

**HAMILTON** 

# Integrated Devices

Expand the Capabilities of Your Liquid Handler



# Over 50 Years of Experience in Automation

## EMPOWERING SCIENTISTS TO ACHIEVE MORE

Hamilton specializes in developing, manufacturing, and customizing laboratory solutions to meet the evolving needs of the scientific community. With global headquarters in Reno, Nevada, and Bonaduz, Switzerland, as well as subsidiary offices worldwide, Hamilton has over 70 years of experience providing scientists with cutting-edge technologies to advance their research.

Innovation is at the core of Hamilton's offerings, from precision measurement devices to automated liquid handling workstations to sample management systems. The company developed the world's first semi-automated diluter in 1970 and the first fully automated system in 1980. That same spirit continues today through automated solutions like the Microlab STAR, NIMBUS, VANTAGE, STAR V, and Prep workstations.

No matter the specific needs or application, Hamilton can tailor automated solutions to maximize reliability, efficiency, and flexibility for any workflow. As a trusted partner for laboratories around the world, Hamilton enables researchers to continually enhance their productivity with groundbreaking technologies.

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# Integrated Devices

No two laboratory workflows are identical. Hamilton offers a wide range of application-specific integrated devices to fully automate methods, increase walkaway time, and reduce operator variability. These devices are designed to seamlessly integrate with Hamilton's automated liquid handling workstations, handling critical tasks like temperature control, shaking, sealing, solid phase extraction, and more.

Hamilton's integrated technologies can streamline even the most complex workflows so laboratories can devote more resources towards pushing the boundaries of research rather than manual tasks. With Hamilton's integrated devices, labs can maximize productivity and accelerate their research.



## Hamilton Automation

Hamilton's automated liquid handling platforms are ideal for any laboratory looking to streamline workflows and improve accuracy. Intuitive workstations and software automate repetitive tasks, increasing sample throughput while reducing cross-contamination and human error. Hamilton offers a range of automated platforms that can be tailored to meet current needs and customized for future workflow requirements.

# Hamilton Heater Shaker 2G (HHS)

## Heating & Shaking Made Easy

The Hamilton Heater Shaker (HHS) automates heating and shaking workflows for a variety of ANSI/SLAS plates and tubes. Featuring heating up to 105° C monitored with dual sensors, the HHS enables both clockwise and counterclockwise shaking at up to 2500 RPM. The device accommodates microplates, deep well plates, and tubes via interchangeable adapters, enabling flexible processing on one piece of hardware.

The HHS seamlessly integrates with Hamilton's automated liquid handlers allowing for direct control through the workstation's software. The 2G comes with a fixed configuration of a base, adapter, cable, orbit, and brackets.

## Benefits

- Temperature control: Ambient +5° C to 105° C
- Shaking orbits: 1.5 mm, 2.0 mm, 3.0 mm
- Shaking speed: 100 to 2500 RPM
- Redundant sensors for temperature control
- Automatic plate lock
- Can be integrated with the Prep, NIMBUS, STAR, STAR V, and VANTAGE



# Specifications

Hamilton Heater Shaker 2G			
Available Options		Part Number	
HHS 2.0 Flat Bottom		199033	
HHS 3.0 Flat Bottom		199034	
Control Box (Needed for more than 2 HHS units)		190755	
General Specifications			
Base Unit Dimensions (WxHxD)		150 x 90 x 105 mm (5.9 x 3.5 x 4.1 in)	
Weight		2.5 kg (5.5 lbs)	
Deck Consumption		1 ANSI/SLAS Site	
Communication Type		CAN via TCC Connector or via USB	
Operating Specifications			
Power Consumption		41 V / 100 W (max.)	
Operating Temperature Range		15° C to 35° C (59° F to 95° F)	
Operating Relative Humidity		15%-85% (no condensation)	
Thermal and Shaking Specifications			
Temperature Control		Ambient +5° C to 105° C (+41° F to 221° F)	
Shaking Speed		Up to 2500 RPM	
Available Shaking Orbits (peak to peak)		1.5 mm, 2.0 mm, 3.0 mm (0.06 in, 0.08 in, 0.12 in)	
Shaking Directions		Clockwise and Counter-Clockwise	
Acceleration / Deceleration Speed		2.0 Seconds	
Temperature Ramp Rate and Tolerance Band			
Temperature	Ramp from 25° C	Deviation compared to target temp	Tolerance Band for measurement and control: deviation on plate (middle to edge position)
37° C (98.6° F)	in 3 min	36.0° C-38.0° C (96.8° F-100.4° F)	35.0° C-39.0° C (95° F-102.2° F)
60° C (140° F)	in 10 min	58.5° C-61.5° C (137.3° F-142.7° F)	57.0° C-63.0° C (134.6° F-145.4° F)
90° C (194° F)	in 20 min	88.0° C-92.0° C (190.4° F-197.6° F)	86.0° C-94.0° C (186.8° F-201.2° F)
100° C (212° F)	in 30 min	97.5° C-102.5° C (207.5° F-216.5° F)	95.0° C-105.0° C (203° F-221° F)
105° C (221° F)	in 35 min	102.5° C-107.5° C (216.5° F-225.5° F)	100.0° C-110.0° C (212° F-230° F)

# Hamilton Heater Shaker 3G (HHS)

## Next Gen Heating & Shaking

The Hamilton Heater Shaker 3G (HHS 3G) builds on proven performance while upgrading flexibility, efficiency, and safety. An innovative Smart Adapter system enables easy on-site swapping to reconfigure setups without a new base. Smart adaptors can be quickly interchanged and verified by the end user, enabling additional workflows on the fly.

Slash waiting times with faster, more uniform heating across plates. Added compatibility allows for a seamless transition from the HHS 2G, carrying over trusted protocols with no additional programming.

## Benefits

- Temperature control: Ambient +5° C to 105° C
- Field Adjustable orbits: 1.5 mm, 2.0 mm, 3.0 mm, 4.0 mm
- Shaking Speed: up to 2500 RPM
- User exchangeable smart adapters have an ID chip that identifies the adapter type and optimizes performance by automatically setting parameters
- Customer run verification for temperature, orbit, and RPM (no tools required)
- Dual measuring system for orbit and temperature
- Accommodates deep well plates, PCR plates, Microtiter plates, MIDI plates, and tubes (specific adaptors needed)



# Specifications

Hamilton Heater Shaker 3G		
Available Options		Part Number
Hamilton Heater Shaker 3G		Configurable (Plate adaptor, orbit, and cable customizable)
Control Box (Needed for more than 2 HHS units)		190755
General Specifications		
Base Unit Dimensions (WxHxD)		150 x 90 x 105 mm (5.9 x 3.5 x 4.1 in)
Weight		2.5 kg (5.5 lbs)
Deck Consumption		1 ANSI/SLAS Site
Communication Type		CAN via TCC Connector or via USB
Operating Specifications		
Power Consumption		42 VDC / 140 W (max.)
Operating Temperature Range		15° C to 35° C (59° F to 95° F)
Operating Relative Humidity		15%-85% (no condensation)
Thermal and Shaking Specifications		
Temperature Control		Ambient +5° C to 105° C (+41° F to 221° F)
Shaking Speed		Up to 2500 RPM
Available Shaking Orbits (peak to peak)		1.5 mm, 2.0 mm, 3.0 mm, 4.0 mm (0.06 in, 0.08 in, 0.12 in, 0.16 in)
Shaking Directions		Clockwise and Counter-Clockwise
Acceleration / Deceleration Speed		2.0 Seconds
Temperature Ramp Rate and Tolerance Band		
Temperature	Ramp from 25° C (77° C)	Tolerance Band
37° C (98.6° F)	in 3 min	±1° C (±33.8° F)
60° C (140° F)	in 5 min	±1.5° C (±34.7° F)
90° C (194° F)	in 6.5 min	±2° C (±35.6° F)
100° C (212° F)	in 7 min	±2.5° C (±36.5° F)
105° C (221° F)	in 7.5 min	±2.5° C (±37.4° F)

# Hamilton Heater Cooler (HHC)

## Versatile Temp Control

The Hamilton Heater Cooler (HHC) automates the heating and cooling of ANSI/SLAS footprint labware. HHC offers a controllable temperature range of 0° C-110° C with an on-device temperature display to monitor conditions. Also featured is a built-in drain to manage condensation.

## Benefits

- Controllable temperature range of 0° C-110° C
- User exchangeable adaptors
- Built-in drain to manage condensation
- Built-in temperature display
- Moisture prohibitive materials
- Can be integrated with Hamilton's Prep, NIMBUS, STAR, STAR V, and VANTAGE automated platforms



The versatile device can be paired with any of Hamilton's automated liquid handling platforms, providing flexible heating and cooling options for a variety of applications.

# Specifications

Hamilton Heater Cooler		
Available Options		Part Number
Hamilton Heater Cooler		6601900-01
Control Box (Needed for more than 2 HHC units)		190755
General Specifications		
Base Unit Dimensions (WxHxD)		148 x 80 x 103 mm (5.82 x 3.15 x 4.05 in)
Weight		1.02 kg (2.25 lbs)
Deck Consumption		1 ANSI/SLAS Site
Communication Type		CAN, USB (via signal distribution box)
Operating Specifications		
Power Input		40-48 V, 120 W
Operating Temperature Range		15° C -35° C (59° F-95° F)
Operating Relative Humidity		15%-85% (non-condensing)
Thermal Specifications		
Temperature Control		0° C-110° C (32° F-230° F)
Temperature Ramp Rate *		
Start Temperature	Target Temperature	Time
70° C (158° F)	25° C (77° F)	in 5 minutes
25° C (77° F)	15° C (59° F)	in 2 minutes
25° C (77° F)	10° C (50° F)	in 3 minutes
25° C (77° F)	0° C (32° F)	in 6 minutes
25° C (77° F)	50° C (122° F)	in 2 minutes
25° C (77° F)	60° C (140° F)	in 3 minutes
25° C (77° F)	70° C (158° F)	in 4 minutes

\* Varies based on environmental conditions

# On-Deck Thermal Cycler (ODTC)

## On-Deck PCR

The Hamilton On-Deck Thermal Cycler (ODTC) is an automated, on-deck solution for genomic workflows. Utilizing INHECO's innovative 3D vapor chamber technology, the compact ODTC provides unmatched well-to-well temperature uniformity along with rapid heating/cooling rates and a seamless transition into plateau phases.

Integrating the ODTC with Hamilton's automated liquid handling systems provides full pipetting access to PCR plates. The system allows lids to open horizontally at any point during the heating or cooling process. The ODTC is compatible with the Hamilton comfort lid in addition to Hamilton and third-party PCR plates.

## Benefits

- Consistent results due to superior well-to-well temperature uniformity
- Automate multi-step processes by accessing the PCR plate at any time during heating/cooling
- Horizontally opening lid
- Streamline workflows with pipetting directly in PCR plates located on the ODTC
- Available in 96-well and 384-well formats
- XL version available for deep well plates Chamber Mount technology allows shortened PCR profiles



# Specifications

On-Deck Thermal Cycler (ODTC)	
Available Options	Part Number
Single ODTC Kit (STAR)	96124-01
Dual ODTC Kit (STAR)	96124-02
OVT Verification Tool 96	OTP-INHC-0161
Hamilton 96-well PCR FramePlate, full skirted, 200 µL wells, low profile well design, clear wells (50 plates)	814302
Hamilton 384-well PCR FramePlate, full skirted, 30 µL wells, low profile well design, clear wells (50 plates)	814305
Comfort Lid (50 lids)	814300
Comfort Lid Adaptor	814337
General Specifications	
Base Unit Dimensions (WxHxD)	156.5 x 248 x 124 mm (6.16 x 9.76 x 4.88 in)
Weight	7.5 kg (16.5 lbs)
Deck Consumption	2.5 ANSI/SLAS Site
Plate Ejection	Automated plate ejection mechanism with exchangeable ejection bars
Plate Format	96 and 384
Run Time	< 40 min. for 40 cycles
Maximum Volume During PCR	Maximum volume during PCR up to 100 µl/well for 96 well version up to 50 µl/well for 384 well version
Lid Pressure	Automated adjustment of lid pressure for different disposable and sealing options
ODTC Lid	Opens and closes by moving horizontally and is heated to avoid condensation Running temperature profiles with an open ODTC lid is possible
Communication Type	Ethernet
Operating Specifications	
AC input	100 - 240 V/50/60 Hz (1250 W)
DC Output	24 VDC, 1200 W
Operating Temperature Range	15° C to 32° C (59° F-89.6° F)
Operating Relative Humidity	30%-80% (no condensation)
Thermal Specifications	
Temperature Range	4° C to 99° C (39.2° F to 210.2° F)
Temperature Accuracy	±0.30 K at 55° C (±32.54 K at 131° F)
Temperature Uniformity	±0.20 K at 55° C (±32.36 K at 131° F)
	±0.20 K at 72° C (±32.36 K at 161.6° F)
	±0.20 K at 95° C (±32.36 K at 203° F)
Heating Rate Average (slope)	Max. 4.4 K/s
Cooling Rate Average (slope)	Max. 2.2 K/s
Adjustable Heating & Cooling Rate	From 0.1 K to 4.4 K/s
ODTC Lid Temperature	Adjustable between ambient temperature 5.0 K to 115° C (41 K to 239° F)
ODTC Lid Default Temperature	110° C (230° F)

# Sample Cooling Carrier (Up to 96 Tubes)

## Cooling Without Moving

The Hamilton Sample Cooling Carrier Module allows for the cooling of sample tubes directly in the original container using an auto-loadable, specially designed carrier that identifies individual tube barcodes. The 32-Sample Cooling Carrier design allows condensate discharge via a pump into a collection tank. The modular sample cooling carrier is available with 32, 64, or 96 positions, and additional positions can be added through

extensions as throughput needs increase, enabling users to scale up capacity as needed.

Hamilton recommends using the Hube Minichiller OLE with the Cooling Carrier Module.

## Benefits

- Cooling for sample tubes down to 4° C
- Auto-loadable carrier enables barcode carrier
- Compatible with STAR and Vantage automated liquid handling platforms



# Specifications

Sample Cooling Carrier			
Available Options		Part Number	
Cooling Carrier Module 1		10105589	
Cooling Carrier Module 2		10105590	
Cooling Carrier Module 3		10105594	
Cooling Carrier Extension 1		10105596	
Cooling Carrier Extension 2		10105595	
General Specifications			
Cooling Carrier Module 1	590 x 67 x 140 mm (23.23 x 2.6 x 5.5 in)	6.2 kg (13.7 lbs)	
Cooling Carrier Module 2	590 x 112 x 140 mm (23.23 x 4.4 x 5.5 in)	10.1 kg (22.3 lbs)	
Cooling Carrier Module 3	590 x 157 x 140 mm (23.23 x 6.2 x 5.5 in)	14 kg (30.9 lbs)	
Cooling Carrier Extension 1	590 x 45 x 140 mm (23.23 x 1.8 x 5.5 in)	3.9 kg (8.6 lbs)	
Cooling Carrier Extension 2	590 x 90 x 140 mm (23.23 x 3.5 x 5.5 in)	5.8 kg (12.8 lbs)	
Condensation Module	222 x 195 x 335 mm (8.74 x 7.7 x 13.2 in)	4.2 kg (9.3 lbs)	
Measurement Box	30 x 43 x 35 mm (1.18 x 1.7 x 1.4 in)	0.025 kg (0.06 lbs)	
Sample Cooling Carrier	590 x 23 x 140 mm (23.23 x 0.9 x 5.5 in)	1.2 kg (2.6 lbs)	
Operation Specifications			
Operation Temperature	+15° C - +35° C (+59° F - +86° F)		
Operation Relative Humidity	15% - 85% (non-condensing)		
Operation Specifications			
Description	Measurement Box	Condensation Module	Periphery Box
Input Voltage	5V	42V DC	42V DC
Nominal Current	0.5 A	max 4 A	1.0 A
Communication	USB	USB	various
Thermal Specifications			
Controllable Temperature Range	Cooling down to 4° C (with Hube Minichiller)		

# Hamilton Incubator Shaker (HIS)

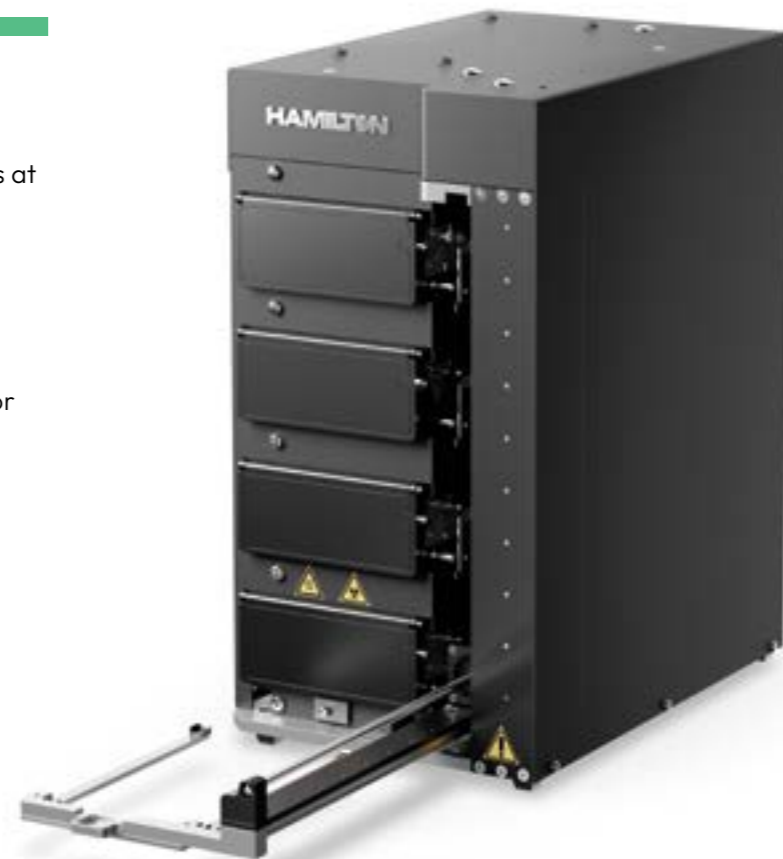
## Accurate pH Measurements

The Hamilton Incubator Shaker (HIS) provides a compact incubation and shaking solution with three versatile configuration options: a 4x lidded microtiter plate module, a 2x lidded microtiter plate with a 1x deep well plate module, and a 2x lidded deep well plate module. Each module allows for independent temperature control up to 60°C and orbital shaking speeds up to 1200 RPM. Temperatures and speeds can be digitally monitored and recorded in real time.

For maximum throughput, multiple HIS units can be integrated on Hamilton's automated liquid handling platforms.

## Benefits

- Run up to four ANSI/SLAS lidded plates at once (depending on configuration)
- Digitally monitor and record individual module temperatures in real-time
- Up to 60° C and 1200 orbital RPM
- Pair multiple units with Hamilton automated liquid handling platforms for maximum throughput



# Specifications

Hamilton Incubator Shaker	
Available Options	Part Number
Hamilton Incubator Shaker (4x lidded MTPs)	96486-02
Hamilton Incubator Shaker (2x lidded MTPs and 1x lidded DWP)	96486-03
Hamilton Incubator Shaker (2x lidded DWPs)	96486-04
General Specifications	
Base Unit Dimensions (WxHxD)	180 x 334 x 274 mm (7.1 x 13.1 x 10.8 in)
Dimensions with Extended Fork (WxHxD)	180 x 334 x 464 mm (7.1 x 13.1 x 18.3 in)
Weight	12.2 kg (27 lbs)
Plate Compatibility	Microtiter plates: up to 17.25 mm (0.679 in) and 140 g (4.93 oz) Deep well plates: up to 48.00 mm (1.889 in) and 300 g (10.58 oz)
Operating Specifications	
Nominal Voltage	100-240 VAC, 3.15 A
Voltage Fluctuations	50-60 Hz
Power Consumption	300 W Maximum
Operating Temperature Range	15° C -30° C (59° F-86° F)
Operating Relative Humidity	10%-90% (non-condensing)
Thermal Specifications	
Controllable Temperature Range	Ambient +4° C to 60° C
Heater Plate Pre-Heat Time	20° C to 37° C max. 5 min (68° F to 98.6° F max. 5 min)
Accuracy	± 0.3° C at all temperatures
Uniformity	± 1° C at all temperatures
Accuracy of Sample Plate	± 0.5° C at all temperatures
Evaporation at 37°C	<2 µL per well per hour
Liquid Heat Up Time	96 well microtiter plate: 150 µL max. 30 min Deep well plate: 150µL max. 30 min 2.0 mL max. 240 min.
Shaking Specifications	
Amplitude	3 mm orbital (0.118 in)
Frequency	40-1200 RPM (.67-20 Hz)

# Vial Cap Management System (VCMS)

## Fully Automated Cap Management

De-cap, aliquot, and recap 96 vials in just 50 minutes with the Vial Cap Management System (VCMS). This device fully automates the cap management process with an advanced vision system that detects tube type, cap type, cap presence, and barcodes. By preventing repetitive tasks, the VCMS not only reduces the risk of human error and cross-contamination but can also keep lab professionals safer by mitigating repetitive stress injuries.

The VCMS seamlessly integrates with Hamilton's Microlab STAR for a start-to-finish solution.



## Benefits

- De-cap, aliquot, and re-cap 96 vials in just 50 minutes
- Vortex up to 1500 RPM
- Detects tube type, cap type, cap presence, and reads 1D/2D barcodes
- Integrates with the Microlab STAR to scan source and destination tubes

# Specifications

Vial Cap Management System (VCMS)	
Available Options	Part Number
VCMS with Falcon Tube Adapters	6608500-01
SurePath Tube Adaptors (set of 100)	6607296-01S
ThinPrep Tube Adapters (set of 100)	6602966-01S
General Specifications	
Base Unit Dimensions (WxHxD)	1053.5 x 452.5 x 1194.5 mm (14.48 x 17.82 x 47.03 in)
Base Unit Dimensions with Door Open (WxHxD)	1053.5 x 684.4 x 1194.5 mm (14.48 x 29.94 x 47.03 in)
Weight	41.6 kg (91.5 lbs)
Capacity	96 vials max.
Compatible Labware	ThinPrep, SurePath, and 50 mL Falcon Tubes
Communication Type	USB/Ethernet
Operating Specifications	
Input Power (Primary), Universal Supply	100-240 VAC, 50/60 Hz, 13 A-6 A
Output Power (Secondary)	42 VDC, 1000 W
Operating Temperature Range	13° C -33° C (55.4° F -91.4° F)
Operating Relative Humidity	15%-85% (non-condensing)
Torque and Vortex Specifications	
Maximum Cap Installation Torque	ThinPrep: 2.26 Nm (20 Lb.-in) Maximum SurePath: 1.13 Nm (10 Lb.-in) Maximum 50mL Falcon Conical Centrifuge Tube: 1.13 Nm (10Lb.-in) Maximum
Maximum Vortex Rate	1500 RPM
1-D Barcode Specification	
Label Length	Maximum label length: SurePath: 37.5mm (1.476 in), ThinPrep: 53.5 mm (2.106 in)
Supported Symbologies	Code 128 (subset B and C), Code 39, Codabar
2-D Barcode Specification	
Form	Square Only
Maximum Label Width	18 mm (0.708 in)
Supported Symbologies	Data Matrix (ECC200)

# Turntable Module

## 0°-270° Rotation Control

The Multiflex Turntable Module enables automated plate orientation control within a 0°-270° rotational range, seamlessly transitioning between portrait and landscape layouts using two deck positions.

## Benefits

- Designed for automated transitioning of plate orientation with a rotational range of 0° -270°
- Occupies two deck positions
- Targeted positioning at 90°, 180°, 270°
- Switches between portrait and landscape orientation



# Specifications

Turntable Module	
Available Options	Part Number
Multiflex Turntable Module	188055APE
General Specifications	
Maximum Outer Dimensions (WxHxD)	135 x 70 x 165 mm (5.31 x 2.76 x 6.49 in)
Weight (without carrier base)	0.5 kg (1.10 lbs)
Interface Box Maximum Outer Dimensions (WxHxD)	370 x 90 x 215 mm (14.57 x 3.54 x 8.46 in)
Interface Box Weight	2 kg (4.4 lbs)
Communication	RS232
Electrical Specifications	
Maximum Power Consumption	20 VA
Voltage	115 / 230 V

# Tilt Module

## Residue-Free Tilting

The Multiflex Tilt Module enables retrieval of precious liquids or complete removal of liquids from ANSI/SLAS format reagent troughs, microplates, and deep-well plates. The module features an adjustable range of 0° - 10° to assist with liquid retrieval or liquid removal.

## Benefits

- Enables retrieval of precious liquids or complete removal of liquids from ANSI/SLAS format labware
- Ideal for cell culture applications requiring the removal of all media or passaging cells
- Adjustable tilt range of 0°-10°



# Specifications

Tilt Module	
Available Options	Part Number
Multiflex Tilt Module	188061
General Specifications	
Maximum Outer Dimensions (WxHxD)	131 x 84 x 92 mm (5.16 x 3.30 x 3.62 in)
Interface Box Maximum Outer Dimensions (WxHxD)	370 x 90 x 215 mm (14.57 x 3.54 x 8.46 in)
Interface Box Weight	2 kg (4.4 lbs)
Communication	RS232
Electrical Specifications	
Maximum Power Consumption	20 VA
Voltage	115 / 230 V

# Seesaw Module

## Keep Mixtures in Motion

The Multiflex Seesaw Module keeps mixtures in suspension and enables maximum retrieval or removal of reagents from ANSI/SLAS format reagent troughs, microplates, and deep-well plates. Features of the Seesaw Module include an adjustable tilt range of 0°-15° and four different rocking speeds.

## Benefits

- Keeps mixtures in suspension by using four different rocking speeds
- Enables maximum retrieval or removal of reagents from ANSI/ SLAS format reagent troughs, microplates, and deep-well plates
- Rocking speeds of 16, 34, 51, and 59 RPM
- Adjustable tilt range of 0° -15°



# Specifications

Seesaw Module	
Available Options	Part Number
Multiflex Seesaw Module	188063
General Specifications	
Maximum Outer Dimensions (WxHxD)	135 x 110 x 140 mm (5.31 x 4.33 x 5.5 in)
Tilt Module Weight	0.5 kg (1.10 lbs)
Interface Box Maximum Outer Dimensions (WxHxD)	370 x 90 x 215 mm (14.57 x 3.54 x 8.46 in)
Interface Box Weight	2 kg (4.4 lbs)
Communication	RS232
Electrical Specifications	
Maximum Power Consumption	20 VA
Voltage	115 / 230 V

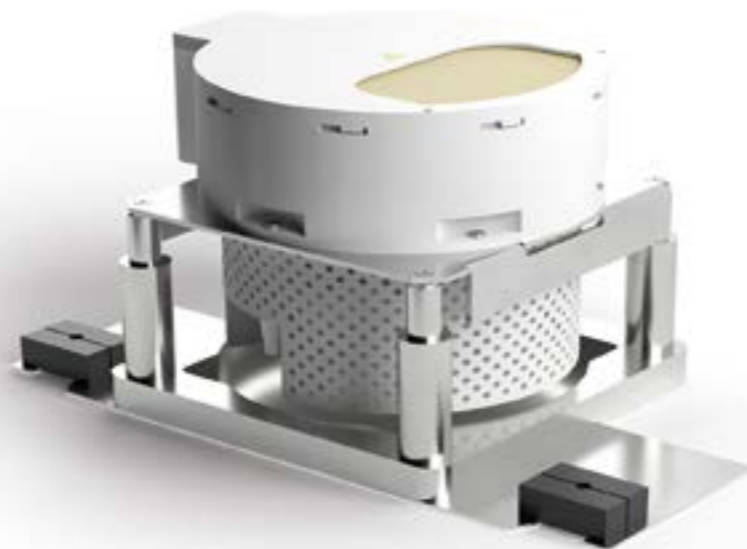
# Gelcard/SBS Centrifuge

## Integrated Centrifuge Solutions

Both the centrifuges for Gelcards and Microtiter Plates / Deep Well Plates can be integrated into the deck of the Microlab STAR. This allows for fully automated assays and simple integration. The top lid version can be loaded/unloaded by the CO-RE grippers. The result is a fully implemented solution for multiple application areas. The Gelcard version comes with 24 positions, while the SBS version allows for loading in two spaces.

## Benefits

- On-deck integration with Microlab STAR
- Accommodates labware up to 60 mm (maximum height)
- Automatic honing position for robotic loading access
- Automatic sensor for imbalance detection
- Minimal vibration
- Labware transfer by CO-RE grippers



# Specifications

Gelcard/SBS centrifuge	
Available Options	Part Number
24 Gelcard Centrifuge	199600
SBS Hamilton Centrifuge	199700
General Specifications	
Dimensions (L x W x H x W)	352 mm x 322 mm x 280 mm x 24 kg (13.9 in x 12.8 in x 11 in x 52.9 lbs)
Lifetime	> 2500 hours
Ambient Conditions	
Temperature	+15° C - +30° C (+59° F - +86° F)
Relative Humidity	15% - 85% (non-condensing)
Gelcard Centrifuge	
Maximum Relative Centrifugal Force	2000 G-Force
Maximum Revolutions Per Minute	1500 RPM
Acceleration Time to Full Speed	Approximately 15 Seconds
Maximum Load	24 x 6.3 grams (24 x 0.22 ounces)
Number of Gel Card Clots	24
Positioning Tolerance	± 1 degree (accuracy) ±0.5 degree (precision)
Rotor Diameter	186 mm (7.3 in)
Electrical and Communication Specifications	
Input Voltage	41 VDC
Input Current (maximum)	5 A
Imbalance Sensor	G-Force Sensor
Interface	CAN-Bus
SBS Centrifuge	
Maximum Relative Centrifugal Force	2000 G-Force
Maximum Revolutions Per Minute	4200 RPM
Acceleration Time to Full Speed	Maximum 50 seconds
Maximum Load	2 x 500 grams (2 x 17.6 ounces)
Number of Plate Positions	2
Maximum Imbalance	6 grams (0.2 ounces)
Positioning Tolerance	± 1 degree (accuracy) ±0.5 degree (precision)
Rotor Diameter	204 mm (8.0 in)
Electrical and Communication Specifications	
Input Voltage	48 VDC
Input Current (maximum)	7 A
Imbalance Sensor	G-Force Sensor
Interface	CAN-Bus

# Plate Sealer

## Safe On-Demand Sealing

Efficiently seal ANSI/SLAS plates with the Hamilton Plate Sealer, a compact device that can be integrated with Hamilton's automated liquid handling systems or used as a standalone unit. The sealer accommodates plates ranging from 8-45 mm in height and seals them with optically clear or foil seals. An interactive touchscreen allows for easy operation and on-demand sealing.

## Benefits

- Compact plate sealer for ANSI/SLAS plates
- Compatible with foil and clear seals
- Flexible sealing solution compatible with labware 8-45 mm in height, such as deep well plates, microplates, and PCR plates
- Intuitive on-device display
- Can be used as a standalone device or integrated with Microlab NIMBUS, STAR, STAR V, and VANTAGE automated liquid handling platforms



# Specifications

Plate Sealer		
Available Options	Part Number	
Plate Sealer	93005-01	
Optically Clear Seals	67765-01	
Aluminum Seals	67760-01	
General Specifications		
Base Unit Dimensions (WxHxD)	580 x 124 x 128.5 mm (22.8 x 4.9 x 5.1 in)	
Weight	6.6 kg (14.75 lbs)	
Compatible Labware	ANSI/SLAS with 8-45 mm in height	
Magazine Seal Capacity	50 Seals	
Waste Capacity	50 Backings	
Communication Type	CAN, IP/TCP via Ethernet, or serial via USB	
Operating Specifications		
Input Power	100-240 VAC, 50/50 Hz, 4.0 A	
Output Power (Secondary)	48VDC, 4.6 A, 221 W Maximum (Use only the power supply provided with the Hamilton Plate Sealer)	
Operating Temperature Range	15° C -40° C (59° F-140° F)	
Operating Relative Humidity	15%-90% (no condensation)	
Foil Seal Option		
Parameter	Optically Clear	Piercable Aluminum
Thickness	50 µm	30 nm
Adhesive Material Composition	Inert Encapsulated Silicone	Acrylic Sublayer
Opacity	Full Spectrum 190-1,100 nm (transmission rate 87% at 400 nm)	N/A
Applications	RT qPCR, PCR, Protein Crystallization, Cold Storage	RT qPCR, PCR, Cold Storage
Product Storage Conditions	21° C-2° C (70° F-90° F), Humidity 40-60%	21° C-32° C (70° F-90° F), Humidity 40-60%
Product Storage Shelf Life	2 years from the date marked on the packaging	3 years from the date marked on the packaging
Applied Seal Temperature Range	-70° C-100° C (-94° F-194° F)	-80° C-120° C (-112° F-248° F)

# FLUOREYE

## Mobile Fluorescence Reader

FLUOREYE is an automated on-deck device offering rapid fluorescence detection directly on Hamilton's liquid handling systems. Effortlessly quantify DNA/RNA, enabling sample normalizations with dual excitation wavelengths at 470 nm/625 nm and detection wavelengths at 520 nm/680 nm. In under 3 minutes, FLUOREYE measures 96 wells and supports up to 6,000

measurements per charge. Its compact footprint (1 ANSI/SLAS position) and multiple integration possibilities allow for full on-deck implementation, giving full flexibility to retrofit the FLUOREYE on existing instruments as well as new platforms.

## Benefits

- Compact, automated on-deck fluorescence detection for DNA/RNA quantification enabling sample normalization and pooling
- Rapid, reliable results - measures 96 wells in less than 3 minutes
- Seamless integration onto Hamilton's Microlab STAR and VANTAGE automated liquid handling systems and easily retrofitted onto existing systems
- Sensitive fluorescence detection for increased specificity
- Touchless measurement of sample
- Pipetting heads enable Fluoreye using CO-RE Technology eliminating the need for plate transport- keep your samples heated, cooled, or in a shaking position



# Specifications

FLUOREYE Mobile Device	
Available Options	Part Number
FLUOREYE (Mobile Device & Base Station)	10141149
Active Carrier Base VANTAGE	188539
Active Carrier Base STAR	10112368
Single Active Position VANTAGE	10161654
Single Active Position STAR	10149934
General Specifications	
Elevation Wavelengths	470 nm / 625 nm
Detection Wavelengths	520 nm / 680 nm
Measurements Possible on a Single Charge	>6000
Communication	CAN
Mobile Device Communication	Encrypted Bluetooth communication from mobile device to base station.
Deck Consumption	1 SLAS/ANSI site
Physical Dimensions	
Mobile Device LxWxH	68 x 35 x 84 mm (2.68 x 1.39 x 3.31 in)
Weight (Mobile Device)	190 g (0.419 lb)
Base Station (LxWxH)	134 x 91 x 110 mm (5.28 x 3.58 x 4.33 in)
Base Station Weight	320 g (0.705 lb)
Operating Conditions	
Temperature Operating	15° C to +35° C
Relative Humidity Operating	15% to 85% (non-condensing)
Altitude	Up to 2000 m/ 6561 ft. Above Sea Level
Battery Voltage	3.7 V
Battery Capacity	500 mAh
Power Supply Voltage	Power Supply Voltage 42 V DC, via TCC1/TCC2 on the STAR and Periphery box of STAR V/ VANTAGE

# easyCode Carrier

# easyCode Carrier Plus

## Scanning so Simple, it's Easy

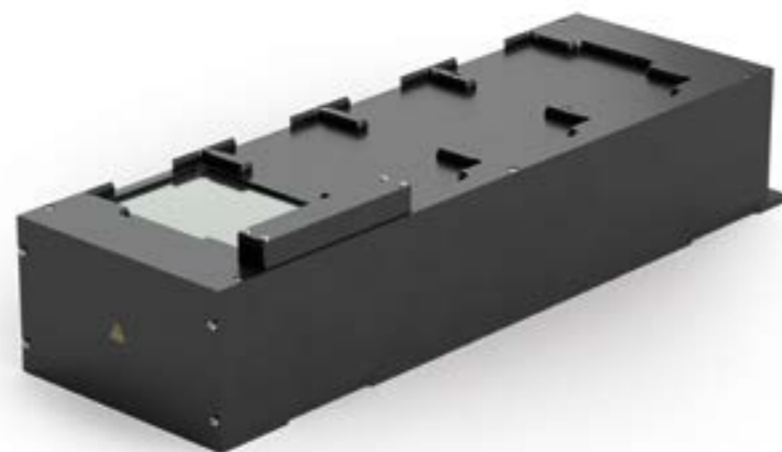
The easyCode Carrier enables automated 2D barcode reading directly on deck, optimizing sample tracking workflows. Featuring four ANSI/SLAS footprint sites, this system can capture and parse an entire microplate of container barcodes in seconds using its integrated 5-megapixel camera. With built-in lighting to assist with identification, easyCode can read even the most challenging barcodes. When seamlessly integrated onto

Hamilton liquid handlers, easyCode allows pipetting immediately after on deck barcode identification.

The easyCode Carrier PLUS includes a mirror for 1D rack barcodes.

## Benefits

- Provides four ANSI/SLAS footprint sites with a robust 2D barcode reader that captures and parses an entire microplate of container barcodes in seconds for ultra-fast, optimized sample tracking
- 5-megapixel camera with advanced optics and built-in light captures even the most difficult 2D barcodes
- The camera requires no warm-up time, features a read time of less than one second, and captures the entire rack in a single image
- easyCode Carrier PLUS includes a mirror for 1D rack barcodes in addition to 2D barcode reading
- Compatible with ML STAR and VANTAGE



# Specifications

easyCode Carrier / easyCode Carrier Plus	
Available Options	Part Number
EasyCode 2D Barcode Reader (6T)	808300
EasyCode PLUS 1D/2D Barcode Reader (7T)	808200
General Specifications	
Weight	easyCode Carrier 4.6 kg (10.14 lbs) easyCode CarrierPlus 5.2 kg (11.5 lbs)
Rack Format	SBS Format Footprint Overall Height ≤ 43 mm (1.7 in)
Rack Layout	Tube Racks with 1 to 384 Tubes, regular (Matrix) arrangement or honeycomb layout Overall Height ≤ 43 mm (1.7 in)
Reading Time	1 sec
Reading and Decoding Time	96 Tubes -> 4 Sec
1D Compatible Barcodes	Code 39, Code 93, Code 128, RSS/RSS-14, EAN 8, EAN 13, UPC-A, UPC-E, 2/5 Industrial/Interleaved, PharmaCode, Codeabar, MSI
2D Compatible Barcodes	Data Matrix ECC 200, PDF-417, QR Code, Micro QR Code, Aztec Code
Communication	USB to General
Add Power	DIV Port (STAR) Periphery Box (VANTAGE)
Operating Specifications	
Operating Temperature	15° C-35° C (59° F-127° F)
Operating Humidity	30%-85% (non-condensing indoors)

# ApH Module

## Accurate pH Measurements

The ApH Module is an integrated pH measurement device for Hamilton's automated liquid handling systems. The mobile module is transported to sample plates for on-deck pH measurements ranging from pH 2-12 with accuracy within 0.1 pH. The system includes probe washing stations to clean the probes between measurements. The ApH Module can run up to 4 parallel pH probes and complete a 96-well plate in 25 minutes.

A single charge enables 10 hours of continuous measuring.

Available on Hamilton STARline systems.

## Benefits

- Up to 4 parallel pH probes for pH 2-12 and accuracy < pH 0.1
- Minimum 10h measurement from a single full charge
- Less than 25 minutes to measure 96 wells
- User-friendly interface and pre-defined methods that can be adapted and integrated into customized methods
- User-exchangeable probes
- Standard format fits ANSI/SLAS format 96-, 48- and 24-well plates as well as other tube formats
- One Carrier (6T) contains an ApH module, washer module, dryer module, and trough module
- Measurement values are transferred via Bluetooth
- Compatible with STARline instruments with VENUS two software and newer versions



# Specifications

ApH Module	
Available Options	Part Number
ApH Module (compatible with STAR line instruments)	819775
CO-RE Grippers for 1 mL Channel (required)	184089
ApH Calibration Solutions	238924
General Specifications	
Diameter of pH Probe	Maximum 5.5 mm
Length of pH Probe	Measurement Part at least 20 mm
Immersion Depth into Liquid	Minimum 7 mm to ensure correct measurement
Range	Minimum pH 2.00-12.00
Accuracy	Better than 0.1 pH
Maximum Outer Dimension	
ApH Measurement Module (Carrier Complete)	140 x 135 x 552 mm (5.51 x 5.31 x 21.73 in)
ApH Measurement Module	77 x 56 x 85 mm (3.03 x 2.20 x 3.35 in)
ApH Measurement Module Base	134 x 60 x 95 mm (5.27 x 2.36 x 3.74 in)
Washer Module	134 x 116 x 95 mm (5.27 x 4.57 x 3.74 in)
Liquid Dispenser	185 x 274 x 247 mm (7.28 x 10.79 x 10.77 in)
Dryer Module	134 x 120 x 95 mm (5.27 x 4.72 x 3.74 in)
Trough module	134 x 66 x 95 mm (5.27 x 2.60 x 3.74 in)
Operating Specifications	
ApH Module Data Transfer	Wireless Bluetooth Connection
ApH Charging Base Connection	TCC Port
Sample Volume Required	100 µL
Operating Temperature Range	+15° C to +40° C (+59° F-104° F)
Operating Humidity	15%-85% relative humidity non-condensing

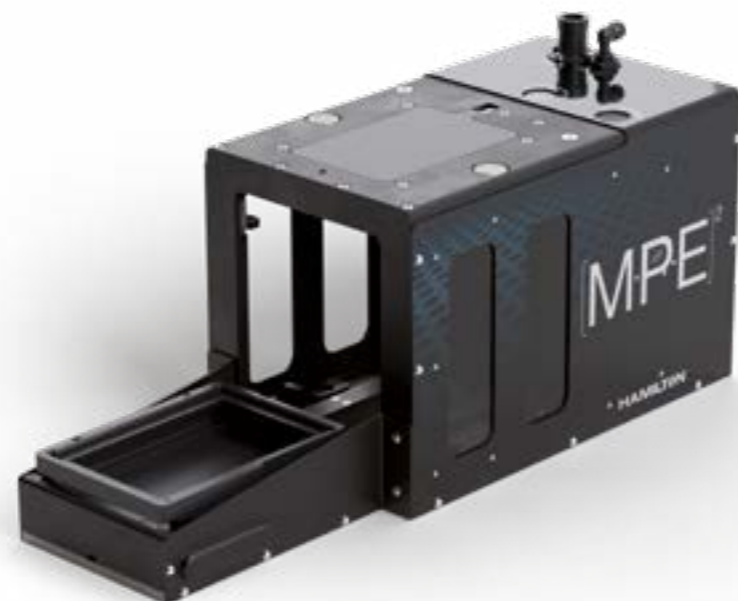
# The Monitored Multi-Flow Positive Pressure Evaporative Extraction Module ([MPE]<sup>2</sup>)

The Monitored Multi-Flow Positive Pressure Evaporative Extraction Module, or [MPE]<sup>2</sup>, is a compact, all-in-one automated solid-phase extraction solution. [MPE]<sup>2</sup> features a patented dual elevator design, delivering consistent results, and works with 24, 48, and 96 well plates in addition to a variety of SPE cartridges.

Additionally, optional reagent and evaporation modules can be paired with [MPE]<sup>2</sup>'s base unit for application-specific needs.

## Benefits

- Fully automates positive pressure filtration, evaporative extraction, and reagent dispensing for solid-phase extraction
- A patented dual elevator design delivers a compact footprint enabling high throughput capabilities
- Add-on evaporation and reagent modules
- Compatible with 24, 48, and 96 well plates and SPE cartridges
- Positive pressure allows partial plate processing and adjustable pressure control up to 100 psi enabling consistent results
- Accommodates filter and collection plate/column heights up to 114 mm



# Specifications

[MPE] <sup>2</sup>			
Available Options	Part Number		
96 Air Manifold	96160-01		
48 Air Manifold	96160-02		
24 Air Manifold	96160-03		
96 Air Manifold and Evaporator	96160-04		
48 Air Manifold and Evaporator	96160-05		
24 Air Manifold and Evaporator	96160-06		
96 Air Manifold and Reagent Dispenser	96160-07		
48 Air Manifold and Reagent Dispenser	96160-08		
24 Air Manifold and Reagent Dispenser	96160-09		
96 Air Manifold, Reagent Dispenser, and Evaporator	96160-10		
48 Air Manifold, Reagent Dispenser, and Evaporator	96160-11		
24 Air Manifold, Reagent Dispenser, and Evaporator	96160-12		
General Specifications			
Deck Positions	NIMBUS: 1 pedestal location	STAR: 7T carrier (max.)	Microlab VANTAGE: 7T carrier (max.)
Communication Type	Ethernet / USB		
Operating Specifications			
Input Power (Primary) Universal Supply	100 – 240 VAC, 50 – 60 Hz, 2.5 A		
Output Power (Secondary) Power	+48 VDC ±2% Wattage: 221 Watts (max.)		
Operating Temperature	5° C–40° C (41° F – 104° F)		
Operating Humidity	15% – 90% (non-condensing)		
Wetted Components for Chemical Compatibility			
Waste System	PEEK, 316 SST, FFKM, Viton ETP, Polypropylene, Tygon 2375, Acetal, EPDM, Buna-N		
Reagent Dispenser	PEEK, 316 SST, PTFE, FFKM, Viton ETP, Tygon 2375, PVDF, 300 Series SST, 430F SST		
Reagent Dispenser Specifications			
Minimum and Maximum Volume Dispensed by Well	50–2000 µL		
CV	4%		
Dispense Speed	1 mL dispensing across a 96-well microplate in less than one minute		
Number of Different Reagents	17		
Communication	Ethernet or USB		
Evaporator Specifications			
Communication	Ethernet or USB		
Evaporation Time	Dependent on the liquid. 60° C can be achieved at the needle within 2 minutes at 60 psi or greater depending on ambient and working gas conditions.		
Cool Down Time	Dependent on ambient and working gas conditions.		

# Clear Vacuum Station (CVS) and NIMBUS Vacuum Station (NVS)

## Vacuum Control

Hamilton's Vacuum System is a single-position, on-deck automated vacuum station, accommodating several types of 96- and 384-format ANSI/SLAS well plates at various collection plate heights. With programmable pressure monitoring, users have a wide range of vacuum control. For fully automated usage, Hamilton's CO-RE grippers transport the vacuum manifold tops on the deck without user intervention.

## Benefits

- Single position, on-deck, automated vacuum station
- Programmable pressure monitoring with a control range of 1- to 1060 mbar
- Accommodates a wide variety of 96- and 384-well plates and various collection plate heights
- The dedicated carrier consists of a manifold top, vacuum pump, and controller
- Compatible on Microlab NIMBUS, STAR, and VANTAGE platforms



# Specifications

CVS & NVS	
Available Options	Part Number
Clear Vacuum Station (CVS), 115V	199021
Clear Vacuum station (CVS), 230V	199020
NIMBUS Vacuum Station (NVS), 220V	67382-01
NIMBUS Vacuum Station (NVS), 120V	64108-01
General Specifications	
CVS Carrier Dimensions WxHxD	155 x 112 x 555 mm (6.10 x 4.40 x 21.85 in)
Vacuum Pump Dimensions WxHxD	242 x 245 x 257 mm (9.53 x 9.65 x 10.12 in)
Waste Container Diameter	155 mm (6.1 in)
Waste Container Height	380 mm (14.96 in)
Weight of CVS	4 kg (8.82 lb)
Weight of Vacuum Pump	13.5 kg (29.76 lb)
Pressure Monitoring	1-1060 mbars
Communication	RS232
Operating Data	
Maximum Power Consumption	530 W (230 VAC)
Voltage	115 VAC / 230 VAC (±10%)
Frequency	50/60 Hz
Operating Temperature Range	10° C-40° C (50° F - 104° F)
Operating Relative Humidity	30%-85% (non-condensing)

# Media Fill Module

## Automated Media Dispensing

The user-friendly Media Fill Module supplies bulk reagents directly onto the deck of Hamilton's automated liquid handling systems. Through an integrated peristaltic pump and automatic fill sensor, the device provides a sterile path for transporting sensitive liquids and media. The sterile transfer enables gentle agitation of cells.

Extra pump and reagent trough modules can be added to increase throughput. The Media Fill Module is compatible with ANSI/SLAS standard troughs for flexible implementation.

## Benefits

- Continuous supply of bulk reagents onto the deck of Hamilton's NIMBUS, STAR, STAR V and VANTAGE instruments
- Automatic fill sensor
- Provides a disposable sterile path for media and other nonvolatile/corrosive liquids
- Compatible with standard ANSI/SLAS format troughs
- Peristaltic pump for filling and gentle agitation of cells
- Integrate additional pumps and reagent trough modules for increased throughput



# Specifications

Media Fill Module (MFM)	
Available Options	Part Number
Startup kit, STAR and Microlab VANTAGE	95145-01
Startup kit, NIMBUS	95146-01
Expansion kit, STAR and Microlab VANTAGE	95147-01
Expansion kit, NIMBUS	95148-01
General Specifications	
Weight	2.5 kg (5.5 lbs)
Deck Consumption	1 ANSI/SLAS Site
Pump Rotation	Up to 350 RPM (0 to 100%)
Liquid Flow Rate (RPM, Fluid, Tube dependent)	Up to 300 mL/min
Supported Source Tube Outer Diameter	0.1 in (3.2 mm) to 0.2 in (4.8 mm)
Communication Type	PC via RS232
Operating Specifications	
Power Supply Input	100 - 240 VAC, 50-60 Hz, 1.5 A
Power Supply Output to Controller	24 VDC, 2.7 A
Operating Temperature Range	5° C to 40° C (41° F - 104° F)
Operating Relative humidity	10%-90% (no condensation)
Motor Specifications	
Pump	Single channel peristaltic pump head
Tubing	1.6 mm Wall, continuous tubing
Supply Voltage	12 VDC, 24 VDC
Power Consumption	5 W
Operating Temperature	5° C - 40° C (41° F - 104° F)
Weight	0.3 kg (0.66 lb)

# Needle Wash Station

## Uninterrupted Washing & Pipetting

Hamilton's Chemical Needle Wash Station automates the washing of reusable steel needles. Compatible with 300  $\mu$ L and 1000  $\mu$ L CO-RE II steel needles, the integrated station features three independent compartments capable of holding up to eight needles each. The three-chamber setup enables continuous pipetting. While two compartments wash and dry needles, a third provides a clean set of needles to continue pipetting.

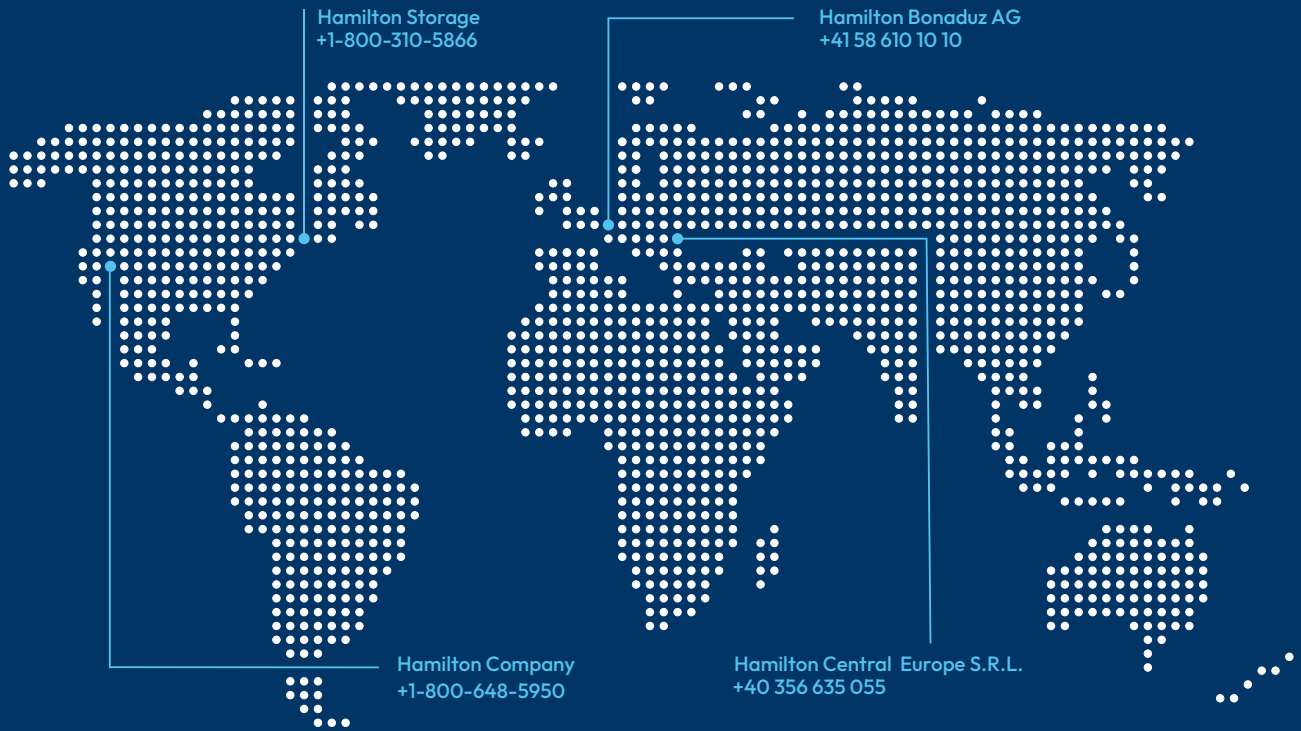
## Benefits

- Integrated solution for applications that require reusable steel needles
- Compatible with 300  $\mu$ L and 1000  $\mu$ L steel needles (CO-RE II)
- Three independent compartments capable of each holding eight needles
- Two bottles are included for washing solutions and one for waste



# Specifications

Needle Wash Station	
Available Options	Part Number
CR Wash Station	186360
Wash/Waste Container 12L	281107
Set of 300 $\mu$ L Needle	235931
Set of 1000 $\mu$ L Needles	235930
Set of 8x 1000 $\mu$ L Needle CO-RE II CR	10158256
Set of 8x 300 $\mu$ L Needle CO-RE II CR	10158261
Set of 8x 3000 $\mu$ L Piercing Needle CO-RE II CR	10146440
General Specifications	
Maximum Outer Dimensions (W x H x D)	Wash Unit: 497 x 135 x 131 mm (19.6 x 5.3 x 5.2 in) Pump Unit A: 520 x 144 x 258 mm (20.5 x 5.67 x 10.16 in)
Weight of Wash Unit	6.35 kg (14 lbs)
Weight of Pump Unit	14.2 kg (31.3 lbs)
Communication	TCC1
Operating Specifications	
Maximum Power Consumption	140 VA
Voltage	230 VAC / 115 VAC
Frequency	50 Hz / 60 Hz
Delayed Action Fuse	115 VAC: T3.15 L250 V 230 VAC: T1.6 L250 V
Operating Temperature Range	15° C - 35° C (59° F - 95° F)
Operating Relative Humidity	30% - 85% (non-condensing)



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