

LabTec™

Smart Dispensing Systems

- *LabTec™ dispenses by volume, weight or weight ratio (dilution by weight)*
- *Improves the speed, precision and accuracy of the entire sample preparation process*
- *In-line filter sterilization eliminates the need for costly and time-consuming autoclaving of diluent*
- *Controlled solvent delivery system enhances employees' safety*
- *Automatically provides critical GLP documentation*

i n t e l l i g e n t d i s p e n s i n g s y s t e m s



LabTec™ models available for organic solvent dispensing



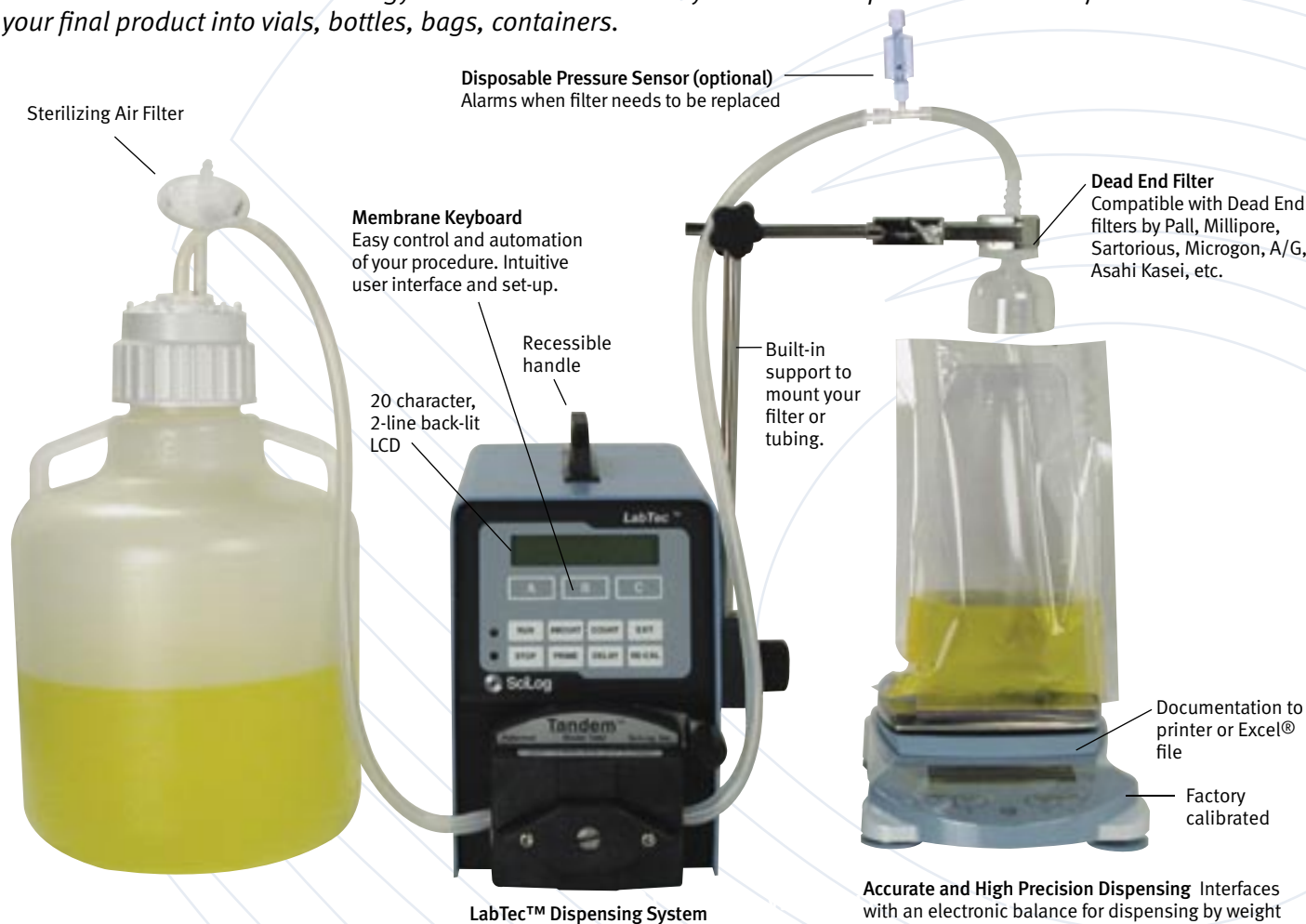
Complete GLP documentation

 **SciLog®**
Intelligent Dispensing Systems

LabTec™ Dispenser and Diluter



The LabTec™ automates, optimizes and documents repetitive liquid dispensing with or without in-line filter sterilization. The LabTec CP models are ideally suited for dispensing sterile solutions in Media Kitchens and Microbiology Laboratories. Also widely used in small production runs to fill your final product into vials, bottles, bags, containers.

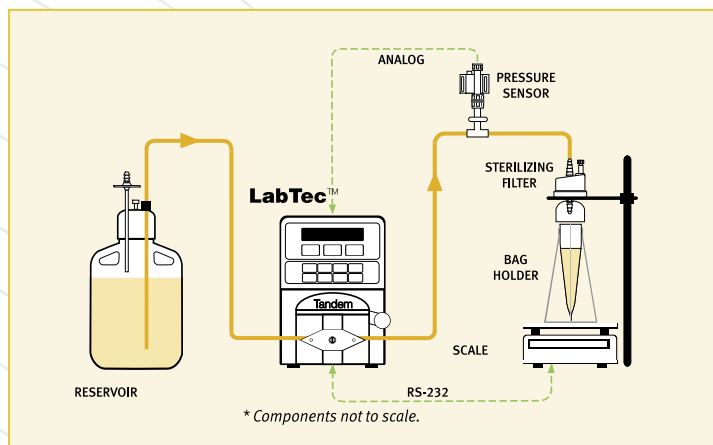


LabTec™ Peristaltic Models Feature and Benefit Summary:

- Rapid, high precision dispensing by volume from ml to liters. SciLog has performance validations that give you the aliquot, speed of dispense and the precision level. If you need to dispense larger aliquots, go to the SciLog Fill Master, which can quickly and with high precision fill 5 liters in 35 sec!!
- Dispense by weight or volume, typical precision 0.5% or better
- Dispensing/filling with in-line filter sterilization
- Sample weighing and auto-diluting capability
- Pump options: Piston and Magnetic Gear are available for pumping organic solvents, monomers, etc. Use peristaltic CP-200 for sterile filling of test tubes, vials, bottles.
- Pressure alarm alerts when in-line filter needs to be replaced
- Complete documentation of dispensing
- Use Magnetic Gear MP-320 for non-sterile filling or use with sterilizing filter for sterile filling. Performance validation: print-out of dispensing data.
- Self-Priming
- Protection against pump overload
- Reversible Flow (Bidirectional Flow)
- High precision microprocessor pump with optically encoded, servo-controlled motor

LabTec™ Applications

1. Automated Weighing & Dilution of Food Samples With In-Line Media Sterilization



The LabTec™ significantly increases the productivity of any Microbiology Laboratory. The dispensing system automates weighing and diluting of food samples in preparation for bacteriological analysis. Only an approximate sample size is needed. The LabTec™ dispenser calculates and rapidly dispenses the media required to achieve a user-selected dilution factor.

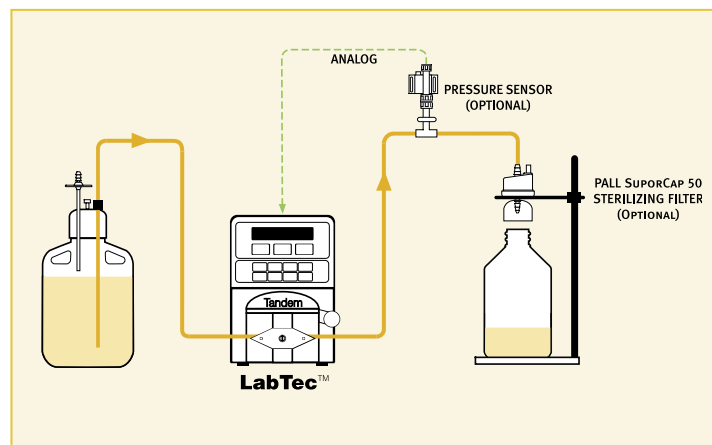
LabTec Performance Data: Automated Weighing and Dilution of Food Samples

Trial #	Sample Weight	Theoretical Diluent Weight	Actual Diluent Weight	Error (grams)
1	10.0gr.	90.0gr	90.0gr	0.0
2	10.0	90.0	89.9	- 0.1
3	10.0	90.0	90.1	+ 0.1
4	10.0	90.0	89.8	- 0.2
5	10.0	90.0	90.1	+ 0.1
6	10.0	90.0	90.0	+ 0.1
7	10.0	90.0	89.9	- 0.1
8	10.0	90.0	90.2	+ 0.2
9	10.0	90.0	90.1	+ 0.1
10	10.0	90.0	89.8	- 0.2
		AVE:	89.99	
		SD:	0.14	
		RSD:	0.15%	

LabTec Dispensing Parameters: Weight Factor = 9.00, Slow Factor = 25gr, Pump Rate = 50% #24 Silicone pump tubing was used for all dispensed aliquots. All solutions were dispensed through a Pall SuporCap 50 sterilizing filter. Cycle Time: 25 sec.; Diluent Dispensing Time:14 sec.

Costly and time-consuming autoclaving of media is avoided with in-line filter sterilization of diluents using a Pall "SuporCap 50" filter capsule. A disposable pressure sensor monitors filter backpressure and provides an alarm signal when a failing sterilizing filter (high backpressure) needs to be replaced. An optional printer or PC hook-up automatically documents all sample and diluent weights. The LabTec dispenser improves the speed, precision and accuracy of the entire sample preparation process by automating the weighing, dilution and documentation process.

2. High Speed, High Precision Volumetric Batch Dispensing



The LabTec Smart Dispensing System is capable of high speed, high precision batch dispensing. The LabTec comes with a 1082 Tandem peristaltic pump head. Up to 10 different dispensing volumes can be stored and easily retrieved for quick batch volume dispensing. An optional sterilizing filter and disposable pressure sensor provide for in-line buffer sterilization and reliable detection of filter plug-up conditions. Typical performance results including dispensing times are summarized in Table below:

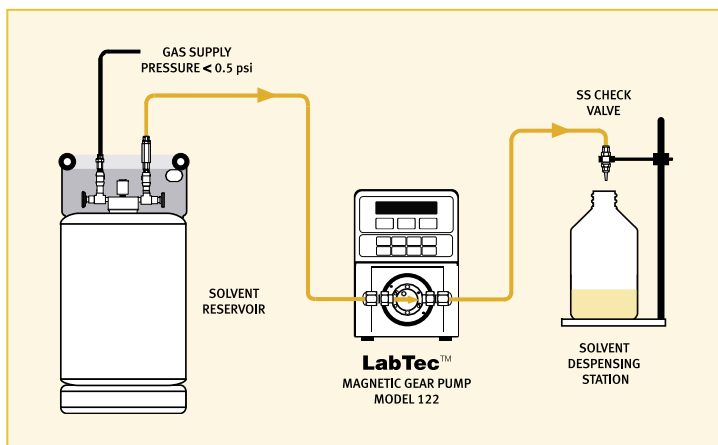
LabTec Performance Data: High Speed Volumetric Dispensing

Dispensed Volume (ml)	Tubing Size:	Pump Speed:	Slow Factor:	Typical Precision:	Dispensing Time/Aliquot
5.00 ml	#15	100%	2.50 ml	1.7%	2.1 Sec
10.00 ml	#15	100%	2.50 ml	0.5%	2.0 Sec
25.00 ml	#15	100%	2.50 ml	0.20%	2.7 Sec
25.00 ml	#24	100%	4.75 ml	0.15%	2.9 Sec
50.00 ml	#24	100%	4.75 ml	0.50%	3.9 Sec
100.00 ml	#24	100%	4.75 ml	0.35%	6.3 Sec
100.00 ml	#35	100%	5.00 ml	<0.5 %	4.5 Sec
200.00 ml	#35	100%	5.00 ml	<0.5 %	6.0 Sec
450.00 ml	#35	100%	5.00 ml	<0.5 %	12.0 Sec

Note: This performance data was generated with a 600 RPM pump motor and Tandem 1082 peristaltic pump head. The pump tubing was made of Silicone

The LabTec is easy to calibrate. A stored calibration curve is provided for each pump head/pump tubing combination. From a stored menu, you select the pump tubing you have installed in the LabTec. For high accuracy dispensing applications, you may want to use the LabTec™ single-point re-cal feature.

3. Organic Solvent Dispensing: Preparation of HPLC Mobile Phase and Extraction Solvents



In this configuration, the LabTec solvent delivery system is a walk-up dispensing station. The user selects the solvent volume then presses a front panel key or foot switch to initiate the dispensing cycle. The LabTec provides high precision, high accuracy dispensing from milliliters to liters.

The LabTec automates the safe and accurate dispensing of solvents typically supplied in pressurized, stainless steel (SS) containers (i.e. J.T. Baker CYCLE-TAINER). The closed, inert-gas-blanketed SS container and Teflon fluid lines eliminate any solvent contamination and degradation.

LabTec Performance Data: Organic Solvent Dispensing

Dispensed Volume	Standard Deviation, SD	Relative Deviation	Pump Rate (% of max.)	Slow Factor	Dispense Time Per Aliquot
10.00 ml	+/- 0.02	0.24%	25%	2 ml	1.5 Sec
50.00 ml	+/- 0.11	0.22%	50%	7 ml	2.0 Sec
100.00 ml	+/- 0.10	0.10%	80%	11 ml	2.7 Sec
500.00 ml	+/- 0.15	0.15%	100%	12 ml	2.9 Sec
1000.00 ml	+/- 0.40	0.04%	100%	12 ml	3.9 Sec

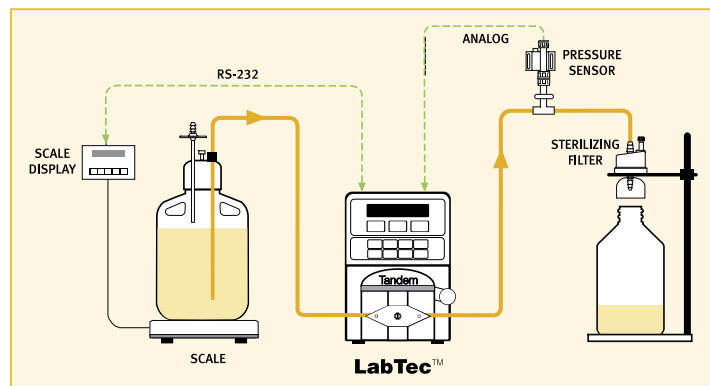
Note: The above data set was generated with a LabTec MP-320 (Magnetic Gear Head, Model 122, Max. Delivery 3200 ml/min).

The LabTec solvent delivery system maintains solvent purity while reducing hazardous solvent waste. The LabTec controlled solvent delivery system enhances employees' safety by reducing solvent spills and hazardous vapor exposures.

Volumetric dispensing accuracy is assured with a simple, single key re-calibration feature. Alternatively, dispensing by weight eliminates the need for pump calibration but will require hook-up to an electronic scale. For ease of use, up to ten user-defined dispensing volumes can be stored in the LabTec. All dispensing data are printed out or sent to your PC for data archiving.

Take advantage of SciLog's liquid handling know-how. SciLog can provide you with automated, customized liquid handling technology for laboratory, pilot plant and production. Whether you need to fill syringes or aseptically transfer solution into single-use storage bags, SciLog has the appropriate system for you.

4. Biopharmaceutical GMP Filling Application: High Accuracy Dispensing with In-Line Filter Sterilization



In this configuration, the LabTec is connected to an electronic scale for high accuracy, GMP filling applications. A sterilizing filter and a disposable pressure transducer provide a safe and effective in-line filter sterilization capability. The LabTec continuously monitors the filter backpressure and alarms when a user-defined pressure level has been exceeded, which indicates a filter plug-up condition.

LabTec Performance Data: Gravimetric Solution Dispensing

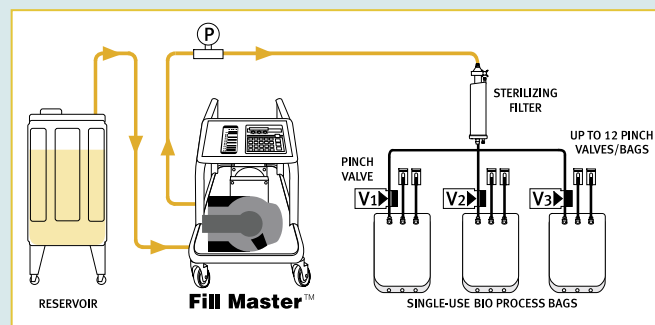
Weight Entered	Avg. Dispensed Weight	RSD (%)	Dispensing Time Per Aliquot
200.00 gr	199.95 gr	0.03%	16 Sec
150.00 gr	150.01 gr	0.11%	14 Sec
100.00 gr	100.01 gr	0.11%	13 Sec
50.00 gr	49.96 gr	0.18%	12 Sec
25.00 gr	25.05 gr	0.25%	10 Sec

Note: The above data set was generated with a LabTec CP 200, 600 RPM Motor, Tandem 1082 peristaltic pump head, and #24 (thick-walled) pump tubing. A Mettler PG-5002-S, readability 0.01 gram, was connected to the LabTec.

Note: Distilled water was used as a diluent; five (5) separate measurements were made for each of the sample weights. Each aliquot was dispensed onto the balance. The average Delivered Diluent Weight and the Relative Standard Deviation (RSD) and the Dispensing Time per Aliquot are summarized.

The high dispensing accuracy is achieved by reducing the pump rate as the target weight is being approached. The slow-down avoids overshooting the target weight. After slow-down, the LabTec pump stops briefly when 99% of the final target weight has been dispensed. The electronic scale is allowed to come to a steady-state readout and the LabTec slowly starts up again to dispense the remaining solution.

Scale Up with Scilog Liquid Handling Systems



Specifications

Dimension:	Width: 5.75 in (14.6cm); Height: 8.5 in (212.6); Depth: 11 in (27.9).
Weight:	14 lbs (6.4kg).
Enclosure:	16 Ga, aluminum baked epoxy blue.
LabTec™ Models:	<i>Optimal range for precision and speed of dispensing</i>
LabTec CP-120	0.2 ml to 50 ml aliquots of low viscosity, aqueous liquids. Typical precision 0.5% by vol. Tandem 1081 peristaltic pump head with variable speed max. 160 RPM motor.
LabTec CP-200	10 ml to 2 liter aliquots of low or high viscosity liquids. Typical precision 0.5% by vol. Use with any thick, viscous liquids. Tandem 1082 peristaltic pump head with variable speed max. 600 RPM motor. Tandem 1081 uses Masterflex peristaltic pump tubing (thin-walled) sizes: #13, 14, 16, 25, 17 & 18. Tandem 1082 uses Masterflex peristaltic pump tubing (thick-walled) sizes: #15, 24 & 35.
LabTec MP-320	4 ml to 3 liter aliquots of organic solvents, low viscosity. Typical precision 0.5% by vol. liquids. Magnetic gear head, 316SS chamber with Teflon gears with variable speed max. 3400 RPM motor.
Pressure Range: Tandem Head Pump	Maximum pressure output at tandem peristaltic pump head is 45 psi. Has single point recalibration feature.
Pressure Displayed:	Pressure displayed with a resolution of 0.1 psi; choice of bar, psi, kpa.
Pressure Sensors Options:	Use with sterilizing filters to monitor filter back pressure and to alarm when need to change filter due to plugging up of filter.
Power:	115/220-240 VAC, 60/50Hz, 75 Watts; double fused: T1AL 250V (CE: IR35A 250VAC)
Re-Cal Feature:	Factory installed calibration curve for all tubing sizes. Front panel Re-cal key for single-point pump recalibration.
LabTec™ Balance Options:	<ul style="list-style-type: none"> • Balance with capacity of 2,000 grams x 0.01 g and 8,100 g x 0.1 resolution are most popular. • Larger balance capacities up to 30 Kg x 0.1 g resolution available.
LabTec™ Software	<ul style="list-style-type: none"> • Dispenses by volume, rapidly and with high precision • Dispenses by weight, used with balance for rapid high precision filling by weight • Weight ratio, automates weighing and diluting process and sample prep process • Monitors back pressure of in-line sterilizing filters • Alarms when back pressure of in-line sterilizing filter is plugged up and can no longer be used
Documentation Software for PC:	<ul style="list-style-type: none"> • SciDoc interface software with custom macros for Excel® data compilation. Sent to you ready to use. • Complete process documentation. • Real-time verification and documentation of process parameters.
Use Range:	4° to 40° C, 100% Humidity.
Motor:	Choice of three (3) motors: 160, 600 and 3,400 RPM at 24 VDC, 3.8 Amperes, variable pump speed, optically encoded, servo-controlled motors.
I/O Ports:	1) First serial port labeled "Balance", Male DB9 connector for hook-up of electronic scale. 2) Second Serial Port labeled "Printer", Female DB9; also used to interface to PC for data storage in an Excel® file in your PC. 3) External I/O port, Female DB37 connector; used for remote On/Off control of PureTec™ via footswitch. 4) Optional pressure sensor interface available.
Data Entry:	Membrane keyboard with auditory feedback.
LabTec Settings:	<ul style="list-style-type: none"> • Save 10 Optimized Dispensing by Volume settings for rapid, high precision filling, from ml to liter aliquots; Typical precision of 0.5% by volume. • Save 10 Optimized Dispensing by Weight settings for rapid, high precision filling by weight from grams to kilograms aliquots; Typical precision of 0.3% by weight. • Save 10 Optimized Weight Ratio settings to automate the weighing and diluting process in sample preparation; Typical precision of 0.3% or better. • Document each dispense or dilution for GLP or for inventory control; print out or data sent to spreadsheet in PC. (SciDoc feature)

Summary of SciLog® Products

- High precision.
- Real-time data collection and graphing.
- User-friendly.
- Safe, walk-away system operation.



- Each one optimizes a particular type of application.
- Built-in alarms and multiple I/O ports for interfacing with other devices, e.g. pressure sensors, balances, valves, printers, PCs, etc.

Performance validations available for all SciLog® models.

SciLog® Intelligent Lab Systems

FilterTec™ Dead End Filtration (DEF) System

- Filterability Studies and Vmax Determination
- SciDoc, Real-Time Data Collection of 15 Filtration Parameters and Graphing
- Increased DEF Filter Utilization up to 35%
- 3 Pressure Sensor Hook-ups for Filter Trains
- Safe, Walk-away System Operation

LabTec™ Smart Dispenser System

- Rapid, High Precision Dispensing/Filling, ml to liters
- Dispense by Weight or by Volume
- In-Line Filter Sterilization – Senses Filter Plug-up
- Sample Weighing and Auto-Diluting – Weight Ratio Capability
- Performance Validation Sent with Each LabTec™
- GLP Documentation to Spreadsheet

ChemTec™ Bioreactor Metering System

- Automated Feed Regulation with Cell Growth Monitor
- Programmed Linear or Exponential Feed by Weight or Volume
- Real-Time Data Collection and Graphing
- Programmable Control of Two 6-Port Rotary Valves
- Other Apps include: Automated pH, Diafiltration and Perfusion

ACCU™ High Precision Digital Metering Pump

- High Precision Pump with Optically encoded Motor
- Proportional Pump Control: 4-20 mA or 0-5 VDC
- PC Interface Via Serial Port (RS-232); Footswitch Control
- Tachometer Output
- Available in Peristaltic, Piston and Magnetic Gear Models

PureTec™ CrossFlow Filtration System

- Ideal for Lab Scale CrossFlow, TFF, Protein Concentration, Diafiltration and Protein Washing
- Controls and Monitors TMP (TransMembrane Pressure)
- Filtration with Constant TMP/Constant Feed Rate
- SciDoc, Real-Time Data Collection of 11 Filtration Parameters and Graphing

SciDoc™ Real-Time Data Collection and Graphing Software

- Up to 15 Fluid Handling Parameters
- Data Collected and Compiled
- Real-Time Data Sent to Excel® File and Graphs
- Custom Spreadsheet with Macros
- User Defined Time Intervals for Data Collection
- Data Used to Characterize and Optimize your Application



SciLog® Intelligent Pilot Plant and Production Systems

Fill Master™ Smart Large Volume Dispenser

- Washdown, Mobile, Smart
- Rapid, High Precision Dispensing/Filling, liters
- Dispense by Weight or by Volume
- In-Line Filter Sterilization – Senses Filter Plug-up
- Automated Aseptic Fill into Multiple, Single Use Storage Bags

SciDoc™ Real-Time Data Collection and Graphing Software

- Up to 15 Fluid Handling Parameters
- Data Collected and Compiled
- Real-Time Data Sent to Excel® File and Graphs
- Custom Spreadsheet with Macros
- User Defined Time Intervals for Data Collection
- Data Used to Characterize and Optimize your Application

SciPure™ Automated TFF System

- Constant Flow Rate and Constant TransMembrane Pressure(TMP), Regardless of Viscosity Changes!
- Eliminates Operator Adjustment of Retentate Line Pressure During TFF
- Control, Monitoring and Documentation of TMP, Inlet Pressure, Retentate Line Pressure, Permeate Line Pressure, Permeate Quantity, Permeate Collection Rate, etc.
- SciDoc: Real-Time Data Collection and Graphing

SciPro™ Intelligent BioProcessing System

- Excellent Process Development Tool
- Programmable On-board Software for Purification and Chromatography
- Washdown, Mobile, Smart, High Precision
- 12 I/O ports to Interface with Scales, Sensors, PCs, Printers, etc.
- Pump Head Options: Peristaltic, Rotary Lobe, Magnetic Gear