), on orbital and suborbital spacecraft, on parabolic flights, and on drop towers. The unique environment of microgravity is valuable in the life and materials sciences. The team builds on >25 years of space experience and has executed 9 missions to the ISS to date.

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