

mPath™ Benchtop Bioreactor Control Towers



Flexible control for single-use cell culture

The mPath controller architecture provides powerful process control for the unique needs of single-use bioprocessing. Emphasizing robustness, ease-of-use and flexibility, mPath controllers combine the robustness of manufacturing with the flexibility of process development. The architecture, based on programmable logic controllers (PLCs) outperforms microcontroller based embedded systems typically seen at this scale. When integrated with Pall bioreactors, mPath control towers easily handle process development (PD), seed applications and small scale manufacturing. Flexible options for single-use sensors, variable speed pumps, networking and interfaces allow customization to individual process needs. Six precision mass flow controllers and three biocontainer hangers with integrated load cells track process inputs accurately. With advanced features designed for single-use, mPath controllers put fewer limits on your processes and your creativity.

Features and Benefits

Features

Control Software – Pall Link

The mPath control tower is designed for operation with Pall Link – a supervisory control and data acquisition (SCADA) software package

Advanced Alarming

Multiple notification modalities to ensure response to process critical events

Gas Handling

More flexibility in gas control – six oxygen-rated thermal mass flow controllers (TMFCs) pre-calibrated for process gases

Optional Liquid Handling

More accuracy in liquid delivery – three variable speed pumps, integrated load cells and biocontainer hangers

Ergonomics and Space

Designed with people in mind to simplify the use and maintenance of bioreactor controllers

Benefits

- ▶ Capable of accessing data anywhere on any networked device including laboratory workstations, desktop computers or remote devices such as laptops, mobile phones and tablets
- ▶ Operates as either a standalone network or integrated with site IT systems, compatible with multiple network security approaches (e.g. virtual private network [VPN]) and password protection to protect bioreactors from unauthorized access
- ▶ Intuitive visual displays for easy interaction with bioreactors to calibrate components, set critical parameters, and fine tune process control
- ▶ Advanced trending capability including creation of custom trends of any process variable for both historic and live processes
- ▶ Database centric design supports naming, logging and exporting experiments for traceability and data analysis
- ▶ Full alarm customization to alert for process or safety critical events
- ▶ Management features for user-definable recipes including scheduling, version control and retirement for recipes no longer in use
- ▶ Compliance capability – designed for operation following 21 CFR Part 11/Annex 11 regulations

Control Tower

- ▶ Color coded illumination ring around the front face of the controller allows identification of operating state from a distance
- ▶ Individual LED indicators for each connection on the connector panel identify problems during set up and operation

Pall Link

- ▶ Highly visible color and textual alerts which indicate alarm severity on all software interfaces
- ▶ Historical alarm logs to review equipment and process performance
- ▶ Accurate gas mixing for two gas streams enabling accurate parameter control and complex gas control regimes, each gas within the mix delivered by a dedicated TMFC
 - Primary gas mix: N₂, O₂, Air and CO₂
 - Secondary gas mix: CO₂ and Air
- ▶ Calibrated flow rates up to 1 L/min for each TMFC
- ▶ Onboard regulators ensure accuracy of TMFCs even with higher input pressures
- ▶ Onboard pressure sensors, combined with alarming capability enable notification of empty gas cylinders or biocontainer overpressure
- ▶ Fast fill button – quick and safe inflation of biocontainers with air
- ▶ Accurate delivery of feeds and titrants without compromises, standard variable speed pumps enable smoother process control and feed profiles for less process variability
 - 8 mm max tubing outside diameter (OD)
 - 14 - 211 rpm (control requiring speeds less than 14 rpm achieved through pulse width modulation [PWM])
- ▶ Removable pump heads for easy cleaning and serviceability
- ▶ Removable biocontainer hangers with integrated load cells allow space efficient execution of weight based feed profiles and accurate tracking of titrant delivery
- ▶ Extensive human factors research to determine optimal placement of connections and control tower elements
- ▶ Flexibility in operation – choose when and where to view data, choose how to design processes
- ▶ Compact design to limit bench space requirements – small form factor and biocontainer hangers remove the need for scales and bottles
- ▶ Elevated from bench for cleanability

For more information:

WEB: FLTR.com.au PHONE: (+61) 1300 62 4020 EMAIL: info@FLTR.com.au SKYPE: Purple.Engineering

Specifications

Item	mPath Bioreactor Control Tower
Weight	Weight <20 kg
Dimensions	H=450 mm, L=600 mm, W=230 mm
Gas Requirements	Air, nitrogen, oxygen and carbon dioxide Minimum supply pressure 2.5 bar (36.3 psi) Maximum supply pressure 6.0 bar (87.0 psi)
EMC Directive 2014/30/EU	BS EN 61326-1: 2013
Low Voltage Directive (LVD) 2014/35/EU	BS EN 61010-1: 2010
Machinery Directive 2006/42/EC	BS EN ISO 12100: 2010
RoHS Directive	All components RoHS compliant (2011/65/EU)
IP Rating	Designed and tested - IP 54 (IP54 IEC 60529)
Electrical Data Voltage	Universal input: 100 – 240 V AC Input frequency: 50/60 Hz
Power Consumption	360 W maximum
Electrical Power Cables	USA, UK and European
Operating System	Pall Link Link server: Microsoft® Windows® 10 Pro Control tower: Microsoft Windows Embedded Compact Oracle®: MySQL® and Java®
Operating Conditions	Laboratory environment Temperature range +5 °C (+41 °F) to +40 °C (+104 °F) Up to 90% relative humidity Non-condensing
Storage Conditions	Temperature range -20 °C (-4 °F) to +50 °C (+122 °F) Up to 90% relative humidity Non-condensing

Ordering Information

The mPath control towers are available for use with Pall benchtop bioreactors, including:

- ▶ Allegro™ XRS 25 rocking bioreactor
- ▶ Xpansion® multiplate bioreactor system
- ▶ iCELLis® Nano bioreactor system
- ▶ PadReactor® Mini bioreactor system

Please contact your sales representative at bioreactors@pall.com or www.pall.com.

For more information:

WEB: FLTR.com.au PHONE: (+61) 1300 62 4020 EMAIL: info@FLTR.com.au SKYPE: Purple.Engineering