

G3Lab Universal SmartGlass Bioreactor System



Next generation development
platform with intelligent control

Smart
Systems



SMART

Scale

1, 3, 7 and 15L for research or process development

Measure

Obtain real-time pH, DO, and temperature measurements

Adjust

Select the best configuration for optimal results

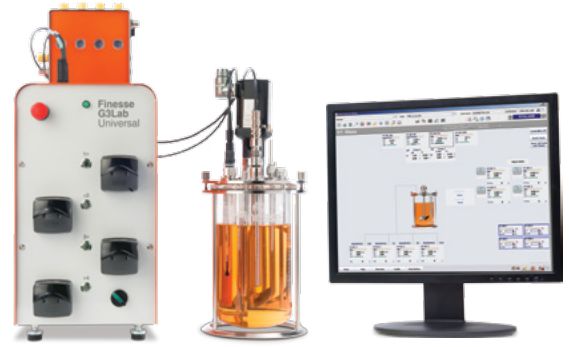
Reproduce

Easily set up and store parameters with TruBio® software

Trust

Rely on USP Class VI / traceable and certified wetted materials

The SmartGlass Bioreactor System



At Finesse, our goal is to enable customers to quickly and efficiently manufacture innovative drugs and vaccines. The SmartGlass, SmartSensors, and SmartParts combination brings next generation control and measurement to glass bioreactor applications. A SmartGlass vessel is controlled by a G3Lab™ Universal SmartController and Finesse TruBio® software. This turn-key package provides a complete solution for research, process development, or seed train production applications.



Finesse SmartGlass Bioreactor

Benefits

Compatible with most cell culture or fermentation applications

Controlled environment for optimal growth

Short set-up time

Plug-and-play with Finesse Universal SmartControllers

Powered by TruBio software

Standard service packages

cGMP capable

Capabilities

Measurement and control of critical process parameters:

- pH**
- Dissolved Oxygen**
- Temperature**
- Agitation**

Accurate gas control with mass flow controllers

Sophisticated feeding strategies using up to four SmartPumps

Optional scales for weight control

Novel impeller design for superior mixing

SmartGlass Bioreactor System Components

SmartGlass Vessels

Designed for R&D and process scale-up, the Finesse SmartGlass family allows end users to design a system that optimizes the cell growth environment. The cold loop provides more rapid and even cooling than the traditional “cold finger.” The novel impeller design provides superior mixing without damage to cells. And the sensor holders allow sensors to be placed and sealed with a simple twist.

G3Lab Universal SmartControllers

G3Lab systems control bioreactors (single-use or sterilizable up to 20 L) and rockers (up to 50 L). 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 automation components as the G3Pro™ controller, G3Lab systems enable fully traceable cGMP process scale-up and scale-down in the laboratory environment.



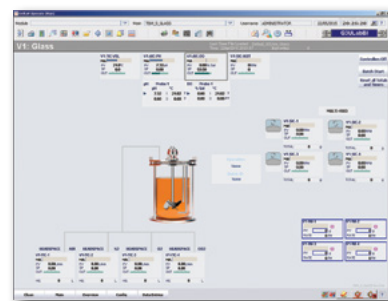
Sterilizable Sensors

The Finesse SmartGlass uses TrupH® and TruDO® sterilizable sensors, which provide superior reliability and stability. The TrupH sensor is also available with an integral temperature sensor for more accurate temperature compensation. The TruDO sensor is available in either the standard or the optical design. Both offer solid performance and superior reliability, and are fully compatible with the Finesse TruSens transmitter blade.



TruBio Software

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.



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	4x2 GAS MANIFOLD	6x3 GAS MANIFOLD
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

SmartGlass

SPECIFICATIONS

VESSEL SIZE	1L	3L	7L
Length	205 mm (8.1 in)	260.5 mm (10.25 in)	385 mm (15.2 in)
Width	110 mm (4.33 in)	140 mm (5.5 in)	170 mm (6.7 in)
Inner Diameter	100 mm (3.9 in)	130 mm (5.1 in)	160 mm (6.3 in)
VOLUME (L)			
Total	1.52	3.28	7.43
Working	1	2	5
Minimum Working	0.5	1.2	2.5
Wetted material	Borosilicate Glass, SS316L, Silicone		

* 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.



Finesse Solutions, Inc.

Global Headquarters USA

3501 Leonard Court
Santa Clara, CA 95054
USA

Toll free +1 800 598 9515

Tel +1 408 570 9000

Fax +1 888 235 6086

sales@finesse.com

Boston USA

5 Perry Way
Newburyport, MA 01950
USA

+1 978 255 1296

United Kingdom

4 Grove Court, Leicester
LE19 1SA, UK

+44 116 289 7149

Europe

Via Sogn Gieri 27a
CH-7402 Bonaduz,
Switzerland

+41 81 641 2000

Benelux, Ireland
& Scandinavia

Van Slingelandtlaan 13
3332 JJ Zwijndrecht

The Netherlands

+31 6 836 00 180

Asia-Pacific

Unit 2317, No. 150 HuBin Road
No. 5 Corporate Avenue Center
Huangpu District
Shanghai 200023, China

+86 21 8013 5067

lming@finesse.com

31 Rochester Drive

Penthouse Levels 24-17

Singapore 138637

+65 6808 8724

sn@finesse.com

www.Finesse.com

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