MICROLAB® 600 Series

**Intelligent Pipette
Automation made Simple**

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Introducing the MICROLAB 600

The MICROLAB 600 is a highly precise syringe pump with a graphical user interface designed to quickly and easily dilute and dispense liquids. This positive displacement system provides better than 99% accuracy, independent of a liquid's viscosity, vapor pressure, and temperature. The inert fluid path minimizes sample carry over and is compatible with harsh chemicals.

Where is the MICROLAB 600 used?

Every laboratory has tasks that are too small to automate and too large to reliably accomplish by hand. The MICROLAB 600 is a Semi-Automated Liquid Handler designed specifically for these in-between applications. The ML600 increases throughput and consistency while reducing cost and wasted buffer. Common industries utilizing the ML600 are:

- ‣ **Forensics**
- ‣ **Environmental Analysis**
- ‣ **Mining**
- ‣ **Manufacturing**
- ‣ **And many more…**

Why choose the MICROLAB 600?

No more adjusting pipettes and recalculating dilutions. Quickly recall stored dispenses and dilutions with the Favorites Screen. Trigger the hand probe or tap the foot switch to actuate the precision syringe drives according to the predefined program.

- ‣ Reduce time preparing samples or dispensing reagents

- ‣ Minimize experimental variation from one user to the next

- ‣ Simplify compliance to EPA, FDA (GLP, GMP) and ISO

- ‣ N.I.S.T. traceable calibration

MICROLAB 600 Diluter
Dual Syringe Diluter

▶ Supports a broad range of sample preparation applications including large ratio dilutions.

MICROLAB 600 Dispenser

Single Syringe Dispenser

▶ Precisely dispense one liquid at a time.

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Diluter

The MICROLAB 600's Dual Syringe Diluter configuration uses two syringes to create up to a 1:50'000 dilution in a single step, drastically reducing preparation time and wasted buffer. The diluent washes the tubing between each sample, minimizing carryover for even the most sensitive techniques, including:

▸ Atomic Absorption (AA)

▸ Inductively Coupled Plasma Spectroscopy (ICP)

▸ Liquid Scintillation

▸ High Performance Liquid Chromatography (HPLC)

▸ Gas Chromatography (GC)

Applications

▸ **Forensics Blood Alcohol Analysis and Urinalysis**

▸ **Mining Assay Labs Metals Detection**

▸ **Environmental Analysis Water and Soils Testing**

▸ **Oil Analysis Preventative Maintenance**

▸ **Alcohol Testing Beer and Wine Manufacturing**

Dual Syringe Diluter

Diluter Ordering Information

Part Number	Description
ML625-DIL	Dual Syringe Diluter with Advanced Controller

The ML625-DIL ships complete with the Concorde Hand Probe, Universal Valves, Fill/Dispense Tubing, Accessory Holder, country specific Power Cord, and the choice of two syringes. If no syringes are selected at the time of the order, a 2.5 mL and 250 μL syringe will be included.

Stand Alone Pump Ordering Information

Part Number	Description
ML635	Dual Syringe Pump no Controller or Accessories

The ML635 model ships with the Universal Valves, the choice of two syringes, and country specific Power Cord. If no syringes are selected at the time of the order, two 1 mL syringes will be included.

The MICROLAB 600 Single Syringe Dispenser is able to dispense volumes from 100 nL to 50 mL. The ML600 uses positive displacement syringes to accurately dispense volatile, viscous, and dense liquids independent of atmospheric influences. The inert fluid path is compatible with harsh chemicals, making the MICROLAB 600 the most reliable and robust dispensing system available.

Single Syringe Dispenser

Applications

▸ **Sample Spiking**

▸ **Titration**

▸ **Animal Dosing (oral gavage)**

▸ **Reagent Addition to Chemical Reactors**

▸ **Flow Chemistry**

▸ **Manufacturing**

> **Mercury Dispensing for Light Bulbs**
>
> **Ink Cartridge Filling**
>
> **Glue and Epoxy Dispensing**
>
> **Nasal Therapeutics (viscous)**
>
> **Contact Lenses**

Dispenser Ordering Information

Part Number	Description
ML620-DIS	Single Syringe Dispenser with Advanced Controller

The ML620-DIS ships complete with the Concorde Hand Probe, Universal Valve, Fill/Dispense Tubing, Accessory Holder, country specific Power Cord, and the choice of one syringe. If no syringe is selected at the time of the order, a 1 mL syringe will be included.

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Pump Features

The MICROLAB 600 is available as a single or dual syringe system. The high torque, precision stepper motors provide unsurpassed positional accuracy across the full range of Hamilton syringes from 10 µL to 50 mL. The instrument communicates with the controller or a corporate network via an ethernet port.

1. Fanless Heat Vent
2. 24 Volt Power Input
3. CAN Daisy Chain Input/ Output
4. RS-232 Console Port
5. Power over Ethernet (PoE)
6. TTL Input/Output

1. High Torque Valve Motors
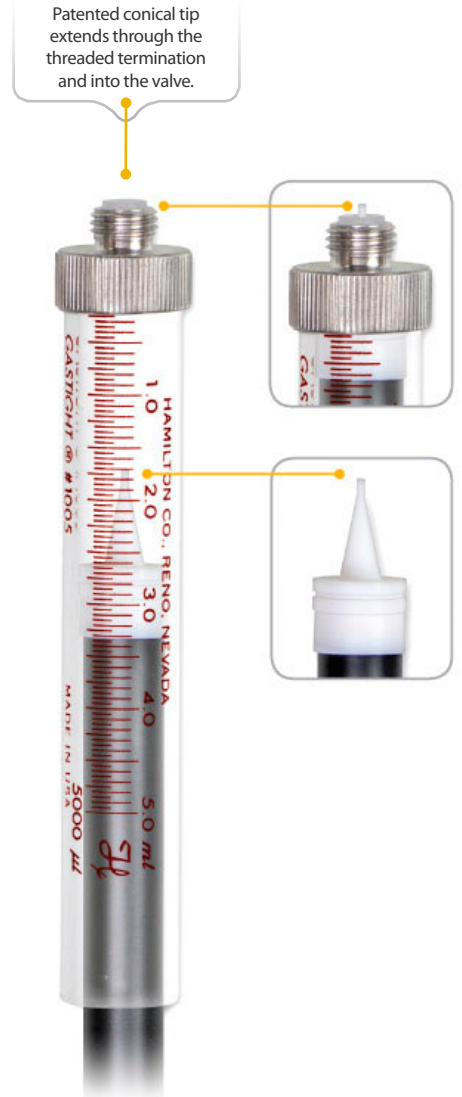2. Precision Syringe Drives with 6'000 steps (48'000 micro-steps) over 60mm
3. Lighted Power and Prime Buttons
4. Independent Left and Right Trigger Ports

Syringe Pump Specifications

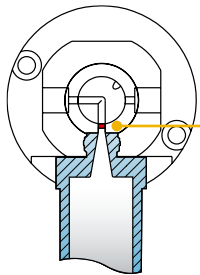| Specifications	Single and Dual Syringe Pump
Accuracy	+/- 1%
Precision	+/- 0.2%
Flow Rate	0.003 - 6000 µL/second (depending on the syringe that is selected)
Syringe Resolution	0.02% of the nominal syringe volume
Compatible Syringes	10, 25, 50, 100, 250, 500 µL, 1, 2.5, 5, 10, 25, and 50 mL
Fluid Path	Borosilicate, PTFE, CTFE
Communication Type	Ethernet, 10/100 BASE-T
Communication Protocol	.NET 2.0 Application Programming Interface (API)
Pump Memory	One method stored in non volatile memory
Calibration	Factory tested and traceable to N.I.S.T. standards
Certifications	CE, CSA
Power Rating	24 VDC, 2.5A
Dimensions	7 x 5.5 x 10.5 inch (177.8 x 139.7 x 266.7 mm)
Weight	13 lbs (5.9 kg)

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Bubble Free Prime syringe

For any syringe pump, the key to achieving the most accurate dispenses is eliminating all air from the fluid path. Traditional syringes trap approximately 50 µL of air between the tip of the syringe and the valve, which makes small syringes difficult to prime.

The Bubble Free Prime (BFP) syringe has a conical plunger tip that extends through the threaded termination and into the valve. This unique design expels the air from the syringe and valve decreasing the number of priming cycles required.
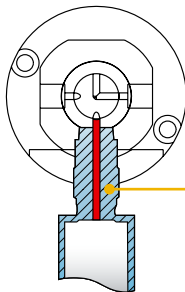
Patented conical tip extends through the threaded termination and into the valve.

Bubble Free Prime Syringe

BFP syringes eliminate the air from the fluid path.

Trapped Air
Syringe
Plunger

Standard Syringe

Traditional TLL syringes trap approximately 50 µL of air, making small syringes nearly impossible to prime.

Universal Valves

The high precision Universal Valves of the ML600 are robust and flexible. The innovative fluid logic enables the same Universal Valve to be used in all MICROLAB 600 dispensing and diluting applications. Simply interchange the valve plugs and tubing to achieve the required configurations.

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Controller Features

The MICROLAB 600 Controller integrates a streamlined user interface with a large touch screen display. Dilutions, dispenses, titrations and more are visually displayed in real-time with just the touch of a button.

1 Touch Screen

2 Screen tilts for viewing comfort

3 Advanced SD Card

4 Ethernet

The Advanced SD Card unlocks the advanced functionality including Wizards and Custom methods as well as an upgrade path for the Syringe Pump and Controller to the most current firmware.

Controller Specifications

Specifications	MICROLAB 600 Controller
Screen Size	5.7 inch (15 cm diagonal)
Screen Resolution	640(H) x 480(V) pixels
Tilt Positions	5 positions from 90° to flat
Mounting Options	On top of the Syringe Pump, Bench Top, or Wall Mount
Program Memory	2 GB (with Advanced Upgrade)
Communication Type	Ethernet, 10/100 BASE-T
Power rating	24 VDC, 2.5A
Dimensions	2.25 x 6.5 x 7 inch (57.2 x 165.1 x 177.8 mm) in down position
Weight	1.9 lbs (0.86 kg)

HAMILTON conducted Human Factor Studies in the pursuit of the ultimate user interface for the MICROLAB 600. The QuickStart gets you up and running for simple dilutions and dispenses.

Upgrade the controller to create methods that use air gaps, washing, repetitive dispensing, and more. Store frequently used methods in the controller to save time and improve consistency.

Main Menu

Run simple dilutions and dispenses.

Reconfigure the pump hardware.

Edit and run Custom Methods.

Dedicated Wizards simplify common tasks.

Download a method to the pump, custom prime and check instrument diagnostics.

Quick Start

Graphical status of the current valve and syringe position.

Press this button to adjust the dispense volume at any time.

Toggle the Auto Refill Button ON and OFF.

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Accessories

Hand Probes, Foot Switch, and Disposable Tips

Concorde CT Hand Probe

Standard with the Single Syringe Dispenser, and Dual Syringe Diluter

Luer Lock
Conversion Kit

Disposable Tips

Disposable Tip Hand Probe

1–35 µL or 1–125 µL

Foot Switch

Large Volume Disposable Tip Hand Probe

1 - mL

Dual Push Button Hand Probe

Standard with the Dual Syringe Dispenser

Syringes		
Part Number	**Syringe Size**	**Optimal Range**
59000-05	10 µL	1 µL-10 µL
59000-10	25 µL	2.5 µL-25 µL
59000-15	50 µL	5 µL-50 µL
59000-20	100 µL	10 µL-100 µL
59000-25	250 µL	25 µL-250 µL
59000-30	500 µL	50 µL-500 µL
59000-35	1 mL	100 µL-1 mL
59000-40	2.5 mL	250 µL-2.5 mL
59000-45	5 mL	500 µL-5 mL
59000-50	10 mL	1 mL-10 mL
59000-55	25 mL	2.5 mL-25 mL
59000-60	50 mL	5 mL-50 mL

Selecting a Syringe:

Select the smallest syringe with a maximum volume that is greater than the largest volume to be dispensed. Ideally the smallest volume to be dispensed should fall within the optimal ranges listed above. The MICROLAB 600 can dispense volumes below the optimal range but there will be some impact on accuracy and precision. Contact a Hamilton sales representative for additional assistance.

Hand Probes, Foot Switch, and Disposable Tips	
Part Number	**Description**
61401-01	Concorde CT Hand Probe
58381-01	Luer Lock Conversion Kit
62541-01	Dual Push Button Hand Probe
62539-01	Disposable Tip Hand Probe 1-35 µL
62540-01	Disposable Tip Hand Probe 1-125 µL
11008-21	200 µL Disposable Tips Bulk (1000/pk) for p/n 62539-01
9766-01	300 µL Disposable Tips Racked (5 racks of 96) for p/n 62540-01
62575-01	Large Volume Disposable Tip Hand Probe 1-5 mL
75702	5 mL Disposable Tips (250/pk) for p/n 62575
62576-01	Foot Switch

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Valves, Power Supplies, Upgrade Kits, Tubing and Miscellaneous Accessories

Left Valve

Valve Plugs

Right Valve

Cross Tube

Universal Valve & Accessories

Part Number	Valve Assembly Description
60676-01	Left Valve Assembly
60675-01	Right Valve Assembly
61498-01	Valve Cross Tube Assembly
61729-01	Valve Plug (1/pk)

Misc. Accessories

Part Number	Description
88990	Tubing Clips (5/pk)
61710-01	Accessory Holder & Tubing Wire Stand

Accessory Holder & Wire Stand

Tubing Clips

Power Cord

Power Supply

Power Supply & Power Cords

Part Number	Power Supply Voltage	
61092-01	Universal (110–220 VAC)	

Part Number	Power Cord Country	Diagram of Plug
355235	Switzerland	
355234	Continental Europe, Russia, Schuko	
355238	Australia, New Zealand, Argentina, China	
355237	UK, Ireland, Malaysia, Middle East	

Software CD

Custom Programmer Kit

Part Number	Upgrade Kit	Includes
61500-03	Custom Programmer Kit (compatible with .Net 2.0)	Programmer Software CD with Programmer Manual, Application Programming Interface, and Example LabView, C#, and VB Programs

PTFE Tubing Assemblies

Part Number	Gauge	Type	Length	Internal Volume
61615-01	18	Fill Tubing	48" (1219 mm)	1.15 mL
240134	18	Dispense Tubing	54" (1372 mm)	1.29 mL
1174-02	18	Fill Tubing	Custom Length	0.94 µL/mm
1173-02	18	Dispense Tubing	Custom Length	0.94 µL/mm
61614-01	12	Fill Tubing	48" (1219 mm)	4.57 mL
240133	12	Dispense Tubing	54" (1372 mm)	5.15 mL
1172-02	12	Fill Tubing	Custom Length	3.75 µL/mm
1171-02	12	Dispense Tubing	Custom Length	3.75 µL/mm
61491-02	18	Continuous Fill Tubing		0.94 µL/mm
61491-01	12	Continuous Fill Tubing		3.75 µL/mm

Fill & Dispense Tubing
(Dispense tubing has tapered end)

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Your HAMILTON representative:

HAMILTON Quality Products:
MICROLITER Syringes
GASTIGHT Syringes
Instrument Syringes
Laboratory & Process Sensors
ARC Sensor System
pH Sensors
DURACAL™ pH Buffers
Conductivity Sensors & Standards
Dissolved Oxygen Sensors
Armatures for Sensors
SoftGrip Pipettes
Diluters & Dispensers
HPLC Columns
BioLevitator
DeCapper
OEM Valves
OEM Syringe Pumps
OEM Pipeting Module

Laboratory Automation for:
Drug Discovery
Genomics
Proteomics
Forensics
In Vitro Diagnostics