

# HyPerforma GXCore Bioprocess Controller

## The core solution for scalability

The Thermo Scientific™ HyPerforma™ GXCore Bioprocess Controller is an innovative, compact, and cost-effective controller built for research and process development applications. True to the Thermo Scientific™ bioprocess controller portfolio, the HyPerforma GXCore Bioprocess Controller operates with Thermo Scientific™ TruBio™ Bioprocess Automation and Control Software powered by the DeltaV™ Distributed Control Platform from Emerson. This provides the research and process development scientist an easy and intuitive user interface to control the culture process, on a robust platform that maintains data integrity for process characterization and scalability from bench to pilot scale and commercial manufacturing.

Taking up a small footprint to allow for more room on the bench, the HyPerforma GXCore Bioprocess Controller is capable of all functionalities such as pH, dissolved oxygen (DO), temperature, stirrer speed, gas mix via mass flow controllers, foam/level control, and variable-speed pumps with totalizers, as required by most research and process development applications. The controller is designed to be compatible for the control of most glass stirred-tank and single-use bioreactors and fermentors, regardless of manufacturer.



### Key features

- Open-architecture capabilities to integrate with vessels from other suppliers, up to 20 L
- Reduced footprint and stackable system for saving space on the bench
- Auxiliary connections to allow future expansion and additional capabilities\*
- User-defined LED strip lighting for status and alarm state
- Affordable bench-scale bioprocessing with process development power

\* Future options available for control of up to 30 L single-use fermentor (S.U.F.) and 50 L single-use bioreactor (S.U.B.)

## Key features (continued)

- TruBio Bioprocess Control Software powered by the Emerson DeltaV platform, a common control platform that can be used from R&D to manufacturing; capable of taking non-GMP research and process development applications to GMP commercial scale with ease
- Reversible peristaltic pumps with variable speed and built-in totalizer
- Ability to add scales to measure weight of vessel, or weight of additional substrates
- Gas mix via state-of-the-art mass flow controller (MFC) devices for up to 6 separate inlet gases\*

## HyPerforma GXCore Bioprocess Controller specifications

### Physical

Utility tower dimensions (H x W x D)	30 x 25 x 36 cm (11.8 x 9.8 x 14.2 in.)
Weight/shipping weight	5.5 kg/7.1 kg (12 lb/15.5 lb)
Enclosure rating	IP5X

### Operating conditions

Operating temperature	5–40°C (41–104°F)
Relative humidity	5–95%, noncondensing

### Utility

Liquid control

Flow range

Gas control

### Connection

Watson-Marlow™ 114 series variable-speed peristaltic pumps

Tubing ID: 0.8 mm (wall thickness: 1.6 mm)	Tubing ID: 4.8 mm (wall thickness: 1.6 mm)
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Minimum: 0.16–5.5 mL/min

Maximum: 3–104 mL/min

Choice of HyPerforma GXCore MFC 4 x 2 or Thermo Scientific™ TruFlow™ MFC with up to 6 x 3 gases\* (see the **benchtop solutions brochure** for specifications)

### Ancillaries

- One discrete I/O for external foam/level pump
- Scales available for vessel weight
- Foam sensor

### Compliance

- CE, TUV (Rheinland), RoHS

## 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.

\*For additional gases, please contact your sales representative for further details.

# HyPerforma GXCore Bioprocess Controller accessories

## Gas MFC for the HyPerforma GXCore Bioprocess Controller

The Thermo Scientific™ Gas Mass Flow Controller (MFC) for the HyPerforma GXCore Bioprocess Controller is a compact assembly providing 4 MFCs and two associated solenoid valves for gas sparge and overlay. When connected, the MFC is instantly recognized by TruBio software to provide precise control of gas flow.

- Option of 0.002–1 slpm or 0.03–15 slpm in aluminum or stainless steel
- Plug-and-play connectivity



### Gas MFC specifications

Enclosure dimensions (H x W x D)	15.6 x 16.5 x 16.5 cm (6.1 x 6.4 x 6.4 in.)
Power requirements	24 V DC, 1.0 A (min.)
Enclosure rating	IP5X
Maximum gas flow rate	0.002–1 slpm or 0.03–15 slpm
Weight/shipping weight	3.0 kg (6.5 lb)/3.6 kg (8.0 lb)
Operating temperature	10–60°C
Storage temperature	10–40°C (50–104°F)
Relative humidity	0–95%, noncondensing
Certifications	NIST-traceable flow calibration certificates are included for each MFC
Inlet pressure/outlet pressure	1.5–2.0 bar (21.8–29.0 psi)/0–1.0 bar (0–14.5 psi)
Mass flow accuracy at calibration conditions	0.2% of full scale
Manifold ports (in and out)	Tapped G 1/8 in.

Note: MFCs and manifolds are cleaned for oxygen service.

## 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



## GXCore Bioprocess Container and MFC ordering information

Description	Cat. No.
<b>HyPerforma GXCore Bioprocess Controller*</b> Suitable for glass and bench-scale single-use bioreactors	F100-7000-000
<b>MFC for GXCore Bioprocess Controller</b>	
0–1 slpm; suitable for all bioprocess gases; aluminum flow path	F100-7001-100
0–1 slpm; suitable for all bioprocess gases; stainless steel flow path	F100-7001-200
0–15 slpm; suitable for all bioprocess gases; aluminum flow path	F100-7015-100
0–15 slpm; suitable for all bioprocess gases; stainless steel flow path	F100-7015-200

\* Control solution must be ordered. See your local sales representative for details.  
Refer to our **Benchtop bioprocessing solutions brochure** for information on available vessels and sensors.

Find out more at [thermofisher.com/controllers](http://thermofisher.com/controllers)

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