

G3Lab Universal SmartRocker Bioreactor System



Next generation rocking platform with integrated
single-use sensors and intelligent control

Smart
Systems



SMART

- Scale** SmartBag available in 10, 20 and 50L for research or production
- Measure** Obtain real-time pH, dO₂, and temperature measurements
- Adjust** Select the best rocking waveform to optimize cell growth
- Reproduce** Easily set up and store parameters with TruBio[®] software
- Trust** Rely on USP Class VI / traceable and certified wetted materials

The SmartRocker Bioreactor System



At Finesse, our goal is to enable customers to quickly and efficiently manufacture innovative drugs and vaccines. The SmartRocker, SmartBag, SmartPuck and SmartReader combination brings next generation control and measurement to rocking bioreactor applications. A SmartRocker is controlled by a G3Lab™ Universal SmartController and Finesse TruBio® software. This turnkey package provides a complete solution for research, process development, or seed train production applications.



Finesse SmartRocker Bioreactor

Benefits

Compatible with most cell culture applications

Short set-up time

SmartPuck™ sensor is USP Class VI compliant and ADCF

SmartPuck design minimizes optical sensor drift

Plug-and-play with G3Lab Universal SmartControllers

Powered by TruBio software

Capabilities

Rocking motion waveform control

Measurement and control of critical process parameters: pH, dO₂ and Temperature

Accurate Gas control with TruFlow SmartMFCs

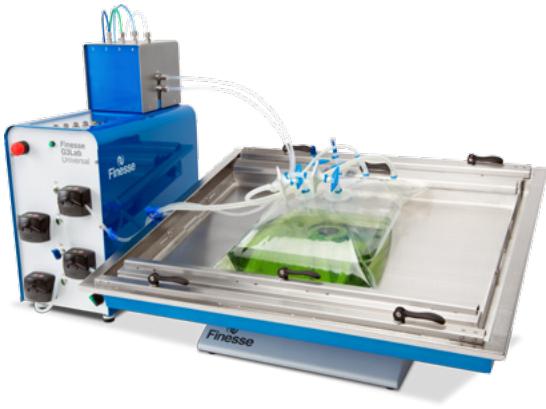
Sophisticated feeding strategies using up to four Finesse SmartPumps

Optional load cell for weight control

Perfusion culture capable

Variable rocking mode

SmartRocker Bioreactor System Components



SmartRocker

The Finesse SmartRocker allows the user to configure the rocking motion through 4 intermediate steps from a smooth waveform that minimizes shear forces for sensitive cell lines to an aggressive motion that maximizes oxygen transfer for robust cells having high oxygen demand.

SmartBag

The SmartBag bioprocess container is currently available in three (3) sizes: 10, 20, and 50 liters. Each bag is delivered with all relevant certificates and conforms to USP Class VI specifications. SmartBags come in a single, standard configuration for each volume. Please contact your Finesse representative if you require customization.

SmartBags are manufactured using multi layer, polyolefin-based, slip agent free film. This film provides superior extractables and leachables profiles, water vapor and oxygen barriers and complete fluid integrity.

SmartBags are sterilized using gamma radiation (25 to 40 kGy) with radiation indicators affixed to each bag. Lot radiation information can be provided upon request. Representative samples of biocontainers are routinely tested for the presence of bacterial endotoxins; release requires endotoxin levels below 0.125 EU/ml.

G3Lab Universal SmartControllers

G3Lab systems control bench top bioreactors (single-use or sterilizable up to 20L) and rockers (up to 50L). The system consists of a utility tower and a TruFlow gas manifold. G3Lab controllers minimize footprint while maximizing process flexibility. By leveraging the same industrial SmartParts as the G3Pro, G3Lab systems enable fully traceable cGMP process scale-up and scale-down in the laboratory environment.

SmartRocker Bioreactor System Components

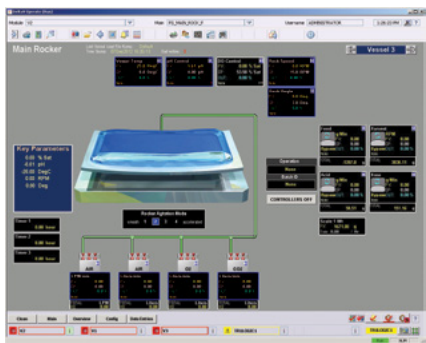


TruFluor SmartSensors

The Finesse SmartBag is a single-use rocker bag equipped with a SmartPuck that incorporates three single-use sensors for dissolved oxygen, pH, and temperature. The SmartPuck leverages the technology behind TruFluor® pH and TruFluor DO in a compact assembly that is pre-calibrated using SmartChip technology. SmartPuck sensors provide accurate, drift-free, in-situ measurements. The combined pH and DO SmartReader uses advanced optical components including large area photodiodes that minimize photo-degradation of the active pH and DO sensing elements. The SmartPuck also leverages the TruFluor 316L stainless steel thermal window for highly stable temperature readings.

The SmartPuck sensor is welded into the single-use SmartBag to eliminate the need for connectors and their associated complications such as leakage and batch contamination. All wetted materials of the SmartPuck Sensor are USP class VI compliant and animal-product derived component free (ADCF) and, being identical to TruFluor, allow direct measurement comparisons and scale-up from 10L rocker bags to 2,000L stirred-tank single-use bioreactors.

The TruFluor transmitters that are located in the utility tower automatically read the SmartPuck calibration from its SmartChip. These transmitters allow one- and two-point calibrations and provide diagnostic functions for sensor or cable connectivity monitoring.



TruBio Software

Choose the preferred control platform (DeltaV or μ C) based on your application. In both cases, TruBio software enables the user to create a process flow without the need for complicated programming. Finesse provides full support for system configuration, documentation, and / or validation.

SmartRocker

SPECIFICATIONS

Dimensions (H x W x D)	264 x 782 x 701 mm (10.4 x 30.8 x 27.6 in)
Weight (Base + Tray)	38.5 kg (85 lbs)
Rocking Angle	2° to 12° Per Side
Rocking Rate	2 to 40 Cycles Per Minute
Working Volume (L)	5, 10, 25
Electrical Power	110 to 120 V / 220 to 240 V, 50 / 60 Hz Powered by G3Lab Universal
Operating Temperature	0°C to 45°C (32°F to 158°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	<95%, Non-Condensing
Acoustic Noise Level	< 70 dB A
pH Sensor Range (pH Units)	5.5 to 8.5
pH Sensor Relative Accuracy	±0.05 pH Over Calibration Range After a 2-Point Calibration Having 0.3 to 0.8 pH Units of Separation
DO Sensor Range (% Sat)	0% to 250%
DO Sensor Limit of Detection	0.03% O ₂
Accuracy	At 25°C: < ±1% at 20.95% O ₂
Temperature	10°C to 45°C (50°F to 113°F)
Temperature Accuracy	±0.15°C at 15°C to 40°C (±0.25°F at 59°F to 104°F)
Precision	±0.1°C (±0.2°F)
Standard Tray Colors* (Pictured at Right)	Also Available in Clearcoated Stainless Steel as Standard. *Additional and custom colors are available at extra charge and longer lead times. The color examples shown are for reference only. Printed and on-screen colors may vary from actual product color.



SmartRocker with 50L SmartBag



SmartRocker with 10L SmartBag and Tray Insert

Lime



Blueberry



Raspberry



Tangerine



Sterling Silver



G3Lab Universal

SPECIFICATIONS

Utility Tower Dimensions (H x W x D)	438.4 x 240 x 482.6 mm (17.3 x 9.5 x 19 in)
Enclosure Rating	NEMA2
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Relative Humidity	5% to 95% Non-Condensing
Certifications	Tested and verified as meeting CE standards EN-60101 and EN 61325
Weight / Shipping Weight	14 kg / 21.4 kg (31 lbs / 47 lbs)
Agitation	Finesse SmartMotor Controller – Glass Vessel Agitator or Rocker Connection to Vessel Adapter Box – Thermo Scientific HyPerforma™ SUB Only Serial Port Connection to GE Wave™ Rocker – EHT Model Only
pH (Up to 2 Inputs)	TruSens Transmitter (Electrochemical Sensors) or TruFluor pH Transmitter (Rocker, Single-Use Vessel)
DO (Up to 2 Inputs)	TruSens Transmitter (Electrochemical Sensors) or TruFluor DO Transmitter (Rocker, Single-Use Vessel)
Temperature	TruSens Transmitter (RTD) or TruFluor (Rocker)
Foam Level	Conductivity Input
Liquid Control	Four (4) Variable-Speed Peristaltic SmartPumps, Watson-Marlow® Series 114
Cold Finger Solenoid	Digital Solenoid Valve
Gas Control (TruFlow)	Standard: Four (4) MFCs with Two (2) Output Connectors Optional: Six (6) MFCs with Three (3) Output Connectors
Scales / Load Cells	Analog Input via Scale Port
Auxiliary Connectors	Seven (7) Analog Inputs and Four (4) Analog Control Loops
Digital Input	Two (2) 24V DC
Digital Output	Two (2) Dry-Relay Contacts
Thermal Control	Heater Blanket, Chilled Water Source
External Pumps	Two (2) Watson-Marlow® Pumps on a Finesse Pump Tower
pH Cables	K8, VP, TruFluor
DO Cables	D4, VP6, VP8, TruFluor
Heater	IEC5-15 Receptacle
Vessels	Glass, 1 L to 20 L Single-Use (SUB), 2.4 L to 45 L Rocker, 10 L to 50 L
Standard Colors* (pictured below)	*Also available in clearcoated stainless as standard. Additional and custom colors are available at extra charge and longer lead times. The color examples shown are for reference only. Printed and on-screen colors may vary from actual product color.



TruFlow Gas Manifold

GENERAL SPECIFICATIONS*

Operating Temp	5°C to 40°C (41°F to 104°F)
Storage Temp	-25°C to 70°C (-15°F to 158°F)
Relative Humidity	5% to 95% (Non-Condensing)
Certification	CE (EN-61326 and EN-61010)
Inlet Pressure	0.7 to 2.75 bar / 10 to 40 psig
Outlet Pressure	0 to 1.38 bar / 0 to 20** psig
Accuracy	±0.8% of Rate ±0.3% Full Scale (Burkert)
Repeatability	±0.1% Full Scale (Burkert)



PHYSICAL

DESCRIPTION	4x2 GAS MANIFOLD	6x3 GAS MANIFOLD
Dimensions (H x W x D)	190.5 x 177 x 184.2 mm (7.5 x 7.0 x 7.25 in)	190.5 x 267 x 184.2 mm (7.5 x 10.5 x 7.25 in)
Rating	NEMA 2 / IP11	NEMA 2 or NEMA 4X (Optional)
Weight / Shipping Weight	4.5 kg / 6.8 kg (10 lbs / 15 lbs)	7.3 kg / 9.1 kg (16.2 lbs / 20 lbs)

COMPONENTS

Mass Flow Controllers	Up to Four (4) Per Vessel for G3Lab	Up To Six (6) Per Vessel (Standard)
Solenoid Valves	Two (2) Per Gas	Three (3) Per Gas
Headers / Spargers	Two (2) Total Per Manifold	Three (3) Total Per Manifold

* Subject to change without notice. **Minimum pressure differential depends on flow rate 30 slpm requires 20 psi differential, 1 slpm or less requires 10 psi.



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