

Microlab[®] NIMBUS

Personal Pipetting Workstation



HAMILTON 

Microlab NIMBUS

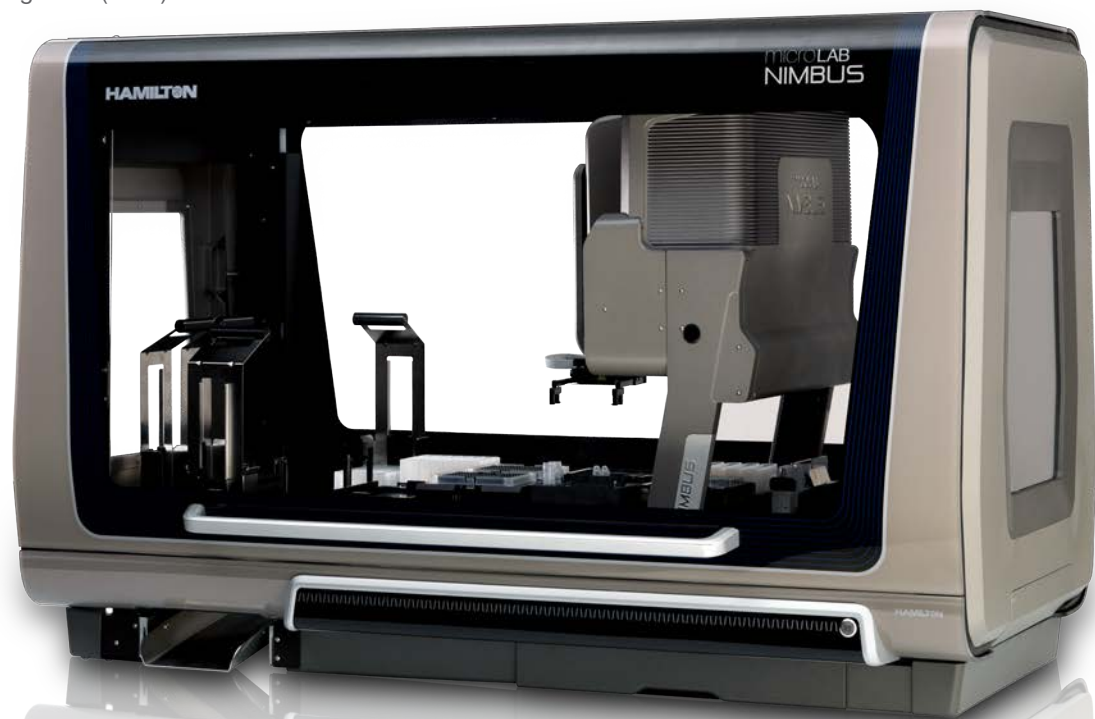
The Microlab NIMBUS is a compact, multi-channel automated liquid handler, offering speed, flexibility, ease-of-use and superior pipetting performance...at a surprisingly affordable price. NIMBUS comes available in three highly configurable open or enclosed platforms:

- ▶ NIMBUS384: 384-channel multi-pipetting head
- ▶ NIMBUS96: 96-channel multi-pipetting head (MPH)
- ▶ NIMBUS4: 1 – 4 independent liquid channels

Who uses the Microlab NIMBUS?

NIMBUS is a small-scale liquid handler designed for space and budget-conscious labs that require

- ▶ high pipetting accuracy and precision
- ▶ low/medium throughput
- ▶ small footprint
- ▶ affordability



Microlab NIMBUS ENCLOSED
Extended Enclosed

Where is Microlab NIMBUS used?

Common industries utilizing NIMBUS include:

- ▶ Drug Discovery
- ▶ Basic & Applied Research
- ▶ Biotechnology
- ▶ DNA Forensics
- ▶ Clinical Diagnostics
- ▶ Environmental Analysis
- ▶ And many others...

What is a Personal Pipetting Workstation?

In today's laboratory, automation of some workflows is better served by taking a 'divide and conquer' approach.

In contrast to large, multi-integrated, high-end systems designed for automating complex workflows, NIMBUS is a small-footprint, lean-integrated, entry-level pipettor ideally suited for automating a single or select set of liquid handling routines. A flexible deck layout and a broad range of modular accessories and options makes reconfiguration for new applications quick and easy. What's more, an attractive price point makes NIMBUS very affordable, allowing even budget-challenged facilities to place multiple systems into a single laboratory.



Why choose Microlab NIMBUS?

Integrated options, intuitive software and the backing of Hamilton's renowned service and applications support makes the NIMBUS an indispensable tool for budget and space-constrained labs. Using proven air displacement pipetting, NIMBUS offers the same liquid handling performance as higher end systems, yet at a fraction of the price.

Imagine Convenience...



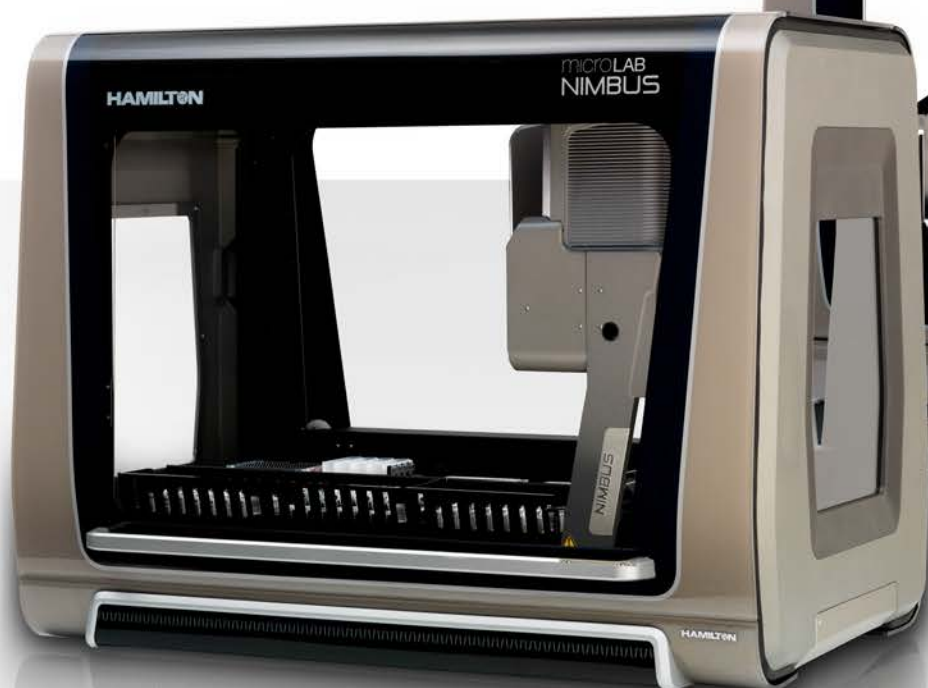
Some of the applications the Microlab NIMBUS can perform

| | | | |
|-------------------------------------|----------------------------------|------------------------|---|
| DNA/RNA extraction and purification | Microarray sample preparation | Cell assays & feeding | Magnetic separation |
| PCR setup and purification | Cloning assays | ADMET assays | Liquid-liquid extraction |
| Post-PCR cleanup | Protein purification & digestion | Solubility assays | ELISA preparation & processing |
| Sequencing assays | MALDI target spotting | Compound handling | Sample pooling |
| Sample normalization | CE analysis setup | Solid phase extraction | Genomics, Proteomics & Cellomics assays |

Meet the Microlab NIMBUS Family

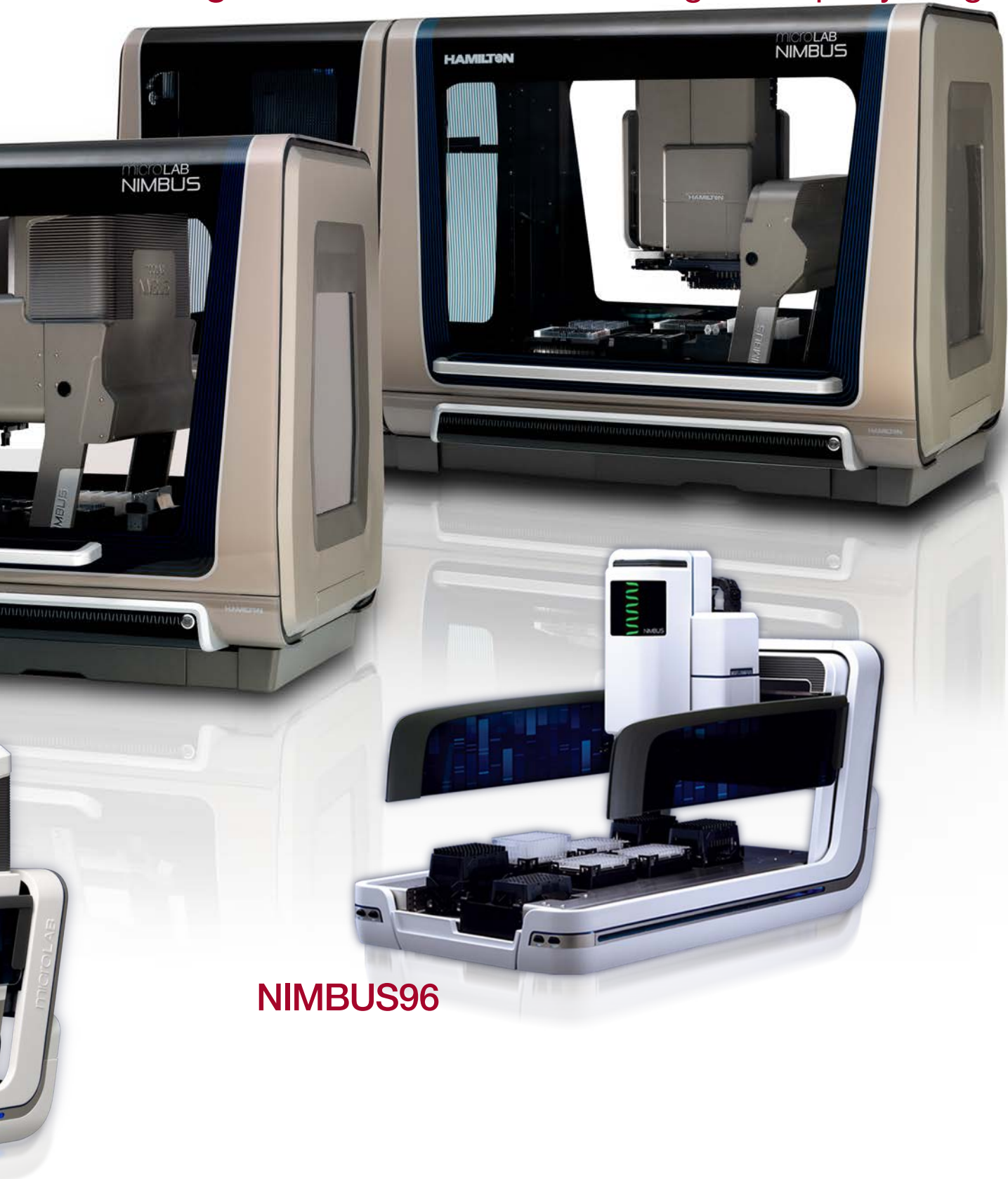
NIMBUS Extended Enclosed

NIMBUS Standard Enclosed



NIMBUS4

NIMBUS Large Extended Enclosed: for large third-party integration



NIMBUS96

Microlab NIMBUS Enclosed

The newest member of the Hamilton Robotics family, the Microlab NIMBUS Enclosed, is a high-speed platform with enhanced processing security. The instrument features a 50 μ L 384-channel MPH, 1 mL 96-channel MPH for fast plate-based pipetting or up to 4 independent liquid channels for flexible pipetting to and from tubes and plates. NIMBUS Enclosed uses air-displacement pipetting technology for the highest precision and accuracy, and features a locking cover set that minimizes environmental contamination.

Labware Gripper Arm

An optional labware gripper enables easy handling of single or stacked microplates, deep-well plates, lids, and Hamilton's Nestable Tip Racks (NTRs). The system's extended reach and 270 degrees of rotation allow for seamless handoffs to integrated devices located on- and off-deck.

Extension Plate (Extended Enclosed only)

A plate located on the left-hand side of the NIMBUS Extended Enclosed allows for 4 additional non-pipetable locations. The locations can use Hamilton stackers, pedestals, Hamilton Heater Shaker, and additional small third-party devices.



Door Locks

Doors automatically lock when the system is running.

Vibrating Waste Station

(Not available on all system configurations)
Worry free waste management removes tips and empty tip racks by gently vibrating them out of the system.

Movement Indicator

Provides at-a-glance cues regarding the movement status of NIMBUS, even from across the room.



CO-RE Paddles

Using two pipetting channels in parallel, NIMBUS can transport plates or tips across the deck without the need for a dedicated labware gripper. CO-RE Paddles are available in both 1 mL and 5 mL channel versions.

4 x Independent CO-RE Air Displacement Channels

Flexible channels are available in 1000 μ L or 5000 μ L, enabling independent movement in both Y and Z axes, and an unprecedented pipetting range of 0.5 μ L to 5000 μ L. Each channel features Capacitance Liquid Level Detection (cLLD) and Pressure-Based Liquid Level Detection (pLLD) to handle both polar and non-polar (organic) fluids.

CO-RE® II 96 MPH

A high-speed 96-channel head ensures fast and accurate pipetting to 96- or 384-well plates across a wide range of volumes, from 1 μ L to 1000 μ L. CO-RE II also features Capacitance-Based Liquid Level Detection (cLLD).



CO-RE® II 384 MPH

A highly precise, time saving 384 head, which accurately & precisely pipettes to 96, 384 and 1536 plates, in individual, column, row and whole plate formats. A volume range of 0.5 μ L to 50 μ L with standard feature Capacitance-Based Liquid Level Detection.



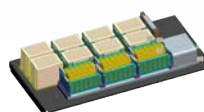
Communications & Control Panel

Simply connect the ethernet cable from your PC to the communications port, plug in the power cable and push the power button to bring NIMBUS to life. An Auxiliary Communications Panel is also featured to support integrated peripheral devices.

Main Deck

The enclosed platform allows for easy loading of pedestals, adapters, plates, tubes, and tip racks onto the high-density main deck. Choose from 3 different deck styles:

- ▶ 9+2 – 9 main deck positions and 2 subdeck positions
- ▶ 3x4 – 12 main deck positions
- ▶ Shift-n-Scan – 8 main deck positions and integrated tube barcode scanner (NIMBUS4 only)



Microlab NIMBUS96/384

The Microlab NIMBUS96/384 represents the latest in compact, high speed automated liquid handling. Using air-displacement pipetting technology for the highest precision and accuracy.

Labware Gripper Arm

An optional labware gripper makes for easy handling of single or stacked microplates, deepwell plates, lids and Hamilton's Nestable Tip Racks (NTRs). Extended reach and 270° of rotation allows for seamless handoffs to integrated devices located both on and off-deck.

Pause/Park Buttons

The park button moves the pipetting head out of the way for easier access to the deck during set-up, while the pause button allows for temporary interruption of a method mid-stream.

Small Footprint

NIMBUS' compact size provides for positioning on virtually any bench top as well as in select commercial hoods and bio-safety cabinets.

Waste Station

An attachable waste receptacle (not shown) accommodates used tips and empty NTRs.



Status Indicator

Provides 'at-a-glance' cues to the operational status of NIMBUS.

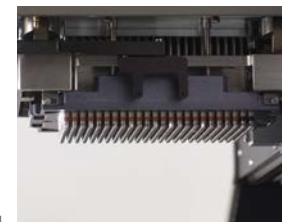
CO-RE® II 96 MPH

A high-speed 96-channel head ensures fast and accurate pipetting to 96- or 384-well plates across a wide range of volumes, from 1 μ L to 1000 μ L. CO-RE II also features Capacitance-Based Liquid Level Detection (cLLD).



CO-RE® II 384 MPH

A highly precise, time saving 384 head, which accurately pipettes to 96, 384 and 1536 plates, in individual, column, row and whole plate formats. A volume range of 0.5 μ L to 50 μ L with standard feature Capacitance-Based Liquid Level Detection.



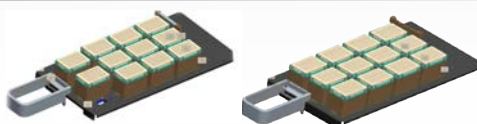
Communications & Control Panel

Simply connect the ethernet cable from your PC to the comm port, plug in the power cable and push the power button to bring NIMBUS to life. An Auxiliary Communications Panel is also featured to support integrated peripheral devices.

Main Deck

An open platform allows for easy loading of carrier pedestals, adapters, plates, tubes and tip racks onto the high-density main deck. Up to 5 standard microplates can be stacked into a single SBS position. Choice of 2 different deck styles:

- ▶ 9+2 - 9 main deck positions and 2 subdeck positions
- ▶ 3x4 - 12 main deck positions



Microlab NIMBUS4

The Microlab NIMBUS4 is a compact and easy-to-use automated pipetting workstation designed to meet the needs of small-scale projects and low throughput applications. Using air-displacement pipetting technology, NIMBUS4 offers superior performance and features up to 4 independent liquid channels for flexible pipetting to/from tubes and plates.

Labware Gripper Arm

An optional labware gripper makes for easy handling of single or stacked microplates, deepwell plates, lids and Hamilton's Nestable Tip Racks (NTRs). Extended reach and 270° of rotation allows for seamless handoffs to integrated devices located both on and off-deck.

Pause/Park Buttons

The park button moves the pipetting head out of the way for easier access to the deck during set-up, while the pause button allows for temporary interruption of a method mid-stream.

Small Footprint

NIMBUS' compact size provides for positioning on virtually any bench top as well as in select commercial hoods and bio-safety cabinets.

Waste Station

An attachable waste receptacle (not shown) accommodates used tips and empty NTRs.



Status Indicator

Provides 'at-a-glance' cues to the operational status of NIMBUS.

4 x Independent CO-RE Liquid Channels

Allowing for independent movement in both Y and Z axes, flexible channels are available in either 1000 μ L or 5000 μ L sizes for an unprecedented dynamic pipetting range from 0.5 μ L to 5000 μ L. Each channel features cLLD and pressure-based Liquid Level Detection (pLLD) to handle both polar and non-polar (organic) fluids.

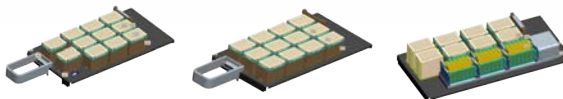
Communications & Control Panel

Simply connect the ethernet cable from your PC to the comm port, plug in the power cable and push the power button to bring NIMBUS to life. An Auxiliary Communications Panel is also featured to support integrated peripheral devices.

Main Deck

An open platform allows for easy loading of carrier pedestals, adapters, plates, tubes and tip racks onto the high-density main deck. Up to 8 standard microplates can be stacked into a single position. Choice of 3 different deck styles:

- ▶ 9+2 - 9 main deck positions and 2 subdeck positions
- ▶ 3x4 - 12 main deck positions (no SubDeck)
- ▶ Shift-n-Scan – 8 main deck positions and integrated tube barcode scanner

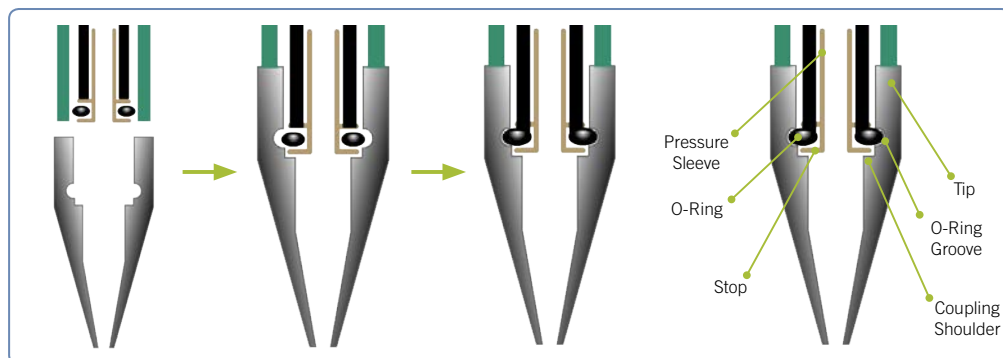


Technology

Innovative technology for higher process performance and reliability.

COMPRESSED O-RING EXPANSION (CO-RE)

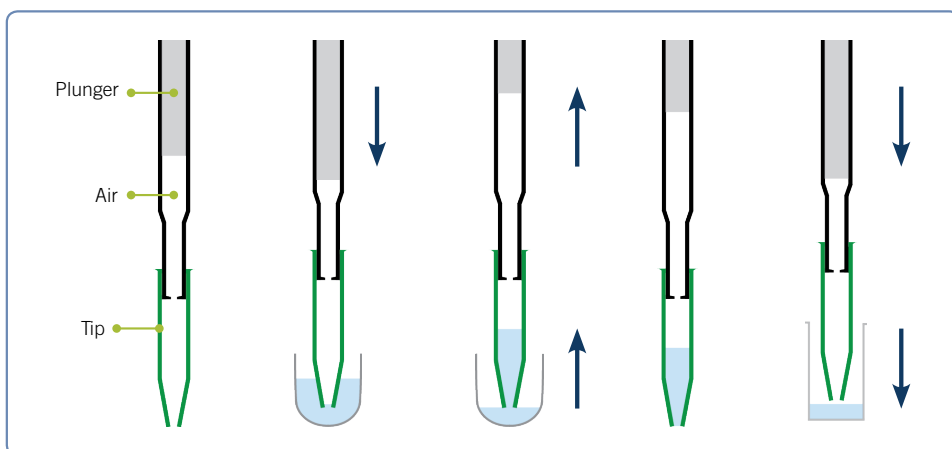
Many of today's applications require precision in tip attachment and positioning. To accomplish this, HAMILTON utilizes proprietary Compressed O-Ring Expansion (CO-RE) technology. CO-RE technology attaches disposable tips using a highly robust lock-and-key style mechanism. This enables a positional precision of $\pm 0.1\text{mm}$ on all axes. The system requires virtually no vertical force for tip attachment or ejection, thus eliminating mechanical stress and minimizing the production of aerosols. Reduced stress also improves overall system reliability and throughput.



AIR DISPLACEMENT PIPETTING

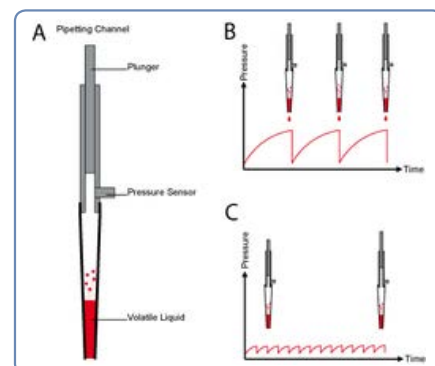
NIMBUS utilizes proven air displacement pipetting, similar to high precision hand-held electronic pipettors. Benefits of this technology include:

- ▶ Reduced risk of contamination or sample dilution (no system fluid)
- ▶ High pipetting accuracy and precision from sub-microlitre to large (>1mL) volumes
- ▶ Increased robustness and easier maintenance owing to lack of system liquids, diluters, valves or complicated tubing



ANTI-DROPLET CONTROL (ADC)

This technology serves to compensate in real time for pressure changes in the liquid channels caused by high vapor pressure of volatile solvents. Upon activation, ADC prevents inadvertent dripping from the channels, reducing the risk of contaminating the deck. (NIMBUS4 only)



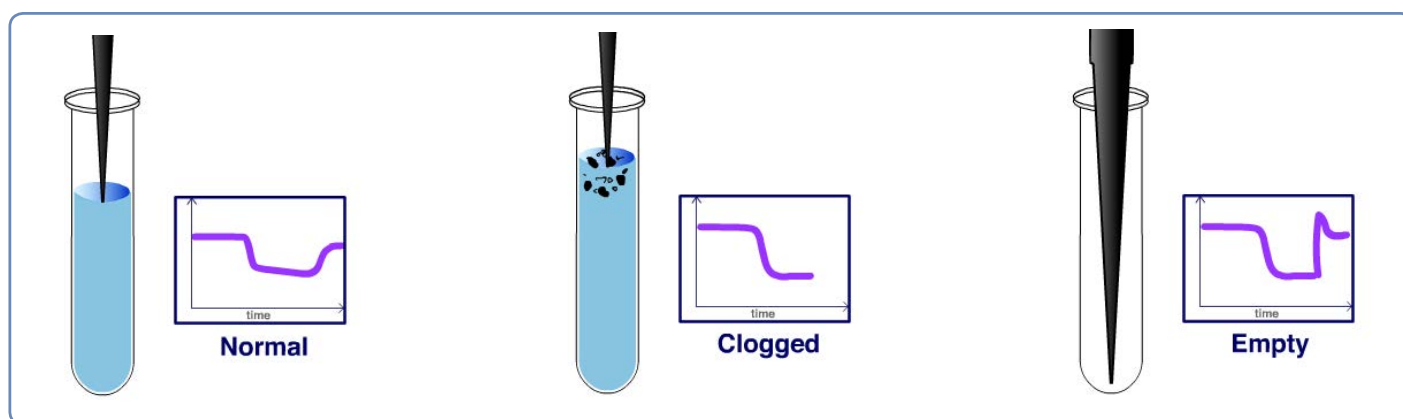
LIQUID LEVEL DETECTION (LLD)

NIMBUS uses LLD technology to determine liquid levels in tubes and plates located on the pipetting deck. There are two modes of LLD: capacitive LLD (c-LLD), used to detect most types of liquids in most types of vessels; and pressure-based LLD (p-LLD), which can detect virtually all fluid types, including foaming liquids and non-conductive organic solvents. cLLD is available on all Hamilton Robotic Systems, NIMBUS384 (MPH channels A5 & P20), NIMBUS96 (MPH channels A1, B2, G11 & H12) and NIMBUS4 (pLLD is available on NIMBUS4 only). For even greater confidence in LLD, a dual mode LLD approach may be used (NIMBUS4 only).



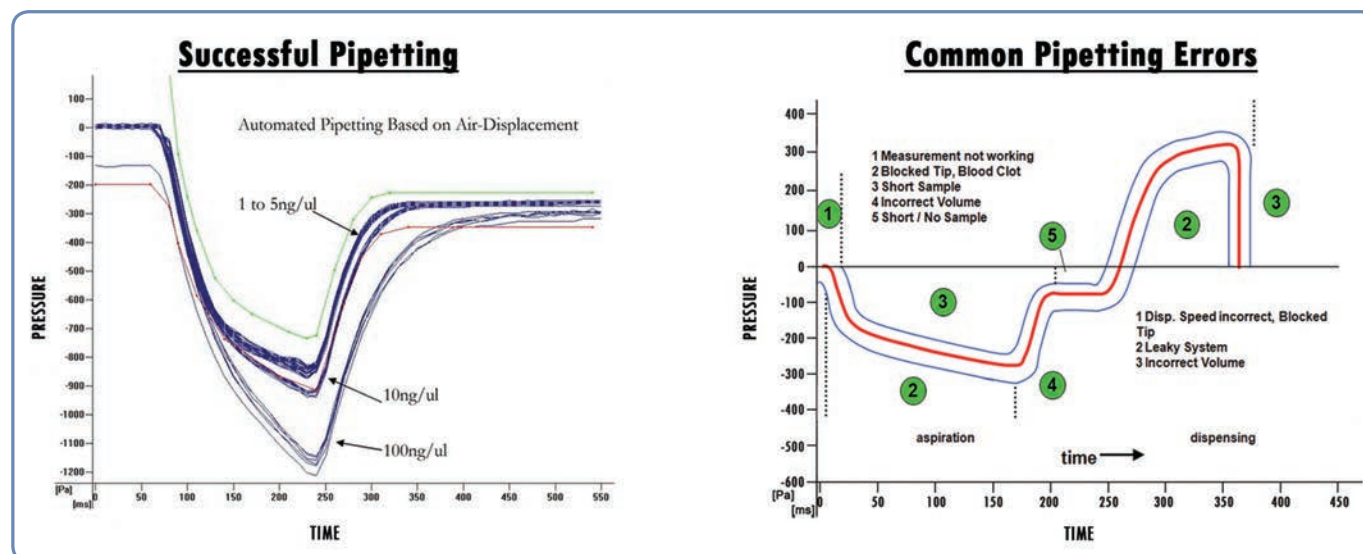
MONITORED AIR DISPLACEMENT (MAD)

By monitoring the air-based pipetting action, NIMBUS can detect clots or empty wells during the aspiration step in real time. It can also be used to pipette highly volatile solvents (NIMBUS4 only).



TOTAL ASPIRATION AND DISPENSE MONITORING (TADM)

During crucial sample transfers (e.g. *in vitro* Diagnostics or DNA Forensics), parameters may be set to monitor, in real time, both the aspiration and dispense steps. TADM verifies with a traceable digital audit trail that a sample has been successfully transferred (NIMBUS4 only).



Software

Hamilton's Microlab INSTINCT software provides an intuitive graphical user interface for simplified instrument control and streamlined method programming, allowing you to achieve results faster and with less training than ever before. Hamilton recognizes the critical role that instrument control software plays in overall system usability and end-user satisfaction.

INSTINCT SOFTWARE

INSTINCT features several tools to enhance the end-user experience:

- ▶ Labware Library – a comprehensive menu of commercially available microplates, deep well plates, reagent troughs/tubs as well as the complete line of Hamilton's CO-RE disposable tips
- ▶ Favorites Tool - enables quick selection of your most commonly-used labware
- ▶ Liquid Class Tuner – an easy to use utility for selecting optimal pipetting parameters and improved liquid handling performance
- ▶ 3-D Viewing – an intuitive tool for visualizing deck layouts

SMART PIPETTING

Combining these preferences together with other user-defined input (e.g. pipetting volume), INSTINCT's built-in intelligence provides:

- ▶ Automated deck layouts – auto-populates the pipetting deck with carriers, microplates/tubes and tips, making setup of deck layouts a snap
- ▶ Automated tip tracking – tracks tip usage, location and status of tip racks
- ▶ Smart plate movements – auto-transporting of labware to destination or waste locations

BASIC TASKS

For basic tasks, INSTINCT software features a series of dedicated Wizards available for commonly performed pipetting routines, each guiding you step-by-step towards final method creation.

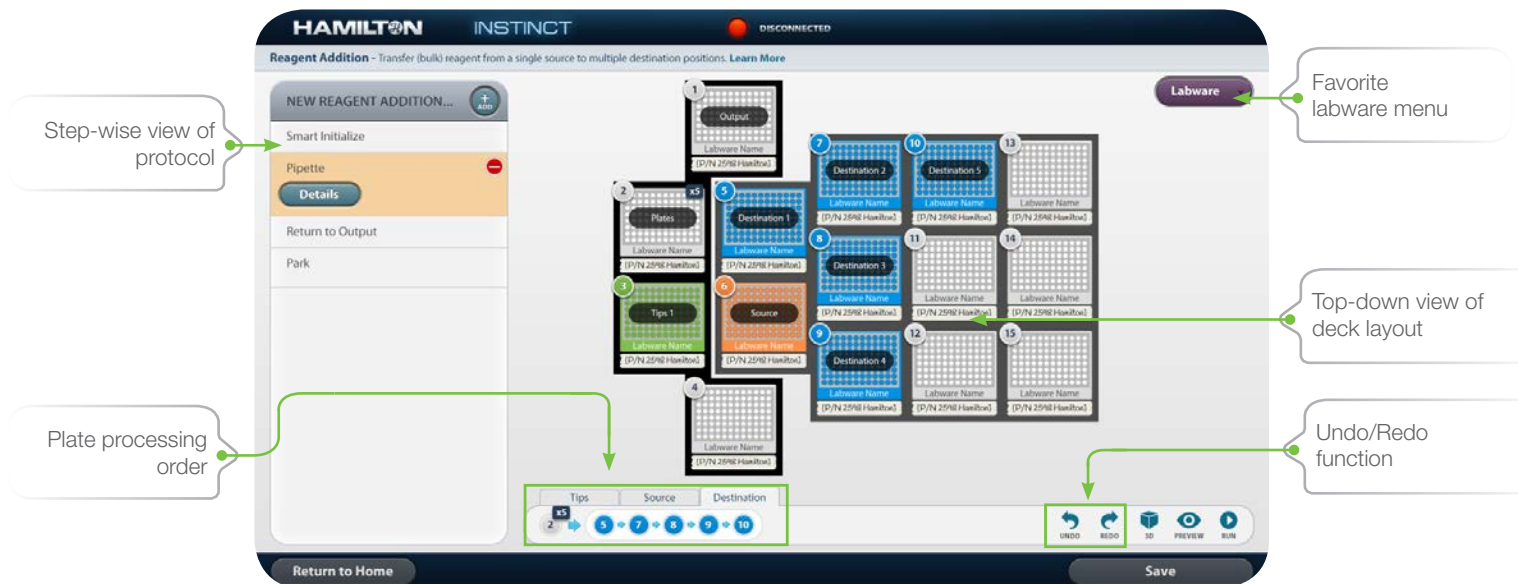
- ▶ Serial Dilutions
- ▶ Reagent Additions
- ▶ Plate Replications
- ▶ Tube to Plate
- ▶ PCR set-up
- ▶ SPE
- ▶ And many more...

ADVANCED PROGRAMMING

For the most sophisticated methods, powerful VENUS software is also featured as standard, providing the flexibility to create or modify a complex method from scratch, ensuring that your requirements are never compromised. VENUS also features a range of utilities for:

- ▶ Worklist importing/exporting
- ▶ Error handling and recovery
- ▶ LIMS adaptation
- ▶ Database/server controls
- ▶ Scheduling
- ▶ Integrated third party device control





21 CFR Part 11 Regulatory Tools

VENUS software contains the software tools required to use NIMBUS in compliance with CFR 21 part 11. The tools provide audit trails, user group defined security functionality and file fidelity with the checksum system.

- ▶ Intuitive graphical user interface
- ▶ Designed for users in busy labs from beginner to advanced

Integrated Options

LABWARE GRIPPER ARM

The NIMBUS Labware Gripper Arm option makes for quick and easy handling of single or stacked microplates, deepwell plates, lids and HAMILTON's Nestable Tip Racks (NTRs). Extended reach and 270° of rotation allows for seamless handoffs to integrated devices located both on and off-deck.



1D BC SCANNER

Reads 1D barcodes microplates presented by Labware Gripper or CO-RE Paddles.



SHIFT-N-SCAN TUBE BARCODE SCANNER

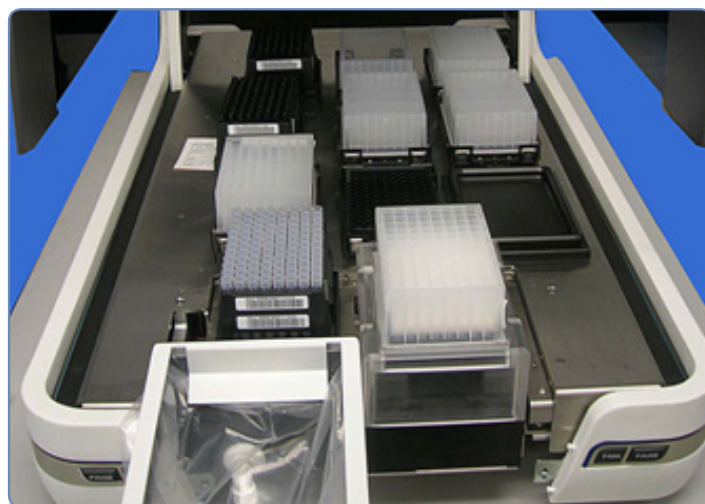
(NIMBUS4 only)

On-deck module for rapid reading of 1D barcoded tubes; accommodates wide variety of tube sizes; compatible with all major symbologies.



NIMBUS VACUUM STATION (NVS)

Fully software-integrated vacuum system with adjustable pressure control; allows automation of SPE and other vacuum based applications.



HAMILTON HEATER SHAKER 2 (HHS2)

Hamilton's latest heater/shaker device offers efficient on-deck orbital shaking and heating (up to 100° C). Accommodates a variety of popular standard and deep well microplates.



PLATE TILT MODULE

An integrated module that lifts plates at an angle to remove liquid out of flat bottomed plates.

FILL MODULE

A liquid filling module used for large volumes of liquid needed on the deck. The module comes standard with a Liquid Sensing Sensor and easily replaced tubing.

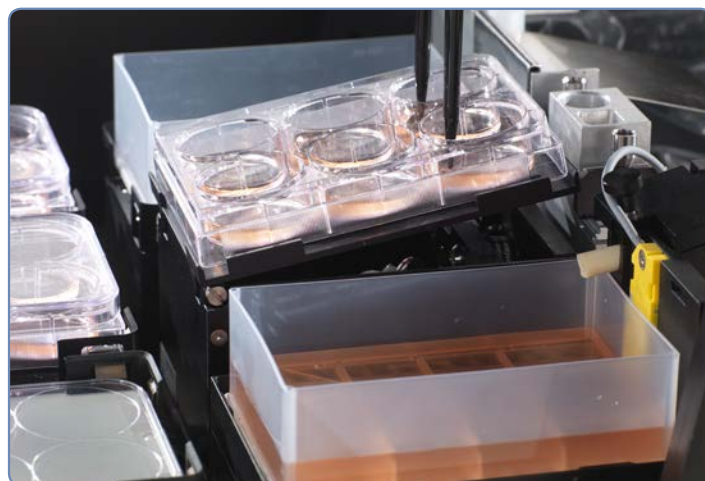


PLATE READERS, WASHERS AND OTHER 3RD PARTY DEVICES

A wide variety of 3rd party peripheral devices are also available for integration.

Labware Handling:

CO-RE Paddles

(NIMBUS4 only)

CO-RE grippers are a cost-effective means for the on-deck transport of labware. Using two pipetting channels in parallel, NIMBUS4 can transport plates or tips (NTRs only) across the deck without the need for a dedicated Labware Gripper. For transfers to off-deck locations and devices, the Labware Gripper option is required. CO-RE Grippers are available in both 1 mL and 5 mL channel versions.



Labware Pedestals :

NTR Pedestal

holds 1 - 4 x Nestable Tip Racks (NTRs); also used for Small Tube Adapters



MTP Pedestal

holds 1 x standard SBS microtiter plate



DWP Pedestal

holds 1 x standard SBS deep well plate; also used for PCR Tray



FTR Pedestal

holds 1 x Framed Tip Rack of CO-RE disposable tips; also used for Filtered CO-RE tips



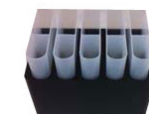
MTP Labware Gripper & Paddle Stacking Pedestals

holds a stack of up to 5 x standard SBS microtiter plates; used with LabWare Gripper only



Reagent Trough Pedestal

holds up to 5 x 50 mL reagent troughs



12x75 - 13x100 mm 32 Tube Position Pedestal

holds 32 x small sample tubes in one SBS position; accommodates the following tube sizes (diameter x height):

► 12 mm x 75 mm; 12 mm x 100 mm; 13 mm x 75 mm; 13 mm x 100 mm



Tip Isolator Pedestal

available for 50, 300 and 1000 µL tips with an integrated deep well plate. The pedestal prevents cross contamination between re-used tips



1536 Plate Pedestal

accommodates most commercially available 1536 MTP plates



16x75 - 17x100 mm & 15 mL Falcon Type 24 Tube Position

holds 24 x medium sample tubes; accommodates the following tube sizes (diameter x height):

- ▶ 16 mm x 75 mm; 16 mm x 100 mm; 17 mm x 75 mm; 17 mm x 100 mm

**50 mL Falcon Like Tubes 6 Position**

holds 6 x 50 mL (i.e. Falcon brand) tubes; accommodates the following tube sizes (diameter x height)

**Labware Adapters:****96 PCR Tray Adapter**

accommodates most commercially available skirted, semi-skirted and unskirted 96-well PCR trays

**384 PCR Tray Adapter**

accommodates most commercially available skirted, semi-skirted and unskirted 384-well PCR trays

**CO-RE Tip Adapter**

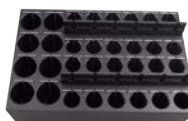
holds 96 x CO-RE tips; required to access single rows/columns of all Framed CO-RE tips and 10 µL NTR tips

**Small Tube Adapter**

holds up to 32 x standard volume (approx 1.7 mL) 'Conical' reaction tubes or 1.8 mL cryovials; a slot feature keeps snap caps out of way to allow access for the pipetting channels

**Multi-Tube Adapter**

holds up to 24 x standard volume 1.8 - 2.0 mL conical tubes or 1.8 cryovials and up to (8) 5 mL standard vial

**4 Position Adapter**

holds up to 5 positions on the reagent trough pedestal adding up to 4 positions for 1.8 - 2.0 mL conical tubes or 1.8 cryovials

**Consumables:****CO-RE Disposable Tips**

The use of superior quality tips is essential to maximizing pipetting performance of your automated liquid handling workstation. Hamilton designs and manufactures our own disposable CO-RE tips, ensuring complete control over the production process to yield only the very highest quality product. All CO-RE tips are manufactured under strict tolerances and undergo the most stringent QA inspection process in the industry.

Hamilton's CO-RE disposable tips are available in 96 or 384 tip traditional frames as well as space-saving, stackable 96 tip Nestable Tip Racks (NTRs). CO-RE tips are available in 10, 50, 300, 1000 and 5000 µL volumes, black conductive or clear, filtered or unfiltered, 'clean' (nuclease and pyrogen-free) or sterile.



NIMBUS96/384 Enclosed Functional & Performance Specifications:

| Parameter | Specification | | |
|--|--|-----------|-----------|
| Input Power (Primary) Universal Supply: | 100 - 240 VAC, 50-60 Hz, 5 A | | |
| Output Power (Secondary) Power: | +42 VDC +5% | | |
| Wattage: | 600 Watts maximum | | |
| Power supply | UL/CSA/CE approved universal power supply with IEC connection | | |
| Physical Dimensions (1000 µL) Operating Dimensions | | | |
| Length: | 53.5 in. (135.9 cm) | | |
| Width: | 27.9 in. (70.9 cm) | | |
| Height: | 35.0 in. max (88.9 cm) | | |
| With Large Extended Enclosed Physical Dimensions | | | |
| Length: | 65.5 in. (166.1 cm) | | |
| Width: | 27.5 in. (70.9 cm) | | |
| Height: | 35.0 in. max (88.9 cm) | | |
| Weight: | 223 lbs (101.2 kg) approx. | | |
| Weight with Large Extended Enclosed: | 243 lbs (110.2 kg) approx. | | |
| Pipetting specifications for disposable tips - 96 channel CO-RE head | Volume | Accuracy | Precision |
| Disposable tip size: | | R (%) | CV (%) |
| 10 µL: 1 µL | | 5.0% | 5.0% |
| 10 µL: 5 µL | | 2.5% | 2.0% |
| 10 µL: 10 µL | | 1.5% | 2.0% |
| 50 µL: 1 µL | | 5.0% | 5.0% |
| 50 µL: 5 µL | | 2.5% | 2.0% |
| 50 µL: 50 µL | | 1.5% | 0.75% |
| 300 µL: 10 µL | | 3.0% | 2.0% |
| 300 µL: 100 µL | | 1.5% | 2.0% |
| 300 µL: 300 µL | | 1.0% | 2.0% |
| Test environment & equipment available upon request | 1000 µL: 1000 µL | 1.0% | 0.75% |
| Pipetting specifications for disposable tips - 50 µL CO-RE 384-Probe Head | | | |
| Disposable tip size: | Volume | Precision | |
| | | CV (%) | |
| 50 µL: 0.1 µL | | 8.0% | |
| 50 µL: 0.5 µL | | 6.0% | |
| 50 µL: 1 µL | | 3.5% | |
| 50 µL: 1 µL | | 15.0% | |
| 50 µL: 5 µL | | 3.0% | |
| 50 µL: 5 µL | | 4.0% | |
| 50 µL: 10 µL | | 2.0% | |
| 50 µL: 10 µL | | 3.0% | |
| Test environment & equipment available upon request | 50 µL: 50 µL | 2.0% | |
| Pipetting specifications for disposable tips - Using the 50 µL CO-RE 384-Probe Head as a 96-Probe Head | | | |
| Disposable tip size: | Volume | Precision | |
| | | CV (%) | |
| 300 µL Rocket: 1 µL | | 4.0% | |
| 300 µL Rocket: 5 µL | | 2.0% | |
| 300 µL Rocket: 10 µL | | 2.0% | |
| 300 µL Rocket: 100 µL | | 2.0% | |
| Test environment & equipment available upon request | 300 µL Rocket: 300 µL | 2.0% | |
| Liquid level detection 96 channel CO-RE head: | Capacitive liquid level detection (cLLD) (Channels A1, B2, G11 and H12) | | |
| Liquid level detection 384 channel CO-RE head: | Capacitive liquid level detection (cLLD) (Channels A5 and P20) | | |
| Deck Capacity | 11 or 12 positions | | |
| Communication type | Ethernet | | |



NIMBUS96/384 Enclosed Functional & Performance Specifications (continued):

| Parameter | Specification |
|------------------------|--|
| Operating | |
| Temperature: | 15° to 35°C (59° to 95°F) |
| Relative Humidity: | 30% to 85% R.H. non-condensing |
| Altitude: | 2000 m (1.2 miles) above sea level |
| Storage | |
| Temperature: | -20°C (-4.0°F) @ 10% humidity to 70°C (158°F) @ 90% humidity non-condensing |
| CSA Certification | |
| Installation category: | II |
| Pollution degree: | 2 |

NIMBUS96/384 Enclosed Labware Gripper Specifications:

| Parameter | Specification |
|----------------------|---|
| Plate format | microtiter footprint plate height < 43 mm |
| Absolute positioning | accuracy X, Y, Z = 0.5 mm reproducibility X, Y, Z = 0.25 |
| Gripping force | 5 N – 16 N (default 9 N): Labware Gripper Landscape 190220 |
| Transport mass | 300g filled deep-well plate |
| Operating Data | Temperature range 15°C – 35°C Relative humidity 30% – 85% (non-condensing, indoors) Altitude 2000 m above sea level |

NIMBUS96/384 Enclosed Dimensions

with Extended Enclosed Shown

Large Extended Enclosed

Height: 35.0" (88.9 cm)

Length: 65.5" (166.4 cm)

Width: 27.9" (70.9 cm)

Weight: 243 lbs (110.2 kg)
approx.

NIMBUS4 Enclosed Functional & Performance Specifications:

| Parameter | Specification | | |
|---|---|---------------------|---------------------|
| Input Power (Primary) Universal Supply: | 100 - 240 VAC, 50-60 Hz, 5A | | |
| Output Power (Secondary) Power: Wattage: | +42 VDC +5% 600 Watts maximum | | |
| Power supply | UL/CSA/CE approved universal power supply with IEC connection | | |
| Physical Dimensions / Operating Dimensions Length: Width: Height: | 41.2 in. (104.6 cm) 27.9 in. (70.9 cm) 32.7 in. max (83.1 cm) | | |
| With Extended Enclosed Physical Dimensions Length: Width: Height: | 53.5 in. (135.9 cm) 27.9 in. (70.9 cm) 35.0 in. max (88.9 cm) | | |
| With Large Extended Enclosed Physical Dimensions Length: Width: Height: | 65.5 in. (166.1 cm) 27.9 in. (70.9 cm) 35.0 in. max (88.9 cm) | | |
| Weight: | 203 lbs (92.1 kg) approx. | | |
| Weight with Extended Enclosed: | 223 lbs (101.2 kg) approx. | | |
| Weight with Large Extended Enclosed: | 243 lbs (110.2 kg) approx. | | |
| Pipetting specifications for disposable tips | Volume | Accuracy R (%) | Precision CV (%) |
| Disposable tip size: | 10 µL: 1 µL | 5.0% | 5.0% |
| | 10 µL: 5 µL | 2.5% | 2.0% |
| | 10 µL: 10 µL | 1.5% | 1.5% |
| | 50 µL: 1 µL | 5.0% | 5.0% |
| | 50 µL: 5 µL | 2.5% | 2.0% |
| | 50 µL: 50 µL | 1.5% | 1.0% |
| | 300 µL: 10 µL | 3.0% | 2.0% |
| | 300 µL: 50 µL | 1.5% | 1.0% |
| | 300 µL: 300 µL | 1.0% | 1.0% |
| | 1000 µL: 10 µL | 7.5% | 3.5% |
| | 1000 µL: 100 µL | 2.0% | 1.0% |
| <i>Test environment & equipment available upon request</i> | 1000 µL: 1000 µL | 1.0% | 1.0% |
| For pipetting of less than 10 µL HAMILTON recommends 10 µL/50 µL volume disposable tips to achieve highest pipetting precision. | | | |
| Liquid level detection Independent Channels: | Capacitive liquid level detection (cLLD) (Pressure liquid level detection (pLLD) | | |
| Deck Capacity | 8-12 positions | | |
| Communication type | Ethernet | | |
| Operating Temperature: Relative Humidity: Altitude: | 15° to 35°C (59° to 95°F) 30% to 85% R.H. non-condensing 2000 m (1.2 miles) above sea level | | |
| Storage Temperature: | -20°C (-4.0°F) @ 10% humidity to 70°C (158°F) @ 90% humidity non-condensing | | |
| CSA Certification Installation category: Pollution degree: | II 2 | | |
| Plate format | microtiter footprint plate height < 43 mm | | |



NIMBUS4 Enclosed Labware Gripper Specifications:

| Parameter | Specification |
|----------------------|---|
| Plate format | microtiter footprint plate height < 43 mm |
| Absolute positioning | accuracy X, Y, Z = 0.5 mm reproducibility X, Y, Z = 0.25 |
| Gripping force | 5 N – 16 N (default 9 N): Independent Channels Gripper Landscape 190220 |
| Transport mass | 300g filled deep-well plate |
| Operating Data | Temperature range 15°C – 35°C Relative humidity 30% – 85% (non-condensing, indoors) Altitude 2000 m above sea level |

NIMBUS4 Enclosed Dimensions

with Standard Extended Enclosed Shown



| Standard | Extended Enclosed | Large Extended Enclosed |
|-----------------------------------|-------------------|------------------------------------|
| Height: 32.7" (83.1 cm) | | Height: 35.0" (88.9 cm) |
| Length: 41.2" (104.6 cm) | | Length: 65.5" (166.3 cm) |
| Width: 27.9" (70.9 cm) | | Width: 27.9" (70.9 cm) |
| Weight: 203 lbs approx. (92.1 kg) | | Weight: 243 lbs (110.2 kg) approx. |

NIMBUS96 Functional & Performance Specifications:

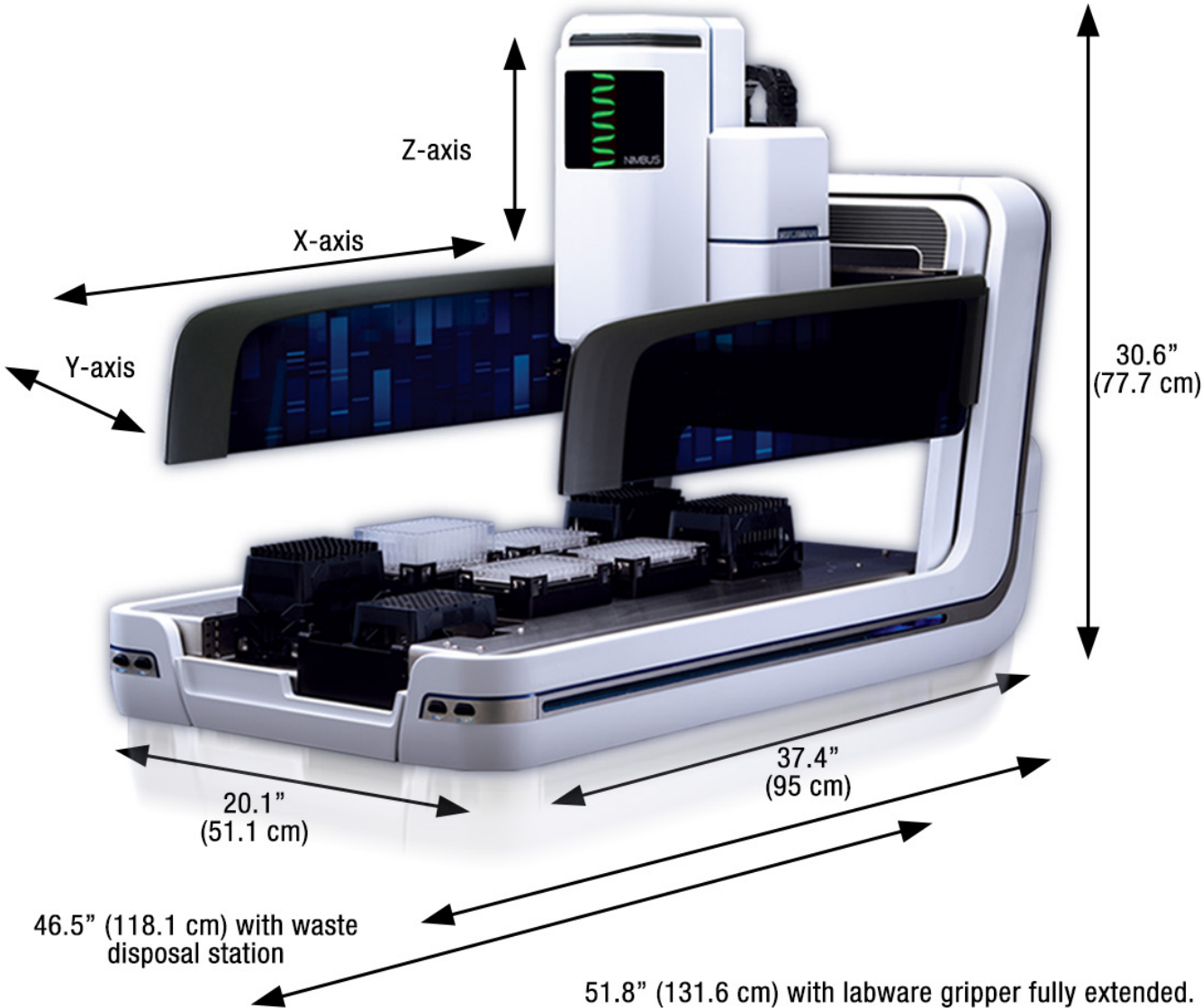
| Parameter | Specification | | |
|--|--|----------|-----------|
| Input Power (Primary) Universal Supply: | 100 - 240 VAC, 50-60 Hz, 5 A | | |
| Output Power (Secondary) Power: | +42 VDC +5% | | |
| Wattage: | 600 Watts maximum | | |
| Power supply | UL/CSA/CE approved universal power supply with IEC connection | | |
| Physical Dimensions (1000µL) Length: | 37.4 in. (94.9 cm) | | |
| Width: | 20.1 in. (51.1 cm) | | |
| Height: | 30.6 in. max (77.7 cm) | | |
| Operating Dimensions Width: (FRONT to REAR) | 20.1 in. (51.1 cm) | | |
| Length: (LEFT to RIGHT) | 51.8 in. (131.6 cm) | | |
| Height: | 30.6 in. max (77.7 cm) | | |
| Weight: | 145 lbs (65.8 kg), 1000µL | | |
| Pipetting specifications for disposable tips - 96 channel CO-RE head | Volume | Accuracy | Precision |
| Disposable tip size: | | R (%) | CV (%) |
| 10 µL: | 1 µL | 5.0% | 5.0% |
| 10 µL: | 5 µL | 2.5% | 2.0% |
| 10 µL: | 10 µL | 1.5% | 2.0% |
| 50 µL: | 1 µL | 5.0% | 5.0% |
| 50 µL: | 5 µL | 2.5% | 2.0% |
| 50 µL: | 50 µL | 1.5% | 0.75% |
| 300 µL: | 10 µL | 3.0% | 2.0% |
| 300 µL: | 100 µL | 1.5% | 2.0% |
| 300 µL: | 300 µL | 1.0% | 2.0% |
| <i>Test environment & equipment available upon request</i> | 1000 µL: | 1000 µL | 1.0% |
| Liquid level detection 96 channel CO-RE head: | Capacitive liquid level detection (cLLD) (Channels A1, B2, G11 and H12) | | |
| Deck Capacity | 8-12 positions | | |
| Communication type | Ethernet | | |
| Operating Temperature: | 15° to 35°C (59° to 95°F) | | |
| Relative Humidity: | 30% to 85% R.H. non-condensing | | |
| Altitude: | 2000 m (1.2 miles) above sea level | | |
| Storage Temperature: | -20°C (-4.0°F) @ 10% humidity to 70°C (158°F) @ 90% humidity non-condensing | | |
| CSA Certification Installation category: | II | | |
| Pollution degree: | 2 | | |



NIMBUS96 Labware Gripper Specifications:

| Parameter | Specification |
|----------------------|---|
| Plate format | microtiter footprint plate height < 43 mm |
| Absolute positioning | accuracy X, Y, Z = 0.5 mm reproducibility X, Y, Z = 0.25 |
| Gripping force | 5 N – 16 N (default 9 N): Labware Gripper Landscape 190220 |
| Transport mass | 300g filled deep-well plate |
| Operating Data | Temperature range 15°C – 35°C Relative humidity 30% – 85% (non-condensing, indoors) Altitude 2000 m above sea level |

NIMBUS96 Dimensions



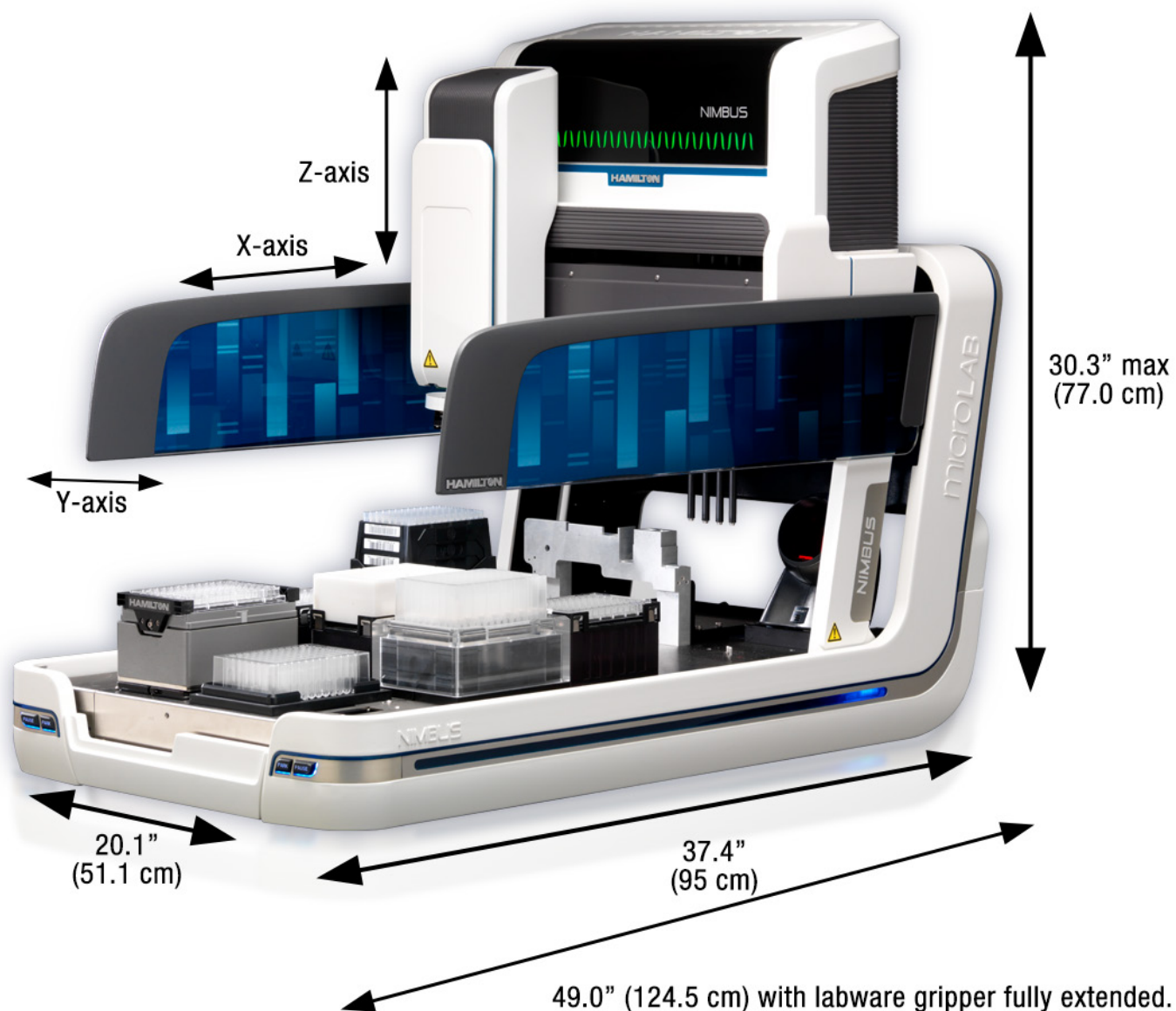
NIMBUS4 Functional & Performance Specifications:

| Parameter | Specification | | |
|--|--|---------------------|---------------------|
| Input Power (Primary) Universal Supply: | 100 - 240 VAC, 50-60 Hz, 5A | | |
| Output Power (Secondary) Power: Wattage: | +42 VDC +5% 600 Watts maximum | | |
| Power supply | UL/CSA/CE approved universal power supply with IEC connection | | |
| Physical Dimensions Length: Width: Height: | 37.4 in. (95 cm) 20.1 in. (51.1 cm) 30.3 in. max (77.0 cm) | | |
| Operating Dimensions Width: (FRONT to REAR) Length: (LEFT to RIGHT) Height: Weight: | 20.1 in. (51.1 cm) 49.0 in. (124.5 cm) 30.3 in. max (77.0 cm) 145 lbs (65.8 kg) | | |
| Pipetting specifications for disposable tips Disposable tip size: | Volume | Accuracy R (%) | Precision CV (%) |
| | 10 µL: 1 µL | 5.0% | 5.0% |
| | 10 µL: 5 µL | 2.5% | 2.0% |
| | 10 µL: 10 µL | 1.5% | 1.5% |
| | 50 µL: 1 µL | 5.0% | 5.0% |
| | 50 µL: 5 µL | 2.5% | 2.0% |
| | 50 µL: 50 µL | 1.5% | 1.0% |
| | 300 µL: 10 µL | 3.0% | 2.0% |
| | 300 µL: 50 µL | 1.5% | 1.0% |
| | 300 µL: 300 µL | 1.0% | 1.0% |
| | 1000 µL: 10 µL | 7.5% | 3.5% |
| | 1000 µL: 100 µL | 2.0% | 1.0% |
| | 1000 µL: 1000 µL | 1.0% | 1.0% |
| <i>Test environment & equipment available upon request</i> | | | |
| For pipetting of less than 10µL HAMILTON recommends 10µL/50µL volume disposable tips to achieve highest pipetting precision. | | | |
| Liquid level detection Independent Channels: | Capacitive liquid level detection (cLLD) (Pressure liquid level detection (pLLD)) | | |
| Throughput Independent Channels: | Replication of one 96-well plate, with cLLD on aspiration: 35s (incl. new tips) Reformatting of four 96-well plates to one 384-well plate, 50 µL, new tips, with cLLD on aspiration: 140s | | |
| Deck Capacity | 8-12 positions | | |
| Communication type | Ethernet | | |
| Operating Temperature: Relative Humidity: Altitude: | 15° to 35°C (59° to 95°F) 30% to 85% R.H. non-condensing 2000 m (1.2 miles) above sea level | | |
| Storage Temperature: | -20°C (-4.0°F) @ 10% humidity to 70°C (158°F) @ 90% humidity non-condensing | | |
| CSA Certification Installation category: Pollution degree: | II 2 | | |
| Plate format | microtiter footprint plate height < 43 mm | | |



NIMBUS4 Labware Gripper Specifications:

| Parameter | Specification |
|----------------------|---|
| Plate format | microtiter footprint plate height < 43 mm |
| Absolute positioning | accuracy X, Y, Z = 0.5 mm reproducibility X, Y, Z = 0.25 |
| Gripping force | 5 N – 16 N (default 9 N): Independent Channels Gripper Landscape 190220 |
| Transport mass | 300g filled deep-well plate |
| Operating Data | Temperature range 15°C – 35°C Relative humidity 30% – 85% (non-condensing, indoors) Altitude 2000 m above sea level |

NIMBUS4 Dimensions

microLAB NIMBUS

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