BIO NET® BioNet®

Bioreactor Control System

BROADLEY JAMES CORPORATION®
19 Thomas, Irvine, California 92618
Toll-free: (800) 288-2833 Phone: (949) 829-5555
Fax: (949) 829-5560 E-mail: sales@broadleyjames.com
Website: www.BroadleyJames.com

Bioreactor Control System

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New Modular BioNet System

The new Modular BioNet system was designed to completely clear the bench-top of control components allowing all control equipment to be mounted underneath or above the bench-top on a shelf. This space saving design frees up the entire bench-top to be used for more vessels or analytical instruments and significantly reduces the traditional wiring clutter associated with multi vessel installations.

This system design breaks the Bioreactor Control System into three smaller subcomponents:

1. Pump Module (4 variable speed pumps per module): Stands upright like a small tower, or it can be mounted horizontally on a shelf above the bench. If only two pumps per vessel are required, the pumps can be independently assigned to a left or right positioned vessel. Additionally, Pump Modules can be connected to the network to assign as many pumps as necessary to a single vessel without I/O limitations.

The Pump module can be located anywhere on, under, or over the bench and communicates to the controller via a DeviceNet cable.

2. Gas MFC Module: (8 MFC's per module): Can be mounted underneath the bench or on a shelf above the bench. One module can be assigned to multiple vessels. Each of the MFC gas outputs is valved and easily switchable between Sparge or Overlay.

The gas module can be located anywhere on, under, or over the bench and it communicates to the controller via a DeviceNet cable.

3. Dual Vessel Utility Module: This compact module on rollers can be stored underneath the bench in the knee space (2-3 Modules per space) for easy access when needed. The Dual Utility Module contains the agitation controllers, pH, DO, and temp transmitters, heater controllers, and a DeviceNet I/O rack that allows future expansion of the system to acquire data from any instrument with 4-20 mA output, such as CO_2, Optical Density or Capacitance Transmitters.

The BioNet Modular System offers a number of options for the networked HMI user interface; traditional bench top workstations, locally mounted touch screens and secure wireless PC tablets, so operators can take the process with them anywhere in the laboratory.

- Designed for Cell Culture or Microbial Applications
- Expandable Network with unlimited analog & digital I/O for the addition of more Vessels, Pumps, Sensors, Gas Modules, Scales etc.
- Built-in continuous historian to securely archive all process data
- Configurations for Autoclavable or Sterilizable-in-Situ Bioreactors
- Manual data entry to process historian with time stamp for off-line test results
- Multi-experiment trend comparison and "Golden Batch" overlay
- Batch Report generation using data from multiple data sources: DeltaV Historian, OSI PI, LIMS, SAP, SQL
- Various control strategies for fed-batch and perfusion applications
- Automated Loop Tuning for tighter control of small scale reactors
- Time Saving Auto population of experimental set-up parameters to multiple vessels simultaneously
- User defined dynamic linking of process parameters for advanced experimental design
- Automated set-point shifting for user definable step change, ramping and shift time intervals
- Variable speed peristaltic pumps for precise control of vessel additions
- Sensor calibration and sensor diagnostics data stored for better experimental management
- pH standardization via on-line or off-line reference BGA measurement
- Utilizes Plantweb™ Technology for Unequaled Process Control
- User definable Substrate Feed Control Strategies based upon on-line BGA measurements