



T700 turn-key cGMP system: Rethink bioreactor productivity.

## “Industry need not wish.”

– Benjamin Franklin (1706-1790)

**Dramatically boost the productivity of your cGMP manufacturing facility with T700 bioreactor systems.** Enjoy higher performance at a lower cost with our next-generation optical TruFluor™ pH and DO sensors. Easily automate process setup and share data in powerful new ways with our user-friendly TruBio® DV bioreactor control software. Experience optimal performance with our modular, space-saving TruViu™ PLSS and PLSSmini hardware. Have confidence that the Emerson DeltaV platform is reliable, robust, and 21CFR Part 11 compliant. Leverage our complete service package for installation, commissioning, validation, and maintenance. Rethink your productivity now. Capitalize on the only complete, proven, and scalable cGMP single-use solution in the market.

Call us today at 800-851-9515 or visit [www.finesse.com](http://www.finesse.com) to learn more about complete cGMP solutions.



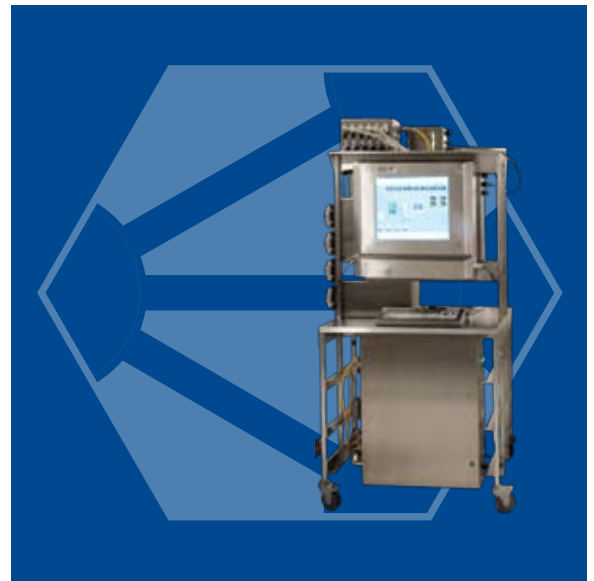
## TruLogic Controller

The TruLogic™ controller is powered by a DeltaV (MD+ or MX) controller capable of controlling up to eight (8) bioreactors. Each TruLogic controller can be networked with additional TruLogic controllers to create a control network capable of managing several hundred bioreactors. A TruLogic controller is connected to TruViu hardware, or other peripheral hardware devices for flexible bioreactor control.

The TruLogic controller is packaged in a NEMA4X enclosure that can be mounted on a wall, a computer room, or a cart. The TruLogic can be up to 300m away from the actual bioreactor vessel.

### Features

- cGMP controller for single-use bioreactors
- Powered by DeltaV controller
- Requires as few as two (2) DSTs per bioreactor controller
- Easily interfaced to third party peripherals, analyzers, SCADA and more



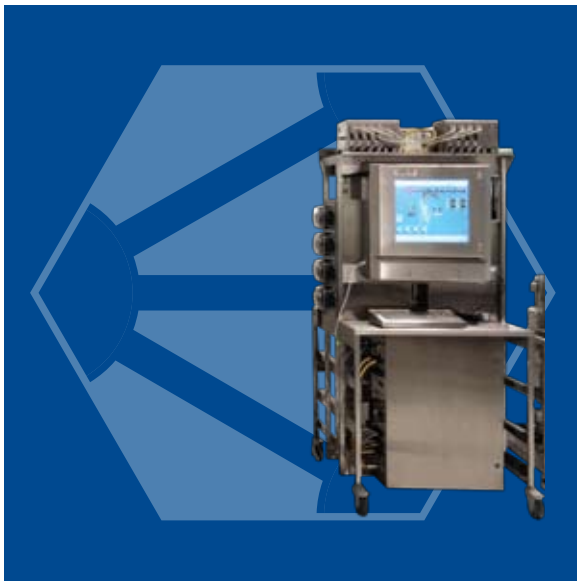
## TruViu PLSSmini

TruViu™ PLSSmini has been specially designed for single-use pilot and small scale production bioprocess applications (25L to 250L). The system consists of an I/O tower, a Pump Tower, and a Gas Manifold, as well as large range of peripherals (cart, HMI, scales, sensors, external pumps, etc.) TruViu PLSSmini interfaces easily with the TruLogic Controller to deliver optimal performance when using the TruBio® DV Software.

TruViu PLSSmini was designed for use with smaller single-use vessels that do not require redundant sensors. It is designed to minimize footprint and start-up cost. Two PLSSmini systems can be mounted onto a cGMP cart, along with a NEMA 4X operation station HMI.

### Features

- cGMP hardware for mid-size single-use bioreactors
- Optimized to control pilot plant or small-scale production units
- Modular, flexible yet affordable
- Plug-and-play
- Auxiliary control loops for third party peripherals



## TruViu PLSS

TruViu PLSS has been specially designed for single-use pilot and small scale production bioprocess applications (up to 2000L). The system consists of an I/O tower, a Transmitter Tower, a Pump Tower, and a Gas Manifold, as well as a large range of peripherals (cart, HMI, scales, sensors, external pumps, etc.). TruViu PLSS hardware interfaces easily with the TruLogic Controller to deliver optimal performance when using TruBio DV software.

TruViu PLSS is designed to be flexible, modular and configurable, in order to maximize ease-of-use, simplify installation, yet remain highly flexible for multi-product applications. TruViu PLSS was designed for use with large single-use vessels that require redundant sensors and multiple peripherals. It is designed to minimize footprint and start-up cost. One PLSSmini system and one PLSS system can be mounted onto a cGMP cart, along with a NEMA 4X operation station HMI.

### Features

- **cGMP hardware for large single-use bioreactors**
- **Optimized to control seed and large-scale production units**
- **Modular, flexible yet affordable**
- **Plug-and-play**
- **Extensive auxiliary spares for third party peripherals**



## TruBio DV Software

TruBio DV software is a hardware independent, highly configurable interface to the DeltaV control platform that has been developed with GAMP4 methods and validated for cGMP applications. TruBio DV software is pre-configured with algorithms for controlling bioprocess parameters such as pH, dissolved oxygen, temperature, agitation, pressure, foam, level, gas/liquid flow, and weight, as well as supporting redundant sensor loops such as pH, temperature, or dissolved oxygen.

TruBio DV software can be used with most types of single-use bioreactors, including rocker, stirred-tank and paddle-based designs, to provide a seamless, integrated solution from R&D through clinical production.

### Features

- **cGMP software for single-use bioreactors**
- **Hardware independent**
- **Highly configurable and flexible**
- **Calibration records, save/load files, user-friendly data reporting**
- **Easy SCADA and OPC connectivity for third party devices**

Visit [www.finesse.com](http://www.finesse.com) for more information.

### General Hardware: Ratings

Enclosures	NEMA4X
Gas Manifold	NEMA4 (MFC vertical)
Certification	CE (EN-61326 and EN-61010) and UL-508

### General Hardware: Operating Conditions

Operating Temperature	5 – 40°C (41 – 104°F)
Storage Temperature	-25 – 70°C (-15 – 158°F)
Relative Humidity	5 – 95% (non-condensing)
Power	110-240 VAC, 50/60 Hz

### General Hardware: Gas Manifold

Gas Manifold	7" (H) x 11" (W) x 7" (D) (178 x 280 x 178 mm)
Inlet Pressure	30 to 35 psig
Outlet Pressure	30 to 35 psig
Accuracy	±0.8% of rate ±0.3% Full Scale (Burkert)
Repeatability	±0.1% Full Scale (Burkert)

### General Hardware: Peripherals

Thermal Control	Heater/Chiller unit having analog control (Lauda T1200, T4600)
Pumps	Watson Marlow 520, 620, 720 series
Scales	Analog output or serial (select Sartorius)
Cart	Standalone mounting cart 34"(W) x 76"(H) x 25"(D) (86x193x64 cm)
HMI	19" color touch screen industrial PC, NEMA 4X, 1280 x 1024, 24-bit color, keyboard and trackball

### General Hardware: Cables

pH	S8, K8, VP, TruFluor
DO	D4/T82, VP, TruFluor
Agitator	Finesse Custom
Heater/TCU	Finesse Custom

### TruLogic Dimensions

Controller Tower	24" (H) x 24" (D) x 8" (W) ( x x mm)
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### TruLogic Specifications

Power	Redundant 24 VDC bulk power Uninterruptible power supply (UPS)
Controller	DeltaV MD+ or MX controller (redundancy available)
Ethernet	Primary and secondary ethernet switches (six (6) connectors each)
I/O Modules	Modbus, DeviceNet, Foundation Fieldbus, and Profibus DP

### PLSSmini Dimensions

I/O tower	30"(H) x 24"(W) x 9"(D) (762 x 610 x 229 mm)
Pump Tower	20"(H) x 16"(W) x 9"(D) ( 508 x 406 x 229 mm)

### PLSSmini Components

Agitation	External Variable Speed Drive
pH	Finesse electrochemical or TruFluor pH transmitter
Dissolved Oxygen	Finesse polarographic or TruFluor DO transmitter
Temperature	Finesse RTD or TruFluor pH/DO transmitter
Pressure	TruTorr transmitter
Liquid Control	Up to four (4) variable-speed, peristaltic pumps Watson Marlow 313 series
Gas Control	Up to five (5) mass flow controllers Max fifteen (15) associated solenoids
Scales/Balances	Analog output or serial communications (RS-232/RS-485)
Auxiliary	Two (2) auxiliary control loops (4-20 mA) Two (2) analog inputs (4-20 mA)

### PLSS Dimensions

I/O tower	30"(H) x 24"(W) x 9"(D) (762x610x229 mm)
Transmitter Tower	24"(H) x 24"(W) x 9"(D) (610x610x229 mm)
Pump Tower	20"(H) x 16"(W) x 9"(D) ( 508x406x229 mm)

### PLSS Utility Tower Components

Agitation	External Variable Speed Drive
pH	Finesse electrochemical or TruFluor pH transmitter (redundant)
Dissolved Oxygen	Finesse polarographic or TruFluor DO transmitter (redundant)
Temperature	Finesse RTD or TruFluor pH/DO transmitter (redundant)
CO <sub>2</sub>	Mettler transmitter (optional, redundant)
Pressure	TruTorr transmitter
Liquid Control	Up to six (6) variable-speed pumps Up to four (4) Watson Marlow 520 series Up to two (2) external pumps with analog control
Gas Control	Up to six (6) mass flow controllers Max eighteen (18) associated solenoids
Scales/Balances	Analog output or serial communications (RS-232/RS-485)
Auxiliary	Two (2) auxiliary control loops (4-20 mA) Six (6) analog inputs (4-20 mA)