HyPerforma G3Lab Controller

Reliable process control

The Thermo Scientific™ HyPerforma™ G3Lab Bioprocess Controller can control most brands of single-use or autoclavable bioreactors or fermentors that are ≤50 L, including stirred-tank and rocking models. The controller operates using TruBio automation platforms, which make a scale-up or scale-down process easy and feature the configurability to modify your control strategy along with your process. The enclosure contains state-of-the-art transmitters along with power supplies, pumps, I/O modules, and the hardware required to connect to the control network, providing maximum control capability.

Key features

- Open architecture capabilities to integrate with vessels from other suppliers
- Coupled with TruBio software and DeltaV control platform allow for data transfer and scalability from R&D, to production, to manufacturing
- The ability to build and manage complex, multifeed dosing strategies
- Allows for third-party peripheral integration as needed

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HyPerforma G3Lab Controller specifications		
Cover description		
Top cover material	Stainless steel cover, aluminum chassis	
Physical		
Utility tower dimensions (H x W x D)	438.4 x 240 x 482.6 mm (17.25 x 9.38 x 19 in.)	
Weight/shipping weight	16.4 kg/21.4 kg (36.5 lb/47 lb)	
Enclosure rating	Standard: NEMA 2	
Operating conditions		
Operating temperature	5°C to 40°C (41°F to 104°F)	
Storage temperature	5°C to 40°C (41°F to 104°F)	
Relative humidity	5% to 95% (noncondensing)	
Utility	**Connection**	
Liquid control	Watson-Marlow 114 series peristaltic pumps	
	Tubing ID: 0.8 mm (wall thickness 1.6 mm)	Tubing ID: 4.8 mm (wall thickness 1.6 mm)
Flow range	Minimum: 0.16 mL/min to 5.5 mL/min	Maximum: 3 mL/min to 104 mL/min
Gas control (TruFlow controller)	Up to four MFCs with output connectors (please see MFC page for details)	

TruLogic DCS controller cabinet specifications	
Dimensions (H x W x D)	610 x 203 x 610 mm (24 x 8 x 24 in.)
Enclosure rating	NEMA 12
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	0°C to 50°C (32°F to 122°F)
Weight/shipping weight	36 kg/77 kg (80 lb/170 lb)
Relative humidity	5% to 95% (noncondensing)
Certifications	CE: EN-60101 and EN-61326
Connection	Up to 8 G3Lab Controllers
Power	110–240 VAC, 50/60 Hz Includes uninterruptible power supply (UPS)
Logic controller	Emerson DeltaV MQ or MX controller
Ethernet	Primary and secondary Ethernet switches, six spare port connectors each
Standard communication cards	Modbus, DeviceNet, Profibus DP, traditional I/O module

Watson-Marlow 114 series variable-speed peristaltic pump specifications	
Power supply	24 V DC
Max. current (at 25°C)	0.25 A
Average current (at 25°C)	0.2 A
Speed	5–160 rpm
Accuracy	±2 rpm or ±2% of setpoint
Tubing (thickness, ID)	1.6 mm wall thickness, ID range: 0.8 mm (min.) to 4.8 mm (max.)

Watson-Marlow 114 series peristaltic pump speeds	
Speed (rpm)	**Minimum/maximum flow rate (mL/min)**
1	0.16/3
10	0.3/6
50	1.7/30
100	3.4/57.5
160	5.5/104

Maximum pump speed is 175 rpm at a flow rate of 6 mL/min, or 111 rpm depending on tubing.

HyPerforma G3Lab Bioprocess Controller accessories

MFC for the HyPerforma G3Lab Bioprocess Controller

The TruFlow gas MFC is designed to work with all of the HyPerforma bioreactor control systems. Its compact assembly provides up to six standard mass flow controllers for inlet gases and three associated outlet valves. When connected, the TruFlow gas MFC is instantly recognized by TruBio software to help provide precise control of gas flow, without requiring any configuration, even at extremely low flow rates.

Key features

- Variety of flow rate options*
- Flow range configurability
- Plug-and-play connectivity

TruFlow gas MFC for HyPerforma G3Lab Bioprocess Controller specifications	
Enclosure dimensions (H x W x D)	Six mass flow controllers: 9.1 x 7.4 x 6.2 in.
Rating	NEMA 1, IP 51 (liquid wipedown)
Maximum gas flow rate	Configurable up to 30 L/min*
Weight/shipping weight	5.8 kg/9.1 kg (12.8 lb/20 lb)
Operating temperature	5ºC to 40ºC (41ºF to 104ºF)
Storage temperature	–25ºC to 70ºC (–15ºF to 158ºF)
Relative humidity	5% to 95% (noncondensing)
Certifications	CE: EN 61010-1 and EN 61326-1
Inlet pressure	1.6 to 2.3 bar/25 to 35 psig
Outlet pressure	0 to 1.38 bar/0 to 20 psig
Accuracy	±0.8% of flow rate and ±0.3% full scale (Burkert)
Repeatability	±0.1% full scale (Burkert)
Cable assembly	2 m (6 ft) standard

MFCs with flow rates higher than 50 L/min are mounted as individual units and are not part of the main MFC block.

* May require additional configuration for specific flow rate. Please consult with your local Thermo Fisher sales representative for more information.

TruBio Bioprocess Automation and Control Software

The TruBio software provides easy-to-configure process control, eliminating the need to learn automation control programming. Developed for use with HyPerforma Bioprocess Controllers, TruBio software is designed to support easy scaling and technology transfer and building of sophisticated process control strategies. It also provides the flexibility to incorporate a wide range of cell culture, fermentor, or mixing vessels, and manage multiple data streams from several unit operations. TruBio software is powered by the Emerson DeltaV system, has been developed according to Good Automated Manufacturing Practice (GAMP™) 5 methods, and conforms to regulatory requirements for use in cGMP-compliant processes.

- **For non-GMP research and process development applications:** Thermo Scientific™ TruBio™ Discovery Bioprocess Control Software powered by the Emerson™ DeltaV™ Discovery platform
- **For GMP and typical scale-up to manufacturing applications:** TruBio software powered by the conventional DeltaV platform

Single-use and reusable sensors

Thermo Fisher Scientific offers single-use and reusable sensors for the measurement of pH, DO, biomass, and headspace pressure—designed for higher reliability and superior performance for cell culture and fermentation process monitoring that meet all of your process analytical technology (PAT) needs.

To further enhance your processes, digital integration is possible with the use of our bioprocess controllers paired with the TruBio Bioprocess Control Software.

We offer a range of intuitive process sensors—whether you're incorporating them into a single-use bioprocess container or autoclavable vessel process—to help you monitor processes, reduce failures, and gain efficiencies.

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Ordering information

HyPerforma G3Lab Controller*	Cat. No.
HyPerforma G3Lab Controller for the use with DeltaV or DeltaV Discovery and TruBio software licenses with 4 Watson-Marlow 114 series pumps, suitable for glass and benchtop single-use bioreactors	ATO-G3Lab-Std
HyPerforma G3Lab Controller for the use with DeltaV or DeltaV Discovery and TruBio software licenses, with 4 Watson-Marlow 114 series pumps, suitable for glass and benchtop single-use and rocker bioreactors	G3Lab-Full-Config

* Each HyPerforma G3Lab Controller needs to be operated using the TruFlow MFC and appropriate automation platform.
Please contact your Thermo Fisher Scientific sales representative for more information on standard package options suitable for your requirements.

Find out more at **thermofisher.com/controllers**

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